STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION
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PUBLIC COMMENTS AND STAFF RESPONSE

Water Board staff received comments from:

1. John Ricker, Water Resources Division Director, Santa Cruz County Environmental Health Services, in an email dated January 23, 2009.
2. Robert Ketley, City of Watsonville, in a letter dated November 4, 2008. Note that staff was instructed by Robert Ketley to use this letter as the formal comments from the City of Watsonville.

Below are staff responses to these comments. All comments are direct transcriptions from the letters unless otherwise noted. Comments are numbered and followed by staff's responses.

1. *All headers need to be revised to read "Corralitos and Salsipuedes Creeks fecal coliform TMDL".*

Staff Response:
Typically staff writes the title of a project report, Basin Plan Amendment, etc. as follows: Staff begins with "Total Maximum Daily Loads", followed by the pollutant, followed by the waterbody or watershed. Staff tries to be consistent about writing the title the same way on all documents.

2. *(REC1) Water Contact Recreation*
"Uses of water for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing, and use of natural hot springs." (Water contact implies a risk of waterborne disease transmission and involves human health.)
(REC2) Noncontact Water Recreation
"Uses of water for recreational activities involving proximity to water but not normally involving contact with water where water ingestion is reasonably possible. These include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

Staff Response:
Staff included definitions for the REC1 and REC 2 beneficial uses in the project report; however, these were truncated versions of the definitions. Staff added the remainder of each REC 1 and REC 2 definition to the project report.

3. The City is of the understanding that fecal indicator bacteria (FIB) water quality objectives are necessary to protect human health and the associated beneficial uses of the water body, while no evidence has been presented indicating that the pathogen impairment in the Corralitos/Salsipuedes Creek watershed is preventing any proper functioning of the watershed as sought in the Vision of Healthy Functioning Watersheds. Please provide the reference that supports the claim that, "Staff expected these plant and animal species to benefit from the implementation resulting in the reduction of fecal coliform" and how this applies to MG1.

Staff Response:
Staff concluded that pathogen impairment in the Corralitos/Salsipuedes Creek watershed is preventing proper functioning of the watershed as sought in the Vision of Healthy Functioning Watersheds. The Vision's Measurable Goal 1 states: By 2025, 80% of the Aquatic Habitat is healthy; and the remaining 20% exhibits positive trends in key parameters. The Water board's definition of healthy aquatic habitat includes the ability of waterbodies to support their beneficial uses. Corralitos and Salsipuedes Creeks should support the REC-1 beneficial use; however currently the Creeks do not support this use because they do not meet the REC-1 Water Quality Objective for fecal coliform. Therefore the watershed is not functioning properly in terms of Measurable Goal 1.

Although staff does not have information connecting pathogens to negative impacts on plant species, staff does have evidence that pathogens have an affect on animal species. Pathogens are recognized for making humans sick. Humans may come in contact with pathogens while recreating in water. The use of water by humans for recreational purposes is safe if the REC-1 beneficial use is protected. Currently, humans are not safe because the REC-1 beneficial use is not protected. Thus, humans are expected to benefit from the implementation resulting in the reduction of pathogens, or, fecal coliform.

Staff removed the reference with regard to staff expecting plant species to benefit from the implementation of these TMDLs.

4. p.2, paragraph 1. "Staff is proposing that the Corralitos/Salsipuedes Creek watershed be subject to two existing prohibitions (Domesticated Animal Waste Discharge Prohibition and Human Waste Discharge Prohibition) that, upon approval, will be amendments to the Water Quality Control Plan, Central Coast Region (Basin Plan). Regulating domestic animal waste and human waste discharges through prohibitions is consistent with the Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program." Please clarify if the prohibitions are existing or proposed. If proposed, does that make them unenforceable until the Basin Plan has been amended?

Staff Response:
The prohibitions are currently proposed and are within the Pajaro River Watershed Basin Plan Amendment Package. The Pajaro River Watershed Basin Plan Amendment Package is the item scheduled to be heard just prior to the Corralitos Creek Watershed Basin Plan Amendment Package in the Board Meeting on March 20, 2009.

With respect to enforceability of the prohibitions, they are enforceable after approved first by the State Water Resources Control Board and finally by the Office of Administrative Law (OAL). This being said, approval of the prohibitions does not preclude the Water Board from using existing regulatory authorities to address discharges causing or threatening water quality.

5. p9, Table 2-1. The report states that urban land use comprises approximately only 2% of the entire watershed, yet the City of Watsonville "...is one of the larger stakeholders in the watershed" per e-mail from K. Sanders on 8/22/08. With around 800 acres (approx. 20%) of the City of Watsonville's drainage area discharging to the Corralitos Creek/Salsipuedes Creek watershed, the pathogenic impairment observed in the reaches of the lower watershed appear to be associated with elevation and flow as much as with adjacent land use. The City suggests that the low flow, depositional reaches of the lower watershed are likely to be organically enriched relative to the upper watershed, and as such are more likely to produce conditions (warm, stagnant) conducive to microbial regrowth. The evaluation of the significance of this potential regrowth is critical to the successful implementation of the fecal coliform TMDL for the Corralitos Creek and Salsipuedes Creek watershed. We must avoid over-simplification of the bacterial dynamics in this environment.

Staff Response:
Although staff reported that urban land use comprised approximately 2% of the watershed, staff also indicated that, "Urban, low intensity residential, and agricultural (irrigated row crops) land uses were the dominant land uses in the impaired reach." Staff did not have reason to conclude that agricultural land use was a source of FIB in the Creeks. Thus, the largest land uses draining to the impaired reach were urban and low intensity residential. Of the urban land use stakeholders, staff concluded that the City of Watsonville was one of the largest. As such staff engaged in stakeholder outreach by soliciting early comments from the City of Watsonville, the subject of the email from Water Board staff, K. Sanders, on 8/22/08.

Staff discussed the possibility of stagnant water and in-stream reproduction of FIB in Section *4.1.8 Natural Sources* and Section *5.1 Critical Conditions* in the project report. Staff agreed that they should evaluate instream microbial regrowth (naturalized fecal indicator bacteria) as research regarding this subject becomes available, and if staff determines at one of the triennial reviews that all source implementation is in place and FIB levels are still high.

6. It must be noted that based on numerous field observations by City staff during the late summer/early fall that there is generally no flow at the gauging station at Corralitos Creek at Freedom Boulevard, while there is significant flow during the same period of time in the Salsipuedes Creek which has no flow gauging station. This results in a significant data gap with regards to interpreting sources and loadings within the watershed.

Staff Response:
Staff conducted the source analysis study in the reach between Corralitos Creek at Freedom Boulevard and the confluence of Salsipuedes Creek and the Pajaro River, as

they did elsewhere in the watershed, based on many different types of data listed in the project report (Section *4 Source Analysis*). Staff used their best professional judgment to assimilate the data provided and make decisions as to which sources contributed to the impairment.

Staff often does not have flow data with which to calculate loads. Additionally, loading estimates can be useful in narrowing down sources, but if different land uses comprise the land above a gauging station, the specific loads from each source are still difficult to determine.

7. Given the known variability in the analytical method and the broad response of FIB concentrations at any one sampling point, a confidence range of the utilized data should be established to account for observed variability, including the geomeans. This will become a critical component of any trend analysis of data over the life of the pathogen TMDL. In addition, in order to strengthen the statistical analysis there should be a method to manage data which skews the geomean (see page 19, Section 3.3.4).

Staff Response:
,Our regional monitoring program (Central Coast Ambient Monitoring Program [CCAMP]) attempts to assure quality of its data by collecting water samples in duplicate as required by the Surface Water Ambient Monitoring Program Quality Assurance Program Plan[1] that states, "Field samples collected in duplicate provide precision information as it pertains to the sampling process."

As stated in the comment, the methods for analyzing and collecting data vary among labs. The method used to analyze the CCAMP data is based on a USEPA method, which have known statistical limits. This method includes using a confidence *limit* to interpret the quality of the collected and processed data, and not to interpret the data. The confidence limit for each data value varies from sample to sample, increasing as the data value gets larger. No confidence *interval* is calculated for the data value.

With respect to trend analysis, staff looks forward to working with stakeholders during the implementation phase, which will include trend analysis to determine progress being made toward achieving the TMDL. Sine the statistical limits are known for CCAMP generated data, staff predicts that meaningful analysis can be developed.

Finally, the Basin Plan water quality objective does not specify a confidence interval. Knowing the confidence intervals would not change the results of this report, because staff would have no standard confidence interval with which to compare those intervals. Staff would still need to determine sources, assign allocations, and develop an implementation plan designed to achieve water quality objectives.

8. p17, Sec. 3.3.3. "Land uses upstream of this location (Salsi 21) were primarily agriculture, pasture, low intensity residential, and urban." Please elaborate as to what

[1] Version 1.0, The Surface Water Ambient Monitoring Program Quality Assurance Team, Quality Assurance Research Group, Moss Landing Marine Laboratories, San Jose State University Research Foundation, September 1, 2008.

urban land use is upstream of Salsi 21 on Salsipuedes Creek?

Staff Response:
There are two residential areas (one area is bordered by the intersection of Holohan Road and East Lake Avenue, and the other is just northeast of the County Fairgrounds along East lake Avenue), the County Fairgrounds, an elementary school and a cemetery, upstream along Salsipuedes Creek above sampling station SALSI 21.

9. p22. paragraph 3. CWC [Coastal Watershed Council] data is not found in Appendix A.

Staff Response:
The CWC data is found on page 6 of Appendix A.

10. The City disagrees with the clumping of "controllable wildlife waste and transport mechanisms" with the City's storm drain (MS4) discharges in Table 4-1. The City understands the Board's intentions to educate the MS4 stakeholders regarding proper waste management (i.e. prohibit littering, control dumpster leachate, cleanup pet waste) in order to reduce pests (e.g. rats). However, no evidence was presented to support the claim that deer, raccoon, skunk, opossum, or bird are controllable sources associated with the City's storm drains. This inference ignores the obvious wildlife habitats associated with this watershed, especially in any undeveloped, low density, or boundary properties within the City limits.

Staff Response:
Staff discussed the differences between controllable and uncontrollable wildlife in Section 4.1.9 Natural Sources. Although staff has not seen opossums, skunks or raccoons within areas that drain to MS4s in this watershed, staff has seen these animals in other municipalities and concluded that based on staff's best professional judgment, those animals are also within the City of Watsonville. Furthermore, staff has observed birds in the City and staff knows from experience that birds and these other animals are attracted by human activities. Staff determined that if an animal is attracted to an urban area by anthropogenic activity then the animal can be discouraged, to some degree, by modifying that anthropogenic activity. Hence, some proportion of loading from these sources is likely controllable.

Staff also acknowledged in the project report that there is wildlife habitat in which the fecal coliform loading is attenuated by the natural conditions of that area including plant filtration and pervious surfaces.

11. On p.27 the Board states, "...staff noted exceedances of water quality objectives with all land uses", however, on p.44 it is stated that, "Water Board staff does not have reason to believe that agricultural land use was a source of FIB in the Creeks." We question this conclusion and request field validation of this claim since this land use accounts for a significant portion of the lands adjacent to the impaired reach of this watershed. Hager et al 2004 provides evidentiary data that exceedances in FIB occur adjacent to row crop agriculture (see HAR-CON data; fecal coliform and E. coli as high as 5,000 MPN/100mL and WAT-AND as high as 8,150 MPN/100ml fecal coliform).

Since E.coli has been found growing on decaying organic matter, it seems reasonable to evaluate this land use as a source and incorporate these property owners into the allocation, implementation, and monitoring components of this TMDL.

Staff Response:
Staff wrote the comment on page 27 to mean that staff noted water quality exceedances in the Creeks at the various monitoring stations, and there was no way to know exactly where the exceedance was coming from due to mixed land uses upstream of any one station. Staff assumed the exceedance could be from any of the land uses, and that all land uses should be investigated for fecal coliform loading. In the sources analysis section (Section 4) staff went on to investigate all sources including agricultural land use. Staff did not have evidence to conclude that agricultural land use was a source, but is continuing to investigate by coordinating efforts with U.C. Davis and the Department of Health Services.

The data the commenter presented is from the TMDLs for Pathogens in the Watsonville Slough project report. One source noted in this watershed was raw manure. Staff specifically investigated the use of raw manure in the Corralitos and Salsipuedes Watershed and could not find evidence that it was being applied.

Staff agreed that there may be fecal coliform loading from agricultural land use, but that it is due to the wildlife that may use agricultural areas. This loading is accounted for in the allocation to natural sources. Furthermore, the Basin Plan water quality objective for fecal coliform accounts for background or natural sources.

12. On p.28, Sec. 4.1.1. states, "Based on land use surrounding the impaired reach of the Creeks, much of which is urban, and ribotyping studies in similar watersheds (Section 3.4 Relationship of Genetic Studies to Land Use in Other Watersheds), staff concluded that the following sources were likely in the storm drain discharge from the Corralitos/Salsipuedes Creek watershed." This conclusion is inconsistent with the previous statement on p.23 which says, "In watersheds where there is a mosaic of land uses, microbial source tracking is not a reliable method for tying sources to land uses because the same animal sources can originate from more than one land use."

Staff Response:
Staff discussed the types of data used for the source analysis at the beginning of Section *4 Source Analysis.* Staff used ribotyping studies as one type of data with which to determine sources. The statement on page 28 should have indicated that staff used other data in addition to land use and ribotyping data to determine the likely sources in storm drain discharge. Staff revised the project report to reflect this change.

13. The comment on p.45 Sec. 4.3., "Additionally, the Creeks attracted controllable wildlife who defecated directly into the Creek systems". How was the wildlife determined to be "controllable"? Isn't that observation a natural condition of a healthy watershed?

Staff Response:
Staff agreed that wildlife use of creek systems is a natural condition. As stated in the response to number 10, some wildlife is attracted to anthropogenic actions and is

therefore controllable to some degree, by modifying those actions. Controllable wildlife may venture into the Corralitos and Salsipuedes Creek systems.

14. We understand that the Board is requiring implementation of corrective actions for controllable sources of fecal contamination in this watershed. However, we feel it is inaccurate to state: "Natural, or, uncontrollable sources of FIB also existed within the watershed. Staff considered this source the least significant source of fecal coliform in the Creeks". Microbial source tracking studies in similar watersheds suggests up to 90% of the FIB is from birds during dry weather conditions. There is also likely a much greater density of natural sources in the lower reach of this watershed due to its proximity to the wetlands habitat. While microbial source tracking (MST) is being enthusiastically funded, much of the research is revealing that human-sourced bacteria contribute less than animal/non-point bacteria regarding the total numbers of indicator bacteria in the environment.

Staff Response:
Staff's ranking of sources was an estimated based on a weight of evidence approach using the evidence that was available at the time. Staff used field observations in addition to conversations with California Department of Fish and Game (CDFG) staff to arrive at the conclusion that natural sources did not make as large a FIB contribution in this watershed compared with some other watersheds adjacent to the Pacific Ocean. Jennifer Nelson of the CDFG indicated that while there are animals including birds present in the watershed and in the Creek system, the birds probably do not exist in similar numbers as shore birds on an ocean adjacent Creek.

Staff also used other creeks as references while ranking sources. There is evidence that natural uncontrollable sources alone may not cause receiving water concentration to exceed the numeric target, i.e., that the numeric target can be achieved by managing controllable sources of FIB in other creeks. For example, Waddell[2] and Scott's Creeks[3] are coastal streams with lagoons. Both Waddell and Scott's Creeks, as well as their lagoons, carry FIB concentrations that achieve the geometric mean value of the numeric target. Single samples from these water bodies have exceeded the numeric target, but the monthly geometric mean achieves the numeric target. Staff, therefore, concludes that the potential exists to achieve the numeric targets by managing the controllable fraction of FIB in the San Lorenzo River Watershed. Hence, staff concluded that natural sources are contributing less to exceedance of objectives than controllable sources of FIB.

Staff acknowledged that the Corralitos/Salsipuedes watershed is a waterbody heavily influenced by urban sources of FIB, whereas Waddell and Scott's Creek are much less developed with less human presence in their watersheds. Therefore, staff offers the above example as more of an indirect comparison, showing concentrations of FIB that

[2] Waddell Creek is located in the Redwood Belt of the Santa Cruz Mountains. The California Big Basin State Park occupies approximately 85% of the Waddell Creek watershed. The lower watershed is comprised of developed open space with a ranger/nature station at the bottom.
[3] Scott's Creek is also located in the Santa Cruz Mountains. The watershed is very rural with a small number of humans in residence. Low intensity timber harvesting, row-crop farming, and cattle ranching are practiced in a sustainable fashion.

more natural waterbodies may exhibit in this area, and not to show a direct comparison to other urban waterbodies that are achieving numeric targets.

Although, if after controlling for all controllable sources staff finds that water quality objectives are still exceeded, staff may conduct investigations to determine if the high level of FIB is due to natural uncontrollable sources. If this is the case, staff will consider recommending a site specific objective.

Lastly, the water quality objectives do not distinguish between sources, animal or human.

15. Although evidence suggests that there are higher loadings of fecal coliform from impervious surfaces (e.g. urban/residential land uses) during wet weather, the hydrological and ecological differences between the upper and lower reaches of this watershed should also be considered when evaluating fecal coliform concentrations, especially during low flow periods. Recent studies have confirmed that coliforms can persist in aquatic systems residing in the sediments resulting in regrowth when conditions are conducive. The lower reach of this watershed possesses a much more gradual elevation change, creating a depositional/stagnant environment where biofilms may be acting as reservoirs for the pathogenic bacteria.

Staff Response:
Staff acknowledged deposition of fecal coliform in sediment within waterbodies and potential instream reproduction of *E. coli* in Sections *4.1.8 Natural Sou*rces and *5 Critical Conditions and Seasonal Variation.*

16. The statement on p. 47 that "Staff found that stagnation might be critical to increasing the level of E. coli to exceed recommended water quality criteria during the dry season" and, "The extent of the influence from this factor is unknown", underscores the importance of considering the sampling site flow conditions when performing the data analysis. Merely sorting the data by wet or dry season does not take into account the flow regime of the sampling site when the sample was collected.

Staff Response:
Comment noted. Staff took into account the observed flow of the sampling site referred to in the above comment and did consider that lack of flow could have resulted in water quality exceedances at this site. Additionally, staff rarely if ever has flow data for each FIB sampling site. Resources generally do not allow for this type of analysis. Staff welcomes stakeholder input regarding monitoring approaches and sites during the implementation phase of the TMDL.

17. As noted on p 47, sections of Corralitos Creek typically has stagnant sections and dry stretches during the dry season. If stagnant pools persist during the dry season, are receiving water samples expected to be collected and evaluated using the same Basin Plan WQO criteria?

Staff Response:
The Basin Plan states, "Beneficial uses are regarded as existing whether the water

body is perennial or ephemeral, or the flow is intermittent or continuous." In addition, staff welcomes stakeholder input regarding a scientifically valid and common-sense approach to monitoring, including monitoring sites and timing of monitoring, with the end result being protection of existing or potential beneficial uses.

18. We understand that the Board is amending the Basin Plan to include a E. coli water quality objective. The City has been monitoring this watershed using E. coli as the FIB, would it be acceptable for the City of Watsonville to use the numeric target recommended for E. coli REC1 water quality objective of 235/100 mL for a single sample limit and 126/100 mL for the geomean?

Staff Response:
The Central Coast Water Quality Control Board is not amending the Basin Plan to include an *E. coli* water quality objective at this time. However, the State Water Resources Control Board (State Board) anticipates approval of new state-wide standards for FIB within the next year. The state-wide standards will include the USEPA recommended water quality criteria for *E. coli*. The Central Coast Water Board will use the new standards once they are adopted by the State Water Resources Control Board.

19. The City suggests serious consideration of a limited REC1 water quality objective in the future, which is consistent with USEPA guidance, and which suggests higher allowable levels for bacteria limits with decreasing frequency of use in a waterbody.

Staff Response:
Staff and the State Board have been evaluating establishment of a limited REC1 water quality objective that allows higher levels of bacteria. Staff determined that the need to adopt TMDLs based on current water quality standards in order to initiate control of controllable sources outweighed the benefit of taking more time to develop the data and information to support a new beneficial use category, designation and water quality objective. However, that possibility remains on the table for future consideration. Note the definition of the REC-1 beneficial use in comment number 2 in this document. Staff concluded that currently the REC-1 beneficial use is applicable for Corralitos and Salsipuedes Creeks because "ingestion of water is reasonably possible" by persons who may ingest water while recreating in Pajaro Levee Park that is adjacent to Salsipuedes Creek water, and by homeless persons who regularly use the Creek systems. Furthermore, both Creeks are accessible to humans and staff must consider the potential beneficial uses of the waterbodies. Staff determined there is potential for humans to wade in this waterbody and therefore the REC-1 beneficial use is applicable.

In the future, if staff has evidence to conclude that REC-1 is not an appropriate beneficial use in all or some part of the watershed, then staff may propose site specific objectives, or regulate based on newer standards, e.g. those being proposed on a statewide level.

20. The discussion in this section omits any mention of the uncertainty in the linkage analysis that is associated with the "unknown" influences of "natural sources" including microbial regrowth.

Staff Response:
Staff gave natural sources a load allocation that is equal to the TMDLs (Section *8 TMDL Calculation and Allocations)*. Section *7 Linkage Analysis* staff stated, "Staff determined a link is established because the numeric target concentrations are the same as the water quality objectives (and TMDLs)..." Staff expects the contribution of natural sources to not exceed the water quality objectives for fecal coliform.

The water quality objectives take into account natural loading which is why they are not set at zero MPN/100mL, but at 200 MPN/100mL.

21. On p.56 the report sates that "The ability to differentiate the controllable from the natural sources is the chief uncertainty in these TMDLs", but that "staff may conduct investigations to determine if the high level of indicator fecal coliform is due to natural uncontrollable sources. It is not clear how the City can demonstrate effective implementation of the control measures given the uncertainties associated with the effectiveness measures?

Staff Response:
Staff concluded that the City can demonstrate effective implementation of control measures by fulfilling the requirements of the SWMP, and complying with the Human Fecal Material Discharge Prohibition and the Domestic Animal Waste Discharge Prohibition. If after the City demonstrates that they have fulfilled these requirements the fecal coliform levels exceed water quality objectives, staff may consider site specific objectives. Staff may conduct investigations to determine site specific objectives, or responsible parties may be expected to conduct investigations if they are interested in a site specific objective.

22. SWMP and Wasteload Allocation Attainment Plan. This TMDL, like others the City is currently addressing, covers a large area and multiple land uses. The City believes that addressing watershed-scale issues with all responsible parties is the most effective way to address TMDLs. As such, the City has included the following TMDL language in our latest SWMP submission to the Board:
The BMP's contained in the city's draft SWMP have been developed specifically to implement recommendations and address the sources identified in the TMDL implementation plans and supporting documents. The background material used in the development of the TMDL's included source identification and prioritization; BMP identification and prioritization, monitoring program development and coordination with stakeholders, as needed to attain the recommended wasteloads. A goal of the SWMP is not to target BMP's to specific TMDL's, or geographic areas, but to implement the BMP's throughout the management area to reduce controllable sources of sediment, FIB, and nutrients associated with the stormdrain system to the maximum extent practicable. The effectiveness of these BMP's toward meeting water quality objectives will be assessed on a triennial basis, in conjunction with the Regional Water Board's mandated triennial review of TMDL implementation for all sources. This review may result further refinement of BMP's for greater effectiveness, or refinement of water quality objectives to recognize the effect of uncontrollable sources of pollutants.

Staff Response:

The City is free to take a holistic approach to working with other stakeholder groups in the watershed to resolve various type of pollutant loading from multiple sources. However, the Water Board will still require itemized evidence and reporting that indicates each responsible party met their allocation for each constituent. This is why we require a SWMP that includes a Wasteload Allocation Attainment Plan (WAAP) and specific BMPs targeting each pollutant related to specific TMDLs.

The Phase II General Municipal Storm Water Permit and federal regulations indicate that a rigorous approach to implementation of the SWMP with regard to a specific pollutant is appropriate. The General Permit requires that Storm Water Management Plans (SWMPs) be "designed to reduce the discharge of pollutants from the permitted MS4 to MEP and **protect water quality**" (emphasis added)[4]. Also, the Preamble to the Phase II Federal Storm Water Regulations states: "Small MS4 permittees should modify their programs if and when available information indicates that water quality considerations warrant greater attention or prescriptiveness in specific components of the municipal program."[5]

Water Board staff developed the requirements for WAAPs as a means to systematically guide municipalities toward attainment of their wasteload allocations. Without a systematic approach of this type, staff concluded that attainment of wasteload allocations is unlikely. This conclusion is supported by the contents of the City's and County's SWMPs. **Generally, the SWMPs do not exhibit the rationale used for BMP selection or draw connections between those BMPs selected and eventual wasteload allocation attainment. Without this level of planning, the significant challenge of achieving wasteload allocations within 13 years is not likely to be met.** USEPA forwards similar approaches for TMDL implementation in its *Draft TMDLs to Stormwater Permits Handbook*, which discusses BMP review and selection, establishing linkages between BMP implementation and load reductions, effectiveness assessment, and BMP/outfall/receiving water monitoring[6].

Ultimately, the WAAPs place the responsibility for program development, assessment, improvement, and success on the municipalities. Placement of responsibility on the municipalities is appropriate, since the municipalities are the parties contributing to the water quality impairment. This approach is also consistent with the Water Board's approach of requiring plans for control of fecal indicator bacteria and associated pathogens from other sources identified by TMDLs, such as sanitary sewer collection private laterals and domestic animal discharges. The Water Board will collectively assess the progress of the various sources toward achieving receiving water quality standards as part of its triennial review, but each source must be responsible for assessing its own progress toward achieving its wasteload allocation. The process of planning, assessment, and refinement outlined by the WAAPs helps ensure continual improvement and ultimate attainment of water quality standards at impaired receiving

[4] State Water Resources Control Board. 2003. Order No. 2003-0005-DWQ. p. 8.

[5] 64 CFR 68753

[6] United States Environmental Protection Agency 2008. Draft TMDLs to Stormwater Permits Handbook. Chapters 5 and 6.

waters. Since the City's and County's SWMPs are the regulatory mechanisms through which their wasteload allocations must be attained, inclusion of the WAAPs in the SWMPs is appropriate.

Note that City and County staff met with Water Board staff after this public comment was received and discussed the WAAPs, and the necessary content.

23. p62, Sec. 10.2.2. "The Central Coast Water Board will regulate discharges from homeless persons/encampments by requiring compliance with the Human Waste Discharge Prohibition." The river levee is used by homeless and transient populations. Encampments and nearby outfalls are typically associated with litter and fecal matter. Each year, the City evicts camp residents and removes all materials. Within days the camps re-establish or simply relocate to another section of the river. National and international policies as well as the large seasonal workforce required by agricultural operations in Monterey and Santa Cruz Counties make the city's efforts to manage this problem of very limited value.

Staff Response:
Comment noted. Staff realized that attenuating fecal matter generated by homeless persons is a unique challenge. However, it is up to property owners to be responsible for the activities on their property. Also, compliance with the Human Fecal Material Discharge Prohibition does not necessarily mean moving the homeless off of one's property. Implementation can include a plan for demonstrating how surface water loading from this source is being eliminated. For example, the Water Board may require evidence of reducing or eliminating areas for homeless persons to gather, and or camp by making them less attractive, e.g., installing deterrent native vegetation such as brambles. Property owners may need to provide the Water Board with dated photos of the actions taken to reduce homeless camps and use, and photo documentation of the reduction of homeless persons in the area. If an area's attractiveness cannot feasibly be reduced or eliminated, property owner may have to demonstrate how they attenuated fecal material from areas that can discharge to surface waters. For example, they may have erected porta potties and surrounded them by a berm, away from the Creek. They may also need to show evidence of homeless persons entering and leaving the porta potties and/or pictures of their creek adjacent property without signs of human fecal material. Persons' who hire security surveillance may need to provide a surveillance schedule and provide photo evidence of the condition of the property.

Another approach may include identifying activities that increase homeless population such as the draw of agricultural operations. Property owners may need to strategize with the agricultural industry and fellow property owners in order to strategize on approaches for preventing the entry of homeless persons onto property. With any approach the Water Board will require evidence that responsible parties attenuated the entry of human fecal material to surface waters.

24. p70, Sec. 10.4.2.1. "City of Watsonville: 11,381 households (U.S. Census Bureau, 2007) x $77 (cost per household) = $876,337 per year"

The City is currently spending approximately $350,000/yr on stormwater program elements. With a $2.3 million General Fund shortfall and the likelihood of a severe national economic recession, it is highly unlikely that the City will be able to allocate significant additional funding to this program in the near future.

Staff Response:
Staff noted comment. Water Board staff working on stormwater permitting will work with City staff to determine how and when the stormwater components of the TMDLs and Implementation Plan can be implemented most effectively given resource constraints.

25. p70, Sec. 10.4.2.1. "Additional implementation measures or management programs may be needed for fecal coliform reductions. Staff does not know the specific measures at this time." With an estimated increase in cost of "City of Watsonville: $876,337 cost per year x 2% minimum increase = $17,526.74 minimum cost increase per year $876,337 cost per year x 15 % maximum increase = $131,450.55 maximum cost increase per year".
These are significant costs increases for an economically-challenged community. How does the Board address this if the City is not definitively responsible for the FIB exceedances? Given the numerous confounding issues with a FIB TMDL, this would appear to be a likely scenario.

Staff Response:
Staff concluded that the City will only be responsible for the City's requirements as described in the TMDLs and Implementation Plan.
Please also see number 39, below.

26. p71, Sec. 10.4.2.2. "Options include hiring security to patrol areas used by homeless, maintaining portable toilets, installing fencing and or deterrent landscaping." Fencing off an area would seem to run counter to the beneficial use goals for the general community.

Staff Response:
Comment noted. Staff suggested installing fencing as just one potential measure property owners can implement to comply with the Human Fecal Material Discharge Prohibition. Fencing may not be appropriate in some areas that homeless persons frequent, therefore another measure should be chosen in those areas. Please also see response to comment number 23.

27. In Table 11-1, the City of Watsonville is identified as the Responsible Party for monitoring the receiving water station Corralitos Creek at Pista Lane. This sampling site is outside of the City limits and should therefore be assigned to another entity.

Staff Response:
Comment noted. Staff concluded that the Corralitos Creek at Pista Lane sampling location would be a sampling location from which to determine the level of FIB prior to the City's FIB contribution. The monitoring locations and responsibility stated in the TMDL project report are only staff recommendations. These will be established as requirements by the Executive Officer or Water Board during TMDL implementation. Staff is open to suggestions of how the City can sample in the most efficient and

effective manner. Staff will work with the City to determine monitoring locations once the TMDLs and Implementation Plan are approved by the Office of Administrative Law.

28. During the dry season City storm drain outfalls are typically dry or produce only a dribble of flow. What is expected in terms of monitoring/sampling by the City under these circumstances?

Staff Response:
Water quality objectives need to be met year-round including during low-flow periods. Since low-flow storm water contributions to receiving waters may be negligible, Water Board staff will work with City staff to figure out the most effective areas from which to sample during low-flow.

29. All responsible parties should be required to prove through water sampling and analysis that their non-point source discharges are meeting Basin Plan water quality objectives for fecal coliform, if they fall into one of the categories listed in Table 8-1. If these entities are not required to perform monitoring, then Table 8-1 needs to be re-written so as to identify the responsible parties more specifically (e.g. parcel-by-parcel, owner-by-owner) for those properties with non-point discharges to the impaired reach of watershed.

Staff Response:
Staff may not require each responsible party, individually, to show through water quality sampling that they are meeting Basin Plan Water Quality Objectives. They will however, need to show compliance with the two prohibitions by the specified means. Staff will be identifying property owners, including those identified as non-point sources, during the implementation phase of the TMDL. These owners will be required to demonstrate compliance as discussed in the Implementation Plan, which may require stream or other water quality monitoring.

30. What is the source for designating the intermittent stream above College Lake as Salsipuedes Creek? Santa Cruz County data indicates that Salsipuedes Cr begins at either at the outlet of College Lake, or at the confluence of Green Valley and Casserly Creek.

Staff Response:
The source for designating the intermittent stream above College Lake as Salsipuedes Creek was the National Hydrologic Data Source. Staff used the high resolution version at this address: http://nhdgeo.usgs.gov/viewer.htm. The metadata is at this address: http://nhdgeo.usgs.gov/metadata/nhd_high.htm.

31. p. 22 We have been critical in the past of EPA criteria for E. coli as there is no documentation that it is useful west coast waters not subject to treated sewage discharge. As a result, prior TMDLs have been revised to not rely on the EPA E. coli objective. Our sampling has shown that E. coli and fecal coliform results are interchangeable and we apply the fecal coliform standards to E. coli data. It would be useful to know what the results and geometric mean were for all the stations that the City collected E. coli data for. It should also be kept in mind that many of these are wet

weather sampling, which naturally has elevated levels of FIB [fecal indicator bacteria].

Staff Response:
Staff agreed that *E. coli* may not always be an appropriate surrogate for measuring human pathogens. Staff used fecal coliform in TMDLs because the Basin Plan objectives use fecal coliform as an indicator. Staff notes that the City found that fecal coliform and *E. coli* data may be interchangeable, however, EPA has given states guidance for analyzing *E. coli* data, and staff will continue to use this guidance, as currently written or amended. That being said, TMDL compliance must utilize fecal coliform analysis because the current water quality objectives are in terms of fecal coliform, until such time that these objectives are revised (please see response to comment 18).

Currently, staff is not requiring USEPA recommended *E. coli* criteria as a standard for the proposed project's TMDLs, allocation or numeric targets. However, note that State Board anticipates approval of new state-wide standards for FIB within the next year. The state-wide standards will include the USEPA recommended water quality criteria for *E. coli*.

The results and geometric mean for the stations at which the City of Watsonville collected E. coli data are included on pp. 8 and 23 of Appendix A to the Project Report.

Staff acknowledged that some of the *E. coli* measurements were made during wet weather and that they may be higher for this reason.

32. p. 26 I disagree with the logic for determining that Salsipuedes Creek upstream of Corralitos Creek is impaired. There are no samples from that reach at all, and the geomean downstream of Corralitos is not particularly high (129). there seems to be no basis for designating Salsipuedes upstream of Corralitos as impaired. Even if the discharge from College lake had high levels of FIB, how would we know whether it was coming from Green Valley Creek, Casserly Creek, Hughes Creek, the intermittent stream draining the fairgrounds, or bird life in College Lake itself? More monitoring data is needed before there can be any determination of impairment in Salsipuedes.

Staff Response:
Staff acknowledged that there are no samples from the reach of Salsipuedes Creek upstream of the confluence with Corralitos. However, staff is identifying that reach of Salsipuedes Creek as impaired based on data from the downstream portion (Salsipuedes Creek below the confluence of Corralitos and Salsipuedes) indicating impairment. Staff is considering the upstream reach as a continuation of the downstream reach. If staff had specific data at a station on Salsipuedes Creek not indicating impairment, we would consider the reach upstream of that station as unimpaired. Staff used this approach in other projects such as TMDLs for Pathogens in Aptos and Valencia Creeks.

Furthermore, Salsipuedes Creek will not be addressed differently than any of the other Creeks upstream of College Lake. With regard to implementation, staff will focus their

efforts in areas where sources identified in the project report are located, including the other Creeks draining to College Lake.

Staff could identify one of the other upstream creeks draining to College Lake as the impaired continuation of Salsipuedes Creek. This would not change the requirements of responsible parties. They would still be required to comply with the implementation plan because they are part of the Salsipuedes Creek subwatershed and the greater Corralitos watershed.

Staff will require monitoring for the intermittent reach of Salsipuedes upstream of the confluence with Corralitos. If staff determines it is not impaired, staff will make recommendation of non-impairment for this reach.

33. p. 33. I wouldn't characterize the Delaney neighborhood as adjacent to Salsipuedes Creek. It is near an intermittent creek that eventually drains into Salsipuedes Cr. Only 2 developed parcels are immediately adjacent to the intermittent creek. Because of the flat topography and distance from the creek, it is unlikely any sewage from system failures would reach the creek except during significant storm events. It is correct that past failures in those neighborhoods could have contributed FIB during periods of storm runoff. Past failures identified as a result of previous surveys and complaints have been corrected. There may be additional potential problems in the winter. We have identified 3 parcels that we conduct follow up checks on, as well as a general check of the area during winter periods. Although any area on septic systems or sewer has the potential to contribute FIB, it is unclear that the Delaney community is contributing significantly more FIB than other locations. Furthermore, there is no documentation of impairment in the intermittent creek draining the area.

Staff Response:
Staff agreed that the Delaney community is near an intermittent Creek, regardless of the name, that connects with the downstream reach of Salsipuedes Creek. Although it is gradual the topography does slope toward the Creek in this community[7]. We understand that past failures have been corrected. However, for the following reasons we will continue to require implementation of those parcels in the area described in the Total Maximum Daily Loads for Fecal Coliform in Corralitos and Salsipuedes Creeks project report[8]:

1. It is possible that during significant storm events sewage could reach the intermittent creek,
2. There is a history of onsite failures in this community,
3. Commenter acknowledged there may be additional potential problems in the winter, and
4. The soil is not conducive to the proper functioning of onsite system leach fields[9].

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[7] United States Geological Survey 7.5 minute series topographical map; Watsonville East Quadrangle

[8] The specified area is within the boundaries of State Highway 152 to the southeast, Foothill Road to the northeast (excluding assessor parcel numbers 05155107 and 05155106), Salsipuedes Creek to the northwest, and up to, but not including The County Fairgrounds to the southwest.

[9] United States Department of Agriculture Soil Conservation Service in cooperation with University of California, Agricultural Experiment Station. 1980. *Soil Survey of Santa Cruz County, California*. August 1980.

Additionally, staff is charged with protecting water quality, so staff needs to work proactively. Staff has the authority to act when there is a threat to water quality, and staff considers the potential overflow of systems onto the substrate surface a threat to water quality.

Please also see staff's response to number 4 regarding impairment of the intermittent Creek draining the area.

34. For the reasons stated above, in your order of importance of sources, I would rank onsite systems as comparable in significance to sewage spills, leaks and sewer laterals. There are a lot more livestock than failing septic systems along the streams.

Staff Response:
Staff agreed. Staff stresses that the ranking of sources was an estimate for providing the reader with an idea of the level of presence of each source in the watershed. Staff agreed that livestock probably were a slightly more significant source of FIB to the Creeks in this watershed than onsite wastewater systems, due to the known presence of livestock in various areas along the Creeks and deposition of their fecal matter directly on top of the substrate.

35. p. 34 Many homes have had septic system replacement since initial construction. The San Lorenzo Preliminary report is pretty old, 1989, and has been superseded by more current info. Recent failure rates in the San Lorenzo Watershed since 2003 have been documented at 1-2% (San Lorenzo Wastewater Management Program Status Report, 2002-2007).

Staff Response:
Comment noted. Staff revised the Project Report to reflect hits information.

36. p. 48 The data presented and general experience would clearly suggest a seasonal and runoff component to the most elevated FIB levels found. It would be unreasonable to expect to meet objectives during rainfall/runoff events.

Staff Response:
Staff acknowledged the variability of the FIB data used in this project, and other FIB data, that may be a function of season. However, there is not enough data for staff to conclude that the elevated levels of FIB in Corralitos and Salsipuedes Creeks suggest a seasonal component.

Therefore, the Water Board will require implementation to occur until the first triennial review, at which time staff should have three years of data. The Project Report (Attachment 2 to the Staff Report) states that if responsible parties demonstrate that controllable sources of FIB are not contributing to exceedance of water quality objectives in receiving waters when all source control measures are in place, and FIB levels remain high, staff may conduct (or use other) investigations (e.g., genetic studies

to isolate sources or other appropriate monitoring) to determine if the high level of FIB is due to natural uncontrollable sources. If this is the case, staff will consider re-evaluating the targets and allocations during triennial reviews. For example, staff may propose a site-specific objective. Staff could base the site-specific objective on evidence that natural uncontrollable sources alone were the cause of exceedances of the Basin Plan water quality objective for fecal coliform.

37. p. 58 What Proposition 13 grant is being referred to?

Staff Response:
The Proposition 13 Grant was referred to in notes from an August 3, 2004 conference call taken by staff no longer with the Water Board. Current staff assumed that the Proposition 13 Grant was the grant that resulted in FIB data collected from numerous sampling locations throughout the County of Santa Cruz and the resulting report by the County of Santa Cruz titled *Assessment of Sources of Bacterial Contamination At Santa Cruz County Beaches*.[10]

38. p. 60 We do not support preparing a wasteload allocation attainment plan for stormwater given that the TMDL documents and the stormwater plan already include most of the required elements. A WAAP [Wasteload Allocation Attainment Plan] represents an unnecessary and redundant cost that detracts from the necessary work. Much of the additional objectives of the WAAP should be satisfied through either the annual reporting of stormwater program implementation or the triennial review of TMDL implementation.

Staff Response:
Note that City and County staff met with Water Board staff after this public comment was received and discussed the WAAPs, when they are due and the necessary content.

Staff concluded that the WAAP is a necessary plan that will ensure the City and County ultimately achieve their wasteload allocations. The Corralitos/Salsipuedes Fecal Coliform TMDLs set forth the expectation that the City and County achieve their wasteload allocations as described in the Resolution (Staff Report Attachment 1) This expectation necessitates a rigorous approach to implementation of the SWMP with regard to fecal indicator bacteria.

The Phase II General Municipal Storm Water Permit and federal regulations indicate that such an approach is appropriate. The General Permit requires that Storm Water Management Plans (SWMPs) be "designed to reduce the discharge of pollutants from the permitted MS4 to MEP and **protect water quality**" (emphasis added)[11]. Also, the Preamble to the Phase II Federal Storm Water Regulations states: "Small MS4 permittees should modify their programs if and when available information indicates that water quality considerations warrant greater attention or prescriptiveness in specific

[10] County of Santa Cruz, Environmental Health Service Water Resources Program. 2006. *Assessment of Sources of Bacterial Contamination at Santa Cruz County Beaches.* March 2006.

[11] State Water Resources Control Board. 2003. Order No. 2003-0005-DWQ. p. 8.

components of the municipal program."[12]

Water Board staff developed the requirements for WAAPs as a means to systematically guide municipalities toward attainment of their wasteload allocations. Without a systematic approach of this type, staff concluded that attainment of wasteload allocations is unlikely. This conclusion is supported by the contents of the City's and County's SWMPs. Generally, the SWMPs do not exhibit the rationale used for BMP selection or draw connections between those BMPs selected and eventual wasteload allocation attainment. Without this level of planning, the significant challenge of achieving wasteload allocations within 13 years is not likely to be met. USEPA forwards similar approaches for TMDL implementation in its *Draft TMDLs to Stormwater Permits Handbook*, which discusses BMP review and selection, establishing linkages between BMP implementation and load reductions, effectiveness assessment, and BMP/outfall/receiving water monitoring[13].

Ultimately, the WAAPs place the responsibility for program development, assessment, improvement, and success on the municipalities. Placement of responsibility on the municipalities is appropriate, since the municipalities are the parties contributing to the water quality impairment. This approach is also consistent with the Water Board's approach of requiring plans for control of fecal indicator bacteria and associated pathogens from other sources identified by TMDLs, such as sanitary sewer collection private laterals and domestic animal discharges. The Water Board will collectively assess the progress of the various sources toward achieving receiving water quality standards as part of its triennial review, but each source must be responsible for assessing its own progress toward achieving its wasteload allocation. The process of planning, assessment, and refinement outlined by the WAAPs helps ensure continual improvement and ultimate attainment of water quality standards at impaired receiving waters. Since the City's and County's SWMPs are the regulatory mechanisms through which their wasteload allocations must be attained, inclusion of the WAAPs in the SWMPs is appropriate.

39. p. 69 In estimated costs of stormwater programs you should probably go higher then the high end of adopted plans, given that additional mandates are recently being added for LID [Low Impact Development], hydromodification plans, effectiveness assessment, wasteload allocation attainment plans [WAAPs], etc.

Staff Response:
Staff does not agree that it is appropriate to increase the estimated costs of the proposed implementation requirements for these TMDLs that will be included in the Storm Water Management Plan (SWMP). First, the State Water Resource Control Board's General Permit for the Discharges of Storm Water from Small Municipal Separate Storm Sewer Systems (General Permit) (NPDES No. CAS000004) requires municipalities to achieve water quality standards through an iterative process. The

[12] 64 CFR 68753

[13] United States Environmental Protection Agency 2008. Draft TMDLs to Stormwater Permits Handbook. Chapters 5 and 6.

WAAPs are consistent with that approach. Second, the WAAPs are required whether or not TMDLs have been assigned to a waterbody within a jurisdiction covered by a SWMP, because the permittee has to comply with water quality objectives. The WAAP is a vehicle for achieving compliance with water quality objectives. Staff concluded that only costs directly attributed to the TMDLs should be included in cost estimates.

LID, hydromodification plans, and effectiveness assessments are also required in the SWMPs. These actions will help to achieve the pathogen TMDLs, so some portion of them should be accounted for in the costs of implementing these TMDLs. However, LID, hydromodification plans, and effectiveness assessments will work to attenuate pollutants in addition to pathogens. Therefore, the total costs of these actions should not be attributed to implementing these TMDLs.

That said, staff chose not to increase the current estimated annual cost of $77 per household. First of all, the costs estimates for implementing the TMDLs are just that, estimates based on staff's best professional judgment. Staff is fulfilling their obligation to the requirements of the California Environmental Quality Act, which does not require a rigorous economic analysis. Second, the cost of $77 per household is well above the $46 per household cost, described in the Project Report, and determined as the high end cost in a survey of NPDES Phase I Storm Water Costs in 2005 conducted by the University of Southern California[14]. Water Board staff is very familiar with the storm water program of the City of Encinitas, a city included in the survey and from which the $46 per household cost was derived. Staff concluded that there are many more actions being performed by the City of Encinitas than the actions required of the City Of Watsonville and County of Santa Cruz, and that the cost of $77 per household is an appropriate estimate at this time.

40. p. 72. Correct the spelling for Rafael Sanchez.

Staff Response:
Staff made this change.

41. It is still unclear to me why the two new prohibitions (for the discharge of domesticated animal waste and human waste) only apply to specified basins. It seems that they should apply to the whole region. Is it ok to discharge human waste in areas not specified?

Staff Response:
No, it is not okay to discharge human waste in areas not specified; existing regulation prohibits such discharges.

Staff must provide supporting evidence for the need of a prohibition, including where that prohibition will be applied. Providing such evidence on a region-wide basis was beyond the scope of this TMDL project. However, staff believes the evidence exists to

[14] *Center for Sustainable Cities, University of Southern California. 2005. NPDES Stormwater Cost Survey. January 2005.*

support the human waste discharge prohibition on a region-wide basis, and may pursue development and approval of such a prohibition in the future.

42. One of the implementation options for onsite systems should include ensuring that the onsite systems in the area are addressed through implementation of the county's wastewater management plan. That would be consistent with other TMDL's (San Lorenzo), the Basin Plan and the proposed AB 885 regulations.

Staff Response:
Staff agreed. Staff's recommendation allows an agency (e.g. the County) to represent an individual owner, community, or municipality in terms of their wastewater management plan and bring onsite system owners into compliance with the human fecal material discharge prohibition. Staff indicated this in our implementation language in the Corralitos Resolution and Project Report.