

San Diego Bacteria TMDL Workgroup, 02/28/17

Meeting Notes, Action Item List

MEETING NOTES

The meeting summary is organized around major points in the meeting agenda, which is included at the end of the meeting summary, along with a list of attendees. Agreements are **highlighted in bold**. Action items are listed at the end of the meeting summary.

1. *Introduction and purpose of meeting*

The purpose of the meeting was to:

- Provide an update on the morning CBA meeting and TMDL-related elements
- Discuss MS4 recommended Entero/HF183 approach for wet weather
- Discuss next steps to address wastewater sources
- Discuss next steps

2. *CBA update*

Workgroup members who had participated in the morning's meeting of the Cost Benefit Analysis (CBA) Steering Committee summarized the discussion and identified key remaining issues, as well as apparent take-home lessons from the overall project. These included:

- Constraints, limitations, and unfinished business
 - Costs and benefits will be assessed largely at the watershed scale because the combination of likely solutions will vary by watershed
 - Discussion has clarified permit vs. TMDL requirements to better describe the CBA terrain
 - The specific costs going into the baseline condition definition have been clarified
 - Estimates of costs and benefits have not yet been developed for some scenarios
 - There is a need for a better estimate on the percent of loads coming from homeless populations
 - There is continuing uncertainty about interactions between MS4s and wastewater agencies that is complicating cost estimation; some events, e.g., underground pipe breaks and leaks that lead to infiltration into the MS4, spills, or illicit discharges, are caused by or result in overlap between the two systems and the CBA project is treating the two systems separately
 - The Workgroup can stress the need for more interaction and transparency related to such interactions and overlaps
 - There are a number of technical issues remaining, such as different timeframes for different scenarios, different boundary conditions across scenarios, and the fact that the benefits of reducing human sources are framed only as GI illness but the costs are framed as all possible illnesses. These and other disparities will have to be addressed in the technical report
 - The human sources and stream restoration scenarios were intended to bookend possible management actions. The results do not provide the same level of detail, given they provide screening level information only
 - Each scenario has been treated separately and the absence of a synthesis means it is not possible to integrate across all scenarios to see what combination of actions would provide the best overall return on investment. That integration scenario would be a large challenge and will not be included in the current project because of schedule and cost constraints
- Findings and implications
 - The CBA process has been helpful in terms of highlighting the need to address human sources, the potential value of stream/habitat restoration, and the need for a more targeted implementation

program. This has in turn highlighted the need to engage wastewater agencies and other sources, and the need to look more closely at sewer management plans. This has taken some weight off the MS4s' shoulders, which is hugely important for those agencies' management

- The Regional Board is considering options to obtain needed data on newly prioritized sources such as leaks and exfiltration from the wastewater system; this has now become a new conversation that is part of addressing the bacteria and swimmer health issues
- Fixing older infrastructure will be expensive and highlights the value of focusing on new and redevelopment to incorporate concepts such as LID and distributed treatment (e.g., package plants) that would reduce the need for large-scale conveyance of contaminated wastewater
- The need to expand the scale of source identification and management could be the most important result coming from the CBA
- Both USEPA and the City of San Diego's Public Utilities department will be encouraged to review the draft CBA
- **Participants agreed that the CBA is intended to provide additional context for the Bacteria TMDL reopener, but will not be used as the final criterion for decisions. It is instead one of several inputs to any decision**

3. MS4 recommended approach

(see Mtng Bacteria Workgroup 07-27-16 Key elements and MS4 recommendations.docx distributed with the meeting summary)

Ashli Desai presented a flow chart that summarized the MS4s' recommendations for an approach to compliance with the TMDL requirements. This is in response to Board staff's earlier request to see a consolidated and more organized summary of an "ask" that builds on previous discussions. The flowchart presents 3 compliance pathways that range from the existing situation to one that is risk-based. The goal is to gain agreement on an overall conceptual approach. As a result, details such as specific target numbers or thresholds have not been incorporated at this time, in order to allow discussion to focus on the overall approach. Discussion included the following:

- The flowchart focuses on wet weather, with the compliance point defined at the beach. Specific compliance points would need to be defined for different categories of beaches
- The 1st pathway is the current situation and includes an allowable exceedance frequency (AEF) based on reference studies, the 2nd pathway combines an *Enterococcus* objective/target with optional HF183 compliance monitoring, and the 3rd pathway is completely risk-based and focuses on the SHS and QMRA results (and future Epi/QMRA studies that may be developed). This pathway uses illness rates rather than indicator values
- The flowchart is not clear about the timescale (e.g., sample by sample, yearly, TMDL compliance date) on which the comparison to targets and the determination of compliance occurs
 - Further discussion clarified that the flowchart confounds two types of "compliance," one related to meeting permit requirements and the second related to final compliance at a future date with the TMDL targets
 - Each type of compliance has distinct implications for monitoring and other aspects of implementation, such as human source reduction. In other words, the "if-then" for final compliance with the TMDL is different than the "if-then" interim actions along the way
 - The flowchart and language in the draft technical report will be modified to distinguish more clearly between actions related to the permit and to the TMDL (**AI**)
- Although the listing policy has a separate method for determining whether a water body should be listed or delisted, attention should be paid to how the flowchart pathways, thresholds, and required monitoring relate to the listing methodology. Ensure that contradictions, e.g., meet TMDL targets but still be listed, are avoided

- Discussion about the continued applicability of the reference approach to setting the AEF; newer science suggests that background conditions may differ between developed and undeveloped watersheds that may affect estimates of natural sources of bacteria in developed watersheds. This is one motivation for focusing on using HF183/human marker to help determine compliance.
- The 2nd pathway attempts to capture a more direct element of risk by using HF183/human marker testing, instead of an AEF
 - Board staff are in general agreement with incorporation of human marker testing and in the future would prefer to make decisions (e.g., listing / delisting) on the basis of human markers or even pathogens, rather than FIB
 - However, the permit and TMDL timeframes should be clarified and other implementation actions (e.g., source reduction) specified
 - The implementation program includes interim monitoring, source identification, and source reduction actions
 - Drew Kleis stated that inclusion of a human marker would be very important to upper management at the City of San Diego, and would make the revised policy much more understandable and acceptable
 - The 2nd pathway can also be understood as an initial screening value using *Enterococcus* followed by a more site-specific HF183 threshold developed with regional data
- Discussion about the actual targets and thresholds that might be used in the 2nd pathway included:
 - The SHS calculated that the *Enterococcus* level corresponding to an illness rate of 32/1000 was 540; this means that using a value of 110 from the 2012 USEPA criteria could incorporate an extra margin of safety
 - Such a margin of safety might help address some uncertainties in the SHS, such as risks to children
 - However, rough initial calculations suggest that children would have to represent a large fraction of the exposed population in wet weather to bring the overall illness rate up to 32/1000; this issue could be addressed by gathering additional data on the number of children swimming during wet weather
 - If risk calculations are too problematic or uncertain, then the policy could instead incorporate a margin of safety
 - Jian Peng will send Regional Board staff a copy of Ben Arnold's paper on risks to children (**AI**); this study suggested that risks to children are about 4X those for adults
 - Board staff would like to see a thorough discussion and justification for the equivalence between the *Enterococcus* objective, any proposed HF183 threshold, and the associated illness rate or level of protection
 - However, the draft technical report should lay a broader foundation that would enable future revisions to human markers, whether it is HF183 or others that may prove to be better
 - HF183 would be used as an implementation provision under the TMDL for meeting the USEPA 2012 criteria
- The 3rd pathway is based on a direct measurement of risk or illness rate and does not rely on indicators such as FIB
 - **Participants agreed that direct measurement of risk or illness with epidemiology studies or QMRA is more accurate and effective than monitoring with FIB to determine if the objective is being met**
 - Under this approach, beaches in the region (with the number of beaches dependent on a decision about how broadly to apply results of the SHS results) would be considered in compliance with the TMDL target because the illness rate documented by the epidemiology study is under 32/1000 in wet weather
 - Even when TMDL targets are met, this pathway envisions ongoing actions to document continued compliance and identification/reduction of human sources
 - Rather than frequent (and very expensive) epidemiology studies, one option would be to conduct periodic sanitary surveys to demonstrate that sources (and therefore presumably risk)

- remain the same as when the last epidemiology study was performed; USEPA has developed a method for such surveys at beaches
- Periodic sanitary surveys could be supplemented by less frequent epidemiology or QMRA studies to directly measure risk and illness rates (the relative frequency of sanitary surveys and epidemiology studies needs further discussion)
 - QMRA could be used instead of full epidemiology studies as long as it can be demonstrated that the sources are not substantially different from those in the SHS watersheds
 - Where the sources are different, a new epidemiology study would need to be performed in order to utilize this pathway
 - Implementation, even when TMDL targets are met, would include some type of monitoring to support the human source reduction program; however, the details of indicators, extent, and timing need further discussion
 - The human source reduction program could also be considered as an essential component of other pathways
 - The implementation plan must demonstrate to USEPA that it is capable of tracking continued compliance with the TMDL targets or reasonable progress toward the targets if they have not yet been met
 - While the ongoing actions, which could include periodic epidemiology studies, could be expensive, they may be less expensive, and certainly more productive, than the full implementation of ineffective BMPs
- If the 3rd pathway is used, then beaches in the region will be in compliance with the TMDL, as long as it can be demonstrated that they are representative of the beaches studied in the SHS
 - Discussed reviewing the 3rd pathway with SCCWRP and the SHS researchers (AI)

4. Wastewater check-in

Regional Board staff will attend the upcoming City of San Diego Tiger Team meeting to learn more about procedures for source tracking and identification.

5. New business, wrap-up, and next steps

Regional Board staff are tracking the progress of the new State Board policy and will brief them at an appropriate time.

The Draft Technical Report is scheduled for completion sometime in September, which will allow time to incorporate the results of the completed CBA.

Next meeting date

The next workgroup meeting will be March 22, 2017, from 1:00 – 4:00 PM per the agreed meeting schedule.

Attendees

San Diego Regional Water Board: Cynthia Gorham, Jeremy Haas, Michelle Santillan, Jimmy Smith, Helen Yu

San Diego County: Todd Snyder, Jo Ann Weber

Orange County Public Works: Jian Peng

City of San Diego: Vicki Kalkirtz, Drew Kleis, Ruth Kolb

Team: Clint Boschen, Ashli Desai, Jerry Diamond, Brock Bernstein

Draft Agenda
San Diego Bacteria TMDL Workgroup Meeting
Regional Water Quality Control Board
Meeting #19 – February 28, 2017 1:00 pm to 4:00 pm

1. Introductions (5 min)
2. CBA update and carryover to Bacteria TMDL process (45 min)
3. MS4 Recommended Entero/HF183 wet weather approach (110 min)
4. Wastewater check-in/next steps (5 min)
5. New Business/Wrap-up (15 min)

San Diego Bacteria TMDL Workgroup Action Items Report













Key to status colors:


















- **Green** indicates a completed deliverable
- **Blue** indicates greater than 30 days until the deliverable is due
- **Yellow** indicates a deliverable is due within 30 days
- **Red** indicates an overdue deliverable



Mng Date	Deliverable	Assigned To	Due Date	Status	Comments
08/27/15	List of studies, completion dates, value added, implications for reopener	Consultant team	09/02/15	●	
08/27/15	Distribute draft cost sharing agreement	Todd Snyder	09/10/15	●	
08/27/15	Review past MOUs to assess whether useful concepts or language can be borrowed for this MOU	Drew Kleis, Ruth Kolb	09/10/15	●	
08/27/15	Discuss cost sharing agreement	Workgroup	09/10/15	●	
08/27/15	Finalize MOU	Workgroup	09/10/15	●	
08/27/15	Michelle Mata to meet with small group to review planned overall approach and its relationship to schedule; develop picture of how pieces fit in logical progression	Michelle Mata, Clint Boschen, Chris Minton, Ashli Desai, key permittees	10/7/15 meeting handout	●	
09/0/15	Evaluate implications of 32 vs. 36 illness rate using available monitoring data from creeks and beaches	Chris Minton, Dustin Bambic	10/7/15 meeting presentation	●	
09/10/15	Frame a more formal description of how a risk-based framework could be used in the TMDL	Ruth Kolb	10/7/15 meeting handout	●	
09/10/15	Develop options for calculating geomeans that account for varying intensities/frequencies of monitoring events	Chris Minton, Dustin Bambic	10/7/15 meeting presentation	●	
09/10/15	Expand the example table (single sample vs. STV) to include a column showing how the geomean compares to the single sample and STV results	Chris Minton, Dustin Bambic	Undefined, but soon	●	

Mng Date	Deliverable	Assigned To	Due Date	Status	Comments
09/10/15	Prepare a set of scenarios showing a range of comparisons across the options presented	Chris Minton, Dustin Bambic	10/7/15 meeting presentation	●	
10/07/15	Prepare background information on the basis for the 32 vs. 36 illness rates	Chris Minton, Dustin Bambic	10/29/15 meeting	●	
10/07/15	Add language to draft TMDL targets memo to explain the applicability of the reference reach analysis in the risk-based framework	Chris Minton, Dustin Bambic	10/29/15 meeting	●	
10/07/15	Prepare a draft decision flow chart	Ashli Desai, Clint Boschen	10/29/15 meeting	●	
10/07/15	Prepare a draft Technical Report outline	Team	12/10/15 meeting	●	
10/29/15	Prepare background information on STV	Team	11/12/15	●	
10/29/15	Provide comments on draft decision flow chart and draft TMDL targets memo	RWQCB staff	11/6/15	●	
10/29/15	Provide revised TMDL targets memo and flow chart based on comments	Team	11/12/15	●	
11/19/15	Provide more detail on analyses needed to compare the two illness rates, along with cost and time estimate	Team			Hold off for now
11/19/15	Approach State Board about Workgroup meeting with them as a focus group	Jeremy Haas	12/10/15 meeting	●	
11/19/15	Examine the 13241 requirements to identify what information would be needed to address those	Team		●	Completed and ready to insert into draft documents when needed
11/19/15	Add the caveat to the draft language that the 32 illness level is a "working assumption"	Team	12/10/15 meeting	●	
11/19/15	Describe the statistical background and rationale for the EPA 2012 criteria	Team		●	
11/19/15	Add a minor revision to the language in the alternative on Slide 7 to capture the potential for regional linkages	Team	12/10/15 meeting	●	
11/19/15	Develop ideas for prototypes or case studies of site-specific objectives that would illustrate different issues such as natural source exclusion	Team	TBD		Longer term
11/19/15	Develop revised language related to allowable exceedance frequency	Team		●	
11/19/15	Prepare an explanation of "safe" in different contexts and what the implications could be for action in response to different types of monitoring outcomes	Team			Longer term

Mng Date	Deliverable	Assigned To	Due Date	Status	Comments
1/26/16	Prepare data comparing STV and SSM to send to SWRCB and RWQCB	Team	03/15/16		
1/26/16	Make the suggested minor edits to the list of items of potential concern on bacteria policy for SWRCB.	Team will prepare initial list and provide to RWQCB. RWQCB will send to SWRCB.	Dustin Bambic		
02/24/16	Prepare data memo comparing STV to SSM to send to SWRCB. Send to entire team for review.	Dustin Bambic	03/15/16		
02/24/16	Briefly raise the issue of the potential contribution of leaking sewer collection systems to the bacteria problem at the March 4 SCCWRP Commission meeting	Todd Snyder	03/03/16		
02/24/16	Prepare a white paper summarizing evidence for the role of leaking sewer collection infrastructure. Provide data, references, and other information to Clint Boschen, who will work with Dustin Bambic and Chris Minton to prepare a draft white paper that would be included as part of the targets and sources section of the TMDL/ Basin Plan Amendment	Team	04/15/16		Replaced by draft sources section in technical support document
02/24/16	Begin preparing written descriptions of implementation pathways building on the concepts agreed on during the past two workgroup meetings.	Team	03/23/16		
02/24/16	Clarify whether State Board's Plan will allow Regional Boards to establish more stringent targets, using other indicators, than identified in the State Plan.	Regional Board staff	03/23/16		
03/23/16	Revise memo to State Board to include mention of sewer collection system and revision of AB411 standards to be consistent with EPA 2012 criteria. Distribute to workgroup for review.	Jimmy Smith	04/15/16		
03/23/16	Develop more detailed written descriptions of the CBA scenarios.	Team	04/15/16		
03/23/16	Submit any additional local information on studies of leaking infrastructure to Clint Boschen.	All	04/15/16		
03/23/16	Individual sponsors of or participants in the San Diego River study will encourage Ken Schiff to develop estimates of the range of leaking sewage needed to produce observed amounts of human markers.	All	04/15/16		
03/23/16	Invite retired sewage system expert to next meeting	Chris Crompton	04/15/16		Invite for June meeting

Mng Date	Deliverable	Assigned To	Due Date	Status	Comments
03/23/16	Forward specific questions related to the operation and monitoring of sewage systems to Michelle	All	04/15/16		
04/18/16	Distribute memo for State Board to workgroup for review	Jimmy Smith	05/01/16		
04/18/16	Review sewer agency annual reports for useful information about infrastructure and human sources	Board Staff	05/15/16		No annual reports; no useful data found
04/18/16	Distribute inventory of sources studies to workgroup	Clint Boschen	05/01/16		
04/18/16	Prioritize CBA scenarios, perhaps in consultation with contractor	Workgroup	??		Start at June CBA meeting with consultant
04/18/16	Prepare updated list of CBA scenarios	Consulting team	04/22/16		
04/18/16	Provide comments on draft Intro and Problem Statement	Board Staff	05/10/16		
05/17/16	Permittees to work with Helen Yu to expand database for delisting, i.e., more recent data, information on actions that led to observed improvements	Permittees	06/23/16		
05/17/16	Add discussion and justification for regional SSO to the technical support document	Consulting team	06/23/16		
05/17/16	Prepare for SCCWRP workshop on SSO	Workgroup members	??		
05/17/16	Provide comments on draft targets section by week before next meeting	Board Staff	06/15/16		
05/17/16	Invite sewer system expert to next workgroup meeting	Chris Crompton	06/23/16		
06/23/16	Provide comments on revised Recommendations table, Source Analysis, and Targets sections	Board Staff	07/20/16		
07/27/16	Expand description of implications of risk-based approach for all aspects of implementation	Consulting team	08/24/16		
02/28/17	Revise Recommended Scenario flowchart and related text to clearly separate final TMDL compliance from interim actions to meet permit conditions	Consulting team	03/22/17		
02/28/17	Send Ben Arnold's paper to Board staff	Jian Peng	02/28/17		
02/28/17	Review 3 rd flowchart pathway with SCCWRP and SHS researchers	Consulting team	06/30/17		

San Diego Bacteria TMDL Workgroup Decision Record

Number	Date	Decision	Type	Yes	No	Abstain
2015-1	09-02-15	Allow two weeks for review of meeting notes	Consensus			
2015-2	09-02-15	Michelle Mata to take on central coordinating role	Consensus			
2015-3	09-02-15	Materials for discussion/review distributed minimum of 10 calendar days before meeting	Consensus			
2015-4	09-02-15	Meeting agendas to include decision points, discussion lead, intended outcomes, and reference to background documents	Consensus			
2015-5	09-02-15	Use 9/10 meeting as trial run for planned approach to more detailed discussion	Consensus			
2015-6	09-10-15	Future discussions of methods for calculating exceedance rates and related topics will account for different settings (freshwater, marine, bays) where this has important implications for the policy	Consensus			
2015-7	10-07-15	Overall schedule of completion between December 2017 and April 2018 with target of September 2016 for technical report	Consensus			
2015-8	10-07-15	Documentation and justification of assumptions will be provided in technical report	Consensus			
2015-9	10-07-15	Use of risk-based framework is appropriate	Consensus			
2015-10	10-29-15	Both the 36 and the 32 per 1000 illness rates are scientifically defensible and the 32 per 1000 illness rate represents an incremental improvement in water quality in accordance with the 2012 USEPA criteria. The 32 per 1000 illness rate has been selected with the possibility of revision based on the results of the Cost Benefit Analysis and/or if the SWRCB selects the 36 per 1000 illness rate as part of the Revision of Bacterial Objectives.	County San Diego, City of San Diego and RWQCB agreed. Pending final agreement from Orange county			
2015-11	10-29-15	E. Coli as the single indicator for freshwater and Enterococcus as the single indicator for marine waters	Consensus			
2015-12	11-19-15	Documents be worded to reflect that the choice of the 32/1000 illness rate is a working assumption. Revises Decision #2015-10	Consensus			
2015-13	11-19-15	The geometric mean is an appropriate TMDL target for dry weather because it is a good indicator of the level of risk over time, but additional thought needs to be given to the details of monitoring, averaging period, etc. in order to best measure trends in risk over time	Consensus			
2016-01	04-18-16	The Cost Benefit Analysis will include only REC 1 beneficial use, not REC 2	RWQCB, agreed by all other participants			
2016-02	07-27-16	Ultimate compliance could be based on illness rate, with FIB used as interim benchmarks of progress	Consensus			
2017-01	02-28-17	The CBA is intended as one of several inputs to a final decision about a science-based reopener; it will not be used as the final criterion for decision making	Consensus			
2017-02	02-28-17	Direct measurement of risk or illness with epidemiology studies or QMRA is more accurate and effective than monitoring with FIB to determine if the objective is being met	Consensus			

San Diego Bacteria TMDL Workgroup Parking Lot

Meeting Date	Issue	Tentative Meeting Date for discussion
9/10/15	Relationship of monitoring locations and procedures to compliance	TBD
10-29-15	Purpose of Cost Benefit Analysis Study and alternatives to be considered in the study	December or January
10-29-15	Need for 13241 analysis for proposed objectives	TBD
10-29-15	Methodologies for monitoring and analysis	TBD
10-29-15	Approach for addressing non-MS4 contributions (particularly wastewater) in TMDL	TBD
11-19-15	Align the definition of dry weather in the TMDL and the permit	TBD

Participants agreed that direct measurement of risk or illness with epidemiology studies or QMRA is more accurate and effective than monitoring with FIB to determine if the objective is being met