

## SECTION 2.3.12

### GUALALA RIVER WATERSHED

The Gualala River in Sonoma and Mendocino counties, California, is listed on California's 303(d) list as a water quality limited water requiring the establishment of a Total Maximum Daily Load (TMDL), due to sedimentation. The key stakeholder concern for the watershed is the decline of the once healthy coho salmon and steelhead trout fisheries thought to be associated with excess sediment load and elevated water temperatures. The technical support document for the sediment TMDL was completed in August 2001. See <http://www.swrcb.ca.gov/rwqcb1/programs/tmdl/gualala/gualala.html> for more information and to view the technical support document.

#### WATERSHED DESCRIPTION

The Gualala River watershed is about 300 square miles, running in a north-south direction and flowing into the ocean at the town of Gualala (Figure 2.3.12-1). The Gualala River is in the hydrological unit 113.80. The watershed consists of five principle tributaries: North Fork, Rockpile Creek, Buckeye Creek, Wheatfield Fork, and the South Fork. The watershed is in mostly mountainous and rugged terrain in both Sonoma and Mendocino Counties with relatively erodable soils. The tributaries flow through steep valleys with narrow bottom lands and elevations range from sea level to over 2,650 feet.



Steep slopes forested by redwood, Douglas fir, madrone, and tan oak characterize the headwaters area of the South Fork and Wheatfield Fork subwatersheds. Open grasslands are interspersed throughout the headwaters of the North Fork, Rockpile Creek, Buckeye Creek, and Wheatfield Fork subwatersheds. The oak-woodland predominates as a more continuous distribution on higher terrain, inland from the coastal marine influence. Streamside vegetation consists primarily of red alder, California laurel, and redwood. Throughout the Gualala River watershed more than ninety percent of the annual precipitation occurs between October and April, with the greatest amounts in January. Rainfall averages 38 inches per year at the coast and up to 100 inches per year on the inland peaks.

Primary land use is forest production and grazing. Forestry is still a major land use today. Approximately thirty four percent (34%) of the Gualala River watershed is owned by timber companies. Gualala Redwoods Inc. (GRI), the largest timberland owner (approx. 30,000 acres), employs a variety of harvesting practices including intensive practices such as clear-cutting and burning coupled with herbicide applications.

Unstable slopes are present throughout the timberland and harvesting activities on these slopes affects slope stability.

Sheep and cattle ranching were prominent industries but have become less significant in recent times. Agriculture has also been a primary land use in the Gualala watershed. Orchards were a significant agricultural activity in the past. Today, vineyards are beginning to become more common throughout the watershed and are likely to become more widespread. Hillside vineyard development is becoming an increasing threat to water quality as more and more steep land is converted to vineyards. The primary population centers in the Gualala River watershed are the towns of Gualala, Sea Ranch, Stewarts Point, Annapolis, and Plantation. The Gualala River is the main source of drinking water for the Sea Ranch community, and the North Fork Gualala serves the town of Gualala. The town of Annapolis depends on springs and wells.

A decrease in the depth and size of the estuary, as well as increased water temperatures in some parts of the watershed, are at issue. Additional upslope erosion controls are needed to reduce sediment delivery to waterways in the Garcia watershed. Solvents, petroleum, and metals have been detected in the ground water and surface water at the US Air Force's Point Arena Station. A number of small sites are contaminated with petroleum products. The Gualala River supports an anadromous fishery including coho salmon, which was listed in 1995 as threatened under the federal Endangered Species Act.

The Critical Coastal Areas in this watershed are Del Mar Landing Ecological Reserve and Gerstle Cove. See Appendix C for more information on these Critical Coastal Areas.

### **ASSESSMENT AND PROBLEM IDENTIFICATION**

Recent data indicate that current streambed habitat remains impaired for salmonid spawning, incubation, and emergence. The success of salmonid spawning, incubation, and emergence in the Gualala River watershed may be limited by the following factors: the impact of fine sediments on spawning and rearing habitats, lack of pool habitat provided by large woody debris, and increased stream temperature possibly due to canopy removal, and an oversupply of sediment.

The results of a sediment source analysis by Regional Water Board staff shows that natural sediment yield accounts for approximately 1/3 of the total sediment delivery in the watershed while human-caused sediment delivery accounts for 2/3 of the sediment delivery in the watershed, or 200% of the natural load. The analysis shows that road-related processes are the dominant source of sediment delivery in the watershed. Gualala Redwoods, Inc., measured percent fines in the North Fork tributaries between 1997 and 1999. With the exception of Dry Creek, all of the tributaries, on average, had percent fines greater than 15%, and thus fall within the range for salmonid habitat that is less than ideal. This data indicates a widespread impact of upslope disturbances throughout the watershed.

Data from the Gualala River Watershed Council, Gualala Redwoods, Incorporated (GRI), and the Mendocino Redwoods Company show that stream temperatures for most of the watershed exceed preferred juvenile rearing temperature ranges for steelhead and coho. Limited exceedance of short-term maximum lethal temperatures for steelhead and coho occur throughout the watershed. The causes of elevated stream

temperatures (e.g., changes in channel morphology, reduced riparian canopy cover, aggradations) have not been thoroughly assessed.

Available data indicate reducing sediment delivery, increasing large woody debris for sediment metering and habitat, and enhancing the riparian canopy cover to reduce stream temperatures could improve that aquatic habitat. In the Fuller Creek and McKenzie Creek watersheds, road-related erosion is believed to be a major source of sediments to the stream, and is the focus of ongoing restoration efforts. More detailed temperature data and analysis, such as that provided by Forward Looking Infrared Imagery and channel surveys will help characterize temperature dynamics and thermal refugia within the watershed.

Other issues of concern are: Downtown Gualala has an MTBE cleanup ongoing at a local gas station, which should be monitored. There is a WW II bombing range in Gualala, a formerly used defense site (FUD), near Sea Ranch where the Department of Toxic Substance Control is the lead on a cleanup. The Annapolis Mill may have a bark dump issue that is not permitted. For a number of years the mill would dump bark refuse into a gully that serves as a tributary to Buckeye Creek. The last inspection was May 2000, and an inspection may be needed. There is also a road yard in Annapolis where cleanup may be required.

From 1974 to the present, a 40,000 tons per year gravel extraction limit has been in place for commercial extraction by Gualala Aggregates, Inc. Gravel extraction since 1993 has been below the 40,000 ton per year gravel extraction limit. Gravel extraction has mainly been through gravel bar skimming. The YMCA on Wheatfield Fork may have a subsurface wastewater disposal problem needs monitoring for bacteria.

Some livestock grazing occurs but is not considered a significant contributor to sediment impairment of the watershed. Summer dams are an issue for contributing sediment. The National Marine Fisheries Service (NOAA Fisheries) and Department of Fish and Game enforces on summer dams. Old Kelly Road is now owned by private landowners and has road maintenance issues.

**Primary water quality problems in the Gualala River watershed**

- sedimentation of streams
- increased water temperatures.

**WATER QUALITY GOALS**

The primary water quality goals center around protection of the beneficial uses associated with aquatic life and drinking water supplies. The development of the TMDL waste reduction strategy for sediment is the highest priority for action in the watershed. In addition to development of the TMDL implementation plan, other available tools will be used as appropriate, such as General Waste Discharge Requirements and property wide Waste Discharge Requirements to address timber operations and timberland conversions.

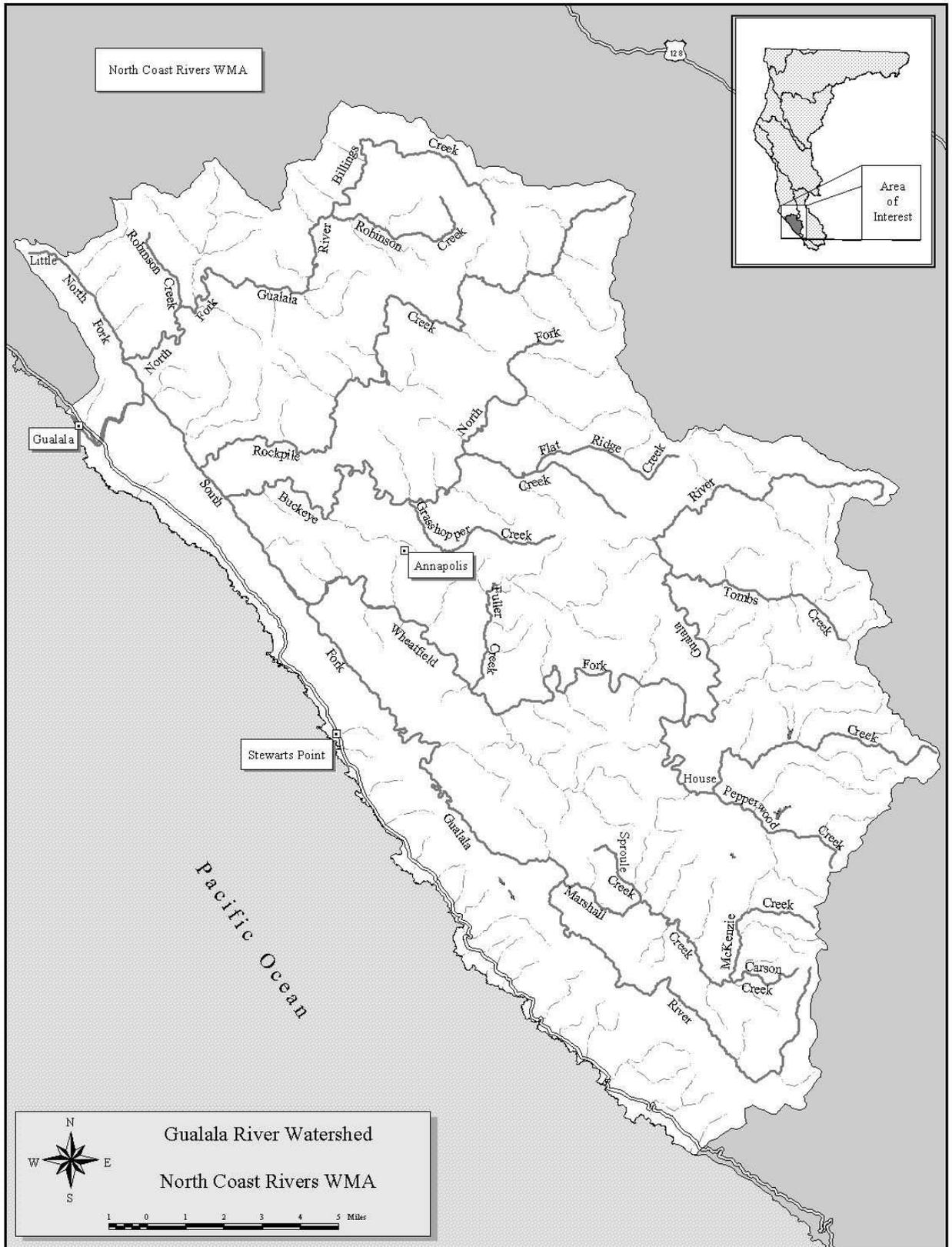


Figure 2.3.12.1. Gualala River Watershed

- **Protect surface and ground water DOM, REC-1, and REC-2 uses**

The Regional Water Board will continue to regulate the permittees in the basin, but will need to shift resources to complete additional inspections and evaluations.

- **Protect and enhance beneficial uses associated with anadromous fishes  
COLD**

A TMDL is being developed that should protect, enhance and restore the cold water fishery.

Needs not currently funded are:

- Identify erosion and sediment sources and potential sources, including sources related to new development of hillside vineyards.
- Conduct outreach on best management practices for hillside vineyards.
- Water temperature extremes need to be further assessed.
- Additional monitoring of the effectiveness of best management practices related to vineyards and timberland activities.

### **IMPLEMENTATION STRATEGY**

The current activities in the watershed are aimed at developing a watershed restoration plan. The Regional Water Board staff is actively involved in that effort and will use the information developed in the process for the TMDL strategy for sediment, and investigating high water temperatures.

Outreach is being conducted by Regional Water Board staff to also educate vineyard landowners and timberland owners about best management practices for prevention of sedimentation of waters of the State, and protection of the beneficial uses of water. Regional Water Board staff is continuing to expand outreach activities combined with needed enforcement activities. Given current funding constraints, any new and/or redirected resources should be focused on staffing for field nonpoint source compliance and enforcement inspections, and developing and implementing the TMDL Implementation Policy Statement for Sediment Impaired Receiving Waters and the Regional Sediment Basin Plan Amendment.

The Gualala River Watershed Council (GRWC) is a local group of interested citizens, agencies, and businesses, focusing on overall watershed health and restoration opportunities related to sediment and temperature and their impacts on salmonid species in the watershed. An ultimate goal is to develop a watershed enhancement plan. The Regional Water Board combined information and ideas from that process into the development of the TMDL Implementation Policy Statement for Sediment Impaired Receiving Waters, and will use it for development of the basin plan Sediment Amendment, and temperature reduction strategy in the near future. Increased assessment activities and continued high priority forestry, grazing, hillside vineyard development, and agricultural related activities are needed.

Appendix B contains additional detail regarding nonpoint source activities.

### **Assessment and Monitoring**

The North Coastal Watershed Assessment Program (NCWAP) targeted the Gualala for FY 2000-01 data gathering, collection, and assessment activities. This multi-agency effort resulted in a comprehensive watershed assessment available on a computerized

database. See the following web sites for access to the database and the synthesis report :<http://www.ncwatershed.ca.gov/> and <http://www.krisweb.com/krisgualala/krisdb/html/krisweb/index.htm>. Some products of that effort were available in time to be used in the development of the TDML technical support document. While NCWAP was primarily an assessment with existing data, some new data collection occurred providing a current picture of some components of a watershed. Three flow gages were constructed in the watershed as part of the NCWAP, and five SWAMP stations provided water quality data including assessment of bacterial quality in two high use recreation areas.

A comprehensive monitoring program to evaluate suspended fine sediments and turbidity will be required to adequately determine the impacts of fine sediment on beneficial uses including municipal and domestic supply, water contact recreation, non-contact water recreation, spawning reproduction, and/or early development, and cold freshwater habitat. In-stream water quality and hillslope monitoring in the long term will be associated with determining the effectiveness of management practices to reduce erosion and sedimentation, and determining trends towards the desired future in-stream condition. Additional in-stream water quality monitoring will be needed associated with the TMDL monitoring needs, and are detailed in Appendix 2.3.12-A.

### **Education and Outreach**

The TMDL process will enhance public and agency participation. The intent is to improve the recognition of land use impacts on the aquatic environment from nonpoint sources and to foster adaptive management for overall watershed health. The Gualala River Watershed Council has conducted various workshops for landowners and agencies under a CWA section 319(h) grant. The NCWAP process involved several public outreach meetings and solicited comments on the process itself and on reports. Recent adoption of General Waste Discharge Requirements for timber harvest activities has also initiated outreach efforts to inform timberland owners and foresters of the requirements for erosion control plans and ensure understanding of erosion sites that pose a threat to water quality.

### **Coordination**

The Regional Water Board currently coordinates through the GRWC on a monthly basis, and with other entities as needed.

### **Core Regulatory**

The current level of point source regulation (inspection, monitoring, and enforcement) on traditional dischargers is anticipated and covers wineries, underground tanks, sewage treatment, landfills, etc. The town of Gualala has a wastewater treatment plant (WWTP) and the county park is on sewer.

### **Ground water**

Ground water issues center on petroleum contamination and will continue to receive the current level of activity. Ground water and surface water contamination are suspected at former and existing mill sites that historically used wood treatment chemicals. Discharges of pentachlorophenol, polychlorodibenzodioxins, and polychlorodibenzofurans likely occurred with poor containment typically used in historical wood treatment applications. These discharges persist in the environment and accumulate in surface water sediments and the food chain. Additional investigation, sampling and monitoring, and enforcement actions are warranted, but insufficient

resources exist to address this historical toxic chemical problem. Other groundwater issues revolve around the issue of vineyard expansion. Large deep wells installed by vineyards are an issue of concern to surrounding landowners with shallow wells. Decrease in water yield is anticipated. Water rights and impact on stream flows in summer are concerns. The Department of Water Resources indicates water yield is on the decrease. Precipitation records show decreases.

### **Nonpoint Source**

The Gualala River is listed under section 303(d) of the CWA as sediment impaired. The TMDL for Gualala shows roads as the biggest contributor to sediment loading in the watershed. The TMDL also shows high stream temperatures in many of the subwatersheds. Coho salmon are listed as threatened species under the federal ESA. The TMDL shows that only coho were found in the Little North Fork from 1993 to 1998 in studies conducted by CDFG.

Vineyards are rapidly expanding in the north coast region and much of this expansion is occurring on hillsides where there is increased erosion potential and delivery of sediment to nearby streams. Timberland conversions to vineyards have been increasing and require additional staff time to review, as they are more complicated than timber harvest plans. A recent expansion of vineyards in the Annapolis area included timberland conversions. Outreach is being conducted by Regional Water Board staff to educate vineyard landowners of best management practices for prevention of increased sedimentation of waters of the State and protection of the beneficial uses of water. Enforcement activities will be used as necessary.

Continued involvement in forestry, grazing, hillside vineyards and county road issues is necessary to ensure protection of aquatic resources. The recent listing of coho salmon as threatened under the federal Endangered Species Act has put the spotlight on all land use activities that potentially may increase sedimentation or otherwise affect habitat. The TMDL process will increase work with local agencies and groups regarding land use effects on water quality, following the State's Nonpoint Source Enforcement Policy (see Appendix B) to reduce nonpoint source pollution. An outreach program will enhance the effectiveness of the program. Where land management activities are found to be out of compliance with Basin Plan standards, Regional Water Board staff investigation and enforcement actions are necessary. The Regional Water Board staff will participate on the Regional Committee to develop Critical Coastal Area Action Plans and implement projects in the Critical Coastal Areas Del Mar Landing Ecological Reserve and Gerstle Cove.

In addition, Regional Water Board staff is proposing a new Total Maximum Daily Load (TMDL) Implementation Policy for Sediment Impaired Receiving Waters in the North Coast Region, which is applicable to all sediment impaired watersheds in the Region. Also under development is a Regional Sediment Amendment to the Basin Plan with prohibitions and an Action Plan, which will provide more enforcement tools to the TMDL Implementation Policy for controlling sediment. See Section 3, Regional Activities for more information on these efforts.

### **Timber Harvest**

The Regional Water Board has an extensive timber harvest program where staff review and inspect timber harvest plans on private lands for implementation of the Forest Practice Rules and compliance with recently adopted General Waste Discharge

Requirements (WDRs) or a Categorical Waiver. Additionally, staff reviews U.S. Forest Service timber sales for implementation of best management practices and compliance with a recently adopted Categorical Waiver to ensure protection of water quality and beneficial uses.

Regional Water Board staff continues to work in concert with the California Department of Forestry and Fire Protection during the review and approval of proposed timber harvesting activities on private lands. The SWRCB and CDF/BOF entered into a Management Agency Agreement, which delegates some water quality protection responsibilities to the CDF/BOF associated with timber harvest regulation. The Regional Water Board has not given up any authority to regulate timber if violations of the Basin Plan occur or threaten to occur. More recently however, the Regional Water Board adopted General WDRs and a Categorical Waiver of WDRs for discharges related to timber harvesting on private timberlands. Regional Water Board staff continues to review timber harvest plans (THPs) and non-industrial timber management plans (NTMPs) and provide recommendations to CDF during the Review Team process. In addition, Regional Water Board staff must review THPs and NTMPs for compliance with the recently adopted General WDRs or waivers of WDRs.

The Regional Water Board currently has resources to oversee timber sale activities associated with USFS lands pursuant to the USFS MAA. Regional Water Board staff continues to review USFS timber harvesting activities for compliance with the recently adopted Categorical Waiver of WDRs and implementation of best management practices. Review of non-timber nonpoint source activities on USFS land is not well funded. Regional Water Board staff is unable to implement this portion of the USFS MAA except for responding to complaint issues on a case-by-case basis. This is a significant issue for future oversight by the Regional Water Board for these activities.

In addition, Regional Water Board staff is currently engaged with one of the primary landowners, CDF, and the California Geological Survey (CGS) in an effort to develop ownership-wide WDRs aimed at achieving recovery of the watershed. Where cumulative impacts are present or where ground disturbance from a large concentration of timber harvest activity creates the potential for contributing to adverse impacts to the beneficial uses of water, the Regional Water Board can employ all available authorities, including existing regulatory standards and permitting and enforcement tools. Examples of existing permitting and enforcement tools can include, but are not limited to watershed-wide waste discharge requirements, individual or project-specific waste discharge requirements, and enforcement actions, including, but not limited to, cleanup and abatement orders, time schedule orders, cease and desist orders, and administrative civil liabilities, and other regulatory actions as necessary. Recent adoption of Resolution No. R1-2004-0087 by the Regional Water Board directing staff to address sediment waste discharges at the watershed-specific level, including cumulative impacts, through all available authorities will be an on-going proactive effort by staff to ensure that water quality standards in impaired waterbodies are achieved.

#### **Local Contracts/Agreements**

The Regional Water Board has administered a CWA section 319(h) contract in the watershed and has coordinated monitoring activities with those in the Garcia River watershed to facilitate learning and collaboration. The Regional Water Board will continue active involvement in the Clean Water Act section 319(h) program and Water

Bond grant programs, as well as promoting other programs like the California Department of Fish and Game programs.

### **Water Quality Planning**

The Basin Plan identifies municipal, industrial, agricultural, recreational, commercial and sport fishing, cold water habitat, migration, spawning, estuarine and wildlife habitat, groundwater recharge, and navigational uses of the Gualala River watershed. The beneficial uses of water related to rare, threatened or endangered species has been proposed for this basin. As with many of the north coast watersheds, the cold water fishery appears to be the most sensitive of the beneficial uses in the watershed because of the sensitivity of salmonid species to habitat changes and water quality degradation. Accordingly, protection of these beneficial uses is presumed to protect any of the other beneficial uses that might also be harmed by sedimentation.

The Basin Plan review process feeds into the activities to the extent issues were identified in the Triennial Review and applicable to the Gualala River watershed. The top priority issues are:

- Consider revisions to the water quality objectives for dissolved oxygen and temperature
- Review the Nonpoint Source Control Measures

In addition, the TMDL strategy will be incorporated into the Basin Plan some time in the future.

### **Evaluation and Feedback**

The Regional Water Board plans to evaluate the overall effectiveness of the process on a yearly basis, adjusting the activities as appropriate. The results of the watershed assessment under the NCWAP feed into future assessment and problem identification.

## **BUDGET**

The Regional Water Board will attempt to fund the highest priority actions as identified in this watershed to the extent funding constraints allow that, and will pursue additional funding for those actions not currently addressed. Additional funding to continue to expand outreach and enforcement activities on hillside vineyards is needed. Monitoring and assessment needs are detailed in Appendix 2.3.12-A. Nonpoint source activities can be found in greater detail in Appendix B.

### **Appendix 2.3.12-A Stakeholders**

Partial listing of agencies and groups in the Gualala River watershed with water quality jurisdiction and interests:

#### **United States**

Environmental Protection Agency  
Fish and Wildlife Service  
National Marine Fisheries Service  
Natural Resources Conservation Service

#### **California State**

California Environmental Protection Agency

Department of Forestry and Fire Protection  
Board of Forestry  
Department of Fish and Game  
Department of Health Services  
Department of Toxic Substance Control  
Department of Water Resources  
California Coastal Conservancy  
Department of Parks and Recreation

**Mendocino County**

Water Agency  
Planning Department  
Public Works Department

**Local Agencies**

Mendocino County Resource Conservation District  
Town of Gualala

**Public Interest Groups**

Gualala River Watershed Council  
Matrix of Change  
Friends of the Gualala River  
Fort Ross Environmental Restoration  
Redwood Coast Land Conservancy  
Coastal Land Trust

**APPENDIX 2.3.12-B**

Detail of monitoring priorities and needs for the Gualala River watershed:

- 1. Sedimentation - \$40,000 (0.2 PY + \$20,000 contract)**  
Assessment of sources and the development of a sediment budget to support the TMDL are needed. Current funding will address this to a degree. The NCWAP assessment provides detailed information, contributing to the TMDL waste reduction strategy.
- 2. Water Temperature - \$12,000 (0.1 PY + \$2000 supplies)**  
Additional assessment of water temperatures in the watershed is needed to document areas of concern and support implementation of practices to improve water temperatures.
- 3. Bacterial Monitoring - \$12,500 (0.1 PY + \$2500 lab)**  
Concern has been expressed regarding bacterial quality for recreational uses the YMCA Camp and Redwood Campground in the Gualala watershed. SWAMP monitoring started to assess the situation in FY 2001-02 that may lead to corrective action if needed.

**Surface Water Monitoring Program**

The SWAMP and NCWAP addressed water quality and some channel geometry monitoring issues in the watershed in FY 2000-01 at five rotating sites:

- North Fork near Gualala

- South Fork at Twin Bridges
- Wheatfield Fork at Twin Bridges
- South Fork near Plantation
- Wheatfield Fork above House Creek

A permanent station has been established at Gualala Regional Park and was included in the FY 01-02 and 04-05 monitoring efforts. Parameters included were general water chemistry, nutrients, metals, and channel morphology and bed characteristics.

#### **Other Monitoring Activities**

The GRWC has grants to perform project monitoring as well as trend monitoring in the watershed. Most of the parameters are aimed at sediment and temperature concerns. The computerized database made available through the NCWAP can be used to store, analyze, and make those data available to interested landowners and agencies.

CDFG has done stream surveys. Gualala River Watershed Council and Coastal Conservancy are conducting an estuary study. SWAMP sampling indicates nutrients are barely above detection. Total load measurements are needed. Endocrine disruption screening needs to be conducted. Gualala River Watershed Council does active water quality monitoring and restoration on GRI lands. Channel parameters and temperature measurements are being conducted. California Department of Transportation has a highway runoff monitoring station for sediment and nutrients.

