



August 11, 2016

*VIA ELECTRONIC MAIL ONLY*

Ms. Xueyuan (Helen) Yu  
San Diego Regional Water Quality Control Board  
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**Subject:** City of Dana Point's Comments – CWA Section 305(b)/303(d) Integrated Report, Attn: Xueyuan Yu

Dear Ms. Yu,

The City of Dana Point (City) appreciates the opportunity to comment on the draft 2014 Clean Water Act (CWA) Section 305(b)/303(d) Integrated Report and proposed 303(d) List for the San Diego Region. The 303(d) List significantly affects the City's water quality programs and priorities and the City has several comments and concerns with the 303(d) list, as proposed, which are described in this letter. The City thanks staff for their efforts on this expansive task.

At the public workshop, we heard Executive Officer Dave Gibson and staff acknowledge some of the following shortcomings and discuss their limitations to address them; however they also encouraged us to relay our concerns so that they can go back and relay them to the State Water Board and/or Legislature, as necessary and thus they are included herein. These are some of the global issues noted in #1-6 below.

- 1. Drafting a "new" "2014" Integrated Report in 2016 (which will be final in 2017 or 2018, we were told), which only includes data up to August 2010.***

As we voiced at the Public Workshop held on July 19, 2016, a very significant underlying concern is the timing of the "2014" Integrated Report with use of "old" data with nothing being evaluated past August of 2010, resulting in a report that is at least 6 years old before it is even adopted. Although, we were told that the new solicitation for data for next Integrated Report will be in the near future, the next Integrated Report won't be out until 2020. There has to be a better, more efficient way to evaluate data and represent current and accurate conditions of the region's waterbodies so we all can responsibly identify and address real priorities.

- 2. Reviewing Data against the Shellfish Beneficial Use which is recognized to have Significant Flaws***

Another very significant concern is the application of the Shellfish standard to the entire stretch of coastline in our region. The State recognized some serious flaws with the Shellfish standard

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and began to address them back in 2007 with a scoping meeting. However, the project has not been completed and the latest work effort, to our knowledge, is the Draft White Paper [http://www.waterboards.ca.gov/water\\_issues/programs/ocean/index.shtml](http://www.waterboards.ca.gov/water_issues/programs/ocean/index.shtml) (attached) which notes “inherent difficulties in achieving the existing water quality standards at all locations where shellfish habitat exists”. The White Paper discusses several significant issues, including lack of a consistent definition of Shellfish, the need to define geographical extent of the recreational shellfish harvesting beneficial use areas to where it actually occurs instead of the entire coastline, etc. It is not a prudent use of any of our resources to evaluate data against standards which have known great flaws, especially when regulatory actions such as TMDLs can be required and applied to every beach location.

### ***3. Postponing Issues to a Potential “Off-Cycle” Effort that may or may not occur***

While we sincerely appreciate the Board’s willingness to consider “off cycle” efforts that may help us address some of the significant limitations with this proposed 2014 list; we were also informed at the workshop that a process has not yet been developed and we understand that potential limitation of staff resources could delay or prevent these efforts. Please provide more details as to what will trigger an “off cycle” review and how the process can occur in a timely manner. We have concerns that many of the proposed 2014 listings are not representative of current conditions and that the receiving water data generated between August 2010 and July 2016 could result in a different listing decision had the Board considered all of the available information.

Notwithstanding an understanding of certain limitations affecting the San Diego Board and the potential value and application of “off cycle” efforts as a potential mechanism that can be incorporated into our Water Quality Management Plans to address *certain* pollutants and waterbodies; the City feels it is crucial to address the high priority specific issues presented herein (including the specific Decision comments in a)- h) below and in comments provided by the County of Orange) so they are reflected as accurately as possible in the Final 2014 Report at this time and not be postponed.

### ***4. Applying the California Stream Condition Index (CSCI) without validating the approach in reference streams with naturally high Total Dissolved Solids (TDS)***

While the City supports the Board’s effort to set biological based water quality standards, we believe the standard used to establish Benthic Community Effects listing, and to suggest that Salt Creek is biologically impaired in the 2014 Integrated Report, needs to be re-evaluated. Specifically, our position is that the California Stream Condition Index (CSCI) needs to be validated in reference streams with naturally high total dissolved solids (TDS) concentrations (in this example, Salt Creek, the creek name itself is an indication of a history of naturally high TDS). Until such time that a CSCI optimization is performed that accounts for elevated TDS levels present in natural conditions, we do not believe that the application of the CSCI approach to list Benthic Community Effects in Salt Creek is technically appropriate at this time.

We also understand that the State Water Board is in the process of developing guidelines for using biological information in the assessment of aquatic life uses, however these guidelines have not yet been officially adopted. As such, it is the City’s position that it is premature and not

appropriate to apply these biological guidelines to the current evaluation of possible impaired waters listings.

Furthermore, we disagree with the inclusion of a generalized statement that pollutant exceedances of water quality objectives contributes to degraded benthic communities. More to the point, the Board included several pollutants and calculated exceedances for these pollutants, and our review of these decisions suggests the lines of evidence need to be reconsidered. We provide the following concerns about the included Lines of Evidence:

- Neither the presence of toxicity in ambient waters nor exceedances of toxicity thresholds have been linked through monitoring studies to degraded stream benthic communities. This relationship has been reiterated several times in southern California regional studies including the Southern California Stormwater Monitoring Coalitions' Regional Watershed Monitoring Program in which the Regional Board is a participating member.
- Mercury has not been established as a stressor to benthic communities in Salt Creek. The administrative record has zero (0) dissolved mercury results in the water quality samples collected between September 2006 and April 2009, whereas the Fact Sheets indicates 6 exceedances in 6 samples. The discrepancies in the Fact Sheet and data files in the administrative record need to be reviewed.
- We do not agree with the Board's decision to use non-Basin Plan or non-statewide plan (e.g., CTR) based criteria to establish the listing decisions. Specifically, the aquatic life benchmarks for Malathion are not adopted objectives in the Basin Plan.
- The Index of Biotic Integrity (IBI) was not formalized into an approved Basin Plan objective and a determination that an IBI score of less than 40 indicates a biological impairment is not appropriate. The technical limitations of the Southern California IBI have been identified and the Board has decided to consider the California Stream Condition Index as a more representative and robust approach for evaluating benthic community data. The Board's decision to suggest an IBI score of 40 indicates a biological impairment should be removed as a supporting Line of Evidence.

We would also like to comment that the pollutants identified in the Lines of Evidence for Benthic Community Effects are not consistent with prioritized chemical stressors identified by the Southern California Stormwater Monitoring Coalitions' Regional Watershed Monitoring Program, in which the Regional Board is a participating member.

The City requests that any listings which have relied upon guidance not yet adopted by the State Board be removed until the biological objectives are finalized and San Diego specific reference conditions can be better reflected in the assessment.

##### ***5. Holistic Approach is Needed***

For many pollutants impacting our waterways, source control will be imperative for water quality standards to be met. Source control of many pollutants begins far beyond the City's,

County's (and State and Regional Board's) authorities under the Clean Water Act. More coordination with other State and regulatory agencies and efforts, such as the Department of Pesticide Regulation, Air Quality Management District, and the State Copper Initiative, to name a few, is needed in order to make demonstrable progress over the long-term. These sources/potential pollutant sources should also be acknowledged in this program.

**6. Review of trends and BMP implementation need to be considered**

Only data from 2006-2010 should be evaluated for listing decisions in the 2014 listing cycle. Many water bodies have shown improvement over time; however when using a large pool of data including water quality before and after improvements, the better, current conditions are not accurately reflected, as the previous poor results are averaged with the better, bringing down averages of the real current conditions. Waterbodies should be reviewed so that listings are not based on old or inaccurate current conditions. For example, if water quality started to improve in 2005 and there were minimal exceedance from 2006-2010, but there were many exceedances from 2000-2005 when this large body of data is pooled, the average conditions will be lower, inaccurate and not reflective of current conditions. Please see comment (a) regarding Baby Beach below for an example of this.

In addition to the above concerns, specific, detailed, technical comments relating to specific decisions that we believe need to be addressed in this cycle for the Final 2014 Integrated Report are provided below.

Please note that the City also fully supports the comments put forth by the County of Orange and those comments are referenced herein.

**a) Decision ID 43763: Pacific Ocean Shoreline, Dana Point HAS, at Dana Point Harbor Baby Beach should be "Delist"**

This beach should be delisted based on the existing data, which is the goal of the TMDL. Baby Beach is a success story! During the previous cycle, the RWQCB indicated that "The reported storm drain data were not evaluated during this listing cycle, and will be included for the next listing cycle. Delisting of old Indicator Bacteria decision is an issue that needs to be addressed during the next listing cycle beginning in early 2010." A robust set of data has been collected under the TMDL and submitted consistently in Annual progress reports since Fiscal Year 2009 demonstrating the achievement of delisting criteria. Please also see comments submitted by County of Orange with further information and data analysis.

**b) Decision ID 49742: Pacific Ocean shoreline, Dana Point HAS, at Salt Creek outlet at Monarch Beach, Copper should be "Do Not List"**

The Listing decision was erroneously made combining non-ocean and ocean samples and listing based on an Ocean Plan Standard. Note that location SCM-1 is not an ocean sample and should not be included in this decision. The decision should be based only on ocean water samples, from SCM1-d taken on the five dates specified. Upon review the data does not exceed the 6-month

median of 3.0 and are well below the the Instantaneous Max of 30 µg/L. Therefore zero of five samples exceed the Water Quality Criteria for Copper. Please re-evaluate with the appropriate sampling site and revise this listing to **Do Not List on 303(d) List**.

**c) Decision ID 34003: Dana Point Harbor: Indicator Bacteria should be “Do Not List”:**

This water body segment is an active Marina. Harbor rules dictate “No Fishing/Swimming. Fishing or swimming within Marina, including fishing from boats within the Marina shall not be permitted.” - See more at: <http://www.danapointmarina.com/rules.php#sthash.11VBJOhJ.dpuf>. The new listing for indicator bacteria is for the Shellfish Beneficial Use which is inappropriately applied to this waterbody.

**d) Decision ID 49724: Pacific Ocean Shoreline, Dana Point HSA, at Niguel Marine Life Refuge: Mercury should be “Do Not List”.**

Only 3 of the 5 samples referenced in LOE 74496 had actual/verified results for Mercury. No exceedances were observed for all samples.

**e) Decision ID 49749: Pacific Ocean Shoreline, Dana Point HSA, at Salt Creek Outlet at Monarch Beach: Malathion should be “Do Not List”:**

Only sample site SCM1d should be used. SCM1 is not an ocean sample. SCM1d did not exhibit any exceedances of the standard used (100 ng/L).

**f) Decision ID 49753: Pacific Ocean Shoreline, Dana Point HSA, at Salt Creek Outlet at Monarch Beach: Nickel should be “Do Not List”:**

Only sample site SCM1d should be used. SCM1 is not an ocean sample. Evaluating the correct site, SCM1d, Nickel should not be listed.

**g) Decision ID 49751: Pacific Ocean Shoreline, Dana Point HSA, at Salt Creek Outlet at Monarch Beach: Mercury should be “Do Not List”:**

In reviewing LOE 75134, there were no data provided for Mercury for the site referenced, so it appears that the Decision Fact Sheet is incorrect noting 9 exceedances in 9 samples. The RB staff decision concludes that the water body pollutant combination should not be placed on the section 303(d) list; however the final listing decision recommendation was “List on 303(d)”; but as noted above, no data was provided or referenced to support the Listing decision, so it appears that the final decision should be “Do Not List”. Please revisit and correct.

Similar inconsistencies (i.e. no data exists for the sample sites referenced) were observed for the upstream sample in *Salt Creek Decision ID 48631, LOE 75557*. Please review and re-evaluate.

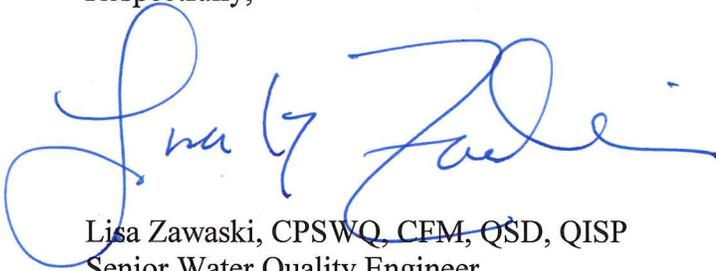
**h) Decision ID 49696: Dana Point Harbor at Guest dock: Indicator Bacteria should be “Do Not List”:**

The LOE 77598 has incorrect number of samples and exceedances based on the data referenced. The site does not meet listing criteria and the decision should be "Do Not List".

The City also wanted to comment the Board and staff on the Public Workshop held on July 19. The City thought it was extremely beneficial and led to some good thoughts and dialogue. The staff was responsive, candid, cooperative and helpful. In addition to the staff present, we would like to thank Executive Officer Dave and Board members Eric and Tomas for taking the time out of their busy days to also attend.

We would also like to thank both staff and Board members in advance for considering our comments. If you have any questions, please contact me at (949) 248-3584 or [lzawaski@danapoint.org](mailto:lzawaski@danapoint.org).

Respectfully,



Lisa Zawaski, CPSWQ, CEM, QSD, QISP  
Senior Water Quality Engineer  
City of Dana Point

Cc; Brad Fowler, Dana Point

Enc: SWRCB Draft Shellfish White Paper, 12/10/12

## Draft Shellfish Ocean Plan White Paper

### Background

The State Water Resources Control Board (State Board) is currently developing beneficial use alternatives to address differences in the SHELL beneficial use definition across Regional Boards, as well as the inherent difficulties in achieving the existing bacterial water quality standards at all locations where shellfish habitat exists. The amendment is planned to address natural sources of bacteria and alignment of Ocean Plan and Basin Plan beneficial uses related to shellfish. Under consideration is the separation of commercial harvesting and recreational harvesting into separate SHELL uses with different water quality objectives, and utilizing a reference system or natural source exclusion approach for recreational shellfish use.

Chapter II of the 2009 California Ocean Plan contains bacterial water quality standards for areas where the designated beneficial uses of water include contact recreational water and shellfish harvesting. Currently there is no fecal coliform standard for areas where mariculture is a designated beneficial use and shellfish are harvested for human consumption.

In 1992, the Department of Health Services (now the Department of Public Health) (DPH) suggested that the California Ocean Plan be amended to add a fecal coliform standard of 14 organisms per 100 ml for waters in all areas where shellfish may be harvested for human consumption. The addition of a fecal coliform standard would make the California Ocean Plan consistent with the National Shellfish Sanitation Program (NSSP) guidelines for commercial shellfish growing areas. Although the NSSP allows the regulating agency to use either total coliform or fecal coliform to regulate commercial shellfish growing areas, adding fecal coliform would make the California Ocean Plan consistent with recreational and/or commercial shellfish growing water requirements of other coastal states, and consistent with California's regulations for commercial shellfish growing waters.

### Scoping Meeting

#### Project Goals

The Shellfish project was initiated to accomplish two goals: 1) create consistency between Ocean Plan amendments and Basin Plan revisions related to shellfish, and 2) address the overlap in activities contained within Shellfish Harvesting (SHELL), Aquaculture/Mariculture (AQUA/MAR), and Commercial Fishing (COMM) beneficial use definitions that lead to confusion in the enforcement of water quality standards. To accomplish these goals, five major issues need to be addressed for amending the Ocean Plan and Basin Plans.

### The Five Issues:

- **Issue 1.** Improve definition of what constitutes “shellfish”.
- **Issue 2.** Separate areas of recreational harvesting from commercial shellfish harvesting beneficial uses.
- **Issue 3.** Better define the geographic extent of the recreational shellfish harvesting beneficial use
- **Issue 4.** Add Fecal Coliform Shellfish standard to Ocean Plan
- **Issue 5.** Address the problem of natural sources of bacteria by allowing the implementation of the Fecal Coliform water quality objectives using either the **reference system with antidegradation** or the **natural sources exclusion approach**.

### Issue Discussion

An initial review of coastal Regional Boards’ Basin Plans show that vast sections of the near coastal ocean waters are designated as shellfish growing areas. Areas are often listed both for shellfish harvesting and for water contact recreation. In these situations, the more stringent shellfish bacterial standard would supersede the water contact recreation standard and could potentially result in an increase in 303(d) listings. Commercial areas have an increased level of monitoring. Staff is also mindful of the recreational harvest of shellfish in state marine waters. Ocean waters must be fishable and therefore the recreational shellfish beneficial use must be protected.

#### Issue 1

Improve definition of what constitutes “shellfish”. This change was proposed for two reasons. First, because the various Regional Boards have an inconsistent definition of “shellfish” in their Basin Plans, which currently include bivalves (clams, oysters and mussels), crustaceans (lobster and crab), sea urchins, and abalone. The second reason was because there is no definition of shellfish in the commercial fishing beneficial use (COMM).

#### Issue 1 Analysis

- **Alternative 1:** No Action. Do not change the existing Ocean Plan definition of what constitutes “shellfish. This alternative would keep the Ocean Plan as it currently exists. This option does not clarify the overlap and among the Ocean Plan and Basin Plans with respect to Shellfish.
- **Alternative 2:** Amend the Ocean Plan and Basin Plans by adding improved definitions. To address these gaps, the proposed solutions are for Basin Plans to use the definition of shellfish specified in the Ocean Plan for SHELL (which restricts shellfish to bivalve mollusks), and for the definition of shellfish in COMM to specify that bivalves are not included in this beneficial use.

- **PRELIMINARY RECOMMENDATION**

**Alternative 2** Amend the Ocean Plan and Basin Plans by adding improved definitions.

## Issue 2

Separate areas of recreational harvest from commercial shellfish harvesting beneficial uses. This change was proposed because of the overlap in definitions of the SHELL and AQUA/MAR beneficial uses. In addition, address the overlap in activities contained within shellfish harvesting (SHELL), mariculture/aquaculture (MAR/AQUA), and commercial fishing (COMM) beneficial use definitions, that lead to confusion in the enforcement of water quality standards

### Issue 2 Analysis

- **Alternative 1: No Action.** Do not change the existing Ocean Plan beneficial use definitions. This alternative would keep the Ocean Plan as it currently exists. This option does not clarify the overlap and among the Ocean Plan and Basin Plans with respect to beneficial use definitions regarding shellfish harvesting.
- **Alternative 2:** Amend the Ocean Plan and Basin Plans by adding improved beneficial use definitions with regard to shellfish harvesting. The proposed change would be to remove commercial harvesting from SHELL, leaving this beneficial use to focus on recreational harvesting, but continue to include commercial shellfish harvesting operations in the AQUA/MAR beneficial use. Remove reference to shellfish harvesting from COMM as necessary.

- **PRELIMINARY RECOMMENDATION**

**Alternative 2** Amend the Ocean Plan and Basin Plans by adding improved Ocean Plan beneficial use definitions with regard to shellfish harvesting.

## Issue 3

Better define the geographic extent of the recreational shellfish harvesting beneficial use. This change was proposed because the current designation of "Ocean Waters" for shellfish harvesting areas in the current definition is broad and applies in all of the State's near-coastal ocean waters out to three nautical miles from shore regardless of whether shellfish is actually harvested or not.

### Issue 3 Analysis

- **Alternative 1:** No Action. Do not change the existing Ocean Plan definition of “Ocean Waters” for shellfish harvesting areas. This alternative would keep the Ocean Plan as it currently exists and continue to rely on each Regional Board determining their geographic extent separately. This option does not clarify the geographic disparity among the Ocean Plan and Basin Plans with respect to Shellfish harvesting areas along the California coast.
- **Alternative 2:** Change the Ocean Plan to define recreational shellfish harvesting areas to the nearshore zone, applied to all intertidal areas in the state and seaward restricted to 30 feet deep or 1000 feet from shore, whichever is furthest from the shoreline.
- **PRELIMINARY RECOMMENDATION**  
**Alternative 2** Amend the Ocean Plan by adding improved geographic definitions.

### Issue 4

Add Fecal Coliform Shellfish standard to Ocean and Basin Plans.

- Add a fecal coliform standard for shellfish of 14 organisms per 100 ml of water with not more than 10% of samples exceeding 43 organisms per 100 ml.

This will create consistent statewide water quality standards for areas of shellfish harvesting. This change was proposed to address the gap between the water quality standards that appear in the Ocean Plan and those enforced by the California Department of Public Health. The proposed change was to add measures of fecal coliforms to the Ocean Plan to make the two programs comparable.

In addition, adding a fecal coliform of 14 organisms per 100 ml would make the California Ocean Plan consistent with recreational and/or commercial shellfish growing water requirements of other coastal states. The addition of a fecal coliform standard will make the California Ocean Plan consistent with the National Shellfish Sanitation Program (NSSP) guidelines for commercial shellfish growing areas

However, the existing Total Coliform standard and the proposed Fecal Coliform standard for protecting beneficial uses of shellfish are very stringent compared with normal bacteria standards applied to protect recreational uses. This is necessary to protect public consumption of filter feeding bivalves (mussels, clams, oysters and scallops) as they bioaccumulate bacteria and pathogens.

#### Issue 4 Analysis

- **Alternative 1:** No Action. Do not change the existing Ocean Plan standard for bacteria. This alternative would keep the Ocean Plan as it currently exists. This option provides inadequate protection to area where shellfish may be harvested for human consumption.
- **Alternative 2:** Amend the Ocean Plan by adding the fecal coliform standard of 14 organisms per 100 ml for waters where shellfish may be harvested for human consumption, and amend the Ocean Plan to address non-human sources of indicator bacteria for non-commercial areas. This change would make the Ocean Plan consistent with recreational and/or commercial shellfish growing water requirements of other coastal states, and consistent with California's regulations for commercial shellfish growing waters. The new fecal coliform standard would apply both in commercial shellfish growing waters and in those areas where recreational shellfish harvesting takes place. The standard would not be applicable where shellfish are not harvested for recreational or commercial purposes.

However, this alternative would increase the need to address the natural background in areas recreational shellfish harvesting take place (**Issue 5**). This would assist when the indicator bacteria is determined to be non-human and the indicator densities do not indicate a human health risk; therefore, the State would not consider those non-human sources of fecal contaminants in determining whether the standard is being attained.

- **Alternative 3:** Add the fecal coliform standard of 14 organisms per 100 ml in all areas. This alternative would use the fecal coliform standard of 14 organisms per 100 ml. However, this alternative would apply the new standard in all of the State's near-coastal ocean waters out to three nautical miles from shore regardless of whether shellfish is actually harvested or not. (Note Issue 2 can address this part of the problem) Furthermore non-human source of indicator bacteria (natural background) would not be considered in determining if standards are attained. The more stringent shellfish bacterial standard would effectively supersede the water contact recreation standard, and could potentially result in an increase in 303(d) listings without consideration of source of bacteria or the threat posed.
- **Alternative 4:** Add the fecal coliform standard of 14 organisms per 100 ml only in areas of commercial shellfish harvesting as designated by Aqua/Mar beneficial use as clarified in Issue 2. The addition of a fecal coliform standard to only commercial areas will make the California Ocean Plan consistent with the National Shellfish Sanitation Program (NSSP) guidelines for commercial shellfish growing areas.

- **PRELIMINARY RECOMMENDATION**

**Alternative 2:** Amend the Ocean Plan by adding the fecal coliform standard of 14 organisms per 100 ml for waters where shellfish may be harvested for human consumption, but only if we are able to amend the Ocean Plan to successfully address non-human sources of indicator bacteria for all recreational shellfish use.

## Issue 5

Address the problem of natural sources of bacteria by allowing the implementation of indicator bacteria water quality objectives using either the **natural sources exclusion approach or reference system with anti-degradation approach**. Note that this should apply to contact recreational standards as well.

### *Natural Sources of Bacteria*

Natural sources of bacteria may cause or contribute to exceedances of water quality objectives for indicator bacteria and will impact implementation of Fecal Coliform standard. It is not the intent of the State or Regional Board to require treatment or diversion of natural water bodies or to require treatment of natural sources of bacteria. Such requirements, if imposed by the State or Regional Board, could adversely affect valuable aquatic life and wildlife beneficial uses supported by water bodies in the state.

Furthermore, non-anthropogenic source of indicator bacteria (natural background) should not be considered in determining if standards are attained. The more stringent shellfish fecal coliform bacterial standard would effectively supersede the water contact recreation standard, and could potentially result in an increase in 303(d) listings without consideration of source of bacteria or the threat posed. Utilizing the latest approaches in source tracking and identification should help in identifying areas and amounts of natural background.

Under the **Natural Sources Exclusion Approach (NSEA)**, dischargers must demonstrate they have implemented all appropriate best management practices to control all anthropogenic sources of indicator bacteria to the target water body such that they do not cause or contribute to exceedances of the indicator bacteria water quality objectives. The requirement to control all sources of anthropogenic indicator bacteria does not mean the complete elimination of all anthropogenic sources of bacteria as this is both impractical as well as impossible. Dischargers must also demonstrate that the residual indicator bacteria densities are not indicative of a human health risk. After all anthropogenic sources of indicator bacteria have been controlled such that they do not cause exceedances of the indicator bacteria water quality objectives, and natural sources have been identified and quantified, exceedances of the indicator bacteria water quality objectives may be allowed based on the residual exceedances in the target water body. The residual exceedances shall define the background level of exceedance due to natural sources.

We may need additional flexibility in how the shellfish standards for recreational beneficial use are implemented. This change was proposed to address the difficulty in enforcing water quality standards due to natural sources of bacteria. The proposed solution was to investigate the use of a Reference System and Antidegradation Approach. This approach establishes an allowable exceedance frequency that is equal to or less than the frequency within a reference system, where a reference system is defined as an area minimally impacted by anthropogenic activity.

Implementation of indicator bacteria water quality objectives using the **Reference System and Antidegradation (RSA)** approach requires control of indicator bacteria from anthropogenic sources so that bacteriological water quality in the targeted waterbody is consistent with that of a reference system. The RSA approach also requires that no degradation of existing bacteriological water quality in the targeted water body occurs when the existing bacteriological water quality is better than that of a water body in a reference system. A reference system is a watershed and the beach to which the watershed discharges that is minimally impacted by anthropogenic activities that can affect bacterial densities in the water body.

Under the RSA approach, a certain frequency of exceedances of the indicator bacteria water quality objectives is allowed. The allowed frequencies of exceedances are either the observed frequency of exceedances in the selected reference system or the targeted water body, whichever is less.

#### *Analysis of Reference System Approaches*

The basic data used for the analysis of the impacts of the current total coliform standards and the addition of fecal coliform standards for shellfish was shoreline bacteria data collected at least weekly for beach recreational water quality monitoring program.

- Used California shoreline beach monitoring data from 2000 – 2009
  - ▶ 645 monitoring stations throughout California
  - ▶ 33,325 station/months of data
- Applied total and fecal coliforms Shell standards
  - ▶ Total coliforms median  $\leq$  70 MPN/ 100 ml (and 10% > 230)
  - ▶ Fecal coliforms median  $\leq$  14 MPN/ 100 ml (and 10% > 43)
- **Reference watershed defined as  $\leq$ 7% developed**
- Determined how often the standards were exceeded under various scenarios

The data from the beach monitoring sites are an important part of the proposed reference system approach, which may be used to determine an allowable rate of exceedance to the shellfish standards due most likely to natural sources in these undeveloped watersheds. Data from the non-reference locations are also useful, as measurement of the existing frequencies of exceedance. In looking at all shoreline bacteria data it was determined that the median water quality standards would be

exceeded about 40% of the time for each total and fecal coliforms and over 65% of the time when any of the four standards were exceeded.

#### *Undeveloped Reference Watershed*

This is based on previous work at SCCWRP and regional boards establishing what would be considered some of the most natural watershed condition with limited anthropogenic influence. The standard examined for this study was a statewide value for watershed that were equal to or less than 7% development. While this is a logical and normal approach in determining reference watersheds, when analyzing total and fecal shellfish standards that are often very close to the laboratory detection limits, we found this approach to be of surprisingly limited value.

Analysis found that there was no correlation between percent development and percent of time the coliform standards were exceeded. Both the fecal and total coliform standards exhibited similar lack of relationships. This can be seen the marginal difference in exceedance rates for all four standards in all areas and in what the reference areas show (62% Undeveloped vs 65% for all sites). (See figure 1 below).

We do not feel that percent development will make an appropriate choice for use as a reference area standard.

#### *ASBS Reference Watersheds*

Areas of Special Biological Significance are areas along the coast of California that have legally limited anthropogenic discharges to protect water quality. While ideally these should provide excellent reference watershed when combined with low development in their source watersheds, these are a very limited set of beach shoreline monitoring stations. While coliform exceedance levels were measurably lower than that of other statewide reference areas, the lack of samples meant this data was based on very low data robustness. (See figure 1 below)

The very limited distribution of sample locations (8 sites out of 645 total) and analyses that are both undeveloped (<7%) and in an ASBS makes this an impractical method for a statewide reference system approach to natural sources of bacteria.

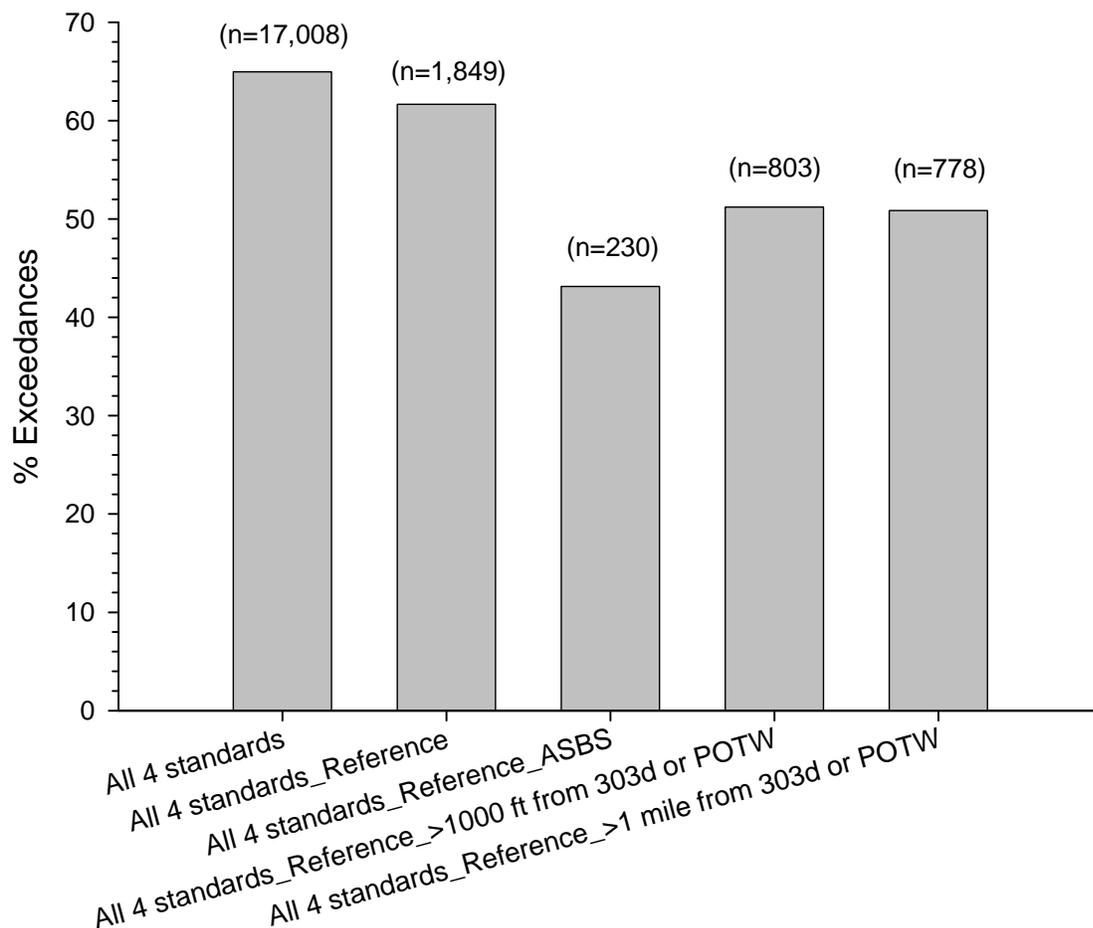
#### *Reference Based on distance from POTW/303d listed waters*

A promising approach is to use for reference sites only for those stations that are some distance (>1000 feet or a mile) from any existing POTW outfall or a 303d listed waterbody (i.e. the bacteria impaired streams and beach areas in the state of California). This analysis 1) Only uses bacteria as the criteria for the 303(d) listing (sites in the total coliform beach monitoring dataset were assessed for proximity to both the total coliform and indicator bacteria 303d listings, while the fecal coliform sites were assessed relative to the fecal coliform and indicator bacteria 303d listings), and 2) excluding 21 sites (out of 645) that do not have lat/long information, and therefore could not be assessed to proximity to 303d/POTWs. This gives an exceedance frequency for all 4 standards of

52% for reference sites >1000' of a 303d/POTW, and 51% for reference sites >1 mile of a 303d/POTW.

It seems like there is a better case for using reference sites that are located at least 1000 feet away from any 303(d) listed waterbody or POTW outfall. There are almost four times as many station-months of data located in this category (n=803, 36 stations) as in the ASBS Reference (n=230, 8 stations).

### Beach Monitoring Data Exceedance Frequencies



**Figure 1.** Beach monitoring data exceedance frequencies under different scenarios. Statewide station/month monitoring data from 1/2000 – 5/2009 were used for the analyses. The four standards included: total coliforms median >70 mpn/100 ml, total coliforms >10% >230 mpn/100 ml, fecal coliform median >14 mpn/100 ml, fecal coliform >10% >43 mpn/100 ml. “All 4 standards” indicates circumstances when any one standard was exceeded, and all four standards could be assessed. Reference sites are those within watersheds with ≤7% development. ASBS = Areas of Special Biological Significance. (n = number of station months with requisite data).

*Inshore vs Offshore data (This is important for commercial offshore vs shoreline recreational shellfish)*

Examination of bacteria data supplied by Los Angeles County Sanitation Districts (LACSD) indicates a much lower incidence of water quality exceedances in the offshore samples (surface samples = 1.1% exceedance, bottom samples = 0.4% exceedance, considering all 4 standards), compared with the shoreline samples (24% exceedance, considering all 4 standards). However, LACSD shoreline data had a lower exceedance frequency than the data from other Region 4 sites (76% exceedance frequency, shoreline data only, excluding LACSD, considering all 4 standards). Because of this difference, the exceedance frequency at inshore locations in other parts of Region 4 may be greater than what has been observed for LACSD.

**Issue 5**

Address the problem of natural sources of bacteria by allowing the implementation of the Fecal Coliform water quality objectives using either the **reference system with antidegradation** or the **natural sources exclusion approach**

**Issue 5 Analysis**

- **Alternative 1:** No Action. Do not change the existing Ocean Plan bacteria standard for shellfish. This alternative would keep the Ocean Plan as it currently exists. This option provides inadequate protection to area where shellfish may be harvested for human consumption.
- **Alternative 2:** Add a fecal coliform standard of 14 organisms per 100 ml in all areas without adding exclusion for natural sources or amending the existing language. This alternative will use the NSSP fecal coliform standard of 14 organisms per 100 ml. However, this alternative would apply the new standard in all of the State's ocean waters regardless of whether shellfish is actually harvested or not. The more stringent shellfish fecal coliform bacterial standard would effectively supersede the water contact recreation standard, and could potentially result in an increase in 303(d) listings without consideration of source of bacteria or the threat posed along major stretches of the California shoreline.
- **Alternative 3:** Add a fecal coliform standard of 14 organisms per 100 ml for shellfish. Add a definition for commercial and recreational shellfish. Separate areas of recreational from commercial shellfish harvesting beneficial uses. Add an allowance for using either the reference system or natural source exclusion approaches that will only apply to recreational shellfish harvesting and contact recreation.

This approach would use for reference sites only those stations that are >1000 feet from any existing POTW outfall or a 303d listed waterbody. This gives an exceedance frequency for all 4 standards of 57% for reference sites >1000' of a 303d/POTW.

- **PRELIMINARY RECOMMENDATION**

**Alternative 3:** Establish a fecal coliform standard of 14 organism per 100 ml for shellfish and add a natural source exclusion approach that will only apply to recreational shellfish and contact recreational areas. This would require amending the existing language of the Ocean Plan and separating the definition of recreational and commercial shellfish harvesting so that the RSA and NSEA could be applied only to recreational shellfish harvesting and contact recreation.

DRAFT