

Beaches and Creeks TMDL Cost-Benefit Analysis
Steering Committee Meeting
November 30, 2016

Committee Members Present

Jeremy Haas, San Diego Regional Water Quality Control Board
Jimmy Smith, San Diego Regional Water Quality Control Board
Ted Shaw, Atlantis Group, representing San Diego County Taxpayers Association
Rob Hutsel, San Diego River Park Foundation
Ruth Kolb, City of San Diego, Storm Water and Transportation
Todd Snyder, County of San Diego, Watershed Protection Program
Chris Crompton, County of Orange, Stormwater Quality Planning

Supporting Roles

Natalia Hentschel, Katz & Associates
Bree Robertoy, Katz & Associates
Jian Peng, County of Orange, Stormwater Quality Planning (Alternate to Chris Crompton)
Michelle Santillan, San Diego Regional Water Quality Control Board
Jo Ann Weber, County of San Diego
Maso Matlow, Environmental Incentives
Chad Praul, Environmental Incentives
Mark Buckley, Eco Northwest
Jeff Soller, Soller Environmental (Participating via phone)
Alvi Khalid, Tetra Tech (Participating via phone)
Clint Boschen, Tetra Tech (Participating via phone)
Ken Schiff, Southern California Coastal Water Research Project (Participating via phone)

Project Status Update

- The stream restoration report, enterococcus study and Orange County cost inputs are still pending. Once available, the steering committee will have the opportunity to review the studies and provide comment. Any issues identified by the committee will be addressed by the consultant. Revisions to the cost-benefit analysis (CBA) are expected, and time has been built into the schedule to allow for them.
 - J. Smith: To the extent that these reports influence the CBA, they need to be referenced in the final report.
- Initial results from the recreation and public health benefits analysis, co-benefits analysis, property analysis, screening Financial Capability Assessment (FCA) and best management practices (BMP) effects table are available for discussion.
- Eco Northwest is completing a peer review of cost estimates. The analysis is less quantitative than the consultant expected, but qualitative comparisons against industry norms will be made.
- The cost analysis is behind schedule. Data have been gathered, but they haven't yet been pulled together cohesively.

Recreation & Public Health Benefits Analysis

Methods

- Data inputs for the analysis included enterococcus concentrations from Tetra Tech modeling and the Surfer Health Study performed by Southern California Coastal Water Research Project (SCCWRP), annual human source pathogen data from Brown & Caldwell, beach illness rates determined by Soller Environmental, and City and County lifeguard counts of beach attendance.
- Some assumptions were made to make beach attendance data equivalent among all beaches.
- Gastrointestinal illness was the only category of illness analyzed due to the weak connection between other categories of illness and enterococcus levels.
 - J. Smith: Analyzing only one type of illness is a concern. We know there are other illnesses that affect public recreation. Could we take a safe range (e.g., double) to account for these other illnesses?
 - M. Buckley: We could calculate the rate of other illnesses as a ratio (e.g., if you have 12 cases of gastrointestinal illness, you would have three ear infections).
 - J. Soller: We could look at other illnesses from the Surfer Health Study (e.g., skin irritation, respiratory problems or ear infection), but we probably wouldn't have enough data for more severe issues that have lower incidence. The primary concern would be whether there are enough data to link those illnesses to the enterococcus concentration.
 - T. Shaw: We need to know whether we can pull the information from the Surfer Health Study. If it's not useable, we need to note that. I'm not comfortable adding a chunk of money to it just because the illnesses are out there. We need to be conservative in our assumptions.
 - C. Crompton: The Rec-1 total maximum daily load (TMDL) beneficial use definition implies that gastrointestinal illness is the concern.
- Scripps, Chollas, Tecolote and Orange County beaches are not included in current results. Data for some of the beaches are pending from Tetra Tech.
 - C. Crompton: The report should include maps indicating which beaches are included.
- The analysis assumes attendance is limited to patrons who would have contact with water. This is not a very sensitive assumption.
- Avoided illness value was determined to be approximately \$50 per illness. The studies used to determine the avoided illness value will be included in the report.
- Recreation trip value was determined to be \$39.68 per day based on an extensive literature review that will be included in the report.
- Tetra Tech supplied enterococcus data for each watershed, and a dilution factor was determined using the Surfer Health Study to determine illness rates. The data are all watershed-specific.
 - J. Smith: Since the Surfer Health Study's population sample was not representative of the general population, would there be a consistent change or a variable change among watersheds?
 - That is a complicated, but important, question. This meeting may not be the right place to address that uncertainty. There are benefits and drawbacks to using the Surfer Health Study, and the report needs to be clear about that.

- A Quantitative Microbial Risk Assessment of illness rates was conducted. Illness rates are based on changes in the number of illnesses that occur with any particular scenario being studied as part of the CBA. There are typically no benefits from BMPs two days after a wet weather event, but it does vary among watersheds.
- The threshold for a wet weather event is 0.2 inches of precipitation. The data were gathered by Tetra Tech from USGS, City and County gauges in the watershed. Model outputs include a host of rain gauges to calibrate the model, but only one gauge is used to flag a “wet” day. Tetra Tech has a detailed process of interpolating and patching data for unreliable data periods. An analysis of this process will be included in the report.
 - R. Hutsel: This process doesn’t make sense. I have concerns with the approach of using just one point in the watershed to determine wet weather events. There could be a cumulative impact of flows at the lower end of the watershed.
 - T. Snyder: Can we get a list of stations? These data seem off.
 - C. Crompton: In Orange County, we get more rainfall up north, but it wouldn’t go anywhere unless the ground is totally saturated. Some companies create averages between the different gauges using radar.
 - J. Smith: What we really care about are wet weather flows. Did Tetra Tech correlate the rain gauges with flow gauges, and are they confident that all of the wet days resulted in increased flows?
 - The rain gauge data are compared to flow output modeling generated from rain, landscape and soil data. Then the model’s performance is judged based on observed flow data. Yes, Tetra Tech is confident that wet weather events resulted in increased flow. A detailed modeling report for the City of San Diego can be included in the CBA. For Orange County, extrapolations are necessary.
- Based on a Brown & Caldwell report, risk was assessed of human waste and treatment facilities’ proximity to water sources and size of pipelines. The criteria are going to be included in the report.
- J. Smith: I’m concerned about the level of confidence in the results of the CBA. The report will need to include a discussion of overall certainty.
 - The report will include sensitivity analyses on the most critical assumptions. The consultant team is working with the best experts to bridge data gaps and reduce uncertainty. All choices are being documented.
- J. Smith: Error bars or confidence intervals should be added to all results to the extent possible. The report should also include a decision-making flow chart.

Results

- The value of annual public health benefits from stormwater BMPs is approximately \$10,000, which is very low. Tweaking methods may not show a big change in value since the number is so low.
- For the recreation analysis, the portion of wet weather events with enterococcus exceeding 104 CFUs per 100 ml were shown to be less than one day per year, which is not accurate. This is due to the dilution factor used. The consultant is investigating options to calibrate the data.
- Roughly 20 percent of visitors seem to be sensitive to water quality the days immediately after a wet weather event.

Action Item

- The consultant will calibrate the data and present revised results at the December 13 teleconference.

Water Quality and Illness Inputs

- Two calls were held prior to the November 30 meeting to discuss water quality and illness inputs, but there were some lingering questions to be discussed.
- The consultant has been analyzing local data, including the Prop 84 Grant Evaluation Report BMP Effectiveness Study performed by SCCWRP. Thus far, the results are not conclusive.
- J. Haas: A lot of local treatment and non-structural BMP projects are underway. Municipalities also have studies available. I'm surprised and discouraged to hear that more local studies weren't part of this assessment. National databases are not representative of California.
- C. Crompton: A wet weather study of human sources is in progress; we need to make sure we talk to SCCWRP about incorporating that study.
- M. Santillan: The committee provided a list of studies to include early on in the project. The consultant should revisit that list.
- J. Haas: Regarding marginal costs over time, some BMPs are not modeled. For non-structural BMPs, is communication between stormwater and wastewater BMPs included?
 - The consultant is attempting to analyze stormwater potential, with a separate scenario for wastewater BMPs.
 - J. Peng could possibly provide more information on this.
 - C. Crompton: A literature review of BMP effectiveness for the Santa Ana Regional Board could be a good reference for the link between fecal coliform and enterococcus.
- J. Haas: On the call, the consultant talked about moving compliance points from the mouth of the creek out to the ocean. If we move the compliance point to receiving waters at the beach, we won't need as many BMPs for the freshwater.
 - R. Kolb: When developing the REC-1 TMDL, the impression was that the compliance points would be in the ocean where recreation occurs.

Co-Benefits Analysis

- The focus is on secondary benefits of stormwater BMPs, not on riparian restoration.
- Results are not available yet, as the consultant has not received final BMP values from Tetra Tech.
- J. Haas: Will the report be watershed-specific? It should be relevant to the region.
 - The intention is to capture actual marginal values of each watershed, but the data only allow for more general information. The analysis will include things that are locally scarce and would be beneficial to the local region.
- J. Haas: To my understanding of green infrastructure, people often promote as a benefit, reduced traditional infrastructure costs.
 - It depends on the approach. Green infrastructure can cost less, but it can also cost more because of increased maintenance costs. We haven't found net cost savings locally.
- J. Haas: Are open areas/restoration strategies going to be considered? They tie in nicely with stormwater programs.

- R. Hutsel: Even a swale can restore ecological value. I didn't see flood reduction included or additional water quality benefits not related to the TMDL but related to BMPs that would reduce costs down the line.
 - The consultant needs more data for flooding.
- J. Haas: Onsite green infrastructure might not reduce big events, but could reduce smaller events, meaning stormwater staff might not need to clean out the channels as much.
 - C. Crompton: When vegetation is installed, there is a new world of maintenance (e.g., permits to clean drains, tree removal) which is more complex. Natural channels are likely to increase costs.
- T. Shaw: When starting to implement new rules there will be lots of costs. I would like to see a regional solution that moves toward stream land restoration. Criteria for green streets has more standards than a regular street. There should be a way to tie in non-TMDL items that will result. A lot of stormwater BMPs are not in dense urban areas, but out in the peripheral. I appreciate the desire to capture these benefits, but I'm not sure you can find a study that captures this region.
- R. Kolb: The City of San Diego could provide information about a creek restoration project in Chollas. There are also plans to put in green infrastructure around the city. Some monitoring data are available, and I sent C. Boschen an email to check into that.
- J. Haas: Small storm events could reduce predators and thus increase habitat for endangered species.

Action Items

- R. Kolb will assist the consultant with obtaining potential flood reduction studies.
- The consultant will submit a request to the committee for relevant data relating to the co-benefits analysis (e.g., flood reduction, hydrological modeling or ecological benefits).
- R. Kolb will provide SAP and/or Alternative Compliance Project (ACP) databases to the consultant.

Property Value

- The analysis showed almost no real effect of water quality on beach front property. The results were not significant and not consistent.
- Properties within one mile of the beach were analyzed, and the study controlled for other factors.
- The analysis will be documented, but it will not contribute to the final CBA.

FCA Methodology and Draft Results

Methods

- The FCA will no longer include trash costs, as the cost data does not exist. Based on the draft results, the consultant does not think the trash costs would significantly impact the outcome of the assessment.
 - R. Kolb: Los Angeles has a similar permit and could provide data regarding trash costs.
- Wastewater and stormwater data, number of households and median income are from the City of San Diego. Water supply data are from the San Diego County Water Authority. Orange County is not included in the assessment.

- The costs are based on operations and maintenance, and debt. They are projected for future years based on expected costs, including new projects. Bonds, asset management plans, and the County of San Diego's Water Quality Improvement Plan estimates are included.
- Costs are for primary treatment.

Results

- Water supply and stormwater costs are low. Wastewater costs are high. The total value with all three category of costs is high (more than 6 percent).
- It is possible that the number of households could increase. Also, there is potentially double-counting between wastewater and water supply. Both these things will be further investigated.
- C. Crompton: National studies typically show stormwater is more expensive than wastewater.
- T. Snyder: \$1.2 billion annually seems high for wastewater costs.
- T. Snyder: How does this compare to other FCAs?
 - This one is a larger scale than most FCAs. Also, FCAs are usually performed for wastewater costs only.

Action Item

- The consultant will work with R. Kolb and C. Crompton to review and vet costs.

BMP Effects Table

- The BMP effects analysis was requested under conceptual model by the Technical Advisory Committee. The goal is to look at co-benefits or co-costs associated with the BMPs analyzed in the CBA to help think through unintended effects of the BMPs.
- The analysis includes a literature review and expert review.
- No significant assumptions are required for the analysis.
- The results will be provided in table format.

Action Item

- The consultant will discuss uses for the table with Technical Advisory Committee member Eric Strecker.

Project Schedule and Next Steps

- The draft CBA will be ready one month later than originally scheduled due to the late submittal of some analyses.
- Monthly in-person meetings have been scheduled. If supplemental teleconferences are required, more notice should be provided to committee members. Teleconferences should focus on targeted questions.
- J. Haas and J. Smith of the Regional Water Quality Control Board will not be able to attend the December teleconferences; if the consultant can provide specific questions prior to these calls, J. Haas and J. Smith can provide feedback and provide another representative from the water board to participate.
- R. Kolb will be unable to participate in the December 20 teleconference.
- Presentation slides and meeting summaries from the December 13 and December 20 teleconferences are to be circulated to steering committee members.

- M. Santillan will send invitations for additional conference calls in January and February.