City of Malibu

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May 7, 2012 *Sent via email to losangeles@waterboards.ca.gov*

California Regional Water Quality Control Board
Los Angeles Region
Attn: Man Voong
320 West Fourth Street, Suite 200
Los Angeles, CA 90013

RE: Comment Letter – Bacteria TMDLs Revisions for Santa Monica Bay Beaches

Dear Mr. Voong:

Thank you for undergoing this reconsideration process and for the opportunity to comment on the subject revisions to the Santa Monica bay Beaches Bacteria TMDL and Basin Plan. Before addressing the substantive comments on the Santa Monica Bay Beaches Bacteria TMDL, the City first requests that the Los Angeles Regional Water Quality Control Board (LARWQCB) separate out the reconsideration hearings, so that the LARWQCB consider the freshwater TMDLs before the beaches TMDLs. The City appreciates LARWQCB staff efforts to reconsider and revise the TMDLs based on new information; however, given the complexity of the issues, the hearing to reconsider the fresh water TMDLs (such as Malibu Creek) should be bifurcated from the hearing to reconsider beach TMDLs, especially the SMBBB TMDL. One hearing to reconsider all TMDLs together will limit the efficacy of these hugely important hearings. Hearing a TMDL is complex on its own. Having five TMDLs heard and considered on the same day is sure to be a complicated and contentious hearing. It is also unreasonable to expect agencies to juggle comments for multiple TMDLs in the review period that was provided, at the same time that draft MS4 permit language and Request for Information were issued from your office. Therefore, the City requests that the LARWQCB proceed with considering the Malibu Creek and other freshwater bacteria TMDLs and delay the beaches TMDLs, in particular the SMBBB TMDL, until a later hearing. Additionally, it would be premature to reconsider the Santa Monica Bay TMDL before the final epidemiology study results are published (see Technical Comment 1 below).

For purposes of the May 7, 2012 deadline, the City submits the following comments with respect to the Santa Monica Bay Beaches Bacteria TMDL. A compact disc (CD) containing all of the documents referenced in the City's comments will be provided directly to your office under separate cover.

Introduction

The Wet and Dry Weather Santa Monica Bay Beaches Bacteria (SMBBB) Total Maximum Daily Loads (TMDLs) (Resolutions 2002-002 and 2002-004, respectively) became effective on July 15, 2003.[1] A total of 11,296 acres of the largely undeveloped Santa Monica Bay and Malibu Creek watersheds is located within the City. Also draining into the City of Malibu are the upper watershed acres of unincorporated Los Angeles County and the thousands of acres owned and operated by park agencies. There are 20 SMBBB TMDL shoreline compliance monitoring sites within the City (Figure 1).

The City of Malibu already operates a successful, and award winning, water quality program, which includes stormwater storage and treatment infrastructure, an aggressive public education and outreach campaign, and participation in cutting-edge research on the sources of pollutants at local beaches. For example, Malibu built the Civic Center's $6 million dollar state-of-the-art stormwater treatment facility to filter and disinfect stormwater flows from the Civic Center drainage system. Malibu also purchased a $25 million dollar piece of property to build Legacy Park, and then invested another $6 million to construct the project. Malibu applied for and received over $3 million dollars in Proposition 84 grants funds, and is providing matching funds, to install two drainage improvement and infiltration projects in the City's Area of Special Biological Significance (ASBS), and created the Coastal Preservation Specialist position (a position funded for the duration of the grant) to conduct a focused outreach program regarding the ASBS, eliminating non-storm runoff, and stormwater pollution prevention. A complete summary of Malibu's aggressive and proactive water quality program is attached to this letter as Attachment 3. Malibu is committed to protecting water quality, and is eager to work with the Regional Water Quality Control Board and staff to create reasonable and appropriate water quality standards and waste load allocations to achieve this goal.

The ten year period since the SMBBB TMDL was originally considered has provided a valuable opportunity to assess the efficacy of the TMDL and re-evaluate the assumptions upon which the TMDL was originally based. As such, there are a few significant general points that must be noted.

Through this process, the LARWQCB will receive comments and complaints from various agencies about the science used to create the TMDLs in 2002. The good news is that many of the mysteries from 2002 have now been explored and answered. Science has advanced tremendously over the past ten years and the City hopes the LARWQCB can use this reconsideration as an opportunity to move forward with best science available to date to set reasonable and appropriate waste load allocations.

[1] Under this TMDL, the City of Malibu (City) is the primary jurisdiction of Jurisdictional Group 4 (J4, Nicholas Canyon) and is also part of Jurisdictional Group 1 (J1, various subwatersheds draining to Santa Monica Bay). Los Angeles County is the primary jurisdiction for J1.

In 2002[2] when the TMDL was first considered, LARWQCB staff under-estimated the cost of addressing dry weather runoff from some of the natural creeks that impact beaches, such as Topanga Creek:

> The City expects that similar prevention and treatment measures to those being implemented in the Malibu watershed will be needed. Specifically, storm drain disinfection systems may need to be installed and, in addition, a watershed source control program will need to be implemented to reduce anthropogenic nonpoint sources of bacteria such as from malfunctioning septic systems. The estimated cost per watershed is $1 to $2 million based on estimates for similar management measures in the Malibu watershed. Dry weather implementation programs are likely to be needed in eight subwatersheds based on the historical data analysis: Nicholas Canyon, Trancas Canyon, Zuma Canyon, Latigo Canyon, Corral Canyon, Las Flores Canyon, Piedra Gorda Canyon, and Topanga Canyon. Estimating on average $1.5 million per watershed equals a total cost of $12 million ($1.1 million in annualized costs). Again, for households in the Santa Monica Bay watershed, this translates into an annual cost of $1.52 per household.

In reality, the costs were significantly higher. Actual Malibu expenditures for the past ten years are approximately $50,000,000. This translates to expenditures of $7,700 per Malibu household or $770 per year, a miscalculation of over 500% with no end in sight to implement an integrated water resources management plan to meet Basin Plan objectives. Many of the factors that drive these extraordinary expenditures are addressed in this comment letter.

Another important factor the science community has learned over the past 10 years is that natural sources of Fecal Indicator Bacteria have been found to be a primary cause of bacteria exceedances for beaches without dry weather storm drain discharges. For this reason, the underlying causes of persistent fecal indicator bacteria (FIB) need to be more fully documented before requiring municipalities to undertake projects and programs aimed at activities that do not create the bacteria exceedances. Bacterial TMDLs can produce unintended consequences as well. For instance, because kelp and sea grasses have been found to be a primary source of FIB at these beaches, municipalities' only option to control FIB at beaches impacted by kelp and sea grasses would be to groom the beaches. However, grooming is controversial in and of itself because it damages critical nesting and foraging habitat for shorebirds such as plovers, and is an incredibly expensive option. While new studies of the impacts of wrack illustrate a potential role for kelp in adversely affecting beach water quality as determined by concentrations of enterococci and E. coli, it should be noted that wrack plays an important role in the beach ecosystem by providing nutrients to the beach food web. Sea birds, invertebrates, and insects all rely on kelp as a food source. Beach grooming to remove stranded kelp has been shown to adversely impact the beach ecosystem (Dugan & Hubbard, 2010). Thus, a decision to remove wrack from a beach should only be undertaken after careful consideration of both water quality and ecosystem needs (Imamura, 2011). Unfortunately, that may be the only measure currently available for mitigating natural sources of FIB at beaches impacted

[2] LARWQCB staff report of January 11, 2002 Total Maximum Daily Load to Reduce Bacteria Indicator Densities during Dry Weather at Santa Monica Beaches, pages 28-29.

by kelp wrack in Malibu unless there is a defined natural source exclusion (NSE) process specifically outlined in the reconsideration. Additional information on natural sources of FIB is provided in the technical comments below.

It is also critical that the TMDLs and relevant Basin Plan Amendment language be clear that the TMDL standards cover both the Basin Plan AND the Ocean Plan standards. Because this was not clear in the original TMDLs, the Ocean Plan standards could arguably be applied to municipalities notwithstanding the existence of the TMDLs. Failing to do so makes responsible agencies vulnerable to additional legal liabilities.

Lastly, municipalities cannot achieve the objectives working alone. All agencies responsible for compliance with TMDLs must actively participate in the process to address water quality exceedances through monitoring, implementation plans strategies and source control, and should be held accountable for compliance and correcting their potential anthropogenic contributions. A TMDL cannot be achieved if it does not consider all potential sources and responsible agencies' actions simultaneously (including managed park sites, open space agencies, and highways). Without including all contributing agencies, the TMDL does not provide a representative picture to evaluate FIB sources and effective control mechanisms, and will provide a flawed analysis of allocations and enforcement burden on those participating agencies.

Similarly to past comments submitted by the City to the SWRCB and LARWQCB for the Marine Debris TMDL, the City of Malibu requests that the Basin Plan Amendment add the following responsible agencies in the Malibu coastal watersheds, that own or operate land and facilities that could contribute to water quality degradation wherever applicable. These following listed agencies should be specifically added to the list of responsible agencies in Jurisdictions 1 and 9 in Table 7-4.2b.[3] Maps with more specific land ownership information can be provided upon request.

- California State Parks
- Santa Monica Mountains Conservancy
- Mountains Recreation and Conservation Authority
- Santa Monica Mountains National Recreation Area
- Santa Monica Malibu Unified School District
- Santa Monica College
- Pepperdine University

With that context in mind, the following are the City's specific technical comments and requests regarding the draft SMBBB TMDL reconsideration, for LARWQCB staff consideration and response:

[3] Proposed Amendment to the Water Quality Control Plan – Los Angeles Region to revise the Santa Monica Bay Beaches Bacteria TMDL - Attachment A to Resolution No. R12-XXX and the Table 7-4.2b

Comments

1. Reconsideration Schedule

- **Draft SMBBB TMDL Reconsideration:** Comments are due to the LARWQCB on May 7, 2012 and the TMDL reconsideration hearing is scheduled for June 7, 2012.

- **Comment:** Since the purpose of the TMDL is to protect the waters for recreation purposes, the City requests that the SMBBB TMDL reconsideration be delayed until the Southern California Coastal Water Research Project (SCCWRP) Pacific Coast Water Quality Study final epidemiological results from shoreline compliance monitoring site SMB MC-2 (Malibu Creek and Lagoon at Surfrider Beach), become available, so these results can be considered in setting any revised waste load allocations (WLAs). This study is relevant and important to reconsideration of the standards since it's the only recent local study that tells us: (a) whether swimmers are getting sick at rates above United States Environmental Protection Agency (USEPA) tolerable levels (and whether this might be due to bather shedding [Goodwin et al 2012] or other uncontrollable pathogen sources), (b) whether FIB concentrations are reliable metrics for predicting swimmer illness rates at a local Santa Monica Bay beach, and (c) whether existing full body contact recreation (REC-1) single sample and geometric mean objective values are protective of or related to swimmer illness rates. Preliminary results at Surfrider Beach have found no correlation between illness rates and indicator bacteria concentrations (Griffith 2011). Other recent Southern California beach epidemiological studies have also questioned the correlation between traditional bacterial indicators and human health risks (Colford et al 2005). Other recent Southern California beach water quality studies have also found that Enterococcus in particular originates in plants and kelp (Moore et al 2007 and Imamura et al 2011), thereby further questioning the presumed human health linkage for urban runoff impacted receiving waters. Several recent USEPA Quantitative Microbial Risk Assessment (QMRA) studies (Soller et al 2010 and Schoen et al 2010) also indicate that REC objectives, specifically Enterococcus geometric mean, correspond to swimmer illness rates that are well below USEPA's tolerable levels at beaches with minimal human bacteria sources. Therefore the epidemiological results of the important Pacific Coast Water Quality Study should most certainly affect how REC use compliance is measured and assessed within the TMDL watersheds, since the setting of compliance limits is a fundamental component of this TMDL reconsideration.

  The City understands that the Regional Board would like to complete this and the other TMDL reconsiderations prior to the adoption of the new Los Angeles regional municipal separate storm sewer system (MS4) permit, and in general supports this concept. However, any amendments to this and other the TMDLs will not be in effect until after a lengthy regulatory review process including approvals by the State Water Resources Control Board (SWRCB), USEPA and the Office of Administrative Law (OAL) and will thusly only be adopted into the permit by reference. This allows some flexibility in waiting a few months to work more closely with the stakeholders to ensure the most recent science is included and proper compliance options are incorporated. Therefore, the City strongly urges the Regional Board to delay this SMBBB TMDL reconsideration a few months.

2. Daily Sampling Investigation

- **Draft SMBBB TMDL Reconsideration:** If a single sample shows the discharge or contributing area to be out of compliance with the number of allowable exceedances days at the final implementation deadline, the LARWQCB may require daily sampling in the wave wash or at the existing open shoreline compliance monitoring site until all single sample limits meet bacteria water quality objectives. A source investigation is also required if 75% of testing days produce an exceedance.

- **Comment:** The City requests that the timeline for daily sampling be clarified (i.e., when is it required, on what basis will the LARWQCB be determining this need, etc.). The City requests that for sites sampled on a weekly basis, being out-of-compliance should trigger an investigation plan, which lays out the approach for identifying and addressing sources, rather than triggering daily sampling immediately. The investigation plan will be much more valuable than daily beach sampling. Mobilizing a team to begin daily sampling within 24 hours for an unknown length of time is anticipated to be an extreme burden on resources. Furthermore, the end point for daily sampling should also be better clarified, as it is currently unclear as to when "all single sample events [would] meet the objectives." The City also recommend clarification that, if daily sampling is chosen, weekends, holidays, and days with unusually unsafe conditions (such as a storm or inaccessible location) would be excluded.

- The City request that the source investigation also be defined, including more detail on the 75% threshold (e.g., is the 75% applicable to all seasons combined or seasons individually, is it applicable only to single sample limits or also to geometric mean limits, etc.).

3. Remove Total and Fecal Coliform Limits

- **Draft SMBBB TMDL Reconsideration:** Compliance limits are set for total coliform, fecal coliform, and Enterococcus for both the geometric mean and the single sample.

- **Comment:** We request that only enterococci, and not total and fecal coliform, be used in the TMDL for compliance assessment. This is consistent with the 2012 Draft USEPA Recreational Water Quality Criteria Report, which states, "Scientific advancements in microbiological, statistical, and epidemiological methods have demonstrated *E. coli* [for freshwater] and enterococci [for marine sites] are better indicators of health than the previous indicators, total coliforms (TC) and fecal coliforms (FC)" (USEPA 2012). This is also consistent with USEPA's Ambient Water Quality Criteria for Bacteria (1986) which states, "The freshwater studies confirmed the findings of the marine studies with respect to Enterococci and fecal coliforms in that densities of the former in bathing water showed strong correlation with swimming associated gastroenteritis rates and densities of the latter showed no correlation at all…. *E. coli* is the most fecal specific of the coliform indicators; and Enterococci, another fecal indicator, better emulates the virus than do the coliforms with respect to survival in marine waters" (USEPA, 1986). This change would not reduce the protectiveness of the TMDL as the Enterococcus single sample and geometric mean limits

would remain. Enterococcus is the indicator that most frequently exceeds REC limits and the Enterococcus geometric mean is best linked to public health.

If the LARWQCB is unwilling or unable to make this change until it is adopted by the SWRCB and incorporated into the California Ocean Plan, then Malibu requests that this change will be incorporated by reference into the Basin Plan so that they are automatically adopted without the time consuming process of needing to reopen the MS4 permit or TMDL again.

4. Natural Source Exclusion – Site Specific Objective Pathway or Process

- **Draft SMBBB TMDL Reconsideration:** Proposed amendments do not include a pathway for determining site-specific objectives when uncontrollable sources exist.

- **Comment:** The City requests that a clear compliance alternative, in the presence of uncontrollable natural sources, be included in the SMBBB TMDL (and other bacteria TMDLs) and include a pathway to clarify the process for either adjustments to the site-specific WLAs or site delisting when compliance cannot be met due to uncontrollable natural sources. The pathway should also clarify what data responsible agencies need to collect/submit, and what study results should indicate in order for LARWQCB staff to consider a water body for TMDL adjustment.

5. Remove Delisting Candidate Sites from TMDL

- **Draft SMBBB TMDL Reconsideration:** Proposed amendments do not acknowledge the ability to delist sites based on the State's delisting criteria.

- **Comment:** The California State Water Resources Control Board's (SWRCB) Water Quality Control Policy (2004), Section 4.3, states, "If a site-specific exceedance frequency[4] was used to place the water on the section 303(d) list, then the same exceedance frequency shall be used in the assessment to remove waters from the section 303(d) list. To the extent possible and allowed by water quality objectives, RWQCBs shall identify one or more reference beaches or water segments in a relatively unimpacted watershed to compare the measurements." Based on an analysis of monitoring data relative to these delisting criteria, the City requests that the following five (5) beaches be delisted: SMB 4-1 (Nicholas Canyon at San Nicholas Creek), SMB 1-2 (Los Alisos Canyon at El Pescador Beach), SMB 1-3 (Encinal Canyon at El Matador Beach), SMB 1-14 (Las Flores Creek), and SMB 1-16 (Pena Canyon at Big Rock/Tunas Beach). Our delisting data analysis is summarized here (Attachments 1 and 2), and the relevant data are illustrated in Exhibit 1 below. Over the last 4 years combined (2008 – 2011)[5], these sites have measured a lower exceedance frequency than the Leo Carrillo reference beach for all three single sample WLAs (summer dry

[4] The terms "frequency" and "rate" are used interchangeably throughout this letter, in reference to the percent of samples that exceed REC1 marine objectives.

[5] The most recent four years of monitoring results are cited here for a delisting evaluation to reflect current water quality conditions since implementation of various City-wide stormwater quality management actions. In later analyses described in this letter, to support a Natural Source Exclusion evaluation, a longer period of record is used, comparable to the period used by LARWQCB staff for their antidegradation analysis in the TMDL Reconsideration Staff Report.

weather, winter dry weather, and wet weather) as well as the rolling 6-week geometric mean (Attachment 2). While this acknowledges geometric mean exceedances at the requested beaches, LARWQCB staff should note that, of those analyzed, there are no beaches -- including the reference beach Leo Carrillo -- that meet the geometric mean limits 100% of the time. Therefore, it is requested that the five sites specified above be delisted, and that the delisting be retained in the next integrated report/303(d) list, and that these sites be removed from the Compliance Monitoring Plan and TMDL. Please refer to Exhibit 1 below:

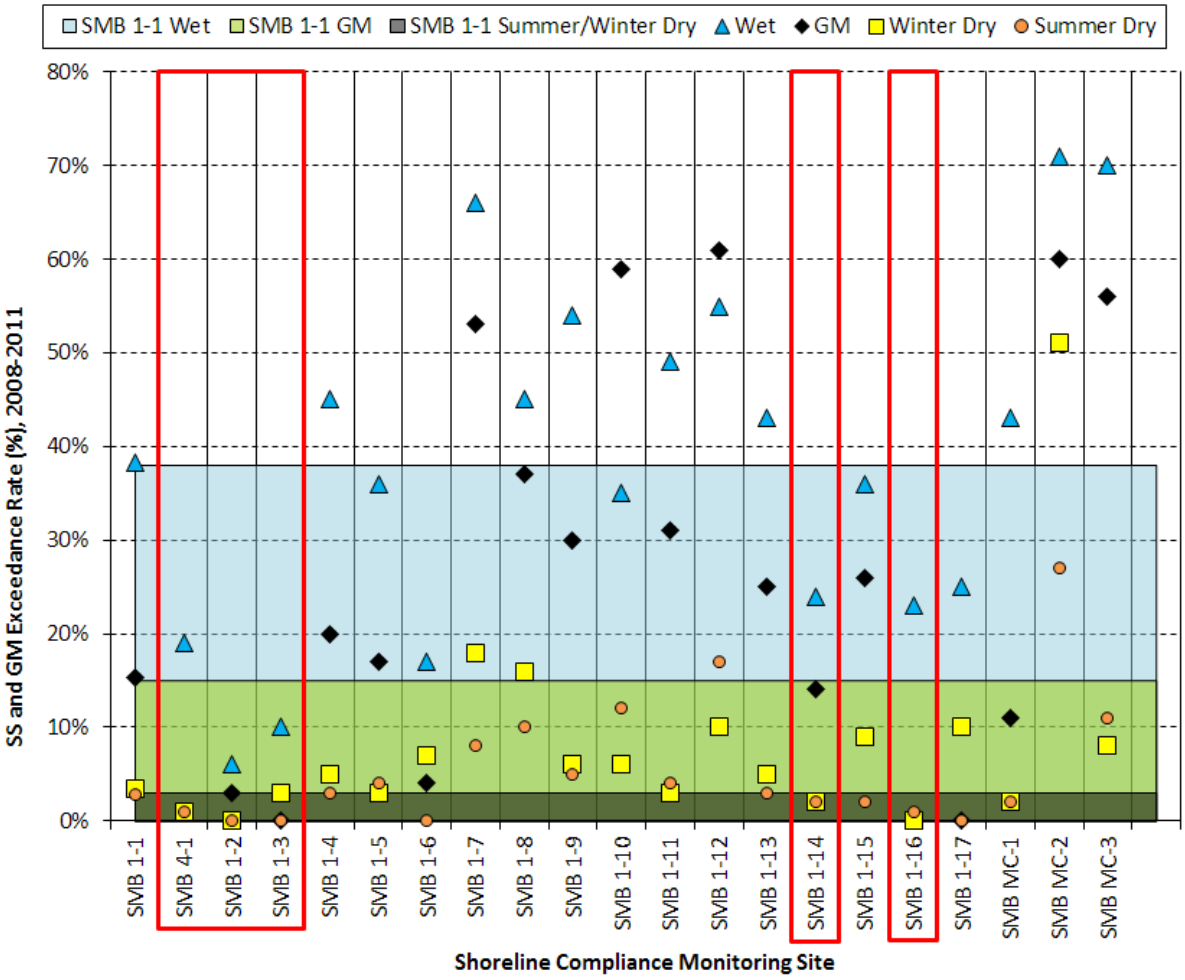


Exhibit 1. Exceedance rates of single sample (wet, winter-dry and summer-dry) and geometric mean (year-round) REC1 marine objectives at shoreline compliance monitoring sites, 2008-2011, compared to SMB 1-1 (Arroyo Sequit at Leo Carrillo reference beach). Sites qualifying for delisting are boxed in red, and colored shaded areas indicate reference beach exceedance rates. "Exceedances" are defined here as sample results that are above of any of the four marine REC1 objectives (i.e., total coliform, fecal coliform, enterococcus, or the total:fecal ratio).

6. Natural Source Exclusion Compliance Approach

- **Draft SMBBB TMDL Reconsideration:** Reference system approach is retained for the Santa Monica Bay Beaches as there has been no documenting evidence submitted to demonstrate that all anthropogenic sources have been controlled.

- **Comment:** The City requests that the NSE approach be used for several beaches where a weight of evidence, including recent bacteria source studies, supports this. Several bacteria source investigations have been performed at beaches in Malibu. These studies are summarized here, and in general have found that human fecal sources are minimal or not present in the water bodies sampled. Furthermore, various other bacteria source studies are summarized here, and these further support the understanding that predominant SMBBB FIB sources are natural in origin, particularly since the implementation of numerous source and treatment controls by the City. Therefore, it is requested a revised NSE-based WLAs in the SMBBB TMDL. NSE-based WLAs would be consistent with the San Diego Regional Water Quality Control Board's (SDRWQCB) NSE Basin Plan Amendment (BPA), which was also approved by the State Water Resources Control Board (SDRWQCB 2008).

  According to the SDRWQCB NSE BPA, application of an NSE Approach (NSEA) would require that dischargers: 1) Control anthropogenic sources of FIB to the water body, 2) demonstrate that all anthropogenic sources are controlled, and 3) demonstrate that the remaining FIB concentrations do not indicate a health risk (SDRWQCB 2008, p.13). The NSE BPA states that the first requirement, to control anthropogenic sources of FIB "does not mean the complete 'elimination' of all anthropogenic sources of bacteria as this is both impractical as well as impossible" due to sources such as re-suspension of bacteria from sediments by swimmers, and shedding by swimmers (SDRWQCB 2008, p.21). Rather, dischargers must demonstrate that controls have been implemented such that anthropogenic sources do not cause or contribute to exceedances of water quality objectives, and a weight of evidence approach is recommended in order to demonstrate that the control of anthropogenic sources has been achieved (SDRWQCB 2008, p.21-22).

  The following weight of evidence supports use of the NSE approach at the following six (6) shoreline compliance monitoring locations: SMB 1-6 (Ramirez Canyon at Walnut Creek), SMB 1-7 (Ramirez Creek at Paradise Cove Beach), SMB 1-8 (Escondido Creek), and Malibu Creek and Lagoon at Surfrider Beach (SMB MC-1, SMB MC-2, and SMB MC-3), due to the below findings of local bacteria source identification studies in these watersheds, which suggested anthropogenic MS4 and onsite wastewater treatment system (OWTS) sources were minimal or nonexistent. Additionally, since it is impractical to conduct bacteria source tracking studies at every compliance monitoring site, the following weight of evidence also supports a NSE approach at the following six (6) additional shoreline compliance monitoring sites based on other factors, including land use make-up, proximity and similarity to the studied watersheds, the presence of kelp and sea grasses, and comparison of water quality to the reference beach: SMB 4-1 (Nicholas Canyon at San Nicholas Creek), SMB 1-3 (Encinal Canyon at El Matador Beach), SMB 1-10 (Solstice Creek), and SMB 1-17 (Tuna Canyon at Las Tunas Beach), as well as SMB 1-2 (Los Alisos Canyon at El Pescador Beach) and SMB 1-16 (Pena Canyon at Big Rock/Tunas Beach), if

Comment #**Error! Reference source not found.**, requesting delisting of these last two sites, is not approved. A summary of the data analysis used relative to NSE evaluation criteria for each monitoring site is provided in Attachment 1.

- Local microbial source tracking (MST) study results indicate that human fecal contributions are minor or non-existent.

  Several MST studies have been conducted within North Santa Monica Bay subwatersheds to assess the presence of human fecal contamination during dry weather. Noble et al (2005) sampled from Malibu Creek, Malibu Lagoon and from the discharge of the lagoon to the beach. Jay et al (2011) collected samples from the Malibu Creek, Malibu Lagoon, and Surfrider Beach, and Izbicki et al (2012b) tested Malibu Lagoon and near-shore ocean water. Two of the three studies (Noble et al 2005 and Izbicki et al 2012b) found no detection of human markers in any of the surface water samples tested, and Jay et al found no evidence of human fecal marker HF183 at Surfrider Beach, however, Jay et al did detect low levels of human marker HF183 in several samples (5 out of 80 samples, or 6%) that were collected from lower Malibu Creek and Malibu Lagoon[6]. It was noted that the detected lagoon levels correspond to 0.00005-0.0009% sewage or greater than 5-log (>100,000 times) dilution. Potential sources for human contributions were not identified, however the Izbicki study specifically investigated the potential for OWTS to serve as sources of human fecal contamination to Malibu Lagoon, and did not find evidence linking microbial communities (based on TRFLP [terminal restriction fragment length polymorphism] community analysis) found in these systems to those found in the lagoon or beach; furthermore all 25 groundwater samples were negative (non-detect) for HF183 (Izbicki, 2012a). Weisberg et al (2009) similarly studied Ramirez and Escondido Creeks and found little to no evidence of human sources in either creek and suggested regrowth[7] (grass clippings and high nutrients in Ramirez and presence of enclosed berm at Escondido) as a potential source of the minor levels measured at the very low end of the detection range. In fact, of 332 samples tested for both creeks, only one sample from Escondido Creek tested positive for optical brighteners (a correlate of human fecal contamination) (Barnett et al 2008 [Year 2 Progress Report on Weisberg study]). Weisberg also tested human

[6] It should be noted that while the HF183 assay is generally accepted as one of the most reliable markers of human fecal waste and has been recommended by SCCWRP and university collaborators based on testing performed for the ongoing State grant-funded Source Identification Pilot Project (SIPP), it is not 100% specific to human fecal contamination and therefore false positives may occur. For instance, assay testing for the SIPP has shown that specificity (or how specific the analysis results are to human sources as compared to sources from other species) is such that up to 18% error rates were observed for test samples based on four test studies.

[7] "Regrowth" is a general term being used here to describe persistence and multiplication of FIB within environmental or engineered systems such as sediments or stormdrains, where decomposing organic matter, nutrient supplies, and/or protection from UV light create favorable conditions for this to occur. Studies by SCCWRP have demonstrated the ability of Enterococcus to grow on sterile concrete surfaces under such conditions, and the speciation of these Enterococcus colonies showed them to be primarily of environmental origin (mostly from plants and decomposing organic matter) (Griffith 2012). Regrowth can serve as an internal source of FIB to waterbodies, as opposed to external inputs such as urban runoff.

Bacteroides markers in both creeks but results were inconclusive. Following the study period at Paradise Cove/Ramirez Creek, the City of Malibu installed a stormwater treatment facility with City and State bond funds. This facility effectively disinfects all flows in dry weather and most flows in wet weather. Compliance and project monitoring show that the treated effluent is bacteria free but as soon as these flows reach the beach, bacteria levels rebound and shoreline samples exceed TMDL WLAs.

The City's final Project Certification to the SWRCB (Brown 2011) acknowledges that the project monitoring site PC-5 at the interface of the treated discharge and the sand was regularly above FIB standards. It was clear that once the treated water flowed across the sand and the accumulated kelp wrack, there was a dramatic decline in water quality and bacteria levels had increased. This is consistent with findings from other Southern California urban runoff disinfection projects, such as in Aliso Creek (Orange County) and Moonlight Beach (San Diego County), where FIB concentrations rebound immediately downstream of the treated discharges.

- A number of recent Santa Monica Bay studies have further identified and confirmed natural (non-anthropogenic) sources of fecal indicator bacteria (FIB) -- including plants, algae, decaying organic matter, beach wrack and bird feces – implicating these as potentially significant contributors to exceedances (Imamura et al 2011, Izbicki 2012b). Beach sands, sediments and beach wrack have been shown to be capable of serving as reservoirs of FIB, possibly by providing shelter from UV inactivation and predation by allowing for regrowth (Imamura et al 2011, Izbicki et al 2012b, Lee et al 2006, Ferguson et al 2005, Grant et al 2001, Griffith 2012, Litton et al 2010, Phillips et al 2011, Jiang et al 2004, Sabino et al 2011, and Weston Solutions 2010). In fact, enterococci include non-fecal or "natural" strains that live and grow in water, soil, plants and insects (Griffith, 2012). Thus, elevated levels of enterococci in water could be related to input from natural sources. Sediments in Malibu Lagoon have also been shown to serve as a reservoir for nutrients (Sutula et al 2004), which, once released, may encourage regrowth of FIB (Weisberg et al 2009 and Surbeck et al 2010).

  The phenomenon of regrowth of FIB from either anthropogenic or natural sources has been suggested by several studies as a possible source of beach bacteria exceedances (Griffith 2012, Litton et al 2010, Weston Solutions 2010, Izbicki et al 2012b, Weisberg et al 2009). Regrowth can be problematic for a number of reasons. First, FIB concentrations measured in impacted watersheds may be a result of actively growing, possibly environmental (rather than anthropogenic) communities within sediments or storm drain systems rather than a result of anthropogenic fecal inputs. In addition, regrowth may lead to a decoupling of FIB concentrations from pathogen concentrations, reducing the potential for FIB concentrations to estimate risk of human illness (Litton et al 2010). Though the lack of correlation was not specifically linked to significant sources of natural FIB or regrowth, an epidemiological study conducted in Malibu found no correlation between illness

rates and Enterococcus concentrations, based on preliminary reported results (Griffith 2011).

This lack of FIB-to-illness correlation has also been shown elsewhere in Southern California studies, such as a 2003 SCCWRP study of Mission Bay (Griffith 2003) which indicated that illness rates differed between swimmers and non-swimmers, but were uncorrelated with FIB and water quality objectives were not predictive of swimming related illnesses. Recent SCCWRP epidemiological study results at Doheny State Beach also illustrate the difficulty of using FIB to predict summer illness rates at beaches unless defined outlet or human sources are present (Griffith 2011). This may be due to previously unacknowledged uncontrollable sources of human fecal bacteria and bather illness risks, which will be mentioned in the Pacific Coast Water Quality Study, such as bather skin shedding of *Staphylococcus aureus*, which has no fecal origin and has been correlated to GI illness and to skin, eye and ear infections among bathers (Goodwin et al 2012). Goodwin et al studied Avalon, Doheny, and Malibu Surfrider beaches, and detected *S. aureus* frequently (53% to 59%, n = 358) in beach water and sand samples, respectively. A study conducted in the Pacific Northwest (Levin-Edens, 2011) also found positive evidence of methicillin resistant *S. aureus* (MRSA), also a cause of skin and soft tissue infection, in freshwater drainages and creeks surrounding popular recreational beaches. Bather skin shedding of this pathogen suggests that beach-related illness may not be completely controllable nor entirely attributable to FIB used in this TMDL.

Other natural sources of FIB are known to be present at Malibu beaches. It is known that Malibu Creek and Lagoon serve as habitat for numerous species of birds and other wildlife (Cooper 2006), and fecal contamination from birds has been suggested as a potential source for FIB within the watershed (Izbicki et al 2012b). In addition, several studies in other watersheds have noted the potential of avian sources to be significant contributors to FIB concentrations measured at beaches and creeks (Griffith et al 2010, Tiefenthaler et al 2008). The Griffith et al (2010) study in particular hypothesized that the presence of lagoons serve to attract birds, and observed an increase in roosting seabirds on the beach near lagoons concurrent with increases in water quality exceedances at the Southern California reference beaches studied.

Taken together, the data cited in both bullets above suggest that the vast majority of FIB at the outlets of Malibu Creek, Escondido, and Ramirez watersheds are non-anthropogenic, and are likely primarily due to avian and other environmental sources, particularly during dry weather when most of these studies were performed.

- Public health risks are likely minimal given low Enterococcus geometric mean concentrations at J1/4 SMB beaches and because human sources are minimal or negligible (see Attachment 3 summarizing controls that have been implemented to address anthropogenic sources). Quantitative Microbial Risk Assessment (QMRA) studies by Soller et al (2010) and Schoen et al (2010) have shown that the Enterococcus geometric mean limit (35 MPN/100mL) is overprotective at beaches where human sources are minimal. Both of these REC QMRA studies were

conducted with USEPA involvement, oversight, or review. Although all beaches that are requested here for NSE do not meet this 35 MPN/100mL as a rolling 6-week geometric mean 100% of the time over the 2005-2011 period of record (as is also the case with Leo Carrillo between 2003-2011), given the predominance of natural sources at these beaches, it would be expected that gastrointestinal illness risks are generally below USEPA's tolerable levels, based on these USEPA QMRA analyses

- Between 2005 and 2011, SMB 4-1, SMB 1-2, SMB 1-3, SMB 1-6, SMB 1-16, and SMB 1-17 all met the USEPA's 2012 Recreational Criteria Statistical Threshold Value (STV) 25% allowable exceedance rate for Enterococcus for every season (summer dry, winter dry, and wet weather). Furthermore, the USEPA recreational geometric mean criteria (35 MPN/100mL Enterococcus) was developed based on epidemiological data and a public health linkage, and between 2005 and 2011, these same six subwatersheds met this threshold between 82% and 99% of the time. By comparison, between 2005 and 2011, the reference site SMB 1-1 (Arroyo Sequit Canyon at Leo Carrillo Beach) met the Enterococcus geometric mean limit only 81% of the time.Recent water quality results are comparable to the Leo Carrillo reference beach at SMB 4-1 (Nicholas Canyon at San Nicholas Creek), SMB 1-2 (Los Alisos Canyon at El Pescador Beach), SMB 1-3 (Encinal Canyon at El Matador Beach), SMB 1-4 (Trancas Creek at West Zuma Beach), SMB 1-5 (Zuma Creek at East Zuma Beach), SMB 1-16 (Pena Canyon at Big Rock/Tunas Beach), and SMB 1-17 (Tuna Canyon at Las Tunas Beach) based on a data analysis summarized in Attachment 4, which compares the range of the rolling 6-week geometric mean for Enterococcus between shoreline compliance monitoring sites (regardless of weather, and assuming ND results are replaced with their detection limits).
- Open space land uses are 97%, 97%, and 96% at SMB 1-10 (Solstice Creek), SMB 1-16 (Pena Canyon at Big Rock/Tunas Beach), and SMB 1-17 (Tuna Canyon at Las Tunas Beach), respectively. These watersheds are comparable to LARWQCB reference watershed candidacy criteria (minimum 95% open space), and have a greater percent open space than the Arroyo Sequit watershed, associated with the Leo Carrillo reference beach.
- The reference beach, Leo Carrillo, was first included in the State's 1998 303(d) list. The fact that the reference beach is listed further supports the flaws with the reference approach (e.g., the disconnect between State listing/delisting criteria and LARWQCB TMDL compliance requirements) as well as the need for a NSE approach that is used where a weight of evidence supports it.

7. Reference System – Watershed Characterization

- **Draft SMBBB TMDL Reconsideration:** Shoreline compliance monitoring site SMB 1-1 (Arroyo Sequit Canyon at Leo Carrillo Beach) is retained as the reference beach for all Santa Monica Bay Beaches.

- **Comment:** Page 9 of the TMDL staff report (LARWQCB, 2012a) states that the 2006 SCCWRP study "Microbiological water quality at non-human impacted reference beaches in southern California during wet weather" found that exceedances of water quality objectives for bacterial indicator densities in wet weather occurred more frequently in large (>100 km^2) watersheds (~30%) than in medium (28-56 km^2) watersheds (~12%) or small (3-12 km^2) watersheds (~7%). Shoreline compliance monitoring site SMB MC-2 (Malibu Creek and Lagoon at Surfrider Beach), at the outlet of Malibu Creek Watershed, meets the SCCWRP definition of a large watershed. It follows then that the exceedance rate at Leo Carrillo (approximately 30 km^2), which qualifies as medium size watershed, is not suitable for Surfrider Beach which also has a 13-acre poorly functioning lagoon contributing to natural sources as well. It is requested that at the outlet of Malibu Creek Watershed, shoreline compliance monitoring site SMB MC-2 therefore be allowed a higher wet weather allowable exceedance rate (i.e., the 30% cited in the SCCWRP report) to the WLAs for this large watershed.

8. TMDL Critical Year

- **Draft SMBBB TMDL Reconsideration:** The number of wet and dry days used to calculate the WLAs is based on the 90th percentile year (1993) in terms of the number of wet weather days.

- **Comment:** The use of a conservative year to approximate the number of wet weather days should similarly be applied to dry weather days. The use of 1993, a wet year, to approximate the number of dry weather days results in an unfair underestimate of the number of allowable dry weather exceedance days. The City requests that similar to the wet weather approach, the 90th percentile "dry year" should be used to approximate the number of dry days used in the calculation of the number of allowable dry weather exceedance days. The 90th percentile critical year, based on the number of dry days at LAX, should be 1948 and the number of dry days should be 330.

9. Remove Single Sample WLAs

- **Draft SMBBB TMDL Reconsideration:** The single sample limits are derived from the single sample maximum for REC-1 beneficial use based on the reference system and anti-degradation approach.

- **Comment:** The City requests that single samples continue to be collected for purposes of beach posting and calculations, but that single sample WLAs be removed as compliance limits from the Draft SMBBB TMDL Reconsideration. Boehm et al (2007) found Enterococcus concentrations vary over short time scales; in some cases, changes between consecutive samples collected one to ten minutes apart were found to be greater than the single sample limit. The study recommends that multiple, rather than single, samples be used to form an accurate snapshot of water quality. The removal of single sample limits is also consistent with the recent draft Santa Ana Regional Water Quality Control Board (SARWQCB, 2012) Basin Pan Amendment which removes single sample limits and only keeps the geometric mean limits, as well as the USEPA's analysis for the Draft Recreational

Water Quality Criteria (2012) report which looked at numerous epidemiological studies and only showed a public health linkage with the Enterococcus geometric mean. The USEPA report further states that because fecal indicator bacteria are highly variable in environmental waters, distributional estimates are more robust than single point estimates. Page 23 of the TMDL staff report also acknowledges, "The geometric mean is a more reliable measure of long term water quality than single sample criteria. It is also directly linked to the underlying epidemiological studies upon which the bacteria water quality objectives were based." In general, single sample exceedances – especially based on wet weather grab sample data, and especially for FIB – constituents that are known to vary over orders of magnitude – are unreliable means of assessing whether water quality at a compliance monitoring site is statistically different than a reference site, at an acceptable level of confidence.

10. Revise Single Sample WLAs using Reference Beach Approach

- **Draft SMBBB TMDL Reconsideration:** The SMBBB TMDL relies on the Leo Carrillo reference beach to set allowable single sample exceedance rates based on the average exceedance rate at all 20 shoreline compliance monitoring sites in Malibu. The allowable exceedance rates have been reevaluated and revised to 0% for summer dry (unchanged from original TMDL), 10% for winter dry (increased from 3%), and 22% for wet weather (unchanged).

- **Comment:** If LARWQCB decide to keep the single sample based WLAs (see Comment #9), it is requested that the WLAs be revised. This is particularly important considering SMB 1-1, the Leo Carrillo reference beach, has been shown to be out of compliance with the single sample WLAs during wet weather for 5 of the past 8 years (2003-2011), which is in direct contrast to the statement on page 9 of the draft BPA which states, "Selecting the 90th percentile 'storm year' in terms of wet days avoids a situation where the reference beach is frequently out of compliance." Therefore it is requested the following adjustments be made to the WLAs, in order of preference:

  A. The City requests that the LARWQCB account for natural water quality variability by setting the allowed rate to the 90th percentile at the reference beach (similar to how the LARWQCB deals with setting the number of wet days to account for hydrologic variability as discussed in Comment #8), rather than the average. The 90th percentile allowable exceedance rates, based on data collected 2003 – 2011 at Leo Carrillo (and results summarized in Attachment 5), would then be 20% during summer dry weather, 18% during winter dry weather, and 46% during wet weather. Therefore, the City requests that these rates, in combination with the number for dry days proposed in Comment #8, be used to determine the WLAs shown in Attachment 6.

     In contrast to LARWQCB staff analysis which uses 2004 – 2010, these proposed WLAs are derived from data collected from Arroyo Sequit Canyon at Leo Carrillo Beach (SMB 1-1) between 2003 and 2011, and from other compliance monitoring sites between 2005 and 2011,. We believe this range to be a more representative

post-TMDL dataset given that it is larger and more robust, more recent, and SMB 1-1 data includes 2003, the year of TMDL effective date. The 2010 data also ends in October, which cuts off two wet weather years where data is available and should be included. However, regardless of years used, our request remains that a non-average statistic be used to more conservatively assess exceedance rates, otherwise the situation remains where the reference beach exceeds this rate roughly half of the years (by nature of an *average* statistic), and so Leo Carrillo could not be delisted since it would not meet the State's delisting criteria which is exceedance frequency based (see Comment #5).

B. If LARWQCB does not agree with Option A, the City requests that instead of using the single sample maximum to derive a year-round WLA, use the 2012 USEPA Draft Recreational Water Quality Criteria 75th percentile STV which was computed based on the water quality variance observed during USEPA's epidemiological studies and allows a 25% exceedance rate. This would also increase consistency between states, which the USEPA has encouraged.

C. Our review of compliance monitoring data show that on average, between 2003 and 2011, exceedance rates at the Leo Carrillo reference beach were 9% during winter dry weather and 27% during wet weather (Attachment 5). It is believed the 2003-2011 data to be a more representative post-TMDL dataset given that it is larger and more robust, more recent, and includes 2003, the year of TMDL effective date. Therefore, if the LARWQCB will not accept the proposed WLAs based on the 90th percentile exceedance rates (Option A), or WLAs based on the STV (Option B), we propose that the winter dry weather allowable exceedance rate of 9% be used in combination with the number of dry days proposed in Comment #8 to determine the winter dry weather WLAs. We similarly propose that the wet weather allowable exceedance rate of 27% be used to determine the winter dry weather WLAs.

D. The draft TMDL staff report (top of page 12) states that the summer dry weather allowable exceedance rate of 0% is retained, despite evidence presented on page 11 (Table 2) that a 10% rate would be more appropriate. LARWQCB staff rationale for this is there were no exceedances at the Leo Carrillo reference beach for 5 of the past 6 years between 2004 and 2010 during summer dry weather. However, this is not consistent with our review of the data and in fact, between 2004 (interpreted as November, per TMDL staff report Table 3) and 2010, FIB concentrations at Leo Carrillo have exceeded the single sample limits during summer dry weather in 2005, 2006, and 2008, or for 3 those 6 years (Attachment 5). Upon close examination, the actual monitoring results do not support the LARWQCB staff conclusions.

   Therefore, if the LARWQCB will not accept the proposed WLAs based on the 90th percentile exceedance rates (Option A), WLAs based on the STV (Option B), or WLAs based on shoreline compliance monitoring data collected at the Leo Carrillo reference beach (SMB 1-1) between 2003-2011 (Option C), it is proposed that, at minimum, the summer dry weather allowable exceedance rate of 10% be used in combination with the number for dry days proposed in Comment #8 to determine the summer dry weather WLAs.

11. Calculation of Single Sample WLAs for Winter Dry Weather

- **Draft SMBBB TMDL Reconsideration:** The SMBBB TMDL relies on the Leo Carrillo reference beach to determine the allowable single sample exceedance rates applied to the number of wet days (75) and dry days (290) to get the WLAs, or number of allowable exceedance days per year. Table 7-4.2 of the draft TMDL lists 9 allowable exceedance days during winter dry weather at Leo Carrillo, assuming daily sampling, a WLA that is also applied to other shoreline compliance monitoring sites where anti-degradation does not apply.

- **Comment:** It is unclear how an allowable exceedance of 9 days was calculated using a 10% allowable exceedance rate during winter dry weather. Section 3.3 of the TMDL staff report indicates that 290 dry weather days are split between summer dry and winter dry periods. The City understands this to mean that the 10% allowable exceedance rate should be applied to 145 days (290 divided by 2). At Leo Carrillo reference beach this results in 14.5, rounded to 15, allowable exceedance days per year during winter dry weather.

  Therefore, if the LARWQCB will not accept the proposed WLAs requested in Comment #10, the City requests that at minimum, the winter dry weather allowable exceedance days at Leo Carrillo, under daily sampling, be revised from 9 days to 15 days per year. It is also requested that a revision of the allowable exceedance days for all other compliance monitoring sites to which a 9 day allowance was incorrectly applied.

12. Geometric Mean Methodology

- **Draft SMBBB TMDL Reconsideration:** Similar to the original SMBBB TMDL, no exceedances are allowed for the geometric mean limits. The draft TMDL geometric mean calculation does not distinguish between wet and dry weather days.

- **Comment:** The City requests that the geometric mean calculation be applied to dry weather days only. This is consistent with the bacteria TMDL geometric mean limits expressed in the Draft San Diego County MS4 Permit (SDRWQCB, 2012), which would allow greater consistency between regions. This is also supported by the fact that the geometric mean statistic is inherently intended to characterize chronic water quality conditions, rather than episodic acute periods of excursion as would be expected during wet weather. Finally, recreational uses and public exposure to beach waters would be expected to be greatest during dry weather, therefore this clarification is expected to continue to be protective of public health.

13. Geometric Mean Averaging Period

- **Draft SMBBB TMDL Reconsideration:** Rolling geometric mean changed from daily to weekly calculation (5 or more samples, all calculations begin on Sunday), over a six week period, rather than a 30-day period.

- **Comment:** We support changing the rolling 30-day geometric mean approach but request the following improvement:

It is suggested an alternative geometric mean averaging period that meets the need of minimizing exceedances at the reference beach, while still being consistent with USEPA's draft recommended REC criteria (which allow up to 90 day geometric mean averaging periods). The LARWQCB's current proposed 6-week rolling average geometric mean calculation approach results in substantial exceedance at the Leo Carrillo reference beach (up to exceedance rates of 47% in a year), based on our data analysis summarized in Attachment 4. As an alternative to an allowed geometric mean exceedance rate, it is suggested that a "hybrid" approach detailed earlier in this comment consisting of monthly (calendar, not rolling) geometric mean during the AB411 period (April – September) and two 75-day geometric means during November through March. This would help to avoid confusion for reporting, compliance assessment, and enforcement penalty determination purposes. As shown in Exhibits 2 to 5 below, based on 2003-2011 Enterococcus monitoring data at Leo Carrillo, this would result in fewer geometric mean[8] exceedances at the reference beach, while still being protective of human health by being consistent with USEPA's REC criteria guidance, which primarily links illness risks with the Enterococcus geometric mean limit (35 MPN/100mL) based on epidemiological study results.

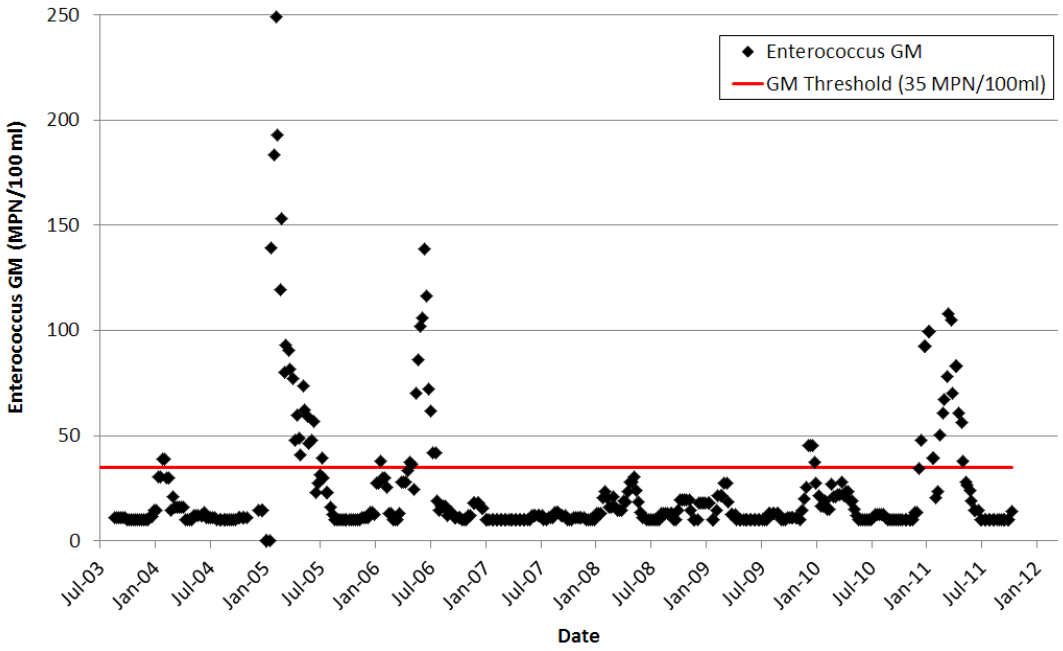


Exhibit 2. Enterococcus **6-week rolling** geometric mean at Leo Carrillo reference beach. Calculation performed every week, on the samples within the previous 6-week period, if 5 or more samples have been taken in that 6-week period.

[8] All results qualified as non-detect, or less than the detection limit, are substituted by the detection limit value in geometric mean calculations. The detection limit for Enterococcus is 10 MPN/100mL.

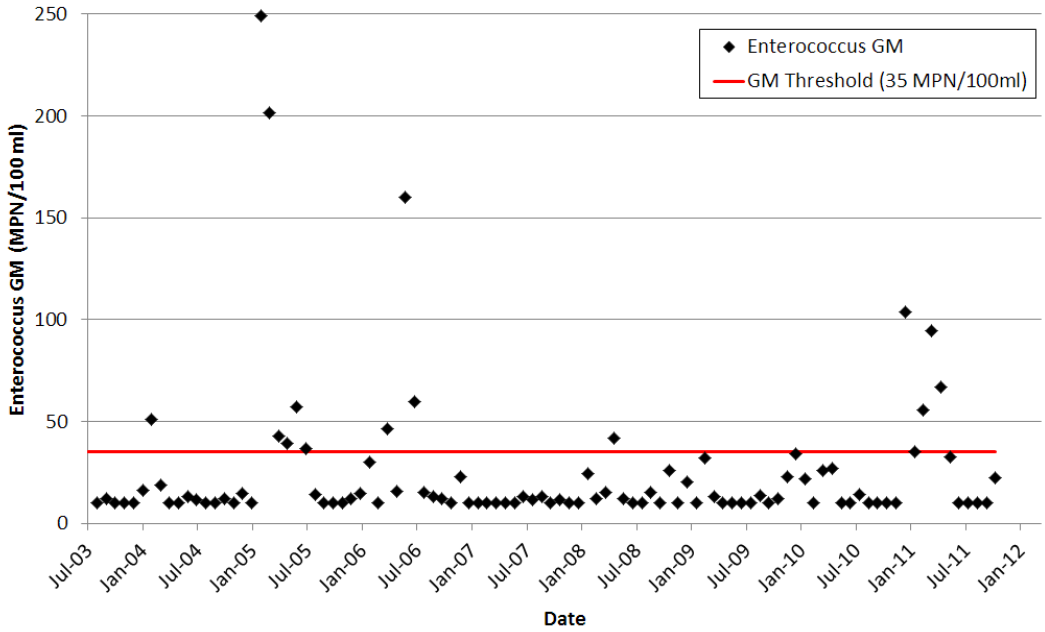


Exhibit 3. Enterococcus **monthly** geometric mean at Leo Carrillo reference beach. Monthly calculation performed every month, on the samples within the previous month, not rolling.

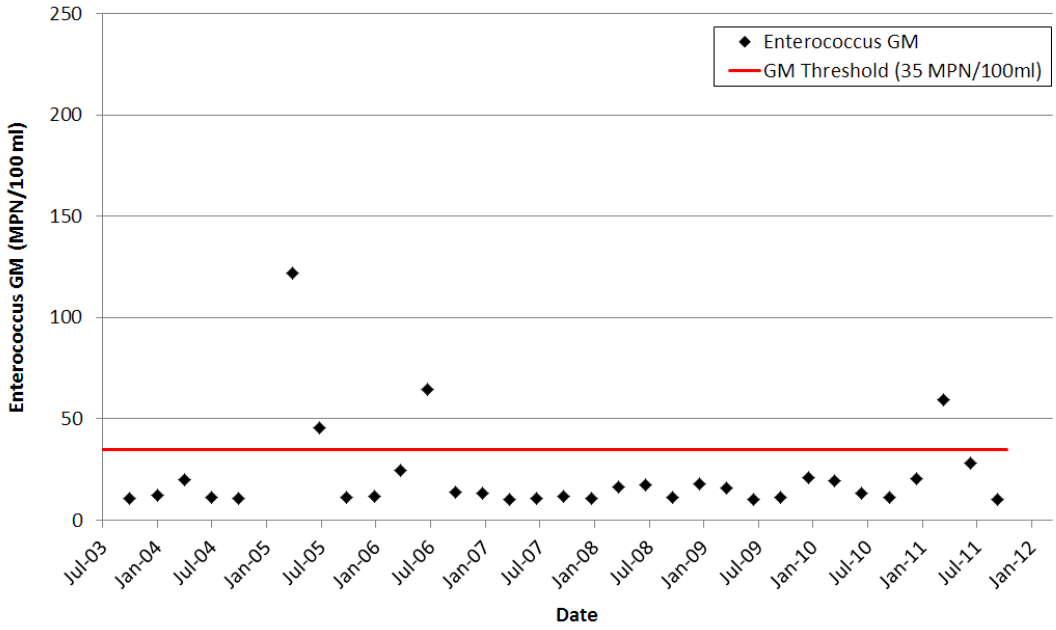


Exhibit 4. Enterococcus **quarterly** geometric mean at Leo Carrillo reference beach. Quarterly calculation performed every 3 months, on the samples within the previous 3-month period, not rolling.

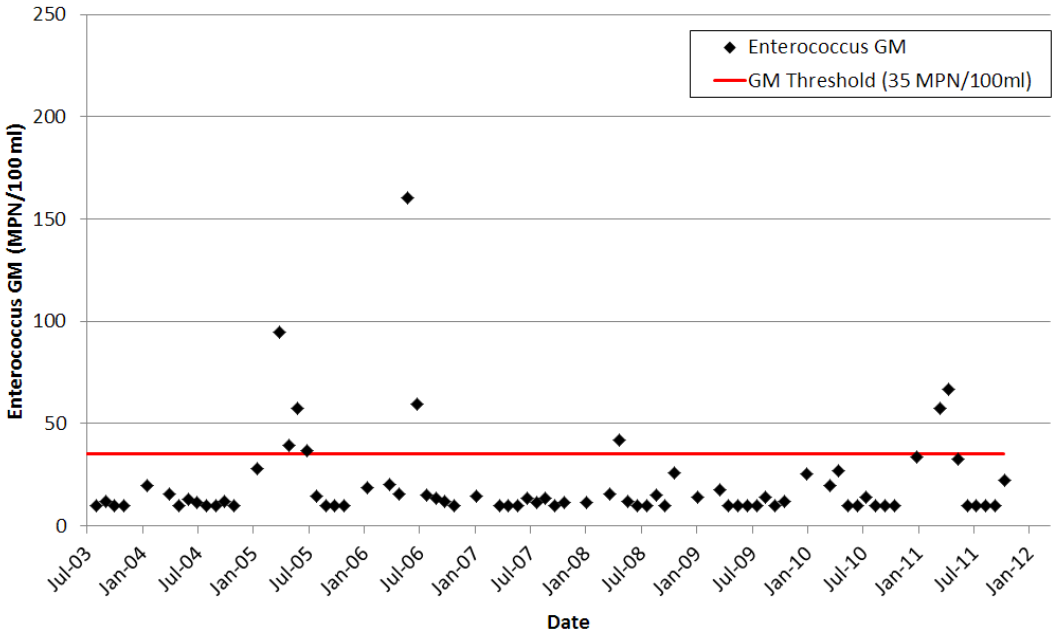
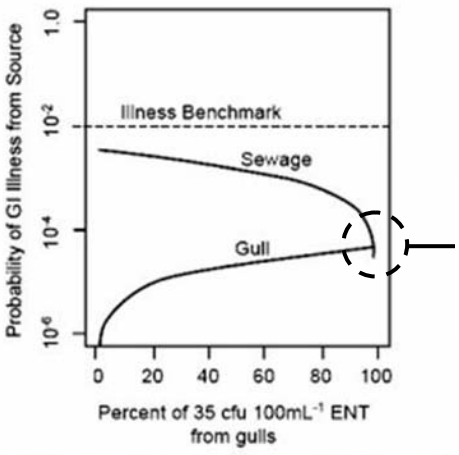


Exhibit 5. Malibu's proposed monthly/75-day "**hybrid**" Enterococcus geometric mean at Leo Carrillo reference beach. Calculation performed (1) every month during the AB411 period (April 1 to October 31) on samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval (not rolling).

In fact, applying the 35 MPN/100mL limit at non-wastewater impacted beaches is a conservative (overly stringent) approach since recent peer-reviewed QMRA work by USEPA's contractor (Soller et al 2010) and USEPA (Schoen et al 2010) shows that the 35 MPN/100mL limit can be greatly increased at beaches where bacteria sources are primarily non-human, while still being protective of USEPA's tolerable illness rates (8 per thousand swimmers), as shown in Exhibit 6 from USEPA (Schoen et al 2010).



[Low illness rate sum, where Enterococcus is primarily from gull sources rather than human sewage.]

Exhibit 6. Comparison of median illness risk for adults when total ENT concentration (at 35 CFU /100mL) is attributed to a mixture of primary POTW effluent (sewage) and seagull feces (gulls) (Schoen et al 2010), of USEPA.

Therefore, it is requested that the rolling 6-week geometric mean approach be replaced with our hybrid geometric mean approach proposed here. This approach is also generally consistent with that proposed by LARWQCB staff as stated during a March 19, 2012 meeting with Lower Malibu Creek Watershed MS4s.

The City also understands that Los Angeles County is requesting a fixed (non-rolling) 6-week averaging period, and if the LARWQCB does not accept our proposed hybrid approach, the City will support Los Angeles County in their recommendation.

14. Non-Detect Value Substitution for Geometric Mean Calculation

- **Draft SMBBB TMDL Reconsideration:** As discussed in the TMDL staff report, the substitution of any value for a non-detect (ND) result must be supported and submitted to the LARWQCB in a revised Monitoring Plan. At this time all ND results are required to substitute the detection limit in geometric mean calculations, which will overestimate the geometric mean, particularly where exceedance frequencies are low.

- **Comment:** As described on page 28 of the TMDL staff report, the City of Los Angeles Environmental Monitoring Division found that, assuming a normal distribution of the log results, 90% of results reported less than 10 MPN/100mL would be less than 3.7 MPN/100mL. The SMBBB TMDL Jurisdictional Groups 5 and 6 then suggested using a ND substitution value of 3.7 MPN/100mL as the Enterococcus value in the geometric mean calculations when the Enterolert result is less than the detection limit of 10 MPN/100mL. We request that the use of 3.7 MPN/100mL be written into the SMBBB TMDL as an allowable ND result substitution for Enterococcus when the detection limit is 10 MPN/100mL. Alternatively, if a value less than 3.7 MPN/100mL is desired to be substituted for another method, then the revised TMDL should state that responsible agencies may submit a proposal to the LARWQCB staff for review and approval.

15. Compliance Schedule

- **Draft SMBBB TMDL Reconsideration:** Original compliance deadlines for both single sample and geometric mean targets were July 15, 2006 for summer dry weather and November 1, 2009 for winter dry weather. The dry weather single sample compliance deadlines have not been extended. However, the geometric mean compliance deadline has been extended to July 15, 2021. Due to the integrated monitoring approach undertaken by all jurisdictional groups, the wet weather deadline has also been extended to July 15, 2021.

- **Comment:** Support wet weather and geometric mean compliance deadline extensions. The City requests a dry weather extension until the SCCWRP Pacific Coast Water Quality Study epidemiological results become publicly available and are interpreted by LARWQCB staff (see Comment #1). An extension will not result in inaction. The City of Malibu provides for your confirmation in Attachment 3, a comprehensive outline of the City's integrated

watershed management programs; demonstrate that since 2000, the City has undertaken a variety of progressive projects and programs to address potential sources and remedies to meet Clean Water Act regulations. Participating agencies will be unable to achieve compliance without the participation of all responsible agencies in the watershed and the acknowledgement of prevalent and persistent sources of natural bacteria in the North Santa Monica Bay watersheds and beaches, no amount of money.

16. Items for Future Reconsideration

- **Draft SMBBB TMDL Reconsideration:** A reconsideration date is not included and no specific items for future reconsideration are listed.

- **Comment:** A reconsideration should be included 4 years from the effective date of the revised TMDL, for reconsideration of the following:
    - Site specific REC objectives based on quantitative microbial risk assessment (QMRA) or epidemiological study results;
    - NSE WLAs based on source investigation results, showing no or minimal human or anthropogenic sources present;
    - Revised exceedance rates based on new reference beach results; and
    - Other items, including items requested in this comment letter (particularly the delisting requirements for beaches with better water quality than the reference beach), if requests are not granted.

17. Reasonable Assurance Plan based Compliance Option

- **Draft SMBBB TMDL Reconsideration:** There is no alternative to the numeric based compliance pathway. However, page 9 of the TMDL staff report cites the potential for a responsible party to pursue action-based interim limits in the MS4 Permit, beginning with the submittal of a Reasonable Assurance Plan (RAP).

- **Comment:** The Draft Los Angeles County MS4 Permit (LARWQCB 2012b), and Washington State's Department of Ecology (Ecology) Draft Industrial Stormwater General Permit (Ecology 2012), and Ecology's MS4 General Permit (Ecology 2007) all include action-based pathways as alternatives to the numeric-based compliance pathway for bacteria. The draft Los Angeles County MS4 Permit currently includes a compliance option for a reasonable assurance program, which would provide the LARWQCB reasonable assurance that the alternative requirements would provide equal or greater reduction in storm water discharge pollutant loading as would have been obtained through compliance with certain control criteria. The recently proposed modifications to Ecology's Industrial Stormwater General Permit (Ecology 2012) would similarly revise the draft effluent limits for fecal coliform by replacing the draft numeric standard with BMP-based requirements. The permittees may be required to implement a new set of BMPs including methods to prevent wildlife from feeding, nesting, or roosting at the facility, annual dry weather inspections to address potential sewer cross-connections, and structural control of any on-site bacterial sources. Ecology's MS4 General Permit (Ecology 2007) also includes action-

based limits for compliance with bacteria TMDLs. We therefore request that the revised SMBBB TMDL state that MS4 Co-Permittees may choose an action-based compliance pathway as an alternative to the numeric based compliance pathway.

Conclusion

As a final summary, Exhibits 6 through 8 below depict the annual single sample exceedance rates (ERs) measured at the Leo Carrillo reference beach, between 2003 and 2011, in comparison to the alternative ERs discussed in earlier comments. Separate summer-dry, winter-dry, and wet charts are shown. For each compliance season, the following data are depicted: the original TMDL allowable exceedance rate (AER), the draft TMDL reconsideration AER, the USEPA STV AER, the average and 90th percentile ERs measured at the Leo Carrillo reference beach, as well as the annual ERs measured at the Leo Carrillo reference beach during summer dry weather (2003-2011), winter dry weather (2004-2011), and wet weather (2004-2011). By presenting year-by-year reference beach data, these charts demonstrate the difficulty of delisting based on single sample exceedance rates, particularly at the existing TMDL AERs, while also noting here that compliance with the additional geometric mean limits further complicate the feasibility of completely achieving the State's delisting criteria. Without adjusted AERs, delisting is likely an impossibility, since if an undeveloped reference beach isn't close to meeting its own AERs, then a developed area would have little hope.

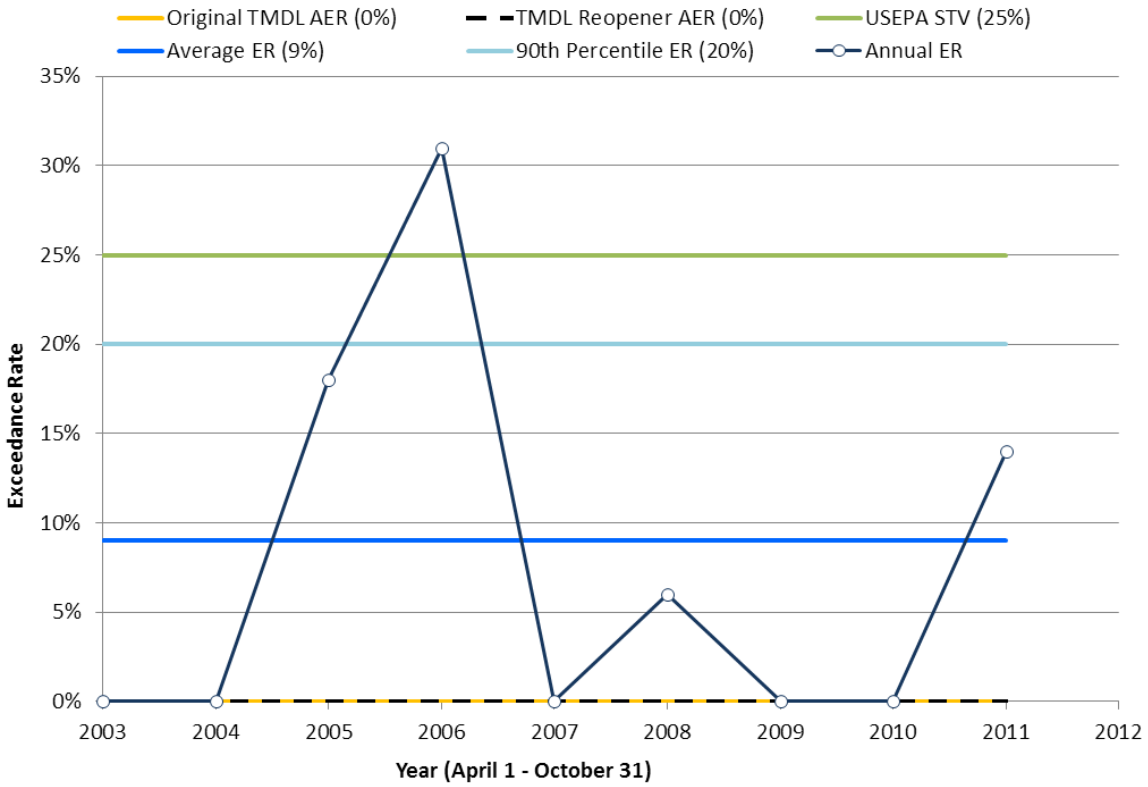


Exhibit 6. Summer dry weather single sample exceedance rates at Leo Carrillo reference beach, 2003 – 2011

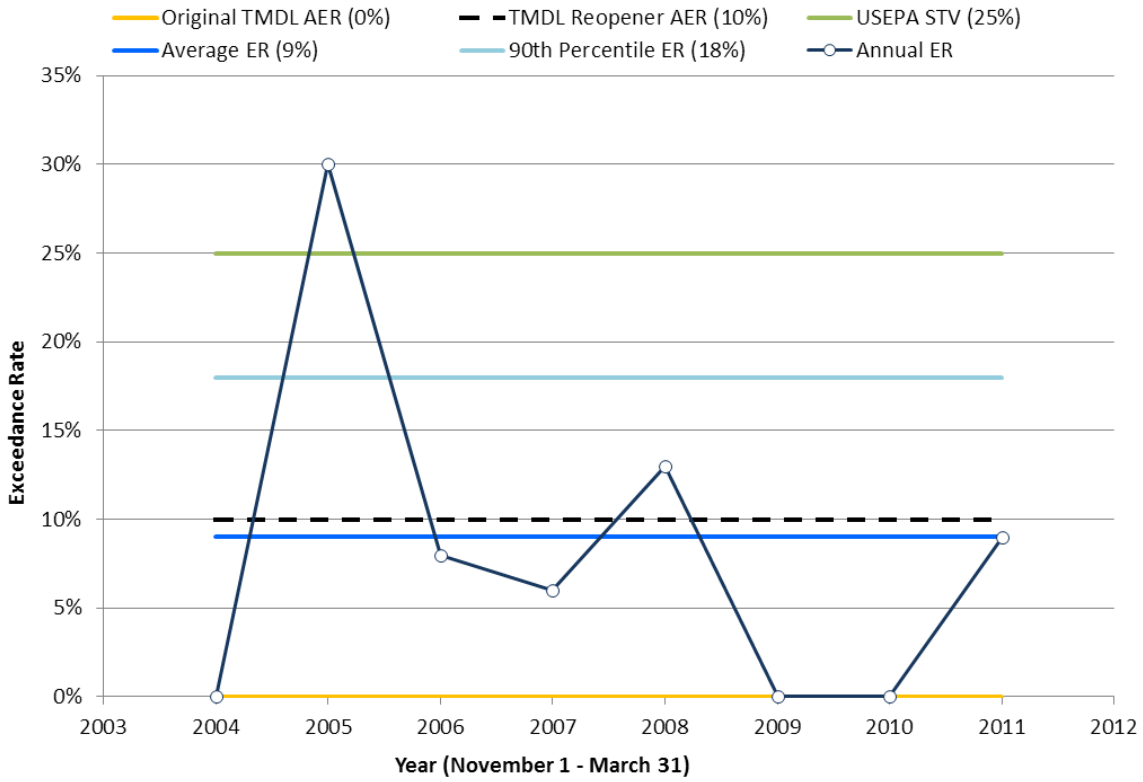


Exhibit 7. Winter dry weather single sample exceedance rates at Leo Carrillo reference beach, 2004 – 2011

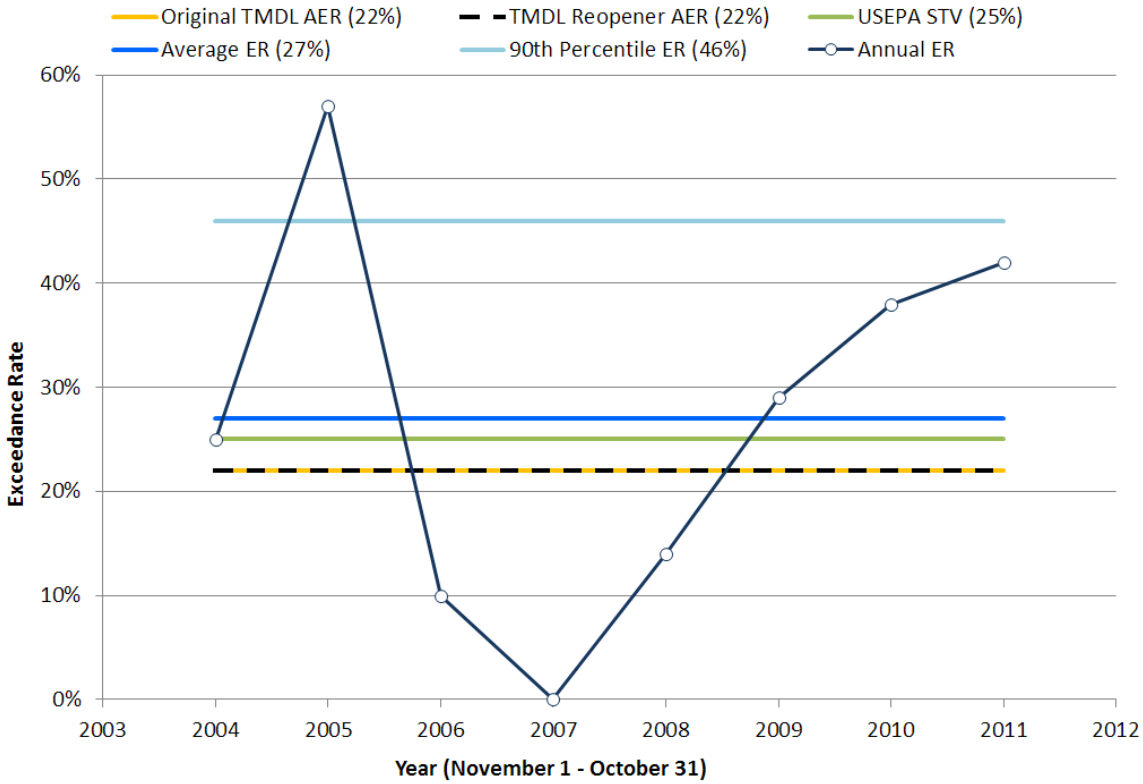


Exhibit 8. Wet weather single sample exceedance rates at Leo Carrillo reference beach, 2004 – 2011

Thank you for the opportunity to comment on the items listed above. I hope that our comments can be incorporated into the final SMBBB TMDL and look forward to the LARWQCB's responses. Additionally, the City welcomes/requests the opportunity to meet with staff to discuss these comments and clarify the pathway/options for granting a Natural Source Exclusion or Site Specific Objective, delisting, or removal from the Compliance Monitoring Plan and TMDL, and that all agencies in a watershed be specifically listed and held accountable as "responsible jurisdictions". As previously stated, all references cited in our discussion are being provided under separate cover directly to the LARWQCB on a CD. The City of Malibu is appreciative of the Regional Board's attention to these issues. If you have any questions regarding this letter or have technical difficulties with the CD, please contact Jennifer Brown, Senior Environmental Programs Coordinator, at (310) 456-2489, ext. 275, or jbrown@malibucity.org.

Sincerely,

Jim Thorsen
City Manager

Attachments

cc: Jennifer Brown, Senior Environmental Programs Coordinator
Thomas Howard, Executive Director, State Water Resources Control Board
Sam Unger, Executive Officer, Regional Water Quality Control Board

References

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Legend

- SMB Monitoring Location
- City of Malibu
- Subwatershed

N

0 0.5 1 2 3 Miles

Figure 1
SMB Compliance Monitoring Locations
City of Malibu, CA

Malibu Creek

Topanga

Arroyo Sequit

Lechuza

Los Aliso

Nicholas

Encinal

No Name

Trancas

Zuma

Ramirez (East)

Escondido

Solstice

Corral Creek

Latigo

Marie

Puerco

Winter

Carbon

Las Flores

Tuna

Pena

Piedra Gorda

SMB 1-1: Arroyo Sequit Canyon at Leo Carrillo Beach (not within City limits)

SMB 4-1: Nicholas Creek at Nicholas Beach

SMB 1-2: Los Alisos Canyon at El Pescador Beach

SMB 1-3: Encinal Canyon at El Matador Beach

SMB 1-4: Trancas Creek at West Zuma Beach

SMB 1-5: Zuma Creek at East Zuma Beach

Ramirez (West)

SMB 1-6: Ramirez Canyon at Walnut Creek

SMB 1-7: Ramierez Creek at Paradise Cove Beach

SMB 1-8: Escondido Creek

SMB 1-9: Latigo Creek

SMB 1-10: Solstice Creek

SMB 1-11: Corral Creek at Corral Beach

SMB 1-12: Marie Canyon in the Corral Subwatershed at Puerco Beach

SMB MC-1: Malibu Creek and Lagoon at Surfrider Beach

SMB MC-2: Malibu Creek and Lagoon at Surfrider Beach

SMB MC-3: Malibu Creek and Lagoon at Surfrider Beach

SMB 1-13: Sweetwater Canyon at Carbon Beach

SMB 1-14: Las Flores Creek

SMB 1-15: Piedra Gorda Canyon at Big Rock Beach

SMB 1-16: Pena Canyon at Big Rock/Las Tunas Beach

SMB 1-17: Tuna Canyon at Las Tunas Beach

Attachment 1

Shoreline Compliance Monitoring and Action Summary

Attachment 1. Summary of SMBBB TMDL Shoreline Compliance Monitoring Site Evaluation and Requested Actions

			Delisting Criteria	Natural Source Exclusion Criteria							
			1	2	3	4	5	6			7
Shoreline Compliance Monitoring Site	Station ID	Requested Action	ER <= SMB 1-1, 2008-2011	Local source tracking study	No or minor human fecal contamination	% Natural open space	WQ range >= SMB 1-1	ENT ER, summer dry	ENT ER, winter dry	ENT ER, wet	GM % compliance
Arroyo Sequit Canyon - Leo Carrillo Beach	SMB 1-1	NA	NA	No	No	95%	NA	7%	7%	22%	81%
Nicholas Creek - Nicholas Beach	SMB 4-1	Delist	Yes	No	No	92%	Yes	1%	3%	14%	97%
Los Alisos Canyon - El Pescador Beach	SMB 1-2	Delist	Yes	No	No	88%	Yes	0%	1%	8%	98%
Encinal Canyon - El Matador Beach	SMB 1-3	Delist	Yes	No	No	89%	Yes	0%	1%	5%	99%
Trancas Creek - West Zuma Beach	SMB 1-4	None	No	No	No	86%	Yes	4%	16%	45%	82%
Zuma Creek - East Zuma Beach	SMB 1-5	None	No	No	No	84%	Yes	7%	14%	30%	83%
Ramirez Canyon - Walnut Creek	SMB 1-6	NSE	No	Yes	Yes	73%	No	3%	11%	23%	88%
Ramirez Creek - Paradise Cove Beach	SMB 1-7	NSE	No	Yes	Yes	73%	No	19%	37%	58%	47%
Escondido Creek	SMB 1-8	NSE	No	Yes	Yes	83%	No	25%	26%	30%	58%
Latigo Creek	SMB 1-9	None	No	No	No	90%	No	14%	16%	39%	65%
Solstice Creek	SMB 1-10	NSE	No	No	No	97%	No	21%	6%	33%	47%
Corral Creek - Corral Beach	SMB 1-11	None	No	No	No	87%	No	8%	8%	33%	75%
Corral Canyon - Marie Canyon in the Corral Subwatershed at Puerco Beach	SMB 1-12	None	No	No	No	87%	No	50%	40%	51%	23%
Sweetwater Canyon - Carbon Beach	SMB 1-13	None	No	No	No	84%	No	10%	10%	43%	65%
Las Flores Creek	SMB 1-14	Delist	Yes	No	No	89%	No	5%	5%	32%	80%
Piedra Gorda Canyon - Big Rock Beach	SMB 1-15	None	No	No	No	81%	No	10%	20%	30%	74%
Pena Canyon - Big Rock/Las Tunas Beach	SMB 1-16	Delist	Yes	No	No	97%	Yes	1%	2%	15%	96%
Tuna Canyon - Las Tunas Beach	SMB 1-17	NSE	No	No	No	96%	Yes	8%	3%	12%	82%
Malibu Creek and Lagoon - Surfrider Beach	SMB MC-1	NSE	No	Yes	Yes	94%	No	7%	12%	28%	84%
Malibu Creek and Lagoon - Surfrider Beach	SMB MC-2	NSE	No	Yes	Yes	94%	No	13%	30%	63%	45%
Malibu Creek and Lagoon - Surfrider Beach	SMB MC-3	NSE	No	Yes	Yes	94%	No	17%	18%	48%	52%

Notes

1: Between 2008 and 2011, has the site had an exceedance rate (ER) for each of the SSM and GM limits less than or equal to that at SMB 1-1?

2: Has a local MS4 tracking study been completed?

3: Has the local source tracking study shown no or minor evidence of human fecal contamination?

4: What percent of the subwatersheds' land use distribution is classified as Natural Open Space? Values reported are taken from J1/4 Implementation Plan (2005) and MCW Nutrient TMDL (200x)

5: Is the site's Enterococcus range roughly equivalent to that at SMB 1-1? Evaluated based on box and whiskers plot (Attachment п).

6: Enterococcus exceedance rate (ER), 2005-2011 (SMB 1-1 is based on 2003-2011). Shaded if less than or equal to 25%, based on STV exceedance rate allowed per new EPA REC Guidance Document.

7: The 6-week rolling GM % compliance rate, 2005-2011. Shaded if greater than or equal to compliance rate at SMB 1-1, 2003-2011. NDs = DL.

Blue shading: Meets criteria for delisting

Yellow shading: Meets criteria for NSE approach

Attachment 2

Annual Shoreline Compliance Monitoring Summary, 2008 – 2011

Attachment 2: SMBBB TMDL Shoreline Compliance Summary, 2008 - 2011

				Wet				Summer Dry				Winter Dry				6 week rolling Geometric Mean			
Shoreline Compliance Monitoring Site	Station ID	Monitoring Year (Nov 1 - Oct 31)	Sampling Frequency	Number of Samples	Number of Exceedances	Number of Allowable Exceedances	Compliance with TMDL WLAs? (y/n)	Number of Samples	Number of Exceedances	Number of Allowable Exceedances	Compliance with TMDL WLAs? (y/n)	Number of Samples	Number of Exceedances	Number of Allowable Exceedances	Compliance with TMDL WLAs? (y/n)	Number of Samples	Number of Exceedances	Number of Allowable Exceedances	Compliance with TMDL WLAs? (y/n)
Arroyo Sequit Canyon - Leo Carrillo Beach	SMB 1-1	2008	Daily	20	3	17	Yes	210	4	0	No	85	4	9	Yes	52	9	0	No
		2009	Weekly	7	2	3	Yes	29	0	0	Yes	16	0	2	Yes	52	0	0	Yes
		2010	Weekly	8	3	3	Yes	29	0	0	Yes	16	0	2	Yes	53	4	0	No
		2011	Daily	46	23	17	No	199	9	0	No	59	2	9	Yes	52	19	0	No
		Total (%)			**38%**	-	-		**3%**	-	-		**3%**	-	-		**15%**	-	-
Nicholas Creek- Nicholas Beach	SMB 4-1	2008	Daily	20	9	14	Yes	210	0	0	Yes	85	2	4	Yes	52	2	0	No
		2009	Weekly	7	1	2	Yes	29	0	0	Yes	16	0	1	Yes	52	0	0	Yes
		2010	Daily	32	0	14	Yes	180	2	0	No	91	0	4	Yes	53	0	0	Yes
		2011	Daily	47	10	14	Yes	199	4	0	No	59	0	4	Yes	52	0	0	Yes
		Total (%)			**19%**	-	-		**1%**	-	-		**1%**	-	-		**1%**	-	-
Los Alisos Canyon - El Pescador Beach	SMB 1-2	2008	Weekly	5	0	1	Yes	31	0	0	Yes	16	0	1	Yes	52	0	0	Yes
		2009	Weekly	8	0	1	Yes	29	0	0	Yes	15	0	1	Yes	52	0	0	Yes
		2010	Weekly	11	0	1	Yes	27	0	0	Yes	15	0	1	Yes	53	0	0	Yes
		2011	Weekly	12	2	1	No	29	0	0	Yes	11	0	1	Yes	42	5	0	No
		Total (%)			**6%**	-	-		**0%**	-	-		**0%**	-	-		**3%**	-	-
Encinal Canyon - El Matador Beach	SMB 1-3	2008	Weekly	6	0	1	Yes	31	0	0	Yes	15	0	1	Yes	52	0	0	Yes
		2009	Weekly	8	0	1	Yes	29	0	0	Yes	15	0	1	Yes	52	0	0	Yes
		2010	Weekly	11	0	1	Yes	27	0	0	Yes	15	1	1	Yes	53	0	0	Yes
		2011	Daily	44	7	3	No	201	0	0	Yes	56	2	1	No	52	1	0	No
		Total (%)			**10%**	-	-		**0%**	-	-		**3%**	-	-		**0%**	-	-
Trancas Creek - West Zuma Beach	SMB 1-4	2008	Daily	20	13	17	Yes	210	2	0	No	85	4	9	Yes	52	7	0	No
		2009	Weekly	7	3	3	Yes	29	0	0	Yes	16	0	2	Yes	52	5	0	No
		2010	Daily	32	8	17	Yes	180	0	0	Yes	85	7	9	Yes	48	6	0	No
		2011	Daily	47	24	17	No	202	17	0	No	62	2	9	Yes	52	23	0	No
		Total (%)			**45%**	-	-		**3%**	-	-		**5%**	-	-		**20%**	-	-
Zuma Creek - East Zuma Beach	SMB 1-5	2008	Daily	20	12	17	Yes	210	0	0	Yes	85	2	9	Yes	52	7	0	No
		2009	Daily	37	12	17	Yes	208	2	0	No	93	0	9	Yes	52	6	0	No
		2010	Daily	32	2	17	Yes	180	2	0	No	91	6	9	Yes	53	0	0	Yes
		2011	Daily	47	23	17	No	202	27	0	No	61	2	9	Yes	52	23	0	No
		Total (%)			**36%**	-	-		**4%**	-	-		**3%**	-	-		**17%**	-	-
Ramirez Canyon - Walnut Creek	SMB 1-6	2008	Weekly	6	0	3	Yes	31	0	0	Yes	15	0	2	Yes	52	0	0	Yes
		2009	Daily	37	9	17	Yes	207	0	0	Yes	90	7	9	Yes	52	1	0	No
		2010	Weekly	11	1	3	Yes	27	0	0	Yes	15	1	2	Yes	53	6	0	No
		2011	Daily	44	7	17	Yes	201	2	0	No	55	4	9	Yes	52	2	0	No
		Total (%)			**17%**	-	-		**0%**	-	-		**7%**	-	-		**4%**	-	-
Ramirez Creek - Paradise Cove Beach	SMB 1-7	2008	Daily	24	19	17	No	210	27	0	No	85	25	9	No	52	29	0	No
		2009	Daily	37	26	17	No	208	2	0	No	93	9	9	Yes	52	19	0	No
		2010	Daily	32	16	17	Yes	180	13	0	No	91	10	9	No	53	34	0	No
		2011	Daily	47	32	17	No	202	19	0	No	62	15	9	No	52	28	0	No
		Total (%)			**66%**	-	-		**8%**	-	-		**18%**	-	-		**53%**	-	-
Escondido Creek	SMB 1-8	2008	Daily	20	2	17	Yes	210	20	0	No	92	15	9	No	52	21	0	No
		2009	Daily	37	15	17	Yes	207	5	0	No	90	8	9	Yes	52	10	0	No
		2010	Daily	41	22	17	No	180	8	0	No	88	21	9	No	53	18	0	No
		2011	Daily	42	24	17	No	197	45	0	No	56	9	9	Yes	52	28	0	No
		Total (%)			**45%**	-	-		**10%**	-	-		**16%**	-	-		**37%**	-	-
Latigo Creek	SMB 1-9	2008	Daily	20	15	17	Yes	210	11	0	No	85	0	9	Yes	52	20	0	No
		2009	Daily	37	25	17	No	208	0	0	Yes	93	9	9	Yes	52	11	0	No
		2010	Weekly	8	4	3	No	29	0	0	Yes	16	0	2	Yes	53	10	0	No
		2011	Daily	47	17	17	Yes	199	23	0	No	59	5	9	Yes	52	21	0	No
		Total (%)			**54%**	-	-		**5%**	-	-		**6%**	-	-		**30%**	-	-
Solstice Creek	SMB 1-10	2008	Daily	20	2	17	Yes	210	20	0	No	92	0	5	Yes	52	32	0	No
		2009	Daily	37	13	17	Yes	207	12	0	No	90	4	5	Yes	52	18	0	No
		2010	Daily	39	6	17	Yes	177	10	0	No	88	9	5	No	53	24	0	No
		2011	Daily	44	28	17	No	201	54	0	No	56	5	5	Yes	52	49	0	No
		Total (%)			**35%**	-	-		**12%**	-	-		**6%**	-	-		**59%**	-	-
Corral Creek - Corral Beach	SMB 1-11	2008	Daily	20	18	17	No	210	11	0	No	85	5	9	Yes	52	17	0	No
		2009	Daily	37	17	17	Yes	208	2	0	No	93	2	9	Yes	52	11	0	No
		2010	Daily	32	17	17	Yes	180	8	0	No	91	2	9	Yes	53	11	0	No
		2011	Daily	47	15	17	Yes	202	8	0	No	61	2	9	Yes	52	25	0	No
		Total (%)			**49%**	-	-		**4%**	-	-		**3%**	-	-		**31%**	-	-
Corral Canyon - Marie Canyon in the Corral Subwatershed at Puerco Beach	SMB 1-12	2008	Daily	20	16	17	Yes	210	40	0	No	91	4	9	Yes	52	43	0	No
		2009	Daily	40	23	17	No	207	8	0	No	90	5	9	Yes	52	15	0	No
		2010	Daily	39	18	17	No	177	18	0	No	87	18	9	No	53	27	0	No
		2011	Daily	37	18	17	No	201	69	0	No	53	5	9	Yes	52	42	0	No
		Total (%)			**55%**	-	-		**17%**	-	-		**10%**	-	-		**61%**	-	-
Sweetwater Canyon - Carbon Beach	SMB 1-13	2008	Daily	16	5	17	Yes	210	7	0	No	91	2	9	Yes	52	8	0	No
		2009	Weekly	8	1	3	Yes	29	0	0	Yes	15	0	2	Yes	52	3	0	No
		2010	Daily	32	14	17	Yes	176	0	0	Yes	88	3	9	Yes	53	13	0	No
		2011	Daily	47	24	17	No	201	9	0	No	56	8	9	Yes	52	29	0	No
		Total (%)			**43%**	-	-		**3%**	-	-		**5%**	-	-		**25%**	-	-
Las Flores Creek	SMB 1-14	2008	Daily	25	0	17	Yes	210	2	0	No	92	3	6	Yes	52	1	0	No
		2009	Weekly	8	3	3	Yes	29	0	0	Yes	15	0	1	Yes	52	6	0	No
		2010	Daily	39	15	17	Yes	177	6	0	No	88	0	6	Yes	53	13	0	No
		2011	Weekly	13	2	3	Yes	28	0	0	Yes	11	1	1	Yes	52	10	0	No
		Total (%)			**24%**	-	-		**2%**	-	-		**2%**	-	-		**14%**	-	-

Attachment 2: SMBBB TMDL Shoreline Compliance Summary, 2008 - 2011

				Wet				Summer Dry				Winter Dry				6 week rolling Geometric Mean			
Shoreline Compliance Monitoring Site	Station ID	Monitoring Year (Nov 1 - Oct 31)	Sampling Frequency	Number of Samples	Number of Exceedances	Number of Allowable Exceedances	Compliance with TMDL WLAs? (y/n)	Number of Samples	Number of Exceedances	Number of Allowable Exceedances	Compliance with TMDL WLAs? (y/n)	Number of Samples	Number of Exceedances	Number of Allowable Exceedances	Compliance with TMDL WLAs? (y/n)	Number of Samples	Number of Exceedances	Number of Allowable Exceedances	Compliance with TMDL WLAs? (y/n)
Piedra Gorda Canyon - Big Rock Beach	SMB 1-15	2008	Daily	24	7	17	Yes	210	2	0	No	85	7	9	Yes	52	19	0	No
		2009	Daily	37	14	17	Yes	208	4	0	No	93	15	9	No	52	13	0	No
		2010	Daily	30	6	17	Yes	180	7	0	No	91	7	9	Yes	50	12	0	No
		2011	Daily	47	22	17	No	199	6	0	No	60	0	9	Yes	52	10	0	No
		Total (%)			**36%**	-	-		**2%**	-	-		**9%**	-	-		**26%**	-	-
Pena Canyon - Big Rock/Las Tunas Beach	SMB 1-16	2008	Weekly	6	0	2	Yes	31	0	0	Yes	15	0	1	Yes	52	0	0	Yes
		2009	Weekly	8	1	2	Yes	29	0	0	Yes	15	0	1	Yes	52	0	0	Yes
		2010	Weekly	11	1	2	Yes	28	0	0	Yes	14	0	1	Yes	53	1	0	No
		2011	Daily	44	14	14	Yes	194	2	0	No	55	0	3	Yes	52	0	0	Yes
		Total (%)			**23%**	-	-		**1%**	-	-		**0%**	-	-		**0%**	-	-
Tuna Canyon - Las Tunas Beach	SMB 1-17	2008	Daily	11	5	12	Yes	210	0	0	Yes	89	13	7	No	24	0	0	Yes
		2009	Weekly	8	0	2	Yes	31	0	0	Yes	13	0	1	Yes	4	0	0	Yes
		2010	Weekly	1	0	2	Yes	38	0	0	Yes	14	0	1	Yes	9	0	0	Yes
		2011	Weekly	0	0	2	Yes	33	0	0	Yes	19	0	1	Yes	0	0	0	Yes
		Total (%)			**25%**	-	-		**0%**	-	-		**10%**	-	-		**0%**	-	-
Malibu Creek and Lagoon - Surfrider Beach	SMB MC-1	2008	Weekly	7	3	3	Yes	30	0	0	Yes	15	0	2	Yes	52	6	0	No
		2009	Daily	37	17	17	Yes	208	8	0	No	93	4	9	Yes	52	10	0	No
		2010	Weekly	8	2	3	Yes	29	0	0	Yes	16	0	2	Yes	53	6	0	No
		2011	Daily	47	21	17	No	199	3	0	No	59	0	9	Yes	52	2	0	No
		Total (%)			**43%**	-	-		**2%**	-	-		**2%**	-	-		**11%**	-	-
Malibu Creek and Lagoon - Surfrider Beach	SMB MC-2	2008	Daily	42	25	17	No	210	45	0	No	110	37	9	No	52	30	0	No
		2009	Daily	46	34	17	No	207	49	0	No	102	52	9	No	52	29	0	No
		2010	Daily	61	45	17	No	189	31	0	No	109	53	9	No	53	24	0	No
		2011	Daily	64	48	17	No	201	93	0	No	87	66	9	No	52	42	0	No
		Total (%)			**71%**	-	-		**27%**	-	-		**51%**	-	-		**60%**	-	-
Malibu Creek and Lagoon - Surfrider Beach	SMB MC-3	2008	Daily	24	16	17	Yes	210	9	0	No	85	1	9	Yes	52	16	0	No
		2009	Daily	37	25	17	No	208	24	0	No	93	11	9	No	52	20	0	No
		2010	Daily	28	20	17	No	180	14	0	No	91	7	9	Yes	51	30	0	No
		2011	Daily	47	34	17	No	199	44	0	No	60	7	9	Yes	52	50	0	No
		Total (%)			**70%**	-	-		**11%**	-	-		**8%**	-	-		**56%**	-	-

Attachment 3

Anthropogenic Source Controls Implemented

Attachment 3

City of Malibu
Projects and Programs

The City of Malibu is providing this summary information as documentation of the BMPs, control measures and / or other actions that the City implemented to prevent or reduce any sources of anthropogenic pollutants to receiving waters. It is provided in response to the Regional Board's notice for the reconsideration of the Santa Monica Bay Beaches Bacteria Total Maximum Daily Load (TMDL) dated March 29, 2012. Exceedances of water quality standards in the receiving waters have over time, prompted the City to evaluate its stormwater program and further investigate sources of potential pollutants and ways to treat and prevent stormwater runoff. This is not an exhaustive list of the City's Clean Water programs, but is meant as an illustration of the City's commitment to water quality and controlling anthropogenic sources of pollution. Further elaboration of the City's Environmental Programs relating to water quality are detailed in its annual stormwater program report, last submitted to the Regional Board in Fall 2011.

The City is actively involved in developing and instituting multiple implementation plans and new programs for the region, proactively and in response to water quality regulations, as well as passing local legislation to eliminate and reduce sources of pollution and activities that degrade the environment. A list of local ordinances showing the City's commitment to water quality issues is included at the end of this document.

Malibu Civic Center Integrated Water Quality Management Plan

The City Council is committed to water quality and is taking bold steps to construct additional treatment facilities, adopt stricter control ordinances and educate the community (residents, businesses and visitors) about personal stewardship of the environment and actions they can take to prevent pollution.

In November 2004, the City Council authorized Questa Engineering Corporation to conduct a Service Area and Options Analysis for Centralized Wastewater Treatment in the Malibu Civic Center area. The study scope was amended twice by the City Council: first, with approval on February 14, 2005, to include an integrated assessment of stormwater management possibilities for the Civic Center area; second, on March 14, 2005, to include additional groundwater modeling scenarios. The study had several components. The first was to define the needs and the priorities for different development sub-areas that could potentially be serviced by community wastewater treatment in the Civic Center area. This task was guided by the results of the Risk Assessment (mentioned later in this document), as well as further detailed analysis of the data collected. An important criterion applied in the analysis was the time of travel model with respect to bacteria and nitrogen. Once the service area priorities were defined, the second step covered an analysis of potentially viable options for locating and sizing all elements of a community wastewater treatment system. This included collection, treatment, disinfection and dispersal elements. All of these were analyzed in the options evaluated.

In February 2004, the City Council amended the scope of work to include stormwater management in the Civic Center area. An objective look at the stormwater management needs of the area had been overlooked. Because of the potential benefit and synergy resulting from integrating and addressing stormwater management and wastewater treatment at the same time, this element was added to the scope of this project, resulting in the change in name to an Integrated Water Quality Management Feasibility Study.

Since this Feasibility Study, the City has constructed the Civic Center Stormwater Treatment Facility (SWTF) and Legacy Park with stormwater mitigation measures, habitat restoration and creation, and environmental education elements. The Legacy Park project transformed approximately 15 acres in the heart of Malibu into a central park that serves as an environmental cleaning machine, with the capability to capture, clean and disinfect more than 2 million gallons per day of stormwater and urban run-off that flow from the surrounding watershed. Legacy Park reduces the City's contribution to pollutant loads in Malibu Creek, Malibu Lagoon and nearby beaches. This project was completed in October 2010.

In addition to the stormwater treatment improvements provided by the Civic Center SWTF and Legacy Park project, the City incorporates stormwater treatment and runoff solutions into its other municipal projects. The Cross Creek Road Improvement Project provides an excellent example of how improvement projects can be constructed in a manner that protects against water quality degradation from stormwater runoff and maximizes the potential for water reuse. This project includes permeable walkways and parking areas, native and drought tolerant vegetation, and drip irrigation to prevent overspray. Based on how well received that project continues to be, the City will consider other City capital improvements with similar elements. This has also prompted the consideration of developing design guidelines for Low Impact Development (LID) elements in City projects. As described in this annual report and later in this document, the City implements the Local Coastal Program (LCP) with stringent development / redevelopment standards, including requiring proper site design to maximize permeable areas, and minimizing site runoff through LID.

Paradise Cove Stormwater Treatment Facility

The City was awarded funding through the Clean Beaches Initiative Grant to design and construct a stormwater treatment system for Ramirez Canyon Creek to eliminate any bacteria from the discharge to the ocean at Paradise Cove during dry weather and potentially some wet weather. The City applied for funding in January of 2006. Designs and specifications were completed by early 2009, but due to the State proposition funding freeze, the project was put on hold. With the assistance of Federal Stimulus funds (American Recovery and Reinvestment Act (ARRA), construction began October 1, 2009 and was completed with the ribbon cutting on June 28, 2010. The monitoring program pursuant to the grant agreement continued for a year after completion through August 1, 2011. A revised monitoring program is ongoing to ensure proper function and operation of the system.

Results from weekly water quality sampling indicate that the system is effective at eliminating fecal indicator bacteria (FIB) from the channel. Results at the outlet are consistently below the

detection limit for all FIB; however, once the treated water contacts beach sands and kelp, the levels of FIB in the samples increase dramatically. This demonstrates that sources outside and down gradient of the watershed are the causes of FIB at the monitoring site SMB 1-07. Additionally, the City does not own or operate any MS4 facilities up gradient of this site. This is compelling evidence that the City's MS4 is not causing or contributing to FIB exceedances at this location.

City of Malibu Local Regulations

The City has adopted ordinances banning smoking on public beaches, the use of expanded polystyrene foam packaging for prepared food and the point of sale distribution of plastic shopping bags; an ordinance establishing an inspection and permitting program for Onsite Wastewater Treatment Systems (OWTS), including a "Point of Sale" element; and ordinances establishing an administrative citation procedure to impose administrative fines for violation of certain Municipal Code regulations. As previously mentioned, and described in detail later in this section, the City has a stringent development review process and an aggressive wastewater management program. These efforts and many more are detailed in various sections of this year's City of Malibu Individual Annual Report for 2010-2011. A list of current relevant ordinances is included at the end of this document.

Staff also continued to work on developing a Green Building program this year. It is a three-pronged approach with green building, LID and Model Water Efficient Landscaping Ordinance elements. It was determined that a separate LID ordinance was not needed, as the LCP already requires LID (referred to in the Program as "site design"). To reinforce LID requirements, a new guidance document was developed last reporting year for distribution to applicants to better understand the condition to implement a water quality mitigation plan and provide LID resources as part of the City's implementation of the SUSMP program. It is also now available on the City's website. Since the majority of construction in the City is single-family residence remodel / redevelopment, staff has been focusing on unique ways to include these types of projects in the program for the most effective implementation with superior sustainability aspects. The City's energy efficiency standards have been approved by the California Energy Commission and received final approval by the City Council in 2011. A compiled list of regulations is included at the end of this document.

"It's Time to Get Serious" Resolution, Water Conservation Ordinances and Partnerships

The City has an emergency water conservation ordinance that was enacted in December 1991 to prevent waste or unreasonable use of water – a consequence of which is the reduction of incidental residential runoff. However, the City passed a resolution March 24, 2008 to collaborate with West Basin Municipal Water District (WBMWD) to update water conservation ordinances and efforts as it is recognized that eliminating irrigation runoff helps eliminate potential pollutant transport. The City found its existing water conservation ordinance to be sufficient; the City's ordinance, in conjunction with the Phased Water Conservation Program of Los Angeles County Waterworks District 29 (WWD29), is affecting the necessary water

conservation. Water runoff elimination efforts are being promoted and goals are starting to be met.

The City did adopt a Water Conservation Landscape Standards ordinance (Water Conservation Landscape Ordinance No. 323) to conform to the State's model water efficient landscape ordinance. The City's ordinance is more inclusive of various types of projects with a smaller size threshold and is more stringent (including limitations on the amount of turf that may be installed and setbacks from right of way for installation of irrigation). Development applications must identify natural features (e.g., environmentally sensitive habitat area (ESHA) and ESHA buffer, protected trees, drainage features, steep slopes, etc.), stormwater best management practices (BMPs) to be implemented, pervious and impervious hardscape areas and the surface area and type of any proposed water features, and slopes (no turf is permitted on slopes steeper than 5%).

The creation of a Malibu Water Conservation Partners Group was enabled from the increased contact with WBMWD. The City continues a strong collaboration with WWD29, WBMWD, staff from Los Angeles County Supervisor Zev Yaroslavsky's office, Resource Conservation District of the Santa Monica Mountains and Las Virgenes Municipal Water District as the Malibu Water Conservation Partners Group. This group has been getting out the message that wasting water can ultimately pollute the receiving water. It has recently expanded to include local energy utility companies, Edison and the Southern California Gas Company, since wasting water wastes energy. The group will therefore be changing its name to the Malibu Area Conservation Coalition (MACC), and is focusing on new goals and a mission statement.

The Group continues to exhibit success in a pilot project focusing on runoff elimination in a target watershed. By getting volunteer residents actively involved in stewardship through water conservation and eliminating runoff with incentives and programs offered by the agencies involved, they serve as role models and can encourage their neighbors to do the same. This project was stalled due to the State's funding freeze, but resumed late in 2010. It has been a model of leveraging agency resources to meet common goals. Based on the outcome of this watershed pilot project, the program will be implemented in other target watersheds.

Integrated TMDL Implementation Plan for the Malibu Creek Watershed and SMBB Wet-Weather Bacteria TMDL Implementation Plan for J1/4

Some of these plans were developed as a requirement of the Bacteria TMDLs specifically. Two of these plans were previously submitted to the RWQCB (Santa Monica Bay Beaches Bacteria Wet-Weather TMDL Implementation Plan and the Integrated TMDL Implementation Plan for the Malibu Creek Watershed). However, they were developed as integrated plans with multiple pollutants in mind. As the projects listed in the plans are constructed and the programs are implemented, a decrease in the levels and frequencies of pollutant exceedances addressed in the plan should result, where any exceedances may have been caused or contributed to by the MS4. However, recent scientific research is finding that many of these exceedances are being caused by natural conditions at the receiving waters, and that cities have limited responsive actions available to address natural causes. The responsible agencies in Jurisdictions 1 and 4, including

the City, County of Los Angeles and Caltrans, have been individually working on implementation of this plan. Highlights of the City's efforts include focusing on equestrian property outreach, construction of the Paradise Cove Stormwater Treatment Facility and construction of Legacy Park.

While not listed specifically as projects in this plan, but conceived in the spirit of the plan, the City also moved forward with executing a grant agreement with the State under the Proposition 84 Area of Special Biological Significance (ASBS) funding program for two projects that would eliminate dry weather runoff and reduce wet weather runoff through a combination of biofiltration and treatment elements. These projects, described in greater detail later in this document, began implementation in 2011 and help to address requirements of the SMBB Wet-Weather Bacteria TMDL and the California Ocean Plan prohibition of the discharge of waste to the ASBS (approximately 11 miles of the 22 mile long coastline in Malibu).

Malibu Creek Trash Monitoring and Reporting Plan and Minimum Frequency of Assessment and Collection

The City and other responsible parties to the Malibu Creek Trash TMDL hired a consultant to prepare the subject plan in accordance with the TMDL requirements. It was submitted to the Regional Board April 29, 2010. It has not yet been approved, but the City has already begun implementing BMPs that prevent the discharge of litter from the MS4 and non-point sources within its jurisdiction to Malibu Creek and Lagoon. Implementation will be ongoing in perpetuity, until the water quality impairment no longer exists, or the plan is superseded.

Escalated Restaurant / Commercial Inspections

The City of Malibu implemented an annual inspection program a few years ago (rather than twice per five years, as required in the MS4 Permit), inspecting all food service establishments including restaurants, grocery stores and coffee shops to reduce any impacts on water quality due to urban runoff from these businesses. Goals of the inspections include compliance verification, enforcement as needed, public education regarding stormwater and urban runoff issues, recycling and related environmental quality efforts, such as the bans on expanded polystyrene food packaging and one-time use plastic shopping bags. The City uses a comprehensive 28-point stormwater inspection checklist that is in accordance with and more stringent than the Santa Monica Bay Restoration Commission's Clean Bay Restaurant Certification program conditions.
Based on the comprehensive inspection criteria and success of the program, the City established its partnership with the Santa Monica Bay Restoration Commission and South Bay Cities to implement the Clean Bay Restaurant Certification program on May 5, 2009. Implementation will be ongoing unless the Santa Monica Bay Restoration Commission rescinds the program and / or a different program supersedes it. This is a certification incentive program where businesses that meet 100% of the criteria (which is beyond NPDES requirements) will be recognized as a Clean Bay Certified Business. To participate, the business must be inspected at least once annually. The program has garnered positive reception and businesses continue to show an interest in meeting the criteria to be able to receive certification. Certifications from this past

cycle of inspections are anticipated to represent approximately 79% of relevant businesses once all certifications are processed.

Due to the success of this program and the importance of ongoing contact with the commercial community, the City also implements a retail gasoline outlet (RGO) and automotive service inspection program annually as resources and funding allow. The City Council is also exploring the option to establish a business licensing program (other than the one adopted by reference and implemented by the County of Los Angeles). Having a business license program would be an effective means to improve tracking of critical sources as required by the NPDES permit and would establish a means of monitoring and communicating with relevant businesses. The City considered a business license program at its August 2010 meeting. Staff has not yet been directed to develop the program; however, it may still be under consideration for the future.

Outreach to and Partnerships with Schools and Universities

The City has begun to work more closely with local primary and secondary schools, and universities to educate about water quality issues and pollutions prevention. The program includes not only educating the students, but also the opportunity for those students to help educate the community in return. The City conducted an "assembly" at the Point Dume Marine Science elementary school about non-point source pollution. The school then set up a day where all of the classes focused on various elements of water quality protection, including stenciling the drains on the campus with a "no dumping" message, and testing the pH of runoff from their grounds. In turn, the school participated in the City's Earth Day Festival with their own booth to educate the community about their projects, marine debris, and their compost club.

The City has also been working with the local Boys and Girls Club. In December, the Club volunteered to help distribute reusable bags during the annual "Day Without a Bag" event. Additional outreach is being planned for this group.

Through the Pepperdine Center for Sustainability and their Graduate School of Business, the City was given the opportunity to propose several environmentally themed projects for a graduate class in project management. Out of eight environmentally themed projects pitched by the City, the students chose five projects including the water quality focused stormwater print media campaign, construction of an Ocean Friendly Garden on campus, a "green" business awards and certification program, and a series of videos on environmental sustainability. The City will take these project outlines and look at fully implementing the students' ideas.

The City has also begun a partnership with California State University at Northridge (CSUN). The City must routinely consider and research existing and future regulations in order to meet Federal Clean Water Act and State environmental regulations. Many of these requirements include research and / or monitoring requirements that are beyond the City's resource capabilities. The City must consider the most efficient and effective strategies (including partnerships) to accomplish its regulatory requirements and needs for current, well-founded science. Many of these requirements are within the capabilities of other local educational and

research institutions, such as CSUN. Therefore, the City and CSUN are in discussions for developing a partnership memorandum of understanding.

Malibu Local Coastal Program

The City of Malibu Local Coastal Program (LCP), as certified by the California Coastal Commission (CCC) September 13, 2002, includes a Land Use Plan (LUP) and Local Implementation Plan (LIP) that detail many environmental quality and protection standards, objectives and implementation measures for new development and redevelopment projects. These include requirements for water conservation, protection of native vegetation and landscaping with native vegetation. The City's contract biologist reviews all landscape plans.

In addition to the priority projects specified by the NPDES permit to comply with the standard urban stormwater mitigation plan requirements, the City requires a water quality mitigation plan for all new development or redevelopment projects that include vineyards, orchards or confined animal facilities, regardless of size.

In reviewing existing programs including the LCP and Municipal Code for the Green Building Program, staff found that there is substantial LID requirement language existing in the City's current regulations. It is called out as BMPs, including site design, source control and structural BMPs, rather than LID (a term that has become more recognized and more commonly used). Therefore, staff is improving the implementation of the LCP and associated handouts and forms so that the process and requirements are transparent and understandable to applicants. Staff also developed guidelines to assist applicants in understanding the water quality mitigation plan requirements. As part of the review process, the City conditions new development and redevelopment projects to reduce stormwater runoff by using site design techniques, and expressly prohibits any new discharge drains into or tributary to the ASBS. The City also requires the applicant provide a drainage plan that incorporates LID practices and does not discharge directly into the ASBS.

It will be implemented in perpetuity in accordance with requirements of the CCC. Amendments may be implemented from time to time pending approval of the CCC.

ASBS Special Protections and Other Activities

The City received an Exception to the Ocean Plan, issued by the State Water Resources Control Board on March 20, 2012 (SWRCB Resolution 2012-0012), and is beginning implementation activities to comply with the Special Protections that were developed by the State Water Resources Control Board staff to regulate the ASBS. However, prior to the adoption of the Exception and Special Protections, the City was still taking steps to cease all non-stormwater runoff in that area and Citywide, and prevent pollution in stormwater discharges by increased education and enforcement activities.

For example, the City submitted a Proposition 84 grant proposal to fund the creation of a new staff position, the Coastal Preservation Specialist. The City submitted the ASBS Grant Proposal

to fund the position for two years to conduct a focused education and outreach program targeted to oceanfront homeowners and visitors to conserve water and eliminate runoff from their properties. In January 2009, the State approved the staff recommendation to award funding for this project. However, the State's proposition funding freeze stalled the full implementation of this project. The City executed the grant agreement with the State in May 2011 and began proceeding with this project in September 2011. The City filled the position this past Fall and has funding for this position for two-years.

The traditional public outreach methods implemented by the City to inform residents have been successful, but more work will be done to achieve the highest degree of effectiveness needed for properties adjacent to the ASBS. For these properties, this Proposition 84 Coastal Preservation Specialist will utilize a multi-faceted approach combining community-based social marketing techniques, a GIS database tool to document and track systematic contact coverage and follow up, and objective effectiveness assessment. The program will target: water conservation, proper septic system maintenance, elimination of any dry weather discharges via private drains that might exist, reducing dry weather runoff that may be caused by excessive irrigation runoff, and reducing wet weather runoff by retrofitting residential landscapes and incorporating low impact design into outdoor living spaces.

The City also applied for grant funding to improve drainage in two neighborhoods in the ASBS, Wildlife Road / Whitesands Place and Broad Beach Road, by implementing methods such as retrofitting some catch basins, installing passive treatment instituting biofiltration, and infiltration where feasible (infiltration is not feasible in many areas due to the threat of slope and bluff instability). The grant agreements were executed in May 2011 (the Wildlife Road Treatment Project shares an agreement for the focused outreach previously discussed) and promptly began the design process soon after. The grant agreements require that the projects be completed by March 2015.

City staff continues to produce new public outreach materials and collaborate with other local agencies to implement source control programs. The City continues to distribute two popular and useful brochures this year that include language regarding protection of the ASBS. The City is continuing and expanding efforts with WWD29 to investigate and eliminate irrigation runoff and with WBMWD to implement more water conservation programs. The City is supporting Surfrider Foundation and WBMWD with promoting their Ocean Friendly Gardens Program and hosted another well-attended workshop at City Hall on March 19, 2011. The City has also been working with the Surfrider Foundation to identify potential sites and engage residents to retrofit their properties, including the opportunities to use the site evaluation and subsequent retrofit as teaching opportunities for other residents and property owners. A former Malibu Mayor engaged in the process to retrofit his property and is hoping his project can serve as a model for landscape retrofits. The City also applied to WBMWD's grant program in the 2008-2009 reporting year for funding to install an Ocean Friendly Demonstration Garden at Malibu Bluffs Park. The City Council directed staff to proceed, and the design process for this project began in January 2012. Another Ocean Friendly Garden workshop is scheduled for June 30, 2012 at Bluffs Park, adjacent to the soon to be constructed demonstration garden. The goal of continuing to seek partnerships that share a common message and goal of protecting the environment and

preserving resources has been met with the establishment of the MACC (formerly the Malibu Water Conservation Partners group), as previously described.

Additionally, one of the projects implemented by the Pepperdine business students as previously described is the construction of an Ocean Friendly Garden on campus.

Integrated TMDL Implementation Plan for the Malibu Creek Watershed

Submitted to the Regional Board on February 27, 2007, but the Regional Board has not yet taken action or formally approved this plan. Implementation is ongoing in perpetuity, until the water quality impairment no longer exists, or the plan is superseded.

Implementation of program beyond what is required in the SQMP

The City is currently implementing the Countywide Stormwater Quality Management Plan (SQMP); in addition, City staff collaborated with the Watershed Management Committee to develop a watershed-wide "Plan Blue" for runoff reduction. As major elements of Plan Blue were incorporated into the Integrated Total Maximum Daily Load (TMDL) Implementation Plan for the Malibu Creek Watershed (Malibu Creek IP), Malibu Creek IP and other regulatory documents supersede it. However, Plan Blue still exists as a programmatic design document. While not formally finalized and adopted, elements of Plan Blue, including the Illicit Connection / Illicit Discharge (IC/ID) Elimination program, have been implemented as the acceptable norm. The WMC discussed the plan and the group consensus was that further work on the Plan was not needed because the previously mentioned implementation plans supersede it.

The City believes that source control measures being implemented Citywide listed above, including programs as part of the City's NPDES MS4 compliance program, the SMBBB Implementation Plan for Jurisdictional Groups 1 & 4, and the Integrated TMDL Implementation Plan for the Malibu Creek Watershed, along with compliance with ASBS Special Protections and grant programs, are the most appropriate measures for these subwatersheds at this time. As the City has not received RWQCB guidance, comments or approval of its RWL Compliance Reports, or any of the subsequent status updates, the SQMP has not been revised, but the City has moved forward with implementing programs to enhance the SQMP.

Wastewater Management Plan Implementation

The City does not own or operate a municipal sanitary sewer system. The City relies instead on private individual Onsite Wastewater Treatment Systems (OWTS), with the exception of several small "Package Treatment Plants" which service limited developments within the City. The information reported in this section refers only to OWTS, small, privately owned and operated treatment systems. Any potential discharge associated with an individual OWTS would constitute a very small volume of effluent and would be localized where it can be contained and remediated, as opposed to the large, difficult to control spills that are experienced by agencies with large collection systems and / or centralized wastewater treatment plants.

The City recognizes the importance of a robust wastewater management program and the institution of appropriate regulations to preventing sewage overflows that have the potential to contribute to water quality impairments. The City has implemented programs with the intention of eliminating the potential of discharge of sewage to the MS4 and to surface waters in the unlikely event of a spill. The City adopted Ordinance No. 312, A Renewable Operating Permit Program, which established an inspection and permitting program for OWTS. Through effective management and repair / replacement of poorly performing systems, the City has taken an aggressive approach to ensure that OWTS are in conformance with regulations and are properly functioning to prevent the potential for any spills that may reach a storm drain system.

The City is considered a leader in the State when it comes to regulation of OWTS. The City signed a Memorandum of Understanding with the Los Angeles Regional Water Quality Control Board for local management of OWTS. The City is responsible for all OWTS producing domestic waste discharge generating 20,000 gallons per day or less and discharge waste from non-food producing commercial facilities that generate 2,000 gallons per day or less. All other OWTS are the responsibility of the Regional Board.

The City has developed and utilizes the Integrated Wastewater Information Management System (IWIMS), a web based data management tool. This program was developed to assist the City in tracking its oversight of the approximately 6,000 OWTS within the City. This program was established in cooperation with the RWQCB and to assist with their data management tools.

Ordinance 321, a Comprehensive Onsite Wastewater Treatment System Inspection and Operating Permit Program Scheme, was adopted on March 10, 2008 by the Malibu City Council. The program was founded on the EPA's Guidelines for the Management of OWTS, Level III. This program provides a means of system inventory, assurance of system functionality and system sustainability. This program requires all new OWTS obtain an Operating Permit prior to any use of the system, and that owners of real property served by an existing OWTS obtain an inspection of the OWTS, apply for an operating permit and make any necessary repairs or upgrades in accordance with the following schedule:

- New Developments – before a Certificate of Occupancy is issued
- Existing properties:
    - Whenever a permit for repair, alteration, replacement, renovation or relocation of an existing OWTS occurs
    - Whenever a remodeling or repair results in addition of plumbing fixtures or increase in load to the existing OWTS
    - Prior to any purchase or change in ownership (Point of Sale Program)
- Restaurants – by March 10, 2009
- Other commercial uses – by March 10, 2009
- Multi-family or Condominiums – by March 10, 2010

Once issued, renewal of operating permits, including a required inspection, must occur according to the following schedule:

- Commercial or multifamily uses – every two years
- Single-family uses with alternative OWTS technology – every three years
- Single-family uses with conventional OWTS technology – every five years

The City has also adopted Ordinance No. 357, a program requiring the registration of all OWTS practitioners. All practitioners, including OWTS Inspectors, must be registered and approved by the City of Malibu. To qualify as a Registered Inspector, candidates must possess a valid California State License as a Certified Engineering Geologist, Registered Professional Geotechnical, Civil Engineer or a Registered Environmental Health Specialist. All inspectors must have attended specific OWTS inspection training provided by a nationally recognized entity and a City-sponsored training. Each component requires the successful completion of an examination. Other Registered Practitioners, including OWTS Designers, Installers, Operation & Maintenance Providers, and Pumpers must meet similar criteria to be considered for registration with the City. The program emphasizes continued training and education to ensure all practitioners are skilled professionals meeting strict standards.

The City continues its outreach program to high priority risk areas, such as restaurants and other commercial use properties, to ensure all OWTS owners are properly maintaining their systems and keeping their Operating Permits current. Notices of non-compliance are issued to OWTS owners when required inspections or Operating Permit renewals are not timely. The City also provides outreach and assistance to individual realtors, real estate companies, escrow companies, and private inspectors regarding the regulatory requirements for OWTS, and various City programs. The California Onsite Wastewater Association (COWA) is actively involved with the City. The City has hosted numerous OWTS training and educational opportunities, including a regulators outreach program in November 2011. These programs are available to the public and provide additional outreach opportunities to the community regarding proper operation and maintenance of OWTS.

While not related to stormwater, it is worth noting that the RWQCB and the City entered into another MOU in July 2011, memorializing additional elements of the wastewater management strategy for the Civic Center area, including phased implementation of a centralized wastewater treatment plant for the area.

ENHANCED MONITORING PROGRAMS

Civic Center Stormwater Treatment Facility Monitoring Program

The treatment facility is currently designed to intercept urban runoff and stormwater up to 1,400 GPM from three drains in the Civic Center area that would drain into Malibu Creek, remove gross solids and then clean the water through media filtration and ozone disinfection. The City monitors the water entering and exiting the Civic Center Stormwater Treatment Facility to ensure proper function of the system. In the fall of 2010, an 8-acre foot storage basin / intermittent wetland on the Legacy Park site was added to increase the flows that can be treated by this facility. This disinfected and treated water is re-circulated until a significant volume is accumulated and then spread on land and not discharged to the Creek. The treated water is used as irrigation water on the Legacy Park site, as well as other uses in the Civic Center area.

Despite not discharging this water to the creek, the City has been testing the water for FIB since mid-2007. Sampling occurs once a week as water enters and exits the treatment system. Samples are analyzed for bacterial indicators. Results, which are available upon request, show that this facility is highly effective at removing bacteria. By constructing this facility and implementing a monitoring plan, the City has shown its ongoing commitment to the environment and to ensuring water quality is protected.

The treatment system's influent and effluent are analyzed weekly for Total Coliform, E. Coli, and Enterococcus. Monitoring results have shown that on the average bacterial indicators in the effluent from the system tested below the laboratory detection levels. As discussed above, this treated water is not discharged to any water body including Malibu Creek, Malibu Lagoon or Surfrider Beach. Monitoring results show that implementing this project has been successful.
Malibu Creek Bacteria TMDL Monitoring Program.

City and County agencies listed as responsible parties under the Malibu Creek Bacteria TMDL have developed and implemented a FIB compliance monitoring program throughout the Malibu Creek Watershed, as approved by the Regional Board. Results have been provided to Regional Board staff since April 2008 and are available upon request.

North Santa Monica Bay (NSMB) Source Identification Study

The County of Los Angeles is conducting the North Santa Monica Bay Bacteria Source Investigation Study (Source ID Study) as a project in partnership with area stakeholders. A Technical Advisory Committee (TAC) that includes staff from the Los Angeles Regional Water Quality Control Board, Heal the Bay, SCCWRP, City of Malibu and various Los Angeles County Departments developed the study protocol. The Source ID Study was designed to provide information regarding the sources and potential health risks associated with elevated bacteria levels at Escondido Beach (SMB-1-08) and Paradise Cove (SMB-1-07) and subsequently to develop an effective methodology that can be applied to other subwatersheds to track sources of pollution. The study ran from March through July 2007, when it was discontinued after six weeks because the beach locations did not exceed bacteria standards

during the study period and the upstream data did not identify any substantial hotspots within either watershed (neither Ramirez nor Escondido). The group decided that further sampling should be postponed until conditions warranted upstream tracking. The study resumed in March 2008 and suspended again when the creek flows dried up. Again, it was resumed in March 2009 and continued for 8 weeks before stopping. In 2009, the TAC discussed additional monitoring and analyses for this project for when it resumes. As beach locations did not exceed bacteria standards during the study period, sampling did not resume in 2010 or 2011.

In a letter dated February 13, 2007 sent to the County of Los Angeles, Jonathan Bishop, then Executive Officer of the Regional Board, recognized the effort of this study and supported it "in lieu of requiring the County to conduct other investigations of exceedances at beaches influenced by natural streams for the upcoming summer dry weather period." The letter went on to recognize that this project was a collaborative effort among several agencies including the City of Malibu.

It was found that the fecal indicator bacteria exceedances at the shoreline at Escondido Canyon Creek are not being caused by inputs upstream in the Creek. Results in Ramirez Canyon are more complicated as to the potential sources; therefore, this study will be continued again to possibly look at tidal influence, animal contributions, potential groundwater exchange near the coast and other hypotheses. Initial Human Specific Bacteroides sample analyses of the surface water shows that the source of shoreline exceedances at Paradise Cove is not likely from human sources and therefore not from upstream OWTS.

Reference Watershed Study

A Reference Watershed Study, titled *Fecal Indicator Bacteria Levels During Dry Weather in Southern California Reference Streams* (Tiefenthaler et. al. 2008), commissioned by responsible agencies in the Malibu Creek Watershed, was conducted by Southern California Coastal Water Research Project (SCCWRP).

This study attempted to quantify naturally occurring background levels of bacteria in streams during base flow (i.e., non-storm) conditions over an extended period. These results showed this program was successful in recognizing that FIB exceedances are likely to still occur in reference streams in absence of (or with minimal) human influence. It also identified that temperature and time of year may be factors in exceedances of FIB water quality standards.

Risk Assessment of Decentralized Wastewater Treatment Systems in High Priority Areas in the City of Malibu

This comprehensive study, conducted in 2004 to evaluate the environmental impacts of current and future levels of onsite wastewater management, provided a baseline to refine its citywide wastewater management program and found that shallow groundwater in the Malibu Creek study area is significantly influenced by bacteria from sources other than OWTS. It is being included here as an example that results of implementing programs may take years for results to be observed and that additional studies have been added as a result of this study.

This study influenced how the City manages OWTS in the City, in particular in the areas adjacent to Malibu Creek and Lagoon. It has also greatly affected and restricted development in the Civic Center area. Other lasting effects of this study include development of regulations, such as the Malibu Creek Bacteria TMDL, and focused the implementation plan development priorities. The City is also building upon this study with current contracts for a Groundwater Monitoring Study and Hydrology model, "Groundwater Mounding Study," which was mentioned previously.

As part of the development of the Santa Monica Bay Beaches Bacteria Wet Weather TMDL Implementation Plan, a Source Identification and Prioritization Analysis was conducted for Jurisdictional Groups 1 and 4 to identify and evaluate potential sources of water quality impairment in the affected subwatersheds and to prioritize these sources. Aspects of this study are also relevant for dry weather bacteria conditions since the sources may be similar even though the transport mechanisms can be different. Based on the results of the Risk Assessment of Decentralized Wastewater Treatment Systems, the source identification and prioritization effort focused on other potential sources (e.g., restaurants, horses and urban runoff). The data did not support the identification of one conclusive source, but did identify the effects of urbanization, particularly urbanization in proximity to water bodies as linked to exceedance of water quality standards. As a result, the focus of the prioritization effort shifted from source prioritization to targeted subwatershed prioritization.

Groundwater "Mounding Analysis"

The City Council authorized the City Manager to execute a professional services agreement for the Hydrology Study of Cumulative Impacts for the Civic Center Area (Ground Water Mounding Analysis) on July 14, 2008. This analysis builds on the information learned in the Integrated Water Management Plan Feasibility Study to help guide decisions for development in the Civic Center area. The final report and model were completed in the past reporting year and will serve to inform as the centralized wastewater treatment facility is developed for the Civic Center area.

Area of Special Biological Significance (ASBS) Efforts

Based on the unique biological status of ASBS, and the concern over potential risk from stormwater discharges, the State partnered with SCCWRP and regulated agencies to conduct a study of the ASBS as part of the Bight 08 program. The goal of this study was to assess the water quality in Southern California ASBS. Specifically, the study was designed to answer two questions:

1. What is the range of natural water quality near reference discharge locations?
2. How does water quality near regulated ASBS discharges compare to the natural water quality at reference locations?

The City participated in the Regional Bight 08 ASBS Monitoring Programs for water quality analyses and bioassessments. This collaborative effort between regulators (State Water Board),

regulated federal, state and local government organizations, private community landowners and associated consultants seeks to define water quality conditions in the ASBS. This combined effort stems from the need to meet regulatory requirements for "natural water quality" in the receiving water while leveraging resources for the most effective combination of monitoring within Northern and Southern California.

Study sites were chosen in Southern California, including four sites in ASBS 24 (two reference, and two discharge sites). Concentrations of total suspended solids (TSS), nutrients (ammonia, nitrate, nitrite, total nitrogen, total phosphorus), total and dissolved trace metals (arsenic, cadmium, chromium, copper, nickel, lead, silver, selenium and zinc), and polycyclic aromatic hydrocarbons (PAH) from post-storm samples were similar at reference and regulated ASBS discharge sites. On average, the range of post-storm pollutant concentrations in receiving waters sampled near regulated ASBS discharge sites were not significantly different from post-storm concentrations at reference sites. Concentrations of chlorinated hydrocarbons were not detected and no post-storm sample exhibited toxicity to the purple sea urchin *Strongylocentrotus purpuratus* (i.e. toxicity was not observed during this study). In addition, there was no consistent increase from pre- to post-storm concentrations at either reference or regulated ASBS discharge locations, showing that discharges did not seem to alter background water quality.

This study found that, overall, ASBS water quality is in good condition. It also found that water quality results at ASBS discharge sites in receiving water were similar to reference sites. On average, the range of post-storm pollutant concentrations in receiving waters sampled near regulated ASBS discharge sites were not significantly different from post-storm concentrations at reference sites. In addition, there was no consistent increase from pre- to post-storm concentrations at either reference or regulated ASBS discharge locations, showing that discharges did not seem to alter background water quality. Toxicity was not observed during this study and polycyclic aromatic hydrocarbons were non-detect at the City's sample sites.

The water quality monitoring program was completed during the 2008-2009 wet season. SCCWRP compiled the results. A report was published in February 2011. The final February 2011 report[1] noted that, "on average, the range of post-storm pollutant concentrations in receiving waters sampled near ASBS discharge sites were not significantly different from post-storm concentrations at reference drainage sites, which included stormwater inputs free of (or minimally influenced by) anthropogenic sources." It also clarified that many data gaps still exist with respect to determining natural water quality. The limited amount of data limits the researchers' ability to definitively assess water quality in ASBS. Data is still needed in areas such as: 1) a thorough analysis linking water quality to condition of the biota and habitat; 2) an analysis of natural sources of elevated pollutants in water; and 3) analysis of non-water quality threats, such as trampling and poaching. Overall, this study shows initially that the management strategies employed by the City have so far been successful in protecting natural water quality and preserving beneficial uses.

[1] Schiff, K.C., B. Luk, D. Gregorio and S. Gruber. 2011. Southern California Bight 2008 Regional Monitoring Program: II. Areas of Special Biological Significance. Southern California Coastal Water Research Project. Costa Mesa, CA.

The rocky intertidal bioassessments took place December 2008 – January 2009, and the rocky subtidal bioassessments took place in Fall 2009 and late Winter 2010. The bioassessments were completed by March 2010 and the bioassessments report was finalized in December 2011. The results of this effort were considered by the State Water Board in decision making about the Special Protections in the ASBS and to provide context for determining the natural water quality. The City is also preparing to comply with Special Protections that were adopted by the SWRCB in March 2012 to regulate the ASBS. This included participation in the Bight 2013 ASBS group planning meetings. The Special Protections also include additional monitoring of water quality and marine aquatic life within ASBS that is not covered by the Regional Bight efforts to ensure the continued protection of beneficial uses over time. Therefore, the City will be conducting monitoring in addition to the Bight 2013 program.

United States Geological Survey (USGS) Research

The City of Malibu commissioned USGS to conduct a study called "Sources of Fecal Indicator Bacteria and Nutrients to Malibu Lagoon and Near-Shore Ocean Water, Malibu, California." The City began conversations with USGS late in 2008 to perform studies to identify any sources of fecal indicator bacteria in Malibu Creek, Lagoon and beaches from the Malibu Colony to the Malibu Pier, including Surfrider Beach. Studies were conducted in July 2009 for dry weather and in April 2010 for wet weather using multiple advanced testing methods. The City has received initial reports and presentations, but a final report has not yet been published. It was circulated for peer review prior to public release and a final report is anticipated to be published shortly.

Initial results of this study are very compelling. Lagoons and estuaries, like Malibu Lagoon, are known to cause a net increase in bacteria loads especially when the physical conditions constrain naturally functioning systems. Research shows that high fecal indicator bacteria at Surfrider Beach and other coastal sites is most likely from bird feces in the sand and kelp, decaying vegetation and naturally occurring bacteria released from the lagoon sediments. Further, monitoring results are particularly affected if the sample is taken at high tide and early in the day. This USGS study is also demonstrating that even when the Malibu Lagoon sand berm is closed, that fecal indicator bacteria can pass through the berm and affect sampling results at Surfrider Beach, if certain conditions are present. The primary source of bacteria is from natural sources, such as avian feces deposited into the Creek and Lagoon, decaying vegetation and avian feces in the kelp and sand. Using the most up to date analysis, no human-specific Bacteroidales was found in the extensive investigations by USGS in 2009. This information is supported by studies at Surfrider Beach by the University of California at Los Angeles and in Malibu Creek and Lagoon and Surfrider Beach by researchers from SCCWRP in 2005 (studies not commissioned by the City and therefore not a part of this report).

Additionally, multiple studies including this USGS study show that even when no Human-specific Bacteroidales markers were present, fecal indicator bacteria limits may be exceeded at Surfrider Beach. The source of the FIB is believed to be caused from previously mentioned natural sources and generation / re-growth of naturally occurring bacteria. The fluctuations of

FIB occur for a variety of reasons including lagoon temperature, tides, disturbance of sediments, wind and bird activity.

Malibu Creek Monitoring Program (Proposition 13)

The monitoring associated with this program was completed and the final report was submitted to the SWRCB in March 2008 as a deliverable for the funding program. Recommendations from the report are tied to the Integrated TMDL Implementation Plan for the Malibu Creek Watershed and are being put into practice by the responsible agencies. The structural BMPs recommended in the plan will be undergoing feasibility and alternatives studies in the upcoming year under contract to Los Angeles County. Since this monitoring took place before the implementation of many projects, it may be useful in historical analysis of water quality as time goes on. This monitoring program was successful overall in providing the stakeholders a context for the conditions in the watershed.

Paradise Cove Stormwater Treatment Facility Monitoring Program

Monitoring was conducted at seven spatially distributed sites to determine project effectiveness and identify potential hot spots contributing to fecal indicator bacteria exceedances. Sampling and physical observations began in August 2010 and have been ongoing on a weekly basis. Additionally, an ultrasonic flow meter was installed in February 2011 to measure stream flow. The final monitoring results report was prepared and submitted to the SWRCB in September 2011.

Results from weekly water quality sampling indicate that the system is effective at eliminating fecal indicator bacteria from the channel. Results at the outlet are consistently below the detection limit for all fecal indicator bacteria. However, once the treated water contacts beach sands and kelp, the levels of FIB in the samples increase dramatically. This demonstrates that sources outside of and down gradient of the watershed are the cause of FIB at the monitoring site SMB 1-07. As previously mentioned, due to a lack of input from the City's MS4 and overwhelming results that the treated discharged water is consistently below detection limits, implementation of this program has been successful in eliminating any possibility that the City's MS4 would cause or contribute to the observed exceedances of the FIB standards and objectives.

Malibu Creek Bacteria TMDL Monitoring Program.

This program was implemented in March 2008. Results have been provided to Regional Board staff and are available upon request. Sample results show that there are occasional single sample exceedances of FIB limits at the sample site MCW-1 in Malibu Lagoon, but not any regular or repeating exceedances of the standards that could be attributed to a specific cause or pattern. Given that the City has installed the Civic Center Stormwater Treatment Facility and does not discharge from its MS4 to the Lagoon, these exceedances cannot be attributed to the City of Malibu. However, the Malibu Creek responsible agencies participating in this monitoring program have recently discussed doing an overall trend analysis of the data collected over the past two years for all sites in this program. Pending results of that analysis, the affected

agency(ies) would implement additional monitoring or programs. Other than the City's projects in the Civic Center that have been described in this report, agencies in the upper watershed have been implementing projects over the past couple years, the results of which are yet to be determined in the lower watershed.

The current protocols in the SQMP are sufficient to determine the presence of elevated pollutant levels, in particular, bacteria indicators; however, more monitoring in the future may be able to help identify sources of pollutants at other listed water bodies. Existing evidence suggests that the vast majority of water quality exceedances that are observed are most likely from natural sources. Peer reviewed scientific studies are continuing to show that non-municipal stormwater is the greatest threat to water quality, as sediments and erosion in undisturbed natural areas coupled with input from wildlife are increasingly likely sources of fecal indicator bacteria from natural sources. This is especially true in areas in the City of Malibu where the City has installed treatment devices to clean runoff or does not even discharge runoff. Hopefully, this will provide sufficient evidence for the Regional Board to be confident enough to properly adopt site-specific objectives and true natural sources exclusions in its implementation of TMDLs.

Local Ordinances and Regulations

The following documents provide necessary regulatory authority to the City to protect various aspects of the environment and protect against degradation of water quality. Most of these ordinances have been codified and are available on the City website at www.malibucity.org and hardcopies can be provided upon request:

1. Malibu Municipal Code (M.M.C.) Chapter 9.08.060. Offenses Against Property
2. City of Malibu Ordinance No. 46. (M.M.C. Chapter 9.20) Water Conservation
3. City of Malibu Ordinance No. 51U. Urgency Amendment to the Excavation Grading Standards of the Building Code, Establishing Stormwater Management Standards, and Amending the M.M.C.
4. City of Malibu Ordinance No. 96. (M.M.C. Chapter 17.44) Water Conservation Landscaping Requirements
5. City of Malibu Ordinance No. 157. Regulating Stormwater and Urban Runoff Pollution
6. City of Malibu Ordinance No. 219. Amending the Stormwater and Urban Runoff Pollution Control Ordinance to Provide Stormwater Pollution Control for Planning and Construction of New Development and Redevelopment Projects
7. City of Malibu Ordinance No. 242. (M.M.C. 15.12) Incorporating the California Plumbing Code to Require Operating Permits for Residential and Commercial Facilities to Use Onsite Wastewater Treatment Systems
8. City of Malibu Ordinance No. 264. (M.M.C. Chapter 13.04) Stormwater and Discharge Control

9. City of Malibu Ordinance No. 265. (M.M.C. Chapter 12.05.035) Prohibiting Smoking on City Beaches
10. City of Malibu Ordinance No. 286. (M.M.C. Chapter 9.24) Ban on Expanded Polystyrene Food Packaging
11. City of Malibu Ordinance No. 321. (M.M.C. Chapter 15.14) Operating Permit Program with a Point of Sale Element for Onsite Wastewater Treatment Systems
12. City of Malibu Ordinance No. 323. (M.M.C. Chapter 9.28) Prohibiting the Use of Plastic Shopping Bags
13. City of Malibu Ordinance No. 324 (M.M.C. Chapter 1.10) Establishing an Administrative Citation Procedure to Impose Administrative Fines for Violations of the Malibu Municipal Code
14. City of Malibu Ordinance No. 325 (M.M.C. 5.04.020(A) and 5.20.140) Amending Various Sections of the Malibu Municipal Code to Make Specified Code Violations Subject to the Administrative Penalty Provisions of Chapter 1.10.
15. City of Malibu Ordinance No. 337 (M.M.C. Chapter 9.32) Prohibiting Smoking in Outdoor Areas and at Public Events
16. City of Malibu Ordinance No. 343 (M.M.C. Chapter 9.22) Creating Landscape Water Conservation Standards.

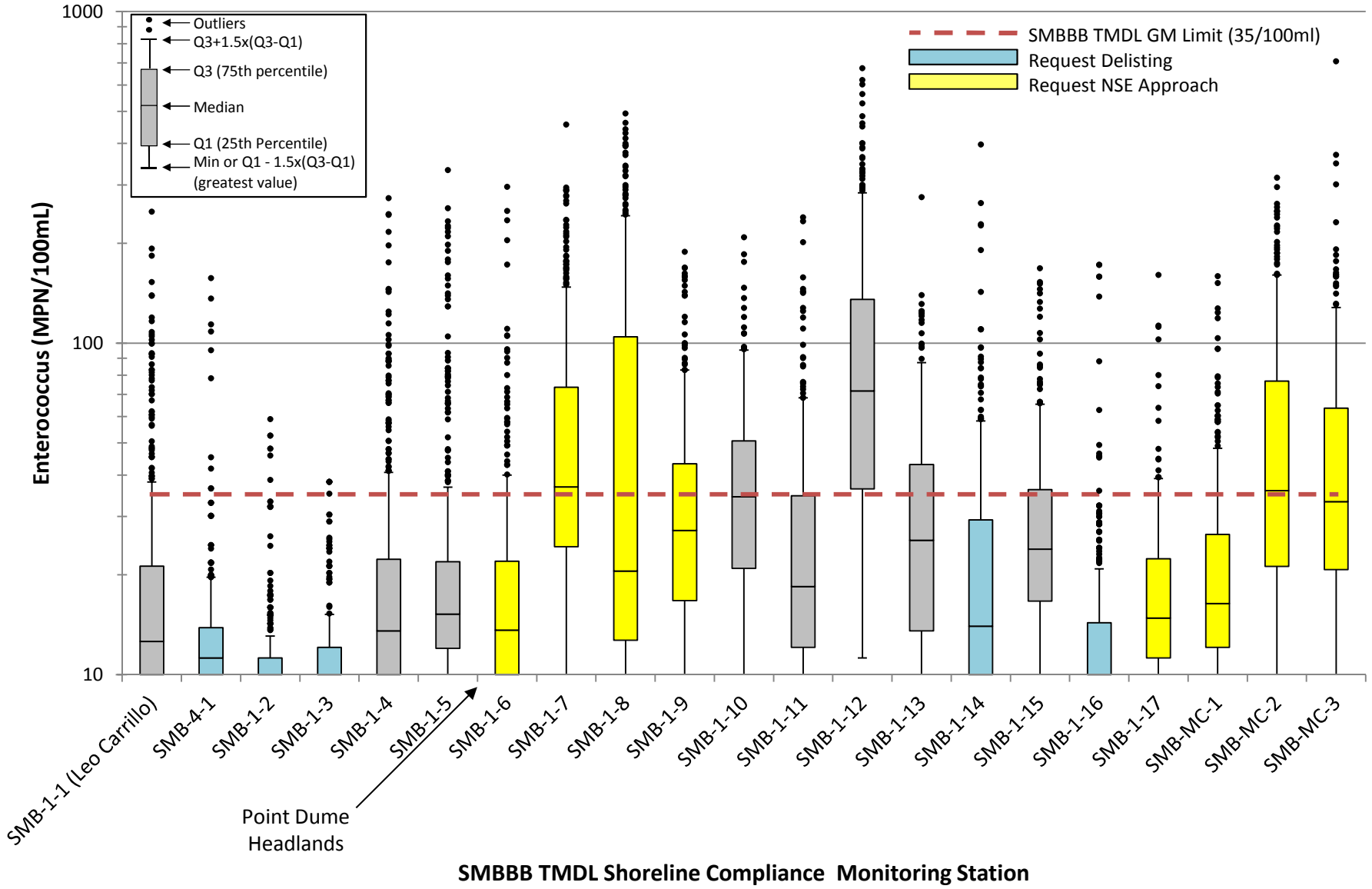
NOTES:

The Malibu Municipal Code (M.M.C.), General Plan and Local Coastal Program (LCP) are available on the City website at www.malibucity.org.
The Memorandum of Understanding between California Regional Water Quality Control Board, Los Angeles Region, and City of Malibu Regarding Onsite Wastewater Treatment Systems is on file at the City and a hardcopy is available upon request.

Attachment 4

6-Week Rolling Enterococcus Geometric Mean at Leo Carrillo Reference Beach

Attachment 4. Enterococcus: Rolling 6-week Geometric Mean at SMBBB TMDL Shoreline Compliance Monitoring Sites, Leo Carrillo (2003-2011), all other sites (2005-2011)



Attachment 5

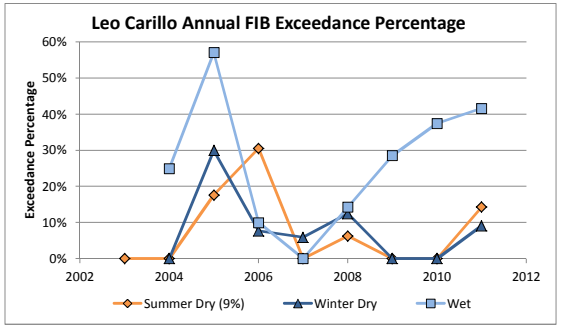
Shoreline Compliance Monitoring Summary

Arroyo Sequit Canyon (SMB 1-1) – Leo Carrillo Beach

			SSM Exceedances					SSM Exceedance Percentage				
TMDL Year	Season	No. of Samples	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2003	Summer Dry	16	0	0	0	0	0	0%	0%	0%	0%	0%
2003	Wet	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2003	Winter Dry	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2004	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2004	Wet	8	0	0	2	0	2	0%	0%	25%	0%	25%
2004	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2005	Summer Dry	34	0	2	4	2	6	0%	6%	12%	6%	18%
2005	Wet	7	2	0	3	0	4	29%	0%	43%	0%	57%
2005	Winter Dry	20	0	1	5	1	6	0%	5%	25%	5%	30%
2006	Summer Dry	36	2	3	9	1	11	6%	8%	25%	3%	31%
2006	Wet	10	0	0	1	0	1	0%	0%	10%	0%	10%
2006	Winter Dry	13	0	0	1	0	1	0%	0%	8%	0%	8%
2007	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Wet	8	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Winter Dry	17	0	0	1	0	1	0%	0%	6%	0%	6%
2008	Summer Dry	32	0	0	2	0	2	0%	0%	6%	0%	6%
2008	Wet	7	1	0	0	0	1	14%	0%	0%	0%	14%
2008	Winter Dry	16	2	0	0	0	2	13%	0%	0%	0%	13%
2009	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Wet	7	0	0	2	0	2	0%	0%	29%	0%	29%
2009	Winter Dry	16	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Summer Dry	28	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Wet	8	1	0	2	0	3	13%	0%	25%	0%	38%
2010	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2011	Summer Dry	35	0	0	5	1	5	0%	0%	14%	3%	14%
2011	Wet	12	0	3	5	3	5	0%	25%	42%	25%	42%
2011	Winter Dry	11	0	1	1	1	1	0%	9%	9%	9%	9%
Total	**Summer Dry**	268	2	5	20	4	24	1%	2%	7%	1%	9%
	Wet	67	4	3	15	3	18	6%	4%	22%	4%	27%
	Winter Dry	123	2	2	8	2	11	2%	2%	7%	2%	9%
90th Percentile	**Summer Dry**		0	2	5	1	7	1%	6%	16%	3%	20%
	Wet		1	0	3	0	4	19%	8%	42%	8%	46%
	Winter Dry		0	1	2	1	3	4%	6%	14%	6%	18%

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2003	0%	NA	NA
2004	0%	25%	0%
2005	18%	57%	30%
2006	31%	10%	8%
2007	0%	0%	6%
2008	6%	14%	13%
2009	0%	29%	0%
2010	0%	38%	0%
2011	14%	42%	9%
Total	9%	27%	9%



		6 Week Rolling GM Exceedances[1]				6 Week Rolling GM[1] Exceedance Rate (%)				Monthly GM Exceedances[2]				3-Month GM Exceedances[3]				Malibu Hybrid GM Proposal, Exceedances[4]			
TMDL Year	Calculation days	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total
2003	11	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2004	53	0	0	2	2	0%	0%	4%	4%	0	0	1	1	0	0	0	0	0	0	0	0
2005	49	15	0	22	23	31%	0%	45%	47%	3	0	6	6	1	0	2	2	2	0	4	4
2006	52	7	0	13	13	13%	0%	25%	25%	1	1	3	3	1	0	1	1	1	1	2	2
2007	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2008	52	9	0	0	9	17%	0%	0%	17%	2	0	1	2	1	0	0	1	2	0	1	2
2009	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2010	53	0	0	4	4	0%	0%	8%	8%	0	0	0	0	0	0	0	0	0	0	0	0
2011	52	5	0	19	19	10%	0%	37%	37%	1	0	5	5	0	0	1	1	1	0	2	2
Total	426	36	0	60	70	8%	0%	14%	16%	7	1	16	17	3	0	4	5	6	1	9	10
90th Percentile		10	0	19	19	20%	0%	38%	39%	2	0	5	5	1	0	1	1	2	0	2	2

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Fecal Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

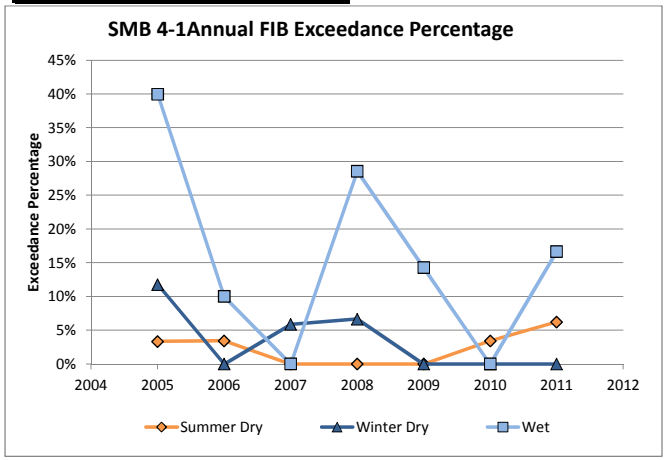
1. 6 Week Rolling GM Exceedances - Geometric mean calculation performed every week, on the samples within the previous 6 week period, if 5 or more samples have been taken in the 6 week period. For example, a total of 52 means that 52 of 52 weeks exceeded
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded

Nicholas Creek (SMB 4-1) – Nicholas Beach

			SSM Exceedances					SSM Exceedance Percentage				
TMDL Year	Season	No. of Samples	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	30	0	0	0	1	1	0%	0%	0%	3%	3%
2005	Wet	5	1	1	2	0	2	20%	20%	40%	0%	40%
2005	Winter Dry	17	0	0	2	1	2	0%	0%	12%	6%	12%
2006	Summer Dry	29	0	1	0	1	1	0%	3%	0%	3%	3%
2006	Wet	10	0	0	1	0	1	0%	0%	10%	0%	10%
2006	Winter Dry	14	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Summer Dry	28	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Wet	8	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Winter Dry	17	1	0	0	0	1	6%	0%	0%	0%	6%
2008	Summer Dry	30	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Wet	7	0	0	2	0	2	0%	0%	29%	0%	29%
2008	Winter Dry	15	0	0	1	0	1	0%	0%	7%	0%	7%
2009	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Wet	7	0	0	1	0	1	0%	0%	14%	0%	14%
2009	Winter Dry	16	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Summer Dry	29	0	0	1	0	1	0%	0%	3%	0%	3%
2010	Wet	8	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2011	Summer Dry	32	0	0	1	1	2	0%	0%	3%	3%	6%
2011	Wet	12	0	0	2	0	2	0%	0%	17%	0%	17%
2011	Winter Dry	10	0	0	0	0	0	0%	0%	0%	0%	0%
Total	Summer Dry	207	0	1	2	3	5	0%	0%	1%	1%	2%
	Wet	57	1	1	8	0	8	2%	2%	14%	0%	14%
	Winter Dry	104	1	0	3	1	4	1%	0%	3%	1%	4%
90th Percentile	**Summer Dry**		0	0	1	1	1	0%	1%	3%	3%	5%
	Wet		0	0	2	0	2	8%	8%	33%	0%	33%
	Winter Dry		0	0	1	0	1	2%	0%	9%	2%	9%

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	3%	40%	12%
2006	3%	10%	0%
2007	0%	0%	6%
2008	0%	29%	7%
2009	0%	14%	0%
2010	3%	0%	0%
2011	6%	17%	0%
Total	2%	14%	4%



		6 Week Rolling GM Exceedances[1]				6 Week Rolling GM[1] Exceedance Rate (%)				Monthly GM Exceedances[2]				3-Month GM Exceedances[3]				Malibu Hybrid GM Proposal, Exceedances[4]			
TMDL Year	Calculation days	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total
2005	41	3	0	8	8	7%	0%	20%	20%	2	0	2	2	0	0	1	1	0	0	1	1
2006	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2007	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2008	52	0	0	2	2	0%	0%	4%	4%	0	0	1	1	0	0	0	0	0	0	0	0
2009	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2010	53	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2011	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
Total	354	3	0	10	10	1%	0%	3%	3%	2	0	3	3	0	0	1	1	0	0	1	1
90th Percentile		1	0	4	4	3%	0%	10%	10%	0	0	1	1	0	0	0	0	0	0	0	0

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

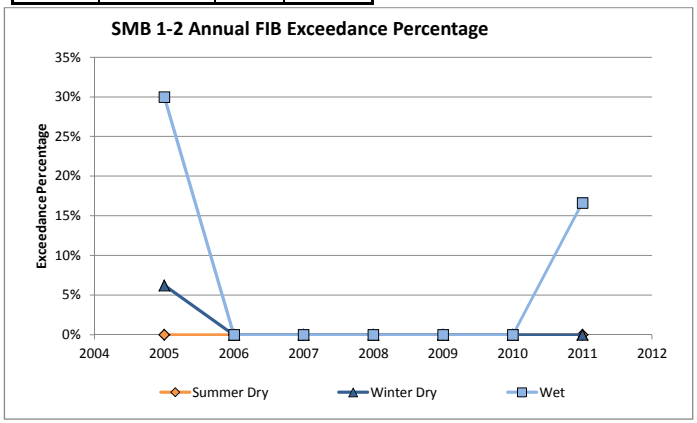
1. 6 Week Rolling GM Exceedances - Geometric mean calculation performed every week, on the samples within the previous 6 week period, if 5 or more samples have been taken in the 6 week period. For example, a total of 52 means that 52 of 52 weeks exceeded.
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded.
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded.
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded.

Los Alisos Canyon (SMB 1-2) – El Pescador Beach

			SSM Exceedances					SSM Exceedance Percentage				
TMDL Year	Season	No. of Samples	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	27	0	0	0	0	0	0%	0%	0%	0%	0%
2005	Wet	10	1	0	3	0	3	10%	0%	30%	0%	30%
2005	Winter Dry	16	1	0	1	0	1	6%	0%	6%	0%	6%
2006	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2006	Wet	9	0	0	0	0	0	0%	0%	0%	0%	0%
2006	Winter Dry	14	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Wet	7	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Winter Dry	16	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Summer Dry	31	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Wet	5	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Wet	8	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Summer Dry	26	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Wet	11	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2011	Summer Dry	18	0	0	0	0	0	0%	0%	0%	0%	0%
2011	Wet	12	0	0	2	0	2	0%	0%	17%	0%	17%
2011	Winter Dry	11	0	0	0	0	0	0%	0%	0%	0%	0%
Total	Summer Dry	189	0	0	0	0	0	0%	0%	0%	0%	0%
	Wet	62	1	0	5	0	5	2%	0%	8%	0%	8%
	Winter Dry	102	1	0	1	0	1	1%	0%	1%	0%	1%
90th Percentile	**Summer Dry**		0	0	0	0	0	0%	0%	0%	0%	0%
	Wet		0	0	2	0	2	4%	0%	22%	0%	22%
	Winter Dry		0	0	0	0	0	3%	0%	3%	0%	3%

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	0%	30%	6%
2006	0%	0%	0%
2007	0%	0%	0%
2008	0%	0%	0%
2009	0%	0%	0%
2010	0%	0%	0%
2011	0%	17%	0%
Total	0%	8%	1%



		6 Week Rolling GM Exceedances[1]				6 Week Rolling GM[1] Exceedance Rate (%)				Monthly GM Exceedances[2]				3-Month GM Exceedances[3]				Malibu Hybrid GM Proposal, Exceedances[4]			
TMDL Year	Calculation days	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total
2005	47	1	0	2	2	2%	0%	4%	4%	1	0	1	1	0	0	0	0	0	0	0	0
2006	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2007	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2008	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2009	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2010	53	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2011	42	0	0	5	5	0%	0%	12%	12%	0	0	1	1	0	0	0	0	0	0	0	0
Total	**350**	**1**	**0**	**7**	**7**	**0%**	**0%**	**2%**	**2%**	**1**	**0**	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
90th Percentile		**0**	**0**	**3**	**3**	**1%**	**0%**	**7%**	**7%**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

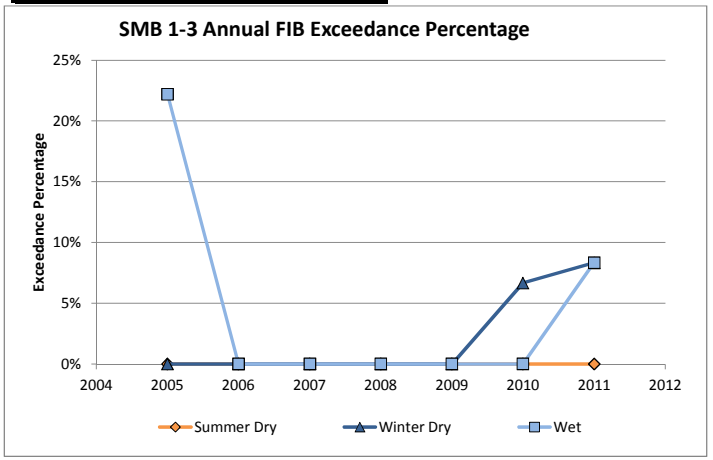
1. 6 Week Rolling GM Exceedances - Geometric mean calculation performed every week, on the samples within the previous 6 week period, if 5 or more samples have been taken in the 6 week period. For example, a total of 52 means that 52 of 52 weeks exceeded.
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded.
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded.
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded.

Encinal Canyon (SMB 1-3) – El Matador Beach

			SSM Exceedances					SSM Exceedance Percentage				
TMDL Year	Season	No. of Samples	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	27	0	0	0	0	0	0%	0%	0%	0%	0%
2005	Wet	9	1	0	2	0	2	11%	0%	22%	0%	22%
2005	Winter Dry	16	0	0	0	0	0	0%	0%	0%	0%	0%
2006	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2006	Wet	9	0	0	0	0	0	0%	0%	0%	0%	0%
2006	Winter Dry	14	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Wet	7	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Winter Dry	16	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Summer Dry	31	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Wet	6	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Wet	8	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Summer Dry	26	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Wet	11	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Winter Dry	15	0	0	1	0	1	0%	0%	7%	0%	7%
2011	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2011	Wet	12	0	0	1	0	1	0%	0%	8%	0%	8%
2011	Winter Dry	12	0	1	0	0	1	0%	8%	0%	0%	8%
Total	Summer Dry	200	0	0	0	0	0	0%	0%	0%	0%	0%
	Wet	62	1	0	3	0	3	2%	0%	5%	0%	5%
	Winter Dry	103	0	1	1	0	2	0%	1%	1%	0%	2%
90th Percentile	**Summer Dry**		**0**	**0**	**0**	**0**	**0**	**0%**	**0%**	**0%**	**0%**	**0%**
	Wet		**0**	**0**	**1**	**0**	**1**	**4%**	**0%**	**14%**	**0%**	**14%**
	Winter Dry		**0**	**0**	**0**	**0**	**1**	**0%**	**3%**	**3%**	**0%**	**7%**

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	0%	22%	0%
2006	0%	0%	0%
2007	0%	0%	0%
2008	0%	0%	0%
2009	0%	0%	0%
2010	0%	0%	7%
2011	0%	8%	8%
Total	0%	5%	2%



	6 Week Rolling GM Exceedances[1]					6 Week Rolling GM[1] Exceedance Rate (%)				Monthly GM Exceedances[2]				3-Month GM Exceedances[3]				Malibu Hybrid GM Proposal, Exceedances[4]			
TMDL Year	Calculation days	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total
2005	47	0	0	4	4	0%	0%	9%	9%	0	0	0	0	0	0	0	0	0	0	0	0
2006	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2007	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2008	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2009	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2010	53	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2011	52	0	0	1	1	0%	0%	2%	2%	0	0	1	1	0	0	0	0	0	0	0	0
Total	**360**	**0**	**0**	**5**	**5**	**0%**	**0%**	**1%**	**1%**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
90th Percentile		**0**	**0**	**2**	**2**	**0%**	**0%**	**5%**	**5%**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

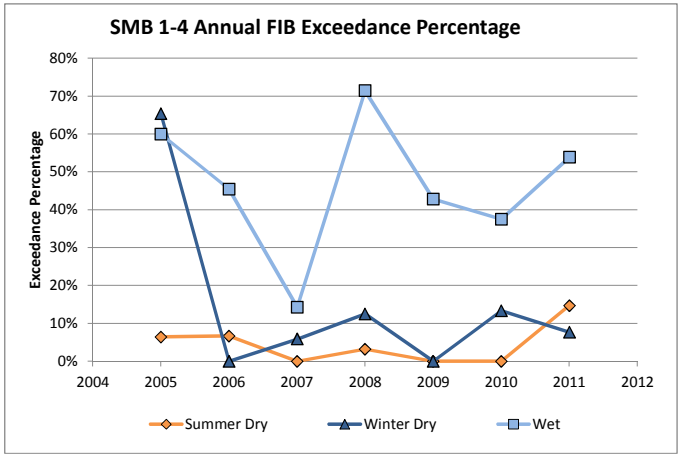
1. 6 Week Rolling GM Exceedances - Geometric mean calculation performed every week, on the samples within the previous 6 week period, if 5 or more samples have been taken in the 6 week period. For example, a total of 52 means that 52 of 52 weeks exceeded.
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded.
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded.
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded.

Trancas Creek (SMB 1-4) – West Zuma Beach

TMDL Year	Season	No. of Samples	SSM Exceedances: Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	SSM Exceedance Percentage: Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	31	0	1	2	1	2	0%	3%	6%	3%	6%
2005	Wet	5	1	0	3	0	3	20%	0%	60%	0%	60%
2005	Winter Dry	26	3	1	16	1	17	12%	4%	62%	4%	65%
2006	Summer Dry	30	0	0	2	1	2	0%	0%	7%	3%	7%
2006	Wet	11	0	0	5	1	5	0%	0%	45%	9%	45%
2006	Winter Dry	13	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Summer Dry	28	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Wet	7	0	0	1	0	1	0%	0%	14%	0%	14%
2007	Winter Dry	17	1	0	0	0	1	6%	0%	0%	0%	6%
2008	Summer Dry	31	0	0	1	0	1	0%	0%	3%	0%	3%
2008	Wet	7	3	1	4	1	5	43%	14%	57%	14%	71%
2008	Winter Dry	16	2	1	0	0	2	13%	6%	0%	0%	13%
2009	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Wet	7	1	1	3	0	3	14%	14%	43%	0%	43%
2009	Winter Dry	16	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Summer Dry	28	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Wet	8	1	0	3	1	3	13%	0%	38%	13%	38%
2010	Winter Dry	15	1	0	2	0	2	7%	0%	13%	0%	13%
2011	Summer Dry	34	4	1	3	0	5	12%	3%	9%	0%	15%
2011	Wet	13	2	2	7	0	7	15%	15%	54%	0%	54%
2011	Winter Dry	13	0	0	1	0	1	0%	0%	8%	0%	8%
Total	Summer Dry	211	4	2	8	2	10	2%	1%	4%	1%	5%
	Wet	58	8	4	26	3	27	14%	7%	45%	5%	47%
	Winter Dry	116	7	2	19	1	23	6%	2%	16%	1%	20%
90th Percentile	**Summer Dry**		**1**	**1**	**2**	**1**	**3**	**5%**	**3%**	**8%**	**3%**	**10%**
	Wet		**2**	**1**	**5**	**1**	**5**	**29%**	**15%**	**58%**	**13%**	**65%**
	Winter Dry		**2**	**1**	**7**	**0**	**8**	**12%**	**5%**	**33%**	**2%**	**34%**

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	6%	60%	65%
2006	7%	45%	0%
2007	0%	14%	6%
2008	3%	71%	13%
2009	0%	43%	0%
2010	0%	38%	13%
2011	15%	54%	8%
Total	5%	47%	20%



TMDL Year	Season	6 Week Rolling GM Exceedances[1]: Calculation days	Total Coliform	Fecal Coliform	Entero	Total	6 Week Rolling GM[1] Exceedance Rate (%): Total Coliform	Fecal Coliform	Entero	Total	Monthly GM Exceedances[2]: Total Coliform	Fecal Coliform	Entero	Total	3-Month GM Exceedances[3]: Total Coliform	Fecal Coliform	Entero	Total	Malibu Hybrid GM Proposal, Exceedances[4]: Total Coliform	Fecal Coliform	Entero	Total
2005		44	13	0	18	18	30%	0%	41%	41%	3	0	6	6	1	0	1	1	1	0	3	3
2006		52	0	0	6	6	0%	0%	12%	12%	0	0	1	1	0	0	0	0	0	0	1	1
2007		52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2008		52	1	0	7	7	2%	0%	13%	13%	0	0	2	2	0	0	1	1	0	0	1	1
2009		52	0	0	5	5	0%	0%	10%	10%	0	0	1	1	0	0	0	0	0	0	0	0
2010		48	2	0	6	6	4%	0%	13%	13%	1	0	2	2	0	0	1	1	0	0	2	2
2011		52	11	0	21	23	21%	0%	40%	44%	2	0	5	5	0	0	1	1	1	0	2	2
Total		**352**	**27**	**0**	**63**	**65**	**8%**	**0%**	**18%**	**18%**	**6**	**0**	**17**	**17**	**1**	**0**	**4**	**4**	**2**	**0**	**9**	**9**
90th Percentile			**11**	**0**	**19**	**20**	**25%**	**0%**	**41%**	**42%**	**2**	**0**	**5**	**5**	**0**	**0**	**1**	**1**	**1**	**0**	**2**	**2**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

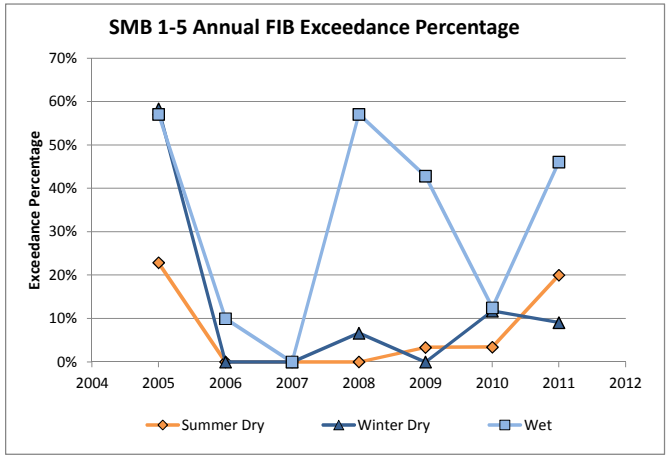
1. 6 Week Rolling GM Exceedances - Geometric mean calculation performed every week, on the samples within the previous 6 week period, if 5 or more samples have been taken in the 6 week period. For example, a total of 52 means that 52 of 52 weeks exceeded.
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded.
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded.
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded.

Zuma Creek (SMB 1-5) – East Zuma Beach

			SSM Exceedances					SSM Exceedance Percentage				
TMDL Year	Season	No. of Samples	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	35	1	2	7	5	8	3%	6%	20%	14%	23%
2005	Wet	7	1	0	4	1	4	14%	0%	57%	14%	57%
2005	Winter Dry	24	1	4	12	6	14	4%	17%	50%	25%	58%
2006	Summer Dry	28	0	0	0	0	0	0%	0%	0%	0%	0%
2006	Wet	10	0	0	1	0	1	0%	0%	10%	0%	10%
2006	Winter Dry	13	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Summer Dry	28	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Wet	8	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Winter Dry	16	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Summer Dry	30	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Wet	7	2	2	4	0	4	29%	29%	57%	0%	57%
2008	Winter Dry	15	0	0	1	0	1	0%	0%	7%	0%	7%
2009	Summer Dry	30	0	0	1	0	1	0%	0%	3%	0%	3%
2009	Wet	7	1	1	3	0	3	14%	14%	43%	0%	43%
2009	Winter Dry	16	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Summer Dry	29	0	0	1	0	1	0%	0%	3%	0%	3%
2010	Wet	8	0	1	0	0	1	0%	13%	0%	0%	13%
2010	Winter Dry	17	0	0	2	0	2	0%	0%	12%	0%	12%
2011	Summer Dry	35	2	2	7	3	7	6%	6%	20%	9%	20%
2011	Wet	13	2	2	6	1	6	15%	15%	46%	8%	46%
2011	Winter Dry	11	0	0	1	0	1	0%	0%	9%	0%	9%
Total	Summer Dry	215	3	4	16	8	17	1%	2%	7%	4%	8%
	Wet	60	6	6	18	2	19	10%	10%	30%	3%	32%
	Winter Dry	112	1	4	16	6	18	1%	4%	14%	5%	16%
90th Percentile	**Summer Dry**		**1**	**2**	**7**	**3**	**7**	**4%**	**6%**	**20%**	**11%**	**21%**
	Wet		**2**	**2**	**4**	**1**	**4**	**21%**	**21%**	**57%**	**10%**	**57%**
	Winter Dry		**0**	**1**	**6**	**2**	**6**	**2%**	**7%**	**27%**	**10%**	**30%**

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	23%	57%	58%
2006	0%	10%	0%
2007	0%	0%	0%
2008	0%	57%	7%
2009	3%	43%	0%
2010	3%	13%	12%
2011	20%	46%	9%
Total	8%	32%	16%



	6 Week Rolling GM Exceedances[1]					6 Week Rolling GM[1] Exceedance Rate (%)				Monthly GM Exceedances[2]				3-Month GM Exceedances[3]				Malibu Hybrid GM Proposal, Exceedances[4]			
TMDL Year	Calculation days	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total
2005	43	11	0	26	26	26%	0%	60%	60%	3	1	7	7	1	0	2	2	1	0	4	4
2006	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2007	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2008	52	0	0	7	7	0%	0%	13%	13%	0	0	2	2	0	0	1	1	0	0	1	1
2009	52	0	0	6	6	0%	0%	12%	12%	0	0	1	1	0	0	0	0	0	0	0	0
2010	53	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2011	52	1	0	23	23	2%	0%	44%	44%	0	0	4	4	0	0	3	3	0	0	4	4
Total	**356**	**12**	**0**	**62**	**62**	**3%**	**0%**	**17%**	**17%**	**3**	**1**	**14**	**14**	**1**	**0**	**6**	**6**	**1**	**0**	**9**	**9**
90th Percentile		**5**	**0**	**24**	**24**	**11%**	**0%**	**51%**	**51%**	**1**	**0**	**5**	**5**	**0**	**0**	**2**	**2**	**0**	**0**	**4**	**4**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

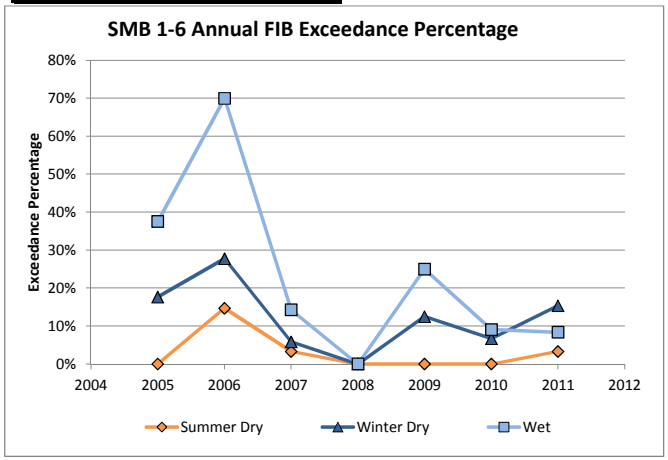
1. 6 Week Rolling GM Exceedances - Geometric mean calculation performed every week, on the samples within the previous 6 week period, if 5 or more samples have been taken in the 6 week period. For example, a total of 52 means that 52 of 52 weeks exceeded.
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded.
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded.
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded.

Ramirez Canyon (SMB 1-6) – Walnut Creek

TMDL Year	Season	No. of Samples	SSM Exceedances: Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	SSM Exceedance Percentage: Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	25	0	0	0	0	0	0%	0%	0%	0%	0%
2005	Wet	8	1	1	3	2	3	13%	13%	38%	25%	38%
2005	Winter Dry	17	1	1	2	1	3	6%	6%	12%	6%	18%
2006	Summer Dry	34	1	2	5	3	5	3%	6%	15%	9%	15%
2006	Wet	10	3	5	6	2	7	30%	50%	60%	20%	70%
2006	Winter Dry	18	2	4	4	2	5	11%	22%	22%	11%	28%
2007	Summer Dry	30	0	0	1	0	1	0%	0%	3%	0%	3%
2007	Wet	7	0	0	1	0	1	0%	0%	14%	0%	14%
2007	Winter Dry	17	0	0	1	0	1	0%	0%	6%	0%	6%
2008	Summer Dry	31	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Wet	6	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Wet	8	0	1	2	2	2	0%	13%	25%	25%	25%
2009	Winter Dry	16	0	1	2	1	2	0%	6%	13%	6%	13%
2010	Summer Dry	26	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Wet	11	0	0	1	1	1	0%	0%	9%	9%	9%
2010	Winter Dry	15	0	0	1	0	1	0%	0%	7%	0%	7%
2011	Summer Dry	30	0	1	1	0	1	0%	3%	3%	0%	3%
2011	Wet	12	0	1	1	0	1	0%	8%	8%	0%	8%
2011	Winter Dry	13	0	0	2	0	2	0%	0%	15%	0%	15%
Total	Summer Dry	205	1	3	7	3	7	0%	1%	3%	1%	3%
	Wet	62	4	8	14	7	15	6%	13%	23%	11%	24%
	Winter Dry	111	3	6	12	4	14	3%	5%	11%	4%	13%
90th Percentile	**Summer Dry**		**0**	**1**	**2**	**1**	**2**	**1%**	**4%**	**8%**	**4%**	**8%**
	Wet		**1**	**2**	**4**	**2**	**4**	**20%**	**28%**	**47%**	**25%**	**51%**
	Winter Dry		**1**	**2**	**2**	**1**	**3**	**8%**	**13%**	**18%**	**8%**	**22%**

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	0%	38%	18%
2006	15%	70%	28%
2007	3%	14%	6%
2008	0%	0%	0%
2009	0%	25%	13%
2010	0%	9%	7%
2011	3%	8%	15%
Total	3%	24%	13%



TMDL Year	6 Week Rolling GM Exceedances[1]: Calculation days	Total Coliform	Fecal Coliform	Entero	Total	6 Week Rolling GM[1] Exceedance Rate (%): Total Coliform	Fecal Coliform	Entero	Total	Monthly GM Exceedances[2]: Total Coliform	Fecal Coliform	Entero	Total	3-Month GM Exceedances[3]: Total Coliform	Fecal Coliform	Entero	Total	Malibu Hybrid GM Proposal, Exceedances[4]: Total Coliform	Fecal Coliform	Entero	Total
2005	41	10	0	11	13	24%	0%	27%	32%	2	0	4	4	1	0	1	1	0	0	1	1
2006	52	11	11	22	22	21%	21%	42%	42%	2	3	5	5	0	0	3	3	2	1	3	3
2007	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2008	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2009	52	0	0	1	1	0%	0%	2%	2%	0	0	2	2	0	0	0	0	0	0	0	0
2010	53	0	0	6	6	0%	0%	11%	11%	0	0	1	1	0	0	0	0	0	0	0	0
2011	52	0	0	2	2	0%	0%	4%	4%	0	0	0	0	0	0	0	0	0	0	0	0
Total	**354**	**21**	**11**	**42**	**44**	**6%**	**3%**	**12%**	**12%**	**4**	**3**	**12**	**12**	**1**	**0**	**4**	**4**	**2**	**1**	**4**	**4**
90th Percentile		**10**	**4**	**15**	**16**	**22%**	**8%**	**33%**	**36%**	**2**	**1**	**4**	**4**	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**1**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

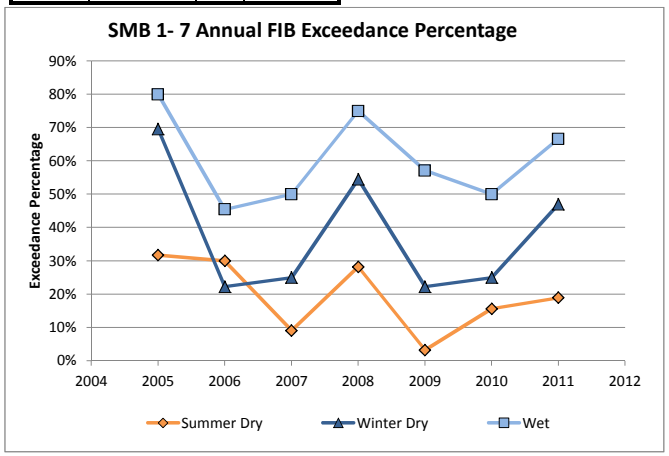
1. 6 Week Rolling GM Exceedances - Geometric mean calculation performed every week, on the samples within the previous 6 week period, if 5 or more samples have been taken in the 6 week period. For example, a total of 52 means that 52 of 52 weeks ex
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded.
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded.
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded.

Ramirez Creek (SMB 1-7) – Paradise Cove Beach

			SSM Exceedances					SSM Exceedance Percentage				
TMDL Year	Season	No. of Samples	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	41	1	2	12	3	13	2%	5%	29%	7%	32%
2005	Wet	10	3	4	7	3	8	30%	40%	70%	30%	80%
2005	Winter Dry	23	1	3	16	8	16	4%	13%	70%	35%	70%
2006	Summer Dry	40	0	1	12	2	12	0%	3%	30%	5%	30%
2006	Wet	11	1	1	5	2	5	9%	9%	45%	18%	45%
2006	Winter Dry	18	0	1	3	2	4	0%	6%	17%	11%	22%
2007	Summer Dry	33	1	1	3	1	3	3%	3%	9%	3%	9%
2007	Wet	8	2	1	4	1	4	25%	13%	50%	13%	50%
2007	Winter Dry	20	0	2	4	1	5	0%	10%	20%	5%	25%
2008	Summer Dry	39	0	3	10	3	11	0%	8%	26%	8%	28%
2008	Wet	8	3	0	6	0	6	38%	0%	75%	0%	75%
2008	Winter Dry	22	2	2	12	3	12	9%	9%	55%	14%	55%
2009	Summer Dry	31	0	0	1	0	1	0%	0%	3%	0%	3%
2009	Wet	7	3	1	4	0	4	43%	14%	57%	0%	57%
2009	Winter Dry	18	0	0	4	1	4	0%	0%	22%	6%	22%
2010	Summer Dry	32	1	1	4	1	5	3%	3%	13%	3%	16%
2010	Wet	8	1	1	3	2	4	13%	13%	38%	25%	50%
2010	Winter Dry	20	0	2	5	1	5	0%	10%	25%	5%	25%
2011	Summer Dry	37	1	4	7	3	7	3%	11%	19%	8%	19%
2011	Wet	12	1	1	8	0	8	8%	8%	67%	0%	67%
2011	Winter Dry	17	1	1	7	3	8	6%	6%	41%	18%	47%
Total	Summer Dry	253	4	12	49	13	52	2%	5%	19%	5%	21%
	Wet	64	14	9	37	8	39	22%	14%	58%	13%	61%
	Winter Dry	138	4	11	51	19	54	3%	8%	37%	14%	39%
90th Percentile	**Summer Dry**		**1**	**3**	**12**	**3**	**12**	**3%**	**9%**	**30%**	**8%**	**31%**
	Wet		**3**	**2**	**7**	**2**	**8**	**40%**	**25%**	**72%**	**27%**	**77%**
	Winter Dry		**1**	**2**	**13**	**5**	**13**	**7%**	**11%**	**61%**	**25%**	**61%**

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	32%	80%	70%
2006	30%	45%	22%
2007	9%	50%	25%
2008	28%	75%	55%
2009	3%	57%	22%
2010	16%	50%	25%
2011	19%	67%	47%
Total	21%	61%	39%



		6 Week Rolling GM Exceedances[1]				6 Week Rolling GM[1] Exceedance Rate (%)				Monthly GM Exceedances[2]				3-Month GM Exceedances[3]				Malibu Hybrid GM Proposal, Exceedances[4]			
TMDL Year	Calculation days	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total
2005	43	17	4	31	31	40%	9%	72%	72%	6	2	8	9	1	0	3	3	3	0	5	6
2006	52	6	0	35	35	12%	0%	67%	67%	2	0	9	9	1	0	4	4	2	0	7	7
2007	52	3	0	12	12	6%	0%	23%	23%	1	0	5	5	0	0	1	1	0	0	3	3
2008	52	11	0	29	29	21%	0%	56%	56%	3	0	7	7	1	0	2	2	2	0	5	5
2009	52	0	0	19	19	0%	0%	37%	37%	1	0	5	5	0	0	1	1	0	0	4	4
2010	53	4	0	34	34	8%	0%	64%	64%	1	0	6	6	0	0	3	3	1	0	5	5
2011	52	2	0	28	28	4%	0%	54%	54%	1	0	7	7	0	0	2	2	0	0	4	4
Total	**356**	**43**	**4**	**188**	**188**	**12%**	**1%**	**53%**	**53%**	**15**	**2**	**47**	**48**	**3**	**0**	**16**	**16**	**8**	**0**	**33**	**34**
90th Percentile		**13**	**1**	**34**	**34**	**29%**	**4%**	**69%**	**69%**	**4**	**0**	**8**	**9**	**1**	**0**	**3**	**3**	**2**	**0**	**5**	**6**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
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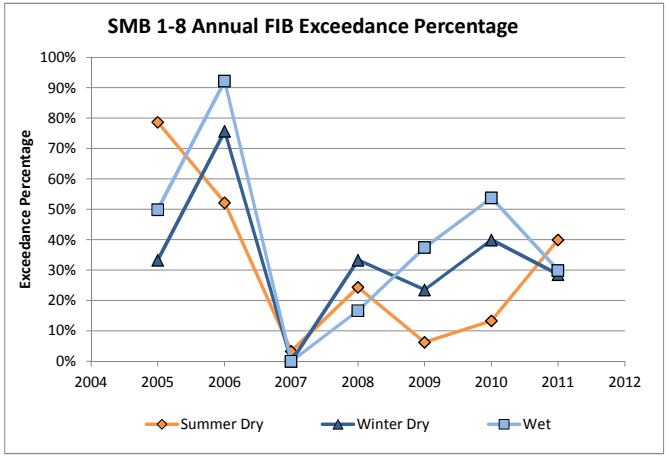
Escondido Creek (SMB 1-8)

			SSM Exceedances					SSM Exceedance Percentage				
TMDL Year	Season	No. of Samples	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	61	15	32	41	35	48	25%	52%	67%	57%	79%
2005	Wet	12	4	4	5	5	6	33%	33%	42%	42%	50%
2005	Winter Dry	21	2	3	3	3	7	10%	14%	14%	14%	33%
2006	Summer Dry	46	2	17	24	17	24	4%	37%	52%	37%	52%
2006	Wet	13	4	11	11	9	12	31%	85%	85%	69%	92%
2006	Winter Dry	33	4	19	20	23	25	12%	58%	61%	70%	76%
2007	Summer Dry	30	0	0	1	0	1	0%	0%	3%	0%	3%
2007	Wet	7	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Winter Dry	16	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Summer Dry	41	2	3	10	3	10	5%	7%	24%	7%	24%
2008	Wet	6	0	0	1	0	1	0%	0%	17%	0%	17%
2008	Winter Dry	21	1	3	7	2	7	5%	14%	33%	10%	33%
2009	Summer Dry	32	0	0	2	0	2	0%	0%	6%	0%	6%
2009	Wet	8	1	0	2	1	3	13%	0%	25%	13%	38%
2009	Winter Dry	17	0	2	4	3	4	0%	12%	24%	18%	24%
2010	Summer Dry	30	0	1	4	2	4	0%	3%	13%	7%	13%
2010	Wet	13	1	3	4	5	7	8%	23%	31%	38%	54%
2010	Winter Dry	20	3	3	7	3	8	15%	15%	35%	15%	40%
2011	Summer Dry	40	2	11	16	12	16	5%	28%	40%	30%	40%
2011	Wet	10	1	1	3	1	3	10%	10%	30%	10%	30%
2011	Winter Dry	14	0	2	4	3	4	0%	14%	29%	21%	29%
Total	Summer Dry	280	21	64	98	69	105	8%	23%	35%	25%	38%
	Wet	69	11	19	26	21	32	16%	28%	38%	30%	46%
	Winter Dry	142	10	32	45	37	55	7%	23%	32%	26%	39%
90th Percentile	**Summer Dry**		**7**	**23**	**30**	**24**	**33**	**13%**	**43%**	**58%**	**45%**	**63%**
	Wet		**4**	**6**	**7**	**6**	**9**	**32%**	**54%**	**59%**	**53%**	**69%**
	Winter Dry		**3**	**9**	**12**	**11**	**14**	**13%**	**32%**	**45%**	**41%**	**54%**

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	79%	50%	33%
2006	52%	92%	76%
2007	3%	0%	0%
2008	24%	17%	33%
2009	6%	38%	24%
2010	13%	54%	40%
2011	40%	30%	29%
Total	38%	46%	39%



	6 Week Rolling GM Exceedances[1]					6 Week Rolling GM[1] Exceedance Rate (%)				Monthly GM Exceedances[2]				3-Month GM Exceedances[3]				Malibu Hybrid GM Proposal, Exceedances[4]			
TMDL Year	Calculation days	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total
2005	47	32	26	36	36	68%	55%	77%	77%	8	8	9	9	3	2	3	3	6	6	7	7
2006	52	34	36	37	37	65%	69%	71%	71%	7	7	8	8	3	3	3	3	5	5	5	5
2007	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2008	52	10	0	21	21	19%	0%	40%	40%	2	1	4	4	0	0	2	2	2	0	3	3
2009	52	0	0	10	10	0%	0%	19%	19%	0	1	2	2	0	0	1	1	0	0	1	1
2010	53	7	6	18	18	13%	11%	34%	34%	1	2	4	4	1	0	1	1	1	2	2	2
2011	52	19	13	28	28	37%	25%	54%	54%	5	2	7	7	2	1	2	2	4	2	4	4
Total	**360**	**102**	**81**	**150**	**150**	**28%**	**23%**	**42%**	**42%**	**23**	**21**	**34**	**34**	**9**	**6**	**12**	**12**	**18**	**15**	**22**	**22**
90th Percentile		**32**	**30**	**36**	**36**	**66%**	**61%**	**73%**	**73%**	**7**	**7**	**8**	**8**	**3**	**2**	**3**	**3**	**5**	**5**	**5**	**5**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

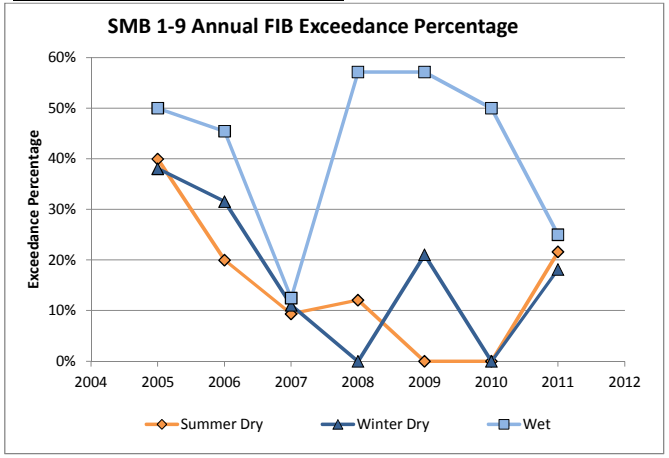
1. 6 Week Rolling GM Exceedances - Geometric mean calculation performed every week, on the samples within the previous 6 week period, if 5 or more samples have been taken in the 6 week period. For example, a total of 52 means that 52 of 52 weeks exceeded.
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded.
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded.
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded.

Latigo Creek (SMB 1-9)

TMDL Year	Season	No. of Samples	SSM Exceedances: Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	SSM Exceedance Percentage: Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	40	0	3	14	6	16	0%	8%	35%	15%	40%
2005	Wet	8	1	1	4	0	4	13%	13%	50%	0%	50%
2005	Winter Dry	21	0	0	8	1	8	0%	0%	38%	5%	38%
2006	Summer Dry	35	1	0	6	0	7	3%	0%	17%	0%	20%
2006	Wet	11	1	1	5	2	5	9%	9%	45%	18%	45%
2006	Winter Dry	19	0	1	5	2	6	0%	5%	26%	11%	32%
2007	Summer Dry	32	1	1	3	1	3	3%	3%	9%	3%	9%
2007	Wet	8	0	0	1	0	1	0%	0%	13%	0%	13%
2007	Winter Dry	18	0	0	2	0	2	0%	0%	11%	0%	11%
2008	Summer Dry	33	0	1	4	2	4	0%	3%	12%	6%	12%
2008	Wet	7	1	0	4	0	4	14%	0%	57%	0%	57%
2008	Winter Dry	14	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Wet	7	0	1	4	1	4	0%	14%	57%	14%	57%
2009	Winter Dry	19	0	2	3	1	4	0%	11%	16%	5%	21%
2010	Summer Dry	28	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Wet	8	1	0	3	2	4	13%	0%	38%	25%	50%
2010	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2011	Summer Dry	37	4	2	6	1	8	11%	5%	16%	3%	22%
2011	Wet	12	1	0	3	0	3	8%	0%	25%	0%	25%
2011	Winter Dry	11	0	0	1	2	2	0%	0%	9%	18%	18%
Total	Summer Dry	234	6	7	33	10	38	3%	3%	14%	4%	16%
	Wet	61	5	3	24	5	25	8%	5%	39%	8%	41%
	Winter Dry	117	0	3	19	6	22	0%	3%	16%	5%	19%
90th Percentile	**Summer Dry**		**2**	**2**	**9**	**3**	**11**	**6%**	**6%**	**24%**	**10%**	**29%**
	Wet		**1**	**1**	**4**	**2**	**4**	**13%**	**13%**	**57%**	**21%**	**57%**
	Winter Dry		**0**	**1**	**6**	**2**	**6**	**0%**	**7%**	**31%**	**14%**	**34%**

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	40%	50%	38%
2006	20%	45%	32%
2007	9%	13%	11%
2008	12%	57%	0%
2009	0%	57%	21%
2010	0%	50%	0%
2011	22%	25%	18%
Total	16%	41%	19%



TMDL Year	Season	6 Week Rolling GM Exceedances[1]: Calculation days	Total Coliform	Fecal Coliform	Entero	Total	6 Week Rolling GM[1] Exceedance Rate (%): Total Coliform	Fecal Coliform	Entero	Total	Monthly GM Exceedances[2]: Total Coliform	Fecal Coliform	Entero	Total	3-Month GM Exceedances[3]: Total Coliform	Fecal Coliform	Entero	Total	Malibu Hybrid GM Proposal, Exceedances[4]: Total Coliform	Fecal Coliform	Entero	Total
2005		41	13	0	32	32	32%	0%	78%	78%	3	0	8	8	1	0	3	3	2	0	6	6
2006		52	2	0	24	24	4%	0%	46%	46%	0	0	5	5	0	0	2	2	0	0	4	4
2007		52	0	0	5	5	0%	0%	10%	10%	0	0	2	2	0	0	0	0	0	0	1	1
2008		52	9	0	18	20	17%	0%	35%	38%	2	0	2	3	1	0	2	2	1	0	2	2
2009		52	2	0	11	11	4%	0%	21%	21%	1	0	3	3	0	0	1	1	0	0	1	1
2010		53	2	0	9	10	4%	0%	17%	19%	1	0	3	3	0	0	1	1	0	0	3	3
2011		52	13	0	19	21	25%	0%	37%	40%	3	0	4	5	1	0	2	3	2	0	3	4
Total		**354**	**41**	**0**	**118**	**123**	**12%**	**0%**	**33%**	**35%**	**10**	**0**	**27**	**29**	**3**	**0**	**11**	**12**	**5**	**0**	**20**	**21**
90th Percentile			**13**	**0**	**27**	**27**	**28%**	**0%**	**59%**	**59%**	**3**	**0**	**6**	**6**	**1**	**0**	**2**	**3**	**2**	**0**	**4**	**4**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

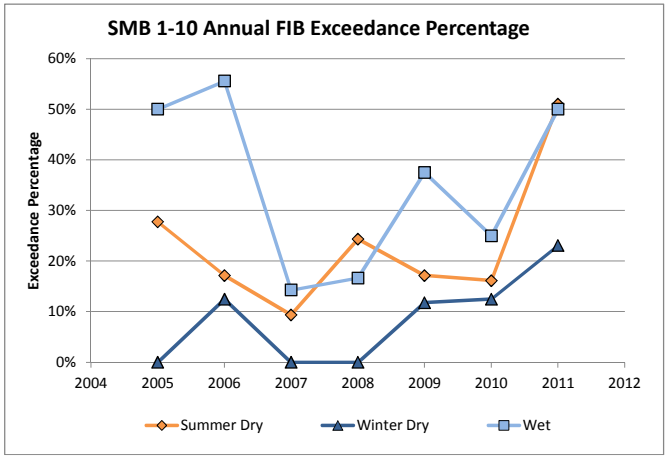
1. 6 Week Rolling GM Exceedances - Geometric mean calculation performed every week, on the samples within the previous 6 week period, if 5 or more samples have been taken in the 6 week period. For example, a total of 52 means that 52 of 52 weeks exceeded.
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded.
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded.
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded.

Solstice Creek (SMB 1-10)

TMDL Year	Season	No. of Samples	SSM Exceedances					SSM Exceedance Percentage				
			Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	36	2	0	6	3	10	6%	0%	17%	8%	28%
2005	Wet	10	4	1	4	0	5	40%	10%	40%	0%	50%
2005	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2006	Summer Dry	35	0	1	6	2	6	0%	3%	17%	6%	17%
2006	Wet	9	1	1	4	2	5	11%	11%	44%	22%	56%
2006	Winter Dry	16	0	2	1	2	2	0%	13%	6%	13%	13%
2007	Summer Dry	32	0	0	2	1	3	0%	0%	6%	3%	9%
2007	Wet	7	0	0	1	0	1	0%	0%	14%	0%	14%
2007	Winter Dry	16	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Summer Dry	41	1	3	10	3	10	2%	7%	24%	7%	24%
2008	Wet	6	1	0	1	0	1	17%	0%	17%	0%	17%
2008	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Summer Dry	35	0	1	3	4	6	0%	3%	9%	11%	17%
2009	Wet	8	1	1	3	0	3	13%	13%	38%	0%	38%
2009	Winter Dry	17	0	2	2	2	2	0%	12%	12%	12%	12%
2010	Summer Dry	31	1	0	5	0	5	3%	0%	16%	0%	16%
2010	Wet	12	1	0	2	1	3	8%	0%	17%	8%	25%
2010	Winter Dry	16	0	0	2	1	2	0%	0%	13%	6%	13%
2011	Summer Dry	49	2	9	23	7	25	4%	18%	47%	14%	51%
2011	Wet	12	1	1	6	2	6	8%	8%	50%	17%	50%
2011	Winter Dry	13	1	3	2	3	3	8%	23%	15%	23%	23%
Total	Summer Dry	259	6	14	55	20	65	2%	5%	21%	8%	25%
	Wet	64	9	4	21	5	24	14%	6%	33%	8%	38%
	Winter Dry	108	1	7	7	8	9	1%	6%	6%	7%	8%
90th Percentile	**Summer Dry**		**2**	**5**	**15**	**5**	**16**	**5%**	**12%**	**33%**	**13%**	**37%**
	Wet		**2**	**1**	**4**	**2**	**5**	**26%**	**12%**	**47%**	**19%**	**52%**
	Winter Dry		**0**	**2**	**2**	**2**	**2**	**3%**	**17%**	**14%**	**17%**	**17%**

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	28%	50%	0%
2006	17%	56%	13%
2007	9%	14%	0%
2008	24%	17%	0%
2009	17%	38%	12%
2010	16%	25%	13%
2011	51%	50%	23%
Total	25%	38%	8%



TMDL Year	Season	6 Week Rolling GM Exceedances[1]					6 Week Rolling GM[1] Exceedance Rate (%)				Monthly GM Exceedances[2]				3-Month GM Exceedances[3]				Malibu Hybrid GM Proposal, Exceedances[4]			
		Calculation days	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total
2005	Summer Dry	47	27	0	27	31	57%	0%	57%	66%	6	0	7	8	3	0	1	3	4	0	5	6
2006	Summer Dry	52	14	0	22	27	27%	0%	42%	52%	3	0	5	6	0	0	2	2	1	0	4	4
2007	Summer Dry	52	9	0	2	11	17%	0%	4%	21%	2	0	2	4	1	0	0	1	2	0	2	4
2008	Summer Dry	52	10	0	30	32	19%	0%	58%	62%	2	0	8	9	2	0	2	3	2	0	7	8
2009	Summer Dry	52	0	0	18	18	0%	0%	35%	35%	0	0	3	3	0	0	1	1	0	0	2	2
2010	Summer Dry	53	0	0	24	24	0%	0%	45%	45%	1	0	5	5	0	0	2	2	1	0	4	4
2011	Summer Dry	52	20	13	49	49	38%	25%	94%	94%	6	4	12	12	2	1	4	4	5	4	9	9
Total		**360**	**80**	**13**	**172**	**192**	**22%**	**4%**	**48%**	**53%**	**20**	**4**	**42**	**47**	**8**	**1**	**12**	**16**	**15**	**4**	**33**	**37**
90th Percentile			**22**	**5**	**37**	**38**	**46%**	**10%**	**72%**	**77%**	**6**	**1**	**9**	**10**	**2**	**0**	**2**	**3**	**4**	**1**	**7**	**8**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

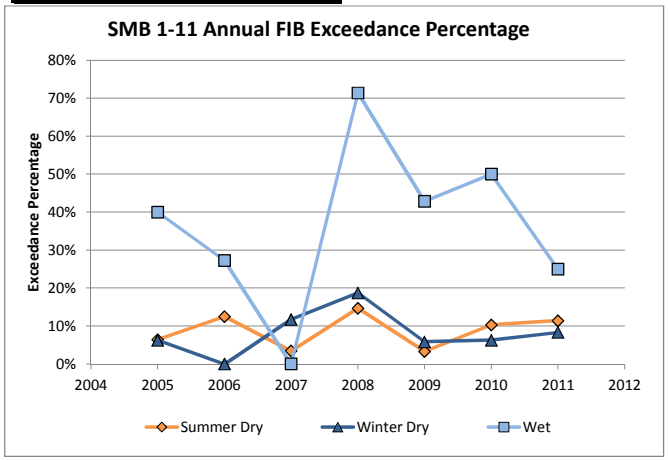
1. 6 Week Rolling GM Exceedances - Geometric mean calculation performed every week, on the samples within the previous 6 week period, if 5 or more samples have been taken in the 6 week period. For example, a total of 52 means that 52 of 52 weeks exceeded.
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded.
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded.
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded.

Corral Creek (SMB 1-11) – Corral Beach

TMDL Year	Season	No. of Samples	SSM Exceedances					SSM Exceedance Percentage				
			Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	31	1	2	2	2	2	3%	6%	6%	6%	6%
2005	Wet	5	0	0	2	0	2	0%	0%	40%	0%	40%
2005	Winter Dry	16	0	0	1	0	1	0%	0%	6%	0%	6%
2006	Summer Dry	32	0	0	3	1	4	0%	0%	9%	3%	13%
2006	Wet	11	1	1	3	1	3	9%	9%	27%	9%	27%
2006	Winter Dry	13	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Summer Dry	29	0	0	1	0	1	0%	0%	3%	0%	3%
2007	Wet	8	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Winter Dry	17	0	0	2	0	2	0%	0%	12%	0%	12%
2008	Summer Dry	34	0	0	5	1	5	0%	0%	15%	3%	15%
2008	Wet	7	2	0	5	0	5	29%	0%	71%	0%	71%
2008	Winter Dry	16	0	0	3	0	3	0%	0%	19%	0%	19%
2009	Summer Dry	30	0	0	1	0	1	0%	0%	3%	0%	3%
2009	Wet	7	2	1	3	0	3	29%	14%	43%	0%	43%
2009	Winter Dry	17	0	0	1	0	1	0%	0%	6%	0%	6%
2010	Summer Dry	29	0	1	3	1	3	0%	3%	10%	3%	10%
2010	Wet	8	2	1	3	0	4	25%	13%	38%	0%	50%
2010	Winter Dry	16	0	0	1	0	1	0%	0%	6%	0%	6%
2011	Summer Dry	35	0	0	3	1	4	0%	0%	9%	3%	11%
2011	Wet	12	1	1	3	0	3	8%	8%	25%	0%	25%
2011	Winter Dry	12	0	1	1	1	1	0%	8%	8%	8%	8%
Total	Summer Dry	220	1	3	18	6	20	0%	1%	8%	3%	9%
	Wet	58	8	4	19	1	20	14%	7%	33%	2%	34%
	Winter Dry	107	0	1	9	1	9	0%	1%	8%	1%	8%
90th Percentile	**Summer Dry**		**0**	**1**	**3**	**1**	**4**	**1%**	**5%**	**12%**	**5%**	**13%**
	Wet		**2**	**1**	**3**	**0**	**4**	**29%**	**13%**	**54%**	**4%**	**59%**
	Winter Dry		**0**	**0**	**2**	**0**	**2**	**0%**	**3%**	**15%**	**3%**	**15%**

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	6%	40%	6%
2006	13%	27%	0%
2007	3%	0%	12%
2008	15%	71%	19%
2009	3%	43%	6%
2010	10%	50%	6%
2011	11%	25%	8%
Total	9%	34%	8%



TMDL Year	Season	6 Week Rolling GM Exceedances[1]					6 Week Rolling GM[1] Exceedance Rate (%)				Monthly GM Exceedances[2]				3-Month GM Exceedances[3]				Malibu Hybrid GM Proposal, Exceedances[4]			
		Calculation days	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total
2005	Summer Dry	40	2	0	11	12	5%	0%	28%	30%	1	0	4	4	0	0	1	1	1	0	3	3
2006	Summer Dry	52	0	0	13	13	0%	0%	25%	25%	0	0	2	2	0	0	1	1	0	0	2	2
2007	Summer Dry	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2008	Summer Dry	52	6	0	17	17	12%	0%	33%	33%	2	0	3	3	1	0	2	2	1	0	2	2
2009	Summer Dry	52	0	0	11	11	0%	0%	21%	21%	0	0	3	3	0	0	0	0	0	0	2	2
2010	Summer Dry	53	2	0	9	11	4%	0%	17%	21%	1	0	4	4	0	0	0	0	1	0	3	3
2011	Summer Dry	52	4	0	24	25	8%	0%	46%	48%	1	0	4	4	0	0	2	2	0	0	3	3
Total		**353**	**14**	**0**	**85**	**89**	**4%**	**0%**	**24%**	**25%**	**5**	**0**	**20**	**20**	**1**	**0**	**6**	**6**	**3**	**0**	**15**	**15**
90th Percentile			**4**	**0**	**19**	**20**	**9%**	**0%**	**38%**	**39%**	**1**	**0**	**4**	**4**	**0**	**0**	**2**	**2**	**1**	**0**	**3**	**3**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

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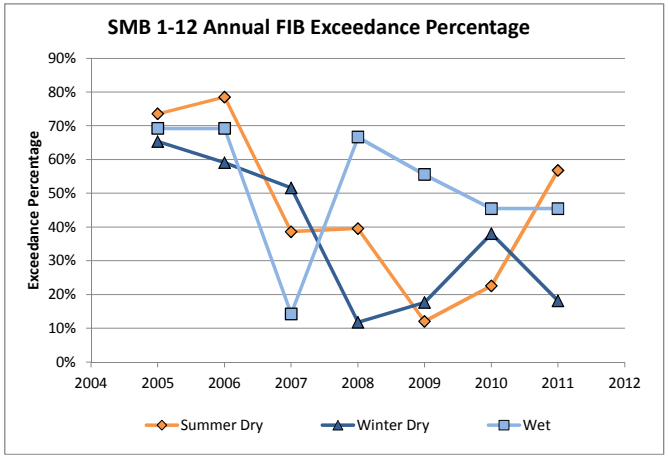
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded.
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded.
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded.

Corral Canyon (SMB 1-12) – Marie Canyon in the Corral Subwatershed at Puerco Beach

			SSM Exceedances					SSM Exceedance Percentage				
TMDL Year	Season	No. of Samples	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	53	14	5	37	3	39	26%	9%	70%	6%	74%
2005	Wet	13	6	3	9	2	9	46%	23%	69%	15%	69%
2005	Winter Dry	26	2	1	16	1	17	8%	4%	62%	4%	65%
2006	Summer Dry	70	22	14	55	7	55	31%	20%	79%	10%	79%
2006	Wet	13	4	4	9	2	9	31%	31%	69%	15%	69%
2006	Winter Dry	22	5	2	12	3	13	23%	9%	55%	14%	59%
2007	Summer Dry	44	5	5	16	5	17	11%	11%	36%	11%	39%
2007	Wet	7	0	0	1	0	1	0%	0%	14%	0%	14%
2007	Winter Dry	31	4	2	16	1	16	13%	6%	52%	3%	52%
2008	Summer Dry	48	4	7	18	6	19	8%	15%	38%	13%	40%
2008	Wet	6	1	2	4	2	4	17%	33%	67%	33%	67%
2008	Winter Dry	17	0	2	2	2	2	0%	12%	12%	12%	12%
2009	Summer Dry	33	1	1	3	1	4	3%	3%	9%	3%	12%
2009	Wet	9	2	4	4	3	5	22%	44%	44%	33%	56%
2009	Winter Dry	17	0	0	3	0	3	0%	0%	18%	0%	18%
2010	Summer Dry	31	2	3	7	1	7	6%	10%	23%	3%	23%
2010	Wet	11	3	3	5	2	5	27%	27%	45%	18%	45%
2010	Winter Dry	21	2	3	7	2	8	10%	14%	33%	10%	38%
2011	Summer Dry	51	9	15	28	7	29	18%	29%	55%	14%	57%
2011	Wet	11	3	1	4	1	5	27%	9%	36%	9%	45%
2011	Winter Dry	11	1	0	2	0	2	9%	0%	18%	0%	18%
Total	Summer Dry	330	57	50	164	30	170	17%	15%	50%	9%	52%
	Wet	70	19	17	36	12	38	27%	24%	51%	17%	54%
	Winter Dry	145	14	10	58	9	61	10%	7%	40%	6%	42%
90th Percentile	**Summer Dry**		**17**	**14**	**44**	**7**	**45**	**28%**	**24%**	**73%**	**13%**	**76%**
	Wet		**4**	**4**	**9**	**2**	**9**	**37%**	**38%**	**69%**	**33%**	**69%**
	Winter Dry		**4**	**2**	**16**	**2**	**16**	**17%**	**13%**	**57%**	**13%**	**62%**

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	74%	69%	65%
2006	79%	69%	59%
2007	39%	14%	52%
2008	40%	67%	12%
2009	12%	56%	18%
2010	23%	45%	38%
2011	57%	45%	18%
Total	52%	54%	42%



	6 Week Rolling GM Exceedances[1]					6 Week Rolling GM[1] Exceedance Rate (%)				Monthly GM Exceedances[2]				3-Month GM Exceedances[3]				Malibu Hybrid GM Proposal, Exceedances[4]			
TMDL Year	Calculation days	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total
2005	47	43	4	47	47	91%	9%	100%	100%	10	1	12	12	3	0	3	3	8	1	9	9
2006	52	45	14	52	52	87%	27%	100%	100%	11	4	12	12	3	0	4	4	8	2	9	9
2007	52	31	0	50	50	60%	0%	96%	96%	4	1	11	11	2	0	4	4	3	1	8	8
2008	52	10	2	43	43	19%	4%	83%	83%	3	1	9	9	0	0	4	4	3	1	7	7
2009	52	1	0	14	15	2%	0%	27%	29%	0	1	5	5	0	0	1	1	0	1	4	4
2010	53	13	4	27	27	25%	8%	51%	51%	5	2	8	8	1	0	2	2	3	1	6	6
2011	52	32	8	42	42	62%	15%	81%	81%	8	3	10	10	2	0	4	4	6	3	8	8
Total	**360**	**175**	**32**	**275**	**276**	**49%**	**9%**	**76%**	**77%**	**41**	**13**	**67**	**67**	**11**	**0**	**22**	**22**	**31**	**10**	**51**	**51**
90th Percentile		**43**	**10**	**50**	**50**	**89%**	**20%**	**100%**	**100%**	**10**	**3**	**12**	**12**	**3**	**0**	**4**	**4**	**8**	**2**	**9**	**9**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

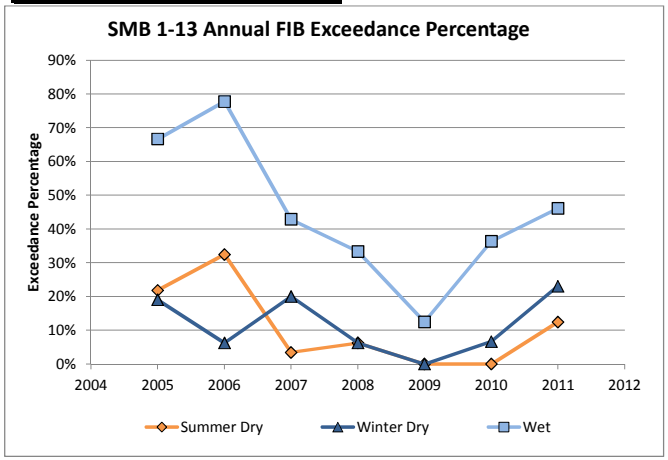
1. 6 Week Rolling GM Exceedances - Geometric mean calculation performed every week, on the samples within the previous 6 week period, if 5 or more samples have been taken in the 6 week period. For example, a total of 52 means that 52 of 52 weeks exceeded.
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded.
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded.
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded.

Sweetwater Canyon (SMB 1-13) – Carbon Beach

			SSM Exceedances					SSM Exceedance Percentage				
TMDL Year	Season	No. of Samples	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	32	0	2	5	2	7	0%	6%	16%	6%	22%
2005	Wet	9	3	1	5	1	6	33%	11%	56%	11%	67%
2005	Winter Dry	21	1	0	2	3	4	5%	0%	10%	14%	19%
2006	Summer Dry	40	2	3	11	2	13	5%	8%	28%	5%	33%
2006	Wet	9	1	3	7	2	7	11%	33%	78%	22%	78%
2006	Winter Dry	16	0	0	1	0	1	0%	0%	6%	0%	6%
2007	Summer Dry	29	0	0	1	0	1	0%	0%	3%	0%	3%
2007	Wet	7	1	1	2	1	3	14%	14%	29%	14%	43%
2007	Winter Dry	15	0	0	3	1	3	0%	0%	20%	7%	20%
2008	Summer Dry	32	0	0	2	0	2	0%	0%	6%	0%	6%
2008	Wet	6	1	0	2	0	2	17%	0%	33%	0%	33%
2008	Winter Dry	16	0	0	1	0	1	0%	0%	6%	0%	6%
2009	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Wet	8	1	1	1	0	1	13%	13%	13%	0%	13%
2009	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Summer Dry	27	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Wet	11	1	0	4	0	4	9%	0%	36%	0%	36%
2010	Winter Dry	15	0	0	1	0	1	0%	0%	7%	0%	7%
2011	Summer Dry	32	0	0	4	0	4	0%	0%	13%	0%	13%
2011	Wet	13	2	3	6	1	6	15%	23%	46%	8%	46%
2011	Winter Dry	13	1	1	3	2	3	8%	8%	23%	15%	23%
Total	Summer Dry	221	2	5	23	4	27	1%	2%	10%	2%	12%
	Wet	63	10	9	27	5	29	16%	14%	43%	8%	46%
	Winter Dry	111	2	1	11	6	13	2%	1%	10%	5%	12%
90th Percentile	**Summer Dry**		**0**	**2**	**7**	**2**	**9**	**2%**	**7%**	**20%**	**6%**	**26%**
	Wet		**2**	**3**	**6**	**1**	**6**	**23%**	**27%**	**64%**	**17%**	**71%**
	Winter Dry		**1**	**0**	**3**	**2**	**3**	**6%**	**3%**	**21%**	**15%**	**21%**

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	22%	67%	19%
2006	33%	78%	6%
2007	3%	43%	20%
2008	6%	33%	6%
2009	0%	13%	0%
2010	0%	36%	7%
2011	13%	46%	23%
Total	12%	46%	12%



	6 Week Rolling GM Exceedances[1]					6 Week Rolling GM[1] Exceedance Rate (%)				Monthly GM Exceedances[2]				3-Month GM Exceedances[3]				Malibu Hybrid GM Proposal, Exceedances[4]			
TMDL Year	Calculation days	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total
2005	47	18	0	23	25	38%	0%	49%	53%	4	0	6	6	2	0	3	3	3	0	5	5
2006	52	3	6	31	32	6%	12%	60%	62%	0	1	7	7	0	0	3	3	0	1	6	6
2007	47	0	0	13	13	0%	0%	28%	28%	0	0	3	3	0	0	1	1	0	0	1	1
2008	52	0	0	8	8	0%	0%	15%	15%	0	0	2	2	0	0	0	0	0	0	1	1
2009	52	0	0	3	3	0%	0%	6%	6%	1	0	1	1	0	0	0	0	0	0	0	0
2010	53	0	0	13	13	0%	0%	25%	25%	0	0	3	3	0	0	0	0	0	0	2	2
2011	52	5	3	29	29	10%	6%	56%	56%	2	1	5	5	0	0	2	2	0	0	4	4
Total	**355**	**26**	**9**	**120**	**123**	**7%**	**3%**	**34%**	**35%**	**7**	**2**	**27**	**27**	**2**	**0**	**9**	**9**	**3**	**1**	**19**	**19**
90th Percentile		**10**	**4**	**29**	**30**	**21%**	**8%**	**57%**	**58%**	**2**	**1**	**6**	**6**	**0**	**0**	**3**	**3**	**1**	**0**	**5**	**5**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

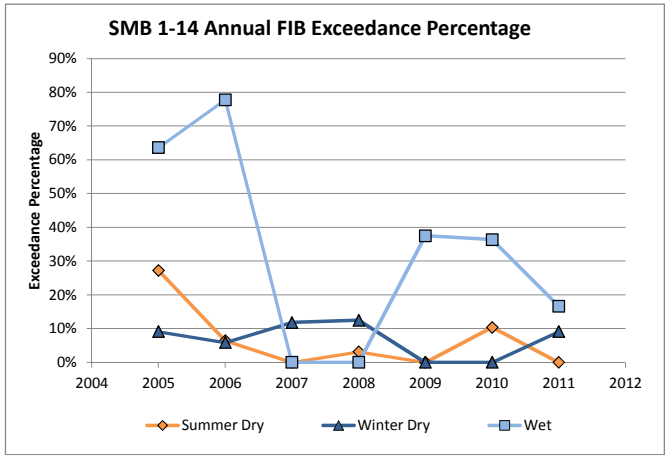
1. 6 Week Rolling GM Exceedances - Geometric mean calculation performed every week, on the samples within the previous 6 week period, if 5 or more samples have been taken in the 6 week period. For example, a total of 52 means that 52 of 52 weeks exceeded.
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded.
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded.
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded.

Las Flores Creek (SMB 1-14)

			SSM Exceedances					SSM Exceedance Percentage				
TMDL Year	Season	No. of Samples	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	33	2	0	7	2	9	6%	0%	21%	6%	27%
2005	Wet	11	4	4	6	2	7	36%	36%	55%	18%	64%
2005	Winter Dry	11	0	0	1	0	1	0%	0%	9%	0%	9%
2006	Summer Dry	31	0	0	2	1	2	0%	0%	6%	3%	6%
2006	Wet	9	4	4	6	3	7	44%	44%	67%	33%	78%
2006	Winter Dry	17	0	0	1	0	1	0%	0%	6%	0%	6%
2007	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Wet	7	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Winter Dry	17	0	1	1	0	2	0%	6%	6%	0%	12%
2008	Summer Dry	32	0	1	0	1	1	0%	3%	0%	3%	3%
2008	Wet	7	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Winter Dry	16	0	0	1	1	2	0%	0%	6%	6%	13%
2009	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Wet	8	0	1	3	1	3	0%	13%	38%	13%	38%
2009	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Summer Dry	29	0	1	2	3	3	0%	3%	7%	10%	10%
2010	Wet	11	0	0	4	0	4	0%	0%	36%	0%	36%
2010	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2011	Summer Dry	28	0	0	0	0	0	0%	0%	0%	0%	0%
2011	Wet	12	1	1	2	0	2	8%	8%	17%	0%	17%
2011	Winter Dry	11	0	0	1	0	1	0%	0%	9%	0%	9%
Total	Summer Dry	211	2	2	11	7	15	1%	1%	5%	3%	7%
	Wet	65	9	10	21	6	23	14%	15%	32%	9%	35%
	Winter Dry	102	0	1	5	1	7	0%	1%	5%	1%	7%
90th Percentile	**Summer Dry**		**0**	**1**	**4**	**2**	**5**	**2%**	**3%**	**13%**	**8%**	**17%**
	Wet		**4**	**4**	**6**	**2**	**7**	**40%**	**40%**	**59%**	**24%**	**69%**
	Winter Dry		**0**	**0**	**1**	**0**	**2**	**0%**	**2%**	**9%**	**3%**	**12%**

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	27%	64%	9%
2006	6%	78%	6%
2007	0%	0%	12%
2008	3%	0%	13%
2009	0%	38%	0%
2010	10%	36%	0%
2011	0%	17%	9%
Total	7%	35%	7%



	6 Week Rolling GM Exceedances[1]					6 Week Rolling GM[1] Exceedance Rate (%)				Monthly GM Exceedances[2]				3-Month GM Exceedances[3]				Malibu Hybrid GM Proposal, Exceedances[4]			
TMDL Year	Calculation days	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total
2005	43	25	0	25	28	58%	0%	58%	65%	5	1	7	7	2	0	2	2	4	1	5	5
2006	52	8	6	13	13	15%	12%	25%	25%	1	1	3	3	1	0	2	2	1	0	3	3
2007	52	0	0	1	1	0%	0%	2%	2%	0	0	1	1	0	0	0	0	0	0	0	0
2008	52	1	0	0	1	2%	0%	0%	2%	0	0	0	0	0	0	0	0	0	0	0	0
2009	52	0	0	6	6	0%	0%	12%	12%	0	0	1	1	0	0	0	0	0	0	0	0
2010	53	0	0	13	13	0%	0%	25%	25%	0	0	4	4	0	0	0	0	0	0	2	2
2011	52	4	0	9	10	8%	0%	17%	19%	2	0	3	4	0	0	0	0	1	0	0	1
Total	**356**	**38**	**6**	**67**	**72**	**11%**	**2%**	**19%**	**20%**	**8**	**2**	**19**	**20**	**3**	**0**	**4**	**4**	**6**	**1**	**10**	**11**
90th Percentile		**14**	**2**	**17**	**19**	**32%**	**5%**	**38%**	**41%**	**3**	**1**	**5**	**5**	**1**	**0**	**2**	**2**	**2**	**0**	**3**	**3**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

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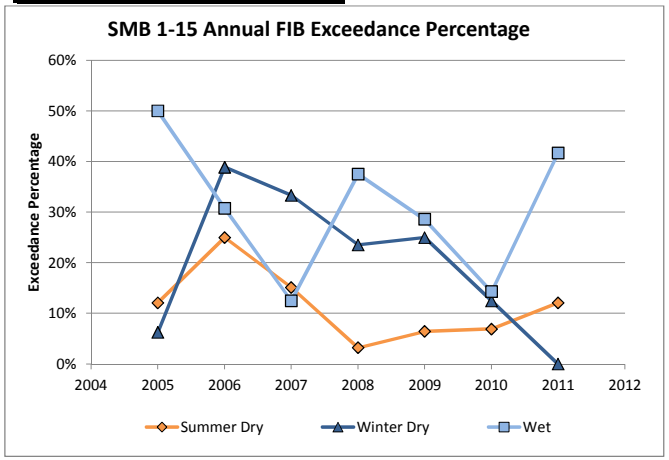
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded.
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded.
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded.

Piedra Gorda Canyon (SMB 1-15) – Big Rock Beach

			SSM Exceedances					SSM Exceedance Percentage				
TMDL Year	Season	No. of Samples	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	33	1	1	3	1	4	3%	3%	9%	3%	12%
2005	Wet	6	1	1	3	0	3	17%	17%	50%	0%	50%
2005	Winter Dry	16	0	0	1	0	1	0%	0%	6%	0%	6%
2006	Summer Dry	36	0	2	7	1	9	0%	6%	19%	3%	25%
2006	Wet	13	0	1	3	2	4	0%	8%	23%	15%	31%
2006	Winter Dry	18	0	1	6	0	7	0%	6%	33%	0%	39%
2007	Summer Dry	33	0	0	4	1	5	0%	0%	12%	3%	15%
2007	Wet	8	0	0	1	0	1	0%	0%	13%	0%	13%
2007	Winter Dry	21	0	1	6	0	7	0%	5%	29%	0%	33%
2008	Summer Dry	31	0	0	1	0	1	0%	0%	3%	0%	3%
2008	Wet	8	0	0	3	0	3	0%	0%	38%	0%	38%
2008	Winter Dry	17	0	1	4	2	4	0%	6%	24%	12%	24%
2009	Summer Dry	31	0	0	2	0	2	0%	0%	6%	0%	6%
2009	Wet	7	0	0	2	0	2	0%	0%	29%	0%	29%
2009	Winter Dry	20	0	0	5	0	5	0%	0%	25%	0%	25%
2010	Summer Dry	29	0	1	2	1	2	0%	3%	7%	3%	7%
2010	Wet	7	1	0	1	0	1	14%	0%	14%	0%	14%
2010	Winter Dry	16	0	0	2	0	2	0%	0%	13%	0%	13%
2011	Summer Dry	33	0	1	4	0	4	0%	3%	12%	0%	12%
2011	Wet	12	0	0	5	0	5	0%	0%	42%	0%	42%
2011	Winter Dry	10	0	0	0	0	0	0%	0%	0%	0%	0%
Total	Summer Dry	226	1	5	23	4	27	0%	2%	10%	2%	12%
	Wet	61	2	2	18	2	19	3%	3%	30%	3%	31%
	Winter Dry	118	0	3	24	2	26	0%	3%	20%	2%	22%
90th Percentile	**Summer Dry**		**0**	**1**	**5**	**1**	**6**	**1%**	**4%**	**15%**	**3%**	**19%**
	Wet		**1**	**1**	**3**	**0**	**4**	**15%**	**11%**	**45%**	**6%**	**45%**
	Winter Dry		**0**	**1**	**6**	**0**	**7**	**0%**	**6%**	**30%**	**5%**	**36%**

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	12%	50%	6%
2006	25%	31%	39%
2007	15%	13%	33%
2008	3%	38%	24%
2009	6%	29%	25%
2010	7%	14%	13%
2011	12%	42%	0%
Total	12%	31%	22%



	6 Week Rolling GM Exceedances[1]					6 Week Rolling GM[1] Exceedance Rate (%)				Monthly GM Exceedances[2]				3-Month GM Exceedances[3]				Malibu Hybrid GM Proposal, Exceedances[4]			
TMDL Year	Calculation days	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total
2005	40	0	0	4	4	0%	0%	10%	10%	0	0	2	2	0	0	1	1	0	0	1	1
2006	52	0	0	21	21	0%	0%	40%	40%	0	0	5	5	0	0	1	1	0	0	3	3
2007	52	0	0	12	12	0%	0%	23%	23%	0	0	3	3	0	0	0	0	0	0	2	2
2008	52	0	0	19	19	0%	0%	37%	37%	0	0	4	4	0	0	2	2	0	0	1	1
2009	52	0	0	13	13	0%	0%	25%	25%	0	0	4	4	0	0	1	1	0	0	2	2
2010	50	0	0	12	12	0%	0%	24%	24%	0	0	4	4	0	0	0	0	0	0	2	2
2011	52	0	0	10	10	0%	0%	19%	19%	0	0	2	2	0	0	1	1	0	0	2	2
Total	**350**	**0**	**0**	**91**	**91**	**0%**	**0%**	**26%**	**26%**	**0**	**0**	**24**	**24**	**0**	**0**	**6**	**6**	**0**	**0**	**13**	**13**
90th Percentile		**0**	**0**	**19**	**19**	**0%**	**0%**	**38%**	**38%**	**0**	**0**	**4**	**4**	**0**	**0**	**1**	**1**	**0**	**0**	**2**	**2**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

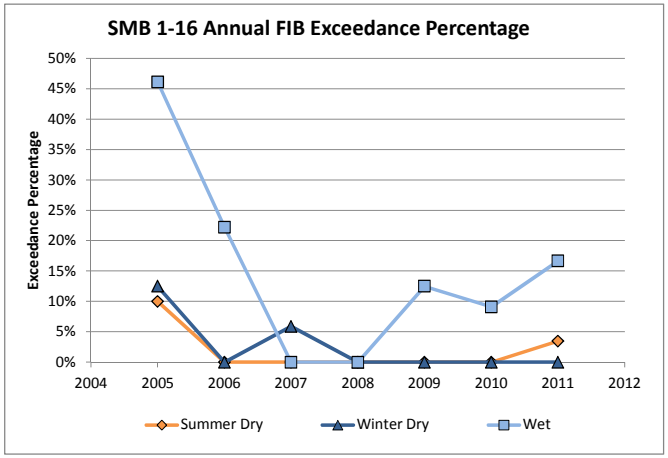
1. 6 Week Rolling GM Exceedances - Geometric mean calculation performed every week, on the samples within the previous 6 week period, if 5 or more samples have been taken in the 6 week period. For example, a total of 52 means that 52 of 52 weeks exceeded.
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded.
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded.
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded.

Pena Canyon (SMB 1-16) – Big Rock/Tunas Beach

			SSM Exceedances					SSM Exceedance Percentage				
TMDL Year	Season	No. of Samples	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	30	0	0	2	1	3	0%	0%	7%	3%	10%
2005	Wet	13	3	1	5	0	6	23%	8%	38%	0%	46%
2005	Winter Dry	16	0	0	2	0	2	0%	0%	13%	0%	13%
2006	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2006	Wet	9	1	1	1	1	2	11%	11%	11%	11%	22%
2006	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Wet	6	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Winter Dry	17	0	1	0	0	1	0%	6%	0%	0%	6%
2008	Summer Dry	31	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Wet	6	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Summer Dry	29	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Wet	8	0	0	1	0	1	0%	0%	13%	0%	13%
2009	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Summer Dry	27	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Wet	11	0	0	1	0	1	0%	0%	9%	0%	9%
2010	Winter Dry	14	0	0	0	0	0	0%	0%	0%	0%	0%
2011	Summer Dry	29	0	0	1	0	1	0%	0%	3%	0%	3%
2011	Wet	12	0	0	2	0	2	0%	0%	17%	0%	17%
2011	Winter Dry	11	0	0	0	0	0	0%	0%	0%	0%	0%
Total	Summer Dry	204	0	0	3	1	4	0%	0%	1%	0%	2%
	Wet	65	4	2	10	1	12	6%	3%	15%	2%	18%
	Winter Dry	103	0	1	2	0	3	0%	1%	2%	0%	3%
90th Percentile	**Summer Dry**		**0**	**0**	**1**	**0**	**1**	**0%**	**0%**	**5%**	**1%**	**6%**
	Wet		**1**	**1**	**3**	**0**	**3**	**16%**	**9%**	**25%**	**4%**	**32%**
	Winter Dry		**0**	**0**	**0**	**0**	**1**	**0%**	**2%**	**5%**	**0%**	**9%**

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	10%	46%	13%
2006	0%	22%	0%
2007	0%	0%	6%
2008	0%	0%	0%
2009	0%	13%	0%
2010	0%	9%	0%
2011	3%	17%	0%
Total	2%	18%	3%



	6 Week Rolling GM Exceedances[1]					6 Week Rolling GM[1] Exceedance Rate (%)				Monthly GM Exceedances[2]				3-Month GM Exceedances[3]				Malibu Hybrid GM Proposal, Exceedances[4]			
TMDL Year	Calculation days	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total
2005	47	11	0	12	14	23%	0%	26%	30%	3	0	4	5	1	0	1	1	1	0	3	3
2006	52	0	0	0	0	0%	0%	0%	0%	0	0	1	1	0	0	0	0	0	0	1	1
2007	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2008	52	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2009	52	0	0	0	0	0%	0%	0%	0%	0	0	1	1	0	0	0	0	0	0	0	0
2010	53	0	0	1	1	0%	0%	2%	2%	0	0	1	1	0	0	0	0	0	0	0	0
2011	52	0	0	0	0	0%	0%	0%	0%	0	0	1	1	0	0	0	0	0	0	0	0
Total	**360**	**11**	**0**	**13**	**15**	**3%**	**0%**	**4%**	**4%**	**3**	**0**	**8**	**9**	**1**	**0**	**1**	**1**	**1**	**0**	**4**	**4**
90th Percentile		**4**	**0**	**5**	**6**	**9%**	**0%**	**11%**	**13%**	**1**	**0**	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

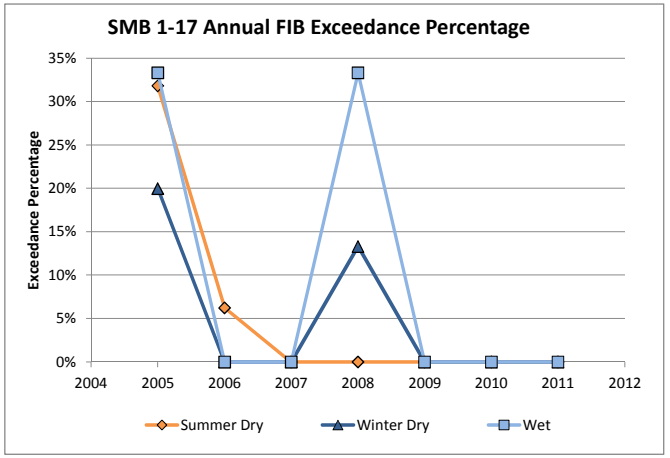
1. 6 Week Rolling GM Exceedances - Geometric mean calculation performed every week, on the samples within the previous 6 week period, if 5 or more samples have been taken in the 6 week period. For example, a total of 52 means that 52 of 52 weeks exceeded.
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded.
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded.
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded.

Tuna Canyon (SMB 1-17) – Las Tunas Beach

			SSM Exceedances					SSM Exceedance Percentage				
TMDL Year	Season	No. of Samples	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	22	0	1	7	2	7	0%	5%	32%	9%	32%
2005	Wet	6	0	0	2	0	2	0%	0%	33%	0%	33%
2005	Winter Dry	15	3	1	1	0	3	20%	7%	7%	0%	20%
2006	Summer Dry	16	0	0	1	0	1	0%	0%	6%	0%	6%
2006	Wet	8	0	0	0	0	0	0%	0%	0%	0%	0%
2006	Winter Dry	9	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Summer Dry	18	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Wet	4	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Winter Dry	9	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Summer Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Wet	3	0	0	1	1	1	0%	0%	33%	33%	33%
2008	Winter Dry	15	0	1	1	0	2	0%	7%	7%	0%	13%
2009	Summer Dry	11	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Wet	4	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Winter Dry	9	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Summer Dry	13	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Wet	1	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Winter Dry	4	0	0	0	0	0	0%	0%	0%	0%	0%
2011	Summer Dry	7	0	0	0	0	0	0%	0%	0%	0%	0%
2011	Wet	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2011	Winter Dry	5	0	0	0	0	0	0%	0%	0%	0%	0%
Total	Summer Dry	102	0	1	8	2	8	0%	1%	8%	2%	8%
	Wet	26	0	0	3	1	3	0%	0%	12%	4%	12%
	Winter Dry	66	3	2	2	0	5	5%	3%	3%	0%	8%
90th Percentile	**Summer Dry**		**0**	**0**	**3**	**0**	**3**	**0%**	**2%**	**16%**	**4%**	**16%**
	Wet		**0**	**0**	**1**	**0**	**1**	**0%**	**0%**	**33%**	**17%**	**33%**
	Winter Dry		**1**	**1**	**1**	**0**	**2**	**8%**	**7%**	**7%**	**0%**	**16%**

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	32%	33%	20%
2006	6%	0%	0%
2007	0%	0%	0%
2008	0%	33%	13%
2009	0%	0%	0%
2010	0%	0%	0%
2011	0%	NS	0%
Total	8%	12%	8%



	6 Week Rolling GM Exceedances[1]					6 Week Rolling GM[1] Exceedance Rate (%)				Monthly GM Exceedances[2]				3-Month GM Exceedances[3]				Malibu Hybrid GM Proposal, Exceedances[4]			
TMDL Year	Calculation days	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total
2005	37	11	0	18	22	30%	0%	49%	59%	3	0	4	5	1	0	1	2	2	0	3	4
2006	24	0	0	0	0	0%	0%	0%	0%	0	0	1	1	0	0	0	0	0	0	1	1
2007	23	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2008	24	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2009	4	0	0	0	0	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
2010	9	0	0	0	0	0%	0%	0%	0%	0	0	1	1	0	0	1	1	0	0	0	0
2011	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0	0	0	0	0	0	0	0	0	0
Total	**121**	**11**	**0**	**18**	**22**	**9%**	**0%**	**15%**	**18%**	**3**	**0**	**6**	**7**	**1**	**0**	**2**	**3**	**2**	**0**	**4**	**5**
90th Percentile		**5**	**0**	**9**	**11**	**15%**	**0%**	**24%**	**30%**	**1**	**0**	**2**	**2**	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**2**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

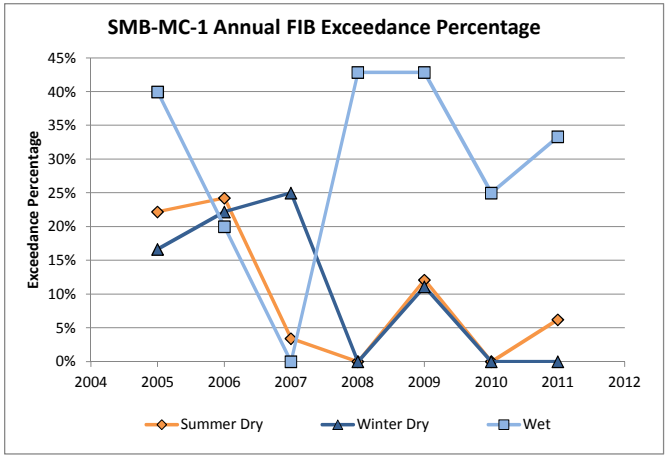
1. 6 Week Rolling GM Exceedances - Geometric mean calculation performed every week, on the samples within the previous 6 week period, if 5 or more samples have been taken in the 6 week period. For example, a total of 52 means that 52 of 52 weeks exceeded.
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded.
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded.
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded.

Malibu Creek and Lagoon (SMB MC-1) – Surfrider Beach

TMDL Year	Season	No. of Samples	SSM Exceedances: Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	SSM Exceedance Percentage: Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	36	5	4	5	2	8	14%	11%	14%	6%	22%
2005	Wet	5	1	0	2	0	2	20%	0%	40%	0%	40%
2005	Winter Dry	18	1	0	3	0	3	6%	0%	17%	0%	17%
2006	Summer Dry	33	2	5	5	4	8	6%	15%	15%	12%	24%
2006	Wet	10	0	1	2	1	2	0%	10%	20%	10%	20%
2006	Winter Dry	18	0	2	4	3	4	0%	11%	22%	17%	22%
2007	Summer Dry	29	0	1	0	0	1	0%	3%	0%	0%	3%
2007	Wet	8	0	0	0	0	0	0%	0%	0%	0%	0%
2007	Winter Dry	20	0	3	4	3	5	0%	15%	20%	15%	25%
2008	Summer Dry	30	0	0	0	0	0	0%	0%	0%	0%	0%
2008	Wet	7	2	1	3	0	3	29%	14%	43%	0%	43%
2008	Winter Dry	14	0	0	0	0	0	0%	0%	0%	0%	0%
2009	Summer Dry	33	0	1	3	1	4	0%	3%	9%	3%	12%
2009	Wet	7	1	1	3	0	3	14%	14%	43%	0%	43%
2009	Winter Dry	18	0	0	2	0	2	0%	0%	11%	0%	11%
2010	Summer Dry	28	0	0	0	0	0	0%	0%	0%	0%	0%
2010	Wet	8	0	0	2	0	2	0%	0%	25%	0%	25%
2010	Winter Dry	15	0	0	0	0	0	0%	0%	0%	0%	0%
2011	Summer Dry	32	0	0	2	0	2	0%	0%	6%	0%	6%
2011	Wet	12	0	0	4	0	4	0%	0%	33%	0%	33%
2011	Winter Dry	10	0	0	0	0	0	0%	0%	0%	0%	0%
Total	Summer Dry	221	7	11	15	7	23	3%	5%	7%	3%	10%
	Wet	57	4	3	16	1	16	7%	5%	28%	2%	28%
	Winter Dry	113	1	5	13	6	14	1%	4%	12%	5%	12%
90th Percentile	**Summer Dry**		**3**	**4**	**5**	**2**	**8**	**9%**	**13%**	**14%**	**8%**	**23%**
	Wet		**1**	**1**	**3**	**0**	**3**	**23%**	**14%**	**43%**	**4%**	**43%**
	Winter Dry		**0**	**2**	**4**	**3**	**4**	**2%**	**13%**	**21%**	**16%**	**23%**

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	22%	40%	17%
2006	24%	20%	22%
2007	3%	0%	25%
2008	0%	43%	0%
2009	12%	43%	11%
2010	0%	25%	0%
2011	6%	33%	0%
Total	10%	28%	12%



TMDL Year	Calculation days	6 Week Rolling GM Exceedances[1]: Total Coliform	Fecal Coliform	Entero	Total	6 Week Rolling GM[1] Exceedance Rate (%): Total Coliform	Fecal Coliform	Entero	Total	Monthly GM Exceedances[2]: Total Coliform	Fecal Coliform	Entero	Total	3-Month GM Exceedances[3]: Total Coliform	Fecal Coliform	Entero	Total	Malibu Hybrid GM Proposal, Exceedances[4]: Total Coliform	Fecal Coliform	Entero	Total
2005	40	9	0	16	18	23%	0%	40%	45%	2	0	5	6	1	0	1	1	1	0	3	4
2006	52	1	0	8	8	2%	0%	15%	15%	1	0	1	1	0	0	0	0	1	0	1	1
2007	52	0	0	5	5	0%	0%	10%	10%	0	0	1	1	0	0	0	0	0	0	1	1
2008	52	1	0	6	6	2%	0%	12%	12%	1	0	1	1	0	0	1	1	0	0	0	0
2009	52	0	0	10	10	0%	0%	19%	19%	0	0	3	3	0	0	0	0	0	0	1	1
2010	53	0	0	6	6	0%	0%	11%	11%	0	0	1	1	0	0	0	0	0	0	0	0
2011	52	0	0	2	2	0%	0%	4%	4%	0	0	1	1	0	0	0	0	0	0	0	0
Total	**353**	**11**	**0**	**53**	**55**	**3%**	**0%**	**15%**	**16%**	**4**	**0**	**13**	**14**	**1**	**0**	**2**	**2**	**2**	**0**	**6**	**7**
90th Percentile		**4**	**0**	**12**	**13**	**10%**	**0%**	**28%**	**30%**	**1**	**0**	**3**	**4**	**0**	**0**	**1**	**1**	**1**	**0**	**1**	**2**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

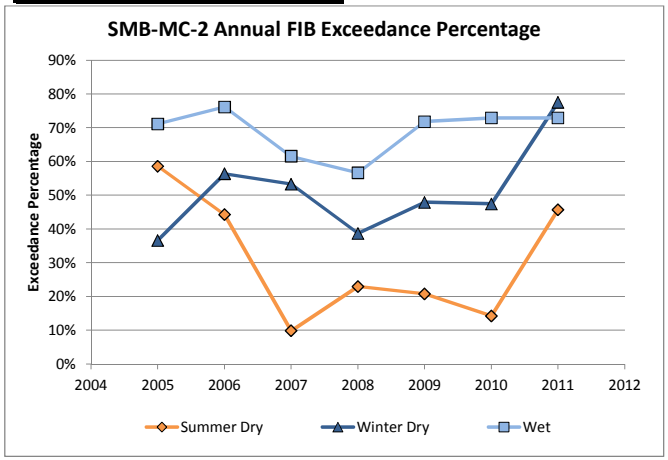
1. 6 Week Rolling GM Exceedances - Geometric mean calculation performed every week, on the samples within the previous 6 week period, if 5 or more samples have been taken in the 6 week period. For example, a total of 52 means that 52 of 52 weeks exceeded.
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded.
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded.
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and (2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded.

Malibu Creek and Lagoon (SMB MC-2) – Surfrider Beach

			SSM Exceedances					SSM Exceedance Percentage				
TMDL Year	Season	No. of Samples	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	145	57	65	22	50	85	39%	45%	15%	34%	59%
2005	Wet	52	28	31	36	20	37	54%	60%	69%	38%	71%
2005	Winter Dry	90	4	20	17	20	33	4%	22%	19%	22%	37%
2006	Summer Dry	140	29	47	26	36	62	21%	34%	19%	26%	44%
2006	Wet	42	16	18	27	17	32	38%	43%	64%	40%	76%
2006	Winter Dry	78	0	25	24	34	44	0%	32%	31%	44%	56%
2007	Summer Dry	142	5	13	4	7	14	4%	9%	3%	5%	10%
2007	Wet	26	2	10	13	11	16	8%	38%	50%	42%	62%
2007	Winter Dry	90	5	34	23	33	48	6%	38%	26%	37%	53%
2008	Summer Dry	152	15	23	14	16	35	10%	15%	9%	11%	23%
2008	Wet	30	9	12	15	8	17	30%	40%	50%	27%	57%
2008	Winter Dry	80	6	22	10	23	31	8%	28%	13%	29%	39%
2009	Summer Dry	149	9	22	18	18	31	6%	15%	12%	12%	21%
2009	Wet	39	15	19	26	18	28	38%	49%	67%	46%	72%
2009	Winter Dry	73	0	24	17	31	35	0%	33%	23%	42%	48%
2010	Summer Dry	133	6	12	11	11	19	5%	9%	8%	8%	14%
2010	Wet	48	17	20	31	12	35	35%	42%	65%	25%	73%
2010	Winter Dry	78	4	18	31	25	37	5%	23%	40%	32%	47%
2011	Summer Dry	142	16	40	36	27	65	11%	28%	25%	19%	46%
2011	Wet	48	13	22	31	16	35	27%	46%	65%	33%	73%
2011	Winter Dry	67	3	30	44	32	52	4%	45%	66%	48%	78%
Total	Summer Dry	1003	137	222	131	165	311	14%	22%	13%	16%	31%
	Wet	285	100	132	179	102	200	35%	46%	63%	36%	70%
	Winter Dry	556	22	173	166	198	280	4%	31%	30%	36%	50%
90th Percentile	**Summer Dry**		**40**	**54**	**30**	**41**	**73**	**28%**	**38%**	**21%**	**29%**	**51%**
	Wet		**21**	**25**	**33**	**18**	**35**	**45%**	**53%**	**68%**	**44%**	**74%**
	Winter Dry		**5**	**31**	**36**	**33**	**49**	**6%**	**41%**	**50%**	**45%**	**65%**

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	59%	71%	37%
2006	44%	76%	56%
2007	10%	62%	53%
2008	23%	57%	39%
2009	21%	72%	48%
2010	14%	73%	47%
2011	46%	73%	78%
Total	31%	70%	50%



	6 Week Rolling GM Exceedances[1]					6 Week Rolling GM[1] Exceedance Rate (%)				Monthly GM Exceedances[2]				3-Month GM Exceedances[3]				Malibu Hybrid GM Proposal, Exceedances[4]			
TMDL Year	Calculation days	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total
2005	47	41	41	33	45	87%	87%	70%	96%	11	10	9	12	3	3	2	3	8	8	6	9
2006	52	38	38	39	44	73%	73%	75%	85%	7	8	9	10	3	2	3	3	6	5	6	7
2007	52	11	17	19	19	21%	33%	37%	37%	4	4	4	4	1	2	2	2	1	1	2	2
2008	52	26	16	12	30	50%	31%	23%	58%	6	5	3	6	2	1	1	2	3	3	2	4
2009	52	24	20	22	29	46%	38%	42%	56%	4	5	6	7	2	2	2	3	2	3	5	5
2010	53	17	14	23	24	32%	26%	43%	45%	5	3	6	6	1	1	2	2	2	1	4	4
2011	52	29	30	40	42	56%	58%	77%	81%	8	8	10	10	3	2	3	3	5	5	7	7
Total	**360**	**186**	**176**	**188**	**233**	**52%**	**49%**	**52%**	**65%**	**45**	**43**	**47**	**55**	**15**	**13**	**15**	**18**	**27**	**26**	**32**	**38**
90th Percentile		**39**	**39**	**39**	**44**	**79%**	**79%**	**76%**	**89%**	**9**	**8**	**9**	**10**	**3**	**2**	**3**	**3**	**6**	**6**	**6**	**7**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

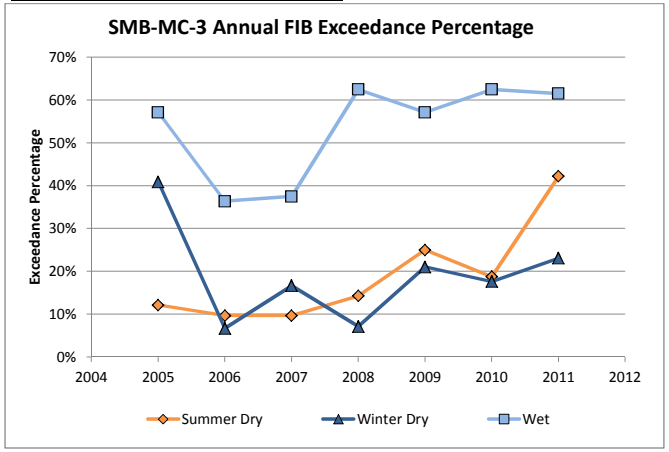
1. 6 Week Rolling GM Exceedances - Geometric mean calculation performed every week, on the samples within the previous 6 week period, if 5 or more samples have been taken in the 6 week period. For example, a total of 52 means that 52 of 52 weeks ex
2. Monthly GM Exceedances - Geometric mean calculation performed every month, on the samples within the previous month (not rolling). For example, a total of 12 means that 12 of 12 months exceeded.
3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded.
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), and
(2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded.

Malibu Creek and Lagoon (SMB MC-3) – Surfrider Beach

			SSM Exceedances					SSM Exceedance Percentage				
TMDL Year	Season	No. of Samples	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total	Total Coliform	Fecal Coliform	Entero	FC/TC Ratio	Total
2005	Summer Dry	33	1	2	3	0	4	3%	6%	9%	0%	12%
2005	Wet	7	1	0	4	0	4	14%	0%	57%	0%	57%
2005	Winter Dry	22	0	1	8	1	9	0%	5%	36%	5%	41%
2006	Summer Dry	31	0	0	2	1	3	0%	0%	6%	3%	10%
2006	Wet	11	0	2	4	1	4	0%	18%	36%	9%	36%
2006	Winter Dry	15	0	0	1	0	1	0%	0%	7%	0%	7%
2007	Summer Dry	31	0	0	3	1	3	0%	0%	10%	3%	10%
2007	Wet	8	0	0	3	1	3	0%	0%	38%	13%	38%
2007	Winter Dry	18	0	1	2	1	3	0%	6%	11%	6%	17%
2008	Summer Dry	35	1	0	4	0	5	3%	0%	11%	0%	14%
2008	Wet	8	3	4	4	0	5	38%	50%	50%	0%	63%
2008	Winter Dry	14	1	0	1	0	1	7%	0%	7%	0%	7%
2009	Summer Dry	36	2	3	7	0	9	6%	8%	19%	0%	25%
2009	Wet	7	1	1	4	0	4	14%	14%	57%	0%	57%
2009	Winter Dry	19	0	0	4	0	4	0%	0%	21%	0%	21%
2010	Summer Dry	32	0	0	6	0	6	0%	0%	19%	0%	19%
2010	Wet	8	2	2	4	2	5	25%	25%	50%	25%	63%
2010	Winter Dry	17	0	1	2	3	3	0%	6%	12%	18%	18%
2011	Summer Dry	45	0	3	17	3	19	0%	7%	38%	7%	42%
2011	Wet	13	4	5	7	4	8	31%	38%	54%	31%	62%
2011	Winter Dry	13	0	2	3	3	3	0%	15%	23%	23%	23%
Total	Summer Dry	243	4	8	42	5	49	2%	3%	17%	2%	20%
	Wet	62	11	14	30	8	33	18%	23%	48%	13%	53%
	Winter Dry	118	1	5	21	8	24	1%	4%	18%	7%	20%
90th Percentile	**Summer Dry**		**1**	**3**	**11**	**1**	**13**	**4%**	**7%**	**27%**	**5%**	**32%**
	Wet		**3**	**4**	**5**	**2**	**6**	**33%**	**43%**	**57%**	**27%**	**63%**
	Winter Dry		**0**	**1**	**5**	**3**	**6**	**3%**	**10%**	**28%**	**20%**	**30%**

SSM Exceedance Percentage

TMDL Year	Summer Dry	Wet	Winter Dry
2005	12%	57%	41%
2006	10%	36%	7%
2007	10%	38%	17%
2008	14%	63%	7%
2009	25%	57%	21%
2010	19%	63%	18%
2011	42%	62%	23%
Total	20%	53%	20%



	6 Week Rolling GM Exceedances[1]					6 Week Rolling GM[1] Exceedance Rate (%)				Monthly GM Exceedances[2]				3-Month GM Exceedances[3]				Malibu Hybrid GM Proposal, Exceedances[4]			
TMDL Year	Calculation days	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total	Total Coliform	Fecal Coliform	Entero	Total
2005	44	19	0	19	26	43%	0%	43%	59%	3	0	4	5	1	0	2	2	2	0	2	3
2006	52	6	0	12	12	12%	0%	23%	23%	1	0	2	2	1	0	1	1	1	0	1	1
2007	52	0	0	15	15	0%	0%	29%	29%	0	0	3	3	0	0	1	1	0	0	2	2
2008	52	10	2	13	16	19%	4%	25%	31%	3	1	4	4	1	0	1	1	2	0	4	4
2009	52	1	0	19	20	2%	0%	37%	38%	1	0	5	6	0	0	3	3	1	0	3	4
2010	51	8	0	30	30	16%	0%	59%	59%	2	0	7	7	0	0	2	2	1	0	5	5
2011	52	22	6	50	50	42%	12%	96%	96%	6	2	11	11	1	0	4	4	5	0	9	9
Total	**355**	**66**	**8**	**158**	**169**	**19%**	**2%**	**45%**	**48%**	**16**	**3**	**36**	**38**	**4**	**0**	**14**	**14**	**12**	**0**	**26**	**28**
90th Percentile		**20**	**3**	**38**	**38**	**43%**	**7%**	**74%**	**74%**	**4**	**1**	**8**	**8**	**1**	**0**	**3**	**3**	**3**	**0**	**6**	**6**

When sampling results were not detected, the following detection limits (DL) were used:
Total Coliform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
FecalColiform DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 67 MPN/100ML
Enterococcus DL: County of LA DHS - 10 MPN/100ML; City of LA EMD - 10 MPN/100ML

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3. 3-Month GM Exceedances - Geometric mean calculation performed every 3 months, on the samples within the previous 3 month period (not rolling). For example, a total of 4 means that 4 of 4 quarters exceeded
4. Malibu Hybrid GM Proposal, Exceedances - Geometric mean calculation performed (1) every month during AB411 period (April 1 to October 31), on the samples within the previous month (not rolling), anc
(2) at two equally spaced intervals between November 1 to March 31 (about 75 days each), on the samples within each interval period (not rolling). For example, a total of 9 means that 9 of 9 calculation periods exceeded

Attachment 6

Malibu Proposed Single Sample Waste Load Allocations

Attachment 6: Malibu Proposed SMBB J1/4 WLAs based on Observed 90th Percentile Reference Beach Exceedance Rates at Leo Carrillo (2003 - 2011), all other sites (2005 - 2011)

Shoreline Compliance Monitoring Site	Station ID	Summer Dry Weather				Winter Dry Weather				Wet Weather			
		Allowable Exceedance Rate	Ref.	WLAs[1]		Allowable Exceedance Rate	Ref.	WLAs[1]		Allowable Exceedance Rate	Ref.	WLAs[1]	
				Daily sampling	Weekly sampling			Daily sampling	Weekly sampling			Daily sampling	Weekly sampling
Arroyo Sequit Canyon - Leo Carrillo Beach	SMB 1-1	20%	a	33	5	18%	a	30	5	46%	a	35	5
Nicholas Creek - Nicholas Beach	SMB 4-1	Remove from TMDL and Compliance Monitoring Plan and Delist											
Los Alisos Canyon - El Pescador Beach	SMB 1-2	Remove from TMDL and Compliance Monitoring Plan and Delist											
Encinal Canyon - El Matador Beach	SMB 1-3	Remove from TMDL and Compliance Monitoring Plan and Delist											
Trancas Creek - West Zuma Beach	SMB 1-4	10%	b	17	3	18%	a	30	5	46%	a	35	5
Zuma Creek - East Zuma Beach	SMB 1-5	20%	a	33	5	18%	a	30	5	46%	a	35	5
Ramirez Canyon - Walnut Creek	SMB 1-6	8%	b	14	2	18%	a	30	5	46%	a	35	5
Ramirez Creek - Paradise Cove Beach	SMB 1-7	20%	a	33	5	18%	a	30	5	46%	a	35	5
Escondido Creek	SMB 1-8	20%	a	33	5	18%	a	30	5	46%	a	35	5
Latigo Creek	SMB 1-9	20%	a	33	5	18%	a	30	5	46%	a	35	5
Solstice Creek	SMB 1-10	20%	a	33	5	17%	b	29	5	46%	a	35	5
Corral Creek - Corral Beach	SMB 1-11	13%	b	22	4	15%	b	25	4	46%	a	35	5
Corral Canyon - Marie Canyon in the Corral Subwatershed at Puerco Beach	SMB 1-12	20%	a	33	5	18%	a	30	5	46%	a	35	5
Sweetwater Canyon - Carbon Beach	SMB 1-13	20%	a	33	5	18%	a	30	5	46%	a	35	5
Las Flores Creek	SMB 1-14	Remove from TMDL and Compliance Monitoring Plan and Delist											
Piedra Gorda Canyon - Big Rock Beach	SMB 1-15	19%	b	32	5	18%	a	30	5	45%	b	34	5
Pena Canyon - Big Rock/Las Tunas Beach	SMB 1-16	Remove from TMDL and Compliance Monitoring Plan and Delist											
Tuna Canyon - Las Tunas Beach	SMB 1-17	16%	b	27	4	16%	b	27	4	33%	b	25	4
Malibu Creek and Lagoon - Surfrider Beach	SMB MC-1	20%	a	33	5	18%	a	30	5	43%	b	33	5
Malibu Creek and Lagoon - Surfrider Beach	SMB MC-2	20%	a	33	5	18%	a	30	5	46%	a	35	5
Malibu Creek and Lagoon - Surfrider Beach	SMB MC-3	20%	a	33	5	18%	a	30	5	46%	a	35	5

Notes

Anti-degradation dictates that the allowable exceedance rate be the lower of (a) the 90th percentile exceedance rate at Leo Carrillo reference beach, 2003-2011, or (b) the site-specific 90th percentile exceedance rate, 2005-2011.

a: Exceedance rate is based on the 90th percentile exceedance at Leo Carrillo reference beach, 2003-2011

b: Exceedance rate is based on the site-specific 90th percentile observed exceedance rate, 2005-2011

1: The daily sampling WLA is computed as the number of dry days (330) or wet days (75), as appropriate, multiplied by the Malibu proposed allowable exceedance rate. The 330 dry days are split evenly between summer dry and winter dry (i.e., each season is allocated 165 dry days to be used in the WLA calculation). The weekly sampling WLA is the daily sampling WLA divided by 7 days/week and rounded up.

Season	90th Percentile Reference Year	Days
Dry Weather	1948	330
Wet Weather	1993	75