Appendix D

Responses to Comments

Part I: **Staff responses to written comments submitted in response to February 10, 2006 Staff Report and proposed Basin Plan amendment**

Part II: **Staff responses to issues raised at April 12, 2006 public hearing**

Part III: **Staff responses to peer review comments on December 16, 2005 Staff Report and Basin Plan amendment drafts**

References

This page intentionally left blank

PART I: STAFF RESPONSES TO WRITTEN COMMENTS ON THE FEBRUARY 10, 2006 STAFF REPORT AND PROPOSED BASIN PLAN AMENDMENT

Comment Letter no. 1: U.S. Environmental Protection Agency, Diane Fleck, Esq.; February 27, 2006

U.S. EPA submitted several constructive comments focused primarily on document clarity and consistency with existing water quality objectives.

Comment 1.1: "The proposed staff Report and Basin Plan Amendment for the Napa River Watershed TMDLs…states that Napa River and its tributaries…are listed on the 303(d) list as impaired for pathogens, and that these documents address those listings. However, a specific list of waterbodies that are on the 303(d) list and that are addressed by the documents is not included. Please include a list of the specific impaired water bodies for which TMDLs are to be adopted."

This TMDL addresses the 303(d) listing for the Napa River. We have revised Tables 7-c and 7-d, in the proposed Basin Plan amendment to indicate that the TMDL and numeric targets apply only to the Napa River. However, load allocations and wasteload allocations apply to the Napa River and all tributaries. The revised tables are presented in the response to Comment 1.2. The corresponding tables in the Staff Report have also been revised according. In addition, Section 1.3 of the Staff Report as been revised to provide clarification, as follows:

> The Napa River ~~(including its tributaries)~~ is listed as impaired for pathogens, as well as sediments and nutrients . The Napa River lies within the jurisdiction of the California Regional Water Quality Control Board, San Francisco Bay Region (Water Board), and therefore the Water Board is responsible for developing a TMDL to address the impairment of the Napa River by pathogens. This report describes the water quality problem causing the impairment, pollution sources and actions needed to restore or cleanup the water body. <u>This TMDL addresses water quality in all tributaries of the Napa River and serves as a comprehensive water quality attainment strategy for the watershed.</u> This report provides the technical and scientific basis for the Basin Plan amendment.

Comment 1.2: Several of Ms. Fleck's comments question our proposed numeric targets and TMDL allocations. She suggests that we add total coliforms and fecal coliforms to the proposed *E. coli* targets and allocations in order to be consistent with current Basin Plan water quality objectives, which are expressed as total and fecal coliforms. She also questions our reliance on an implicit margin of safety for allocations.

The TMDL allocations and targets have been revised so that they are stated in terms of *E. coli*, fecal coliforms, and total coliforms. We should note, however, that the State Board is in the process of adopting statewide bacterial water quality objectives based on *E. coli* for freshwater, per EPA guidance. As a result of this action, anticipated in early 2007, our existing fecal and total coliform water quality objectives will likely be replaced by the new objectives. In order to be consistent with both current and anticipated future bacterial objectives, we have added language stating that the fecal coliform and total coliform targets and allocations will sunset and no longer be effective upon the replacement of the total and fecal coliform water quality objectives in the Basin Plan with *E.coli*-based water quality objectives for contact recreation.

We have also added an explicit 10 percent margin of safety to our TMDL load allocations and the wasteload allocation for municipal runoff. This is reflected in the revisions described below.

The portion of the proposed Basin Plan amendment addressing targets, the overall TMDL, and allocations has been revised as described below. Corresponding portions of the Staff Report have been revised accordingly.

Numeric Targets

The numeric water quality targets listed in Table 7-a are derived from water quality objectives for coliform bacteria in contact recreational waters, and from U.S. EPA's ~~recommended~~ bacteriological criteria (Tables 3-1 and 3-2). The ~~third~~ last target, "zero discharge of untreated or inadequately treated human waste," is consistent with Discharge Prohibition 15 (Table 4-1). The zero human waste discharge target is necessary because human waste is a significant source of pathogenic organisms including viruses; and attainment of fecal coliform targets alone may not be sufficient to protect human health. ~~The E. coli~~ These bacteria targets, in combination with the human waste discharge prohibitions, are the basis for the TMDL and load allocations, and fully protect beneficial uses.

~~**Table 7-a**~~ ~~**Water Quality Targets[a] for the Napa River and Its Tributaries**~~
~~*E. coli* density: Geometric mean < 126 CFU/100 mL[b]~~
~~*E. coli* density: 90th percentile < 320 CFU/100 mL[c]~~
~~Zero discharge of untreated or inadequately treated human waste~~
~~[a]These targets are applicable year-round.~~ ~~[b]Based on a minimum of five consecutive samples collected at approximately equal intervals over a 30-day period~~ ~~[c]No more than 10% of total samples during any 30-day period may exceed this number.~~

Table 7-a **TMDL Water Quality Targets[a] for the Napa River**
E. coli density: Geometric mean < 126 CFU/100 mL[b]; 90th percentile < 409 CFU/100 mL[c]
Fecal coliform density[d]: Geometric mean < 200 CFU/100 mL[b]; 90th percentile < 400 CFU/100 mL[c]
Total coliform density[d]: Median < 240 CFU/100 mL[b]; no sample to exceed 10,000 CFU/100 mL
Zero discharge of untreated or inadequately treated human waste
[a]These targets are applicable year-round. [b]Based on a minimum of five consecutive samples collected at approximately equal intervals over a 30-day period. [c]No more than 10 percent of total samples during any 30-day period may exceed this number. [d]The numeric targets for total coliform and fecal coliform shall sunset and shall no longer be effective upon the replacement of the total and fecal coliform water quality objectives in the Basin Plan with *E.coli*-based water quality objectives for contact recreation.

Total Maximum Daily Load

The TMDL, as indicated in Table 7-b, is expressed as density-based total coliform, fecal coliform, and *E. coli* bacteria limits.

~~**Table 7-b**~~ ~~**Total Maximum Daily Loads of Pathogen Indicators for the Napa River and Its Tributaries**~~	
~~**Indicator**~~	~~**TMDL (CFU/100 mL)**~~
~~*E. coli*~~	~~Geometric mean < 126 [a]~~ ~~90th percentile < 320 [b]~~
~~[a]Based on a minimum of five consecutive samples collected at approximately equal intervals over a 30-day period.~~ ~~[b]No more than 10% of total samples during any 30-day period may exceed this number.~~	

Table 7-b **Total Maximum Daily Loads of Pathogen Indicators for the Napa River**	
Indicator	**TMDL (CFU/100 mL)**
E. coli	Geometric mean < 126 [a] 90th percentile < 409 [b]
Fecal coliform[c]	Geometric mean < 200 [a] 90th percentile < 400 [b]
Total coliform[c]	Median < 240 [a] No sample to exceed 10,000

[a] Based on a minimum of five consecutive samples collected at approximately equal intervals over a 30-day period.
[b] No more than 10 percent of total samples during any 30-day period may exceed this number.
[c] The Total Maximum Daily Loads for total coliform and fecal coliform shall sunset and shall no longer be effective upon the replacement of the total and fecal coliform water quality objectives in the Basin Plan with *E.coli*-based water quality objectives for contact recreation.

Load Allocations

Density-based pollutant allocations for pathogen source categories are shown in Table 7-c. Table 7-d presents wasteload allocations for individual municipal wastewater dischargers. Due to the inherent uncertainty in estimating pathogen loading from nonpoint sources and municipal runoff (Table 7-c), allocations for these source categories incorporate a 10 percent margin of safety. Each entity in the watershed is responsible for meeting its source category allocation.

All discharges of raw or inadequately treated human waste are prohibited. All sources of untreated or inadequately treated human waste have an allocation of zero.

Discharging entities will not be held responsible for uncontrollable discharges originating from wildlife. If wildlife contributions are found to be the cause of exceedances, the TMDL targets and allocation scheme will be revisited as part of the adaptive implementation program.

~~**Table 7-c**~~
~~**Density-Based Pollutant Load Allocations[a] for Dischargers of Pathogens in the Napa River Watershed**~~

~~**Categorical Pollutant Source**~~	~~***E. coli* Density (CFU/100 mL)[b]**~~	
	~~**Geometric Mean**~~	~~**90th Percentile**~~
~~**On-site sewage disposal systems**~~	~~0~~	~~0~~
~~**Sanitary sewer systems**~~	~~0~~	~~0~~
~~**Municipal runoff**~~	~~<126~~	~~<320~~
~~**Grazing lands**~~	~~<126~~	~~<320~~
~~**Confined animal facilities**~~	~~<126~~	~~<320~~
~~**Wildlife[c]**~~	~~<126~~	~~<320~~

~~[a] These allocations are applicable year-round. Wasteload allocations apply to any sources (existing or future) subject to regulation by a NPDES permit.~~
~~[b] Based on a minimum of five consecutive samples collected at approximately equal intervals over a 30-day period.~~
~~[c] Wildlife are not believed to be a significant source of pathogens and their contribution is considered natural background; therefore, no management measures are required.~~

Table 7-c

Density-Based Pollutant Load Allocations and Wasteload Allocations[a] for Pathogen Dischargers in the Napa River Watershed

Categorical Pollutant Source	*E. coli*		Fecal coliform[b]		Total coliform[b]	
	Geometric mean[c]	90th percent-ile[d]	Geometric mean[c]	90th percent-ile[d]	Median[c]	Single sample maximum
On-site sewage disposal systems	0	0	0	0	0	0
Sanitary sewer systems	0	0	0	0	0	0
Municipal runoff	< 113	< 368	< 180	< 360	< 216	9,000
Grazing lands	< 113	< 368	< 180	< 360	< 216	9,000
Confined animal facilities	< 113	< 368	< 180	< 360	< 216	9,000
Wildlife[e]	< 113	< 368	< 180	< 360	< 216	9,000

[a] These allocations are applicable year-round. Wasteload allocations apply to any sources (existing or future) subject to regulation by a NPDES permit. Allocations reflect a 10% margin of safety.

[b] The allocations for total coliform and fecal coliform shall sunset and shall no longer be effective upon the replacement of the total and fecal coliform water quality objectives in the Basin Plan with *E.coli*-based water quality objectives for contact recreation.

[c] Based on a minimum of five consecutive samples collected at approximately equal intervals over a 30-day period.

[d] No more than 10% of total samples during any 30-day period may exceed this number.

[e] Wildlife are not believed to be a significant source of pathogens and their contribution is considered natural background; therefore, no management measures are required.

~~**Table 7-d**~~

~~**Density-Based Wasteload Allocations[a] for Municipal Wastewater Treatment Facilities**~~

~~Facility~~	~~*E. coli* Density (CFU/100 mL)[b]~~		~~NPDES Permit #~~
	~~Geometric Mean~~	~~90th Percentile~~	
~~Napa Sanitation District~~	~~<126~~	~~<320~~	~~CA0037575~~
~~Town of Yountville~~	~~<126~~	~~<320~~	~~CA0038121~~
~~City of St. Helena~~	~~<126~~	~~<320~~	~~CA0038016~~
~~City of Calistoga~~	~~<126~~	~~<320~~	~~CA0037966~~
~~City of American Canyon~~	~~<126~~	~~<320~~	~~CA0038768~~
~~Napa River Reclamation District #2109~~	~~<126~~	~~<320~~	~~CA0038644~~

~~[a] These allocations are applicable year-round. Wasteload allocations apply to any sources (existing or future) subject to regulation by a NPDES permit.~~

~~[b] Based on a minimum of five consecutive samples collected at approximately equal intervals over a 30-day period.~~

Table 7-d

Density-Based Wasteload Allocations[a] for Municipal Wastewater Treatment Facilities

Facility	*E. coli* Density (CFU/100 mL)						NPDES Permit #
	E. coli		Fecal coliform[b]		Total coliform[b]		
	Geometric mean[c]	90th %ile[d]	Geometric mean[c]	90th %ile[d]	Median[c]	Single sample max	
Napa Sanitation District	< 126	< 400	< 200	< 400	< 240	10,000	CA0037575
Town of Yountville	< 126	< 400	< 200	< 400	< 240	10,000	CA0038121
City of St. Helena	< 126	< 400	< 200	< 400	< 240	10,000	CA0038016
City of Calistoga	< 126	< 400	< 200	< 400	< 240	10,000	CA0037966
City of American Canyon	< 126	< 400	< 200	< 400	< 240	10,000	CA0038768
Napa River Reclamation District #2109	< 126	< 400	< 200	< 400	< 240	10,000	CA0038644

[a] These allocations are applicable year-round. Wasteload allocations apply to any sources (existing or future) subject to regulation by a NPDES permit.

[b] The alloactions for total coliform and fecal coliform shall sunset and shall no longer be effective upon the replacement of the total and fecal coliform water quality objectives in the Basin Plan with *E.coli*-based water quality objectives for contact recreation.

[c] Based on a minimum of five consecutive samples collected at approximately equal intervals over a 30-day period.

[d] No more than 10% of total samples during any 30-day period may exceed this number.

The Margin of Safety section in the Staff Report has been revised as follows:

6.4 Margin of Safety

TMDLs are required to include a margin of safety (MOS) to account for uncertainty in the relationship between pollutant loads and water quality in the receiving water body. The overall level of uncertainty in this TMDL is relatively low, and conservative assumptions in pathogen loading and transport are used. Therefore, a ten percent explicit margin of safety is employed for all load allocations and the wasteload allocation for municipal runoff. This explicit MOS reflects the inherent uncertainty in estimating pathogen loading from nonpoint sources and diffuse sources such as municipal runoff, and in assessing the effectiveness of management measures in reducing pathogen loading. This approach is consistent with the methodology provided in U.S. EPA's Protocol for Developing Pathogen TMDLs (U.S. EPA, 2001).

This TMDL employs an implicit MOS for the wasteload allocations for wastewater treatment plant discharges. These point sources are regulated by NPDES permits with defined effluent limits, therefore there is little uncertainty in pathogen loading. In addition, wastewater discharges from these facilities are prohibited except during the wet season when the discharge receives greater than 10 to 1 dilution in the receiving water.

~~TMDLs are required to include a margin of safety (MOS) to account for data uncertainty, growth, critical conditions, and lack of knowledge.Virtually all pathogens have a limited ability to survive outside the human (or other host) body (U.S. EPA, 2001). Pathogen densities are therefore expected to only decrease in the outside environment over time, due to factors such as exposure to sunlight, chemical damage, and predation/competition by native nonpathogenic organisms. This effect provides an implicit MOS to the proposed TMDL.~~

~~Both numeric targets and load allocations are conservatively derived from U.S. EPA's *E. coli* recommendations and current water quality objectives, as described in Section 4 of this report. These *E. coli*-based targets and allocations are more protective of human health than current fecal coliform-based water quality objectives, thereby providing an additional implicit MOS. Therefore, no additional and/or explicit MOS is needed for this TMDL.~~

Comment 1.3: "We recommend you either clearly designate the water bodies as moderately to lightly used areas (limited REC-1 uses), or use a target of 235 CFU/100mL as a 90th percentile single sample value, EPA's default criteria recommendation, reflecting an appropriate risk for designated beaches (full REC-1 uses)."

It is our understanding that the single sample maximum values provided in U.S. EPA's 1986 bacteria criteria (U.S. EPA, 1986) were intended to be used for closure of formally designated bathing beaches, and that U.S. EPA allows the states discretion in interpreting these values for other Clean Water Act applications. U.S. EPA's policy on this issue is discussed at length in the 2004 BEACH Act (U.S. EPA, 2004). The BEACH act summarizes U. S. EPA's current policy on the use of single sample maxima as follows:

> EPA recognizes that the single sample maximum discussion in the 1986 bacteria criteria document refers only to beach monitoring, and does not discuss how or whether the single sample maximum should be implemented for other Clean Water Act applications, such as establishing Total Maximum Daily Loads or National Pollutant Discharge Elimination System permit limitations. EPA agrees that the single sample maximum values in the criteria are best used for making beach notification and closure decisions. However, as noted above, they may, but need not, also play a role in implementing other Clean Water Act programs. Except in the beach notification and closure context, EPA expects that States will

> determine how to use the single sample maximum criteria in the context of their broader programs implementing the Clean Water Act. (U.S. EPA, 2004, pp. 67224-67225)

For this TMDL we have chosen to adopt the approach described in U.S. EPA's November 2003 draft Implementation Guidance for Ambient Water Quality Criteria for Bacteria (U.S. EPA, 2003). This draft guidance reinterprets the 1986 criteria as well as the May 2002 draft guidance (U.S. EPA, 2002). The 2003 guidance replaces the different single sample maxima based on intensity of recreational use with upper-percentile values:

> EPA's criteria are essentially constructed as a series of frequency distributions of bacterial densities associated with specific risk levels...over the course of a swimming season. EPA characterizes each distribution…using a geometric mean and upper percentile values. When the criteria were published in 1986, EPA recommended use of specific risk levels and associated geometric means for fresh and marine recreational waters. Further, upper percentiles of the associated frequency distribution (referred to as "confidence levels" in EPA's 1986 criteria document) were termed "single sample maximum" values, *reflecting one possible way of using the information and applying the criteria*. While the risk assessment and scientific basis for EPA's 1986 criteria remain unchanged, this guidance more fully recognizes and describes the risk management considerations in selecting an appropriate risk level and applying both the geometric mean and upper percentile values. *The term "upper percentiles" is used in place of "single sample maximum" to more accurately reflect their derivation and more accurately reflect the range of recommended usage of this aspect of EPA's criteria.* (U.S. EPA, 2003, p. 7)

The 2003 guidance then presents a table of recommended upper-percentile criteria for different risk levels. The recommended 90th percentile value for a risk level of 0.8 percent (eight illnesses per thousand swimmers, the lowest risk level addressed in either the guidance or the 1986 criteria) is 409 CFU/100 mL.

Consistent with this guidance, we have chosen to employ this 90th percentile value as a numeric water quality target. Allocations are also based on this value, but with an additional 10 percent margin of safety.

Comment 1.4: "In…the proposed Basin Plan Amendment, at page 4, the sources of pathogens are listed, then discussed. Although the discussion includes wildlife, the list does not. For clarity and completeness, please add wildlife to the list of sources in [the] proposed assessment"

We have revised the list of potential sources on page 4 of the proposed Basin Plan amendment as follows:

Sources
The following source categories have the potential to discharge pathogens to surface waters in the Napa River watershed:

- On-site sewage disposal systems (septic systems)
- Sanitary sewer lines
- Municipal runoff
- Grazing lands
- Confined animal facilities
- Municipal wastewater treatment facilities
- Wildlife

Comment 1.5: "In…the proposed Staff Report, the source assessments qualitatively estimate loads for some of the source categories within the watershed, while other categories are not clearly defined. Some source categories are described as "significant," "potentially significant," or "not significant," while other categories are not qualitatively described. Source estimates should be quantified, if at all possible, if this is not possible, then all sources should be qualitatively assessed."

As noted in the Staff Report, we feel that quantitative assessment of each source category in the Napa River watershed would be subject to a great deal of uncertainty, and would be of little benefit, especially since allocations are density-based rather than load-based. In the Staff Report's source assessment summary, we qualitatively describe all source categories except sanitary sewer collection systems. We have revised the discussion of sanitary sewer systems in the source assessment summary (Section 5.3) as follows:

- **Sanitary sewer systems** Sanitary sewer systems are a potentially significant, but localized source. Elevated indicator bacteria levels were found in areas dominated by septic systems, areas served exclusively by sanitary sewer systems, and in mixed areas. Further monitoring during the adaptive implementation phase of this TMDL will be required to assess the relative importance of septic system failure versus sewer line failure and identify additional areas where septic/sewer loading is a concern.

Comment Letter no. 2: Napa County Board of Supervisors, Bill Dodd, Chair. March 24, 2006

This letter contains a number of general comments addressing broad elements of the TMDL, as well as many more specific comments. We summarize and respond to the general comments below (Comments 2.1-2.3), followed by direct quotations from the more specific comments, with responses.

Comment 2.1: Mr. Dodd questions the adequacy of our source assessment analysis, suggesting that the number of samples was insufficient to conclude that septic systems are a significant pathogen source.

Staff acknowledge that more work is needed to fully assess the extent of septic system problems in the Napa River watershed. Our implementation plan proposes continued sampling. However, we are confident that septic systems are a significant pathogen source in some parts of the watershed. Our data, collected over four years, consistently show high levels of pathogen indicators associated with septic systems. Our independent scientific peer reviewer has described our source assessment as reasonable, especially in the context of an adaptive implementation approach. Adaptive implementation is a key element of this TMDL, allowing us to continue monitoring and assessing while simultaneously acting to address identified problems.

Comment 2.2: Mr. Dodd asserts that the proposed implementation plan will place an undue economic burden on the County and other public agencies, as well as on private property owners, and that this impact has not been adequately addressed.

The TMDL requires all members of identified source categories to implement reasonable and feasible measures to reduce pathogen sources within their control. The TMDL implementation plan is intended to be sufficiently clear and detailed to provide a measure of certainty in how the Water Board intends to regulate pathogen sources in the future, but still allow responsible parties as much flexibility as possible.

In fact the TMDL restates a requirement already in force in the state's *Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program* (SWRCB, 2004). Its cost is the cost of properly disposing of waste in sensitive areas of the watershed. Waterways that are unsafe for wading, swimming, or fishing due to pathogens from human-caused sources such as septic tanks and sewer systems also carry a cost for individuals, government, and society.

We have revised our economic analysis section in response to a number of comments in the County's letter. These revisions are presented in our response to Comment 2.16, below.

Comment 2.3: The commenter states that our stakeholder outreach efforts have been inadequate, and that insufficient notice was provided when the proposed Basin Plan amendment and Staff Report were released for public comment.

Staff believe that the stakeholder process has been adequate. County staff were informed of our sampling and data analysis activities in late 2003, at which time the County provided us with valuable sampling data that was subsequently used in our Staff Report. Water Board staff made a presentation to the Napa County Board of Supervisors describing our approach and preliminary data in January 2004. We also met with Napa

Resource Conservation District (RCD) and Natural Resource Conservation Service (NRCS) staff on numerous occasions in 2004. In July 2005 we released our initial project report, which presented an analysis of the data we had collected together with a preliminary implementation plan. That month we also gave a presentation to the County Board of Supervisors and held a well-attended public meeting in Yountville. We met numerous times with County, City, Napa Sanitation District, RCD, and NRCS staff, as well as with representatives of the Napa County Farm Bureau, throughout the summer and fall of 2005. We held a well-attended public workshop and CEQA scoping meeting in Napa in November 2005.

We believe that interested parties have had ample time to comment on the proposed Basin Plan amendment and Staff Report. These documents were posted on the Water Board web site and noticed in the Napa Valley Register on February 10, beginning a 45-day public comment period. In response to County concerns, the Water Board agreed to accept written comments submitted by the County on April 11, two weeks after the close of the formal public comment period. It should also be noted that most of the content of the February 10 staff report and Basin Plan amendment had been presented in the July 2005 project report, for which the County submitted written comments in September 2005.

We have met or communicated with key stakeholders on numerous occasions since receipt of the County's comment letter, and will continue to do so throughout the implementation of this TMDL.

Comment 2.4: "[Water Board] staff has inferred that a nutrient TMDL will not be pursued if the pathogen TMDL is adopted. Confirmation of this assertion will help all parties focus on the primary objectives of the efforts being made by the [Water Board] and the County."

We appreciate this comment and the opportunity to clarify this point. Adoption of a pathogen TMDL will not eliminate the need for a nutrient TMDL. However, implementation actions for the pathogen TMDL should reduce—and for some source categories, eliminate—the need for additional implementation actions for nutrients. For example, the pathogen TMDL calls for compliance with the conditions of the region-wide waiver of Waste Discharge Requirements for grazing lands currently being developed by Water Board staff. Compliance with these waiver conditions will also satisfy implementation requirements for a future nutrient TMDL. Additional nutrient reduction actions beyond those required for pathogens may be required for some source categories, especially those not addressed in the pathogen TMDL.

Comment 2.5: "The Salvador Creek area has not been determined to have potential septic system sources. However, that potential is inferred without the presence of septic systems in the area."

We have not been able to determine with certainty that no septic systems lie adjacent to Salvador Creek, especially the upper reaches of the creek. If review of County and Napa Sanitation District records shows that there are no septic systems on or near the creek, then no septic system-related actions will be required. We look forward to working with the County to further identify the location of septic systems in problem areas, once the County has designed and engaged in its own program to address the TMDL.

Comment 2.6: "The impact of wildlife was dismissed except for site-specific instances. We do not believe this has been reviewed thoroughly to substantiate its dismissal on a wider basis."

We are confident that wildlife are not a widespread pathogen source in this watershed. We have sampled in two state parks (both with conditions—such as campgrounds located in wooded habitat—that are highly attractive to wildlife) and several natural areas; all were low in pathogens. We found similar results in the Sonoma Creek watershed. As explicitly stated in both the Staff Report and Basin Plan amendment, if areas of significant pathogen loading from wildlife were to be discovered in the future, stakeholders would not be held responsible for these loads outside their control.

Comment 2.7: "The County needs to confirm that, if any other local responsible agency fails to act/implement necessary actions, the County will not be held liable or responsible to act in the event of such other agency's inaction."

We have confirmed from communication with County staff (Pahl, 2006a) that this comment refers to the municipal stormwater program, in which the County and cities share responsibilities. County and city responsibilities are specified in the countywide municipal stormwater management plan. If necessary, these responsibilities can be further clarified upon reissuance of the countywide permit, anticipated in 2008.

Comment 2.8: "The report is unclear as to the extent of On-Site Sewage Disposal System (OSDS) review and/or monitoring that will be required and who will be responsible. The specifics of this program need to be established in order to fully evaluate the mitigation and implementation costs. Between 70 and 860 existing systems are identified, with the potential of all OSDSs in the County (approximately 9,000) to be included. The cost of staff time to identify these systems is ignored. Implementation of the program goals will require a great deal of staff oversight."

Both the Staff Report and Basin Plan amendment make it clear that the County is the responsible party for septic system review and monitoring. We encourage the County to prioritize aspects of their existing program to address septic systems with the potential to negatively affect surface water quality. It is not possible to definitively estimate the number of septic systems in this category, partly because, as the County points out in its comment letter, the location of half of the systems in the watershed is unknown.

Based on currently available information, Water Board staff estimates that 400 or fewer systems will be involved. The expected extent and cost of the County's inspection and monitoring program is described in the cost analysis section of the Staff Report, which has been revised as discussed in response to Comment 2.16, below.

Comment 2.9: "The failure to abate septic problems may result in a taking of the property if no alternatives/options are available to the landowner. Small parcels created over 50 years ago may require an eviction if the septic system failure cannot be abated."

It is not the intent of this TMDL to evict anyone from their home, and we believe such an event is extremely unlikely. Numerous technologies exist to remedy septic system failures, even on small, poorly situated lots (Leverenz et al., 2002).

Comment 2.10: "State-issued individual Waste Discharge Requirements (WDRs) or waivers would essentially bring new development to a halt. The County should retain its flexibility to accommodate local land use desires and use the local knowledge and expertise in this area."

We concur that adapting the existing County septic system program is the most desirable way to attain the goals of this TMDL. State-issued WDRs are mentioned only as a possible alternative in the event the County fails to carry out its responsibilities.

Comment 2.11: "The municipalities within Napa County have limited knowledge of the [Water Board's] TMDL process and timeline, in addition to the proposed implementation requirements and associated costs. Program success requires that the municipalities be brought into the process and become part of the solution. The existing countywide NPDES permit should address the pathogen TMDL and Basin Plan concerns."

Board staff have met with representatives of all cities in the watershed. Implementation responsibilities of cities in this TMDL are primarily in the areas of municipal stormwater and domestic wastewater management. The cities are already engaged in addressing these source categories through the existing municipal stormwater program, sanitary sewer overflow program, and municipal wastewater discharge permits.

Comment 2.12: "As the proposal for State issued WDRs or waivers [for grazing lands] is under development, the specifics of these should not be included in the Basin Plan amendment. Language such as 'Upon completion of the grazing lands WDR protocol, such measures will be considered and incorporated into the Basin Plan at that time.' Should be used."

Mr. Dodd is correct in noting that the proposed Basin Plan amendment includes no specifics of the forthcoming grazing waiver program. The amendment's requirements

for filing Reports of Waste Discharge apply to any nonpoint pollution source, regardless of whether a waiver program exists or not. Under the amendment, grazing operators will have the option of participating in any future waiver program or seeking individual WDRs.

Comment 2.13: "Grazing and range land professionals of Natural Resources Conservation Service and University of California Cooperative Extension feel the draft WDR conditions under development will unnecessarily over-burden livestock producers, effectively discouraging program participation and causing some producers to cease production altogether.

"It is very unlikely that livestock grazing (in the traditional sense) has a significant impact on pathogen levels in the Napa River. Grazing that does occur in the watershed is very distant and scattered in upland areas and is not likely to impact pathogen levels due to present management of those operations and the degree to which the land is utilized (known operations maintain very high levels of residual matter/vegetative cover.

"Herbaceous grazing techniques have been successfully used in Napa County to manage fuel loading in the urban-rural wildfire interface; this grazing practice is a preferred alternative to controlled burns in these high-risk areas. Regulating grazing will effectively remove this tool at our disposal to suppress the likelihood and catastrophic force of fire in Napa County. Targeted grazing has also been successful in controlling noxious weeds in the County. Again, if grazing is regulated as proposed, a tool to control local weed infestations may be lost.

"Use of exclusion fencing along 'blue-line' streams as a solution in a 'worst case' scenario is neither practical nor an effective way to meet the program's goals, particularly when other means of livestock management are available that have been proven effective.

"A few rigid standards burdening grazing operations to comply with State mandated WDR or waiver requirements would likely close what limited grazing operations exist in the Napa River watershed. Closure of these operations (i.e., non-renewal of grazing leases) would further reduce the diversity of agriculture in Napa County."

We recognize the many benefits associated with livestock grazing in the Napa Valley, and it is not our intent to reduce agricultural diversity or place undue hardships on cattle producers. The details of the grazing waiver are being developed in a stakeholder process that includes ranchers and operators of grazing lands. Water Board staff fully intends to allow operators maximum flexibility in meeting management goals.

Comment 2.14: "Again, since the proposal for [confined animal] WDRs or waivers is under development in this area, the specifics of these should not be included in this amendment. In addition, other than disperse family/hobby livestock husbandry and a handful of horse boarding facilities, there are no 'confined animal facilities' in the Napa River watershed. The widespread impact of these 'facilities' is questionable and likely highly localized at worst."

While we concur that confined animal facilities are a localized problem, sampling indicates that these facilities are serious local polluters, and must be addressed. Just as for grazing (Comment 2.13), the Basin Plan amendment includes no specifics regarding the confined animal waiver.

Comment 2.15: "The pathogen reduction measures [for municipal runoff] are not due to be incorporated until 2008. It is difficult to assess these future measures or associated costs in the present proposal."

We agree that it is difficult to accurately estimate costs associated with reducing pathogens in municipal runoff at this time. The estimates provided are current best estimates by Water Board staff, and are approximate.

Comment 2.16: "Local costs were not included for new program implementation, management and oversight. Costs prior to completion of repairs were not considered. Weather, funding, scheduling, etc. could all postpone the repair completion. At a minimum pumping and hauling of wastewater should be considered."

The cost analysis in the Staff Report represents the best estimates of Water Board staff. We contacted the County numerous times since these comments were received, but it did not provide alternative cost estimates. We have therefore revised the cost analysis section of the Staff Report based on its written comments and other comments in the County's March 27 letter. Revisions are as follows:

> **Onsite Sewage Disposal Systems**
> The Basin Plan amendment requires the County to develop a plan and implementation schedule to evaluate Onsite Sewage Disposal Systems (OSDS) performance in the Napa River watershed and to bring identified OSDS up to the County's repair standards. It anticipates that repairs will be made to failing systems. The specifics of the management program that will document and assess performance of OSDS have not yet been determined. Within the Napa River watershed, approximately 9,000 parcels have septic systems. Of those, approximately 860 are located on parcels that are within 15 meters of a surface drainage watercourse (Wang et al., 2004). (Parcels are included in this count if any portion of the parcel is located within 15 meters of a watercourse. In many—if not most—cases the actual septic system is located further away than 15 meters, and the count is therefore conservative.) Among these, approximately 70 septic system parcels are located within 100 feet of the

"high priority" (as described in Section 10 of the Staff Report and in the Basin Plan amendment) waterbodies, Murphy Creek and Browns Valley Creek (Pahl, pers. comm. 2005). Inspection and repair is currently proposed only for septic systems adjacent to Murphy and Browns Valley Creeks, and possibly a very limited number of systems adjacent to Salvador Creek. Inspection and repair may be required for additional subwatersheds based on water quality monitoring conducted during the adaptive implementation phase of this TMDL. However, since monitoring to date suggests that less than half of the stream reaches in the watershed are impaired, we assume that no more than 400 of the 860 septic systems mentioned above will require inspection and/or repair. The cost of system repairs will vary according to the type, age, and location of the system. The national average for failing systems ranges from 10–20 percent (U.S. EPA, 2002). There is no information on failure rates in Napa County.

Evaluation/Monitoring: The specifics of the program that will document and assess performance of OSDS have not yet been determined. For calculating low-range cost estimates, we assumed inspections only of the70 parcels adjacent to Murphy and Browns Valley Creeks every ten years. For calculating high-range cost estimates, we assumed inspection every five years of ~~all 860~~ 400 septic systems ~~located on parcels within 15 meters of any waterbody in the Napa River watershed~~. Inspections would likely include a visual survey of the tank, water level, and leach field. A hydraulic load and dye test would likely be necessary. This type of inspection could be performed by a qualified contractor and would cost approximately $500 per inspection (Smith, pers. comm. 2004).

Additional program costs incurred by the County to implement an expanded evaluation, monitoring, and reporting program are estimated to range from $10,000 to $50,000 per year.

Repair Program Implementation: OSDS repair costs vary greatly depending upon the problem. As a low-range cost estimate, we assumed a minor system repair costing approximately ~~$1,000 (Ng, pers. comm. 2006)~~ $2,000, including the cost of interim waste pumping and hauling. As a high-range per-unit cost estimate, a complete system replacement of a failed leach field could require installation of a mound system for a cost of approximately $40,000 (including labor and engineering) (Ng, pers. comm.2006). For the low-range estimate, a failure rate of 10 percent of the 70 high priority septic systems in the Murphy and Browns Valley subwatersheds, and a repair cost of ~~$1,000~~ $2,000 per system is assumed. For a high-range estimate we assume a failure rate of 20 percent ~~for all 860 septic systems on parcels within 15 meters of a waterbody~~ for 400 septic systems, with a repair cost of $40,000 per system.

Reporting: The Basin Plan amendment also requires the County to report progress on implementation of the OSDS management program. Oversight of the inspection results and follow-up would vary according to the number of systems inspected, frequency of inspection, type of

system, and economies of scale. A similar reporting/follow-up program in Marin County involving biannual inspection of 1,300-3,500 septic systems has been estimated to cost $24,000/year (Economic Planning Systems, 2003). This value is used as a conservative high-range estimate for the Napa County program. The low-range estimate is one quarter of the high-range estimate, or $6,000/year.

Based on the above revisions, we have revised Tables 20 and 21 in the Staff report as follows:

Table 20
Summary of Estimated Costs for
Pathogen TMDL Implementation (Year 0 through 10)

Source Category	One Time Cost (Site Development/Infrastructure)		Annual Costs		Ten-Year Program Cost	
	Low	High	Low	High	Low	High
Municipal Runoff	$0	$0	$2,000	$15,000	$20,000	$150,000
Onsite Sewage Disposal Systems	~~$7,000~~ $14,000	~~$6,880,000~~ $3,200,000	~~$9,500~~ $19,500	~~$110,000~~ $114,000	~~$102,000~~ 209,000	~~$7,980,000~~ $4,340,000
Grazing Lands	$269,373	$1,266,863	$36,937	$136,686	$603,809	$2,499,040
Confined Animal Facilities	$100,000	$500,000	$55,000	$255,000	$650,000	$3,050,000
Sanitary Sewer Systems	$0	$0	$0	$0	$0	$0
Wastewater Treatment Plants	$0	$0	$0	$0	$0	$0
GRAND TOTAL	~~$376,373~~ $383,373	~~$8,646,863~~ $4,966,863	~~$103,437~~ $113,437	~~$516,686~~ $520,686	~~$1,375809~~ $1,482,809	~~$13,679,040~~ $10,039,040

Table 21
Implementation Actions and Estimated Costs

Implementation Action	Responsible Party		One-Time Cost		Annual Cost		10-Year Program Cost	
	Name	No.	Low	High	Low	High	Low	High
Municipal Runoff								
1. Inspection/ Monitoring	Napa County Flood Control and Water Conservation District (NCFCWCD)	1	$0	$0	$0	$0	$0	$0
2. Stormwater Plan Implementation	NCFCWCD	1	$0	$0	$2,000	$15,000	$20,000	$150,000
3. Reporting	NCFCWCD	1	$0	$0	$0	$0	$0	$0
Total			$0	$0	$2,000	$15,000	$20,000	$150,000
Onsite Sewage Disposal Systems (OSDS)								
1. Evaluation/ Monitoring	Napa County	1	$0	$0	~~$3,500~~ $13,500	~~$86,000~~ $90,000	~~$35,000~~ $135,000	~~$860,000~~ $900,000
2. Repair Program Implementation	Homeowner	70-~~860~~400	~~$7,000~~ $14,000	~~$6,880,000~~ $3,200,000	$0	$0	~~$7,000~~ $14,000	~~$6,880,000~~ $3,200,000
3. Reporting	Napa County	1	$0	$0	$6,000	$24,000	$60,000	$240,000
Total			~~$7,000~~ $14,000	~~$6,880,000~~ $3,200,000	~~$9,500~~ $19,500	~~$110,000~~ $114,000	~~$102,000~~ $209,000	~~$7,980,000~~ $4,340,000
Grazing Lands								
1. Inspection/ Monitoring	Ranchers	20	$20,000	$20,000	$10,000	$10,000	$110,000	$110,000
2. Implement Management Measures	Ranchers	20	$249,373	$1,246,863	$24,937	$124,686	$473,809	$2,369,040
3. Reporting	Ranchers	20	$0	$0	$2,000	$2,000	$20,000	$20,000
Total			$269,373	$1,266,863	$36,937	$136,686	$603,809	$2,499,040
Confined Animal Facilities								
1. Inspection/ Monitoring	Confined Animal Facilities	20-100	$0	$0	$10,000	$50,000	$100,000	$500,000
2 Implement Management Measures	Confined Animal Facilities	20-100	$100,000	$500,000	$40,000	$200,000	$500,000	$2,500,000
3. Reporting	To be determined		$0	$0	$5,000	$5,000	$50,000	$50,000
Total			$100,000	$500,000	$55,000	$255,000	$650,000	$3,050,000
Sanitary Sewer Systems								
1. Comply with approved Sanitary Sewer Management Plan	System Owners	6	$0	$0	$0	$0	$0	$0
Total			$0	$0	$0	$0	$0	$0
Domestic Wastewater Discharges								
1. Comply with applicable NPDES permits	Facility Owners	6	$0	$0	$0	$0	$0	$0
Total			$0	$0	$0	$0	$0	$0

Comment 2.17: "The identification of new monitoring sites in future years has an unknown impact on the County's resources. How those monitoring sites are identified and concurred with by the stakeholders is of issue. How will the four additional tributaries be determined and their associated implementation plans be developed and implemented? (Table 7-g)"

Water Board staff will make a determination of which additional tributaries will be monitored in consultation with stakeholders including the Napa Watershed Information Center and Conservancy's (Napa WICC's) Technical Advisory Committee. It is our expectation that selected tributaries will be sampled at points near their confluence with the Napa River. We have, however, revised the evaluation and monitoring portion of the proposed Basin Plan amendment to allow for further flexibility in future monitoring:

> Table 7-g presents locations for baseline water quality monitoring. Each site will be sampled for *E. coli* ten times each year. Five samples will be collected weekly during one 30-day period in each wet season (November through March) and one 30-day period in each dry season (May through September). All water quality monitoring (including quality assurance and quality control procedures) will be performed pursuant to the State Water Board's Quality Assurance Management Plan for the Surface Water Ambient Monitoring Program. Additional monitoring will be conducted as needed if funds are available. In lieu of the monitoring plan described in Table 7-g, one or more implementing parties may submit an alternative monitoring plan for Executive Officer approval.

We anticipate that implementation actions for tributaries that in the future may be identified as impaired will be similar to actions for the currently identified problem tributaries. However, as with all elements of the implementation plan, responsible parties have flexibility in determining how to address impairment.

Comment 2.18: "In the introduction it refers to Chapter 4 amendments but the Basin [Plan] indicates it is Chapter 7 that is amended. What other changes in Chapter 4 are needed?"

The TMDL will be adopted as an amendment to Chapter 7 of the Basin Plan. Chapter 4 will not be changed, and the reference to Chapter 4 in the introduction will be changed to Chapter 7.

Comment 2.19: "We object to the use of dated sampling from the 60's, 70's and 80's, at best 25 years ago. Much improvement has been achieved since that time. This old data is not relative in a current context and programs."

The old data are included to provide historical perspective. The following paragraph has been added to the end of Section 3.3 of the Staff Report (Summary of Past Bacteriological Water Quality Studies in the Napa River):

> The results presented above provide historical perspective on the pathogen problem in the Napa River watershed. Improvements in waste treatment and management practices have resulted in significantly improved water quality, as described in the following section.

The last paragraph of Staff Report Section 3.4 (Recent and Ongoing Bacterial Water Quality Studies in the Napa River) has been revised as follows:

> In sum, ~~past and present~~ recent bacterial water quality studies in the Napa River watershed provide a consistent picture of widespread, but generally moderate and somewhat localized pathogen impairment. Data indicate that much of the watershed, including several major tributaries, meets bacterial Water Quality Objectives. However, Water Quality Objectives are exceeded at a number of locations in the watershed at all times of year.

Comment 2.20: "Under Numeric Targets, it is noted that "septic tanks provide minimal primary treatment." However, septic tanks are accompanied by leach fields, which should provide adequate treatment except in the case of failure. For rural areas, septic systems are adequate means of sewage disposal. (Page 15)"

We concur that septic systems, if functioning properly, are adequate means of sewage disposal in rural areas. However, in failing systems the leach field can be short-circuited, in which case the sewage receives only minimal treatment in the septic tank.

Comment 2.21: "The City of American Canyon Wastewater Treatment Plant is on Mezzetta, not Elliot Drive. (Page 17, Table 6)"

This has been corrected.

Comment 2.22: "Section 5.2 fails to mention the potential of sewer transmission systems, which are more likely to be found in urban areas than are septic systems."

The second paragraph of section 5.2 has been revised as follows:

> Different delivery mechanisms drive pathogen loading during the wet and dry seasons. During the wet season, loading is primarily via precipitation-driven surface runoff, and secondarily though groundwater flow into stream channels. Surface runoff is largely absent in the dry season and pathogen delivery is predominantly though groundwater inflow (including in many cases septic system leachate or sanitary sewer line leakage), direct deposition (e.g., animals in the creek), and low-volume runoff from human activities (e.g., lawn and landscape watering, car washing, washing of animal holding areas, etc.). Therefore, dry and wet season pathogen loading are discussed separately below.

Comment 2.23: "Section 5.2.3 suggests that the primary cause is sewer transmission lines. Due to the limited septic systems in this area, we suggest that septic systems are not the cause of excessive pathogen levels. Section 5.2.3 indicates that septic systems are included as sources, which is highly unlikely due to the lack of septic systems in the area. Section 5.3 suggests that in the Browns Valley Creek, Murphy Creek and Salvador Creek areas, septic systems are the primary concern, but the samples indicate that only Murphy Creek may have septic concerns."

We cite septic systems as potential sources in Murphy, Browns Valley, and Salvador Creeks. Septic systems are known to exist along Murphy and Browns Valley Creeks, and clearly represent potential sources in these watersheds. Septic systems may also be a source in the upper reaches of Salvador Creek, as it is currently unclear how many, if any, septic systems exist in this watershed. Sewer lines are cited as potential sources in Browns Valley Creek and Salvador Creek, but not in Murphy Creek, which is served entirely by septic systems.

Comment 2.24: "Section 9.4 states that 'a public entity with the financial and legal capability to assure that the system provides protection to the quality of the water of the State for the life of the development project' is responsible. We have many systems that were installed prior to 1978. Who is responsible in those cases?"

The Basin Plan amendment clearly indicates that individual property owners are responsible for septic systems regardless of date of installation. The TMDL calls upon the County to develop a program for regulating existing septic systems to the extent that they pose a threat to water quality.

Comment 2.25: "Napa is unique with its parcel size limitations for parcel splits. These large minimum parcel sizes address many of the concerns of more urban counties. Less development potential exists with large minimum parcels which mean less septic systems can be installed."

We agree. However, this comment applies primarily to new systems, and not to older existing systems.

Comment 2.26: "It needs to be determined that if a TMDL is in place, but more restrictive regulations from the AB 885 [statewide septic system regulations] process are enacted, the TMDL will be the guiding document because it is more site specific. The Environmental Management Department has almost completed a local sewage ordinance upgrade that incorporates many water quality improvements that parallel the AB 885 process and provide enhanced protection of water quality."

The AB 885 regulations are still being developed. The County will need to meet AB 885 requirements in developing its septic system program. However, we anticipate that the regulations will contain provisions for the Water Board to exercise discretion in applying certain AB 885 requirements (e.g., setback requirements) in waterbodies where an approved TMDL is in place. If this is confirmed, when AB 885 regulations are adopted, then the TMDL will be the guiding document to the extent allowed by AB 885.

Comment 2.27: "Section 9.4 on page 38 fails to mention the City of American Canyon in the municipal runoff discussion."

The City of American Canyon obtained coverage under the state's Small Municipal Separate Storm Sewer System General Permit beginning in January 2006. In both the Staff Report and the Basin Plan amendment, we have added American Canyon to the list of participating municipalities.

Comment 2.28: "Section 9.5 suggests that operating permits be required for all 9,000 OSDS's. The cost and feasibility of this is unsubstantiated. This is not a practical or feasible additional regulation. It is not focused to reduce pathogens in the Napa River watershed."

This comment is addressed in our responses to Comment 2.8 and Comment 2.10.

Comment 2.29: "Table 14 again does not indicate if all OSDS would be included in this proposal [that the County develop a program for septic system inspection and repair] or only a subset that could impact the watershed directly. Even if it is a subset, that group is not clearly defined."

This comment is addressed in our responses to Comment 2.8 and Comment 2.16.

Comment 2.30: "Section 10.2 indicates that 'stakeholders in the Watershed will collaborate to monitor selected water quality…' which would be a cost to stakeholders that is not included in the cost analysis."

It is our hope that this can be accomplished at relatively low cost through combining sampling activities with existing monitoring programs, through volunteer monitoring, or a combination of these.

Comment 2.31: "Section 10.2 indicates that an analysis will be done that includes review of county files. No county staff is allocated for this project. Who will be conducting this review? Even if it is not county staff, the validity of the data will need to be confirmed by county staff, due to the possibility for incorrect interpretation."

We expect that County staff will review County files. The cost is reflected in the revised cost analysis presented in the response to Comment 2.16.

Comment 2.32: "Table 19 refers to 'four additional tributaries to be determined' – this creates a concern that this is a never-ending analysis of the watershed rather than a plan to achieve delisting of the watershed."

As we continue to gather information, our goal is not simply to delist the watershed, but to protect recreational users. Our hope is that the County will be willing to work with us to monitor water quality in the watershed in a manner such that discharges are identified and corrected before they become a public health problem. This comment is further addressed in our response to Comment 2.17.

Comment 2.33: "Section 10.3 suggests that it will '"provide opportunities for stakeholder participation.' This has not occurred to date. What are the assurances that it will be done by RWQCB in the future?"

This comment is addressed in our response to Comment 2.3.

Comment 2.34: "What is the true probability that, after a TMDL standard is set and valiant efforts are made to achieve it, the standard…will be [relaxed]?"

The original wording of this comment used the word "reduced" rather than "relaxed". We substituted words based on clarification provided by County staff (Pahl, 2006b). The question, then, is whether it is likely that the Water Board will raise numeric targets if implementation actions do not reduce pathogen levels below existing targets.

We are confident that implementation actions will succeed in reducing pathogen levels below the TMDL targets. The fact that much of the watershed currently meets targets indicates that the targets are attainable in the remainder of the watershed. If, however, in the unlikely event that targets cannot be met due to wildlife or other uncontrollable discharges, dischargers will not be held responsible for exceedances, and the Water Board may consider alternative means to resolve impairment.

Comment 2.35: "There are incorrect references to "Tomales Bay." It is not in Napa County and in most cases is not an appropriate reference."

Most references to Tomales Bay are intentional comparisons to conditions or programs in the Napa River watershed. The incorrect references to Tomales Bay in the CEQA discussion have been corrected.

Comment 2.36: "…Section 11.4 (Municipal Runoff Cost Estimates)…fails to mention the City of American Canyon."

American Canyon is addressed in the response to Comment 2.27.

Comment 2.37: "The estimated costs for OSDS fail to include the need to pump and haul prior to repair as well as staff time for overseeing these activities. In addition, many parcels may be of a limited capacity so that easements or community solutions will require much more time than simple repair. The impacts of these circumstances need to be included."

This comment is addressed in the response to Comment 2.16.

Comment 2.38: "The discussion of the Salvador area on page 49 [in the economic analysis] does not include OSDS, which is inconsistent with the sample findings."

We did not include Salvador Creek in the cost analysis because we anticipate very few or no problem septic systems in the Salvador Creek watershed, and that costs associated with addressing these few problems will be minimal within the overall context of a countywide program.

Comment 2.39: "Cost estimates are derived from Marin and Sonoma County staff statements, which may not reflect Napa's costs (Smith and Ng). The $500 to $1,000 estimate as a minimum is probably not realistic for the situation in the Murphy Creek area. This lower end estimate is well under the probable cost to repair."

This comment is addressed in the response to Comment 2.16.

Comment 2.40: "The scope of OSDS needs to be delineated. There is a huge difference between using all parcels (860) within 15 meters of the stream versus the approximate 70 parcels in the study areas."

This comment is addressed in our responses to comments 2.8 and 2.16.

Comment 2.41: "The Environmental Management Department's existing Alternative Sewage Treatment Systems monitoring program costs are much higher than those stated in the report. More research on these costs is needed. The low estimate of $7,000 to conduct a repair is not realistic. It includes no staff costs, which will add $7,000-14,000 to the estimate to achieve the level of effort."

This comment is addressed in the response to Comment 2.16.

Comment 2.42: "Implementation should be balanced against the ability to acquire additional funding to provide for the services. The County does not have existing funds to implement these programs. If no outside funds are available, there is no mechanism to provide these services."

We agree that a balanced approach to implementation is necessary, and feel that the flexibility in the implementation plan allows for such a balance. In testimony at the April 12, 2006 Water Board hearing, County staff indicated that the County Board of Supervisors has allocated funds to begin implementation actions. We applaud the County's recognition that the problem of pathogens in the Napa River watershed warrants serious attention. We look forward to assisting the County in identifying additional funding sources in the future.

Comment Letter no. 3: Napa County Board of Supervisors, Bill Dodd, Chair. April 11, 2006.

At the April 12, 2006 Water Board hearing, the Board agreed to accept this second letter from the Napa County Board of Supervisors although the comment period had passed.

The letter contains a number of constructive comments, including detailed implementation suggestions.

Comment 3.1: "Napa County has the same overall goal as the Regional Water Quality Control Board (RWQCB) 'to minimize exposure to waterborne disease-causing pathogens and to protect uses of water for recreational activities.' Napa County hopes that the pathogen listing as a Federally impaired 303(d) waterway can be removed either through pathogen reduction or the determination that the pathogen sources cannot be further controlled. Wildlife and homeless encampments most likely contribute to the pathogen TMDL, but there is no way to control these sources."

We appreciate that the County shares the Water Board's goal for this TMDL. We recognize that some sources are uncontrollable, but we are confident that management of controllable sources will result in significant water quality improvement.

Comment 3.2: "Pathogens are not a severe or widespread problem in the Napa River Watershed, but instead appear to be limited in localized areas. Napa County believes the Basin Plan amendment and associated pathogen thresholds established by a suite of Total Maximum Daily Load (TMDL) measures to meet the goal are too broad and potentially confine Napa County to unattainable implementation measures."

We agree that pathogen problems are relatively localized in the Napa River watershed. Neither the Staff Report nor the Basin Plan amendment requires the County to take actions where no threat to water quality exists. The TMDL allows responsible parties great flexibility in determining implementation details.

Comment 3.3: "In addition to our previous comments in the letter dated March 24, 2006, Napa County proposes the following implementation measures as appropriate to proceed to the eventual delisting of the Napa River for pathogens:

"Identify and survey the septic systems within 100 feet of a Napa River tributary in the localized areas identified as problems: Salvador, Browns Valley and Murphy creeks. Due to the high clay soils in these areas, it is unlikely that a septic system failure could reach a tributary through either surface or subsurface travel from 100 feet away. Since the sewage system setback is currently 100 feet it will likely be older systems that were built prior 1969 when Napa County established a 100 foot setback from blue line creeks for septic systems. This may make the repairs more challenging.

"Work with the property owners where failing septic systems have been identified to repair those failures. Monitor the system until the repair is completed.

"Update a 'Living in the Country' brochure and mail out to all septic system owners identified during the initial survey of the problem areas.

"If future RWQCB sampling determines other areas of localized concern during their sampling of additional tributaries, the above procedures will be followed once Napa County determines that the samples warrant such action.

"Review the various river and tributary sampling that is being conducted by agencies within the County for use to further evaluate potential pathogen problems.

"Existing Sanitary Sewer Overflow plans, Municipal Wastewater Permits (including their discharge conditions) and [National Pollutant] Discharge Elimination [System] Permits and plans (including the 2008 proposed pathogen implementation actions) should be adequate to address all concerns related to sanitary sewer systems and stormwater/non-point systems. No additional implementation measures are necessary in these areas.

"The public process for developing Waste Discharge Requirements, Waivers and Exemptions for grazing lands and confined animal facilities is not completed and the requirements/standards have not been fully developed. This is a public process and stakeholders must be engaged to complete the final product. In the interim, educational outreach and implementation of Best Management Practices offers a practical and efficient means to reduce the risks of pathogen transmission from our few grazing operations and confined animal facilities."

Staff generally endorse the measures proposed, and feel that they will form the core of an effective implementation strategy. The measures should be included in the County's plan to evaluate and correct septic system deficiencies, to be submitted to the Water Board for Executive Officer approval per the implementation requirements of this TMDL. We are confident that consensus can be achieved regarding the need for additional implementation actions if future monitoring reveals impairment in additional tributaries. However, it is the Water Board that has the ultimate responsibility to decide if a tributary is impaired and if corrective actions are needed.

Comment 3.3: "Implementation measures and deadlines associated with the TMDL should be balanced with the achievement of additional funding to provide for resulting added services and programs. The County does not have additional funds to implement any new programs. If no outside funds are available, there is no mechanism to provide the needed services associated with the proposed TMDL/Basin Plan Amendment."

This comment is addressed in the response to Comment 2.42.

Comment Letter no. 4: Napa Sanitation District, Michael Abramson, General Manager. March 27, 2006.

Comment 4.1: "We fully support the fact that [the] only requirements for sanitary sewer systems under the TMDL will be to implement the new requirements from the NPDES Division to develop a sewer system management plan (SSMP)."

On May 2, 2006, the State Board adopted general WDRs for sanitary sewer systems. All public entities that own or operate sanitary sewer systems greater than one mile in length and/or convey untreated or partially treated wastewater to a publicly owned treatment facility in the State of California must comply with these WDRs. The WDRs require enrollees to develop SSMPs. We expect that the SSMP program and other provisions of the general WDRs will be sufficient to address sanitary sewer implementation requirements. We have revised Section 9.4 of the Staff Report to describe the newly-adopted general WDRs:

> Sanitary Sewer Systems
> An October 2003 Water Board resolution established a collaborative program between the Water Board and Bay Area Clean Water Agencies (BACWA) to reduce sanitary sewer overflows (SSOs). The collaborative program includes four key tasks:
>
> - Establish SSO reporting guidelines
> - Develop an electronic reporting system
> - Establish guidelines for sewer system management plans (SSMP) ~~and~~
> - Conduct a series of regional workshops to provide training on the first three tasks
>
> Reporting guidelines, the electronic reporting system, and regional workshops were completed in 2004. The Water Board in cooperation with BACWA completed the Sewer System Management Plan (SSMP) Development Guide in July 2005. Some of the SSMP requirements direct wastewater agencies to:
>
> - Develop an overflow emergency response plan to contain overflows and prevent wastewater from reaching surface waters
> - Develop a Fats, Oils, and Grease (FOG) Control Program if needed
> - Allocate adequate resources for the operation, maintenance, and repair of its collection system
> - Prioritize preventive maintenance activities, such as scheduled cleaning of sewers, root control, and investigation of customer complains
> - Identify structural deficiencies and prioritize repair ~~and~~
> - Monitor the effectiveness of each SSMP element
>
> The Water Board notified wastewater collection agencies of the requirements for preparing SSMPs in July 2005.

On May 2, 2006, the State Water Board adopted general Waste Discharge Requirements for sanitary sewer systems (Board Order 2006-0003). All public entities that own or operate sanitary sewer systems greater than one mile in length and/or convey untreated or partially treated wastewater to a publicly owned treatment facility in the State of California are required to apply for coverage under these WDRs by November 2, 2006. The WDRs contain provisions for SSO reduction measures, including development and implementation of SSMPs.

Comment 4.2: "Basin Plan amendment language need to be revised to be fully consistent with…Water Board SSMP [Sewer System Management Plan] requirements." The comment suggests specific changes to Table 7e of the proposed Basin Plan amendment, in order to make the table more consistent with SSMP requirements.

We agree that consistency with general WDRs and SSMP requirements is appropriate. We have revised Table 7-e of the proposed Basin Plan amendment as follows:

Table 7-e

Trackable Implementation Measures for the Napa River Pathogen Total Maximum Daily Load

Source Category	Action	Implementing Party/ies	Completion Dates
Sanitary Sewer Systems	~~Comply with applicable Waste Discharge Requirements (WDRs)~~	Napa Sanitation District, City of Calistoga, City of St. Helena, Yountville Joint Treatment Plant, City of American Canyon, Napa River Reclamation District #2109	~~As specified in the applicable WDRs~~
	~~Submit to the Executive Officer for approval a plan and implementation schedule for evaluating sanitary sewer line performance and correcting identified deficiencies[a] Priority should be given to the Browns Valley Creek and Salvador Channel subwatersheds~~ Apply for coverage under the State Water Board's general WDRs for sanitary sewer systems Board (Order No. 2006-0003). Comply with provisions of WDRs.		~~January 2008~~ As specified in general WDRs
	Report progress on inspection and evaluation of sewer systems[ba] Priority should be given to the Browns Valley Creek and Salvador Channel watersheds.		Annually
	~~[a]Plans may be incorporated into approved Sanitary Sewer Management Plans (SSMPs).~~ [ba]Reports may be incorporated into annual Sewer System Management Plan audit reports.		

Comment 4.3: "Implementation actions for sanitary sewer collection agencies in the staff report need to be clarified." The comment suggests specific changes to Table 15 of the Staff Report to make the table more consistent with SSMP requirements.

Table 15 of the Staff Report has been revised as follows:

Table 15

Proposed Implementation Actions to Reduce Pathogen Loading from Sanitary Sewer Systems

Implementing Party	Action
Napa Sanitation District; City of Calistoga; City of St. Helena; Yountville Joint Treatment Plant; City of American Canyon; Napa River Reclamation District #2109	1. In cooperation with the Water Board and Napa County DEM, provide existing sanitary sewer maps to Water Board staff in order to identify potential areas of greatest water quality concern from collection system failure based on proximity to impaired reaches, soil type, topography, and other factors.
	2. Comply with provisions of general WDRs for sanitary sewer systems.~~Develop Sanitary Sewer Management Plan in accordance with Water Board/BACWA guidelines (see Section 9.4, pages 36-37). Plan should include provisions to identify and repair collection system failures. Priority should be given to areas identified as posing water quality risks.~~
	3. Report progress on implementation of pathogen reduction measures. Priority should be given to areas identified as posing water quality risks.

Comment 4.4: "Insufficient data exist to implicate sanitary sewers as a source of pathogens to the Napa River…General statistical methodology is flawed...Browns Valley data do not point to sanitary sewer as a source…Salvador Channel data do not point to sanitary sewers as a source."

Mr. Abramson implies that failure to establish a correlation between dry season bacteria levels and land use constitutes a flaw in our statistical approach. On pages 22 and 23 of the Staff Report we note that lack of *general* correlation throughout the watershed indicates nothing about *localized* sources. It has been our assertion throughout that sewer lines are a localized source in this watershed. The commenter further suggests that the inability to statistically compare wet and dry season data (due to the small quantity of wet season data) is a flaw in our statistical approach. As we explain in the Staff Report, wet and dry season pollutant discharge pathways are completely different, and there is little value in statistically comparing the two.

Mr. Abramson asserts that Browns Valley Creek data do not implicate sewer lines because bacteria levels remain high for a significant length of the stream, suggesting a diffuse, continuous source rather than a single discrete source such as a single sewer line

leak. There are many possible causes for the observations in Browns Valley Creek. Given the high density of sewer lines in the area, sewer line leakage is a very likely source. The additional monitoring and reconnaissance proposed in the Staff Report will clarify sources in this tributary.

Finally, Mr. Abramson asserts that Salvador Creek data do not point to sanitary sewers as a source because bacteria levels *do not* remain high for a significant length of stream, suggesting a single, discrete source. This is exactly the reverse of the argument made for Browns Valley Creek. In fact, sewer lines can be either discrete or diffuse sources, depending on the nature of the leakage. Again, further investigation during the adaptive implementation phase of the TMDL will clarify the extent to which sewer lines are a pathogen source in these tributaries.

Comment Letter no. 5: City of Calistoga, Paul W. Wade, Public Works Director. March 27, 2006.

Comment 5.1: "The staff report includes references to collection system agency 'cooperation' and 'collaboration' with the Water Board to identify river stretches of greatest water quality concern. These references should be expanded to clarify the exact meaning of 'cooperation' and 'collaboration.' Monitoring of receiving waters by collection system agencies is beyond the scope of the existing Sewer [System] Management Plan (SSMP) program and not appropriate unless sanitary sewers are conclusively identified as a pathogen source."

Implementation requirements for collection system agencies have been clarified as described in the response to Comments 4.1 and 4.2. No monitoring of receiving waters will be required of these agencies.

Comment 5.2: "There is insufficient data linking leaky sanitary sewer lines to pathogens in the Napa River. It is therefore too soon to require actions over and above those outlined in the existing…Sewer [System] Management Plan program."

No actions beyond those specified in the Sewer System Management Plan and general WDRs will be required except in cases where leaking sanitary sewer lines are linked to pathogen loading to surface waters.

Comment Letter no. 6: Friends of the Napa River, Bernhard Krevet, President. March 27, 2006.

Comment 6.1: "We generally agree with the findings and support a sensible implementation plan as presented in this report with proposed actions necessary to achieve water quality objectives. In particular, we encourage the plan's intent to

educate the general public, property owners and City and County agencies about the dangers to human health from pathogens in the river. Advocacy and education go a long way to improve detrimental habits and sensitize citizens to appropriate behavior. We offer our support in such efforts by providing informational booths for agencies at our events and participate in training programs for monitoring the watershed. We understand that the final implementation plan will be developed in close coordination with stakeholders. Water Board staff needs to discuss source control actions with all interested stakeholders and seek their input in regard to cost and feasibility.

"We applaud the overall intent of this implementation plan to restore and protect beneficial uses of the Napa River and its tributaries by reducing pathogen loadings."

We welcome the support of the Friends of the Napa River. We agree that effective outreach and education will enhance the effectiveness of TMDL implementation, and we look forward to working together with the Friends, the Sierra Club, and other stakeholder groups in the future.

Comment Letter no. 7: Sierra Club, Napa County Group; Elizabeth Frater, Chair; March 17th, 2006.

Comment 7.1: "On behalf of the Executive Committee of the Napa Group of the Redwoods Chapter of the Sierra Club I would like to extend our sincere appreciation to the Water Board for the excellent work on the Napa River Pathogen TMDL. The studies that you have provided have been both interesting and informative.

"The Napa County Sierra Club looks forward to continuing to work with the Board and other stakeholders to expand the knowledge base of our watershed and to seek proactive solutions to our common problems. We certainly appreciate the commitment of the Board to moving this work forward."

We appreciate the support of the Sierra Club, and look forward to working with the local group as we move into the implementation phase of the TMDL.

PART II: STAFF RESPONSES TO ISSUES RAISED AT THE APRIL 12, 2006 PUBLIC HEARING

Several stakeholders presented oral comments at the April 12 Water Board testimony hearing. Board members also made a number of constructive comments. Many of the comments raised at the hearings either by the Board or by attendees are addressed in the previous section. Below we summarize and respond to issues raised in oral testimony that are not addressed elsewhere in this Responses to Comments document.

Commenter no. 1: Michael Abramson, General Manager, Napa Sanitation District

Mr. Abramson expressed support for the general goals of the TMDL and endorsed the use of the Sewer System Management Plan program to implement the sanitary sewer-related parts of the TMDL.

The issues Mr. Abramson raised in his testimony are addressed in Part I of this document.

Commenter no. 2: Jill Pahl, acting Director, Napa County Department of Environmental Management

Ms. Pahl summarized the County's comment letter of April 11, 2006.

We appreciate the constructive input contained in the letter Ms. Pahl submitted at the hearing, and in her oral testimony. Responses to the suggestions and issues she raised are presented in Part I of this document.

Commenter no. 3: Sandy Elles, Executive Director, Napa County Farm Bureau

Comment 3.1: Ms. Elles expressed concern that the implementation costs (as estimated in Section 11.4 of the staff report) will potentially put cattle producers in the Napa Valley out of business.

It is not our intent to place undue economic hardships on grazing land operators (or any other category of dischargers), or to reduce agricultural diversity in the Napa Valley. The Staff Report notes that even the low-range cost estimates we present for grazing lands are high, as they represent a worst-case scenario. While we expect actual costs to be considerably lower than those presented, more accurate estimates are difficult to develop because appropriate management practices will likely vary from site to site. Staff welcome creative, economical management solutions.

Comment 3.2: Ms. Elles suggested that cattle grazing should be a low priority in the implementation plan, or not be addressed at all, since grazing operations are dispersed and stocking densities are generally low.

California's *Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program* requires that all current and proposed nonpoint source discharges must be regulated. We feel that this TMDL accords an appropriate priority to cattle grazing. All grazing operations will be asked to comply with conditions of the grazing lands waiver currently being developed. We encourage operators to participate in the public process for developing these waiver conditions.

Comment 3.3: Ms. Elles suggested that we focus exclusively on the few site-specific problems in the watershed.

Staff intend to focus on problem sites, but not exclusively. State policy holds that all grazing operations with the potential to discharge to surface waters must be regulated. While we believe that the most effective means of regulation for most grazing operations in the Napa watershed is the region-wide grazing waiver program, additional regulation may be required for certain problem operations.

Comment 3.4: Ms. Elles noted that no definition has been provided for the minimum size of animal facility that will be subject to regulation. She further pointed out that many small operations, such as 4-H projects and small "boutique" sheep herds exist in Napa County.

We anticipate that minimum facility size subject to regulation will be defined in the renewed confined animal waiver expected to be completed in 2008. As noted by Board Member Waldeck in this hearing, small animal facilities can pose a serious threat to water quality, and all potential water quality impacts must be considered in establishing this minimum.

Comment 3.5: Ms. Elles offered to work with the Board in outreach and education, and to promote sustainability in the Napa watershed.

We share Ms. Elles' interest in maintaining agricultural sustainability, and we look forward to working with her.

Commenter No. 4: Kathy Hayes, Government Affairs, North Bay Association of Realtors.

Comment 4.1: Ms. Hayes stated that there is "a lot of fear among homeowners…about regulations from the Regional Water Quality Board."

There is no intention on the part of Water Board members or staff that any homeowner will lose his or her home as a consequence of the need to repair a failing septic system or sewer lateral. We will support the County in ongoing efforts to educate homeowners about the importance of septic system maintenance and repairs, and the potential of a single failing system to impair a nearby stream or creek. We will also help to clarify the availability of grants and loans for low-income homeowners whose sanitary systems need repair.

Comment 4.2: She asked that the board "figure out ways to include [local homeowners] in the [TMDL] process."

We are open to suggestions on how to better include residents in the TMDL process. In fact, we have heard from homeowners during TMDL development. A number of residents attended a public meeting on the Napa River Sediment and Pathogen TMDLs held at the Yountville Community Center on July 21st, 2005. Homeowners and renters also attended the public workshop and CEQA scoping meeting for the Napa River Pathogen TMDL, at the Napa Library on November 7, 2005, which was noticed in the local newspaper. We look forward to hearing more from residents as we move into the adaptive implementation process.

Comment 4.3: Ms. Hayes questioned the discharge prohibition against untreated or inadequately treated human waste, which she characterized as giving homeowners "no slack."

Ms Hayes is correct that there are no exceptions. This is based on the Basin Plan's region-wide prohibition against the discharge of raw or inadequately treated sewage.

Comment 4.4: Ms Hayes indicated that she reads the review drafts to mean that the zero discharge prohibition will be reviewed for appropriateness in five years, at which time the standard may be relaxed.

We do not anticipate that the zero discharge prohibition will be revised for septic systems or sewer lines at any time in the future.

Comment 4.5: Ms Hayes expressed uncertainty about what the county and property owners will be required to do to comply with the TMDL.

Property owners and the County are expected to comply with conditions specified in the implementation plan. TMDL targets and allocations are not themselves directly enforceable; only actions specified in the Implementation Plan or in the course of the adaptive implementation process are. The Water Board expects the county to develop a program for prioritizing and inspecting septic systems and sewer connections in areas where pathogens are detected in local waterways. Homeowners will be required to comply with the existing county program and any new requirements. However,

continued discharge of untreated septage to surface waters is in violation of the Basin Plan, and may subject a property owner to Water Board enforcement actions.

Comment 4.6: She questioned the relative numbers of homes within hotspot target areas in the Napa River and Sonoma Creek watersheds.

We understand this comment to question the disparity between the number of potential problem septic systems called out in the Napa River and Sonoma Creek TMDLS (860 and 1165 systems, respectively). These numbers differ due to differing patterns of water quality impairment and residential development in the two watersheds. While we are confident in these estimates, we anticipate refining them during adaptive implementation.

Comment 4.7: Ms. Hayes requested cost estimates for dairies.

There are no dairies in the Napa River watershed.

Comment 4.8: Ms. Hayes asked, "What's the ask of property owners, and what are we going to do with property owners that can't meet the standard? And what financial resources are in place to both help the county and the property owners?"

Property owners are being asked to repair (or if necessary, replace) and maintain improperly functioning septic systems. As explained in the staff report (Section 11.4), costs will vary with the nature of the failure, location of the parcel and system, soil characteristics, etc. For purposes of our analysis, staff has estimated the cost of septic system repairs ranging from $2,000 for a simple repair, to $40,000 for replacement of a failed leach field with an engineered mound system.

There are a number of potential funding sources to which the County could apply for cost assistance, including Proposition 13, 40, and 50 funds. The State Water Resources Control Board's Small Community Wastewater Grant Program may have funds available for small treatment works. Funds, if available, are awarded on a sliding scale based on the median household income in the designated project area. If a municipality makes application to the State Water Resources Control Board, the Board may be able to make state revolving funds available to supply collateral to local banks for low-interest loans to homeowners for repair of systems causing water quality problems.

Comment 4.9: Ms. Hayes offered the Realtors' Association's support in helping to provide opportunities for outreach to the community.

Staff gratefully acknowledges the offer and looks forward to working with the Board of Realtors in the future.

Board members made a number of comments and suggestions at the April 12th meeting. These are addressed below.

Board Member Wolff noted that while "compliance will…be determined under plans that will be submitted later" in the adaptive management process, staff need to clarify for residents and other stakeholders, where compliance will be measured. "For example, for an on-site sewage disposal system [with] an E. coli allocation of zero, is that zero at the property line, or [in the nearest] surface water?"

In general, all dischargers and potential dischargers in the watershed need to take reasonable actions to prevent human and animal waste from reaching surface waters. Compliance with the TMDL will be assessed based on implementation of appropriate management measures and/or compliance with applicable permits. At the Board hearing, Ms. Whyte of Water Board staff noted that in the case of septic systems, compliance will be determined "based on the operation of the system itself, in addition to monitoring [in the] water body." Site-specific evaluation will consider the age of systems, how well they're functioning, depth to groundwater, depth to bedrock, and soil permeability. A weight-of-evidence approach will be used to identify problem systems. This approach is preventative, meaning that with septic tanks we do not wait until we find evidence of human waste in downstream waters to make a determination of non-compliance; we require that all septic tanks meet basic standards and function properly.

For grazing lands, operators are expected to implement practices to prevent animal waste from entering creeks. We anticipate that as the County develops its plan and implementation schedule for evaluating septic systems and correcting deficiencies, and as WDRs and waiver conditions for grazing lands and confined animal facilities are developed or amended, measures of compliance will be further defined.

Board member Wolff requested that we add to the Staff Report context for the pathogen TMDL in terms of other impairments in the watershed, and the relative importance of each pollutant (and TMDL) to the health of the watershed. Where is the overlap? Perhaps some of the "same measures that control pathogens will control sediments," for example; this information would be helpful to stakeholders.

We appreciate the suggestion. In order to clarify the relationship among different TMDLs in the watershed, we have made the following addition to the implementation section of the Staff Report.

10.4 Relationship to Other TMDLs in the Napa River Watershed

In addition to pathogens, the Napa River is listed as impaired by nutrients and sediments. The sediment TMDL is scheduled for Water Board adoption later in 2006. We anticipate adoption of the nutrient TMDL in 2007.

Many of the implementation actions prescribed in this TMDL will also satisfy implementation requirements for the other pollutants. For example, by meeting conditions of the Water Board's grazing waiver program, cattle producers will meet the requirements for all three TMDLs. This is also the case for the confined animal waiver.

We anticipate that pathogen TMDL requirements for septic systems and sewer lines will generally fulfill the requirements of the nutrient TMDL. (These sources are not relevant to the sediment TMDL.) However, it should be noted that not all actions to abate pathogen pollution from septic systems also reduce nutrient pollution. For instance, incorporating a disinfection unit into a septic system will control pathogens, but has no effect on nutrient loading to nearby waters. Furthermore, nutrients (especially nitrate) can be more mobile in soil than pathogens. (Pathogens, being particles, are more readily retained in the soil than nitrate, a chemical solute.) Therefore, setbacks appropriate for pathogens may not be sufficient for nutrients.

A number of pollutant source categories that are not important for pathogens can be significant nutrient or sediment sources. Wastewater treatment plants are not significant pathogen sources, but can be important sources of nutrients. Sediment source categories that were not addressed in the pathogen TMDL include vineyards (preliminary data indicate that vineyards are not a significant nutrient source in the Napa watershed), unpaved roads, and actively eroding gullies and shallow landslides eroded by concentrated runoff.

It is difficult to compare levels of impairment attributable to the three pollutants because the mechanisms and the consequences of impairment differ for each. Pathogens impair contact recreational use because they pose health risks to users. Excess nutrients impair aquatic habitat by stimulating excess algae growth, which can in turn deplete dissolved oxygen and smother bottom habitat. In extreme cases excess nutrients can also result in acute toxicity. Excess sediment degrades stream habitat in a number of ways, including clogging of spawning gravels, intensifying streambed scour during peak flows, and filling of deep pools.

In the context of "strategic adjustments over time" to the TMDL, Board Member Wolff suggested an additional "soft" section of the TMDL, headed "watershed approach" or "watershed compliance." To summarize his remarks, he suggested that if groups of property owners with common land use decided to together and set priorities for investments as well as compliance, that the Water Board might afford them "preferential treatment when it comes down to enforcement," possibly providing relief to "individual property owners who can't or don't comply, as long as bigger problems are being solved."

A watershed approach that allows coordination among individual dischargers provides many benefits. A group of people that comes together around local water quality issues

is an important resource for long-term health of the watershed. Groups with incentives to work together are more likely to innovate solutions while they avoid state interference with individual actions. We hope that watershed groups will participate and assist in many of the functions that will be called for in successful implementation of this TMDL, including developing appropriate management practices, conducting group or watershed-based monitoring, sharing technical knowledge, and obtaining funding. We encourage watershed groups and other coalitions to coordinate, with the primary goal of achieving water quality targets, and a secondary goal of reducing the regulatory burden on individual members of the group as long as the designated reach or waterbody remains in compliance with the TMDL. We must note, however, that the state's *Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program* makes it clear that individual dischargers continue to bear ultimate responsibility for complying with water quality requirements and orders.

To clarify our support of watershed groups, the following section has been added to the staff report:

9.6 Watershed Groups and Stakeholder Partnerships

Water Board staff encourages, but does not require, watershed groups and stakeholder partnerships to coordinate, with the ultimate goal of achieving water quality targets. In many cases, watershed groups may assist and participate in many actions to facilitate successful implementation of this TMDL, including developing appropriate management practices, conducting group or watershed-based monitoring, sharing technical knowledge, and obtaining funding. Watershed groups can assist individual dischargers in achieving compliance. However, as required by the state's Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program, individual dischargers continue to bear the ultimate responsibility for complying with water quality requirements and orders.

Board Member Waldeck encouraged staff to continue to communicate with stakeholders to provide clarification, in order to address concerns.

We agree that communication is key to working with our stakeholders and in providing assurance as to the intent of this TMDL. Since the April hearing, we have worked with the County to provide clarification on our expectations regarding implementation measures. We'll continue to work with our stakeholders throughout this process.

Board Member Waldeck encouraged staff to "not to relax any of the requirements," making specific references to "people that have a few sheep, a few cows in their backyard. He said that he "would want extra strong regulations on people that [have small flocks or herds]" because small operators may be less concerned with pollution prevention than large ranches. Mr. Waldeck noted that "If it turns into the cool thing

to take some of your vineyard land and raise llamas on it, I want regulations in place to protect the watershed."

We appreciate the comment. A small number of animals can indeed cause serious water quality problems if management measures are not in place to prevent waste from entering surface waters. The state's *Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program* requires that all current and proposed nonpoint source discharges (such as animal waste) must be regulated under WDRs, waivers, or basin plan prohibition, or some combination of these tools. In accordance with this policy, staff will work to address discharges of animal waste from both large and small facilities. Efforts underway include development of grazing lands WDRs or waiver conditions. Small confined animal facilities may also be addressed in the next renewal of the confined animal waiver, anticipated in 2008.

PART III: STAFF RESPONSES TO PEER REVIEW COMMENTS ON DECEMBER 16, 2005 STAFF REPORT AND BASIN PLAN AMENDMENT DRAFTS

Dr. Saied Mostaghimi of Virginia Polytechnic Institute provided independent scientific peer review for this TMDL. We are grateful to Prof. Mostaghimi for the time and attention he invested in his review. In most areas, Prof. Mostaghimi was in agreement with staff's approach and the scientific basis for the TMDL. Below we respond to his comments, most of which deal with terminology or relatively minor technical or regulatory issues.

Comment 1: "Although it is common usage to name a TMDL report based on the impairment, technically the TMDL is for the pollutant estimated in the target TMDL load, e.g. biological impairments may be addressed with a sediment TMDL or a phosphorus TMDL, and the TMDL for the bacteria impairment in this study is developed with an E. coli TMDL."

While we acknowledge that the argument for using the term *E. coli* for this TMDL has merit, we have chosen to follow the precedent of many other TMDLs in California and throughout the nation, and use "pathogen."

Comment 2: "It is very unclear in this [numeric targets] section whether water quality 'objectives' are the same as water quality 'standards', as the term 'standards' is used in the discussion in Section 3.2, but not in the tables referred to for numerical targets. If they are not the same, what is the relationship between 'objectives' and state 'standards'?"

We appreciate the comment and the opportunity to clarify what may be a confusing use of terms for those not familiar with California's Water Code and Water Quality Management Plans. As defined in the Clean Water Act, water quality standards consist of three elements: designated uses, water quality criteria (numeric or narrative), and an antidegradation policy. The State of California uses the term "beneficial uses" in place of designated uses, and "objectives" in place of criteria. In order to clarify the use of these terms, Section 3.2 of the Staff Report has been revised as follows:

> Under CWA authority, the Water Board has established water quality standards for the Napa River and its tributaries. Water quality standards consist of: a) beneficial uses[2] for the waterbody, b) water quality objectives[3] (numeric or narrative) to protect those beneficial uses, and c) the Antidegradation Policy, which requires the continued maintenance of existing high-quality waters. The Water Board's Basin Plan specifies beneficial uses for waterbodies in the Region and the objectives and implementation measures necessary to protect those beneficial uses. The beneficial uses of the Napa River and its tributaries impaired by high levels of pathogens (Table 1) are water contact recreation (REC-1) and non-contact water recreation (REC-2). The purpose of this TMDL is to

protect and restore these beneficial uses by reducing the levels of pathogens in this watershed. Water quality objectives for REC-1 use are more stringent than those for REC-2, since REC-1 can involve water ingestion. Since both beneficial uses occur throughout the entire Napa River drainage basin, this TMDL will be driven by the more rigorous REC-1 requirements.

[2]Synonymous with "designated uses" as used in the CWA.
[3]Synonymous with "water quality criteria" as used in the CWA.

Comment 3: "The statement that EPA recommendations will be used to set numeric targets, instead of the state 'objectives' sounds like the TMDL will be developed for criteria more stringent than state standards. That does not sound defensible."

We have revised the Staff Report and proposed Basin Plan amendment to include numeric targets based on both U.S. EPA recommendations and Basin Plan water quality objectives. These revisions are presented in response to Comment 1.2 in Part I of this Responses to Comments document.

Comment 4: "In the discussion of the Margin of Safety, this more stringent EPA set of criteria is used as justification for an implicit MOS [margin of safety]. However, in looking at the details, while the geometric mean criterion would be more restrictive, the single sample criterion would actually be less restrictive, so the basis for this justification is questionable."

The Staff Report and Basin Plan amendment have been revised as described in Part I of this document to incorporate a 10 percent explicit margin of safety.

Comment 5: "The statement of the geometric mean target also needs to include a period over which this calculation will be made. Is the mean to be calculated over a running 30-day period, a calendar-month, or some other time period? The target should also specify the minimum number of samples to be used in the calculation."

Proposed numeric targets are based on a minimum of five samples collected at approximately equal intervals over a 30-day period. This is noted in the draft Basin Plan amendment, but not in the Staff Report. We have inserted the following footnote into the numeric targets section of the Staff Report:

[7]Based on a minimum of five consecutive samples collected at approximately equal intervals over a 30-day period.

Comment 6: "The sampling-based approach for locating bacteria source hot spots is a reasonable 'weight of evidence' approach for identification of source areas and critical seasons, especially within an adaptive management framework."

We appreciate that Dr. Mostaghimi acknowledges that our source assessment approach is well suited to an adaptive management framework.

Comment 7: "One description of localized concentrations of resident waterfowl under general trends (p.18) is never considered under source assessments or later allocations. Since this appears to be a human-influenced concentration of waterfowl, I would have expected some type of action to improve management of this source."

Sampling at the site in question (Napa River at 3rd St.) revealed elevated *E. coli* levels in October 2002, but not in January 2003 or July 2003. It is therefore unclear if the waterfowl at this location currently constitute a significant pathogen source. If future monitoring indicates that waterfowl are a significant pathogen source at this or other locations, we will address the problem through the municipal stormwater program.

Comment 8: "Another part of the justification for the implicit MOS [margin of safety] (p. 31) is that bacteria concentrations will only decrease downstream due to die-off. Pathogen regrowth is stated to be very unlikely (p. 33), but no support is offered for this reasoning."

The Staff Report and Basin Plan amendment have been revised as described in Part I of this document to incorporate a 10 percent explicit margin of safety.

Comment 9: "Another terminology inconsistency—density vs. concentration—needs clarification. When referring to TMDL requirements, reference is made to 'concentrations', but thereafter reference is only made to 'density.' Common usage is for 'density' to refer to the amount of a substance within a solid, while "concentration" refers to the amount of a substance within a liquid. If these terms are being used synonymously, it should be so stated upon first use."

The term "density" refers to the number of bacteria in a given volume of water, and follows the convention of U.S. EPA's Implementation Guidance for Ambient Water Quality Criteria for Bacteria (U.S. EPA, 1986, 2002, 2003). All references to bacterial "concentration" in the Staff Report and Basin Plan amendment have been changed to "density." The following footnote has been added after the first reference to bacterial density in the Staff Report:

> [6]"Density" refers to the number of bacteria in a given volume of water (U.S. EPA, 1986, 2002, 2003). The term is analogous to "concentration," which refers to the mass of chemical pollutant in a given volume of water. "Bacterial density" and "bacterial concentration" are sometimes used interchangeably.

Comment 10: "There was no justification given for writing the WLA [wasteload allocation] targets in terms of different parameters (enterococci and total coliforms) than the one used for the LA [load allocation] target (*E. coli*). With different units,

they can not be summed together to specify an overall TMDL, which seems a bit awkward and will probably be a tough sell to EPA."

The Staff Report and proposed Basin Plan amendment have been revised to include wasteload allocations based on U.S. EPA recommendations and Basin Plan water quality objectives. These revisions are presented in response to Comment 1.2 in Part I of this document.

Comment 11: "It was not clear who will be providing the oversight to implementation? Will there be a local stakeholders advisory group involved?"

No overall stakeholder advisory group is planned at this time. The Water Board will oversee and coordinate implementation activities, working with responsible parties for each pollution source category separately.

Comment 12: "Will the proposed monitoring be sufficient to verify compliance? The specified monitoring is five consecutive weekly samples, twice a year. The TMDL is not stated to be applicable only during those two periods, so the justification needs to include the rationale that these are the critical periods for standards exceedances, and that compliance during these periods is assumed to ensure compliance during the entire year."

We believe that the proposed sampling scheme is representative of typical conditions during dry and wet seasons. Data collected by the Napa County Department of Environmental Management (presented in Appendix A of the Staff Report), as well as data from elsewhere in the region (Tomales Bay Shellfish Technical Advisory Committee, 2000) indicate a lack of systematic trends within each of these seasons. That is, early dry season bacteria levels tend to be similar to mid- and late wet season levels; and levels also tend to be consistent throughout the dry season.

REFERENCES

Leverenz, H, G. Tchobanoglous, and J.L. Darby. 2002. *Review of Technologies for the Onsite Treatment of Wastewater in California*. Center for Environmental and Water Resources Engineering, UC Davis, Davis CA. Report 02-2.

Pahl, J,. 2006a. Acting Director, Napa County Dept. of Environmental Management. Personal communication, April 28, 2006

Pahl, J,. 2006b. Personal communication (email), May 8, 2006.

State Water Resources Control Board (SWRCB). 2004. *Policy For Implementation And Enforcement Of The Nonpoint Source Pollution Control Program.* May 20, 2004.

Tomales Bay Shellfish Technical Advisory Committee (TBSTAC). 2000. *Investigation of Nonpoint Pollution Sources Impacting Shellfish Growing Areas in Tomales Bay, 1995-96*. Final Draft Report. December 2000.

U.S. EPA. 1986. *Ambient Water Quality Criteria for Bacteria—1986.* EPA-440/5-84-002. Washington D.C., Office of Water.

U.S. EPA. 2002. *Implementation Guidance for Ambient Water Quality Criteria for Bacteria.* May 2002 Public Review Draft. EPA-823-B-02-003. Washington D.C., Office of Water.

U.S. EPA. 2003. *Implementation Guidance for Ambient Water Quality Criteria for Bacteria.* November 2003 Draft. EPA-823-B-03-xxx [sic]. Washington D.C., Office of Water.

U.S. EPA. 2004. Environmental Protection Agency, Fed. Reg. Vol. 69, No. 220, pp. 67218-67243 (November 16, 2004, Part II) (codified at 40 C.F.R. pt. 131).