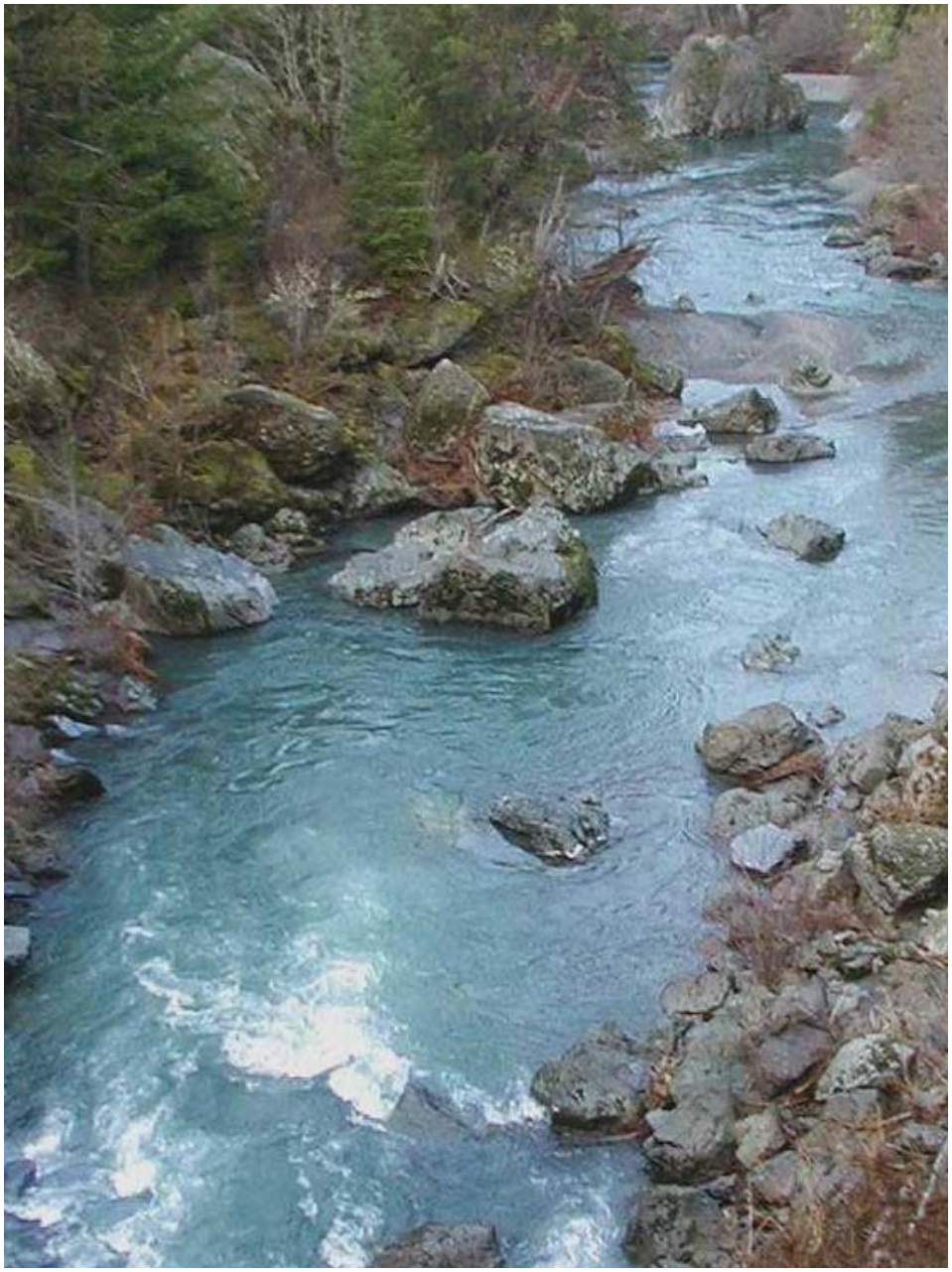
North Coast
Regional Water Quality Control Board

Watershed Planning Chapter



February 2005

Regional Water Quality Control Board
North Coast Region
5550 Skylane Blvd.
Santa Rosa, CA 95403

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NORTH COAST REGIONAL WATER QUALITY CONTROL BOARD
WATERSHED PLANNING CHAPTER

EXECUTIVE SUMMARY

The water resource protection efforts of the State Water Resources Control Board and the Regional Water Quality Control Boards are guided by a five year Strategic Plan (updated in 2001). A key component of the Strategic Plan is a watershed management approach for water resources protection.

To protect water resources within a watershed context, a mix of point and nonpoint source discharges, ground and surface water interactions, and water quality/water quantity relationships must be considered. These complex relationships present considerable challenges to water resource protection programs. The State and Regional Boards are responding to these challenges with the Watershed Management Initiative (WMI). The WMI is designed to integrate various surface and ground water regulatory programs while promoting cooperative and collaborative efforts within watersheds. It is also designed to focus limited resources on key issues.

Past State and Regional Water Board programs tended to be directed at site-specific problems. This approach was reasonably effective for controlling pollution from point sources. However, with diffuse nonpoint sources of pollutants, a new regulatory strategy was needed. The WMI uses a strategy to draw solutions from all interested parties within a watershed, and to more effectively coordinate and implement measures to control both point and nonpoint sources.

During initial implementation of the WMI, each Regional Board identified the watersheds in their Region, prioritized water quality issues, and developed watershed management strategies. These strategies and the State Board's overall coordinating approach to the WMI are contained in the Integrated Plan for Implementation of the WMI of which this Watershed Planning Chapter is a part.

The Watershed Management Initiative is intended to support the goals in the Strategic Plan:

- The Board's organizations are effective, innovative and responsive
- Surface waters are safe for drinking, fishing, swimming, and support healthy ecosystems and other beneficial uses
- Ground water is safe for drinking and other beneficial uses
- Water resources are fairly and equitably used and allocated consistent with public trust
- Individuals and other stakeholders support our efforts and understand their role in contributing to water quality
- Water quality is comprehensively measured to evaluate protection and restoration efforts.

Most State and Regional Board programs are funding driven and directed at categories of problems. Traditional program management can be near-sighted, focused only on the program goals and outputs without obvious relationships to other problems. Added to the mix are "unfunded mandates," those tasks that are required or requested, but without attendant funding.

Addressing water resource issues on a watershed basis is founded in determining the problems and needs independently of funding sources. In this way the analysis of problems and needs and their prioritization is unencumbered by program constraints. The combination of the pure analysis of needs and relationships in a watershed with programs presents an administrative challenge. In these lean times, priorities by watershed provide a good framework for ensuring that staff and contract resources are applied to the most important issues first.

Addressing problems on a more holistic basis with a collaborative approach involving landowners and other agencies in a watershed represents a new and challenging role for government. The WMI seeks to facilitate solutions from all interested parties in a watershed, and coordinate measures to improve watershed health, and ultimately the beneficial uses of water.

Watershed Management Areas

The North Coast Region, which comprises all basins draining into the Pacific Ocean from the California-Oregon state line (including Lower Klamath Lake and Lost River Basins) south to the southerly boundary of the watershed of the Estero de San Antonio and Stemple Creek in Marin and Sonoma Counties. The North Coast Region covers all of Del Norte, Humboldt, Trinity, and Mendocino Counties, major portions of Siskiyou and Sonoma Counties, and small portions of Glenn, Lake, and Marin Counties. The North Coast Region encompasses a total area of approximately 19,390 square miles, including 340 miles of scenic coastline and remote wilderness areas, as well as urbanized and agricultural areas.

Description of Region

Distinct temperature zones characterize the North Coast Region. Along the coast, the climate is moderate and foggy and the temperature variation is not great. For example, at Eureka, the seasonal variation in temperature has not exceeded an average of 63 F for the period of record. Inland, however, seasonal temperature ranges in excess of 100 F have been recorded.

Precipitation over the North Coast Region is higher than for any other part of California, and damaging floods are a fairly frequent hazard. Particularly devastating floods occurred in the North Coast area in December of 1955, in December of 1964, and in February of 1986. Ample precipitation in combination with the mild climate found over most of the North Coast Region has provided a wealth of fish, wildlife, and scenic resources. The mountainous nature of the Region, with its dense coniferous forests interspersed with grassy or chaparral covered slopes, provides shelter and food for deer, elk, bear, mountain lion, furbearers and many upland bird and mammal species. The numerous streams and rivers of the Region contain anadromous fish, and the reservoirs, although few in number support both coldwater and warm water fish.

Tidelands, and marshes too, are extremely important to many species of waterfowl and shore birds, both for feeding and nesting. Cultivated land and pasturelands also provide supplemental food for many birds. Tideland areas along the north coast provide important habitat for marine invertebrates and nursery areas for forage fish, game fish, and crustaceans. Offshore coastal rocks are used by many species of seabirds as nesting areas and by marine mammals.

Critical Coastal Areas (CCAs) are specially designated land areas of the California coast where state, federal and local government agencies and other stakeholders have agreed to improve degraded water quality or protect exceptional coastal water quality from the impact or threat of nonpoint source pollution, by coordinating expertise and resources. There are twenty-one Critical Coastal Areas in the North Coast Region. See Table 5 in Appendix C for a complete list. Also see the web site http://www.coastal.ca.gov/nps/cca-nps.html for a copy of the CCA Draft Strategic Plan and general background information on the CCA Program.

Major components of the economy are tourism and recreation, telecom and other high technology businesses, logging and timber milling, aggregate mining, commercial and sport fisheries, and agricultural activities including vineyards, wineries, and sheep, beef and dairy production.

Watershed Management Initiative Process

Six watershed management areas (WMAs) are designated in the Region: Klamath River, Trinity River, Humboldt, Eel River, Russian/Bodega, and North Coast Rivers. The WMAs are first assessed and problems, issues and concerns identified using staff and public meetings in the WMA. Goals for each WMA are designated. A strategy to address the objectives and actions for the goals is developed and an implementation phase follows. An evaluation step feeds into the next assessment. In general, the process has improved communication within the office and in some watersheds has improved communication among agencies and the public. Documented in this Chapter are numerous issues and problems as well as ideas to address them.

Water Quality Issues

The North Coast Regional Water Quality Control Board faces numerous water quality issues. Overarching water quality issues in the Region are protection of the coastline, protection and restoration of anadromous fish, protection of drinking water, and pollution prevention. More specifically water quality problems include contamination of surface water due to nonpoint source pollution from storm water runoff, erosion and sedimentation (roads, agriculture, and timber harvest), channel modification, gravel mining and dairies, and MTBE, PCE, and dioxin contamination. Ground water contamination from leaking underground tanks and health and safety issues from contaminated areas that are open to the public are also priority issues. High priority water quality problems due to point sources include chronic violations by some Publicly Owned Treatment Works (POTWs) and lack of permit compliance. Lack of or limited funding for water quality monitoring and watershed assessment compounds the difficulty of addressing these issues.

Highest priority activities in the North Coast Region
(Revised December 2004)

- Implementing TMDLs for sediment in 16 coastal watersheds
- Completing all Klamath Basin TMDLs by December 2005
- Maintaining the core regulatory program for regulated dischargers, including storm water
- Developing a monitoring strategy for the region and integrating SWAMP with TMDL monitoring
- Regulating vineyards and timber activities
- Developing policies for runoff from roads
- Maintaining the ground water cleanup programs for high priority sites
- Improving outreach and community involvement in decisions
- Fostering watershed groups and citizen monitoring
- Protecting Critical Coastal Areas
- Promoting water recycling activities
- Developing a freshwater beach program with the Sonoma County Health Department for the Russian River

See Appendix E for a discussion of water quality priorities.

Organization for WMI
To advance implementation of the WMI the North Coast Region has reorganized along watershed lines. Presently there are five divisions: Timber Harvest Division, Watershed Management Division, Watershed Protection Division, Cleanups and Special Investigations Division, and Administrative Division. In theTimber Harvest Division there are units for the Klamath and Trinity WMAs, Eel River Humboldt Bay WMAs, and the North Coast and Russian/Bodega WMA. The Watershed Management Division is split between a Planning unit and a TMDL development unit. In the Watershed Protection Division are the Eel. Humboldt, Trinity, and Klamath unit, the North Coastal NPS unit, the Russian River unit, the Contracts, Loans, and Special Projects unit, and the SWRCB Small Community Grants unit. The Cleanup Division is split between the Southern and Northern Cleanup units.

To help implement the intended transition to a watershed organization, all programs have been integrated, to the extent possible, along watershed lines. The budget process, planning for permits, inspections and enforcement are largely driven by watershed needs. The creation of watershed divisions was influenced by needs within watersheds and the division of program resources to address those needs.

The North Coast Regional Water Quality Control Board (RWQCB or Regional Water Board) sets staff priorities each fiscal year (FY). Those priorities are generally organized in relation to watershed needs; however; the Regional Water Board will take all factors into account in setting final priorities. Most legislative mandates do not take watershed needs into account. However, the Regional Water Board usually exercises appropriate discretion within programs to assure that resources are applied where needs are the greatest.

Funded versus Unfunded Actions
Where unfunded activities are necessary to protect water quality, the Regional Water Board may use discretionary resources, in a limited fashion, to address those needs. When needs are established the Regional Water Board seeks new resources to address water quality issues. An example is the Regional Water Board's hillside vineyard program. Vineyard activities on hillsides can adversely affected water quality due to sedimentation. In previous years, no program existed to address the issue short of after-the-fact enforcement. Nonpoint source funds were sought and received to address the issue. Now the Regional Water Board has an outreach program to help prevent problems before they happen and enforcement is still available where required.

As the Regional Water Board continues the transition to a watershed-oriented region, the budgeting process will be driven by watershed needs and priorities. Currently, establishing Total Maximum Daily Loads (TMDLs) and other nonpoint source issues are at the forefront. Point source needs also require additional resources, especially in relation to recent legislation that is expected to increase monitoring, inspections and enforcement.

Russian/Bodega WMA
In the Russian/Bodega WMA (pages 13-36) the primary water quality goals focus on protecting beneficial uses of surface and ground water such as salmonid fishery values, recreation, and domestic, municipal and agricultural water supply. Maintaining the core regulatory activities associated with point source waste discharges to surface and ground water from municipal and industrial sites is a high priority and is mandatory. Permitting, compliance inspections, enforcement and cleanup activities are performed on those facilities with the highest threat and/or actual impact on water quality. The program of investigation and follow-up of spills and complaints regarding water quality problems will continue. Discharges of PCE, petroleum hydrocarbons, pesticides, nutrients, bacteria and sediment are the primary pollutants of concern.

Nonpoint source discharges are addressed by the core regulatory program storm water permits and inspections, and by the nonpoint source program (see Appendix B) through timber harvest inspections, outreach, grants, and promoting land management measures that are protective of beneficial uses. Critical Coastal Areas in the Russian/Bodega WMA are: 1) the Bodega Marine Life Refuge, 2) the Estero Americano, and 3) the Estero de San Antonio.

Klamath WMA
In the Klamath WMA (pages 37-54) the following broad goals provide a focus for water quality control activities: 1) protect and enhance the salmonid fishery (Mainstem and tributaries below Iron Gate Dam), 2) protect and enhance coldwater, warmwater and endangered aquatic species, 3) maintain the viability of agriculture and timber uses, 4) maintain recreational opportunities, and 5) protect groundwater uses. The Critical Coastal Area in the Klamath WMA is the Klamath River.

North Coast Rivers WMA
In the North Coast River WMA (pages 55-138) the overall emphasis is the inspection of timber harvest plans for implementation of the Forest Practice Rules and best management practices to ensure protection of water quality and beneficial uses. Through recent budget actions the timber harvest program activities on private land in concert with California Department of Forestry and Fire Protection have been expanded. The future development of a Basin Plan amendment for TMDL waste reduction strategies for sediment is another

primary activity by Regional Board staff. This WMA has been the focus of the multi-agency North Coast Watershed Assessment Program effort.

The Critical Coastal Areas in the North Coast WMA are: 1) Mattole River , 2) King Range National Conservation Area, 3) Pudding Creek, 4) Noyo River, 5) Pigmy Forest Ecological Staircase, 6) Big River, 7) Albion River, 8) Navarro River, 9) Garcia River, 10) Kelpbeds at Saunders Reef, 11) Del Mar Landing Ecological Reserve, and 12) Gerstle Cove.

Humboldt Bay WMA
In the Humboldt Bay WMA (pages 139-160) the following broad goals provide a perspective from which to view the specific goals and actions presented Section 2.4: 1) improve coordination, education, outreach, assessment, and monitoring, 2) protect surface and ground water uses for municipal supply, recreation, and industrial shellfish harvest, and 3) protect and enhance the anadromous salmonid resources. The Critical Coastal Areas in the Humboldt Bay WMA are: 1) Redwood Creek, 2) Redwood National Park, 3) Kelpbeds at Trinidad Head, and 4) Mad River.

Eel River WMA
In general, the primary issues associated with water quality in the Eel River WMA (pages 161-176) are focused on the beneficial uses for drinking water supply, recreation, and the salmonid fishery. Since the watershed is located in steep forested terrain with highly erosive soils and high rainfall, erosion and sediment production and transport are high. For most of the watershed the issues of temperature and sedimentation and their impacts on the salmonid fishery are of high concern, involving the timber and rangeland industries. Other issues include ground water contamination, dairies in the delta area near the ocean, and localized contamination of surface and ground waters. The Critical Coastal Area in the Eel River WMA is the Eel River.

Trinity River WMA
The Trinity River watershed is also located in steep forested terrain with highly erosive soils and high rainfall, erosion and sediment production and transport are high. The issues of temperature and sedimentation and their impacts on the salmonid fishery are of high concern, involving the timber and rangeland industries. The broad goals for this WMA (pages 177-188) include improving the anadromous fishery through sediment reductions and habitat enhancements and maintaining the other high beneficial uses of both surface and ground water.

For more information or copies of the Chapter, contact Janet Blake at 707-576-2805 or jblake@waterboards.ca.gov. Also see http://www.waterboards.ca.gov/northcoast/programs/watersheds.html

SECTION 1

INTRODUCTION

This document comprises the North Coast Regional Water Quality Control Board's chapter for the Integrated Plan for Implementation of the Watershed Management Initiative (WMI). The process for the Regional Water Board is responsive to the Watershed Management Initiative called for in the State Water Resources Control Board Strategic Plan (updated in 2001). It essentially involves designating Watershed Management Areas (WMAs) and performing the following steps:

- assessing water quality related issues on a watershed basis,
- developing prioritized water quality goals for watersheds from the issues,
- addressing the issues with various programs and
- evaluating progress.

The chapter identifies priorities to be funded by existing resources, as well as priority tasks that are currently not funded, including those that might be potential projects for grant applications. The WMI Chapter is not a commitment to complete work. Work commitments are made in fund source-specific workplans. The chapter may be used to provide information for making informed decisions on which activities to be funded by specific workplans.

This chapter is dynamic, and as such, represents the best information and strategy at the time of this writing and for the resources made available to develop it. This document is an administrative management tool, and by its very nature, must be flexible and responsive to the adaptive management required in addressing issues with changing priorities and new information. The following is a description of each of the sections:

Section 1 - Introduction
This section briefly describes the Region's Chapter, and water quality management in the Region.

Section 2 - Watershed Activities
2.0 Background - explanation of watershed management for the six Watershed Management Areas (WMA) in the Region. Each WMA plan includes statements of concerns and issues, water quality goals, and an implementation strategy.

Section 3 - Regional Activities
Activities not prioritized on a watershed basis are explained.

Appendices
Appendix A - Beneficial Use Definitions
Appendix B - Nonpoint Source Program
Appendix C – Critical Coastal Areas
Appendix D – Acronyms
Appendix E – Water Quality Priorities
Appendix F – Grant Projects in the North Coast Region

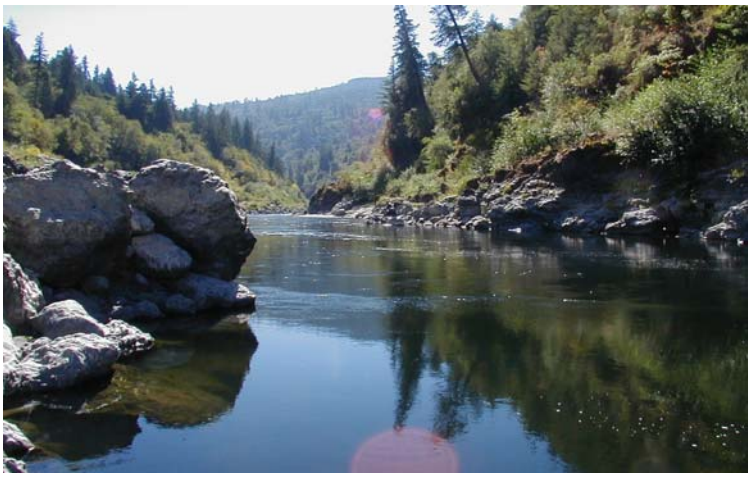
The North Coast Regional Water Quality Control Board's Process
The focus of the watershed-based effort is to assure all Regional Water Board activities are coordinated throughout a watershed in an efficient, integrated manner. Non-discretionary

activities, such as issuing federal permits, will continue in all watershed areas. Related land use issues will be addressed through Nonpoint Source Program compliance with appropriate enforcement. Water resource issues will be coordinated with appropriate state and federal agencies, such as the State Water Resources Control Board's Division of Water Rights, the Department of Water Resources, and the US Environmental Protection Agency.

For the purposes of this process, "management area" is the basic planning unit and may contain one or more drainage "basins" or "watersheds." The Regional Water Board Watershed Management Areas (WMAs) and their watersheds are depicted in Figure 1-1. They are:

2.1 Russian/Bodega WMA
2.2 Klamath WMA
2.3 North Coast Rivers WMA
- 2.3.3 Mattole River
- 2.3.4 Ten Mile River
- 2.3.5 Noyo River
- 2.3.6 Big River
- 2.3.7 Albion River
- 2.3.8 Navarro River
- 2.3.9 Greenwood Creek
- 2.3.1 Garcia River
- 2.3.12 Gualala River

2.4 Humboldt Bay WMA
2.5 Eel River WMA
2.6 Trinity River WMA



Note that the "management areas" are on a different scale than the basins and hydrologic units specified in the Water Quality Control Plan for the North Coast Region (Basin Plan) http://www.waterboards.ca.gov/northcoast/programs/basinplan/basin.html. This is a conscious effort to reduce the number of units within this process for reasonable assessment and budgeting. The individual watersheds and hydrologic units are not ignored and may be assessed at that finer level of resolution. The Regional Water Board activities to address issues and problems are prioritized in recognition of the reality that resource allocations change.

The overall process involves first identifying and assessing the water quality problems in the basin, and second, developing a strategy to implement specific activities to address the identified problems. Assessment is on a continuous basis and is concentrated in watersheds with developing Total Maximum Daily Loads (TMDLs). Implementation of the resultant strategy is then scheduled according to the complexity of the issues and the tools and resources available to address the issues. Water quality goals to be addressed are prioritized. When the short-term goals are reached, the activities to address long-term goals are then addressed as resources allow. This planning document resulting from the process is a multi-year watershed management document for water quality activities.

Additionally, addressing the ocean and near shore areas not included in harbors or bays in individual WMAs is necessary. It is recognized that near shore areas may be affected by land-based activities in specific watersheds. The Regional Water Board will attempt to determine the extent to which land-based activities are affecting ocean resources when data indicate ocean impacts. The watershed approach would be used to address the freshwater and land-based problems. Also, some form of regional or statewide ocean and near shore monitoring program should be supported. See Appendix C for information on Critical Coastal Areas.

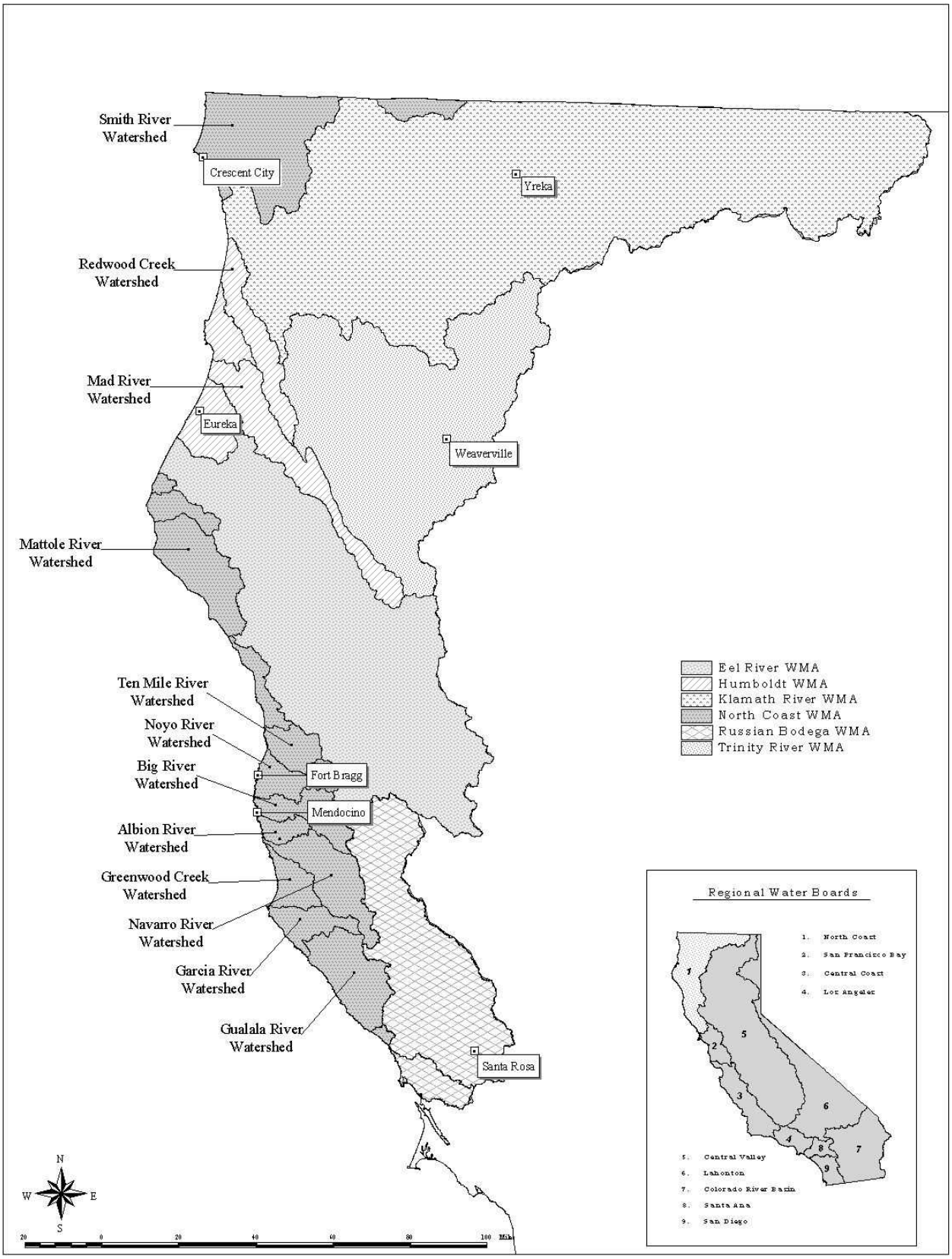


Figure 1. Watershed Management Areas for the North Coast Regional Water Quality Control Board

The watershed planning process in the North Coast Region is intended to provide an administrative tool to facilitate budgeting decisions on the basis of issues, concerns, and problems and completed watershed analyses. As such, numerous new activities are identified and prioritized. However, inadequate funding for existing programs makes it difficult to address new issues. If additional funding becomes available, those issues will be addressed in a priority order.

The North Coast Regional Water Quality Control Board faces numerous water quality issues. Overarching water quality issues in the Region are protection of the coastline, protection and restoration of anadromous fish populations, protection of drinking water, and pollution prevention. More specifically water quality problems include contamination of surface water due to nonpoint source pollution from storm water runoff, erosion and sedimentation (roads, agriculture, and timber harvest), failing septic tanks, channel modification, gravel mining and dairies, and MTBE and dioxin contamination. Ground water contamination from PCE, leaking underground tanks, and health and safety issues from contaminated areas that are open to the public are also priority issues. High priority water quality problems due to point sources include chronic violations by some POTWs and lack of permit compliance. Lack of or limited funding for water quality monitoring and watershed assessment compounds the difficulty of addressing these issues. See Appendix B - Nonpoint Source Program, Table 1 for Regional nonpoint source problems.

Highest priority activities in the North Coast Region
(revised December 2004)

- Implementing TMDLs for sediment in 16 coastal watersheds
- Completing all Klamath Basin TMDLs by December 2005
- Maintaining the core regulatory program for regulated dischargers, including stormwater
- Developing a monitoring strategy for the region and integrating SWAMP with TMDL monitoring
- Regulating vineyards and timber activities
- Developing policies for runoff from roads
- Maintaining the ground water cleanup programs for high priority sites
- Improving outreach and community involvement in decisions
- Fostering watershed groups and citizen monitoring
- Protecting Critical Coastal Areas
- Promote water recycling activities
- Developing a freshwater beach program with the Sonoma Co. Health Dept. for the Russian River

The highest priority issues that need more funding if they are to be properly addressed are: TMDL implementation, responses to contaminated drinking water wells, inspection and enforcement of nonpoint source pollution issues, monitoring and assessment, outreach and education, basin planning efforts to update water quality objectives in the Basin Plan to protect threatened species and beneficial uses, and improvement of state and local government interactions.

In the **Russian/Bodega WMA** (see pg. 13-36) the primary water quality goals focus on protecting beneficial uses of surface and ground water such as salmonid fishery values, recreation, and domestic, municipal and agricultural water supply. Maintaining the core regulatory activities associated with point source waste discharges to surface and ground water from municipal and industrial sites is a high priority. Permitting, compliance inspections, enforcement and cleanup activities are performed on those facilities with the highest threat and/or actual impact on water quality. Discharges of PCE, petroleum hydrocarbons, pesticides, nutrients, bacteria and sediment are the primary pollutants of concern. Nonpoint source discharges are addressed by the core regulatory program storm water permits and inspections, and by the nonpoint source program through timber harvest inspections, outreach, grants, and promoting land management measures that are protective of beneficial uses. Critical Coastal Areas in the Russian/Bodega WMA include: 1) the Bodega Marine Life Refuge, 2) the Estero Americano, and 3) the Estero de San Antonio.

In the **Klamath WMA** (see pg. 37-54) the following broad goals provide a focus for water quality control activities: 1) protect and enhance the salmonid fishery (mainstem and tributaries below Iron Gate Dam), 2) protect and enhance warm water and endangered aquatic species, 3) maintain the viability of agriculture and timber uses, 4) maintain recreational opportunities, and 5) protect ground water uses. The Critical Coastal Area in the Klamath WMA is the mouth of the Klamath River.

In the **North Coast River WMA** (see pg. 55-138) the overall emphasis is the inspection of timber harvest plans for implementation of the Forest Practice Rules and best management practices to ensure protection of water quality and beneficial uses. The Regional Water Board is expanding timber harvest program activities on private land in concert with California Department of Forestry and Fire Protection. The future development of TMDL waste reduction strategies for sediment is another primary activity by Regional Board staff. The Critical Coastal Areas in the North Coast WMA are: 1) Mattole River , 2) King Range National Conservation Area, 3) Pudding Creek, 4) Noyo River, 5) Pigmy Forest Ecological Staircase, 6) Big River, 7) Albion River, 8) Navarro River, 9) Garcia River, 10) Kelpbeds at Saunders Reef, 11) Del Mar Landing Ecological Reserve, and 12) Gerstle Cove.

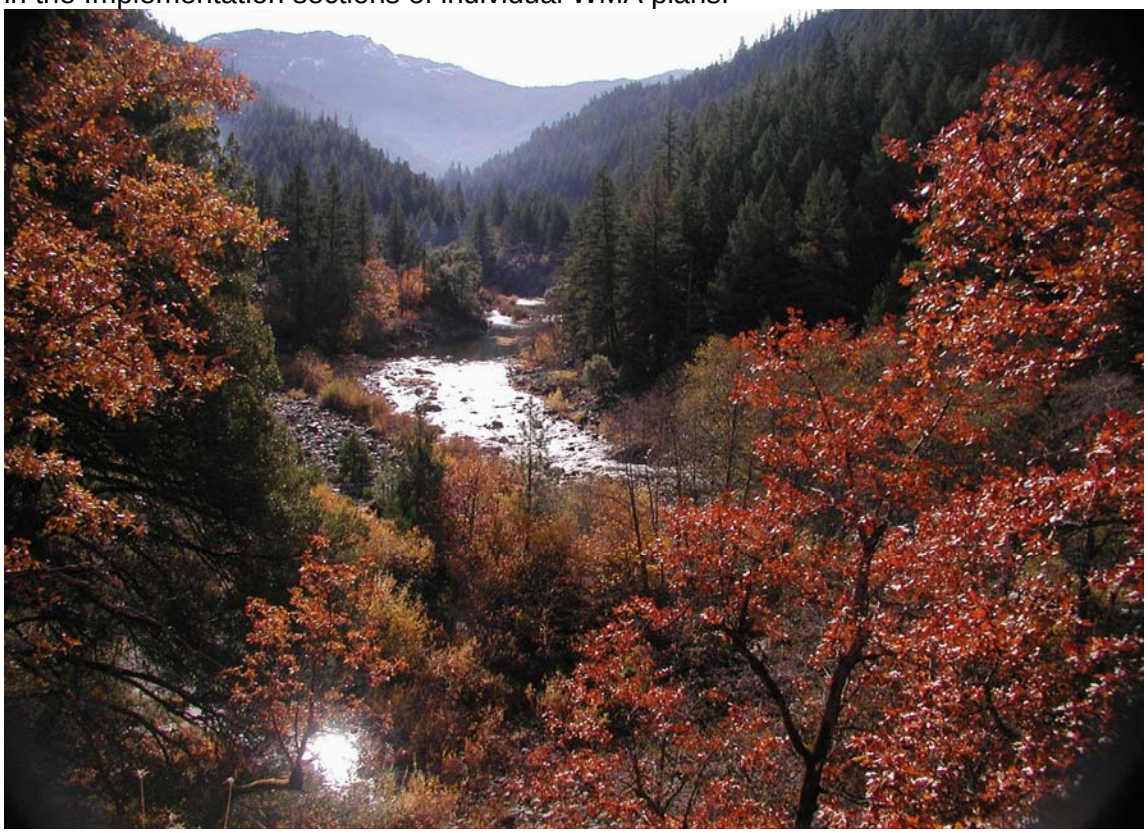
In the **Humboldt Bay WMA** (see pg. 139-160) the following broad goals provide a perspective from which to view the specific goals and actions presented Section 2.4: 1) improve coordination, education, outreach, assessment, and monitoring, 2) protect surface and ground water uses for municipal supply, recreation, and industrial shellfish harvest, and 3) protect and enhance the anadromous salmonid resources. The Critical Coastal Areas in the Humboldt Bay WMA are: 1) Redwood Creek, 2) Redwood National Park, 3) Kelpbeds at Trinidad Head, and 4) Mad River.

In general, the primary issues associated with water quality in the **Eel River WMA** (see pg. 161-176) are focused on the beneficial uses for drinking water supply, recreation, and the salmonid fishery. Since the watershed is located in steep forested terrain with highly erosive soils and high rainfall, erosion and sediment production and transport are high. For most of the WMA the issues of temperature and sedimentation and their impacts on the salmonid fishery are of high concern, involving the timber and rangeland industries. Other issues include ground water contamination, dairies in the delta area near the ocean, and localized contamination of surface and ground waters. The Critical Coastal Area in this WMA is the Eel River.

The Trinity River watershed (see pg. 177-188) is also located in steep forested terrain with highly erosive soils and high rainfall, erosion and sediment production and transport are high. The issues of temperature and sedimentation and their impacts on the salmonid fishery are of high concern, involving the timber and rangeland industries. The broad goals for this WMA) include improving the anadromous fishery through sediment reductions and habitat enhancements and maintaining the other high beneficial uses of both surface and ground water.

Regional Water Board Programs

The major programs or work efforts that will be used to address problems and achieve goals in a specific management area are consolidated into ten groups and will be used in the Implementation sections of individual WMA plans.



Assessment

Assessing waterbody condition and specific relationships of land use or waterbody system dynamics is essential to identifying issues and assigning activities for correcting problems. Additional components of assessment include gathering public perspectives on water quality related issues and assessing the adequacy of existing institutional frameworks in correcting problems. Focused water quality studies, TMDL approaches, ground water pollution identification, nonpoint source assessments, and full watershed assessments are included. The North Coast Watershed Assessment Program is described in more detail in Section 3: Regional Activities.

Monitoring

Trends in water quality and habitat, and the effectiveness of control strategies and TMDLs will be monitored through the Surface Water Ambient Monitoring Program

(SWAMP) sampling program, established photo points, aerial observation, and other observations relevant to the problems being addressed and the activities being used. Activities include discharger compliance and self-monitoring under the core regulatory and ground water programs. SWAMP is described in more detail in Section 3: Regional Activities and http://www.waterboards.ca.gov/northcoast/programs/swamp.html.

Core Regulatory
The Regional Water Board issues federal National Pollutant Discharge Elimination System (NPDES) permits for discharges of waste to waterbodies in the Region, and state Waste Discharge Requirements (WDRs) for wastes contained on site or discharged to land. Both prescribe the quantity, quality, and conditions under which waste can be discharged and require self-monitoring. Activities include issuance of new permits/WDRs, updating existing permits/WDRs, compliance inspections, review of self-monitoring reports, response to spills and complaints, storm water runoff, and associated enforcement. In addition, SB 390 required the Regional Water Board to update waivers of waste discharge requirements on January 1, 2003. See Appendix B, Table 3 for the waiver schedule.

Ground water
Activities to protect and clean up ground water are associated with Spills, Leaks, Investigations, and Cleanup (SLIC), wellhead protection, the above ground and underground tank programs (including local oversight programs), as well as site mitigation activities under the Department of Defense and Superfund programs.

Water Quality Certification
Activities are associated with the Clean Water Act (CWA) section 401 certification that relates to protection of wetlands and stream channel work and activities.

Nonpoint source
The long term goals are aimed at enhancing the overall recognition and understanding of nonpoint sources of pollution, especially sediment and nutrients, and elimination of the those sources as limiting factors in the maintenance and enhancement of salmonid populations, other aquatic organisms, and water supply. The program follows the statewide Nonpoint Source Pollution Control Program, using NPS Enforcement Policy (see Appendix B). Timber harvest on state, federal, and private lands, and the development of TMDL waste reduction strategies are high priority throughout the region. Localized agricultural problems are being addressed in the upper Klamath/Lost River area, Shasta and Scott River watersheds, Eel River delta area, and the Russian River WMA. Outreach and specific nonpoint source activities are taking place in the WMAs. See Appendix B for more information on nonpoint source efforts and Appendix C for Critical Coastal Areas that have been designated as a result of nonpoint source pollution.

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. The goals of the proposed TMDL Implementation Policy are to control sediment waste discharges so that TMDLs are met, sediment water quality objectives are attained, and beneficial uses are no longer adversely affected by sediment. The proposed Sediment TMDL Implementation Policy takes the form of a Resolution from the Regional Water Board which will also give direction to the Executive Officer to develop a workplan

describing how and when actions will be taken to address sediment waste discharges. Such actions include the development of a monitoring strategy and a sediment control guidance, the use of available authorities and tools to more effectively address sediment waste discharges, memoranda of understanding with other agencies, and cooperation with landowners, stakeholders, and organizations. 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.

Wetlands
The Regional Water Board has wetlands in lagoon areas along the coast and in the Santa Rosa Plain. Many of these areas are threatened by development activities such as new housing projects and vineyards. Long-term goals are directed toward wetland protection and management. Most activities to protect wetlands take the form of Clean Water Act (CWA) section 404 review and CWA section 401 Water Quality Certification. At this time, other agencies are taking the lead on wetlands in the region such as the Army Corps of Engineers, the Department of Fish and Game, and the Division of Water Rights. The Regional Water Board will develop a policy concerning wetland conservation in the region starting with an inventory and mapping of the resource, assessing the current conditions, and forming a strategy for conservation. See Section 3: Regional Activities for more information on the wetland activities.

Local Contracts/Agreements
The Clean Water Act section 319(h) grant program, and Water Bond (Propositions 13, 40 and 50) grants result in contracts and grant agreements with local agencies or non-profit entities to plan, monitor, and improve water quality. See http://calwatershedfunds.org/index.php, http://getgrants.ca.gov/, or http://www.waterboards.ca.gov/nps/grantinfo.html for funding sources and Appendix E for water quality priorities and target projects.

Water Quality Planning
Regional Water Board planning activities include the basin plan Triennial Review process, development of water quality objectives, development of action plans (including TMDLs), participation in watershed planning activities (including local watershed groups), Basin Plan amendments, and review of environmental documents. The Triennial Review process was started again in May 2004. Some planning tasks are watershed based; others are regional in nature. A contract with the Sonoma County Water Agency for review and revision of water quality standards to comply with a “no take” provision of salmonids listed in the Russian/Bodega WMA under the federal Endangered Species Act is currently active. The Basin Plan objectives have been reviewed, and changes to temperature, dissolved oxygen and sediment objectives are

being proposed. See Section 3: Regional Activities for more information on Basin Plan revisions currently planned or underway.

Regional (Non-Watershed Based) **Activities**
Activities not prioritized or targeted on a watershed basis are addressed differently. Examples of these are: underground tank program, Department of Defense cleanup sites, and core regulatory activities like permit adoption and inspections. For activities of a regional nature, such as Triennial Review of the Water Quality Control Plan (Basin Plan) for the North Coast Region and the Water Quality Assessment (305(b) report), there are descriptions in Section 3: Regional Activities, as well as descriptions within the individual watershed sections appropriate to those activities that are specific to a particular WMA.

To the extent possible all activities within a WMA are incorporated in its section of this chapter irrespective of whether the activities are prioritized on a watershed basis. Descriptions of all activities that are not regional in nature will be phased into individual WMA sections as progress is made.

SECTION 2

WATERSHED ACTIVITIES

The following watershed plans draw upon knowledge and information obtained through public input, agency contacts, and the experience of Regional Water Board staff. Significant strategy development and implementation may be occurring in a WMA at the present time. However, staff recognizes that the problem identification, watershed assessment, and strategy development are not complete, and that further public and agency involvement will improve the effort. This document is a preliminary summary of existing and planned actions based on current knowledge.

Fourteen WMA plans are presented in this section:

Since this is a dynamic process, the document presents each WMA plan as of the time of this printing. As the process is in different phases depending on the WMA, some sections are more complete than others.

In addition, http://www.swrcb.ca.gov/rwqcb1/programs/tmdl/Status.html Clean Water Action section 303(d) (TMDLs) presents a prioritized list of waterbodies not meeting water quality standards, as well as some additional background and implementation information. That additional information will be integrated into the individual WMA plans as the process continues.

Appendix B, Nonpoint Source Program, contains information on the program including goals, problems and actions. It also contains tables of impaired waterbodies, education and outreach, waivers of waste discharge, and partners of the Regional Water Board. Appendix C contains information on Critical Coastal Areas. Appendix D is a list of acronyms used in this document. Appendix E contains Water Quality Priorities and potential target projects that address those priorities.

Regional (non-watershed based) **Activities**
This section is a description of those activities that occur region-wide where the processes of prioritizing by WMA has not occurred. Regional activities, such as the Basin Plan Triennial Review, the Water Quality Assessment (305(b) report), wetland

activities, and the new TMDL Implementation Policy are described in Section 3: Regional Activities To the extent possible all activities within a WMA have been incorporated irrespective of whether the activities are targeted or prioritized on a watershed basis. Descriptions of how these programs function in WMAs will be phased into individual WMA sections as resources allow.

SECTION 2.1

RUSSIAN/BODEGA WATERSHED MANAGEMENT AREA

The following draws upon knowledge obtained through public involvement, agency contacts, and the personal experience of Regional Water Board staff. The problem identification and watershed assessment and the strategy development are not complete. Further involvement will improve the effort. This summary of existing and planned actions is based on current knowledge.

MANAGEMENT AREA DESCRIPTION

This management area includes the Russian River and Bodega hydrologic units numbers 114.00 and 115.00, respectively. Within those units are the entire Russian River watershed (114.00), and Salmon Creek, Bodega Bay (including Bodega Harbor), Americano Creek, and Stemple Creek watersheds (115.00) (Figure 2.1-1).

Russian River Hydrologic Unit

The Russian River hydrologic unit encompasses 1485 square miles in Mendocino and Sonoma counties, bounded by the Coast Ranges on both the east and west. The mainstem is about 110 miles long, flowing southward from Redwood and Potter Valleys (north of Ukiah) to its confluence with Mark West Creek, where it turns west to cut through the coast range and empties into the Pacific Ocean at Jenner. The principal tributaries from the headwaters down are the East Fork Russian River, Feliz Creek, Pieta Creek, Big Sulfur Creek, Dry Creek, Mark West Creek (including the Laguna de Santa Rosa), Green Valley Creek, and Austin Creek. Elevations range from sea level at the estuary near Jenner to 4,343 feet at the summit of Mt. St. Helena in the Mayacama Mountains.

Two reservoirs provide flood protection and water supply storage: 1) Coyote Dam and Lake Mendocino on the East Fork Russian River near Ukiah, and 2) Warm Springs Dam and Lake Sonoma on Dry Creek west of Healdsburg. A diversion from the Eel River through the Potter Valley powerhouse flows into the East Fork and Lake Mendocino. The Russian River hydrologic unit supplies drinking water, including ground water supply to over 500,000 people and a varying amount of water for agricultural purposes. The majority of flow in the Russian River is during the winter season, when average rainfall ranges from 30-80 inches, depending on locale. The summer climate is moist and cool near the coast with temperatures increasing in the upper valley areas that are more isolated from the coastal influence.

Bodega Hydrologic Unit

Cooler temperatures and relatively high rainfall due to coastal influences typify the Bodega unit. The terrain in this unit is relatively steep, with the streams carving through the Coast Range and entering the Pacific Ocean south of the Russian River. Salmon Creek, Americano Creek, and Stemple Creek and their associated estuaries are the main waterbodies. These streams are located in erosive topography and are sensitive to land disturbance. Summertime flows are often non-existent in Americano Creek and Stemple Creek, while Salmon Creek flow is low but sustained. The three major watersheds in the Bodega unit each have estuary areas. However, the most notable are the Estero Americano (Americano Creek) and the Estero de San Antonio (Stemple Creek). Those two estuaries are prized for their resemblance to fjords and the resource values associated with isolated estuarine areas. Both of these estuaries are designated Critical Coastal Areas. The Bodega Marine Life Refuge is also a Critical Coastal Area (CCA). See Appendix C for more information on these CCAs.

ASSESSMENT AND PROBLEM IDENTIFICATION

The following analysis is based on existing knowledge of issues and problems in the Russian River basin from long-term water quality monitoring, discharger regulation, water quality planning, nonpoint source program efforts, and public involvement. However, the following analysis may not constitute a full assessment, and will be updated when necessary.

Primary water quality issues in the Russian/Bodega WMA

- Sedimentation of streams
- Toxic contamination of ground water
- Mercury in lakes
- Riparian area destruction
- Low stream flows
- Bacterial contamination of surface water
- Hydromodification
- High water temperatures
- Low dissolved oxygen in Laguna de Santa Rosa
- High ammonia and low dissolved oxygen in Americano and Stemple Creeks

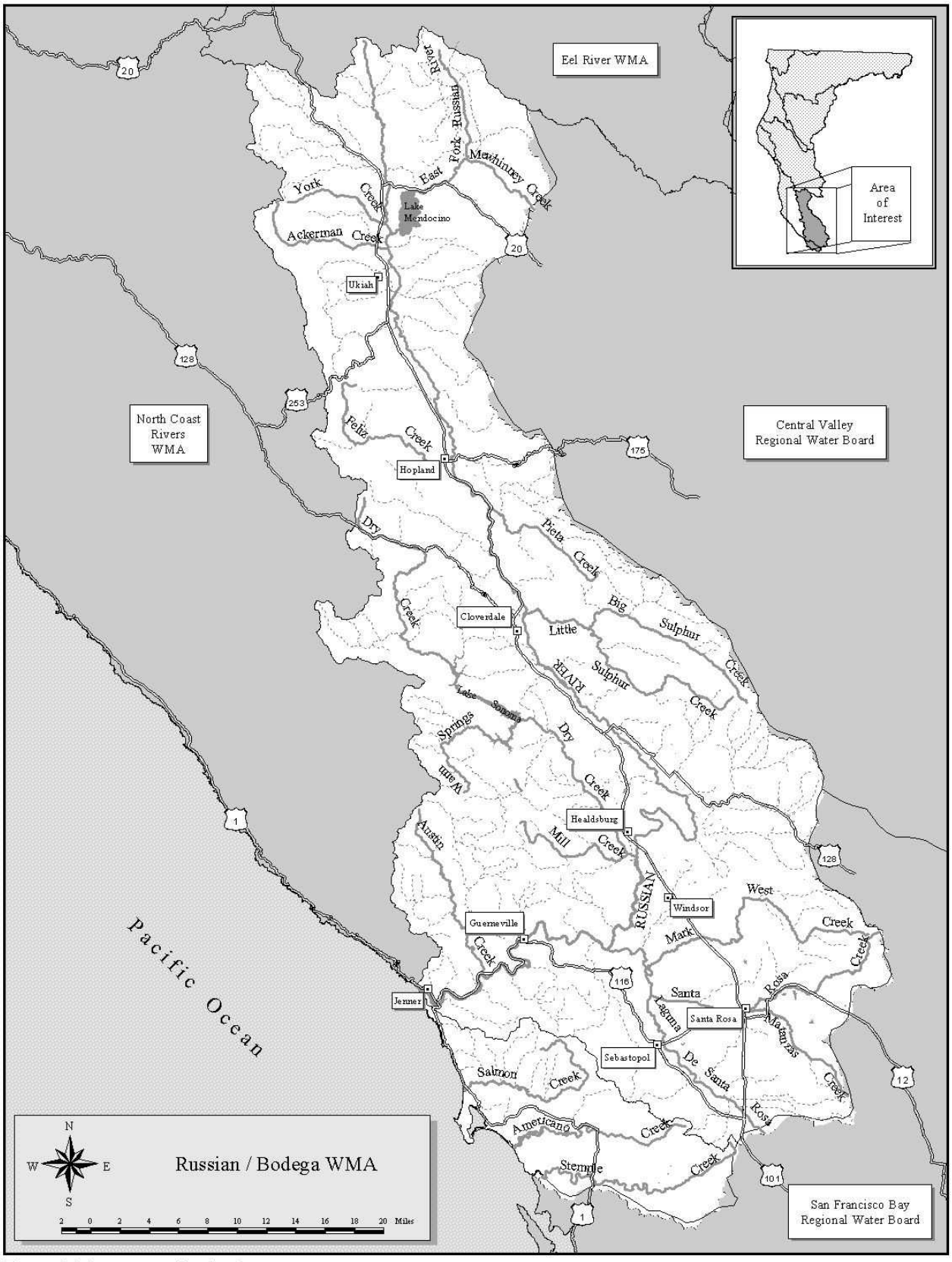


Figure 2.1.1. Russian / Bodega WMA

Russian River Hydrologic Unit
Russian River sampling programs conducted over the last 20 years indicate substantial improvements in water quality. Pollution control efforts with respect to point sources (municipal and industrial waste treatment and discharge) and nonpoint sources (agricultural runoff, urban and industrial runoff, and septic tank practices) are largely responsible for improvements in water quality

Toxic substances have rarely been detected in the water column. Sediment sampling in 1985-86 and again in 1995 detected no pesticides in sediments. Monitoring of heavy metals exhibited no trends, with the exception of higher zinc concentrations downstream from the more urbanized areas. Toxic substance sampling in resident fishes and in transplanted freshwater clams does occasionally detect pesticides and/or heavy metals. However, the only significant trend is the presence of mercury in fish flesh from lakes. The issue of mercury in fish flesh was referred to the California Office of Health and Hazard Assessment for their analysis and action and a health advisory issued for Lake Pillsbury.

The major water quality issues associated with the Healdsburg and Santa Rosa Plain areas are concentrated downstream from the urbanized areas, and where animal facility operations, cultivated agriculture, and industrial sites are located. Toxic discharges have affected ground water resources, with municipal supply wells for the City of Sebastopol and City of Santa Rosa being shut down due to toxic chemical contamination. Toxic chemicals also contaminate many individual wells in the area, most notably threatening 140 wells in the West College Avenue at Clover Drive area in Santa Rosa.

Less than 5% of the timber harvested in the Region comes from this watershed area. The primary issues deal with stormwater runoff impacts on domestic water supplies and fisheries. Forest herbicides are also a great concern to small landowners. Nuisance can result from the discharge of sediment, and organic debris, but increase stream temperature is a greater concern in the urban/forestry interface.

Sedimentation, riparian area destruction, low stream flows, bacteria, stream modification practices and high water temperatures have been identified as concerns in the tributaries. The Russian River watershed was added to the section 303(d) list for sedimentation issues in December of 1997.

The Laguna de Santa Rosa is seasonally eutrophic. A TMDL has been developed and implementation is underway to reduce and/or eliminate nutrient sources necessary to improve water quality. Ammonia goals were met ahead of schedule, but dissolved oxygen continues to be a problem due to enriched bottom deposits in the Laguna.

Bodega Hydrologic Unit
This Bodega Hydrologic management unit is typified by rangeland grazing and animal facility operations, including dairies and some timber production in the Salmon Creek watershed. Although the community of Bodega Bay has experienced some development in the last decade, the growth has been minimal. The population of the Bodega Bay area was 1127 residents according to the 1990 census. The Critical Coastal Areas in this WMA are the Bodega Marine Life Refuge, Americano Creek and the Estero Americano, and Stemple Creek and the Estero de San Antonio.

Americano Creek and Stemple Creek are Clean Water Act section 303(d) listed for water quality impairment associated with high ammonia and low dissolved oxygen (*Stemple Creek Water Quality Characteristics and a Maximum Daily Load Process, Marin and Sonoma Counties*, North Coast Water Quality Control Board, August 15, 1995). A watershed group was formed in the Stemple Creek watershed to address erosion and animal facility operation waste issues. A section 303(d) *Total Maximum Daily Load and Attainment Strategy for the Stemple Creek Watershed* was developed and adopted by the Regional Water Board in 1997 to address sediment and nutrient issues. Water quality improvements have been documented in the last two years as a result of activities in the watershed.

WATER QUALITY GOALS AND ACTIONS

The primary water quality goals focus on protecting beneficial uses of surface and ground water such as salmonid fishery values, recreation, and domestic, municipal and agricultural water supply. Maintaining the core regulatory activities associated with point source waste discharges to surface and ground water from municipal and industrial sites is a high priority. Permitting, compliance inspections, enforcement and cleanup activities are performed on those facilities with the highest threat and/or actual impact on water quality. The program of investigation and follow-up of spills and complaints regarding water quality problems will continue. Discharges of PCE, petroleum hydrocarbons, pesticides, nutrients, bacteria and sediment will be the primary pollutants of concern. For nonpoint source, emphasis has been increased on animal facility waste control, erosion control, riparian improvements, and fishery habitat enhancement. The primary concerns include sedimentation, nutrients, and riparian destruction.
The nine Goals for the Russian/Bodega WMA are related through the beneficial uses they address:

- **GOAL 1: Protect surface water uses MUN, REC-1, REC-2**
- **GOAL 2: Protect and maintain ground water quality and quantity for the beneficial uses of domestic, municipal, agricultural, and industrial water supply uses**
- **GOAL 3: Protect/enhance coldwater fisheries**
- **GOAL 4: Protect/enhance warmwater fisheries**
- **GOAL 5: Protect aquatic life and public health in Bodega Harbor**
- **GOAL 6: Objectives attainment in the Laguna de Santa Rosa**
- **GOAL 7: Stemple Creek and Americano Creek Waste Reduction Strategies**
- **GOAL 8: Water Rights Coordination**
- **GOAL 9: Assessment of Salmon Creek and other tributaries**

GOAL 1: Protect surface water uses MUN, REC-1, REC-2

High quality water is required to protect these primary beneficial uses. The Regional Water Board recognizes that protecting and enhancing water quality for the primary beneficial uses will generally maintain and protect all other uses.

Point Source Issues

Current Activities

- Continue to track compliance with time schedules in NPDES Permits and enforcement orders
- Keep all Russian River municipal dischargers on schedule for advanced wastewater treatment.

- Maintain bacterial sampling at public water- contact recreation areas.
- Maintain the sampling regimen at the four long-term historical water quality monitoring stations to provide long-term monitoring data for the Russian River mainstem under SWAMP. Evaluate monitoring sites in other streams in the WMA and schedule monitoring under the SWAMP rotating schedule for FY 2004-05.
- Propose modified Basin Plan water quality objectives for Regional Board consideration to address protection of FESA listed salmonid fish.
- Provide assistance/coordination to Sonoma County Water Agency for the development of an early warning system for the mainstem Russian River.
- Evaluate the cumulative impacts of flow changes proposed as alternatives in the Sonoma County Water Agency/US Army Corps FESA Section 7 consultation and of waste discharges using the Russian River water quality model and other methods.
- Continue to regulate industrial and construction storm water dischargers in the Roseland Creek watershed and other watersheds.
- Renew the municipal storm water permit for the Santa Rosa area
- Continue working with a new mushroom composting facility on a waste discharge permit.

Additional Needs

- Continue and also seek additional staffing to work with the City of Santa Rosa and their co-permittees to fully implement their Municipal Storm Water Permit.
- Inspect all regulated facilities in accordance with the State Administrative Procedures manual.
- Identify any point source discharges of hazardous or toxic substances to Santa Rosa Creek and mitigate.
- Target subwatersheds to assess filing status and compliance with industrial and construction storm water permits.
- Pursue enforcement actions on non-filers for industrial and construction storm water permits.
- Provide comment on environmental documents, modify permits, and generally promote concerns for maintaining stream channel form and function.
- Assess spill contingency planning and compliance on aboveground storage tanks.
- Coordinate activities with local agencies and groups.
- Pursue post construction storm water management to improve water quality and flood control.

Nonpoint Source Issues

Current Activities

- Use education, outreach and enforcement of Basin Plan provisions to reduce or eliminate nonpoint source discharges from hillside vineyard development and other agricultural operations.
- Expand the outreach and enforcement activities on hillside vineyards including further development of interagency coordination and cooperation.
- For erosion problems, blatant violations of the Basin Plan are addressed through increased enforcement.

- Continue to work with animal facility operations to develop and implement improved animal waste management practices.
- Maintain the effective individual on-site waste disposal system program described in the Basin Plan and promote reasonable resolution of localized problems.
- Support the Sonoma County's hillside vineyard ordinance that addresses the issue of erosion and sediment discharges from hillside vineyard development.
- Support the Marin County RCD and Southern Sonoma County RCD and Natural Resource Conservation Service efforts to address erosion and mass wasting (landslides) sediment issues in the Stemple Creek watershed with education, outreach and grant assistance.
- Continue to review timber harvest operations in coordination with the California Department of Forestry for control of sediment discharges.
- Monitoring for compliance with water quality objectives associated with timberland activities in key areas (e.g., Jenner Gulch).
- Continue the restoration of portions of Santa Rosa Creek.
- Monitor for MTBE in Lake Sonoma and Lake Mendocino.
- Screen for xenobiotic estrogens by using vitellogenin testing of fish under SWAMP. Monitor for toxic chemicals through coordination with the SWAMP rotation in FY 2004-05.
- Conduct a pathogen source analysis on the mainstem and tributaries.
- Post, on the Regional Water Board web site, the results of summertime bacteriological sampling at swimming beaches conducted by the county health department with the Regional Board's assistance.
- Continue working with the Sonoma Land Trust on mitigation projects for restoration in the lower Russian River and Bodega Bay areas.
- Under the Sonoma County Water Agency contract, monitor aluminum and temperature in the mainstem and tributaries, especially the East Fork and at gravel mining areas near Healdsberg.

Additional Needs

- Volunteer monitoring should receive additional attention.
- Promote additional outreach and enforcement where appropriate for road maintenance and sediment control, agricultural operations, implementation of best management practices and pollution prevention at commercial and industrial facilities, and new development of hillside vineyards.
- Seek funding for additional assessment of semi volatile, volatile, and metal pollutants in Laguna de Santa Rosa tributaries.
- Participate in the Regional Committee for Critical Coastal Areas to protect Critical Coastal Areas and promote Critical Coastal Area Action Plans and implementation of CCA projects

GOAL 2: Protect and maintain ground water quality and quantity for the beneficial uses of domestic, municipal, agricultural, and industrial water supply uses.

The discharges to ground water from underground and above ground tanks, wrecking yards, maintenance yards, septic systems, landfills, herbicide and pesticides applications, dairies, illegal disposal sites, and other agricultural and industrial facilities have resulted in contamination and degradation of ground water. Sonoma County relies heavily on ground water as a domestic supply. The extent to which some ground water

contamination areas affect surface waters is not well known, but several toxic sites are documented as affecting nearby streams with contaminated ground water.

Point Source Issues

Current Activities

- Continue with pollution prevention activities to promote the continuing development and application of best management practices for storage, treatment, and disposal of hazardous substances, storm water pollution prevention controls, solid waste, dairy waste, municipal waste water, agricultural and domestic and industrial wastes.
- Continue to address the sites that have the highest ground water contamination, greatest risk to the beneficial ground water uses and greatest risk to drinking water sources.
- Assist City of Sebastopol in a source water protection program and continue efforts at source control for the ground water contaminated with solvents and petroleum products.
- Coordinate with local agencies to protect ground water, assess effects of gravel mining and other land use activities on local water tables, and assess impacts of industrial and agricultural chemicals in the ground water.

Additional Needs

- Expand source water protection programs to areas beyond Sebastopol.
- Evaluate local program efforts for eliminating Class V injection wells and unpermitted discharges to the subsurface. Promote eliminating Class V wells and coordinate with US EPA on identifying locations of other Class V wells in the WMA.
- Provide needed enforcement follow-up on unpermitted discharges.
- Expand cleanup efforts to address Priority II and III SLIC dischargers. Expand assessment program for determining sources of polluted well contamination.
- Pursue innovative approaches to funding ground water and volunteer monitoring efforts.

Nonpoint Source Issues

Current Activities

- Maintain the Regional Water Board and County of Sonoma's and County of Mendocino's individual waste disposal system programs and promote reasonable resolution of localized issues.

Additional Needs

- Promote the continuing development and application of best management practices for storage, treatment, and disposal of hazardous substances, storm water runoff, solid waste, dairy waste, municipal wastewater, agricultural, and industrial wastes.
- Coordinate with local agencies to protect ground water, assess effects of gravel mining and other land use activities on local water tables, and assess impacts of industrial and agricultural chemicals in the ground water.
- Coordinate with other agencies and groups regarding ground water issues and funding.
- Establish a monitoring network in high risk/high ground water use areas.

- Determine source of pollutant discharges from ground water-to-surface water pathway.
- Assess nonpoint source impacts of Sonoma County Central Landfill on Stemple Creek.

GOAL 3: Protect/enhance coldwater fisheries

The historic anadromous fishery is in decline due to a combination of factors, including dams, siltation, loss of habitat, low tributary flows, high tributary temperatures, and other factors. The condition of water resources with respect to maintaining and enhancing those uses is being addressed by other agencies, however the Regional Water Board shares responsibility for determining the level of attainment.

Point Source Issues

Point source issues are addressed in Goals 1 and 2.

Nonpoint Source Issues

Current Activities

- Under contract to the Sonoma County Water Agency (SCWA), the adequacy of water quality objectives and the current regulatory structure in attaining federal Endangered Species Act requirements for threatened salmonids will be evaluated. Included in the analysis was an evaluation of existing data for compliance with water quality objectives related to fisheries.
- Propose changes to water quality objectives for water temperature, dissolved oxygen, sediment, and aluminum, and take those changes, as well as implementation plans, to the Regional Board for their consideration.
- Under the SCWA contract we also established monitoring protocols to detect any changes in water quality.
- Develop a database of mitigation and enhancement activities that could influence the changes in water quality objectives for listed and unlisted species, and enhance the quality of surface water for the benefit of listed and unlisted species.
- The Russian River water quality model is being refined under the SCWA contract and used in scenario analysis of flow changes associated with the Section 7 consultation. It will be used for evaluating discharge effects on water quality as well.
- The SCWA has proposed a watershed data gathering, analysis, and information system for Sonoma and Marin counties. That system will include the Russian/Bodega WMA and play a significant role in FESA-listed salmonid recovery planning.
- Continue to review timber harvest operations.
- Continue to work with the dairy industry to promote management practices that protect water quality.
- Support the Marin and Southern Sonoma County RCDs erosion control efforts in the Stemple Creek watershed.
- Maintain current involvement in the Russian River Watershed Council.
- Continue outreach and interagency coordination and cooperation to the grape growing industry to reduce impacts of vineyards on water resources, especially the anadromous fishery.
- Continue to coordinate with local agencies/groups in the support of local non-regulatory, cooperative efforts for erosion/sedimentation controls.

- Continue to coordinate with the Division of Water Rights regarding water supply issues and the decline of summer flows.
- Continue to work with the SCWA on channel maintenance activities.

Additional Needs

- Promote additional outreach and enforcement where appropriate for improved road maintenance and sediment control on rural residential roads.
- Continue to expand efforts to conduct additional outreach and enforcement to promote control of soil erosion and riparian habitat reduction by conversion of hardwood and coniferous forest to hillside vineyard.
- Promote habitat/riparian restoration in existing agricultural areas.
- Promote restoration, enhancement, and maintenance of riparian areas through grant funding, public education and outreach, and coordination and assistance to other agencies and groups.
- Implement and enforce best management practices for nonpoint source regulation; react to complaints and conduct enforcement.
- Evaluate the sediment data collected by the US Geological Survey for the Russian River with respect to erosion and sedimentation issues and the anadromous fishery.
- Evaluate and pursue methods for evaluating sediment sources (e.g., satellite imagery, aerial photography).
- Pursue innovative approaches to funding and volunteer monitoring.
- Monitor for toxic chemicals in water, sediment, and tissue.
- Coordinate with California Department of Fish and Game in their salmonid restoration activities.
- Increase coordination with the local planning agencies.
- Promote awareness of the effects of increased erosion on channel morphology.
- Promote development and adoption of a county grading ordinance.

GOAL 4: Protect/enhance warmwater fisheries

The protection and enhancement of warm water fisheries and ecosystems (beneficial use WARM) also is important in the Russian/Bodega WMA. The Laguna de Santa Rosa may be re-listed for dissolved oxygen and nutrients because recent water quality indicates they are still a problem.

The issues and actions overlap significantly with those for coldwater habitat and are not restated here.

GOAL 5: Protect aquatic life and public health in Bodega Harbor

Bodega Harbor supports the following beneficial uses: REC-1, REC-2, COMM, COLD, MAR, WILD, MIGR, SPWN, AND SHELL. The local sewage treatment plant, marina and dry dock operations, and storm water runoff from agricultural, urban, and industrial sites threaten those uses to varying degrees.

Point Source Issues

Current Activities

- Inspect the marina and dry dock operations, and the dredge-tailing site.
- Inspect and update Waste Discharge Requirements for Bodega Harbor Wastewater Treatment Plant.

- Work with the Army Corps of Engineers on their Bodega Harbor dredging proposal.

Additional Needs

- Review and inspect selected industrial and construction storm water permit holders.

Nonpoint Source Issues

Current Activities

- Continue working with individual agricultural operations to improve management practices.
- Continue cooperative investigations with the Sonoma County Department of Environmental Health and the Bodega Marine Laboratory regarding high bacterial levels at Campbell Cove and Doran Park beaches. Look into DNA analysis to identify source species.

Additional Needs

- Evaluate the extent of complex organic contamination in sediments in Bodega Harbor.
- Determine the need for cleanup and begin cleanup action.
- Develop a monitoring program for the Bay, including water, sediment, and tissue monitoring.
- Eliminate discharges currently not under permit or other regulation.
- Determine sources and extent of sedimentation in Cheney Gulch and refer concern to Sonoma County Planning Department or other responsible agency.
- Work with agricultural, and other runoff discharges, primarily through grant-funded projects, volunteer monitoring coordination, and public education and outreach; conduct enforcement.
- Improve agency coordination regarding runoff issues and marina and dry dock operations; encourage the pursuit of grants.
- Participate on the Regional Committee to develop a Critical Coastal Area Action Plan and projects to protect the Critical Coastal Area Bodega Marine Life Refuge.

GOAL 6: Objectives attainment in the Laguna de Santa Rosa

High ammonia concentrations threaten aquatic life in the Laguna, as do frequent events of low dissolved oxygen. The 1995 TMDL and a waste reduction strategy (WRS) require revision to fine-tune the estimates and goals. Implementation monitoring documents an improvement in nitrogen concentrations to the point of meeting the interim instream goals for nitrogen. Dissolved oxygen appears to be largely dependent on internal processes in the Laguna and requires further investigation to support revision of the TMDL and strategy.

Point Source Issues

Current Activities

- Maintain NPDES permit oversight for the dischargers to the Laguna.

Additional Needs

- Evaluate load estimates for point source discharges.

- Revise load estimates and the WRS to more accurately reflect conditions in the Laguna and status of dischargers.

Nonpoint Source Issues

Current Activities

- Continue to implement the plan for reduction of nutrient and organic matter loading; maintain liaison with RCDs and Sonoma-Marin Animal Waste Committee.
- Continue to promote restoration and enhancement of riparian areas.
- Expand the hillside vineyard outreach program to educate vineyard landowners of best management practices and conduct enforcement activities to address erosion from hillside vineyards.

Additional Needs

- Coordinate activities with other agencies and groups, using cooperative, non-regulatory programs.
- Work cooperatively with agricultural and other runoff discharges; conduct enforcement.
- Encourage the maintenance of riparian vegetation along the banks of streams.
- Revise load estimates and the WRS to more accurately reflect conditions in the Laguna and status of nonpoint source loads.
- Continue to expand effort to identify erosion and sediment sources and potential sources related to new development of hillside vineyards
- Expand outreach on best management practices for hillside vineyards, including further development of interagency coordination and cooperation on addressing erosion problems.

GOAL 7: Stemple and Americano Creeks Waste Reduction Strategies

This goal provides for the continued implementation of a waste reduction strategy for the Stemple Creek watershed to meet dissolved oxygen and ammonia objectives. It will be used as a model for Americano Creek in the future. For that reason, only the Stemple Creek activities are described below.

Point Source Issues

Current Activities

- Continue regulatory oversight of the Sonoma County Landfill.
- Continue investigation of the US Coast Guard Petaluma Training Facility Wastewater Treatment and Disposal Facilities and wet weather operational problems.

Additional Needs

- Investigate the impacts to ground water by petroleum products and other toxic materials from leaky underground tanks and any other sources.
- Work with the US Coast Guard Petaluma Training Facility on leaky underground tanks and other sources.
- Work with dairies on strategies for reducing water quality impacts from these operations.

Nonpoint Source Issues

Current Activities

- Continue on-going data analysis and water quality data collection.
- Continue to encourage the maintenance of riparian vegetation along the banks of streams.

Additional Needs

- Coordinate with the RCDs on public participation and in compiling land use information to support a watershed runoff model.
- Implement and enforce best management practices for nonpoint sources, including work with agricultural, and other runoff discharges; conduct enforcement.
- Investigate the nonpoint source impacts of the Sonoma County Landfill on the surface water and ground water in the Stemple Creek watershed.
- Participate in the Regional Committee to develop Critical Coastal Area Action Plans and promote projects in the Critical Coastal Areas Estero Americano and Estero de San Antonio

GOAL 8: Water Rights Coordination

Water use in the WMA has increased over the years, with competing demands among agriculture, domestic, and wildlife/fishery uses creating conflict over availability. Concern has been expressed regarding excessive summer diversions and temporary diversion structures impacting salmonid resources in Russian River tributaries. We are increasing our coordination with the state Division of Water Rights and reviewing water rights permits for water quality concerns. The issues associated with water diversions are covered under GOAL 3.

GOAL 9: Assessment of Salmon Creek and other tributaries

Little is known about the water quality condition of the coastal tributaries between the Russian River to the north and Americano Creek to the south. Concerns have been raised by the public regarding sedimentation, water temperature, nutrients, and salmonid habitat values. This goal provides for water quality monitoring and water quality problem assessment in Salmon Creek and other coastal tributaries.

Current Activities

- Actions associated with this goal are contained in Goal 3.

Additional Needs

- SWAMP is scheduled for FY 2004-05 to perform water quality sampling but lack of resources preclude cursory watershed assessments for Salmon Creek and Cheney Gulch as well as other coastal tributaries south of the Russian River such as Stemple and Americano Creeks.

Other More General Additional Needs for the Russian/Bodega WMA

- Identify ways to speed up permit process with other agencies
- Seek funding for additional needs

- Promote incentives for landowners
- Use focus groups to address specific issues or geographic areas
- Maintain a database of projects and actions, possibly with a GIS component
- Promote grants for improved watershed health

IMPLEMENTATION STRATEGY

The general emphasis in this watershed is to; enhance interagency and public coordination, protect existing uses, continue to implement and improve existing permitting programs, clean up contaminated ground water, implement preventative point and nonpoint source programs to protect surface and ground water, assess, monitor, and improve the biotic health of the system, reduce nutrient and sediment loading in selected sub-watersheds, and support efforts to improve the channel and riparian areas. The Regional Water Board plans to accomplish these goals through increased efforts at assessing and evaluating compliance with water quality objectives through reviewing self monitoring reports, conducting compliance inspections and updating permits on a regular cycle. Staff will continue to respond to complaints regarding unpermitted discharges and violations of permit conditions.

Assessment

Focus will be on assessment efforts on identified concerns regarding; objectives attainment (e.g., dissolved oxygen, bacterial quality, sedimentation), biological health (e.g., presence of xenobiotic estrogen responses in fish, benthic macroinvertebrate populations), evaluation of Basin Plan water quality objectives regarding federal Endangered Species Act (FESA) compliance (e.g., dissolved oxygen, temperature), ground water quality, and surface water quality and watershed modeling to assess the relative importance of various factors to changes in water quality. The biennial Water Quality Assessment under Clean Water Act section 305(b) will be supported by the assessment and monitoring activities, including listings for section 303(d). See http://www.krisweb.com/ for information and data.

Monitoring

Water quality monitoring efforts will be focused on maintaining four long-term monitoring stations in the Russian River watershed, TMDL confirmation monitoring in the Laguna de Santa Rosa, and expanding the temperature monitoring consortium for the watershed to include other water quality parameters. Those activities will be funded through the SWAMP http://www.waterboards.ca.gov/northcoast/programs/swamp.html. SWAMP rotated into to the Russian River watershed in FY 04-05 and in addition to the four permanent trend-monitoring stations, thirteen rotating stations have been added. The SWMP monitoring is being coordinated with the Sonoma County Water Agency and USGS below Dry Creek and with the Sotoyome RCD in Austin Creek. Activities also include ground water quality assessment, and public participation. Specific monitoring for pathogens will continue in the Russian River and Santa Rosa Creek as a result of the identification of bacteria problems in these watersheds. Additional options considered for improved and enhanced monitoring include; the establishment of long-term photo records, fostering voluntary monitoring by individuals and watershed groups; reviewing the USEPA Rapid Bioassessment Protocol, providing spatial analysis of surface and ground water data, and increased coordination with local universities and the UC Extension Service for education and outreach. Additional monitoring and assessment needs are provided in Appendix 2.1-B.

Core Regulatory
The Regional Water Board will continue to support the core regulatory program to the extent feasible based on available resources, and program and water quality priorities. Priorities and expected workloads are contained in annual program workplans developed each year by State and Regional Board staffs. Federal storm water permitting programs that address the control of pollutants contained in storm water runoff from industrial, municipal and construction sites are being implemented. Construction projects involving total ground disturbance of one acre or more are required to implement appropriate BMPs to control pollutant discharges during construction. A municipal NPDES storm water permit has been issued to the City of Santa Rosa/SCWA and the County of Sonoma requiring them to conduct activities aimed at reducing pollution due to the City's storm water discharges. Phase II of the storm water program will require that several smaller municipalities as well as state and federal facilities obtain municipal storm water permits. In addition, the SWRCB has issued a statewide municipal NPDES storm water permit to the California Department of Transportation (CalTrans) requiring the agency to control storm water runoff from their transportation system. Regional Board staff is responsible for enforcing this permit for CalTrans discharges within this Region.

Ground water
Cleanups related to the leaky petroleum underground storage tank program, Superfund program, and other ground water remediation programs will continue for any new and all existing ground water contamination sites. The PCE contamination at West College Avenue and Clover Drive in Santa Rosa is an example of a high priority clean up site because of domestic drinking water wells in the vicinity. Continued public outreach and education regarding hazardous waste handling and the potential for ground water contamination is a priority in preventing future problems. The Source Water Assessment Program administered by the California Department of Health Services may provide additional water quality protections for both ground water and surface water supplies.

Water Quality Certification
The watershed is seeing a considerable increase in projects involving dredge/fill within waters of the US including surface water and wetlands. Most of these projects are a result of development related impacts in the Santa Rosa plains. Staff is responsible for ensuring that these projects comply with all applicable state standards, including the State's "no net loss" policy for wetland impacts. State certification (401 Certification) is required by provisions of the Clean Water Act (CWA) in order for federal CWA section 404 permits to be issued. Adequate staff funding is needed to completely implement the 404/401 programs. Staff continues to pursue innovative approaches to assure appropriate review and certification of all projects. High priority projects (those with a potential for adverse impacts) will continue to receive a complete review.

Nonpoint Source Program
The long-term goals of this program are described in the Introduction section of this document. Specifics regarding this WMA include:

- Continue promoting best management practices in the dairy industry and other agricultural operations thorough coordinated outreach and education with local agencies and watershed groups regarding land use effects on water quality,
- Assisting the local Resource Conservation Districts (RCDs) and other agencies with CWA section 319(h), and Water Bonds (Propositions 13, 40 and 50) projects to address riparian issues, sedimentation, and nutrient discharges,

- Addressing forestry issues under the Management Agency Agreement with the California Department of Forestry. When appropriate, monitoring and reporting programs may be issued to achieve compliance with the Basin Plan,
- Assisting in the continuing implementation of the *Total Maximum Daily Load and Attainment Strategy for the Stemple Creek Watershed*, and for the *Laguna de Santa Rosa Watershed,*
- Expanding the outreach program to educate hillside vineyard landowners of best management practices for prevention of increased sedimentation of waters of the State and protection of the beneficial uses of water, and conducting enforcement activities as needed to address erosion from hillside vineyards. Continuing outreach activities intended to assist in project development, water quality improvement and continued monitoring and assessment, and
- Education and outreach are addressing nonpoint source waste discharges from the dairy industry and other agricultural operations.
- Complete development of the Sediment TMDL Implementation Policy and the Regional Sediment Basin Plan Amendment (see Section 3, Regional Activities).

Additional nonpoint source program detail is provided in Appendix B.

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. 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.

Water Quality Planning
The Basin Plan review process assists in identifying issues that may affect the Russian/Bodega WMA, including the following:

- Evaluate numeric and narrative dissolved oxygen, and temperature objectives,
- Consider numeric and narrative objectives for nutrients and aluminum,
- Establish fish habitat criteria,
- Review nonpoint source control measures,
- Develop a comprehensive action plan for the Russian River,
- Review water quality impacts from gravel mining, and
- Evaluate cumulative impacts
- Evaluate wetland and stream system protection measures

Local Contracts/Agreements
The Regional Water Board will continue active involvement in the Clean Water Act sections 319(h) grant program and the Water Bond grant programs, as well as promoting other programs like the California Department of Fish and Game programs.

Evaluation and Feedback
Implementation progress will be reviewed annually, and adjustments made to the next year's work based on that review. Additionally, an evaluation of the progress and process will occur at the end of a five-year cycle. The evaluation may result in changes to the overall program, and the Regional Water Board may be able to apply discretionary funding to priority work efforts on a watershed basis.

BUDGET

The Regional Water Board will attempt to fund the highest priority actions as identified in each WMA to the extent funding constraints allow, and will pursue additional funding for those actions not currently addressed.

APPENDIX 2.1-A
Stakeholders

Partial list of agencies and groups in the Russian/Bodega WMA

United States
Environmental Protection Agency
Army Corps of Engineers
Geological Survey
National Biological Service
Fish and Wildlife Service
National Marine Fisheries Service (NOAA Fisheries)
Natural Resources Conservation Service

Native American
Pomo Basket Weavers
Yakima

California State
California Environmental Protection Agency
Department of Fish and Game
Department of Health Services
Department of Pesticide Regulation
Office of Environmental Health and Hazard Assessment
Department of Toxic Substance Control
Department of Water Resources
California Coastal Conservancy
UC Agricultural Extension
Hopland Research and Extension Center
California Coastal Commission
Department of Parks and Recreation

Sonoma County
Water Agency
Planning Department
Department of Environmental Health
Agricultural Commissioner's Office
Redevelopment Agency
Economic Development Board
Open Space District

Mendocino County
Water Agency
Planning Department
Department of Environmental Health
Agricultural Commissioner's Office

Local Agencies
City agencies
    planning departments
    public works departments
North Marin Water District
Resource Conservation Districts
    Mendocino County RCD
    Sotoyome RCD

Goldridge RCD
Southern Sonoma County RCD
Marin County RCD
Mendocino Water Supply and Flood Control District
local water districts - numerous
Santa Rosa Waterways Plan
Santa Rosa Creek restoration activities by local agencies
Eel/Russian Commission

Public Interest Groups
Green Valley Creek Watershed Advisory Group (WAG)
Laguna de Santa Rosa Foundation
Laguna Coordinated Resource Management and Planning (CRMP) Task Force
Farm Bureau
Western United Dairymen
United Winegrowers
Stemple Creek WAG
Russian River Watershed Protection Committee
Friends of the Russian River
Russian River Alliance
Vernal Pool Task Force
Environmental Resource Council
Sonoma County Taxpayers Association
Trout Unlimited
Salmon Unlimited
Citizens for Cloverdale
Committee for Sensible Reuse
Surfrider Foundation
Citizens Cleanup Committee
Southwest Area 2000
Roseland Action
Russian River Watershed Council
West College Avenue Citizens Group
Russian River Watershed Alliance
Russian River Watershed Association
Salmon Creek Watershed Council
Santa Rosa Creek Association
Forest Unlimited
McNab Creek Watershed Group
Community Clean Water Institute
Sonoma Ecology Center
Sequoia Paddling Club
Sonoma County Conservation Action
Sonoma County Wetlands Watch
Coastal Land Trust
Redwood Creek Neighborhood Association
Occidental Arts and Ecology
Atascadero/Green Valley Watershed Association
Blucher Creek Watershed Council
Committee for Restoring Santa Rosa Creek
Cunningham Marsh Preservation Committee

Dutch Bill Creek Watershed Group
Friends of Copeland Creek
Friends of the Esteros
Greenbelt Alliance
Mark West Creek Preservation
Friends of Mark West Creek

APPENDIX 2.1-B

Monitoring and assessment needs for the Russian/Bodega WMA.

The prioritized monitoring and assessment activities below support testing hypotheses about support of beneficial uses MUN, REC1, COLD, RARE or provide assessment information essential for program implementation. They are currently unfunded.

The estimates are Regional Water Board needs on a per year basis with desired fiscal year implementations identified.

1. **Coordinated Monitoring and Assessment - $40,000 (0.3PY + $10,000)**
   A consortium of monitoring agencies and groups has not yet been established to coordinate discharger self-monitoring, receiving water monitoring, storm water monitoring, fish habitat assessments, flow monitoring, existing long-term water quality stations (4), agricultural chemical use, and special investigations like estrogenic endocrine disruptor screening. Regional Water Board permits will be coordinated to provide the most ecologically significant, efficient, and effective monitoring strategy for the WMA. It is hoped that the efforts of the NMFS, RRWC, and SCWA to develop information systems will promote coordination.

2. **TMDL Assessments - $50,000 (0.3PY + $20,000 lab)**
   Continued assessment of water quality, especially nutrient and dissolved oxygen relationships is required by the Laguna and Stemple TMDL waste reduction strategies. The City of Santa Rosa and some local groups are performing chemical monitoring in both streams and the SCWA will deliver some of the analysis, but the Regional Water Board must continue to oversee the program and investigate nutrient and dissolved oxygen problems.

3. **Ocean tributary assessments - $40,000 (0.2 PY + $10,000 lab)**
   Water quality assessments of streams tributary to the ocean excluding the Russian River are needed to determine general water quality and to serve as the basis for addressing problems associated with land uses in the watersheds, including Salmon Creek, Cheney Gulch, Americano Creek. The intend is to address this with the SWAMP rotation in FY 04-05.

4. **Spatial Data Assessment - $45,000 (0.4 PY)**
   A number of dischargers and programs are collecting surface and ground water information in the WMA. Spatial assessment of those data would provide a picture of problems associated with groundwater and storm drain contamination and groundwater to surface water connections, as well as providing direction for developing a coordinated multi-agency approach to monitoring and assessment in the WMA.

The Russian River watershed is 303(d) listed for sedimentation. Further assessment of existing data and collection of new information is needed to develop strategies (TMDLs) for reducing erosion and sedimentation of tributary spawning and rearing streams. The NMFS, RRWC, and SCWA efforts should begin to address watershed assessment needs from a spatial scale, assisting in the assessment of sediment sources.

5. **Sediment TMDL Development - $750,000 (2 PY + $500,000)**
   Once assessment is completed a TMDL will need to be developed to identify sources and estimate loading from sediment sources in the watershed by FY 09-10.

6. **Sediment TMDL Implementation - $160,000 (1 PY + $50,000)**
   TMDL implementation will require development and adoption of a Basin Plan amendment, estimated to take two years to develop and another year for adoption. Continued implementation will require constant oversight and monitoring for the foreseeable future (at least 20 years).

7. **Chemicals in POTWs - $52,000 (0.2 PY + $30,000)**
   Petroleum products, including solvents, MTBE, and gasoline, as well as pesticides should be sampled in the influent and effluent of POTWs. MTBE, gasoline components and pesticides were sampled in 2000.

8. **Bodega Harbor Sediment Contamination - $155,000 (0.5 PY + $100,000)**
   Sources of contaminants in Bodega Harbor sediments identified with the Bay Protection and Toxic Cleanup Program need additional assessment and focused cleanup efforts.

9. **Ground Water Quality Network**
   Water quality monitoring of ground water is needed for toxic chemicals at stations throughout the WMA.

Surface Water Monitoring Program

Water quality monitoring efforts will be focused on maintaining four long-term monitoring stations in the Russian River watershed. Funded by the SWAMP program TMDL confirmation monitoring in the Laguna de Santa Rosa, and expanding the temperature monitoring consortium for the watershed to include other water quality parameters may also be included. Activities also include ground water quality assessment and public participation. During FY 04-05 the Russian River will be intensively monitored with 13 rotating stations in addition to the four permanent stations.

Additional needs in the smaller watersheds in the Bodega Unit including monitoring in the Stemple Creek watershed, and monitoring and assessment in the Americano Creek, Cheney Gulch, and Salmon Creek watersheds. These watersheds will be addressed in the SWAMP rotation in FY 2004-05 if resources allow. Additional options considered for improved and enhanced monitoring include; the establishment of long-term photo point monitoring records; fostering voluntary monitoring by individuals and watershed groups; reviewing the USEPA Rapid Bioassessment Protocol; providing spatial analysis of surface and ground water data; and increased coordination with local universities and the UC Extension Service for education and outreach. In addition, the Sonoma County

Water Agency as part of the Roseland Action Plan has funded domestic well sampling in the McMinn Superfund area for the next five years.

Other Monitoring Activities

The Regional Water Board is involved in a number of other programs that are focused in nature, providing useful information on specific issues or areas:

Water temperature monitoring- Russian River

The Regional Water Board is coordinating temperature monitoring in the Russian River watershed with the City of Santa Rosa, the Sonoma County Water Agency, and the California Department of Fish and Game. Station locations are discussed in the spring of each year, and specific protocols are agreed upon for data logger deployment, sampling frequency, and data logger retrieval and data downloading. The intend is to expand that cooperative effort into other interested parties in the future.

MTBE monitoring – Lakes Sonoma and Mendocino

Under a now expired SCWA contract both reservoirs and their outlets were sampled for MtBE on a monthly basis during the summer recreation season at a number of sites and through the water column. A yearly report was produced each winter that details the findings.

Diel sampling – Russian River

The Regional Water Board performs round-the-clock monitoring a few times a year for dissolved oxygen, pH, temperature, and conductance at several sites along the mainstem Russian River to support refinement of the Russian River water quality model. Nutrient samples are taken at specific intervals during the sampling periods.

Bacterial investigations – Bodega Harbor

The Sonoma County Department of Environmental Health monitors bacterial quality of beaches in the county under the SWRCB's Coastal Monitoring Program. High bacterial levels at some beaches in the Bodega Harbor area caused further investigation, including increased sampling frequencies and soliciting the assistance of the Bodega Marine Laboratory in investigating sources. Several potential sources exist and DNA analysis will be done to determine the most likely sources. The Sonoma County Department of Environmental Health has a State Water Resources Control Board Clean Beaches grant to investigate sources using circulation studies and bacterial examinations employing DNA speciation.

Jenner Gulch Turbidity Monitoring

In conjunction with the Sonoma County Department of Transportation and Public Works, Regional Water Board staff conducts turbidity monitoring in Jenner Gulch to assess the potential impacts to the domestic water system for the community of Jenner. High turbidity levels have been known to cause the treatment plant to shut down operations. Potential sources include up-slope land management activities, especially associated with timber harvest operations and logging road conditions.

West College Avenue Ground Water Monitoring

Using Cleanup and Abatement Account funds, the Regional Water Board staff samples domestic wells in the West College Avenue at Clover Drive area of Santa Rosa, and is performing a hydrologic assessment in the area.

McMinn Superfund Area Ground Water Monitoring

Using funds from the Roseland Plan of Action program, the Regional Water Board staff samples domestic wells in the southwest area of Santa Rosa.

SECTION 2.2

KLAMATH WATERSHED MANAGEMENT AREA

The following discussion draws upon knowledge obtained through public input, agency contacts, and the personal experience of Regional Water Board staff. This document presents a summary of knowledge regarding water quality issues and the existing and planned actions at this time.

MANAGEMENT AREA DESCRIPTION

The Klamath WMA includes several hydrologic units within 105.00: 105.10 (Lower Klamath), 105.20 (Salmon River), 105.30 (Middle Klamath), 105.40 (Scott River), 105.50 (Shasta River), 105.60 (Upper Klamath)), 105.80 (Butte Valley), and 105.90 (Lost River).

The Klamath River Watershed Management Area (most of that portion of the overall Klamath River Basin which is within the State of California) has been divided into three sub-basins: Lower Klamath, Middle Klamath and Upper Klamath (Figure 2.2-1). This division facilitates budgeting and it also helps recognize that the size of the overall basin, and its diversity in climatic and geologic facets and land uses affect water quality in different ways in different sub-areas of the basin. In addition to this segmentation of the watershed area within California, roughly half of the watershed is north (and mostly upstream) of the California-Oregon state border. The segment of the basin in Oregon has profound effects on the quality and quantity of the Klamath River in California. The Trinity River watershed, though within the overall Klamath basin, is not included in the Klamath River Watershed Management Area. Each sub-basin is described below.

The **Lower Klamath** subwatershed encompasses that portion of the Klamath River and its tributary watershed downstream from the Scott River to the Pacific Ocean (excluding the Trinity River), and is 2,564 square miles in area. Included in the watershed are the Salmon River, Blue Creek, numerous smaller perennial streams, and the Klamath River delta/estuary. The area is largely rugged, steep forestland with highly erodable soils. The population of the area is small and scattered. Water quality issues have arisen as a result of unauthorized discharges or inadequately treated residential sewage.

Water quality issues in the sub-basin are related to the salmonid-habitat qualities of the mainstem river and the effects to the tributaries of silvicultural activities on both federal and private lands. These issues include high summertime water temperatures, sedimentation, erosion, mass wasting and stream modifications that affect salmonid habitats, and forestland herbicide applications that threaten domestic water supplies.

Major land uses in the watershed include timber harvesting, grazing, dairies, and agriculture; gravel mining occurs in the river just outside the coastal zone. Pollutants contributed by agricultural land uses include nutrient loads (primarily from grazing, dairies, and irrigated agriculture in the upper watershed), bacteria, and sediment. In the middle to lower watershed, historic and current timber harvesting is a source of increased sedimentation. Active and inactive mines may also contribute metals.

The Klamath River and its delta and estuary are designated as a Critical Coastal Area. See Appendix C for more information on the Klamath River CCA and CCAs in general.

The **Middle Klamath** subwatershed is 2,850 square miles in area and encompasses that portion of the Klamath River and tributaries between the confluence of the Klamath and Scott Rivers and Iron Gate Dam. Included in the watershed are the mainstem Klamath River, the Shasta River and Scott River watersheds and lesser tributaries. The two major tributaries, the Shasta and Scott Rivers, receive localized precipitation as well as snow and glacial melt from nearby mountain ranges. The quality of water from Iron Gate reservoir, agriculture in the Shasta and Scott Valleys and silvicultural activities in the remainder of the drainage are the major issues. Other water quality issues are related to surface water and groundwater contamination from toxic chemical discharges in the Weed and the Yreka areas.

The **Upper Klamath** subwatershed includes watershed areas in California that are upstream of Iron Gate Dam. Many natural and human-altered watershed elements above Iron Gate and across the California-Oregon border affect the quality and quantity of water which exits Iron Gate Dam, supplies the mainstem flow and affects (both supports and jeopardizes) the beneficial uses of the river within California. The complexity of this sub-basin is magnified by jurisdictional issues associated with water-delivery/utilization infrastructures (including the Federal Klamath Project) irrigation, hydropower, endangered species, tribal rights, lake-level-management demands for Upper Klamath Lake, the waters criss-crossing the California-Oregon border, and minimum flow requirements in the Klamath below Iron Gate Dam. The Irongate fish hatchery has a NPDES permit. Considerable energy is being expended in State/Federal cooperative efforts to assist in resolving trans-border issues. While it is recognize that water quality assessment, planning, and management should be conducted with regard to the issues, the realities of the California-Oregon border and other jurisdictions color the perspective and intensify the issues.

Most of the Upper Klamath watershed area is in Oregon. The primary subwatershed in California is the Lost River watershed, which is 1,689 square miles in area. That subwatershed, which is about half in California and half in Oregon, encompasses Clear Lake Reservoir and most of its tributaries in California, the agricultural and contributing areas in Oregon, and, in California, the agricultural and wildlife-refuge areas which were once the bottom of Tule Lake and the Lower Klamath Lake. Ground water is now part of the surface water system, since numerous high production wells were brought online in

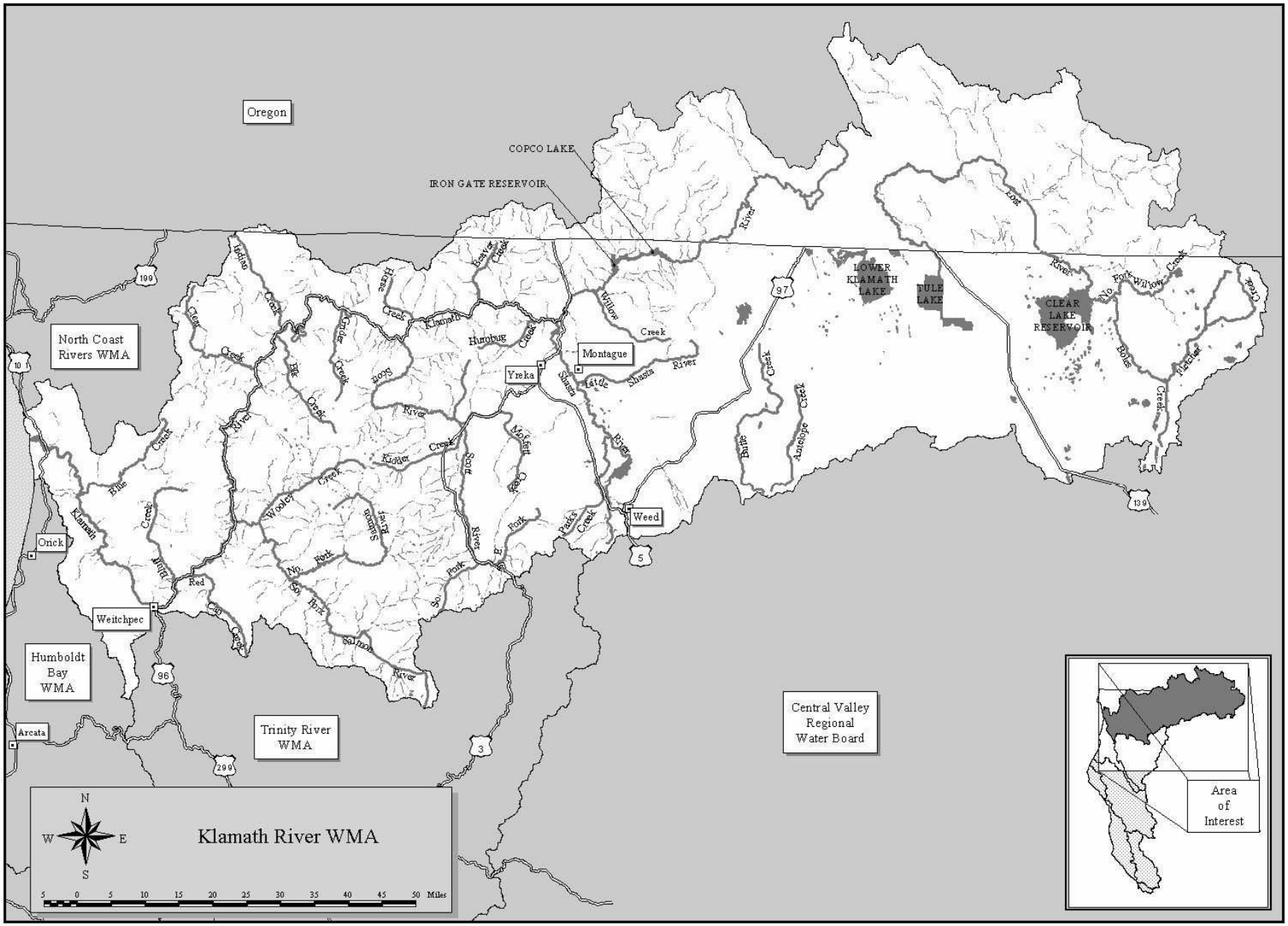


Figure 2.2.1. Klamath River WMA

2001 to augment surface flows. Additional wells were developed in 2001 and add to the surface water flow regime. The Regional Water Board expects to regulate these ground water discharges to surface water under the NPDES program.

Primary beneficial uses in the basin are domestic, agricultural and industrial water supply, cold and warm water fisheries, and recreation. The shortnosed sucker (*Chamistes brevirostris*) and Lost River sucker (*Deltistes luxatus*), native to the watershed, are listed as endangered under the federal Endangered Species Act.

Both Oregon and California have CWA section 303(d) issues of water quality impairment in the Lost and Klamath Rivers. A joint effort to reconcile the inconsistencies between the Oregon and California standards and addressing the nonattainments is under way. A primary element of that effort is to first define the roles of the various states' agencies in these interstate waterbodies.

ASSESSMENT AND PROBLEM IDENTIFICATION

Primary water quality issues in the Klamath WMA

- Salmonid habitat destruction
- High water temperatures
- Sedimentation of streams
- Soil erosion
- Mass wasting
- Hydromodiification
- Forest herbicide applications
- Low flows
- High nutrient levels
- Low dissolved oxygen

Upper Klamath subwatershed

Land uses and associated hydrologic and water quality factors in the Klamath basin change dramatically moving downstream through the watershed areas. The uppermost Lost River basin around Clear Lake, characterized by high desert stream systems, continues to be dominated by cattle grazing on both US Forest Service and private lands. The area is sparsely settled, with Clear Lake being part of the Klamath Basin National Wildlife Refuges. Land uses on the California side in the lower Lost River basin are primarily 1) crop agriculture such as grains, potatoes, and onions, 2) grazing, and 3) lands administered for the National Wildlife Refuge.

The Klamath River begins at the point where the outflow from Upper Klamath Lake is released through the modified natural channel known as Link River and also via hydropower systems, and then enters Lake Ewana. Keno Dam controls this lake. Below Keno the river flows through rugged canyon areas into California. It passes through the John Boyle hydropower structures along its way. Upon entering California, the Klamath River flows into Copco Reservoir, through its hydropower system and then into Iron Gate Reservoir. Dams created these reservoirs for power generation and to regulate flow regimes down stream. Permanent residences and cabins dot the shoreline of Copco Lake. Both cold and warm-water fishing are popular in the nutrient-rich waters.

Iron Gate Dam blocks upstream salmon migration at this point in the Klamath River. Iron Gate Hatchery is located just downstream of the dam.

Livestock which graze on public and privately owned lands adjacent to streams which flow to Clear Lake have free access to the streams, thus causing trampled banks (sediment discharge) and loss of riparian vegetation, nutrient release, increased water temperature and widely ranging temperature extremes. Unshaded, sediment laden eutrophic streams are poor-to-unsuitable habitat for RARE species; the severity of degradation to Clear Lake tributary streams varies by location, but Boles, Willow and Mowitz Creeks have been assessed and are receiving remedial efforts. Lost River below Clear Lake Dam in California is substantially impaired.

Drainage from agricultural lands and wetlands conveys nutrient rich, suspended particulate materials and dissolved materials into waterbodies that are long standing nutrient traps. Evaporation, transpiration, insolation and planktonic growth processes cause these waters to have very high nutrient levels, support very high plankton (algae) populations, and have widely swinging diel dissolved oxygen, pH and ammonia levels. The Tule Lake sump system is highly eutrophic with consequent low dissolved oxygen levels, high pH levels, high un-ionized ammonia levels, and high water temperatures. This water quality is perceived as impaired and may become or remain toxic to and uninhabitable by native fish species, including the ESA listed shortnose sucker and Lost River sucker. The question remains open whether irrigated agriculture and lake wetland modifications have affected this eutrophic condition to a measurable degree such that water quality beneficial uses are impaired.

For the Upper Klamath above Iron Gate Dam the Straits Drain contributes un-ionized ammonia and nutrient-rich suspended particulate materials which, in summer heat, contribute to the robust algae growth potential (eutrophication) of river flows which have been released from Upper Klamath Lake. The Drain discharge contributes to the nonattainment of desired water quality conditions in the river and is an issue to be addressed by Oregon in a TMDL process pursuant to Clean Water Act section 303(d). Possible remediation of the non-attainment should consider turnover time of water in the refuges, the timing and quantity of discharges to and from Klamath Straits Drain, and the quality of discharges to and from the Drain that can be accomplished within the primary wildlife protection mandates of the refuge.

Hydromodifications (dams, levees, irrigation diversion, and drain-water removal works) that have been constructed since 1860 in the basin upstream of Iron Gate Dam have resulted in:

- diminished dry season river flow rates,
- increased summer/fall water temperatures and impairments to WARM and RARE beneficial uses,
- arrested migration of anadromous fish,
- endangerment of fish species native only to this basin,
- development of an extensive agricultural community in Oregon and California, including the development of extensive private property on once underwater lake/marshes and once inhospitable canyon lands,
- development of extensive hydropower resources,
- preservation of managed migratory waterfowl refuges, and
- ground water augmentation of surface flows.

Middle Klamath subwatershed
The Middle Klamath Basin begins at Iron Gate Dam. The Shasta River confluence is downstream. The Shasta River Valley has a substantial cattle grazing industry on private lands irrigated extensively by streams in the watershed. Dwinnel Dam on the upper Shasta River controls stream flows for downstream irrigation, and the movement and distribution of water is complex. The City of Weed, which is supported by the forest products and tourist industries, is situated upstream of the reservoir. The Shasta River historically was the top salmon producing tributary in the Klamath River system. The small cities of Yreka and Weed are the primary centers of population.

The Scott River is the other major tributary in the Middle Klamath basin. It also has a substantial cattle grazing industry irrigated extensively from streams in the watershed. Silvicultural activities on both USFS and private lands dominate the steep, highly erodable watersheds flowing into the valley floor. The Scott River alluvial gravels were mined extensively in the 1800's. That activity and more-recent channeling for flood control altered its morphological characteristics dramatically. The Scott River also supports substantial salmon runs. Small towns in the valley such as Etna, Fort Jones and Callahan support the timber and grazing dominated economies. There has been concern expressed that too much water is being used by agriculture at the expense of maintaining instream flows to the extent necessary to maintain a viable salmonid fishery. Another concern is recreational instream suction dredging for gold at the confluence of the Klamath River and possibly in other locations.

Treatment plants in the watershed at Yreka, Weed, Montague, Shastina and Granada use a combination of oxidation and perk ponds. Due to a Cease and Desist Order, the treatment system in Yreka disposes of secondary treated water to subsurface leach fields that drain to Yreka Creek. Groundwater is being monitored. An unlined landfill near Yreka has been approved for 30 years, and poses no threat to the Shasta River. In Weed, the Roseburg Forest Products and the J.H. Baxter Paper Company are Superfund sites where treated groundwater is used to water log deck and adjacent fields. Monitoring occurs on Beaughton and Boles Creeks, and toxic substance monitoring (TSM) has occurred in the past.

Lower Klamath subwatershed
The Lower Klamath Basin below Scott River is characterized by mountainous terrain used extensively for silvicultural purposes on both USFS and private lands. Timber sales occur in the Klamath National Forest. Logging is particularly heavy on private corporate lands in the redwood region of the lower basin. The small communities along the Klamath are almost all timber-based. The Karuk and Yurok Tribes make their ancestral communities along the lower Klamath River, with fishing being an important part of their cultures. The Lower Klamath River recreational salmon fishery is popular. There has been both historic and recent mining activity on some of the tributaries such as Indian Creek. Abandoned mines are a concern in the Salmon River watershed that is a major tributary to the lower Klamath River. There is concern about recreational instream suction dredging for gold in the Salmon River. Timber related herbicide use on tribal lands and adjacent to tribal lands by private timber companies is a concern for the local tribes in the area. The Klamath River and its delta and estuary are designated as a Critical Coastal Area. The identified problems are sedimentation/threat of sedimentation, threat of fish population decline and impacts to fish. The pollutants are nutrients,

temperature, and sediment. The sources are industrial/municipal point sources, irrigated agriculture, surface mining, silviculture, and other nonpoint sources.

WATER QUALITY GOALS AND ACTIONS

The following goals and supporting actions reflect a synthesis of the problems and issues in the WMA and are the focus for water quality control activities.

- **Protect and enhance the salmonid fishery (mainstem and tributaries below Iron Gate)**
- **Protect and enhance warm water and endangered aquatic species**
- **Maintain the viability of agriculture and timber uses**
- **Maintain recreational opportunities**
- **Protect groundwater uses**
- **Protect Critical Coastal Areas**

Actions to support achieving those goals are arranged by individual sub-basins and/or watersheds due to the size of the WMA and the diversity of issues and jurisdictions. Accordingly, there is overlap in the actions among some geographic areas. The summary listing of actions is in priority order for all actions, with some distinctions based on geographic area, but largely incorporating geographic concerns in the prioritization.

Upper Klamath River Basin - Lost River Watershed

The current effort towards resolution of nutrient loading, high water temperatures and eutrophic streams is to continue to support USFS and Lava Beds RCD efforts to protect the streams by methods such as alternative watering sources and prescriptive and management measures such as stream sensitive grazing allotments, riparian plantings, and livestock exclusion (seasonal or year-to-year rotations). This support is currently accomplished through various grant programs.

The effort towards resolution is through monitoring and assessment of specific field drainages by the Tulelake Irrigation District (TID). This also can be supported through California's participation with the TMDL Committee established by the Oregon Department of Environmental Quality (ODEQ) for Klamath River and Lost River non-attainment issues. Remedial and restoration measures may include revised impoundment management (refresh stagnant lakes/sumps), enhance marsh/wetland functions to convert water borne nutrients and particulates into plants and soil, revised land/crop management to keep nutrients and particulates on cropland and in marketable biomass, and support for fish screening the canal and drain systems at strategic points to keep the fish in the streams and Tule Lake.

The following specific actions are aimed at addressing the issues and problems described above for the Lost River watershed, and are responsive to the broader goals to: 1) protect and enhance warm water and endangered aquatic species, and 2) to maintain the viability of agriculture:

- continue existing level of point source compliance and complaint inspections, including NPDES, underground tank, toxic site remediations, etc.,
- continue existing level of baseline water quality monitoring and investigation of pesticide and toxics issues,
- increase staff interactions with Bureau of Reclamation (BOR) and National Wildlife Refuges to document and understand influences of Klamath Straits Drain discharges

on downstream Klamath water quality and to address the issues of water quantity, conveyance, and timing in a manner that better protects water quality,
- increase staff interaction with ODEQ and TID on review of existing water quality objectives through the TMDL process and funding support for assessment of agricultural practices affecting water quality in Lost River and Tule Lake, and
- continue existing level of grant programs for stream restoration.

Upper Klamath River Basin - mainstem Klamath River above Iron Gate Dam, including reservoirs

The Lost River watershed contributes to a problem downstream in the mainstem Klamath River from the commingled drainage from agricultural lands and a wildlife refuge that is pumped from the area known as Klamath Straits and discharges into the Lake Ewana reach of Klamath River in Oregon. Water in Straights Drain has been used and retained in the Lower Klamath Wildlife Refuge in diked-off cells to benefit resident and migratory waterfowl. Cells are shallow areas of water that may sit for long periods of time. Because of the differences in timing of waters routed through the Klamath River/Lake Ewana system versus the Straits system and the concentrating processes that occur before water is pumped from the Straits, this drainage discharge is usually of much lower quality than the river.

Water in Copco and Iron Gate reservoirs becomes thick with algae in the summer months, leading to complaints about aesthetic conditions from the public. As part of the Federal Energy Regulatory Commission (FERC) process the effort towards resolution would be to encourage and support PacifiCorp and BOR efforts to determine if revised reservoir water management through the system would help alleviate the problem.

The following specific actions are aimed at addressing the issues and problems described above for the mainstem Klamath River in the Upper Klamath Basin, and are responsive to the broader goals to: 1) protect and enhance the salmonid fishery, 2) protect and enhance warm water and endangered aquatic species, 3) maintain the viability of agriculture, and 4) maintain recreational opportunities:
- significantly increase staff interaction with PacifiCorp, BOR, Klamath Compact Commission, USFWS, and CDFG working towards understanding water conveyance and flow scheduling as relates to water quality factors in the FERC and SWRCB water rights licensing processes,
- continue existing level of baseline monitoring, including multi-agency coordination of hydrolab stations in Oregon at JC Boyle and Keno Dams with emphasis on documenting water quality as it flows from above Klamath Straits Drain into Copco reservoir,
- begin SWAMP sampling of permanent station at Klamathon below Iron Gate Dam,
- increase staff interactions with ODEQ on review of common bi-state water quality objectives through the TMDL program, including California concerns regarding Klamath water quality meeting recreation standards,
- increase staff time spent interacting with USFWS for KRIS maintenance and use,
- increase staff interaction with residents of Copco Reservoir regarding summertime nuisance conditions, and
- continue existing level of grant program for stream restoration work.

Middle Klamath River Basin - mainstem Klamath River and Shasta and Scott River watersheds

The discharge from Iron Gate Dam can be at water temperatures considered detrimental to salmonids. The degree that reservoir management is a factor must be determined during the upcoming FERC re-licensing process. The effort at resolution of this issue may be through Regional Water Board input on water quality factors to the State Water Resources Control Board at it reviews and considers CWA section 401 certification of the FERC re-licensing process.

Silvicultural activities have historically had a significant and adverse impact on water quality beneficial uses of the Middle Klamath Basin. The effect has been impaired stream habitat from erosion and mass wasting, and consequent declining fisheries. New laws, regulations, and state and federal regulatory activities during the past 20 years have moderated these impacts during current logging and associated activities. The current resolution is continued Regional Water Board participation in the CDF Review Team process, review of sensitive federal timber sales, and monitoring overview of forest herbicide applications.

The Shasta River has high water temperatures and low dissolved oxygen at times during the summer. The Regional Water Board is developing TMDLs for dissolved oxygen and temperature that are due in 2004. There is a Technical Advisory Committee (TAC) consisting of state and federal agencies, local watershed groups, and interested parties that will help with a TMDL monitoring plan and land access. Cattle grazing affecting riparian habitat and bank stability, along with warm, flood irrigation return flow are the primary causes. The current effort towards resolution to this issue is to support local landowner efforts to restore riparian habitat and reuse irrigation return flow. The Yreka sewage treatment plant discharges to percolation ponds in the Yreka Creek flood plain. Evidence of leakage of those ponds directly into Yreka Creek has prompted staff to work with the City of Yreka on alternatives to percolation pond disposal of effluent. Contamination from sites in Weed and Yreka may contribute dioxins, metals, and MTBE to tributary streams. Additional assessment and monitoring may be required to assess the degree of impact and further cleanup and remediation efforts.

SWAMP has established four monitoring stations in the Shasta River watershed at Yreka Creek, Highway 263, Montague, and Edgewood. All four sites are being sampled for organics, inorganics, nutrients, low level metals and low level mercury, along with standard water quality parameters.

The Scott River has no flow in locations at times, and areas of high streambed sedimentation. Irrigation canals diverting large amounts of water and cattle grazing affect these issues. Upslope logging and road building on sensitive and highly erosive soils affect the latter. Current resolution includes supporting local landowner efforts towards alternatives to diverting large amounts of stream flow during the fall months, restoring riparian corridors to improve water quality, and reducing erosion sources to control stream sedimentation. Current field support comes through grant program activities. The Regional Water Board is developing a TMDL for sediment and for temperature for the Scott River watershed that is due in 2005.

The following specific actions are aimed at addressing the issues and problems described above for the mainstem Klamath River and its tributaries in the Middle Klamath Basin, and are responsive to the broader goals to: 1) protect and enhance the salmonid fishery, 2) maintain the viability of agriculture and timber uses, and 3) maintain recreational opportunities:

- continue existing level of point source compliance and complaint inspections on commercial timberland areas (federal and private),
- continue existing level of CDF Review Team meetings and inspections,
- issue waste discharge requirements (WDRs) or waiver of WDR for THPs
- continue existing level of review of USFS timber sales as well as other USFS projects,
- continue existing level of work with local community on sediment control in the upper Scott River watershed,
- continue existing level of forest herbicide application monitoring,
- continue existing grant program for stream restoration and nonpoint source control of agricultural, construction, and timberland in the Shasta, Scott, and Salmon Rivers, concentrating on those issues which affect water temperature and habitat, such as riparian corridors, irrigation water discharges,
- increase staff interaction with USFWS and CDFG towards determining specific temperature needs for fish in the mainstem below Iron Gate dam and in the Shasta and Scott Rivers using the FERC process to ensure adequate flows for fish migration and temperature maintenance,
- review grazing permits and practices for water quality compliance,
- increase baseline water quality monitoring, using SWAMP permanent stations at Klamath River at Klamathon, Klamath River near Empire Creek, Shasta River at the mouth, and Klamath River near Horse Creek,
- continue existing level of staff interaction with local watershed groups towards developing TMDLs in designated subwatersheds, and
- increase cooperation with the Division of Water Rights to evaluate water diversions and impacts to salmonids.

Lower Klamath River Basin

Silvicultural activities have historically had a significant and adverse impact on water quality beneficial uses of the Lower Klamath Basin. The effect has been impaired stream habitat from erosion and mass wasting, and consequent declining fisheries. New laws, regulations, and state and federal regulatory activities during the past 20 years have moderated these impacts during current logging and associated activities.

The following specific actions are aimed at addressing the issues and problems described above for the Lower Klamath Basin, and are responsive to the broader goals to: 1) protect and enhance the salmonid fishery, 2) maintain the viability of timber uses, and 3) maintain recreational opportunities:

- continue existing level of CDF Review Team meetings and inspections,
- continue existing level of review of USFS timber sales as well as other USFS projects,
- issue waste discharge requirements (WDRs) or waivers of WDRs for THPs
- increase staff interaction with private timber companies to develop long-term water quality monitoring programs,
- foster adaptive management based on water quality findings,
- begin monitoring of SWAMP stations at the Scott River at the mouth, Klamath River at Seiad Valley, and Klamath River at Weitchpec,
- increase level of forest herbicide application monitoring, and
- participate on the Regional Committee for Critical Coastal Areas to develop a Critical Coastal Area Action Plan and promote projects in the Klamath Critical Coastal Area.

IMPLEMENTATION STRATEGY

Significant strategy development and implementation for water quality protection and improvement are occurring in the management area through action by many agencies, tribes, and individuals. The actions are prioritized in recognition of shifting resources. As such, the implementation of actions to address issues and achieve water quality goals are flexible.

Clean Water Act section 319(h) grants supported the development of a Klamath River Information System (KRIS), a computerized database and data analysis tool. The KRIS system provides access to and analysis capabilities for a large body of water resource and land use information, valuable in making the multitude of management decisions necessary in this large and complex watershed.

The Water Quality Control Plan for the North Coast Region (Basin Plan) and this chapter recognize that the Klamath watersheds are culturally, climatically and geologically diverse. The watershed provides some of the highest quality water resources of the Region, yet it simultaneously produces some of the most challenging water resource conflicts. The Basin Plan contains specific water quality objectives for many index points within the Basin and it provides implementation programs to protect and enhance identified beneficial uses of water. The over-arching regulatory provision of the Basin Plan is its discharge prohibitions section, which prohibits direct waste discharge to all freshwater surface waters in this management area. The one exception to this prohibition results from the situation of City of Tulelake at a place that was once submerged by the waters of Tule Lake. This City is permitted to discharge its treated municipal wastes into the irrigation-drain system which eventually is pumped from the low point of the valley into the higher-elevation waters of the Klamath River in Oregon.

The Klamath River Basin Fisheries Task Force (KRBFTF) was authorized by Congress in 1986 and is overseeing a 20-year effort to restore salmonid fishery values to the Klamath watershed. It is headed by a multiple representative task force that makes funding, management, and scheduling decisions regarding fishery restoration efforts in the watershed. The Regional Water Board coordinates activities closely with the KRBFTF. Staff intends to continue coordinating with the listed agencies and groups enhancing our relationships where definite water quality benefits can be realized.

The general emphasis in the watershed is to continue interagency coordination, assess existing conditions and uses, focus reduction efforts for sediment, nutrient and oxygen-demanding loadings to selected subwatersheds, assess conditions and operations to determine where water temperature and nutrient improvements are feasible, and support efforts to improve riparian areas. The plan is to increase efforts in assessment, evaluate objectives attainment, and maintain the nonpoint source grant program.

Assessment

The assessment efforts will focus on identified concerns regarding objectives attainment and integration with Oregon's standards (e.g., dissolved oxygen, temperature, sediment, unionized ammonia) and evaluation of the need to develop an action plan for the management area to be included in the Basin Plan. Interagency coordination is a large part of the effort, since many agencies, tribes, and groups are collecting information and have jurisdiction. See http://www.krisweb.com/ for information and data on the Klamath WMA.

A Clean Water Act section 104(b) grant is being used to support an assessment effort in the Upper and Middle Klamath watersheds. It involves considerable interagency coordination and data sharing with the Bureau of Reclamation, National Biological Service, PacifiCorp, University of California at Davis, California Department of Fish and Game, Oregon Department of Environmental Quality and others. The assessment is aimed at describing the water quality relationships in the Klamath River downstream to Ike's Falls. Assessment activities are occurring in the major tributary streams, notably the Lost, Shasta, and Scott Rivers. Additional investigations into pesticides in the Tulelake area may be warranted in the future.

The Klamath River is on the CWA section 303(d) impaired water body list for dissolved oxygen, temperature and nutrients. The Regional Water Board is currently developing TMDLs for the mainstem Klamath River, and the Lost, Salmon, Scott and Shasta Rivers. In addition to data collection by the TMDL staff, USGS is working under contract for the Regional Water Board on TMDL data collection in the Lost, Klamath and Shasta Rivers watersheds. The USEPA and Regional Water Board staffs are coordinating with the Hoopa, Karuk and Yurok Tribes in the development of tribal water quality plans. The Hoopa plan has been approved and plans for the Yurok and Karuk Tribes are underway.

In the Scott River watershed, sedimentation and temperature studies need enhancement, especially regarding sediment inputs from the east side of the watershed. A Clean Water Act section 205(j) planning grant assessed the sediment sources in Moffet Creek. The local community is involved in a CRMP-type process that will need assistance in implementing the TMDL waste reduction strategy for sediment and in developing a strategy for a temperature TMDL.

The Shasta River watershed faces needs regarding local community assistance in developing a TMDL waste reduction strategy for temperature and dissolved oxygen. Further investigation of toxics issues in the upper watershed near Weed should be sought to determine the extent to which dioxins, metals, and MTBE contamination of local sites is impacting the beneficial uses of the Shasta River.

Monitoring

Long-term monitoring is a goal for the entire WMA. The Surface Water Ambient Monitoring Program (SWAMP) will rotate intensive surveys into the WMA in the future. The intensive survey will focus on overall assessment of water quality in the WMA, and address assessment of known problem areas. SWAMP monitoring was conducted in the Scott River and Shasta River watersheds and at some mainstem Klamath River stations in the FY 02-03 and FY 03-04.

Core Regulatory

The core regulatory program will continue to be supported at its current level with regard to compliance inspections, waste discharge orders and enforcement, groundwater and toxic site mitigation/remediation activities, and coordination with the public and other agencies in pollution prevention and data gathering. Ground water-to-surface water discharges to augment surface flows will be regulated to ensure that constituents and thermal discharges comply with the Basin Plan. The main issues in the Klamath basin involves underground storage tank investigations and clean-ups related to California Department of Transportation and CDF.

Ground water
The underground storage tank program and remedial work on existing localized ground water contamination will continue. Continued outreach regarding hazardous waste handling and potential ground water contamination is a priority in preventing future problems. The extent to which ground water contamination influences surface waters may be an issue in the Weed and Yreka areas, requiring additional investigation in the future.

Water Quality Certification
Clean Water Act section 401 water quality certifications will be processed as they are requested, however, there is a need to scrutinize them more closely with respect to the Endangered Species Act listing of coho salmon.

Nonpoint Source Program
Work will continue with local agencies and groups regarding land use effects on water quality, following the State Nonpoint Source Pollution Control Program and the Policy for the Implementation and Enforcement of the NPS Pollution Control Program to reduce nonpoint source pollution. (See Appendix B for more information on NPS control.) This involves issuing Waste Discharge Requirements (WDRs), waivers of WDRs, or relying on Basin Plan prohibitions. Our active outreach program will continue as well as the CWA section 319(h) grant program and Water Bond grant programs.

Response to the section 303(d) requirements for waste load reductions will necessarily include assessment of the feasibility of water quality objectives attainment on the Lost, Klamath, Shasta, and Scott Rivers. The data will support assessing the relationships of land and water use to objectives attainment, nonpoint source control alternatives, and development of potential management changes to achieve water quality objectives. Additional information concerning TMDLs is at http://www.waterboards.ca.gov/northcoast/programs/tmdl/Status.html.

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.

The program is also involved in the USFS co-op roads (cooperative maintenance agreement between the USFS and a timber company), fire salvage timber sales, and rehabilitation in the basin. Staff has met with the USFS and assisted with the formulation of language on co-op roads to get private users to agree to wet weather rules and maintenance.

Aerial and ground application of herbicides is an issue with the Native Americans of this area. Reports of forest herbicide applications are required in the WDRs and the waivers of WDRs. The USFS is the single largest landowner and is protecting water quality through the implementation of Management Agency Agreement with the State Water Resources Control Board. The primary water quality issues are recovery of threatened and endangered species of coho salmon and steelhead trout and protection of domestic water supplies in small rural communities.

Water Quality Planning
The Basin Plan review process necessarily feeds into the activities in this WMA to the extent issues are identified that affect the Klamath River WMA:

- review of water quality problems in the Lost, Klamath, Scott, and Shasta Rivers
- evaluation of dissolved oxygen and temperature objectives,
- consideration of a nutrient objective,
- review of Nonpoint Source Control Measures.

Local Contracts/Agreements
The Regional Water Board will continue active involvement in the Clean Water Act sections 319(h) grant program and the Water Bond grant programs, as well as promoting other programs like the California Department of Fish and Game programs.

Evaluation and Feedback
The progress of implementation will be reviewed on a yearly basis, and adjustments made to the future year's work based on that review. Additionally, an evaluation of the

process will occur at the end of the cycle that will determine the changes to be made in the program overall.

During the Klamath WMA assessment effort, Regional Water Board staff conducted and participated in several multi-agency, water quality assessment projects. These included the 1995 Lost River Water Quality Characteristics project (CWA section 319(h) grant), the TMDL data gathering project (USEPA mini-grant), and the first year of a two-year water quality monitoring project covering areas from Tulelake in the Upper Klamath downstream to Ike's Falls in the Lower Klamath (CWA section 104(b) grant).

BUDGET

The Regional Water Board will attempt to fund the highest priority actions as identified in each WMA to the extent funding constraints allow, and will pursue additional funding for those actions not currently addressed.

Appendix 2.2-A
Stakeholders

Partial list of agencies and groups with jurisdiction and/or interest in water quality in the Klamath WMA:

United States
Klamath River Basin Fisheries Task Force
Bureau of Reclamation
Forest Service
Bureau of Land Management
Klamath Basin Ecosystem Restoration Office
Environmental Protection Agency, Regions IX & X
Army Corps of Engineers
Geological Survey
National Biological Service
Fish and Wildlife Service
National Marine Fisheries Service (NOAA Fisheries)
Natural Resources Conservation Service

Native American
Klamath Tribe
Hoopa Tribe
Yurok Tribe
Karuk Tribe

Oregon State
Oregon Department of Environmental Quality

California State
Department of Fish and Game
Department of Health Services
Department of Pesticide Regulation
Office of Environmental Health and Hazard Assessment
Department of Toxic Substance Control
Department of Water Resources

Department of Parks and Recreation
California Coastal Conservancy
UC Agricultural Extension

County and Local Agencies
Resource Conservation Districts
- Lava Beds RCD
- Siskiyou RCD
- Shasta RCD

Irrigation districts
- Tulelake Irrigation District
- Klamath Irrigation District
- Butte Valley Irrigation District
- Montague Irrigation District
- others in Shasta and Scott watershed

County Agricultural Commissioners
city planning departments
city public works departments

Companies, Organizations, and Public Interest Groups
PacifiCorp
Klamath Water Users Association
American Fisheries Society, Humboldt Chapter
Timberland owners
Farm Bureaus
Scott River Watershed Council
Shasta CRMP
Klamath Forest Alliance
French Creek WAG
Siskiyou Bioregional Group
Lower Klamath Restoration Partnership
North California Indian Development Council
Salmon River Restoration Council

APPENDIX 2.2-B

Monitoring priorities and needs for the Klamath WMA

Additional assessment by Regional Water Board staff is needed to test hypotheses about support of beneficial uses MUN, REC1, COLD, RARE, or provide assessment information essential for program implementation. They are currently not funded.

The estimates are Regional Water Board needs on a per year basis.

1. Nutrient and Eutrophication Studies - $170,000 (1.0 PY + $60,000)
An intensive nutrient, temperature and dissolved oxygen monitoring and assessment program was funded for two years on the upper and middle Klamath River. The effort continues by other agencies and entities in the upper and middle Klamath River without significant involvement by Regional Water Board staff. Staff should be collecting data specific to the needs for TMDL development and implementation of nonpoint source controls. The SWAMP established five permanent stations in the upper and middle

Klamath in FY 2000-01. The intensive survey in FY 2002-03 focused more intensively on problem areas.

2. Sedimentation - $70,000 (0.3 PY=$40,000)
The Scott River watershed is 303(d) listed for sediment impacts. Assessment of sediment sources and impacts is needed to assist in developing a TMDL sedimentation reduction strategy for the watershed. A CWA section 205(j) project with the Siskiyou RCD evaluated sediment sources in Moffett Creek. Additional assessment is needed in the lower Klamath River tributaries (Terwer, Blue, High Prairie, Hunter Creeks)

3. Lake Shastina Toxics - $42,000 (0.2 PY + $20,000)
While cleanup activities continue on Beaughton and Boles Creeks to eliminate metals, dioxins, and MTBE contamination, new sources have been identified. Additional assessment is needed to determine the extent of the problem in the tributaries and Lake Shastina.

4. Yreka Creek Petroleum - $42,000 (0.2 PY + $20,000)
While groundwater contamination from solvents and other petroleum products are documented and being addressed to varying degrees, contamination of Yreka Creek from contiguous groundwater is a concern. To date no significant problems have been identified, however it remains a concern.

Surface Water Monitoring Program

The Surface Water Monitoring Program (SWAMP) rotated intensive surveys into the Klamath WMA in FY 02-03 and FY 03-04. The intensive survey focuses on overall assessment of water quality in the WMA, and addressed assessment of known problem areas. Parameters are general water chemistry, nutrients, metals and organic chemicals. In FY 01-02 three monitoring stations were established in the Scott River watershed: Fort Jones, near Etna Creek, and at the town of Callahan. Parameters tested are water chemistry, nutrients, metals and organic compounds. In addition, multiparameter dataloggers will be deployed at scheduled intervals for continuous measurement of pH, dissolved oxygen (DO), specific conductance (SC) and temperature at each of the stations.

Seven long-term stations will be maintained in the WMA as initiated in FY 2000-01: Klamath River at Klamathon, near Empire Creek, near Horse Creek, at Seiad Valley, at Weitchpec; Shasta River at the mouth; Scott River at the mouth. Additional monitoring sites were established in the Shasta River system as well in FY 01-02. In addition to the permanent station at the Highway 263 Bridge, monitoring in Yreka Creek at Anderson Grade Road and the Highway 3 bridge has been added.

Additional assessment by Regional Water Board staff is needed to test hypotheses about support of beneficial uses MUN, REC1, COLD, RARE, or provide assessment information essential for program implementation.

SECTION 2.3

NORTH COAST RIVERS WATERSHED MANAGEMENT AREA

North coast rivers not specifically included in other WMAs are included in this grouping. The major watersheds from the Oregon border south include the following. Those in **bold** have information in this section:

2.3.1 Smith River
2.3.2 Bear River
2.3. **Mattole River**
2.3.4 **Ten Mile River**
2.3.5 **Noyo River**
2.3.6 **Big River**
2.3.7 **Albion River**
2.3.8 **Navarro River**
2.3.9 **Greenwood,** Elk, and Alder creeks
2.3.11 **Garcia River**
2.3.12 **Gualala River**

A citizen's lawsuit in 1997 against US Environmental Protection Agency produced a consent decree scheduling a number of north coast rivers for development of Clean Water Act section 303(d) "TMDLs" or Total Maximum Daily Loads, primarily for sediment and temperature. . Since that time, additional water bodies in this WMA have been listed as impaired. Water bodies listed as impaired under Section 303(d) in this WMA include the Albion River (for sediment impairment), Big River (sediment and temperature), Garcia River (sediment and temperature), Gualala River (sediment and temperature), Mattole River (sediment and temperature), Navarro River (sediment and temperature), Noyo River (sediment), and the Ten Mile River (sediment and temperature). See http://www.waterboards.ca.gov/northcoast/programs/tmdl/Status.html for TMDL schedules. Activities to date have targeted the Albion, Garcia, Navarro, Mattole, Gualala, Ten Mile, Big, and Noyo Rivers, as well as an Assessment of Aquatic Conditions in the Mendocino Coast Hydrologic Unit that included information on the Ten Mile, Gualala, Big and Albion Rivers and Capser Creek. Descriptions of those activities appear in this section, developed to varying degrees depending on the level of activity completed.

Under the federal Endangered Species Act, all of the rivers in this WMA fall within Ecological Significant Units (ESUs) in which coho salmon are listed as a threatened species. Under the State Endangered Species Act, the California Fish and Game Commission has found that coho salmon are endangered species in all of the rivers in this WMA except the Bear, Mattole, and Smith Rivers. Additionally, both chinook salmon and steelhead trout are listed as threatened species under the federal Endangered Species Act in all of the rivers in this WMA except the Smith River. The Smith River is one of the most "pristine" in the North Coast Region. There are currently three permanent SWAMP monitoring stations established on the Smith River.

The Critical Coastal Areas in the North Coast WMA are: 1) Mattole River, 2) King Range National Conservation Area, 3) Pudding Creek, 4) Noyo River, 5) Pigmy Forest Ecological Staircase, 6) Big River, 7) Albion River, 8) Navarro River, 9) Garcia River, 10)

Kelpbeds at Saunders Reef, 11) Del Mar Landing Ecological Reserve, and 12) Gerstle Cove. See Appendix C for more information on these Critical Coastal Areas.

Approximately 25% of the timber harvest in the Region occurs in Mendocino County that comprises the majority of this hydrologic area. The primary water quality issues associated with timber harvesting activities include are recovery of threatened and endangered species of coho salmon, chinock salmon, and steelhead trout. There are also potential impacts of timber harvesting on the water supply for the coastal communities of Elk, Gualala, and Fort Bragg. Reports of all forest herbicide application are a requirement of the WDRs or waivers of WDRs associated with timber harvest plans.

Institutional Framework

The *Water Quality Control Plan for the North Coast Region* (Basin Plan) contains specific water quality objectives and implementation programs to protect and enhance identified beneficial uses of water. The over-arching regulatory provisions of the Basin Plan are the Action Plan for Logging, Construction and Associated Activities and the Nonpoint Source Action Plan.

The North Coastal Watershed Assessment Program (NCWAP) focused on assessment in the following watersheds in this WMA: FY 2000-01—Gualala, Albion, and Big Rivers; and FY 2001-02—Mattole River. This multi-agency effort gathered existing data and collected new data to provide assessments of the watersheds. Those data and the assessments will be made available on an interactive computer database. Significant outreach to local landowners and agencies was an element of the program and has added to our understanding of issues in these watersheds.

Additionally, the Surface Water Ambient Monitoring Program (SWAMP) monitored sites in the WMA in FY 2000-01, establishing permanent stations to be sampled for long term trend analysis. The actual station locations and timing are detailed in the individual watershed sections.

The overall emphasis in the watersheds is the inspection of timber harvest plans for compliance with Basin Plan standards, implementation of the Forest Practice Rules and best management practices to ensure protection of water quality and beneficial uses. The Regional Water Board is expanding the timber harvest program activities in concert with California Department of Forestry and Fire Protection.

The Regional Water Board has adopted a new Total Maximum Daily Load (TMDL) Implementation Policy Statement for Sediment Impaired Receiving Waters in the North Coast Region, which is applicable to all sediment impaired watersheds in the Region. The goals of the proposed TMDL Implementation Policy are to control sediment waste discharges so that TMDLs are met, sediment water quality objectives are attained, and beneficial uses are no longer adversely affected by sediment.

The Sediment TMDL Implementation Policy Statement takes the form of a Resolution from the Regional Water Board. Through the Resolution, the Regional Water Board gave direction to the Executive Officer to develop a workplan describing how and when actions will be taken to address sediment waste discharges. Such actions include the development of a monitoring strategy and a sediment control guidance, the use of available authorities and tools to more effectively address sediment waste discharges,

memoranda of understanding with other agencies, and cooperation with landowners, stakeholders, and organizations in a non-enforcement and/or regulatory manner. The Sediment TMDL Implementation Policy Statement basically sets out commitments for staff, including using available regulatory tools to control sediment discharges.

The Regional Water Board staff is currently developing a Regional Sediment Amendment to the Basin Plan with prohibitions and an Action Plan associated with timber harvesting activities include more enforcement tools to the Sediment TMDL Implementation Policy Statement for controlling sediment.

SECTION 2.3.3

MATTOLE RIVER WATERSHED

The Mattole River in Mendocino and Humboldt Counties, California, is listed on California's 303(d) report as a water quality limited waterbody requiring the establishment of a Total Maximum Daily Load (TMDL) due to sedimentation and temperature. The North Coast Regional Water Board completed the TMDL for sediment in 2002 and for temperature in 2003. The key stakeholder concern for the Mattole River is the decline of the once healthy coho and chinook salmon fisheries, thought to be associated with excess sediment load and elevated water temperatures.

WATERSHED DESCRIPTION

The Mattole River starts in northern Mendocino County, and flows north 62 river miles, through steep, forested lands in Humboldt County and into the ocean ten miles south of Cape Mendocino. It is contained in the hydrological unit 112.30. The watershed encompasses an area of approximately 194,560 acres (304 square miles) and supports a population of over 2,000 people. The main population centers are in Petrolia, Honeydew and Whitethorn, but people are scattered throughout the watershed. Small landowners (less than 450 acres) own 43 percent of the land, Bureau of Land Management (BLM) owns about 12 percent, and commercial timber companies own much of the remaining land. The area is subject to intense rainfall from 50 inches per year near the mouth of the river to 115 inches per year near Honeydew. The main tributaries to the Mattole River include East Branch North Fork Mattole, Upper North Fork Mattole, Mill Creek, Squaw Creek, Bear Creek, Thompson Creek, Honeydew Creek, and Bridge Creek. See Figure 2.3.3.1 below.

From 1947 to 1987 an estimated 82 percent of the timber was harvested. By 1988 over 90 percent of old-growth forests had been harvested and by 1996 late seral habitats comprised less than 8 percent of the original forest cover. A large part of the late seral stage acreage lies within the King Range National Conservation Area. Twelve percent of the Mattole watershed lies within this management area that, since 1991, has been managed as a Spotted Owl Habitat Conservation Area. The "one hundred year" floods of 1955 and 1964 deposited hundreds of tons of sediment into the river system from which the Mattole River has yet to recover. Floods also occurred in 1995 and 1997.

The Mattole watershed is widely recognized as being a landscape prone to excessive erosion due to tectonic movement, slope instability, and high levels of rainfall. The tectonic Mendocino Triple Junction of the Pacific, North American, and Gorda Plates makes the Mattole watershed the most seismically active watershed in the continental United States. Most of the Mattole is underlain by coastal belt rocks, is highly unstable and uplifts 1-2 cm/year. A 1993 inventory estimated 3,350 miles of active and abandoned roads in the Mattole basin, with 115 miles maintained by the county, 25 miles maintained by BLM, leaving 425 miles of active and 2,800 miles of abandoned roads that are not managed or maintained. In addition to roads that account for approximately 76 percent of human-induced erosion, logging, conversion of forestland to pasture, and over grazing contribute to erosion and sedimentation of the streams in the watershed.

The Mattole Restoration Council and the Mattole Salmon Group have been active in the watershed since the early 1980's, and have conducted numerous successful restoration projects and collected valuable data on the declining fisheries. Sanctuary Forest owns about 1,100 acres of old growth forest, and BLM manages about 6,500 acres of old growth (Gillham Butte and Mill Creek Forest). Major timber landowners are Pacific Lumber Company (PALCO), the Bureau of Land Management (BLM) and Barnum Lumber Company. The federal government has classified the Mattole River as a Tier 1 Key Watershed essential to the survival of coho and chinook salmon stocks. Known fish species in the Mattole include coho and chinook salmon, steelhead trout, rainbow trout, green sturgeon, and brook lamprey. In addition to anadromous salmonids, species at high risk of extinction include the southern torrent salamander and the tailed frog.

The Mattole River and the King Range National Conservation Area are Critical Coastal Areas. See Appendix C for more information on these Critical Coastal Areas.

ASSESSMENT AND PROBLEM IDENTIFICATION

The following analysis is based on existing knowledge of issues and problems in the Mattole River watershed from monitoring, discharger regulation, water quality planning and nonpoint source program efforts, and public input. However, the following analysis does not constitute a full assessment and will be refined.

The populations of anadromous salmonid species in the Mattole River watershed have declined dramatically since the 1960's. According to the California Department of Fish and Game the carrying capacity of the habitat for fish populations has been seriously degraded due to cumulative adverse impacts caused by timber operations, residential development, private road construction, agricultural operations and other land use practices. Natural events such as wildfires, floods, and earthquakes have also played a

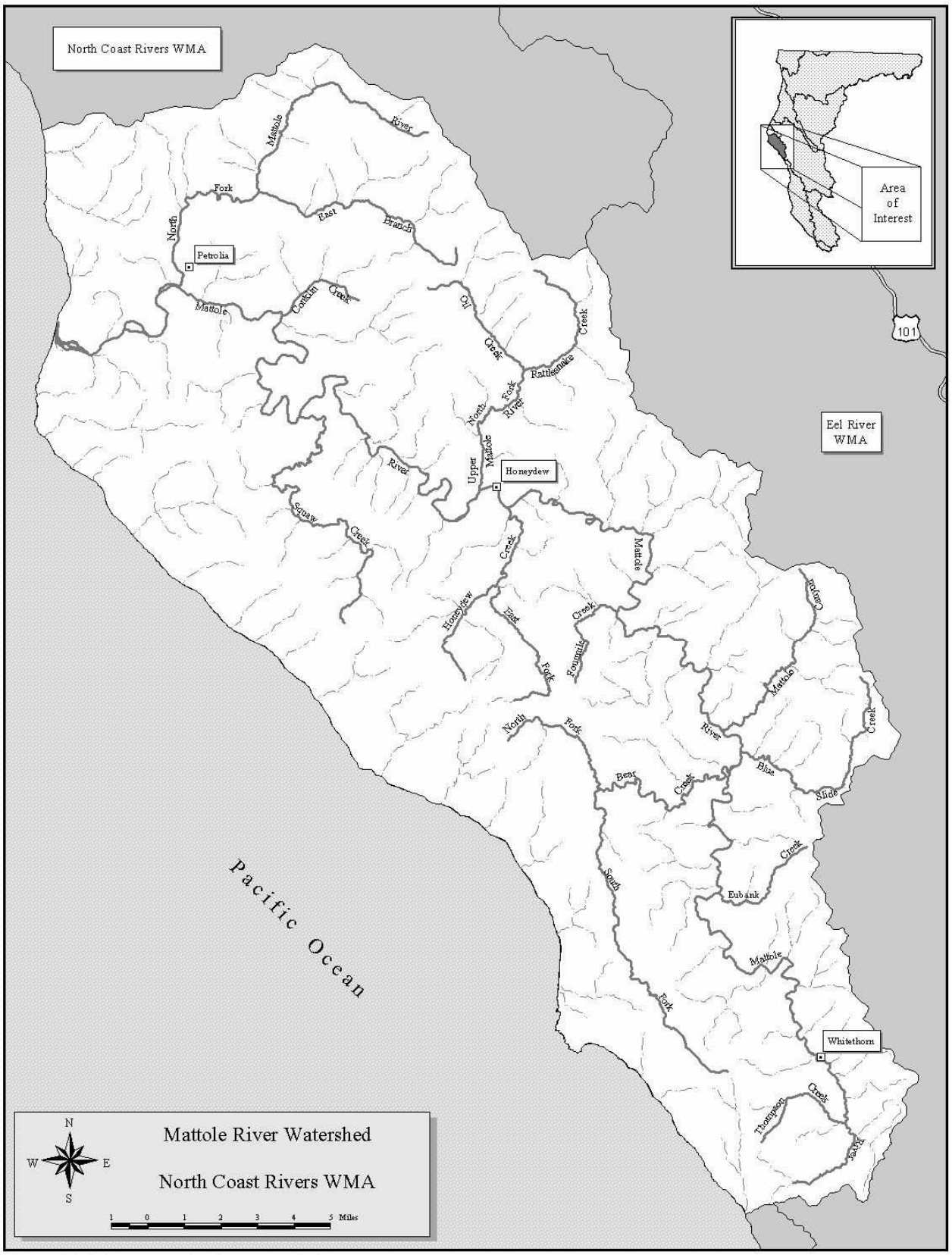


Figure 2.3.3.1. Mattole River Watershed

major role. Impacts to the fishery are from sedimentation caused by erosion from landslides, streambank failures, sheet and gully erosion, loss of large woody debris for instream cover, and increased water temperatures due to removal of protective streamside shade canopy. Many tributaries have sediment in storage, filling of pools, streambed aggradation, siltation of spawning gravels, fewer plunge pools, reduced flows and moderate migration barriers. Coho salmon that require cool pools scoured by water flow over woody debris or rock outcrops now exist only in the headwaters and its tributaries because habitat in the lower reaches has been lost. In 1981 escapement data indicate 3,000 chinook and 500 coho were present, but by 1989 there were only 150 chinook and 50 coho present. Such information prompted the Department of Fish and Game in 1990 to recommend a zero net discharge of sediment to watercourses, retention of existing large woody debris, and no further increases in water temperature.

In addition to natural, background sediment sources, timber harvesting, salvage logging and roads also contribute sediment to streams and accelerate mass wasting and downstream flooding. The Mattole River estuary, important for fish rearing, is now shallow and warm and may have anoxic zones. Juvenile chinook are no longer found in the Mattole summer lagoon. Riparian zone management is needed on the mainstem and in some tributaries. The U S Geological Survey has been doing sediment sampling at their flow gauging station, and temperature monitoring has occurred throughout the watershed by various entities. Many roads have been inventoried and assessed in a five-county coho effort and by the Mattole Restoration Council.

There are no NPDES permits or Waste Discharge Requirements in the watershed. Blue Slide Creek has a diesel discharge from an above ground tank. Other home heating-oil discharges in the watershed are likely. A problem with an underground tank at the Petrolia Store has been addressed. Herbicide applications on forestlands are limited to hand applications to prevent widespread drift of toxic materials. The Queens Peak Mine on BLM property has recently been recontoured and restored.

Primary water quality issues in the Mattole River watershed

- Lack of large woody debris
- High water temperatures
- Sediment buildup and siltation in the mouth of the river, in the mainstem and tributaries
- Increased turbidity
- Salmonid habitat disturbance
- Flooding from sediment discharges
- Forest herbicide applications

Monitoring needs include water temperature, turbidity, channel morphology, sedimentation, riparian habitat health, marcoinvertebrates, bacteria, and toxics such as fuels.

WATER QUALITY GOALS AND ACTIONS

The following broad goals provide a perspective from which to view the specific goals and actions presented below: 1) improve coordination, education, outreach, assessment, and monitoring, 2) protect and enhance the anadromous salmonid resources, and 3)

protect surface and ground water uses for municipal supply, and recreation. Refinement of the goals and strategy through public participation will include enhanced interagency and public coordination and cooperation. The three goals for the Mattole River watershed are related through the beneficial uses they address:

- **Protect and enhance salmonid resources (COLD, MIGR, SPWN, RARE, EST)**
- **Protect all other surface water uses**

The protection of cold water fisheries requires the protection of surface water with additional concerns for siltation, habitat loss, temperature and low tributary flows. Actions for protecting the beneficial uses for COLD largely serve to protect all other uses, except MUN.

- **Protect and enhance salmonid resources (COLD, MIGR, SPWN, RARE, EST)**

The anadromous fishery has experienced severe decline in the last 40 years. Most notable is the destruction of fish habitat. Natural events and multiple land uses are responsible to varying degrees for sediment contributions through accelerated erosion and mass wasting and include timber production and harvest, road construction and maintenance, and grazing. Increased water temperatures in some parts of the watershed are an issue. Additional upslope erosion controls are needed to reduce sediment delivery to waterways in the Mattole River watershed. The Regional Water Board must promote and develop considerations for the stability of stream channels and maintenance of channel form consistent with a functioning hydrologic channel. The riparian and instream habitat components must be enhanced. Instream temperatures for cold-water habitat and adequate stream flows to protect and enhance salmonid resources and COLD will be managed.

- **Protect all other surface water uses**

The actions for the above largely serve to protect all other uses, however additional issues with regard to beneficial use impairment may arise and be addressed in the future

IMPLEMENTATION STRATEGY

Significant strategy development and implementation for water quality protection and improvement are occurring in the Mattole River watershed at the present time by many agencies, interest groups, and individuals. The watershed problem identification, watershed assessment, and strategy development are an on-going process, and further input will improve the effort. The intent of the Regional Water Board process is to focus resources on the highest priority issues within a given time frame. As such, actions to address issues and achieve water quality goals are flexible. Given the current funding constraints, any new and/or redirected resources should be focused on staffing for field nonpoint source compliance and enforcement inspections. The general emphasis in the watershed is to increase assessment activities (including monitoring coordination) and education/outreach, especially regarding erosion control and sedimentation. While maintaining a watchful eye on traditional dischargers, forestry related activities are a high priority.

Assessment and Monitoring

Two state programs have improved monitoring and assessment in the watershed. The North Coast Watershed Assessment Program (NCWAP) was a multi-agency approach to gathering, developing, analyzing and presenting watershed assessments and data for

north coast watersheds. In addition to the Regional Water Board, four agencies within the Resources Agency were involved: Department of Fish and Game, Department of Forestry and Fire Protection, Division of Mines and Geology, Department of Water Resources. Each had specific tasks relating to gathering existing data, filling information gaps by collecting new data, analyzing the data, and presenting the resulting watershed assessments in a standardized format for agency, landowners, and watershed groups. NCWAP was closely coordinated with the Surface Water Ambient Monitoring Program (SWAMP) and the outreach functions of the WMI Coordinator in the Regional Water Board. NCWAP focused on watershed assessment in the watershed in FY 2000-01 and FY 2001-02. The final product is an interactive computerized format including the data and watershed assessment. Hard copies of watershed assessments will also be made available to those not having computer access. Go to www.ncwatershed.ca.gov/mattole/mattole_river.html for background information and the final report. Also see http://www.krisweb.com/ for more information and data.

SWAMP is a region-wide monitoring program that will monitor permanent stations for long-term trends as well as rotate into WMAs on a five-year basis. Up to five stations are scheduled as permanent stations. See http://www.waterboards/northcoast/programs/swamp for SWAMP information.

Education and Outreach
The TMDL process will enhance public and agency participation. The Regional Water Board's 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. Appendix 2.3.3A at the end of this section is a partial list of stakeholders in the watershed.

Watershed Coordination
The Regional Water Board currently coordinates with local agencies and watershed groups, State and federal agencies on an as-needed basis. Improved coordination is sought as part of the TMDL implementation process. The NCWAP also required coordination with landowners and agencies in the watershed.

Core Regulatory
The current level of point source regulation (inspection, monitoring, and enforcement) on traditional dischargers is anticipated and covers above ground tanks, underground tanks, storm water pollution control, landfills, as well as construction related pollution, and gravel management.

Water Quality Certification
The Clean Water Act section 404 permitting and associated section 401 Water Quality Certification required of the Regional Water Board have been streamlined significantly for salmonid stream habitat restoration activities that follow the California Department of Fish and Game California Salmonid Stream Habitat Restoration Manual. Adequate staff funding is needed to completely implement the 404/401 program. Staff continues to pursue innovative approaches to assure appropriate review and certification of all projects. High priority projects (those with a potential for adverse impacts) will continue to receive a complete review.

Ground water
Ground water issues center on petroleum contamination and will continue to receive the current level of activity. Groundwater and surface water contamination is 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

Nonpoint Source
Continued involvement in forestry, grazing, and road issues is necessary to ensure protection of aquatic resources. The Regional Water Board continues implementation of the MAA with U.S. Forest Service for non-timber nonpoint source issues on a very limited basis due to a lack of staff resources. However, this issue is becoming more important as sediment sources are further evaluated in this watershed. 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 Critical, Coastal Areas are the Mattole River and the King Range National Conservation Area where Regional Water Board staff participate on a Regional Committee to develop a Critical Coastal Area Action Plan and implement projects to improve water quality. See Appendix D for more information on nonpoint source activities and these Critical Coastal Areas.

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
There is an extensive timber harvest program where staff review and inspect timber harvest plans for implementation of the Forest Practice Rules and best management practices to ensure protection of water quality and beneficial uses. The program is expanding activities on private land in concert with California Department of Forestry and Fire Protection. Also expanding is review and inspection of timber sales as well as other projects on U.S. Forest Service lands. The over-arching regulatory provisions of the Basin Plan are the Action Plan for Logging, Construction and Associated Activities and the Nonpoint Source Action Plan. The SWRCB and CDF/BOF entered into a Management Agency Agreement, which delegates primary water quality authority 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. Regulatory activities associated with timber harvest are conducted in accordance with that agreement. The Regional Water Board reviews timber harvest plans (THPs) and non-industrial timber management plans (NTMPs) and provides recommendations to CDF. In addition, THPs and NTMPs must comply with general or individual WDRs or waivers of WDRs.

The timber division is specifically funded to oversee the water quality protection of the Habitat Conservation Plan for the Pacific Lumber Company (PALCO) in the North Fork Mattole. The primary water quality issues involving PALCO are: the protection of domestic water supplies and nuisance flooding from sediment discharges from PALCO timber harvesting; recovery of threatened and endangered species of coho and chinook salmon and steelhead trout; protection of domestic water supplies and water quality beneficial uses and forest herbicide application.

PALCO is subject, in part, to regulation under a Habitat Conservation Plan (HCP). The HCP is intended to protect habitat for endangered species and requires PALCO to incorporate interim prescriptions (best management practices) into its timber harvest and harvest-related activities, while performing watershed analysis for the watersheds within its ownership. As watershed analyses are completed, watershed-specific and project-specific prescriptions will be developed, implemented, monitored, and adapted as necessary. In the interim, PALCO is required to conduct several types of monitoring, including interim prescription effectiveness monitoring.

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

- Review the Nonpoint Source Control Measures
- Develop an implementation policy for sediment reduction

Local Contracts/Agreements
The Regional Water Board will continue active involvement in the Clean Water Act sections 319(h) and grant program and the Water Bond grant programs, as well as promoting other programs like the California Department of Fish and Game programs.

In addition, the TMDL strategy will be incorporated into the Basin Plan at some future date.

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 final evaluation of the Mattole River TMDL will 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 currently not addressed.

Appendix 2.3.3-A
Stakeholders

Partial listing of agencies and groups in the Mattole River Watershed with an interest and/or responsibility for water quality:

United States
Environmental Protection Agency
Army Corps of Engineers
Forest Service
Bureau of Land Management
Geological Survey
National Biological Service
Fish and Wildlife Service
National Marine Fisheries Service (NOAA Fisheries)
Natural Resources Conservation Service

California State
California Environmental Protection Agency
Resources Agency
Department of Fish and Game
Department of Health Services
Department of Parks and Recreation
Department of Pesticide Regulation
Office of Environmental Health and Hazard Assessment
Department of Toxic Substance Control
Department of Water Resources
California Coastal Conservancy
UC Agricultural Extension
Humboldt State University
College of the Redwoods

Humboldt and Mendocino County
Water Agency
Planning Department
Department of Environmental Health
Agricultural Commissioner's Office

Local Agencies
Resource Conservation Districts
- Mendocino County RCD
- Humboldt County RCD

local water districts
city planning departments
city public works departments
county planning departments

Public Interest Groups
Cattlemen’s Association
Trout Unlimited
Salmon Unlimited
California Forestry Association

Mattole Salmon Group
Mattole Restoration Council
Timber Companies
    Pacific Lumber Company
    Barnum Lumber Company
Sanctuary Forest
Middle Mattole Conservancy
Mill Creek Watershed Conservancy
Redwood Community Action Agency

SECTION 2.3.4

TEN MILE RIVER WATERSHED

Based on the recognition that the anadromous fishery is in decline, activities to assess the watershed and improve conditions for anadromous salmonids are underway. The Ten Mile River watershed harbors the last native coho salmon in Mendocino County. As such, protection of the fish and restoration of their habitat in the Ten Mile River watershed is of special interest. A Clean Water Act section 303(d) technical TMDL for sediment has been completed and approved by USEPA in 2000. The following provides an overview of activities and outlines the basic framework and strategy at this time.

WATERSHED DESCRIPTION

The Ten Mile River watershed drains an area of approximately 31,000 hectares or 120 square miles. It is located north of the City of Fort Bragg by eight miles, sharing ridges with Pudding Creek and the North Fork of the Noyo River to the south and Wages Creek and the South Fork of the Eel River to the north. Elevations range between sea level and 977 meters (3,205 feet). The Ten Mile River watershed experiences a Mediterranean-type climate typified by abundant rainfall and cool temperatures during the winter and dry, hot summers punctuated with cool breezes and fog along the coast. Precipitation occurs primarily as rain with 40 inches in the western portion and 70 inches in the eastern portion of the watershed. Approximately 90% of the annual precipitation occurs between October and April. The Ten Mile is in the hydrological unit 113.13. See Figure 2.3.4.1 below.

The watershed is entirely privately owned, with Hawthorne Timber Company, LLC (managed by Campbell Timberland Management, LLC), successor to Georgia-Pacific West, owning about 85 percent of the watershed. Three small non-industrial timber owners and a handful of other residences are in the watershed. The terrain varies from the flat estuary and broad river floodplain to rugged mountainous topography with high relief. The Ten Mile River has three main forks: the North Fork, Middle Fork (also known as the Clark Fork) and the South Fork. Most of the basin, aside from the northeast grasslands, is characterized by steep, narrow drainages bordered by steep to moderately steep slopes leading to the headwaters of the tributaries.

The Ten Mile River watershed has a dominant overstory consisting of redwood and Douglas fir. Hardwood species such as tanoak and Pacific madrone are other common components of conifer stands, though only on xeric sites. Interior live oak is a minor component at most xeric sites on inland ridges. Near the headwaters open grassland dominates with an overstory of California black oak and Oregon white oak punctuated with Douglas-fir/redwood/tan oak stand.

The history of the Ten Mile River watershed is largely defined by timber harvest, which began in the lower basin about 1870. The railroads were developed in the 1910's and used for timber yarding and hauling. Tractor yarding began in the 1930's and major portions of the watershed were harvested for timber from the 1940's to the 1960's. The forest was left to regenerate until the 1980's when timber harvest was again increased. Coho and chinook salmon have declined sharply in the Ten Mile River watershed. Steelhead trout, however, may be now surpassing the population numbers identified in the 1960s. The Ten Mile River watershed harbors the last native coho salmon in Mendocino County (last count indicates less than 200 individual fish). The population of coho in the 1960's was about 6,000. As such, protection of the fish and restoration of their habitat in the Ten Mile River watershed is of special interest. Chinook salmon are not considered to be native to the Ten Mile River, although chinook has been reported caught in the river "several decades ago."

The primary beneficial use of concern in the Ten Mile River watershed is the cold freshwater fishery that supports coho salmon (*Oncorhynchus kisutch*), steelhead trout (*Oncorhynchus mykiss*), and chinook salmon (*Oncorhynchus tshawytscha*). The Ten Mile River watershed also supports other native and introduced fish and aquatic species including: three-spined stickleback, coast range sculpin, prickly sculpin, several species of lamprey, pacific giant salamander, several species of newt, yellow-legged frog, and tailed frog. The beneficial uses of water related to rare, threatened or endangered species have been proposed for this basin. As with many of the north coast watersheds, the coldwater 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 impaired water quality.

Additional beneficial uses related to the Ten Mile River watershed's coldwater fishery are:

- Commercial and sport fishing (COMM)
- Cold freshwater habitat (COLD)
- Migration of aquatic organisms (MIGR)
- Spawning, reproduction, and early development (SPWN); and
- Estuarine habitat (EST)

ASSESSMENT AND PROBLEM IDENTIFICATION

Several management-related factors have contributed to the elevated sediment delivery rates throughout the watershed. The most important include high rates of timber harvest and associated road building, both historically and currently; high road densities, and, historically, high densities of skid trails. While overall rates have declined in the period from 1933 – 1999, sediment generation from road surface erosion has increased. Current sediment delivery from all sources is estimated at 629 tons/sq. mile/ year, with about 50 percent of that background and rest management related. There are currently 940 miles of roads in the Ten Mile watershed, which translates to a basin wide road density of 7.86 miles/sq. mile (including the former railroads that were converted to roads). While some sediment load in the stream is natural, much of the excess sediment is directly and indirectly caused by land management activities.

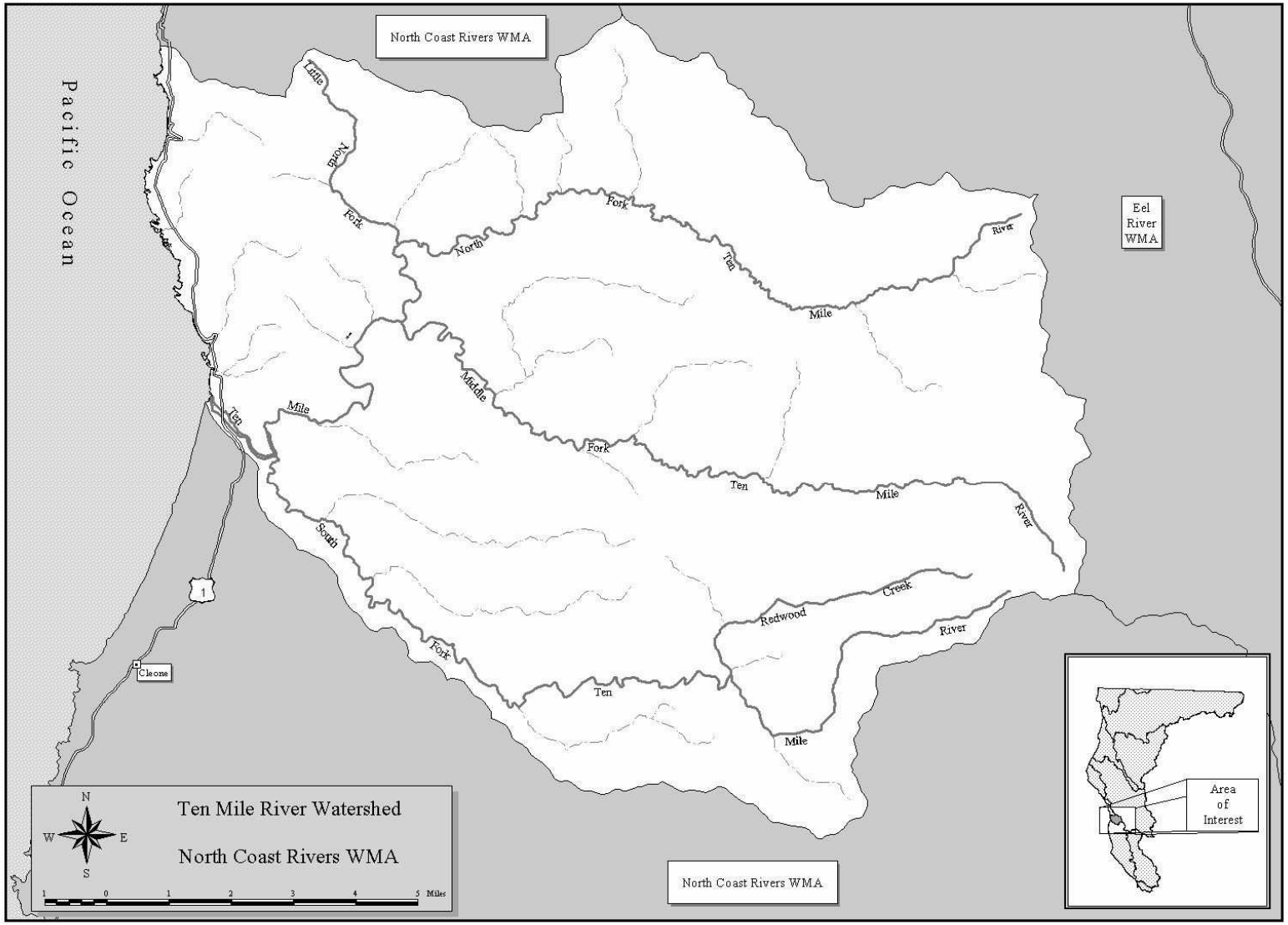


Figure 2.3.4.1. Ten Mile River Watershed

The existing data indicate that coho salmon continue to spawn and rear with some regularity in the Ten Mile River and tributaries. Chinook were introduced to the Ten Mile River in the 1980s, with the last and largest release in 1987 (9,000 fingerlings released). Chinook carcasses found in the watershed are composed of various age groups and may indicate a rare successful introduction. Less than ten fish were found in the watershed in 1995-96. Unfortunately, very limited data regarding chinook salmon has been collected over the years.

It appears that each of the three main forks of the Ten Mile River watershed, on average, only minimally support salmonid spawning, incubation, and emergence success. Data developed for the Ten Mile River watershed indicates an average annual sediment discharge of 1,135 ton/mile/year for the period 1952 to 1997. A maximum weekly average temperature (calculated as the mean of daily maximums) of 16.8 degrees C predicts whether or not coho will be present in a stream. The Little North Fork Ten Mile River, the Middle and Upper Clark Fork Ten Mile, Smith, Mill, Churchman and Redwood Creeks and Upper South Fork Ten Mile River all exhibit temperatures adequate for salmonid survival. All other sampling locations exhibit temperatures that are inadequate to support coho summer rearing.

Summary of findings on salmonid habitat:

- Shelter is extremely poor throughout the watershed, including large woody debris.
- Stream temperatures are elevated in the three main forks.
- The percentage of habitat in scour pools is extremely poor.
- The availability of C-type channel is limited.

Salmonid habitat in the Ten Mile River watershed could be significantly improved with reductions in sediment delivery, protection and improvement in riparian functions, increases in large woody debris for sediment metering and habitat, and modification of stream channel type.

Primary water quality issues in the Ten Mile River watershed

- Salmonid habitat disturbance
- Lack of large woody debris
- High water temperatures
- Sedimentation of streams

There are two permits for gravel mining currently in effect in the Ten Mile River watershed. These are issued to Watkins Sand & Gravel for the removal of up to 2,500 cubic yards of gravel per year from several sites in the South Fork of the Ten Mile River channel and up to 10,000 cubic yards from a hillside quarry, and to Baxman Gravel Company for the removal of up to 50,000 cubic yards of rock per year from a hillside quarry. There have been other gravel mining operations in the Ten Mile River watershed prior to those associated with these two permits. However, previous operations were not permitted. Although gravel mining is a land use activity in the basin, it does not appear to have contributed significantly to the sediment problems.

WATER QUALITY GOALS

- **Protect surface and ground water MUN, DOM, REC-1, and REC-2 uses**
- **Protect and enhance beneficial uses associated with anadromous fishes COLD, MIGR, SPWN, EST, COMM**

The overall emphasis in the watershed is the completion of the TMDL waste reduction strategy for sediment. Therefore, increased assessment activities and continued high priority forestry related activities, including any needed outreach to new vineyards are necessary

IMPLEMENTATION STRATEGY

Implementation will occur in the form of the TMDL waste load reduction strategy for sedimentation that will bring the watershed into a desired future condition that is consistent with the enhancement and maintenance of salmonid species. A broad interagency effort was used to gather and assess existing information on the watershed and development of the strategy incorporated significant interagency and public coordination.

Assessment and Monitoring

Assessment of existing information was used in the development of the TMDL strategy, drawing from existing information contained in plans being developed by the CDF and private timber companies as well as any citizen information that is made available. See http://www.krisweb.com/ for more information and data.

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 condition. The Regional Water Board will coordinate with landowners to develop a monitoring plan that includes road and hillslope indicators that directly relate to sediment delivery to the watercourse. Substrate composition and V* are relatively simple to monitor, and should be monitored regularly. Thalweg profiles are better monitored on an infrequent basis, potentially after large flood events.

The habitat inventories available for the Ten Mile River watershed provide useful information about habitat conditions. The fish population data, temperature data, and substrate composition data are especially useful for understanding conditions and trends in the basin. The availability of each of these data sets in electronic form for each of the years in which they were collected would vastly improve the ability of Regional Water Board staff to analyze it. Some additional parameters that would help better understand changes in sedimentation in the basin, include: Longitudinal profiles, Cross-sections, V*, and LWD volume and distribution.

Continued and improved spawning, rearing, and outmigrant salmonid population studies are necessary to keep close track of the success of the few remaining native coho salmon. Some locations where substrate data could confirm suspected aggradation include: Blair Gulch, Barlow Gulch, McGuire Creek, Cavanough Gulch, O'Connor Gulch, Gulch 8, Gulch 11, Gulch 19, Gulch 23, and Gulch 27.

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.

Coordination
The Regional Water Board currently coordinates with local and State agencies on an as-needed basis. Improved coordination is sought as part of the TMDL implementation process.

Core Regulatory
The current level of point source regulation (inspection, monitoring, and enforcement) on traditional dischargers with some increase in storm water issues is anticipated. Individual waste disposal systems as well as construction related problems are addressed through the core regulatory program and the local oversight of individual systems.

Nonpoint Source
Continued involvement in forestry, grazing 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 implementation 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). 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.

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 for implementation of the Forest Practice Rules and best management practices to ensure protection of water quality and beneficial uses. Program activities are expanding on private land in concert with California Department of Forestry and Fire Protection. The over-arching regulatory provisions of the Basin Plan are the Action Plan for Logging, Construction and Associated Activities and the Nonpoint Source Action Plan. The SWRCB and CDF/BOF entered into a Management Agency Agreement, which delegates primary water quality authority 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. Regulatory activities associated with timber harvest are conducted in accordance with that agreement. The Regional Water Board reviews timber harvest plans (THPs) and non-industrial timber management plans (NTMPs) and provides recommendations to CDF.

In addition, THPs and NTMPs must comply with general or individual WDRs or waivers of WDRs.

Water Quality Planning
The Basin Plan review process feeds into the activities to the extent issues were identified in the Triennial Review and applicable to the Ten Mile River watershed. The top priority issue is review of the Nonpoint Source Control Measures. In addition, the TMDL strategy will be incorporated into the Basin Plan at some future date.

Local Contracts/Agreements
The Regional Water Board will continue active involvement in the Clean Water Act sections 319(h) grant program and the Water Bond grant programs, as well as promoting other programs like the California Department of Fish and Game programs.

Evaluation and feedback
Progress will be evaluated on a yearly basis, the TMDL providing the focus.

BUDGET

The Regional Water Board will attempt to fund the highest priority actions as identified in this watershed to the extent funding constraints allow, and will pursue additional funding to conduct outreach and enforcement activities as needed to pursue the actions currently not addressed.

Appendix 2.3.4-A
Stakeholders

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

United States
Environmental Protection Agency
Fish and Wildlife Service
National Marine Fisheries Service (NOAA Fisheries)
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
Department of Environmental Health

Local Agencies
Mendocino County Resource Conservation District
city planning departments
city public works departments

Public Interest Groups and Industries
Coast Action Group
Pacific Coast Federation of Fishermen's Associations
Georgia-Pacific Corporation
Louisiana-Pacific Corporation
Ten Mile River Watershed Association
Campbell Group (Hawthorne Timber Company)
Coastal Land Trust
Mendocino Coast Watch
Mendocino Land Trust
Redwood Coast Land Conservancy
Redwood Community Action Agency

SECTION 2.3.5

NOYO RIVER WATERSHED

Based on the recognition that the anadromous fishery is in decline, activities to assess the watershed and improve conditions for anadromous salmonids are underway. A Clean Water Act section 303(d) technical TMDL for sediment has been completed and approved by EPA in December 1999. The following provides an overview of activities and outlines our basic framework and strategy at this time.

WATERSHED DESCRIPTION

The Noyo River watershed is a 72,323-acre coastal tributary immediately west of the City of Willits that flows to the Pacific Ocean at the City of Fort Bragg. The Noyo hydrological unit is 113.20. Redwood and Douglas fir forest on rugged, mountainous terrain dominate the watershed. The climate has moderate temperatures (annual average 53 degrees F) and an average annual rainfall of 40 - 65 inches. The primary land use within the watershed is timber production and harvesting by three large timberland owners: Mendocino Redwood Company, Hawthorne Timber Company (managed by Campbell Timberland Management) and the Jackson Demonstration State Forest (run by the California Department of Forestry and Fire Protection which owns about 19 percent of the watershed). Together these three landowners own approximately 70 percent of the watershed. Old growth logging started in the mid 1800's and continued into the early part of the 20th century. Second growth logging began in the 1960's primarily in the lower main drainage area, and continues today. Removal of residual old-growth stands began in the 1960's and continued into the mid 1980's.

The Sierra Railroad operates the Skunk Train that traverses the Noyo River watershed along the mainstem channel with 40 miles of track and 31 bridges and trestles crossing the river. Other minor land uses in the basin include ranching and recreation. The mouth of the Noyo River is dominated by a marina and associated fish processing facilities in support of the local fishing industry. This is the only major fishing fleet between Bodega Bay and Eureka.

The Noyo River supports an anadromous fishery including steelhead trout, coho salmon, and chinock salmon, all of which are listed as threatened under the federal Endangered Species Act. The Noyo River, pursuant to section 303(d) of the Clean Water Act, is listed as impaired by excessive sediment loading associated with logging, overgrazing and road building. Hillside vineyard development is a concern for production of sediment as land is converted to new vineyards in the future. Critical Coastal Areas in and around the Noyo watershed include Pudding Creek, Noyo River, and the Pygmy Forest Ecological Staircase. Appendix D has a description of these Critical Coastal Areas.

The City of Fort Bragg uses surface water from the Noyo River as a primary source of drinking water. The City of Fort Bragg suffered from lack of sufficient quantity of water during the drought in the 1980's and is subject to high raw water turbidities during the winter period. A new water treatment plant was constructed in 1987. The water intake system was designed to frequently backflush compressed air through the intake screens to remove silt that was plugging the screens. The City has established a new deep well about a mile inland on the Noyo River where timing of pumping is important to avoid seawater intrusion. Another diversion from the river has been established to send water to Pudding Creek to service the Georgia Pacific Corporation mill. This mill is being dismantled and the area is being cleaned up. Many summer camps also use the river for water supply.

ASSESSMENT AND PROBLEM IDENTIFICATION

The Noyo River watershed is primarily in timber production. Little development has occurred in the watershed in the last two decades. As mentioned above, the primary water quality concerns are related to drinking water supply and the anadromous fishery. The City of Fort Bragg's Noyo River water supply is directly influenced by surface water and suffers from frequent siltation of the intakes. Turbidity data collected by the City of Fort Bragg between 1993 and 1997 indicate that turbidity values have increased steeply through this period. Turbidity levels have periodically obscured visibility and have remained elevated even after the cessation of rain. This can adversely affect fish and drinking water quality.

Existing salmonid habitat is limited by various erosion-influenced factors, including infrequent and shallow pools, few backwater pools and other over-wintering habitat, embedded cobbles, and elevated fines in potential spawning gravels. Limited availability of large woody debris in the channels of Noyo River watershed contributes to the problems associated with sedimentation. Pool volume in the Noyo River and tributaries has decreased due to the accumulation of fine sediment delivered by surface erosion throughout the basin. The availability of large woody debris and deep pools appear to be two of the main factors limiting the success of salmonids in the Noyo River watershed. Coho populations today are probably less than 6 percent of what they were in the 1940’s and there has been at least a 70 percent decline since the 1960’s. The anadromous fishery has experienced shifts in species composition. California Department of Forestry and Fire Protection employees found the total salmonid biomass was similar to that in the 1960’s but the species composition has inverted from primarily coho salmon to primarily steelhead trout. The decline in the stream channel’s average pool depth, in response to past logging practices, seems the most likely instream parameter causing the inversion in salmonid species composition in the Little North Fork Noyo River.

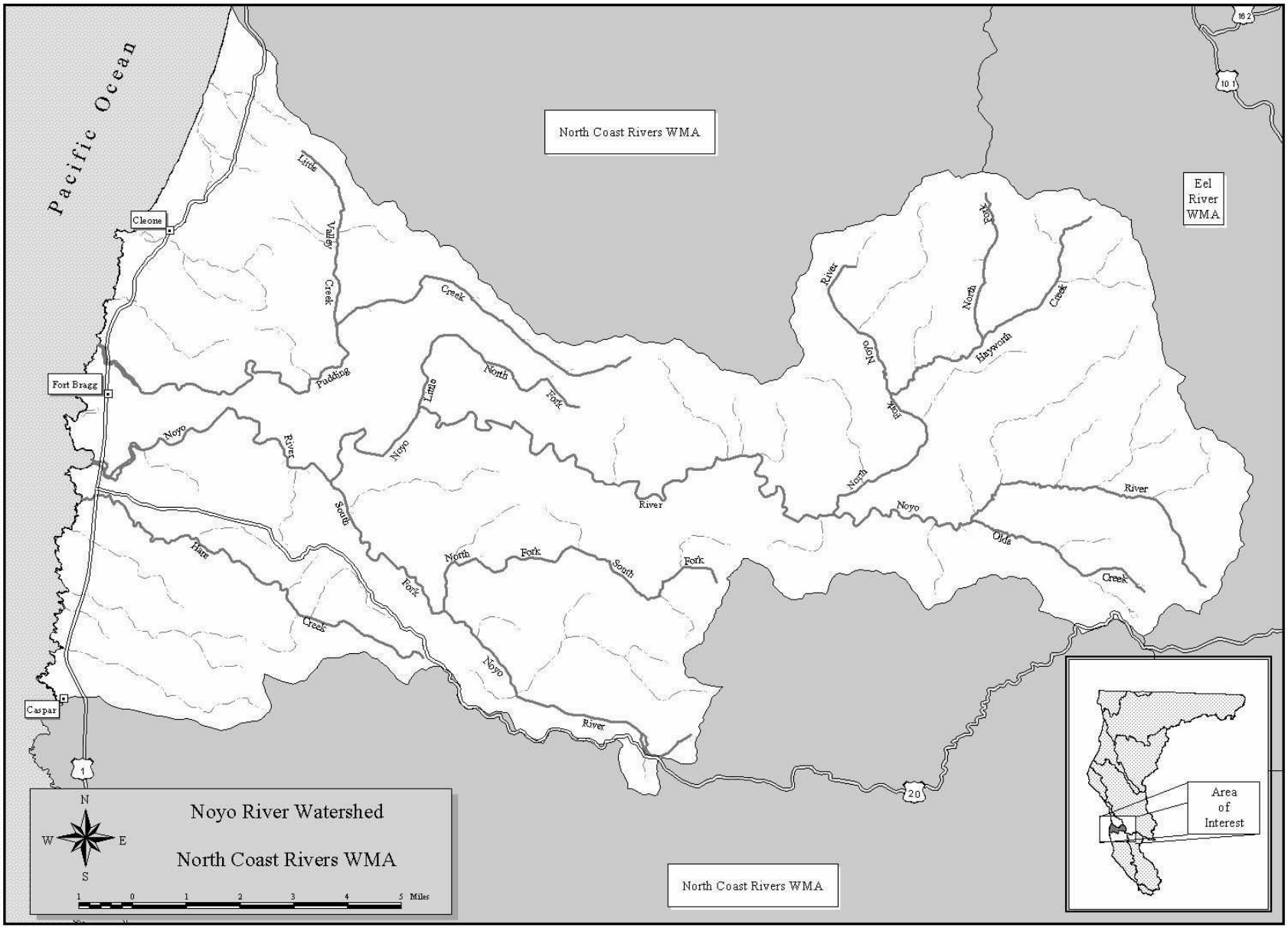


Figure 2.3.5.1. Noyo River Watershed

The Noyo River is listed on the CWA section 303(d) list as impaired by excessive sediment loading associated with historic logging, overgrazing and road building The Noyo River Sediment Total Maximum Daily Load has been completed and established by the U.S. EPA, which can be found online at: http://www.epa.gov/region09/water/tmdl/noyo/noyo.pdf. In addition, the average road densities for the watershed overall is 6.71 miles per square mile. Road densities in most individual tributaries are higher, and the majority of these roads are seasonal, unsurfaced, and have the potential for greater surface erosion. Many logging and rural residential roads are involved in mass wasting and sediment discharge incidents.

The harbor must be dredged on a frequent basis due to the large amounts of sediment deposited from upstream. Dredging volumes have increased over the years. For example, the average dredging volume in 1994 was 236 percent of the average volume in 1957 and 127 percent of the average volume for the first ten years of dredging (starting in 1933). A new marina, Dolphin Marina, needs to dredge to maintain adequate depth. The California Department of Transportation is replacing the Highway 1 Bridge over the Noyo River and dredge spoils are being placed at the north bank of the bridge footing.

Primary water quality issues in the Noyo River watershed

- Salmonid habitat disturbance
- Sedimentation of streams and harbors
- Turbidity

Contamination from diesel, penta- and tetrachlorophenol, and dioxins in stream sediments has been documented in the Parlin Fork and the Noyo River as a result of past activities at a wood treatment plant at the CDF camp. There are concerns about metals and creosote from the Skunk Train. Georgia Pacific has an old bark dump on the north side of the river where tannins may be leaching into a wetland area at Newman Gulch. Herbicide use continues on forestlands. The Office of Emergency Services reports frequent oil spills in the harbor area, and fish waste dumping is also a concern. Urchin wastes are discharged one mile off shore and assessment of this practice is incomplete. Waste discharge requirements exist for the Conservation Camps at Chamberlin Creek and Parlin Fork.

WATER QUALITY GOALS AND ACTIONS

The following listing represents a first-cut delineation of goals and actions to achieve water quality goals.

GOAL 1: Protect surface and ground water MUN, DOM, REC-1, and REC-2 uses

Point Source Issues

Current Activities

- Continue to perform waste discharger compliance inspections
- Address highest priority groundwater cleanups/remediations, e.g., Parlin Fork CDF camp
- Address highest priority underground tank cases

- Promote continuing development and application of management practices for storage, treatment and disposal of hazardous substances

Nonpoint Source Issues

Current Activities

- Maintain timber-related activities and focus on erosion controls

Additional Needs

- 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

GOAL 2: Protect and enhance beneficial uses associated with anadromous fishes COLD, MIGR, SPWN, EST, COMM

Nonpoint Source Issues

Current Activities

- Carry out the TMDL Implementation Policy Statement for Sediment Impaired Receiving Waters, including the use of existing authorities and tools, coordination, outreach and education efforts, monitoring, and development of a guidance document.

Additional Needs

- 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
- Participate on the Regional Committee for development of Critical Coastal Area Action Plans and promotion of projects in the Critical Coastal Areas of Pudding Creek, Noyo River and Pygmy Forest Ecological Staircase.

IMPLEMENTATION STRATEGY

Implementation will occur in the form of the TMDL Implementation Policy Statement for Sediment Impaired Receiving Waters that was adopted by the Regional Water Board on November 29, 2004. The Policy Statement will bring the watershed into a desired future condition that is consistent with the enhancement and maintenance of salmonid species. A broad interagency effort was used to gather and assess existing information on the watershed. Likewise, the development of the policy will incorporate significant interagency and public coordination. See Section 3, Regional Activities, Nonpoint Source for additional information on the policy.

Other concerns in the watershed will continue to be addressed through existing programs. However, vineyards are rapidly expanding in the north coast region. Much of this expansion is occurring on hillsides where there is increased erosion potential and delivery of sediment to nearby streams. 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. Current funding constraints will limit Regional Water Board staff outreach activities and enforcement activities to address this issue.

The Water Quality Control Plan for the North Coast Region (Basin Plan) contains specific water quality objectives and implementation programs to protect and enhance identified beneficial uses of water. The Regional Water Board staff is currently working on 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 Statement for controlling sediment. Increased assessment activities and continued high priority forestry related activities are necessary. Given current funding constraints, any new and/or redirected resources should be focused on staffing for field nonpoint source compliance, education and outreach efforts, monitoring, and enforcement inspections and hillside vineyard erosion issues as they develop.

Assessment and Monitoring

Assessment of existing information was used in the development of the TMDL strategy, drawing from existing information contained in plans being developed by the CDF and private timber companies as well as any citizen information that is made available. As mentioned above, data along with some analysis is available in the KRIS-Noyo computerized database package. See http://www.krisweb.com/.

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 condition. Additional biological assessment in the surface waters near the Parlin Fork Conservation Camp may be required in association with a contamination issue. The SWAMP has identified a rotating station low in the watershed for basic water quality parameters. Monitoring needs also include monitoring toxins associated with marina use, boat repair and herbicide use. Monitoring for bacteria and sediment also needs to be increased.

As part of the Sediment TMDL Implementation Policy Statement for Sediment Impaired Waters, the Regional Water Board directed staff to develop a sediment TMDL implementation monitoring strategy by December 31, 2005. The strategy will provide feedback on the recovery of sediment-impaired water bodies, including the Noyo River. The monitoring strategy shall include a description of monitoring objectives, trend monitoring stations, the sediment-related parameters that will be monitored, benchmark conditions, measurable milestones, and specific due dates for monitoring and data analysis. Monitoring will likely begin in 2006 following the completion of the monitoring strategy. Although the monitoring strategy is focused on all sediment impaired water bodies in the North Coast Region, the Noyo River is a good candidate for a long term sediment monitoring station due to the presence of cooperative landowners and the Noyo Watershed Alliance, who appear to be willing to assist with monitoring efforts.

Additional detail of monitoring needs is contained in Appendix 2.3.5-B.

Education and Outreach

As part of the Sediment TMDL Implementation Policy Statement for Sediment Impaired Waters, the Regional Water Board directed staff to conduct public outreach and education on sediment control issues, and to seek additional staff resources for such activities. Staff is currently developing a guidance document on sediment waste discharge control that will include examples of sediment waste discharge sites, sediment control practices, and road management practices; guidance for developing inventories of sediment sources and for developing erosion control plans; sediment assessment

methods; suggested prioritization criteria; and monitoring guidance. This guidance document is to be completed by December 31, 2005

Coordination
The Regional Water Board is currently coordinating with local and State agencies on an as-needed basis. Improved coordination is sought as part of the TMDL implementation process.

Core Regulatory
The current level of point source regulation (inspection, monitoring, and enforcement) on traditional dischargers with some increase in storm water issues is anticipated. Harbor issues associated with fish processing and individual waste disposal systems (primarily on the south shore of the harbor), as well as construction related problems, are addressed through the core regulatory program and the local oversight of individual systems.

Ground water
Ground water issues center on petroleum contamination and mill sites and will continue to receive the current level of activity. Groundwater and surface water contamination is 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.

Nonpoint Source
Continued involvement in forestry, grazing and county road issues is necessary to ensure protection of aquatic resources. The 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 implementation process (see the above discussion) will increase work with local agencies and groups regarding land use effects on water quality, following the State Nonpoint 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 TMDL Implementation Policy for sediment and Sediment Amendment to the basin plan are also a part of the NPS strategy.

Vineyards are rapidly expanding in the watershed. Much of this expansion is occurring on hillsides where there is increased erosion potential and delivery of sediment to nearby streams. Staff will need to educate vineyard landowners of best management practices for prevention of increased sedimentation of waters of streams and protection of the beneficial uses of water through an outreach program as conversion of land to vineyards occurs.

Timber Harvest
The Regional Water Board has an extensive timber harvest program where staff review and inspect timber harvest plans for implementation of the Forest Practice Rules and

best management practices to ensure protection of water quality and beneficial uses. Program activities are expanding on private land in concert with California Department of Forestry and Fire Protection. The over-arching regulatory provisions of the Basin Plan are the Action Plan for Logging, Construction and Associated Activities and the Nonpoint Source Action Plan. The SWRCB and CDF/BOF entered into a Management Agency Agreement, which delegates primary water quality authority 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. Regulatory activities associated with timber harvest are conducted in accordance with that agreement. The Regional Water Board reviews timber harvest plans (THPs) and non-industrial timber management plans (NTMPs) and provides recommendations to CDF. In addition, THPs and NTMPs must comply with general or individual WDRs or waivers of WDRs.

Local Contracts/Agreements
The Regional Water Board will continue active involvement in the Clean Water Act sections 319(h) grant program and the 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 review process feeds into the activities to the extent issues were identified in the Triennial Review and applicable to the Noyo 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 Implementation Policy will be completed, and a Regional Sediment Amendment will be incorporated into the Basin Plan at some future date.

Evaluation and feedback
The Regional Water Board will evaluate progress on a yearly basis, the TMDL providing the focus.

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 to conduct outreach and enforcement activities on new developments of hillside vineyards as needed to pursue the actions currently are not addressed.

Appendix 2.3.5-B contains monitoring and assessment needs, and Appendix B contains details on nonpoint source program activities and needs.

Appendix 2.3.5-A
Stakeholders

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

United States

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

California State
California Environmental Protection Agency
Department of Forestry and Fire Protection
Jackson Demonstration State Forest
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
Department of Environmental Health

Local Agencies
Mendocino County Resource Conservation District
city planning departments
city public works departments

Public Interest Groups and Industries
Coast Action Group
Pacific Coast Federation of Fishermen's Associations
Friends of Fort Bragg
Campbell Timberland Management (Hawthorne Timber Company)
Mendocino Redwood Company
Noyo Watershed Alliance
Coastal Land Trust
Mendocino Coast Watch

Appendix 2.3.5-B

Monitoring priorities and needs detail for the Noyo watershed

Additional assessment by Regional Water Board staff is needed to test hypotheses about support of beneficial uses MUN, REC1, COLD, RARE, or provide assessment information essential for program implementation. They are currently not funded.

The estimates are Regional Water Board needs on a per year basis.

1. TMDL Monitoring - $65,000 - (0.5 PY + $10,000) ongoing at 5-year increments
Instream and hillslope conditions should be monitored to gauge success and progress of implementation and to provide feedback into the implementation process.

2. Parlin Fork Biological Assessments - $32,000 (0.2 PY + $10,000)

Documentation of conditions and monitoring of the aquatic biota should be conducted to assess the success of wood treatment chemical cleanup actions at the Parlin Fork Conservation Camp. (This was planned for under the Toxic Substance Monitoring (TSM) program, but those fund were re-directed to mercury sampling in the Trinity River. Subsequently, the TMS program has been terminated and this sampling has not been initiated.)

SECTION 2.3.6

BIG RIVER WATERSHED

Based on the recognition that the anadromous fishery is in decline, activities to assess the watershed and improve conditions for anadromous salmonids are underway. Sediment and high water temperatures impair the Big River. A technical TMDL has been completed for sediment but not for temperature. The following provides an overview of activities and outlines our basic framework and strategy at this time.

WATERSHED DESCRIPTION

The Big River watershed drains an area of approximately 116,000 acres, or about 181 square miles. The Big River estuary is located immediately south of the town of Mendocino and approximately ten miles south of Fort Bragg. The hydrological unit for the Big River is 1113.30 (CalWater version 2.2). The watershed drains from the east to the west, sharing ridges with the Noyo River watershed to the north, the Eel River watershed to the east, and the Little, Albion and Navarro Rivers watersheds to the south. The Big River watershed has a Mediterranean climate, characterized by a pattern of low-intensity rainfall in the winter and cool, dry summers with coastal fog. Mean annual precipitation is 40 inches at Fort Bragg near the western margin of the watershed and 51 inches at Willits to the east. About 90% of the precipitation in this area occurs between October and April with the highest average precipitation in January. Snowfall is very rare and hydrologically insignificant.

The Big River Basin is sparsely populated, with most of the land used for silviculture and other smaller areas used for ranching. There are only a handful of populated areas within the Big River Basin, including the areas around Orrs Springs, Whiskey Springs, Cameron, and Mendocino. By far the largest populated area is Mendocino, with a population of approximately 824 people.

Vegetation in the Big River basin is predominantly coniferous with redwoods near the coast and in the stream bottoms and Douglas fir in the interior and along the ridges. Broadleaf trees typical of the area include tan oak, live oak, alder, bay and madrone. They are interspersed throughout the conifer stands. On the drier slopes in the headwaters there is considerable oak-grassland and brush. California black oak, Oregon oak, ceanothus, currant, raspberry, and manzanita comprise woody species dominant in these areas. Herbaceous species consist of oat grasses, bromes, fescues, and filagree.

The Big River is designated a Critical Coastal Area. See Appendix C for more information on this Critical Coastal Area.

Historically, coho salmon *(Oncorhynchus kisutch*) and steelhead trout (*O. my*kiss) utilized habitat throughout the Big River watershed, and are still present today. All of the subwatersheds in the Big River watershed have accessible streams presumed to have been historically fully suitable for sustaining populations of salmonids under pre-management conditions. Compared to coho, currently steelhead are reported to be relatively more abundant and more widespread in the Big River watershed, but the actual population numbers are low for both species, especially as compared to historic levels. Chinook salmon (*O. tshawytscha*) have also been found in the Big River Watershed, although little is know about the population size or extent of the species.

The primary beneficial uses of concern in the Big River watershed are those uses associated with the cold freshwater fishery that supports coho salmon, chinock salmon, and steelhead trout, which are listed as threatened under the federal Endangered Species Act. Additionally, the Basin Plan identifies municipal, industrial, agricultural, and recreational uses of the Big River watershed. The beneficial uses of water related to rare, the Regional Water Board and State Water Board have approved threatened or endangered species for this basin. As with many of the north coast watersheds, the beneficial uses associated with coldwater 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 and high water temperatures.

The following beneficial uses are related to the Big River watershed's coldwater fishery:

- Commercial and sport fishing (COMM);
- Cold freshwater habitat (COLD);
- Migration of aquatic organisms (MIGR);
- Spawning, reproduction, and early development (SPWN); and,
- Estuarine habitat (EST).

The five largest property owners are private timber companies and a state-owned forest: together, Mendocino Redwood Company, Jackson State Demonstration Forest, Pioneer Resources, Hawthorne Timber Company (managed by Campbell Timberland Management),

and Weger Holdings own 83 percent of the watershed. Thirty-one property owners (ownership from 160 to 3,760 acres) own another 14 percent of the land, and the rest is in scattered private residences. Timber production and harvest are the primary land uses in the watershed. The history of the Big River watershed is dominated by timber harvest. Logging began in the basin about 1852. A mill was built, railroads were constructed and splash dams were used to transport logs down the river to the mill. Tractor yarding and road watershed has been logged, some areas more than once. There is some grazing along Comptche-Ukiah Road and in the southeast portion of watershed.

In 2002, the majority of the Big River Estuary, as well as upland areas, were added to Mendocino Headland State Park. The Big River Unit consists of 7,334 acres, which, when added to the surrounding State Park system, created a 74,000-acre wildlife corridor which links diverse coastal and inland habitats into the largest piece of connected public land entirely within Mendocino County. Reaching from the river's mouth to 800-foot elevation inland ridges, the Big River wetlands property includes a wide range of habitats including 12 miles of salmoind spawning gravel, and over 1,500 acres of California's remaining wetlands. The land was purchased with private funds through the Mendocino Land Trust.

ASSESSMENT AND PROBLEM IDENTIFICATION

The Big River watershed provides degraded conditions for salmonids because of poor quality summer rearing and overwintering habitat, which is limited by high sedimentation, low large woody debris (LWD), a low number of pools, the shallow depth of pools, channel entrenchment and a lack of connection to off-channel habitat. Spawning gravels generally are present, but their quality is low due to embeddedness of the gravels and fine sediment in the substrate. High water temperatures also impair salmonid rearing, in part due to low canopy cover

There is limited information from which to estimate the historic population size of salmon and steelhead in the Big River Watershed. In the early 1960s, the California Department of Fish and Game (CDFG 1965) estimated that 6,000 coho and 12,000 steelhead spawners returned each year to the Big River Watershed. At that time, CDFG also noted that the watershed was not supporting larger runs of fish and cited erosion and siltation as limiting factors. Thirty years later, Brown et al. (1994) estimated coho spawning populations to be around 280 fish in the entire Big River Watershed. The populations of both coho and steelhead have substantially decreased and will continue to decline without protection and restoration.

Within the Central California Coast Evolutionary Significant Unit (ESU), coho salmon abundance in the 1990's was clearly lower than in the mid-to-late 1980's (SFSC 2001). Big River Watershed coho populations are located within the Central California Coast ESU. According to the Southwest Fisheries Science Center operated by the National Marine Fisheries Service, coho within the Central California Coast ESU are presently in danger of extinction (SFSC 2001). However, according to the *Status Review of California Coho Salmon North of San Francisco* (CDFG 2002b), "coho salmon populations of streams in the northern portion of the [Central California Coast] ESU seem to be relatively stable or are not declining as rapidly as those streams to the south."

Excessive inputs of sediment to the Big River and its tributaries have caused a reduction in the quality and quantity of instream habitat that is capable of fully supporting many of the beneficial uses of the Big River. In addition, there are specific concerns about sedimentation on the estuarine processes in the Big River because timber harvesting within the valley has

increased erosion on the slopes above the river. Subsequently, the sediment load of the river has increased. Estuaries are subject to natural sedimentation with the coarser particles settling out upriver and the finer particles settling out in the estuary and floodplains along the lower reaches of the estuary. Sedimentation greatly accelerated after logging began, resulting in a major decrease in width and rapid sediment build-up along the banks in the lower river. The narrowing channel caused an increase in water velocity and increased deposition of fine sediment on the floodplains in the tidal areas. Levees built up at the edges of wetland flats where they adjoin the main channel are primary indicators of this rapid sediment accretion. These levees extend at least 3 kilometers (2 miles) further down the estuary than they did 80 years ago. There is concern about the effect of excessive sedimentation in the estuary on vegetation because sediment-driven levee formation has cut off tidewater intrusion in and around the estuarine sloughs. The productivity of the estuary relies heavily on the production of salt marshes.

Sediment delivery to the river and tributaries has varied over time with the most delivery in the early periods of timber harvest when logging practices accounted for most of the sediment generation. But in recent times, since 1989, even though harvesting has increased (over 55 percent of the watershed has been harvested in the last two decades) and the quantity of roads has increased (over a third of the roads have been constructed in the last decade) total sediment generation did not increase over historical levels possibly due to improved road building and timber harvest practices. However, road related sediment delivery has increased in total and proportionally to the total sediment generated, with 181 tons/sq. mile/year of sediment generated from roads including associated landslides. There is currently an estimated 1,242 miles of roads in the Big River watershed, which translates to a basin-wide road density of 6.86 miles/sq.mile. For more information on sediment sources in the Big River Watershed, please see the Sediment TMDL at http://www.epa.gov/region09/water/tmdl/big/bigfinaltmdl.pdf

Primary water quality issues in the Big River watershed

- Sedimentation of streams
- Salmonid habitat degradation
- High water temperatures

In 2003, as part of the 2002 Clean Water Act 303(d) List update, the Big River was listed as temperature impaired because high water temperatures were found to be negatively impacting salmonids. Although the technical TMDL has not yet been completed, potential sources of the high water temperatures include stream bank modification/destabilization, the removal of riparian vegetation, habitat modification, and non-point sources.

Other issues of concern in the watershed are potential herbicide runoff due to timberland management, livestock entry into watercourses, an inactive rock quarry adjacent to the estuary, a permitted septic disposal facility adjacent to Lagoon Creek, a landfill near Casper, a small mill still in operation on Chamberlain Creek near the men's conservation camp, and the City of Mendocino that is sewered with an ocean outfall. There are some leaking underground fuel storage tank sites in the town of Mendocino and in the watershed itself. There is at least one incident of a fuel spill on Highway 20 into James Creek (a Big River tributary) that continues to contaminate James Creek.

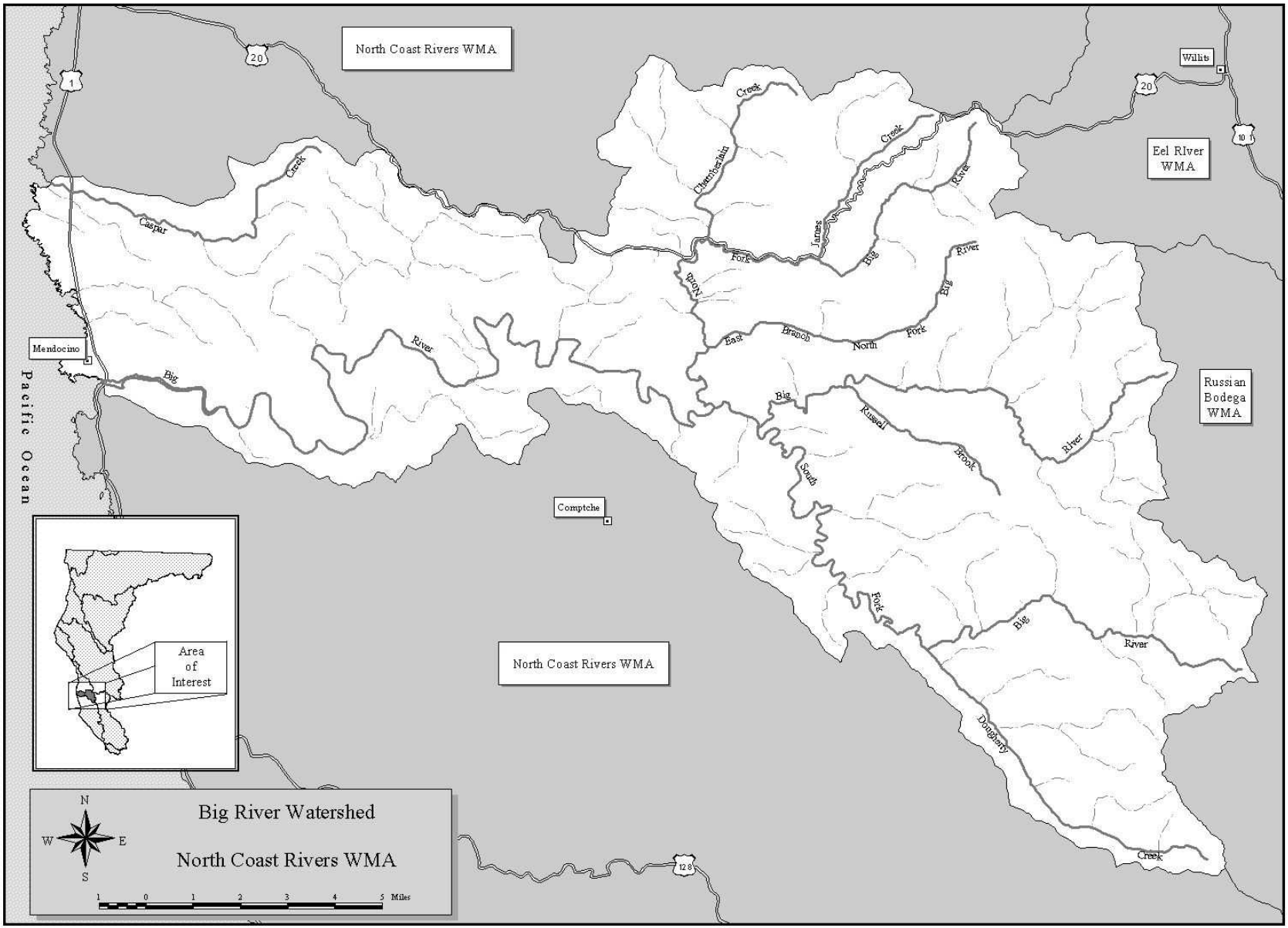


Figure 2.3.6.1. Big River Watershed

WATER QUALITY GOALS

The following listing represents a first-cut delineation of goals and actions to achieve the goals that will be refined through the TMDL development

- **Protect surface and ground water IND, MUN, DOM, REC-1, and REC-2 uses**
- **Protect and enhance beneficial uses associated with anadromous fishes COLD, MIGR, SPWN, EST, COMM**

The overall emphasis in the Big River watershed was the completion of the TMDL Implementation Policy Statement for Sediment Impaired Waters. The increased assessment of timber harvest related activities continues to be a high priority, along with outreach to ranches, rural landowners, and others stakeholders in the Big River. Additionally, the temperature TMDL will need to be developed.

IMPLEMENTATION STRATEGY

Implementation will occur in the form of the TMDL Implementation Policy Statement for Sediment Impaired Waters that was approved by the Regional Water Board on November 29, 2004. The Policy Statement will bring the watershed into a desired future condition that is consistent with the enhancement and maintenance of salmonid species. A broad interagency effort was used to gather and assess existing information on the watershed. Likewise, sediment waste discharge control efforts will continue to incorporate significant interagency and public coordination.

Implementation measures to address the temperature impairment will be developed following completion of the temperature TMDL.

Other concerns in the watershed will continue to be addressed through existing programs. Given current funding constraints, any new and/or redirected resources should be focused on staffing for field nonpoint source compliance, education and outreach efforts, monitoring, and enforcement inspections.

Assessment and Monitoring

Assessment of existing information was used in the development of the sediment TMDL strategy, drawing from existing information contained in plans developed by the CDF and private timber companies as well as any citizen information that was made available. Data and a limited analysis are available in the KRIS-Big River computerized database package. See http://www.krisweb.com/. A watershed assessment of the Big River was to be drafted in a multi-agency effort led by the California Resources Agency called the North Coast Watershed Assessment Program (NCWAP). In total, five state agencies participated in NCWAP: Department of Fish and Game (DFG), Department of Forestry and Fire Protection (CDF), Department of Conservation-Division of Mines and Geology (DMG), Regional Water Quality Control Board – North Coast Region (NCRWQCB), and Department of Water Resources (DWR). The principal goal of NCWAP was to compile and develop baseline scientific information about existing biophysical conditions in north coast watersheds. Unfortunately, NCWAP funding was eliminated before the Big River assessment was completed.

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. Three stations were monitored for basic water quality parameters as part of the Surface

Water Ambient Monitoring Program (SWAMP) in fiscal year 2000-2001. Presently, there are no plans to continue monitoring at these sites.

As part of the Sediment TMDL Implementation Policy Statement for Sediment Impaired Waters, the Regional Water Board directed staff to develop a sediment TMDL implementation monitoring strategy by December 31, 2005. The strategy will provide feedback on the recovery of sediment-impaired water bodies, including the Big River. The monitoring strategy shall include a description of monitoring objectives, trend monitoring stations, the sediment-related parameters that will be monitored, benchmark conditions, measurable milestones, and specific due dates for monitoring and data analysis. Monitoring will likely begin in 2006 following the completion of the monitoring strategy. Although the monitoring strategy is focused on all sediment impaired water bodies in the North Coast Region, the Big River is an excellent candidate for a long term sediment monitoring station due to the presence of the Big River Unit of the Mendocino Headlands State Park and other landowners willing to cooperate and assist with monitoring efforts.

Education and Outreach
As part of the Sediment TMDL Implementation Policy Statement for Sediment Impaired Waters, the Regional Water Board directed staff to conduct public outreach and education on sediment control issues, and to seek additional staff resources for such activities. Staff is currently developing a guidance document on sediment waste discharge control that will include examples of sediment waste discharge sites, sediment control practices, and road management practices; guidance for developing inventories of sediment sources and for developing erosion control plans; sediment assessment methods; suggested prioritization criteria; and monitoring guidance. This guidance document is to be completed by December 31, 2005.

Additional education and outreach will occur during the development of the temperature TMDL for the Big River Watershed.

Coordination
The Regional Water Board currently coordinates with local and State agencies on an as-needed basis. Improved coordination is sought as part of the TMDL implementation process. Additionally, staff is currently serving an advisory role in the development of an interim management plan for the Big River Unit in cooperation with California State Parks.

Core Regulatory
The current level of point source regulation (inspection, monitoring, and enforcement) on traditional dischargers with some increase in storm water issues is anticipated. Construction related problems are addressed through the core regulatory program and the local oversight of individual systems.

Ground water
Ground water issues center around petroleum contamination and mill sites and will continue to receive the current level of activity. Groundwater and surface water contamination is 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.

Nonpoint Source

Continued involvement in forestry, grazing and county road issues is necessary to ensure protection of aquatic resources. The 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 implementation process will increase work with local agencies and groups regarding land use effects on water quality, following the State 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. Regional Water Board staff will participate on the Regional Committee to develop a Critical Coastal Area Action Plan and implement projects in the Big River Critical Coastal Area.

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.

Local Contracts/Agreements
The Regional Water Board will continue active involvement in the Clean Water Act sections 319(h) grant program and the 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 review process feeds into the activities to the extent issues were identified in the Triennial Review and applicable to the Big River watershed. The top priority issue is the review the Nonpoint Source Control Measures. In addition, the TMDL strategies will be incorporated into the Basin Plan at some future date.

Evaluation and feedback
The Regional Water Board will evaluate progress on a yearly basis, the TMDL providing the focus. Appendix B contains details on nonpoint source program activities and needs.

BUDGET

The Regional Water Board will attempt to fund the highest priority actions as identified in this watershed to the extent funding constraints allow, and will pursue additional funding to conduct outreach and enforcement activities as needed to pursue the actions currently not addressed.

Appendix 2.3.6-A
Stakeholders

Partial listing of agencies and groups 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
Jackson State Demonstration Forest
California State Parks, Mendocino Headlands State Park, Big River Unit
California State Parks, Montgomery Woods State Park

Mendocino County
Water Agency
Planning Department
Department of Environmental Health

Local Agencies
Mendocino County Resource Conservation District
city planning departments
city public works departments

Public Interest Groups and Industries
Coast Action Group
Pacific Coast Federation of Fishermen's Associations
Mendocino Redwood Company
Campbell Timberland Management
Pioneer Resources
Mendocino Land Trust
Trust for Wildland Communities
Friends of the Big River
Big River Watershed Alliance
Coastal Land Trust
Mendocino Coast Watch
Redwood Coast Land Conservancy
Redwood Community Action Agency

SECTION 2.3.7

ALBION RIVER WATERSHED

Based on the recognition that the anadromous fishery is in decline, activities to assess the watershed and improve conditions for anadromous salmonids are underway. A Clean Water Act Section 303(d) technical TMDL for sediment has been completed. The following provides an overview of activities and outlines the basic framework and strategy at this time.

WATERSHED DESCRIPTION

The Albion River watershed drains an area of approximately 27,500 acres, about 43 square miles. The Albion River estuary is located near the town of Albion and is approximately 16 miles south of the city of Fort Bragg. The Albion River is in the hydrological unit 1113.40 (CalWater version 2.2). It primarily drains from the east to the west, sharing ridges with the Big River watershed to the north and northeast and the Navarro River watershed to the southeast and south. Elevations range from sea level to 1,566 feet. The main tributaries of the Albion River include: Railroad Gulch, Pleasant Valley Creek, Duck Pond Gulch, South Fork Albion River, Tom Bell Creek, North Fork Albion River, and Marsh Creek. The Mendocino Redwood Company (MRC), an industrial forestry company, owns approximately 54% of the land in the Albion River watershed. MRC property is concentrated in the Lower Albion River, Middle Albion River, and South Fork Albion River watersheds. Smaller industrial timberland ownerships, a few ranches, and numerous small parcels, typically private residences, make up the balance. Public ownership is limited to several parcels owned by Mendocino County and various school districts and community services districts. Population centers are the towns of Albion and Comptche.

The watershed is dominated by two distinct landforms: the relatively flat marine terraces extending several miles inland, and intervening deeply incised inner gorges of the major river channels and streams that dissect these surfaces. The Mediterranean climate in the watershed is characterized by a pattern of low-intensity rainfall in the winter and cool, dry summers with coastal fog. Mean annual precipitation is about 40 inches at Fort Bragg near the western margin of the watershed and about 50 to 55 inches at Willits. About 90% of the precipitation in this area occurs between October and April, with the highest average precipitation in January. Snowfall in this watershed is very rare and hydrologically insignificant.

Redwood and Douglas fir forest dominate the Albion River watershed. A 1949 survey identified the following assemblages: redwood and fir forest, laurel and poison oak, chaparral, salt marsh, sedge, coast hemlock, cypress, red alder, velvet grass, blackberry, bull thistle, and tangled underbrush.

The Albion River has a large estuary with tidal intrusion extending upstream by as much as five miles. The estuary contains over two miles of eel grass beds, as well as algae,

sea-lettuce, rock weed, and red laver. This area has been designated as a Critical Coastal Area. Approximately 4 river miles are within the coastal zone. The town of Albion is located at the mouth of the river and supports a thriving fishing harbor. The harbor has had small episodic oil spills associated with the fishing industry. The Albion River empties into the Mendocino Coast State Seashore. The Critical Coastal Area problem is sedimentation from human and natural sources. The pollutant is siltation from silviculture, roads, and other land uses**.**

Albion River estuary as an example of a drowned river valley resulting from a rise in sea level. The mouth of the river is defined by a narrow opening along the south side of the bay protected by rock headlands. This embayment reduces long ocean swell and sea height, which reach the mouth of the river. It also minimizes wave-induced longshore sediment transport, which causes the mouths of many California rivers to close during low flow periods due to sand bar formation. The mouth has aligned itself such that it discharges at the point of lowest wave energy, which allows the stream to remain open to the sea year around. The estuary is used as a commercial and sport fishing harbor and contains a small boat basin. The depth of the estuary has reduced from 20 to 25 feet deep in the 1940s to be less than six feet deep with a heavily silted bottom in 1979.

The history of the Albion River watershed is dominated by timber harvest. Logging began in the lower basin about 1852, around the time that the first mill was constructed near the lagoon upstream from the mouth of the Albion River. A number of smaller mills operated in the Comptche area between the mid 1930's and the 1960's. Since 1940, tractor yarding and the construction of roads, skid trails and landings have been the primary types of logging practices. Until the Forest Practice Rules Act was passed in 1973, logging practices were unregulated. This Act required road construction and timber harvesting practices intended to protect aquatic habitat and watershed resources.

Historically, coho salmon (*Oncorhynchus kisutch*) and steelhead trout (*O. mykiss*) utilized habitat throughout the Albion River watershed, and are still present today. Chinook salmon (*O. tshawytscha*) have also been found in the Albion River Watershed, although little is know about the population size or extent of the species.

The beneficial uses impaired by excessive sediment in the Albion River watershed are primarily those associated with the salmonid fishery: commercial sport fishing (COMM),cold fresh water habitat (COLD), estuarine habitat (EST), migration of aquatic organisms(MIGR) and spawning and reproduction and/or early development (SPWN). Additionally, the Basin Plan identifies municipal, industrial, agricultural, and recreational uses of the Albion River Watershed. The beneficial uses of water related to rare, threatened or endangered species has been proposed for this basin, and approved by the Regional Water Board and State Water Board. As with many of the north coast watersheds, the beneficial uses associated with 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.

ASSESSMENT AND PROBLEM IDENTIFICATION

Generally, the most sensitive beneficial use in the Albion River watershed, protection of cold water fish species, is limited by habitat conditions that include excess sediment,

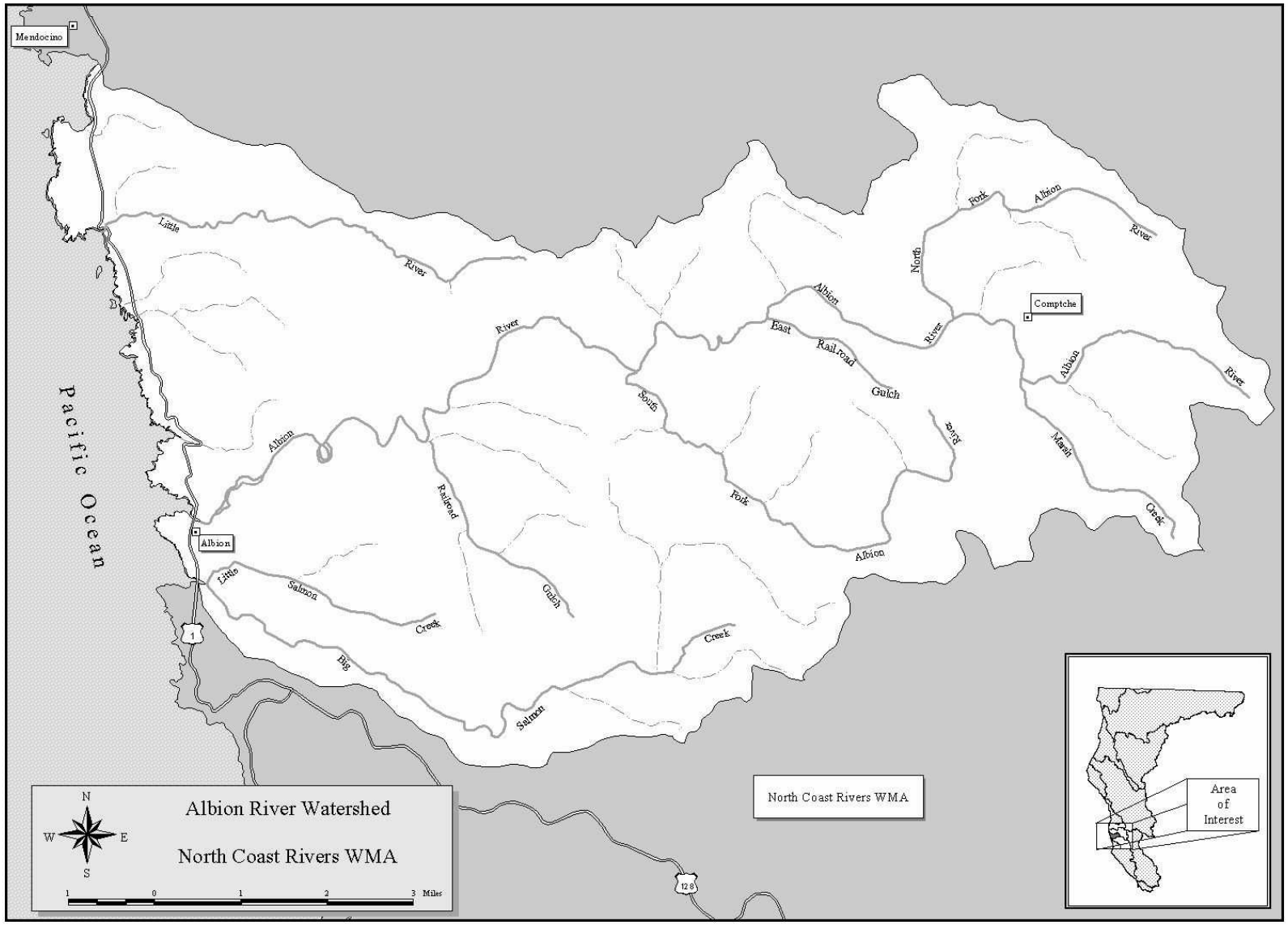


Figure 2.3.7.1 Albion River Watershed

lack of complex, deep pools, fair to poor spawning gravels and limited shelter. Excess sediment is adversely impacting the number and volume of pools. Sediment is also causing moderate to high embeddedness of substrate and spawning gravels in the basin. Shelter is poor throughout the basin. In general, habitat conditions in most locations in the watershed are moderately degraded. However, recently increased road building and timber harvest activities may cause additional degradation in the future, not reflected in current stream habitat conditions.

Data on the salmonid population in the Albion River watershed is sparse, but show that populations of chinook, coho, and steelhead in the Albion River and its tributaries have decreased substantially and continue to decline. In the early 1960's, the California Department of Fish and Game (CDFG 1965) estimated that 256,000 chinook, 99,000 coho, and 573,000 steelhead spawners returned each year to the coastal rivers of California. North Coast counting stations over the 1940s, 1950s, and 1960s showed spawning escapement declines of 64% in chinook salmon, 65% in coho salmon, and 66% in steelhead trout (USDA 1972). Coho populations in California today are probably less than 6% of what they were in the 1940s, and there has been at least a 70% decline since the 1960s (Brown et al. 1994). There is every reason to believe that California coho populations, including hatchery stocks, will continue to decline without protection and restoration.

There is currently an estimated 362 miles of roads in the Albion watershed, which translates to a basin-wide road density of 8.43 mile/sq. mile. Road erosion accounts for about 13 percent of sediment delivery to the stream that is double the long-term average of 54 tons/sq. mile/year. Background-related sediment inputs account for about 45 percent of the total, and management-related sediment inputs account for about 55 percent of the total. For more information on sediment sources in the Albion River Watershed, please see the Sediment TMDL at: http://www.epa.gov/region09/water/tmdl/albion/albionfinaltmdl.pdf.

The Albion's estuary dissolved oxygen (DO) concentrations indicate that dissolved oxygen may be a limiting factor for salmonids in the upper portions of the estuary late in the season, a condition that may be exacerbated in low flow years.

Primary water quality issues in the Albion River watershed

- Sedimentation of streams
- Salmonid habitat degradation
- Low dissolved oxygen in the estuary

Other issues of concern are: two trailer parks with septic system problems that need to be investigated, underground storage tanks leaking to ground water near the bluffs overlooking the ocean, Mendocino Mineral Water bottling plant that at one time had a waste discharge requirement and now needs investigation, and new development of homes and septic systems in the Comptche area.

WATER QUALITY GOALS

The following listing represents a first-cut delineation of goals and actions to achieve the goals that will be refined through the TMDL development.

- **Protect surface and ground water MUN, DOM, REC-1, and REC-2 uses**
- **Protect and enhance beneficial uses associated with anadromous fishes COLD, MIGR, SPWN, EST, COMM**

IMPLEMENTATION STRATEGY

Implementation will occur in the form of the TMDL Implementation Policy Statement for Sediment Impaired Waters that was approved by the Regional Water Board on November 29, 2004. The Policy Statement will bring the watershed into a desired future condition that is consistent with the enhancement and maintenance of salmonid species. A broad interagency effort was used to gather and assess existing information on the watershed. Likewise, sediment waste discharge control efforts will incorporate significant interagency and public coordination.

Other concerns in the watershed will continue to be addressed through existing programs. Given current funding constraints, any new and/or redirected resources should be focused on staffing for field nonpoint source compliance, education and outreach efforts, monitoring, and enforcement inspections. In order to develop adequate strategies it is a high priority to increase assessment activities of forestry, grazing, and agriculturally related activities including hillside vineyards and outreach to any new vineyards.

Assessment and Monitoring

Assessment of existing information was used in the development of the sediment TMDL strategy, drawing from existing information contained in plans being developed by the CDF and private timber companies as well as any citizen information that is made available. Data along with some analysis is available in the KRIS-Albion computerized database package (see http://www.krisweb.com/).

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. The SWAMP has identified a rotating station low in the watershed for basic water quality parameters. Monitoring needs also include monitoring toxins associated with marina use, boat repair and herbicide use. Monitoring for bacteria and sediment also needs to be increased. Under the North Coast Watershed Assessment Program, the Albion Basin Assessment Final Report was completed in February 2004.

As part of the Sediment TMDL Implementation Policy Statement for Sediment Impaired Waters, the Regional Water Board directed staff to develop a sediment TMDL implementation monitoring strategy by December 31, 2005. The strategy will provide feedback on the recovery of sediment-impaired water bodies, including the Albion River. The monitoring strategy shall include a description of monitoring objectives, trend monitoring stations, the sediment-related parameters that will be monitored, benchmark conditions, measurable milestones, and specific due dates for monitoring and data analysis. Monitoring will likely begin in 2006 following the completion of the monitoring strategy.

Education and Outreach

As part of the Sediment TMDL Implementation Policy Statement for Sediment Impaired Waters, the Regional Water Board directed staff to conduct public outreach and

education on sediment control issues, and to seek additional staff resources for such activities. Staff is currently developing a guidance document on sediment waste discharge control that will include examples of sediment waste discharge sites, sediment control practices, and road management practices; guidance for developing inventories of sediment sources and for developing erosion control plans; sediment assessment methods; suggested prioritization criteria; and monitoring guidance. This guidance document is to be completed by December 31, 2005.

Coordination
The Regional Water Board currently coordinates with local and State agencies on an as-needed basis. Improved coordination is sought as part of the TMDL implementation process and the North Coast Watershed Assessment Program

Core Regulatory
The current level of point source regulation (inspection, monitoring, and enforcement) on traditional dischargers with some increase in storm water issues is anticipated. Harbor issues associated with fish processing and individual waste disposal systems (primarily on the south shore of the harbor), as well as construction related problems, are addressed through the core regulatory program and the local oversight of individual systems.

Ground water
Ground water issues center on petroleum contamination and mill sites and will continue to receive the current level of activity. Groundwater and surface water contamination is 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.

Nonpoint Source
Continued involvement in forestry, grazing and county road issues is necessary to ensure protection of aquatic resources. The 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 implementation 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 TMDL program. The Regional Water Board staff will participate on the Regional Committee to develop a Critical Coastal Area Action Plan and implement projects in the Albion River Critical Coastal Area.

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.

Local Contracts/Agreements
The Regional Water Board will continue active involvement in the Clean Water Act section 319(h) grant program and the 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 review process feeds into the activities to the extent issues were identified in the Triennial Review and applicable to the Albion River watershed. The top priority issue is review of the Nonpoint Source Control Measures. Additionally, the TMDL strategy will be incorporated into the Basin Plan at some future date.

Evaluation and feedback
The Regional Water Board will evaluate progress on a yearly basis, the TMDL providing the focus. Appendix B contains details on nonpoint source program activities and needs.

BUDGET

The Regional Water Board will attempt to fund the highest priority actions as identified in this WMA to the extent funding constraints allow that, and will pursue additional funding to conduct outreach and enforcement activities on new developments of hillside vineyards is needed to pursue the actions currently not addressed.

Appendix 2.3.7-A
Stakeholders

Partial listing of agencies and groups with water quality jurisdiction and interests:

United States
Environmental Protection Agency
Fish and Wildlife Service
National Marine Fisheries Service (NOAA Fisheries)
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
Department of Environmental Health

Local Agencies
Mendocino County Resource Conservation District
city planning departments
city public works departments

Public Interest Groups and Industries
Coast Action Group
Pacific Coast Federation of Fishermen's Associations
Mendocino Redwood Company
Albion River Watershed Protection Association
Comptche Land Conservancy
Jughandle Creek Farm and Nature Center
Coastal Land Trust
Friends of Salmon Creek
Mendocino Coast Watch

SECTION 2.3.8

NAVARRO RIVER WATERSHED

The Navarro River in Mendocino County, California, is listed on California's 303(d) report as a water quality limited water body requiring the establishment of a Total Maximum Daily Load (TMDL) due to sedimentation and temperature. Technical support documents for the TMDLs were developed in mid-2000. USEPA will promulgate the TMDLs to meet consent decree deadlines.

WATERSHED DESCRIPTION

The Navarro River watershed is a coastal watershed in southern Mendocino County, 3 miles south of the town of Albion encompassing approximately 315 square miles (201,600 acres). The Navarro River is in the hydrological unit 113.50. The Navarro River flows through the coastal range, the Anderson Valley, and out to the Pacific Ocean. The watershed is the largest coastal basin in Mendocino County and can be subdivided into five major drainage basins: Mainstem Navarro River, North Fork Navarro River, Indian Creek, Anderson Creek, and Rancheria Creek. Rainfall averages about 40 inches per year at Philo, with most of it occurring between December and March.

The population of the watershed is about 3,500 people, with most living in and around the towns of Boonville, Philo, and Navarro. State Highway 128 traverses much of the watershed, paralleling Rancheria Creek and the mainstem Navarro River for approximately twenty-five miles. Land-use in the watershed includes forestland (70%), rangeland (25%), and agriculture (5%) with a small percentage devoted to rural residential development. Timber production, livestock grazing and other agricultural activities have been present in the Navarro River watershed since the mid-1800s.

The Navarro River is designated a Critical Coastal Area and approximately 5.5 river miles of the Navarro River are included in the coastal zone, including the estuary. See Appendix C for more information on this Critical Coastal Area.

The Navarro River empties into the Mendocino Coast State Seashore. This river basin supports a significant base of agriculture, livestock and timber (and, formerly, fishery) production. Sheep and cattle graze the open grassland areas, especially in the

headwaters. Anderson Valley, the most settled part of the basin, supports significant orchard and viticulture industries. Recent vineyard development of the highest ridges surrounding the Anderson Valley has led to the official designation of Sky Island appellation. The lower basin supports mixed redwood-Douglas fir-forest, which has been heavily logged. While exploitation of these resources has been in part responsible for the damage to the salmon and steelhead resource, they continue to play an important role in the local economy. The enhancement of the fishery must be planned and carried out in a way that takes account of other land uses and respects property rights in the basin.

ASSESSMENT AND PROBLEM IDENTIFICATION

The beneficial uses for the salmonid fishery are currently impaired. Freshwater habitat conditions in the Navarro River and its tributaries have degraded and are not adequate to support the beneficial uses. The degradation in freshwater habitat conditions has contributed to a dramatic decline in the populations of coho and steelhead from historical levels. As recently as 1985, the Navarro was considered to have the most anadromous habitat of any coastal stream in the county. The Navarro River was famous for its coho (silver) salmon runs. Today the range and abundance of coho salmon have been reduced greatly and subsequently listed as endangered on the federal Endangered Species Act list. The steelhead, although faring somewhat better than salmon due to a higher tolerance for high water temperature, also have been severely reduced.

Current stream temperatures tend to be lowest in small tributary streams, and highest in locations on the main streams of Anderson, Indian, and Rancheria Creeks, and on the Navarro River. The active channels are wider than natural in many reaches with high stream temperatures. Riparian vegetation in some of these reaches is sparse. Regional Water Board staff analyzed available data to determine the extent to which various factors are affecting stream temperatures in the Navarro River and its tributaries. It is highly likely that summertime water temperatures in the streams of the Navarro River watershed have been altered upward during the past fifty years. Land use activities, water withdrawals, changes in flow, dam construction and associated water releases, point source discharges, and natural factors have contributed to the change.

The results of a sediment source analysis show that human-caused sediment sources deliver approximately 40% of the total sediment yield of the Navarro River watershed. The dominant sources of human-caused sediment delivery (road-related sources) reflect the dominant land uses of the watershed. Both timber production and ranching make use of a vast network of roads, which deliver the majority of the human-caused sediment. Vineyards, which occupy approximately five percent of the watershed, have the potential to deliver large volumes of sediment to streams, and thus have potential to cause locally significant deleterious impacts. The watershed damage and concomitant damage to the anadromous fishery of the Navarro River basin is in large measure a result of accelerated erosion and sediment production, coupled with reduced flows in late summer due to agricultural diversion. A more detailed description and map is available in the restoration plan, Navarro Watershed Restoration Plan (1998). 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.

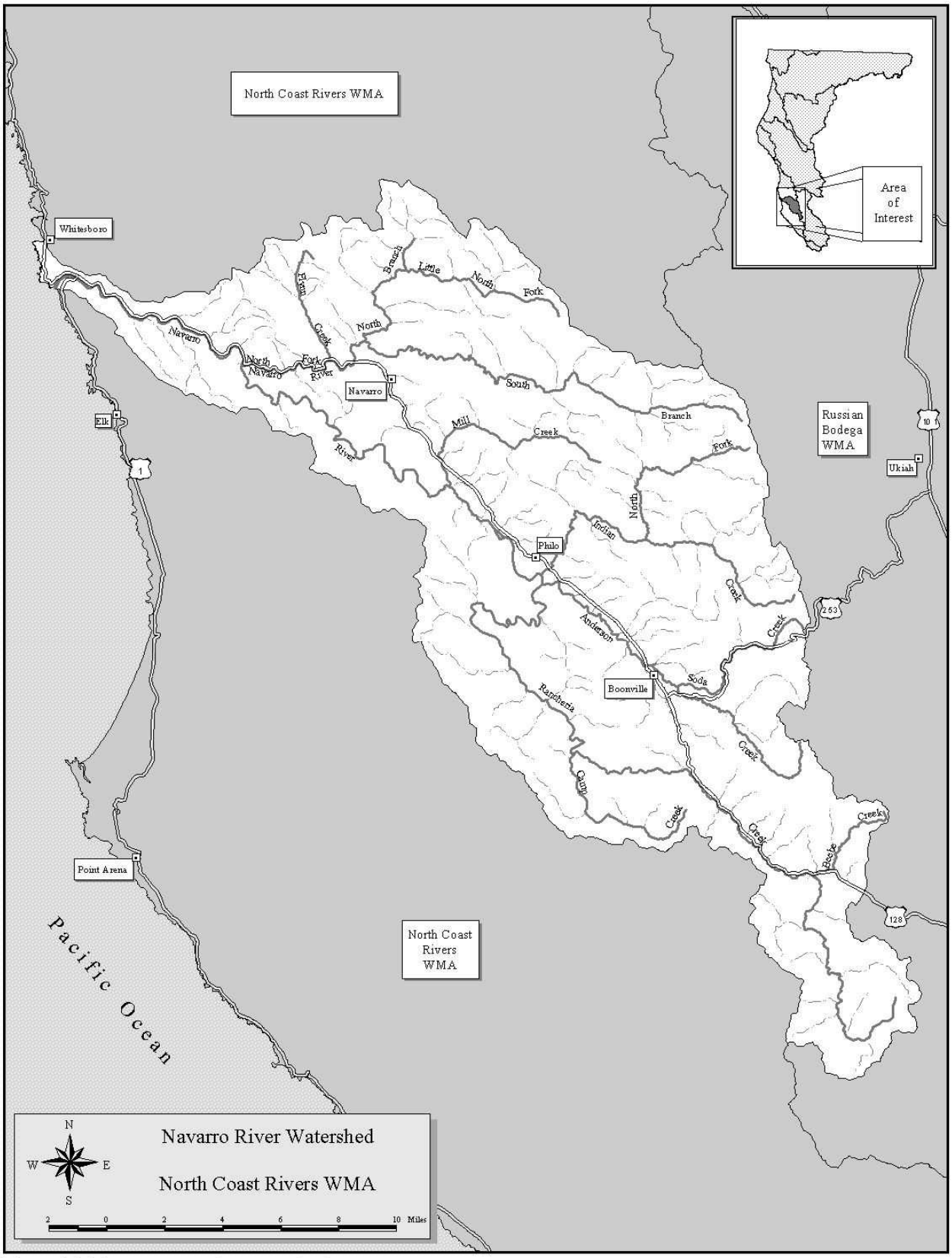


Figure 2.3.8.1. Navarro River Watershed

Primary water quality issues in the Navarro River watershed
- Sedimentation of streams
- High water temperatures

WATER QUALITY GOALS

The primary goals center around protection of the beneficial uses associated with aquatic life and drinking water supplies. The implementation of the TMDL Implementation Policy Statement Impaired Receiving Waters (adopted November 29, 2004) and the development of the waste reduction strategy for temperature are the highest priorities for action in the watershed. For the Navarro temperature TMDL, the Regional Water Board is setting numeric targets by estimating the natural water temperatures for the watershed. In addition, a target condition related to flow is being set. New and redirected funding has been focused on new staff and/or contracts to assist in implementing the TMDL Implementation Policy Statement for Sediment Impaired Receiving Waters and Regional basin plan amendment for sediment, and hillside vineyard outreach and needed enforcement activities.

- **Protect surface and ground water DOM, REC-1, and REC-2 uses**
- **Protect and enhance beneficial uses associated with anadromous fishes COLD**

IMPLEMENTATION STRATEGY

The current activities in the watershed aimed at implementing a watershed restoration plan form the primary focus for implementing changes to address problems in the watershed. Regional Water Board staff is actively involved in that effort and is using the information developed in the process for the TMDL strategy for sediment and temperature.

A major challenge to a restoration effort is creation of public understanding of the health of the watershed and support for implementation of specific enhancement activities. Watershed health, and the survival of the coho, is inherently a cross-ownership, community efforts in which everyone's actions, upland and downstream, are interconnected. Landowners, interest groups and community leaders should be fully engaged in this process in a non-judgmental, problem solving fashion to build the groundwork for the long-term effort of resource restoration and conservation and economic stability. The Regional Water Board will continue to foster a watershed-wide collaborative approach to dealing with watershed problems. Outreach is being conducted by Regional Water Board staff to also educate vineyard landowners about best management practices for prevention of increased sedimentation of waters of the State and protection of the beneficial uses of water. Staff is continuing to expand outreach activities combined with needed enforcement activities to address this issue.

The Anderson Valley Land Trust, Mendocino County Water Agency, and the California State Coastal Conservancy jointly sponsored a Navarro Watershed Restoration Plan, focusing on restoration opportunities related to sediment and temperature and their impacts on salmonid species in the watershed. The products of that effort are included in the TMDL Implementation Policy Statement for Sediment Impaired Receiving Waters in the development of the reduction strategies temperature. A list of agencies and other groups participating in the process are provided in Appendix 2.3.8-A.

The Regional Water Board adopted the technical TMDL for sediment and temperature in January of 2001. Core regulatory functions, especially regarding groundwater contamination, will continue as high priority items on a site-specific basis. The overall emphasis in the watershed is implementing the TMDL Implementation Policy Statement for Sediment Impaired Receiving Waters and developing reduction strategies temperature. Increased assessment activities and continued high priority forestry, grazing, and agricultural related activities including hillside vineyards, are parts of that effort.

Assessment and Monitoring
Assessment of existing information and some ground-truthing was performed in developing the TMDL support documents (technical TMDL). A future restoration plan will be drawing from existing information. 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 condition. Specific monitoring recommendations for temperature include a focused, coordinated monitoring study by the State of California (including CDFG, Division of Water Rights and Regional Water Board) that studies the flow and temperature patterns of areas with current diversions. This would reduce the uncertainty regarding the spatial extent of possible temperature problems from flow and estimates of eleven diversions. Implementation for temperature should include a program to continue to field test the temperature allocations and possible studies on averaging and monitoring techniques for shade. The SWAMP included up to six rotating basin stations in the FY 2000-01 rotation: Navarro River near Dimmick State Park, Navarro River at Philo, North Fork Navarro at Dimmick, Mainstem Navarro at Dimmick, Indian Creek at Philo, and Rancheria Creek at Highway 128. For more information and data see http://www.krisweb.com/.

Education and Outreach
It is hoped that the TMDL implementation 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. Increased emphasis on vineyard development is planned through the Nonpoint Source Program.

Coordination
The Regional Water Board currently coordinates with local and State agencies on an as-needed basis. Improved coordination is sought as part of the TMDL implementation process, especially with the Division of Water Rights.

Core Regulatory
The current level of point source regulation (inspection, monitoring, and enforcement) on traditional dischargers is anticipated and covers wineries, underground tanks, etc., as well as construction related pollution.

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 is 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.

Nonpoint Source

Continued involvement in forestry, grazing 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 implementation process will increase work with local agencies and groups regarding land use effects on water quality, following the State's Nonpoint Enforcement Policy (see Appendix B) to reduce nonpoint source pollution. An outreach program will enhance the effectiveness of the program. Appendix B contains additional program detail. 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 also participate on the Regional Committee to develop a Critical Coastal Area Action Plan and implement projects in the Navarro River Critical Coastal Area.

Vineyards are rapidly expanding in the north coast region. Much of this expansion is occurring on hillsides where there is increased erosion potential and delivery of sediment to nearby streams. 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. Regional Water Board staff is expanding outreach activities combined with needed enforcement activities to address this issue.

Road-related sediment is the dominant source of management-related sediment delivery across the Navarro watershed landscape. Vineyards have the potential to be locally significant, while use of conservation measures such as cover crops and contouring, as well as avoidance of areas prone to erosion can reduce the amount of sediment eroded. Regional Water Board staff believes that the potential for significant reductions of sediment delivery from vineyard erosion is great, based on the fact that most vineyards in the Navarro watershed are not incorporating the previously mentioned conservation practices. The vineyard density in some smaller watersheds, such as Mill, Lazy, and Floodgate Creeks, has great potential to degrade the habitat in those small streams if conservation practices are not employed.

More resources are needed to:

- 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

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 for implementation of the Forest Practice Rules and best management practices to ensure protection of water quality and beneficial uses. The program activities are expanding on private land in concert with California Department of Forestry and Fire Protection. The Water Quality Control Plan for the North Coast Region (Basin Plan) contains specific water quality objectives and implementation programs to protect and enhance identified beneficial uses of water. The over-arching regulatory provisions of the Basin Plan are the Action Plan for Logging, Construction and Associated Activities and the Nonpoint Source Action Plan. Provisions in that action plan will be the subjects of the upcoming TMDL waste reduction strategy. The Regional Water Board reviews timber harvest plans (THPs) and non-industrial timber management plans (NTMPs) and provides recommendations to CDF. In addition, THPs and NTMPs must comply with general or individual WDRs or waivers of WDRs.

Local Contracts/Agreements
The Regional Board will continue active involvement in the Clean Water Act section 319(h) grant 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 review process feeds into the activities to the extent issues were identified in the Triennial Review and applicable to the Navarro WMA. 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 at some future date.

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 final evaluation once implementation of the TMDL Implementation Policy Statement Impaired Receiving Waters is complete will feed into more 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, and will pursue additional funding for those actions currently are not addressed. Additional needs are detailed in Appendix 2.3.8-B for monitoring and assessment and in Appendix B for nonpoint source program activities. Additional funding to continue to expand outreach and enforcement activities on hillside vineyards is needed to pursue the actions are not currently being addressed.

Appendix 2.3.8-A
Stakeholders

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

United States
Environmental Protection Agency
Fish and Wildlife Service
National Marine Fisheries Service (NOAA Fisheries)
Natural Resources Conservation Council

California State
California Environmental Protection Agency
Department of Forestry and Fire Protection
Department of Fish and Game
Board of Forestry
Department of Water Resources
California Coastal Conservancy
Department of Parks and Recreation

Mendocino County
Water Agency
Mendocino Resource Conservation District

Public Interest Groups
Anderson Valley Land Trust
Pacific Watershed Associates
Circuit Rider Productions, Inc.
The Navarro Watershed Community Advisory Group
Coast Land Trust
Friends of the Navarro
Mendocino Coast Watch
Navarro by the Sea Center
Navarro River Watershed Landowner Group

Appendix 2.3.8-B
Monitoring priorities and needs detail for the Navarro Watershed

Additional assessment by Regional Water Board staff is needed to test hypotheses about support of beneficial uses MUN, REC1, COLD, RARE, or provide assessment information essential for program implementation. They are currently not funded.

The estimates are Regional Water Board needs on a per year basis.

1. **TMDL Monitoring - $92,000 - (0.7 PY + $15,000) – ongoing at 5-year increments**
   Instream and hillslope conditions should be monitored to gauge success and progress of implementation and to provide feedback into the implementation process.

2. **Log Mill Biological Assessments - $48,000 (0.3 PY + $15,000)**
   Documentation of conditions and monitoring of the aquatic biota should be conducted to assess the potential problems at historic wood treatment sites at old and existing log mills. Macroinvertebrate sampling under the SWAMP will provide some evaluation of aquatic conditions in this regard as well as begin to establish baseline information for future studies.

SECTION 2.3.9

GREENWOOD CREEK WATERSHED

This section is under construction, but contains some pertinent information. It will be expanded in the future.

Greenwood Creek is located in Mendocino County in California. It was considered for the 303-(d) lists but was ultimately not proposed for listing. This watershed is still a priority watershed because of the steelhead and coho placement on the Endangered Species Act list.

The creek itself supports many beneficial uses of water, including municipal supplies to the town of Elk, cold water and migratory/spawning habitat for anadromous fisheries (coho salmon and steelhead), wildlife habitat, recreation, and agriculture.

WATERSHED DESCRIPTION

Greenwood Creek Watershed, approximately 16,000 acres in area, is located on the southern Mendocino Coast between the town of Elk and Philo and between Greenwood Ridge (north), Clift Ridge (south) and Signal Ridge (east). Most of the coastal watershed is privately owned, with 60% owned by Louisiana Pacific Corporation as Timber Production Zone (TPZ) land, and the rest owned by approximately 50 smaller landowners. The only public land in or adjacent to Greenwood Creek is Greenwood State Beach, which contains the Greenwood Creek estuary, and a very small parcel owned by Elk County Water District. The watershed is used primarily for timber production, viticulture, fruit orchards, residences and limited cattle ranching. Greenwood Creek, a Class I coastal stream, flows 16 miles from its headwaters high in the watershed, downstream into the Pacific Ocean at the town of Elk.

IMPLEMENTATION STRATEGY

The Water Quality Control Plan for the North Coast Region (Basin Plan) contains specific water quality objectives and implementation programs to protect and enhance identified beneficial uses of water. The over-arching regulatory provision of the Basin Plan is the Action Plan for Logging, Construction and Associated Activities and the Nonpoint Source Action Plan. References are: “Greenwood Creek Watershed Project 1996 Road Survey Summary Report” and “Greenwood Creek Stream Survey Data Analysis and Recommendations.”

Nonpoint Source

Continued involvement in forestry, grazing 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.

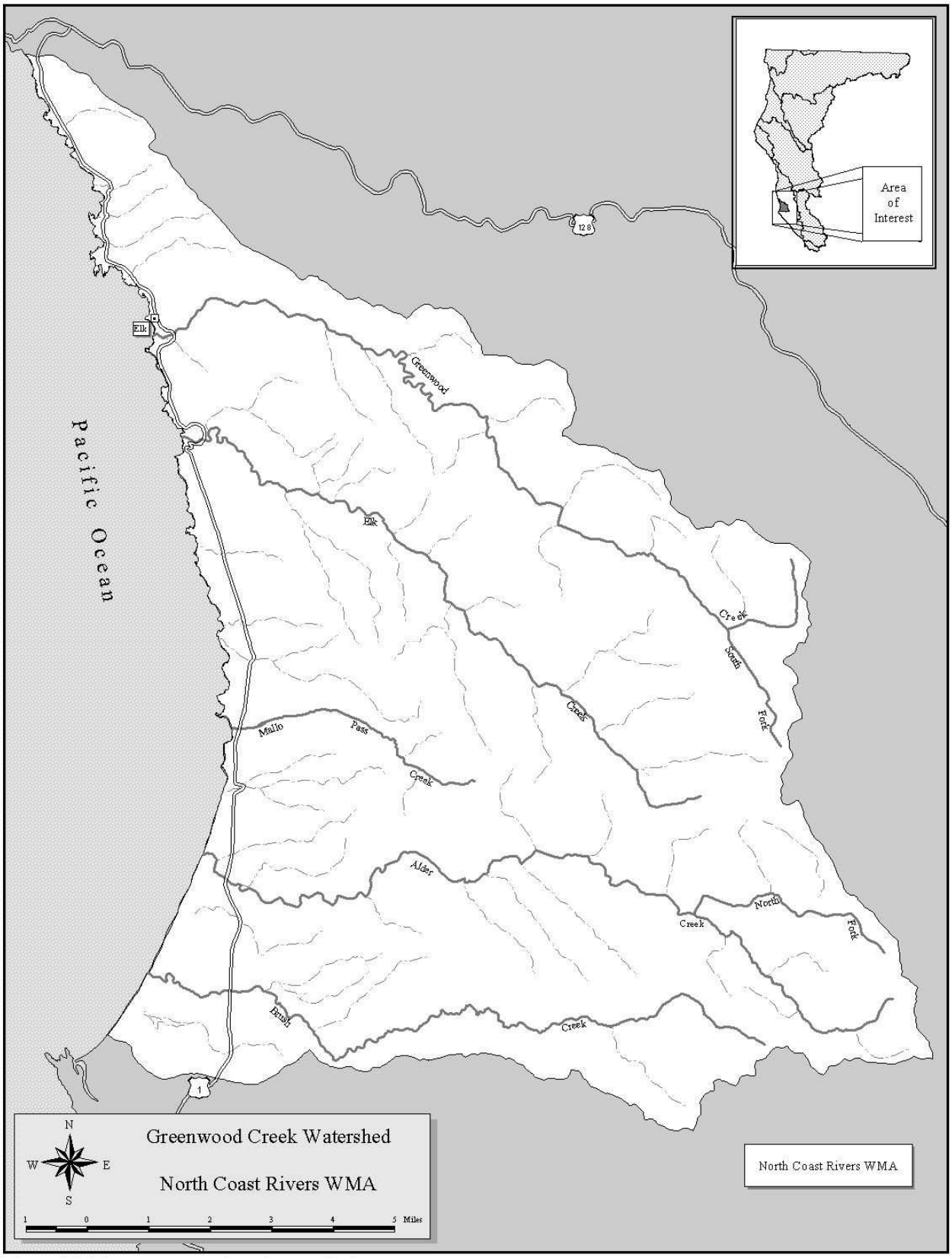


Figure 2.3.9.1. Greenwood Creek Watershed

SECTION 2.3.11

GARCIA RIVER WATERSHED

The Garcia River watershed, located in southern Mendocino County, is a forested watershed with coastal influenced climate in the lower half of the drainage (Figure 2.3.11-1). Steelhead and coho salmon utilize the stream for spawning and rearing, however populations have plummeted in the last decade. The Garcia River is listed under Clean Water Act section 303(d) for excessive sedimentation and elevated temperatures. The Action Plan for the Garcia River Watershed Sediment TMDL (Garcia TMDL Action Plan) was adopted into the Water Quality Control Plan for the North Coast Region on January 3, 2002.

WATERSHED DESCRIPTION

The Garcia River watershed comprises approximately 73,223 acres in southwestern Mendocino County. The Garcia River watershed is in the hydrological unit 113.70. The river flows northwest along the San Andreas Fault Zone for part of its course and then west to the Pacific Ocean. The Garcia River forms an estuary that extends from the ocean to the confluence of Hathaway Creek. It is a forested watershed consisting of mixed conifer (primarily fir and redwood) and hardwood (primarily tan oak and madrone) forests. The lower portion of the watershed, including the estuary, is primarily cropland and contains few conifers in the riparian zone. The primary land uses; forestry, dairies, grazing, and gravel mining, have changed little in the last two decades.

Timber harvesting is the dominant land use activity in the watershed. The period of heaviest timber cutting in the Garcia River watershed was between 1954 and 1961, but industrial and non-industrial timber harvesting continues today. Statistics kept since 1987 indicate 38,363 acres of the 73,223 acre watershed were harvested from 1987 to 1997 (52% of the basin). Forty-two percent of that harvesting occurred in 1988 and 1989. Most of the harvesting in this period occurred on property owned by Coastal Forestlands, Ltd., with additional harvesting on the Georgia Pacific Corporation, Louisiana Pacific Corporation, Bewley, Hanes, Alden and Mailliard properties, as well as that of smaller landowners (<1000 acres). The watershed is all privately owned under multiple ownerships. Hillside vineyard development is a concern for production of sediment as land is converted to new vineyards in the future.

A comprehensive watershed description is included in the Proposed Garcia River Watershed Water Quality Attainment Strategy for Sediment (Mangelsdorf and Lundborg

1997) and the Assessment of Aquatic Conditions in the Garcia River Watershed (NCRWQCB 1997) that were prepared for the development of a Clean Water Act section 303(d) waste load allocation and sediment reduction process.

Beneficial uses of the Garcia River include commercial and sport fishing; cold freshwater habitat; wildlife management; migration of aquatic organisms; spawning, reproduction and early development; and estuarine habitat. Sedimentation is impacting the beneficial uses of the Garcia River watershed. On October 19, 1993, the United States Environmental Protection Agency (US EPA) placed the Garcia River watershed on the Clean Water Act section 303(d) List of Impaired Waterbodies due to impairment and/or threat of impairment to water quality by sediment. The Clean Water Act requires the establishment of a Total Maximum Daily Load (TMDL) as the mechanism for controlling sediment pollution that is impacting the beneficial uses of the Garcia River watershed.

The Critical Coastal Areas in this watershed are the Garcia River and the Kelpbeds at Sanunders Reef. See Appendix C for more information about these Critical Coastal Areas.

ASSESSMENT AND PROBLEM IDENTIFICATION

The Garcia River and its tributaries have experienced a reduction in the quality and amount of instream habitat that is capable of fully supporting the beneficial use of a cold-water fishery, due to increased sedimentation. The anadromous fisheries have experienced severe decline in the last 40 years. Accelerated erosion from land use practices and other causes is impacting the migration, spawning, reproduction, and early development of cold water fish such as coho salmon , pink salmon, chinook salmon and steelhead trout. Natural processes combined with multiple land uses are responsible to varying degrees for impairment of the beneficial uses within the Garica River watershed. Anthropogenic sediment contributions from accelerated erosion and mass wasting have resulted from land use activities including timber production and harvest, road construction and maintenance, grazing, gravel mining, and agriculture. The Action Plan (refer to the Implementation section below) contains additional detail on land use and changes over time.

The acceleration of sediment delivery in the Garcia River watershed due to land management activities has resulted in the reduction of pools necessary for salmonid rearing and the loss or degradation of potential spawning gravel. In addition, the loss or reduction of instream channel structure in the Garcia watershed due to land management activities has contributed to this habitat loss. Data from 1991 indicates that the canopy density (with the possible exception of Mill Creek) is generally poor. Further, the component of canopy attributable to coniferous tree species is generally low. This finding correlates with the additional finding that the occurrence of large woody debris (LWD) in these same survey reaches was also generally low.

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.

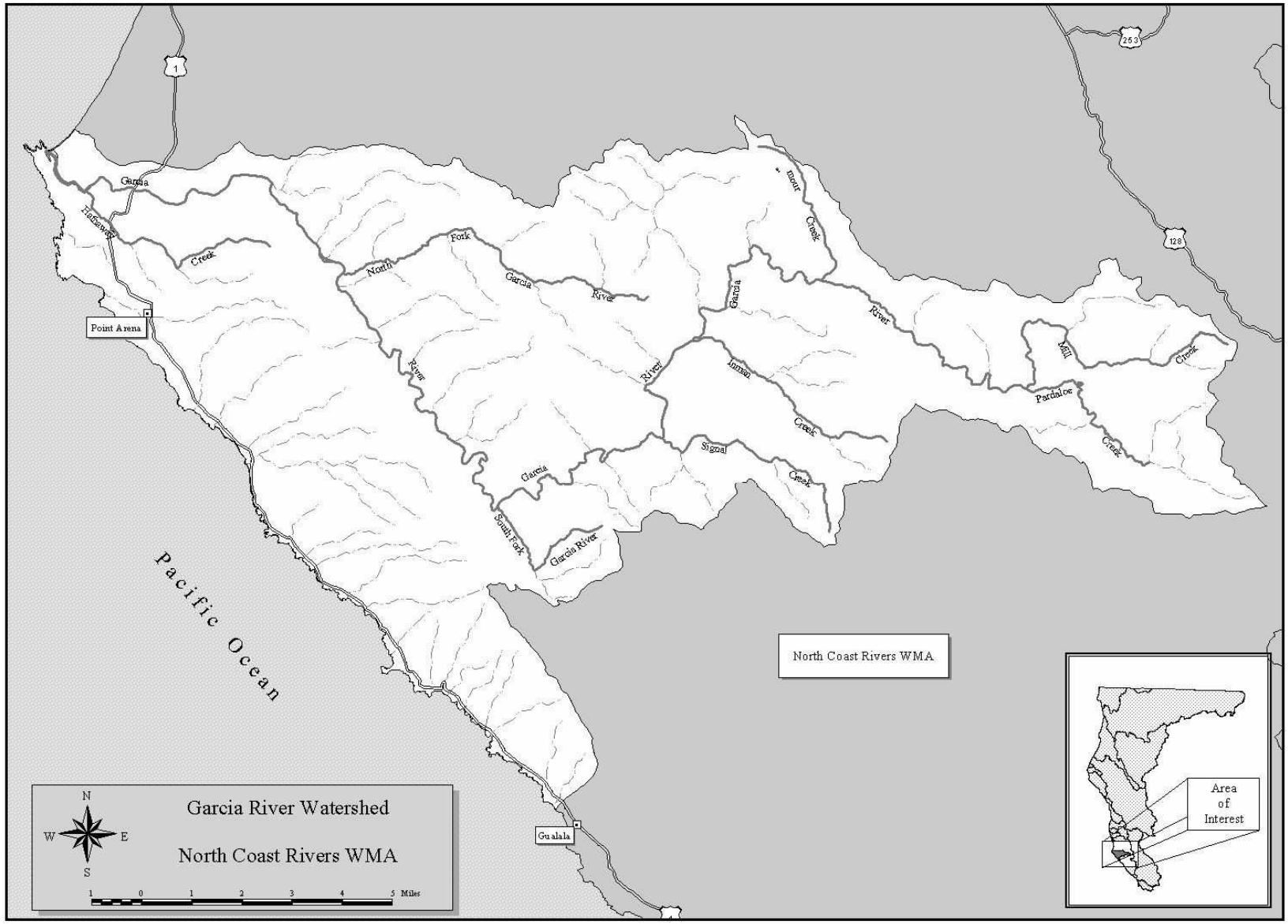


Figure 2.3.11.1 Garcia River Watershed

Primary water quality problems in the Garcia River watershed

- Sedimentation of streams
- Salmonid habitat degradation
- High water temperatures

WATER QUALITY GOALS AND ACTIONS

Staff members familiar with our activities in the watershed, prioritized goals and actions to address issues associated with the goals. The goals and actions, and their priority rankings reflect the desire to address certain issues in a priority fashion. However, the realities of funding constraints and program-related priorities may override the priorities. The goals and rankings were developed prior to the development of the Acton Plan.

The broad goals for the watershed include improving the anadromous fishery through sediment reductions and habitat enhancements and maintaining the other high beneficial uses of both surface and ground water. The three goals for the Garcia River are related through the beneficial uses they address:

GOAL 1: Protect and enhance salmonid resources (COLD, MIGR, SPWN, RARE)
GOAL 2: Protect and enhance ground water resources and attendant high beneficial uses
GOAL 3: Protect all other surface water uses

GOAL 1: Protect and enhance salmonid resources (COLD, MIGR, SPWN, RARE)
The Regional Water Board must promote and develop considerations for the stability of stream channels and maintenance of channel form consistent with a functioning hydrologic channel. The riparian and instream habitat components must be enhanced. Instream temperatures for cold-water habitat and adequate stream flows to protect and enhance salmonid resources and COLD will be managed.

Nonpoint Source Issues
Current Activities

- Assist landowners in development of compliance documents for the Garcia River TMDL Action Plan
- Participate in the THP review team and preharvest inspections
- Review and comment on SYPs and HCPs to ensure consistency with the Garcia River TMDL Action Plan
- Provide outreach and education to local landowners
- Promote and manage 319(h) grants for restoration
- Review existing temperature data and collect more to fill data gaps
- List segments for temperature exceedances on CWA section 303(d) list
- Review compliance with the Garcia River TMDL Action Plan
- Enforce on violations of the Basin Plan and/or Garcia River TMDL Action Plan
- Stay involved in and promote the above considerations in the section 404 permit process and CDFG 1603 process
- Supplement the Garcia River TMDL Action Plan by doing the following:
    - Inventory landowner and county road problems

- Promote effective drainage techniques for roads to prevent sediment discharges to watercourses
- Develop specific targets for implementation measures within the watershed
- Request Rangeland Management Plans from ranchers
- Promote specific implementation plans in the Action Plan to address identified sources
- Implement upslope erosion controls
- Manage and maintain properly functioning riparian zone (may include promoting late seral stage coniferous vegetation)
- Keep channel profile, plan, and dimension appropriate for the valley type and slope
- Provide outreach and education to landowners, including outreach for new hillside vineyard development projects
- Promote a “no cut” zone with conifers as a component of the vegetation
- Encourage bridges instead of culverts on fish-bearing streams
- Discourage direct diversion for road watering/dust control

Additional Needs
- Identify erosion and sediment sources and potential sources, including sources related to new development of hillside vineyards
- Implement and monitor the Mendocino County Garcia River Gravel Management Plan
- Review effectiveness of current enhancement projects
- Monitor, assess, and review areas needing work and determine best options
- Support and promote CDFG restoration efforts
- Promote and encourage riparian canopy where needed
- Promote and encourage maintenance of adequate stream flows
- Enhance estuary conditions per the enhancement plan
- Conduct outreach on best management practices for hillside vineyards
- Consider effects of off-stream water supply pits and channel stability
- Provide increased outreach and education to landowners, including outreach for new hillside vineyard development projects
- Participate on the Regional Committee to develop Critical Coastal Area Action Plans and implement projects in the Critical Coastal Areas of Garcia River and the Kelpbeds at Saunders Reef.

GOAL 2: Protect and enhance ground water resources and attendant high beneficial uses

The underground storage tanks and toxics remediation programs are aimed at addressing the issues associated with this goal. While pollution/contamination issues are site specific and localized, ground water in those areas is an important resource and supports high beneficial uses.

Point Sources Issues

Current Activities
- Continue cleanup activities at contaminated sites
- Continue the effective individual waste systems program

Nonpoint Source Issues
Current Activities

- Work with the Mendocino County Health Department to educate users of agricultural and residential storage tanks on pollution prevention
- Work with landowners on best management practices for groundwater protection.

GOAL 3: Protect all other surface water uses
The actions above for GOAL 1 largely serve to protect all other uses, however additional issues with regard to beneficial use impairment may arise in the future. If issues do arise, staff will address them through this process.

IMPLEMENTATION STRATEGY

The primary emphasis in the watershed will be the continued implementation of the Garcia River TMDL Action Plan. Our core regulatory and toxics site mitigation activities will continue at their current levels. Landowners within the Garcia River watershed are provided three strategies, known as "Options", as a way to ensure that the land they own and manage will achieve compliance with the TMDL Action Plan. As of January 3, 2002, all landowners are subject to two new waste discharge prohibitions, also known as Option1. The following are the new Option 1 waste discharge prohibitions in the Garcia River watershed:

- The controllable discharge of soil, silt bark, slash, sawdust, or other organic and earthen material from any logging, construction, gravel mining, agricultural grazing, or other activity of whatever nature into waters of the State within the Garcia River watershed is prohibited.

- The controllable discharge of soil, silt bark, slash, sawdust, or other organic and earthen material from any logging, construction, gravel mining, agricultural grazing, or other activity of whatever nature to a location where such material could pass into waters of the state is prohibited.

Option 1 is the default option for landowners that have not submitted a signed Statement of Intent to comply with the Option 2 or 3 strategies described below.

A second strategy, known as Option 2, requires a landowner to develop an Erosion Control Plan and a Site-Specific Management Plan (SSMP) for their entire property. The Erosion Control Plan is an inventory of all controllable sediment delivery sites that have the potential to deliver ten cubic yards of sediment or greater to waters of the state over the life of the TMDL (40 years). The inventoried sediment delivery sites are then placed on a schedule to be mitigated over the next ten years. The SSMP is a list of management practices developed by the landowner to be conducted in the future as a means of preventing sediment delivery into watercourses. Additionally, an inventory of all unstable areas (slides) on the landscape is required. The SSMP measures must provide roughly equivalent protection as that of the corresponding Garcia River Management Plan (GRMP) measures. The GRMP are a set of Best Management Practices contained in the TMDL Action Plan.

The Option 3 strategy also requires the development of an Erosion Control Plan, but instead of developing a SSMP, the landowner agrees to follow the GRMP measures. The GRMP contains land management measures that apply to roads, watercourse crossings, slides, riparian zones, and near stream facilities designed to prevent the

delivery of sediment to waters of the state. All landowners are provided three compliance strategies, or options, to comply with the Garcia River TMDL Action Plan. All landowners are encouraged to develop Erosion Control Plans and Management Plans to control and prevent sediment discharges to watercourses within the Garcia River watershed.

In response to the sedimentation and fisheries issues and concerns for the effects of land use practices in the watershed, the Mendocino County RCD obtained Coastal Conservancy funding for a watershed assessment and enhancement plan. The assessment and restoration strategy, Garcia River Watershed Enhancement Plan, completed in 1992, involved considerable local involvement and the creation of the Garcia Watershed Advisory Group (WAG). The strategy has been revised and renamed to reflect its role as a supporting document to a Basin Plan amendment and is now known as the Reference Document for the Garcia River Watershed Water Quality Attainment Action Plan for sediment. Go to http://www.waterboards/northcoast/programs/tmdl/Status.html to view the TMDL and Action Plan.

Assessment and Monitoring

The Monitoring Plan is an important component to the overall Garcia River TMDL Action Plan. Landowners who are implementing approved compliance documents are required to submit annual hillslope monitoring reports to the Regional Water Board regarding all mitigation conducted during the previous year as well as to report any additional sediment sources. Instream water quality monitoring is conducted in the watershed on a voluntary basis and several landowners and interested parties are currently implementing these efforts with grant funding supplied through the Regional Water Board. These monitoring efforts will provide the information necessary to make adjustments to the overall assessment as site-specific data are generated and more definitive relationships among hillslope conditions, hillslope activities, and instream conditions are revealed. The Monitoring Plan will help assess progress towards attainment of the desired future conditions as expressed by the numeric targets.

More information and data are available at http://www.krisweb.com/.

Regional Water Board staff will coordinate instream monitoring efforts of the landowners, other regulatory agencies, academic institutions and members of the public and shall set a goal of establishing at least one instream monitoring point in each of the twelve sub-watersheds in the Garcia River watershed. In addition, Regional Water Board staff will work together with the University of California Cooperative Extension to assist landowners in developing voluntary monitoring plans.

The monitoring strategy is contained in the Garcia River TMDL Action Plan but needs to be refined. The Regional Water Board will work with the UC Extension Service in their rangeland management and monitoring training activities, and major landowners in priority sub-watersheds, as well as promote volunteer monitoring in the watershed. Monitoring for the most part will be supportive of the Garcia River TMDL Action Plan and assist in the application and evaluation of the numeric targets and implementation measures. First-round TMDL monitoring occurred in the spring of 2000, and SWAMP stations were included for FY 2000-01 for general water quality information. Additional details on Regional Water Board monitoring and assessment needs are presented in Appendix 2.3.11-B.

Education and Outreach
The Regional Water Board will continue to support education and outreach, coordinating with the UC Extension Service, Farm Bureau, the California Department of Forestry and Fire Protection and industrial timber companies. Staff level involvement will be on a priority sub-watershed basis.

Coordination
Coordination with the Mendocino RCD, other restoration efforts, the California departments of Fish and Game and Forestry and Fire Protection, National Marine Fisheries Service, the Garcia WAG, Farm Bureau, local interest groups and others is a necessary part of the phased Garcia River TMDL Action Plan. The sub-watershed prioritization will be used as the primary determining factor for staff involvement.

Core Regulatory
The Regional Water Board plans on maintaining the current level of point source regulation (inspection, monitoring, and enforcement) on traditional dischargers, such as underground tanks, toxic contaminated sites, and sewage treatment works. Involvement in the gravel mining issues will continue under the Garcia River TMDL Action Plan.

Ground water
Ground water issues center around petroleum and other toxic contamination at specific sites. The Regional Water Board will continue cleanup activities at those sites, while working with the Mendocino County Health Department to educate users of agricultural, industrial, and residential tanks on pollution prevention.

Nonpoint Source
The Garcia River TMDL Action Plan is a phased, reduction plan that focuses on sedimentation as the primary nonpoint source problem in the watershed. Several activities are detailed in this plan, including assessment and monitoring, education and outreach, coordination, local contracts, and water quality planning

The intent is to focus staff effort and involvement on a priority sub-watershed basis, using criteria for sediment delivery rates, fishery values, and property size in determining which sub-watersheds would be required to submit Statements of Intent detailing their intent to comply with one of the three options or a melding of them. Staff will focus resources on those priority sub-watersheds, providing assistance on the basis of priority. In addition to the Action Plan, other activities in the watershed are of concern for water quality and will be coordinated within the Regional Water Board and at local levels as appropriate. The Rangeland Water Quality Program is an option for part of the agricultural compliance with the Action Plan. 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.

Vineyards are rapidly expanding in the watershed. Much of this expansion is occurring on hillsides where there is increased erosion potential and delivery of sediment to nearby streams. The Regional Board staff will need 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 through an outreach program as conversion of land to vineyards occurs.

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 except the Garcia River watershed. 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. These efforts will not supercede the Garcia TMDL Action Plan, but adds actions available to Regional Water Board staff.

In addition, 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 of the Garcia River and the Kelpbeds at Saunders Reef.

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.

Local Contracts/Agreements

The Regional Water Board will continue active involvement in the Clean Water Act section 319(h) grant program and Water Bond grant programs, as well as promoting other programs such as the California Department of Fish and Game programs.

Water Quality Planning
The planning process feeds into the activities to the extent issues are identified for the Garcia watershed:

- The proposed Basin Plan amendment sets a time schedule for addressing sediment sources by type with a final attainment date of 2038. It also incorporates a change to the prohibition regarding sediment discharge in recognition of the impaired status of the Garcia River

- Perform Triennial Review of the Basin Plan

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. Emerging issues of large magnitude or high priority may cause early re-evaluation and shifting priorities.

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 currently not addressed. Monitoring and assessment needs are detailed in Appendix 2.3.11-B, and nonpoint source activities are contained in Appendix B.

Additional funding to conduct outreach and enforcement activities on new developments of hillside vineyards is needed to pursue the actions not currently addressed.

Appendix 2.3.11-A
Stakeholders

The following is a list of agencies and groups that are active in or have jurisdiction in the Garcia River watershed:

United States
Environmental Protection Agency
Fish and Wildlife Service
National Marine Fisheries Service (NOAA Fisheries)
Natural Resources Conservation Service
Department of Defense

California State
California Environmental Protection Agency
Resources Agency
Department of Forestry and Fire Protection
Board of Forestry
Department of Fish and Game
Department of Transportation
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
City of Point Arena
Mendocino County Resource Conservation District

Public Interest Groups
Friends of the Garcia River
Sierra Club
Mendocino Watershed Service
CalTrout
Coast Action Group
Agricultural Landowners Association
Mendocino County Farm Bureau
Garcia Watershed Advisory Group

Tribal
Manchester Rancheria

Appendix 2.3.11-B

Detail of monitoring priorities and needs for the Garcia River watershed WMA

Additional assessment by Regional Water Board staff is needed to test hypotheses about support of beneficial uses MUN, REC1, COLD, RARE, or provide assessment information essential for program implementation. They are currently not funded.

The estimates are Regional Water Board needs on a per year basis.

1. Updated Aerial Photos - $37,000 (0.2 PY + $15,000)
Aerial photos will need to be interpreted to evaluate conditions in the watershed and in providing an update to the TMDL and implementation plan.

2. Additional Water Quality Monitoring - $50,000 (0.2 PY + $28,000)
Additional work is needed to assess sediment in the river. Continuous turbidity monitoring, suspended sediment, and bedload evaluations are needed.

Surface Water Monitoring Program

The SWAMP addressed basic water quality monitoring issues in the watershed in FY 2000-01at three stations: Garcia River near Point Arena, Garcia River at Eureka Hill Road bridge, and South Fork Garcia River.

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.

SECTION 2.4

HUMBOLDT BAY WATERSHED MANAGEMENT AREA

The following draws upon information obtained through public input, agency contacts, and the personal experience of Regional Water Board staff. What is presented in this document is a summary of knowledge regarding water quality issues and the existing and planned actions at this date based on current Regional Water Board staff knowledge.

MANAGEMENT AREA DESCRIPTION

This area encompasses tributary waterbodies to the Pacific Ocean from Humboldt Bay (hydrological unit 110.00) north to, and including, Redwood Creek and all groundwater within that area (Figure 2.4-1). Major river systems in this area are the Mad River (hydrological unit 109.00) and Redwood Creek (hydrological unit 107.00). Other major waterbodies include Humboldt Bay and Mad River Slough, numerous coastal lagoons (Big Lagoon, Stone Lagoon, Freshwater Lagoon), and coastal streams (Elk River, Freshwater, Jacoby, and Maple Creek, and Little River). The terrain is elevated hillslope in the east with coastal plain to the west. Vegetation consists of redwood and Douglas fir interspersed with some hardwoods and meadows. Precipitation ranges from 32 to 98 inches annually with 70 to 80 inches as rain.

Land use in the WMA is primarily timber production, with agricultural uses in the non-forested areas consisting primarily of grazing and dairies. Flat land areas around the bay are predominantly pastureland with some limited cultivation, primarily lily bulb farms. Humboldt Bay is an important commercial and recreational shellfish growing area, as well as deep-water port. It is a major shipping center for the north coast, the largest such center between San Francisco and Coos Bay, Oregon, and presents the potential for water quality problems associated with industrial uses adjacent to the bay.

Lily bulb farms are found in the Arcata bottoms and the McKinleyville area. Urbanized areas include Trinidad on the ocean, McKinleyville and Blue Lake on the Mad River, and Arcata and Eureka on Humboldt Bay. Rural residential developments are scattered throughout the timber/grazing interface. The majority of the population in this WMA lives in the Humboldt Bay area and the cities of Eureka and Arcata. The area has a population of about 65,000. Suburban growth is occurring in the unincorporated community of McKinleyville, north of Arcata.

Freshwater streams support production of anadromous salmonids, including steelhead and cutthroat trout, coho and chinook salmon. The Mad River is the drinking water and industrial supply for the Humboldt Bay Area, and other coastal streams provide drinking water for local communities and individual homes. Humboldt Bay includes the typical coastal values of an estuarine embayment, as well as an extensive commercial oyster industry. The deltas of the Elk River and Mad River Slough also support commercial and sport shellfish production and harvesting.

The Redwood National Park and Prairie Creek Redwoods State Park are located in the lower 40 percent of the Redwood Creek basin that includes lower Redwood Creek and the Prairie Creek tributary. This protected park is a world famous attraction for tourists and researchers. Prairie Creek and its tributaries are considered by some as “reference watersheds” or ones that are in the most pristine condition for comparison to lands that have been altered by human presence. Private landowners conduct grazing and timber harvesting activities in the estuary and upper reaches of the watershed. A small population of people lives in the town of Orick near the mouth of Redwood Creek. This watershed has won worldwide acclaim and is most likely one of the best-studied watersheds. When a Water Board CWA section 303(d) Water Quality Attainment Strategy (“TMDL”) and implementation plan is adopted, existing efforts to monitor activities in the watershed for the benefit and enhancement of the salmonid resources will be coordinated.

The Mad River watershed is mixed private and US Forest Service timberland with a long history of timber harvest. Gravel mining occurs in the lower portions of the watershed. The Mad River is CWA section 303(d) listed for sediment and temperature impacts. The primary issues for the watershed are forestry related, with urbanization and associated industrial and public point sources. For the Mad River and its tributaries, discharge of waste is allowed only under NPDES permit during the period of October 1 through May 14 and at 1% of the flow of the receiving water. The McKinleyville Community Services District discharges municipal effluent to the Mad River in compliance with those restrictions. The City of Blue Lake does not discharge directly, disposing of effluent in percolation/evaporation ponds.

In the past the Eureka Waterfront was the site of several industrial operations including lumber mills, bulk oil storage and handling facilities, wrecking yards, and railroad yards. These operations produced both soil and ground water contamination with heavy metals, petroleum products, and pentachlorophenols (PCPs). The Waterfront is currently undergoing cleanup and redevelopment. The City of Eureka is coordinating the redevelopment with several responsible parties including Union Pacific Railroad, Simpson Timber Company, Cheveron, Unical, and Tosco oil companies, and a few others. The City is also cleaning up two brownfield sites on the Waterfront.

The Critical Coastal Areas in this WMA are Redwood Creek, Kelpbeds at Trinidad Head, and the Mad River. See Appendix C for more information on these Critical Coastal Areas.

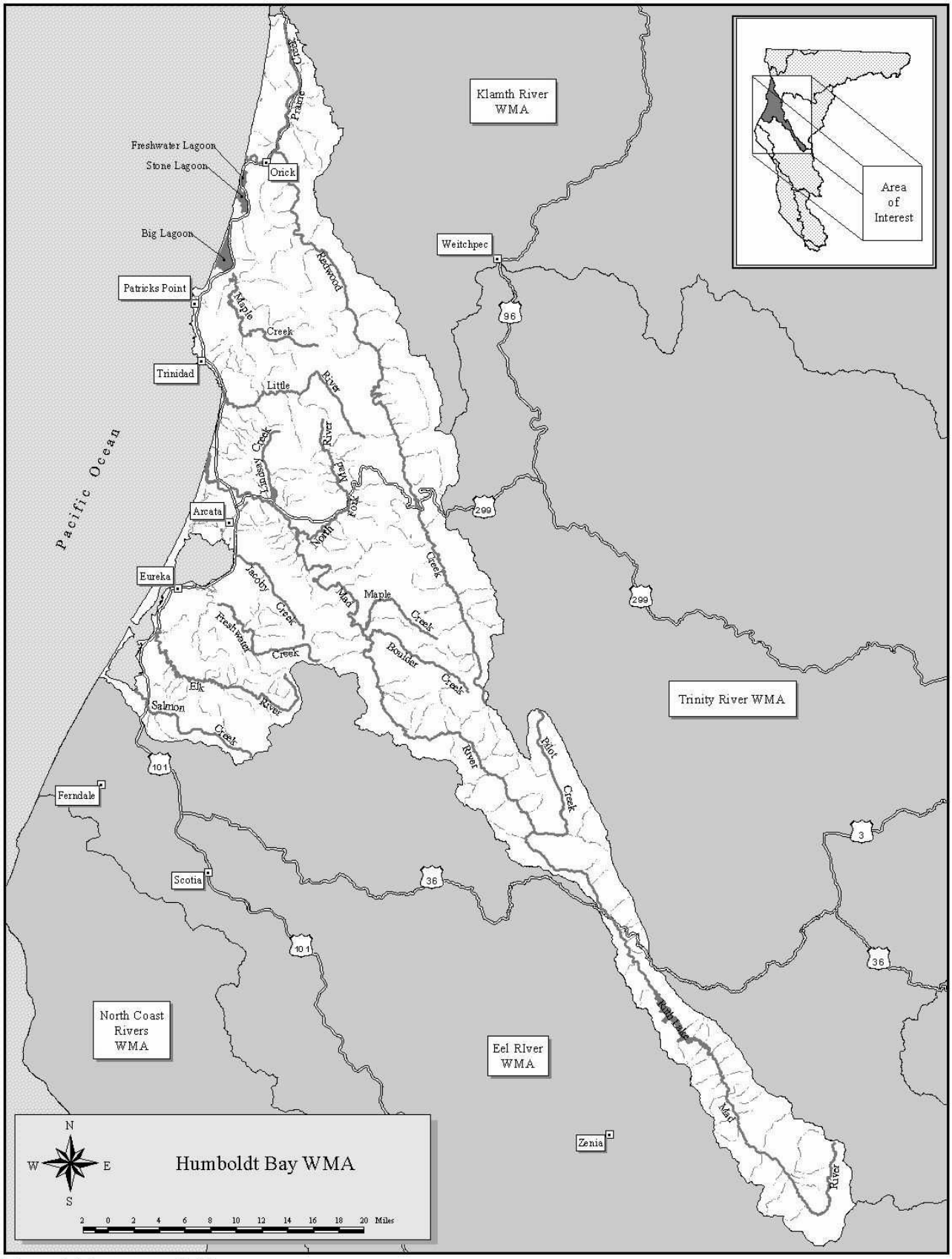


Figure 2.4.1. Humboldt Bay WMA

ASSESSMENT AND PROBLEM IDENTIFICATION

The following analysis is based on existing knowledge of issues and problems in the Humboldt WMA from long-term monitoring, discharger regulation, water quality planning and nonpoint source program efforts, and public input. However, the following analysis does not constitute a full assessment and will be refined.

There are several TMDLs designated in this WMA: Humboldt Bay for polychoronatedbiphenols (PCBs)(not started), the Mad River for sediment and turbidity (under development), and for temperature (not started), Redwood Creek for sediment (complete), and temperature (not started), Freshwater Creek for sediment and an action plan (September, 2005), and Jacoby Creek for sediment (not started). See http://www.waterboards/northcoast/programs/tmdl/Status.html for more details on TMDLs.

The upper hillslope areas of the WMA, while populated to varying degrees, are primarily occupied by timber production and harvesting activities, with coast redwood as the predominant harvested species. Past practices and continued problems with harvesting techniques and road construction have added to stream sedimentation, in varying degrees, in all the drainages in the WMA.

Sedimentation is a problem within lower Redwood Creek perhaps resulting from past harvesting activities, as noted by Redwood National Park staff. Assessments by National Park staff document problem areas and suggest follow-up coordination for implementing controls in conjunction with local landowners, USGS, the Department of Fish and Game, and Humboldt State University. National Park and USGS staffs, along with graduate students and local landowners, closely monitor fish populations, temperature, and channel changes on Redwood Creek.

Coastal tributaries draining to the ocean south of Redwood Creek and north of Salmon Creek face issues related to timber harvest and grazing, much like those that drain to Humboldt Bay. Humboldt Bay tributaries have experienced problems from urbanization and agricultural uses in addition to timber harvest issues. Additionally, they flow into Humboldt Bay and can impact uses there. Local concerns include sedimentation of Freshwater Creek and Elk River and subsequent flooding and domestic water supply degradation. Flooding in Freshwater Creek and Elk River has increased in frequency and magnitude, and is related to stream aggradation and sediment discharges. Some industrial timberland owners are developing Sustained Yield Plans that will address sensitive watershed issues to some degree.

Lower Redwood Creek houses the Redwood National and State Park and is subject to discharges originating from industrial timberlands located upstream. Herbicide application on these timberlands is an issue, but the primary water quality issues are: recovery of threatened and endangered species of coho and chinook salmon and steelhead trout; protection of domestic water supplies; and protection of water quality beneficial uses.

Humboldt Bay supports a significant commercial oyster industry and is a popular area for recreational shellfishing. Both commercial and sport shellfish resources are impacted by nonpoint source runoff from urban and rural areas and are threatened by point sources. Considerable monitoring is required from the commercial shellfish industry under a conditional harvest regulation to ensure a safe product. Assessment and monitoring

over the years has assisted in reducing contamination of the shellfish harvesting areas. Both compliance and special monitoring programs require support and coordination in the future to ensure new sources are addressed and the shellfish resource is protected.

Historically, wastewater discharges to the bay impacted the shellfish uses. Recent emphasis on improved treatment and reliability and the consolidation and relocation of the Eureka wastewater plants has significantly reduced the problem. Discharge of treated wastewater to Humboldt Bay is permitted from the Arcata treatment plant and marsh complex in Arcata Bay (north Humboldt Bay) and the Elk River plant that serves the greater Eureka area. The Arcata plant discharges to a constructed marsh/pond complex prior to discharge to Arcata Bay. The Elk River plant times its discharges to out-going tidal flow so that effluent promptly exits the bay. The College of the Redwoods operates a small sewage treatment plant that discharges indirectly to south Humboldt bay. Contamination from collection system overflows of raw sewage during high intensity rainfall events is a continued threat to commercial and recreational uses of the bay. Storm water runoff from all watersheds draining to the bay convey indicators of bacterial contamination that impacts shellfish harvest. Seasonal and rainfall-based shellfish harvesting closures are in effect to mitigate the effects of nonpoint source runoff. A shellfish Technical Advisory Committee was established in November of 1995 to address nonpoint source runoff issues.

The following nonpoint source issues and actions were identified by the public, and agencies, and relate directly to concerns about the coldwater fishery:

- Stream sedimentation from various land use activities limits coldwater aquatic uses. Stream sedimentation from rural subdivisions is an issue with regard to aquatic habitat, especially for salmonids. Logging roads are a concern because of the potential to increase runoff and delivery of sediment to local waterbodies on private and federal lands. The Mad River, Redwood Creek, Freshwater Creek and Elk River are listed on the federal Clean Water Act section 303(d) list for sedimentation affecting salmonid populations. Other waterbodies in the Humboldt Bay watershed may be added to the list for excessive sediment in the future.
- The function of Redwood Creek estuary is a concern, because it serves as a nursery for newly hatched salmonids who sometimes stay in the estuary as long as 3 years before leaving to the ocean.
- The function of the riparian corridor in the Redwood Creek basin is a major concern because lack of canopy cover and large woody debris, shallow pools, and high temperatures impact spawning and rearing habitat for threatened and endangered salmonid species.
- Potential impacts from dairies and grazing need to be evaluated. Dairies should be brought up to Chapter 15 standards. Grazing issues include erosion, sedimentation, and water chemistry.
- Potential ground water contamination, such as nutrient loading via ground water to streams, is a concern.
- Pesticide and herbicide applications on private and public lands are a water quality concern. Use of pesticides and herbicides along roadways, in agricultural operations, in urban areas, and in lily bulb farming and forestlands in the WMA poses a threat to ground and surface waters.

Storm water runoff from logging activities, construction sites, auto wrecking yards, fleet maintenance yards, and highways is likely to contain sediment and chemical pollutants.

These pollutants can have adverse effects on all domestic water supply systems as well as other beneficial uses that have been addressed under separate goals for the Humboldt Bay WMA. Potential impacts from dairies, feedlots, and grazing have yet to be evaluated. Soil and groundwater cleanup sites along the Eureka Waterfront are potential sources of pollutant discharge to Humboldt Bay. Contaminated sites along the waterfront require continuous coordination in order to facilitate redevelopment. Herbicide application on public and private lands can affect water quality. Continuous compliance with waste discharge requirements at local sewage treatment plants is needed.

Primary water quality issues in the Humboldt WMA

- Salmonid habitat degradation
- Sedimentation of streams
- Flooding
- Impaired domestic water supplies
- Bacterial contamination

WATER QUALITY GOALS AND ACTIONS

The following goals and supporting actions are in order of priority and reflect the synthesis of the issues and problems identified from public and agency input. Refinement of the goals and strategy through public participation will include scheduling of the actions by fiscal year, seeking support fiscally and otherwise from local agencies and groups, and enhanced interagency and public coordination and cooperation.

The following broad goals provide a perspective from which to view the specific goals and actions presented below: 1) improve coordination, education, outreach, assessment, and monitoring, 2) protect surface and ground water uses for municipal supply, recreation, and industrial shellfish harvest, and 3) protect and enhance the anadromous salmonid resources.

The five goals for the Humboldt WMA are related through the beneficial uses they address:

- **GOAL 1: Protect surface water uses MUN, REC-1, REC-2, NAV, WILD, EST, MAR, MIGR, SPWM, SHELL**
- **GOAL 2: Protect ground water uses MUN, IND, AGR, REC-1, REC-2**
- **GOAL 3: Increase and continue assessment and monitoring**
- **GOAL 4: Protect and enhance cold water fisheries**
- **GOAL 5: Protect commercial and recreational shellfish uses**

GOAL 1: Protect surface water uses MUN, REC-1, REC-2, NAV, WILD, EST, MAR, MIGR, SPWN, SHELL

Numerous activities occur within the watershed that may result in adverse effects to the beneficial uses of surface waters in the Humboldt Bay WMA. Beneficial uses identified for this watershed include, municipal and domestic water supply, recreation, navigation, wildlife, estuarine, and marine habitat, as well as providing for migration and spawning of aquatic organisms, and support of shell fish harvesting. These uses may be impaired through discharges to surface water bodies of chemical, biological, and sedimentary materials. Activities that threaten the impairment of surface water beneficial uses include: waste disposal, vehicle and railroad maintenance yard operations, herbicide

application, gravel extraction, timber harvesting, dairy operations, automotive wrecking yard or metal recycling activities, wood treatment facilities, publicly owned treatment works, construction activities, and many others.

The Regional Water Board has issued permits and inspected sewage treatment and industrial facilities that discharge from point sources for many years. Programs for the investigation and control of non-point discharges from municipalities and industries have recently been placed into action. The Regional Water Board also is developing general waste discharge requirements for in-stream gravel extraction for Humboldt, Mendocino, and Del Norte counties.

Point Source Issues

Current Activities

- Maintenance of basic regulatory programs regulating waste discharges.
- Sampling for petroleum products, including solvents, MTBE, and gasoline and pesticides at POTWs.
- Impose penalties on facilities with repeated non-compliance.

Additional Needs

- Assist treatment plants to seek additional funding to upgrade existing plant operations.
- Seek additional funding to conduct more frequent compliance inspections under the storm water program.

Nonpoint Source Issues

Current Activities

- Reviewing timber company's Sustained Yield Plans and Habitat Conservation Plans for protection of beneficial uses.
- Maintaining an active timber harvest review program and promoting enforcement actions on violations.
- Seek increased funding to develop educational outreach programs and regularly scheduled inspections to assist cattle handlers in identifying and implementing good management practices and the California Rangeland Water Quality Management Plan.
- Impose penalties on animal facilities with repeated non-compliance.
- Continuing active participation in Vegetation Management Advisory Committee (CalTrans) and assisting CalTrans in the development of a study of herbicide runoff from highway spraying operations.
- Promoting watershed analysis of Humboldt Bay tributaries within the scope of the Pacific Lumber Company Habitat Conservation Plan using the Washington State Department of Natural Resources methodology.
- Following up on MTBE detection at Ruth Lake in the Mad River watershed.

Additional Needs

- Strategies for reduction of erosion and sedimentation are needed.
- Seek funding to improve interagency coordination to assist with identification of problem areas, conduct outreach programs and coordinate enforcement activities for erosion control.
- Encourage local agencies to adopt and enforce local ordinances for erosion control.

- Conduct community education and outreach programs to inform the public and private industries of best management practices and the potential negative impacts if these practices are not implemented.
- Perform watershed assessments and include bacterial sampling.
- Require regular monitoring of water quality at nonpoint source facility discharge points.
- Seek additional funding for regulatory oversight of investigations and cleanups along the waterfront through cost recovery programs and brownfields grants.
- Require regular monitoring of nearby surface water bodies in association with the application of herbicides.
- Seek increased funding to conduct inspections and water quality monitoring
- Expedite development of TMDLs for Elk River and Freshwater Creek.
- Participate on the Regional Committee to develop Critical Coastal Area Action Plans and implement projects in the Critical Coastal Areas Redwood Creek, Redwood National Park, Mad River, and the Kelpbeds at Trinidad Head.

GOAL 2: Protect ground water uses MUN, IND, AGR, REC-1, REC-2

Activities that occur in the Humboldt Bay WMA may result in the contamination and degradation of ground water. Beneficial uses identified for ground water in this watershed include: municipal and domestic, industrial, and agricultural water supply, and recreation. These uses may be impaired through discharges to ground water of chemical and biological materials. Ground water quality may be impacted by chemicals from various sources (point and nonpoint), such as the improper and illegal disposal of waste, spills from leaking underground storage tanks, dry cleaners, home-owners, maintenance yards (especially in the old Eureka waterfront area), small wrecking or "junk" yards including home owners who have garbage on their property, inactive mill sites, and bacteria from septic systems and confined animal operations. Problem ground water sites should receive progressive enforcement per the Nonpoint Source Enforcement Policy (see Appendix B). Ground water information needs to be gathered and placed into a database system. This system can help to: (1) identify the location of the problem areas of the WMA, (2) identify the location of sensitive areas of the WMA, (3) identify cleanup sites and activities associated with the WMA and (4) identify ground water source areas.

Point Source Issues

Current Activities

- Continuing coordination, cooperation and increasing follow-up activities with various agencies regarding illegal disposal and discharges.
- Continuing to promote the development and application of best management practices for storage, treatment, and disposal of hazardous substances.
- Continuing coordination and cooperation with various local agencies to expediently investigate and remediate problem sites located along the old Eureka waterfront area.
- Continuing regulatory programs for inspections, assessment and enforcement.
- Continuing to monitor on-going activities associated with known ground water contamination.
- Bringing all facilities into compliance.

Additional Needs

- Prepare, develop, and implement a program to educate the public about point source discharges and disposals.
- Pursue additional Regional Water Board funding (PYs) for staff and laboratory services to assess and address the illegal disposals and assess ground water quality.
- Seek ground water monitoring funds.

Nonpoint Source Issues

Current Activities

- Identifying sources of existing information, including other agencies and local groups.
- Participating in local outreach programs, such as the Humboldt Bay Symposium
- Administering the 319(h) grant for dairy waste outreach and implementation in the WMA, including educational meetings with the public and agencies to promote use of wastes at agronomic rates, a Rangeland Management Planning process, disposal of nonpoint source wastes, and to increase inter-agency coordination and cooperation.
- Providing information for accessing grant funds for the agricultural community.
- Continuing regulatory programs of inspections, assessment and enforcement.

Additional Needs

- Pursue additional Regional Water Board funding (PYs) to identify ground water monitoring needs and to coordinate functions with other agencies on a watershed basis.
- Pursue additional Regional Water Board funding (PYs) to develop GIS support for the storage, analysis, and assessment of information.
- Prepare, develop, and implement a program to educate the public, local, city, and state agencies, along with private industry, on discharges of toxic chemicals.
- Increase coordination and cooperation with the RCDs and agricultural community to deal with rangeland and confined animal problems, and to advance to Title 27 requirements in order to avoid ground water contamination.
- Prevent access and discharge to waste pits and ponds.
- Pursue additional Regional Water Board funding (PYs) to conduct nonpoint source inspections (and follow-up) and to investigate nonpoint source problems, and develop a task force to target problem areas or problem management practices.
- Coordinate with the county to review septic system problems to avoid ground water contamination. This includes enforcement of the Basin Plan requirement to ensure that the county reports septic disposal practices and trends.

GOAL 3: Increase and continue assessment and monitoring

This goal will continue to be a high priority to support the prioritization of activities and ensure that staff resources and funding are directed to those areas needing attention. This goal will involve considerable outreach and coordination. A limiting-factors analysis should be conducted to identify obstacles to achieving water quality goals. There are specific process issues that need to be addressed to facilitate assessment and monitoring. They include: a) development of standardized monitoring protocols for shared data sources, b) coordination of monitoring and assessment activities, c) promotion of volunteer monitoring, d) development and maintenance of an information bank for locations of watershed projects, activities, and monitoring, and e) development of long-term monitoring programs. Information needs to be developed in a number of

areas to assist in assessments. Additionally, the following specific areas should be monitored to ensure all other goals are being met:

- runoff from urban areas, county, state and federal roads, timberlands, construction and industrial sites,
- gravel extraction impacts to channel morphology, wetlands, and other habitat values,
- stream sediment with regard to aquatic habitat and flooding,
- chemicals in the estuary that are not monitored or assessed in the State Mussel Watch Program,
- public swimming areas, and
- the effectiveness of restoration activities.

The North Coast Watershed Assessment Program (NCWAP) assessment has been completed for Redwood Creek. The SWAMP will monitor Redwood Creek at Orick and the Mad River at Blue Lake as permanent stations; sampling began in early 2001. The Regional Water Board will be working with local residents in the area to address some of their specific needs as resources allow.

This goal is not separated by discharger type (point versus nonpoint source) as it encompasses both.

Current Activities

- Maintaining discharger self-monitoring programs.
- Continuing involvement with local efforts to coordinate monitoring.
- The World Wide Web resources being developed by the California Resources Agency at UC Davis should include the Humboldt WMA. They include CERES (California Environmental Resources Evaluation System), and CARA (California Rivers Assessment).

Additional Needs

- Additional monitoring workshops should be held in the Humboldt Bay area to coordinate among private, public groups, HSU, and other agencies with the goal of standardizing monitoring to increase data exchange utility. The workshops should focus on coordinating data collection and analysis activities in the WMA, standardization of monitoring protocols, and volunteer monitoring efforts.
- Coordinate assessment and monitoring activities with local agencies and groups, initially the Redwood Community Action Agency, Humboldt Bay Shellfish TAC, Humboldt County Health Department, Humboldt County Planning Department, Humboldt County Resource Conservation District, Redwood National and Prairie Creek Redwoods State Parks, University of California Cooperative Extension, Humboldt State University, College of the Redwoods, Salmonid Restoration Federation, California Coastal Conservancy, Humboldt Fish Action Council, California Department of Fish and Game, US Army Corps of Engineers, Redwood Creek Landowners Association, local timber companies, and North Coast Gravel Association. Coordinate with the Division of Water Rights to address water rights issues as they are identified.
- Staff should assist groups wishing to do volunteer monitoring with both time and equipment.
- Information should be gathered on a database locally prior to input to the above resources.
- Seek funding for a local database/GIS system and coordinator.

- Redirect staff resources into additional assessment and monitoring functions, and seek funding to support increasing assessment and monitoring activities in the WMA.
- Public education and outreach should be increased, and focus on the these specific areas: discharger inspections, the potential to monitor specific areas in association with the health department, placing educational handouts at local permit offices, development of a road map of groups/agencies responsible to assist an individual landowner, and erosion control for small and rural landowners.
- Support and promote educational opportunities for permitting, erosion control, wetlands values, and aquatic habitat restoration, and promote involvement in the California Resources Agency's World Wide Web informational and educational activities.
- Meet Water Quality Attainment targets from the TMDL to reduce erosion and sedimentation and improve water temperatures. Targets can be attained by assisting in the collection of data contributing to assessments in the initial stages, and generating additional data through future monitoring.
- Investigate restoration projects from the standpoints of utility and effectiveness.
- Obtain dredging records to assist in the assessment of the quantity of upslope erosion and describe the linkage between numerous small upland or upslope activities and larger problems downstream in the waterways.
- Review discharger self-monitoring programs to make them more ecologically significant and include surface water monitoring, perhaps watershed-wide, and as appropriate.
- Improve water quality monitoring activities with an emphasis on dairy waste. Encourage self-monitoring with field test sampling kits for ammonia discharges.
- Seek additional funding for staff and laboratory services for special, focussed water quality studies

GOAL 4: Protect and enhance cold water fisheries

The coldwater fishery, specifically trout, steelhead, and salmon, is of concern regarding sedimentation and other potential impacts to habitat and water quality. It is recognized that a number of activities already presented for protecting other uses and enhancing assessment and monitoring will also serve to further this goal.

Point Source Issues

At this point in time there are no specific issues to add for point source beyond those already covered.

Nonpoint Source Issues

Current Activities

- Conducting education and outreach: The RCAA's and Humboldt County Resource Conservation District's 319(h) and Water Bond grant project(s) include educational components for agriculture, timber, and rural/urban issues. The Regional Water Board continues involvement in that effort.
- Maintaining involvement in gravel mining, especially as relates to channel stability impacts.
- Promote watershed analysis of Humboldt Bay tributaries within the scope of the Pacific Lumber Company Habitat Conservation Plan using the Washington State Department of Natural Resources methodology.

Additional needs

- Promote erosion control educational materials and programs for landowners. Place educational handouts at local permit offices and perform more outreach.
- Tax incentives for erosion control and aquatic restoration activities should be supported and pursued. Decreasing road density on upland slopes and decommissioning problem roads were two potential targets of such an incentive program.
- Implement and enforce best management practices for Nonpoint Source Regulation. This task entails increased inspections and work with construction, agricultural, silvicultural, and urban runoff discharges primarily through grant-funded projects, volunteer monitoring coordination, and public education and outreach to reduce nutrient, sediment, and chemical discharges from nonpoint sources. This task should also address issues associated with land use planning regarding riparian encroachment and flood plain use and encourage local agencies to adopt and enforce local ordinances for such controls. Increase funding and become more involved in erosion/sedimentation issues in the WMA and perform watershed assessments.
- Require water quality monitoring of THPs by PALCO, and other timer companies, to assess compliance with Basin Plan objectives.
- Address Clean Water Act section 303(d) for the Mad River, Redwood Creek, Freshwater Creek and Elk River (listed for sediment impairments). Involve public outreach, assessment of sources, assessment of impairments, development of quantifiable targets, consideration of feasible solutions to reduce sources, and coordinated monitoring.
- Improve Water Quality Monitoring Activities -See GOAL 3.
- Improve habitat conditions for anadromous fish by assisting and coordinating with CDFG and local agencies and groups in fishery assessment and emerging issues and by promoting grant funding for stream rehabilitation and monitoring.
- Promote enhancement of riparian areas through grant funding, public education and outreach, and coordination and assistance to other agencies and groups to improve the functions for temperature control, buffering land use impacts, bank stabilization, and habitat.
- Increase time for participation in the CalTrans Vegetation Management Advisory Committee.

GOAL 5: Protection of commercial and recreational shellfish uses

Both point and nonpoint sources of pollution can adversely impact commercial and recreational shellfish uses. Water quality monitoring should be expanded to locate pollution sources and monitor the bay for impacts to shellfish resources.

Point Source Issues

Current Activities

- Continuing regulation of point sources of pollution to the Bay.

Additional Needs

- Review and revise existing monitoring programs currently contained in NPDES Permits for the dischargers to Humboldt Bay with specific emphasis on overflows from sewage collection systems.

Nonpoint Source Issues

Current Activities

- The Regional Water Board by Resolution established the Humboldt Shellfish Technical Advisory Committee (TAC). Staff will continue to support and encourage the TAC to provide coordination with agencies and a forum for the development of any needed water quality investigations or monitoring.
- Continuing investigations and cleanup activities at the Eureka Waterfront area to eliminate petroleum, metals, and organic chemical pollution and threats.
- Continuing the review of land use practices within the Humboldt Bay watershed to ameliorate impacts from runoff sources, including, but not limited to timber harvest, pesticide use, urban, industrial and agricultural runoff, and individual waste disposal systems (septic tanks).

Additional Needs

- Bring all dairy operations into compliance with Title 27 to ensure containment of wastes and reduction of runoff-generated pollution.
- Support use of the State Mussel Watch Program within the Bay. Review and expand, if appropriate, the scope of the analyses to answer the question, "Are there chemicals in wide use that have not been monitored or assessed with the State Mussel Watch Program?"
- Finalize the report on Bay Protection monitoring activities and findings.
- In cooperation with the Department of Health Services' Shellfish Program, explore pathogen issues in cooperation with the University of California at Davis.
- Coordinate with the Department of Health Service's Shellfish Program, the Humboldt County Health Department, and shellfish harvesters, when appropriate, on all monitoring activities.
- Participate on the Regional Committee to develop Critical Coastal Area Action Plans and implement projects in the Critical Coastal Areas Redwood Creek, Redwood National Park, Mad River, and the Kelpbeds at Trinidad Head.

IMPLEMENTATION STRATEGY

Significant strategy development and implementation for water quality protection and improvement is occurring in the Humboldt WMA at the present time by many agencies, interest groups, and individuals. The Regional Water Board recognizes that the WMA problem identification, watershed assessment, and strategy development are an on-going process, and that further input will improve the effort. The intent of the Regional Water Board process is to focus resources on the highest priority issues within a given time frame.

The State Water Quality Control Policy for the Enclosed Bays and Estuaries of California provides water quality guidelines for the prevention of water quality degradation and to protect the beneficial uses of bays and estuaries in the state. The general emphasis in the WMA is to increase coordination and education/outreach, especially regarding erosion control and sedimentation and the handling of toxic materials. Increased assessment activities, including monitoring coordination, maintaining a watchful eye on traditional point source dischargers and continued high priority forestry related activities are also part of the strategy. Agencies and groups in the management area, a list is offered for informational purposes in Appendix 2.4-A.

Assessment and Monitoring
Additional assessment needs are for storm water issues, both urban and otherwise. The uses of Humboldt Bay are threatened by runoff contaminants, and the freshwater streams are subject to sedimentation by storm water runoff from eroding areas and from mass wasting (landslides). Ground water data are not sufficient to describe the condition of ground water in the WMA, and a system to gather and analyze existing information is needed.

A monitoring workshop has been suggested to improve coordination, standardize protocols, develop an information bank, and foster a volunteer monitoring program. Likewise, the need to monitor both the implementation and effectiveness of watershed enhancement efforts should be addressed. Long-term monitoring programs are present to some degree, but would benefit from additional coordination. For instance, the bacterial data collected on Humboldt Bay for determining oyster harvest conditions may benefit from a broader data analysis. Continuing to promote the use of State funds for the State Mussel Watch Program and Toxic Substances Monitoring Program is a high priority, so that a watch on toxic chemical accumulation in food and fauna, and the ability to detect hot spots are maintained. The State Mussel Watch Program, a sentinel monitoring program for toxic chemicals, has provided valuable information on occurrence of toxic chemicals that has guided cleanups around the bay. Current activities relating to water quality in the Eureka Waterfront area are guided by information from that program, the Bay Protection and Toxic Cleanup Program, and ground water monitoring and assessment activities.

The North Coast Watershed Assessment Program (NCWAP) was a multi-agency approach to gathering, developing, analyzing and presenting watershed assessments and data for north coast watersheds. In addition to the Regional Water Board four agencies within the Resources Agency were involved: Department of Fish and Game, Department of Forestry and Fire Protection, Department of Conservation, Division of Mines and Geology, and Department of Water Resources. The NCWAP program worked with previously established watershed groups and Federal agencies, such as USGS and the National Parks Service, to obtain the most current information and address all issues of concern specific to that watershed. The final assessment product for Redwood Creek, including all data compiled for the report, will be publicly available on the World Wide Web and on compact disks. See http://www.ncwatershed.ca.gov/. Also see http://www.krisweb.com/ for more information and data.

The Surface Water Ambient Monitoring Program (SWAMP) is a regionwide monitoring program that will monitor permanent stations for long-term trends as well as rotate into WMAs on a five-year basis. See http://www.waterboards.ca.gov/northcoast/programs/swamp.html. Redwood Creek at Orick and the Mad River at Blue Lake have been established as permanent stations, sampling began in early 2001. More detail on monitoring priorities and needs are presented in Appendix 2.4-B.

Education and Outreach
Pollution prevention activities are highlighted as a high priority activity. Increased education and outreach should be addressed for erosion control, storm water issues, confined animal facilities, management and disposal of toxins, monitoring and assessment, and the core regulatory program. Concern was raised that the public does not have a good idea of the level of compliance of various point source dischargers, and

that the Regional Water Board staff should present the compliance histories at a public workshop.

Coordination
Tied in closely with education and outreach is the need for enhanced coordination. The Regional Water Board currently participates in a number of activities aimed at improving communication and coordination to benefit water quality. Included in those actions are participation in the Humboldt Bay Shellfish Advisory Group and the CalTrans Vegetation Management Advisory Committee, administration of Clean Water Act section 319(h) and Water Bond grants with the Redwood Community Action Agency and the Humboldt Resource Conservation District, close coordination with the local environmental health department, and coordination with a group of local agencies and landowners coordinating cleanup activities on the Eureka Waterfront.

Core Regulatory
The Regional Water Board will maintain the current level of point source regulation (inspection, monitoring, and enforcement) on traditional dischargers, while increasing the level of involvement in storm water issues. Included in core regulatory are the underground storage tanks program and addressing the Eureka Waterfront issues. Involvement in the gravel mining issues in the WMA should continue, especially as regards stream channel geomorphology and potential effects on the anadromous salmonid resources.

Ground water
Ground water issues center around petroleum contamination and Eureka Waterfront problems, and efforts should focus on increased coordination, such as follow-up on illegal disposal cases, and additional assessment.

Nonpoint Source
Continued involvement in forestry issues is necessary to ensure protection of aquatic resources. The listing of chinook salmon in Redwood Creek and coho salmon in the Humboldt WMA as threatened under the federal Endangered Species Act has put the spotlight on all land use activities that may potentially increase sedimentation or otherwise affect habitat. The Regional Water Board needs to increase work with local agencies and groups regarding land use impacts on water quality, following the State Nonpoint Source Enforcement Policy (see Appendix B) to reduce nonpoint source pollution. An active outreach program will enhance the effectiveness of the program.

Response to CWA section 303(d) requirements resulted in a TMDL for Redwood Creek promulgated by USEPA on December 30, 1998. An implementation plan has been written but not adopted by the Regional or State Water Boards. The USEPA will be addressing a TMDL for the Mad River by the end of 2007. Elk River and Freshwater Creek were added to the section 303(d) of impaired waterbodies and will be scheduled for similar actions in the future. Additional information is contained in http://www.waterboards/northcoast/programs/tmdl/Status.html. Issues of listing additional streams in the WMA will be addressed through the water quality assessment process.

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.

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 Redwood Creek, Redwood National Park, Mad River, and the Kelpbeds at Trinidad Head.

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.

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.

An estimated 25% of the timber harvesting in the Region occurs in this WMA that has many waterbodies listed as impaired due to sediment discharges. The primary sources of sediment appear due to surface erosion and mass wasting from timber harvesting and other land use activities. Beneficial uses of primary concern include aquatic habitat (COLD, RARE, WILD, COMM, etc.), recreational uses (REC1 and REC2), and domestic water supplies. In addition, downstream residents in the Elk River and Freshwater Creek watersheds, both listed under the 303(d) process as impaired due to sediment, have experienced increased rates and magnitudes of flooding. Because of these sediment-impaired waterbodies and threats to water quality in other surface waters, staff are working within the timber harvest plan review process as well as under Water Board authority to require in-stream water quality monitoring for fine sediments. This monitoring will: 1) assess long term water quality trends, 2) evaluate effectiveness of timber harvest-related best management practices and prescriptions in ensuring Basin Plan compliance, and 3) provide a feedback loop for timber owner-operators to allow for timely identification and response to sediment discharges from timber harvest and related activities. The monitoring will also provide information to assist with future timber harvest planning timber sales as well as other projects on U.S. Forest Service lands.

The Pacific Lumber Company (PALCO), the largest of many timber companies in the area, owns approximately 211,700 acres of forestland in Humboldt County, encompassing lands within 22 watersheds including the Elk River and Freshwater Creek watersheds. PALCO conducts timber harvesting and related activities on the lands within its ownership, and the Timber Division is funded to oversee water quality protection of the Habitat Conservation Plan (HCP). The HCP is intended to protect habitat for endangered species and requires that PALCO incorporate interim prescriptions (best management practices) into its timber harvest and harvest-related activities, while performing watershed analysis for the watersheds within its ownership. As watershed analyses are completed, watershed-specific and project-specific prescriptions will be developed, implemented, monitored, and adapted as necessary. In the interim, PALCO is required to conduct several types of monitoring, including interim prescription effectiveness monitoring. To date, PALCO has not implemented in-stream effectiveness monitoring, and has not included instream monitoring for fine sediments (turbidity, suspended sediments) in its other HCP-required monitoring programs that are currently underway. PALCO has been required by State and Regional Water Board orders to monitor water quality in association with some timber harvesting activities.

During the winter of 1996/97 significant volumes of sediment discharged from landslides and road networks into Freshwater Creek, Elk River, Jordan Creek, Bear Creek and Stitz Creek. The Regional Water Board received a great deal of public complaint of logging activities by the Pacific Lumber Company (PALCO) resulting in degradation of these streams. The Regional Water Board staff has attempted to require PALCO to conduct monitoring in these watersheds but have been unsuccessful. Freshwater Creek and Elk River are specifically listed under CWA section 303(d) as sediment impaired. Bear Creek, Jordan Creek and Stitz Creek are tributaries to the Eel River that are listed as sediment impaired. The Regional Water Board would like to have at least one station in each watershed that monitors turbidity, suspended sediment and flow. There is a

citizens group that is monitoring but they have limited funds to conduct adequate monitoring.

Regional Board staff believes that the interim prescriptions of the HCP may not be adequate to restore, protect or maintain water quality objectives and beneficial uses in 303(d)-listed waterbodies. Since there is no in-stream effectiveness monitoring, adaptive management cannot adequately address the effectiveness of interim prescriptions.

Local Contracts/Agreements
The Regional Water Board will continue active involvement in the Clean Water Act section 319(h) the State 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 review process feeds into the activities to the extent issues were identified in the Triennial Review and applicable to the Humboldt WMA. The top priority issues are:

- Review the policy for regulation of underground storage tanks,
- Update the policy on disposal of solid wastes, wood wastes, and programs for ash applications,
- Consider revisions to the water quality objectives for dissolved oxygen and temperature, and
- Review the Nonpoint Source Control Measures.

In addition, the water quality attainment strategies for the CWA section 303(d) waterbodies will be incorporated to some degree into the Basin Plan.

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. Emerging issues of large magnitude or high priority may cause early re-evaluation and shifting priorities. Evaluation will feed into future assessment and problem identification.

BUDGET

The Regional Water Board will attempt to fund the highest priority actions as identified in the Humboldt WMA to the extent funding constraints allow that, and pursue additional funding for those actions not currently addressed. Monitoring and assessment needs are detailed in Appendix 2.4-B.

Appendix 2.4 – A
Stakeholders

Partial listing of agencies and groups in the Humboldt Bay WMA with an interest and/or responsibility for water quality:

United States
Army Corps of Engineers
Bureau of Land Management
Environmental Protection Agency

Fish and Wildlife Service
Geological Survey
Humboldt Bay National Wildlife Refuge
National Biological Service
National Marine Fisheries Service (NOAA Fisheries)
National Park Service
Natural Resources Conservation Service

California State
California Coastal Conservancy
College of the Redwoods
Department of Conservation, Division of Mines and Geology
Department of Fish and Game
Department of Forestry and Fire
Department of Health Services
Department of Pesticide Regulation
Department of Toxic Substance Control
Department of Water Resources
Humboldt State University
Office of Environmental Health and Hazard Assessment
California Environmental Protection Agency
UC Cooperative Extension
Department of Parks and Recreation

Humboldt County
Agricultural Commissioner's Office
Department of Environmental Health
Planning Department

Local Agencies
Humboldt County Resource Conservation District
Shellfish Technical Advisory Committee
Humboldt Bay Harbor District
local water districts - numerous, to be compiled later
city planning departments
city public works departments

Local Industry and Public Interest Groups
Farm Bureau
United Dairymen
Jacoby Creek Protection Association
Humboldt Fish Action Council
American Fisheries Society
Pacific Coast Restoration
North Coast Gravel Association
Trout Unlimited
Salmon Unlimited
California Forestry Association
Redwood Community Action Agency
Redwood Creek Landowners Association
Salmon Forever

Humboldt Watershed Council
Pacific Lumber Company
Simpson Timber Company
Cummings Creek Watershed Advisory Council
Elk River Watershed Conservancy
Humboldt Bay Watershed Advisory Committee
Humboldt Planning Department – Dunes Restoration CRMP
Mad River Slough and Dunes Cooperative Management Area
Salmon and Steelhead Recovery Coalition

Appendix 2.4-B

Monitoring priorities and need detail for the Humboldt Bay Watershed Management Area

Additional assessment by Regional Water Board staff is needed to test hypotheses about support of beneficial uses MUN, REC1, COLD, RARE, or provide assessment information essential for program implementation. These activities are not currently funded.

The estimates are Regional Water Board needs on a per year basis.

1. Spatial Assessment of Contamination - $33,000 (0.3 PY)
Sediment contamination identified from the BPTCP should be combined with existing groundwater and stormwater information and spatially organized to provide an overall picture of the extent of contamination and linkages of surface and groundwater contamination, and to guide future monitoring and assessment activities in the WMA. Primary areas of concern are the Eureka Waterfront (metals, petroleum), stormwater drainages (metals, petroleum), and Arcata Bottoms (animal waste, chemicals, petroleum).

2. Sedimentation - $376,000 (1.6 PY - 0.5 Redwood, 0.5 Mad, 0.6 F/W & Elk + $200,000)
Redwood and Freshwater Creeks and the Mad and Elk rivers are 303(d) listed for sediment impacts. While development of a TMDL by USEPA for the Mad River in the near future will support gathering and assessing existing data to some degree, additional staffing is needed. Implementation of the TMDLs for Redwood Creek and Mad River will require monitoring, as will the development of TMDLs for Freshwater Creek and Elk River.

3. Water temperature - $26,000 (0.2 PY + $4000 supplies)
The Mad River is 303(d) listed for water temperature effects on salmonid fisheries. Collection of data will assist in development of TMDL strategies to reduce water temperatures. Addressed by SWAMP in FY 2001-02.

4. Chemicals in POTWs - $26,000 (0.1 PY + $15,000)
Petroleum products, including solvents, MtBE, and gasoline, as well as pesticides should be sampled in the influent and effluent of POTWs.

5. Bacterial Monitoring - $42,000 (0.2 PY + $20,000 lab)
Concerns about bacterial quality of Humboldt Bay and other recreational waters (coastal lagoons, Mad River, Redwood Creek) with regard to enteric bacteria and parasites

(Cryptosporidium and Giardia) should be addressed through a monitoring program linked to remediation. Some work was done on Elk River, tributary to Humboldt Bay, but additional sampling is needed.

6. Log Mill Biological Assessments - $48,000 (0.3 PY + $15,000)
Documentation of conditions and monitoring of the aquatic biota should be conducted to assess the potential problems at historic wood treatment sites at old and existing log mills.

7. Ruth Lake MtBE - $26,000 (0.1 PY + $15,000)
MtBE was detected in Ruth Lake on the Mad River, upstream of public and private water supplies. Additional sampling is needed to define the extent of the problem. The monitoring program was begun in FY 00-01 and continued in FY 04-05.

Surface Water Ambient Monitoring Program

The SWAMP started intensive monitoring in FY 2001-02. Two long-term stations were established in spring of 2001: Redwood Creek (HUC 107) at Orick and Mad River (HUC 109) at Blue Lake. Parameters are general water chemistry, nutrients, metals, and organic chemicals. For FY 04-05 Surface Water Monitoring Program Monitoring Stations for the Mad River are one permanent station at Blue Lake and three rotating stations at Ruth Lake. Sampling in Ruth Lake is to monitor the extent of MtBE and other fuel by-products including benzene, toluene, ethylbenzene and xylene (BTEX). SWAMP has established nine rotating stations in the Eureka Plain HU110, two in Jacoby Creek, two in Freshwater Creek, three in Elk River, and one in Salmon Creek.

SECTION 2.5

EEL RIVER WATERSHED MANAGEMENT AREA

The following draws upon information obtained through public input, agency contacts, and experience of Regional Water Board staff. The Eel River is listed in the CWA section 303(d) list as impaired by sediment and temperature. The technical TMDLs for the North Fork, South Fork and Middle Fork of the Eel River have been completed.

MANAGEMENT AREA DESCRIPTION

The Eel River WMA encompasses roughly 3,684 square miles in highly erodable soils in the steep coastal mountains of the Region, supporting a variety of water uses including municipal and agricultural supply systems, salmonid fisheries, and recreation.
The main tributaries to the Eel River are the Van Duzen River, the Bear River, and Yager, Larabee, Bull and Salmon Creeks. Lake Pillsbury is located near the headwaters of the mainstem. The upper watershed is mountainous and vegetated by redwood, Douglas fir interspersed with some hardwoods and meadows. Toward the coast the River spreads out on a coastal plain where the Salt River joins it. Several dairies are located here, as well as the towns of Ferndale, Fortuna, and Loleta. Other population centers are Scotia, Garberville, Laytonville, and the largest of all Willits.

Surface water in many areas is intimately connected with the ground water along the nearby alluvial valleys, thereby having a profound effect on local groundwater supplies. A Northwestern railroad line follows along the River from south of Dos Rios to the Humboldt Bay and has fallen into disrepair having experienced numerous landslides and train wrecks. There are recent efforts to revive the railroad, but costs seem prohibitive. This rail line has been the cause of a great deal of water quality pollution.

The Eel River WMA is also a prime recreational area boasting numerous state and private campgrounds along its length with both water contact and non-contact uses such as boating and swimming. The Eel River is the third largest producer of salmon and steelhead in the State of California and supports a large recreational fishing industry. The erodable soils, steep terrain, and timber production evoke a high level of concern for

the anadromous fishery resource. Coho salmon were listed as endangered under the federal Endangered Species Act in 1997.

The Eel River is designated as a Critical Coastal Area. See Appendix C for detailed information on this Critical Coastal Area.

ASSESSMENT AND PROBLEM IDENTIFICATION

The WMA is heavily forested and as such, heavily utilized for timber production. Numerous activities occur within the watershed that may result in potential adverse effects to the beneficial uses of the Eel River Watershed. Municipal, agricultural, and recreational uses may be impaired through discharges to surface water bodies from chemical, biological, and sedimentary materials entering the surface water system. A few of the many activities that, if conducted improperly, are likely to impair surface water beneficial uses include: illegal waste disposal, vehicle and railroad maintenance yard operations, herbicide application, gravel extraction, timber harvesting, road building, dairy operations, automotive wrecking yard activities, wood treatment facilities, publicly owned treatment works, and failing septic systems.

Since the watershed is located in steep forested terrain with highly erosive soils and high rainfall, erosion and sediment production and transport are high. For most of the watershed the issues of temperature and sedimentation and their impacts on the salmonid fishery are of high concern, involving the timber and rangeland industries. Other issues include ground water contamination, dairies in the delta area near the ocean, and localized contamination of surface and ground waters.

At Lake Pillsbury, the Regional Water Board has concerns about mercury bioaccumulation in fish and placed the lake on the CWA 303(d) list of impaired waterbodies for mercury. The National Marine Fisheries Service has issued no take permits for endangered species in the lake. There are underground tanks in the area that are leaking and have contaminated private domestic wells. There are also fueling stations on the dock in the marina and above ground piping in the lake area that are of concern. PG & E and US Forest Service are conducting a restoration project in Soda Creek. A scoping project is being done for logging for fuel reduction on the lakeshore at Summerhome. The Eel River is partly diverted to the Russian River through a PG & E power generation plant at Potter Valley. There is a lumber mill operated by Louisiana Pacific at Van Arsdale where a cleanup is partially complete, but dioxin and furans are still detected in the mainstem of the river. Sedimentation is also a problem here.

On the North Fork Eel River where the land is owned by the Bureau of Land Management, the US Forest Service and private parties, there is still a lot of timber harvesting being done. This is an area of natural instability with highly erodable soils so that erosion and sedimentation of the waterways is a concern. The other major land use is cattle grazing which may also cause soil erosion. The wastewater treatment plant in the Covello/Dos Rios area with a daily capacity of about 100,000 gallons is poorly maintained and potentially discharges to the Eel River. Investigation and enforcement need to be increased on the treatment plant. The Round Valley Reservation uses a septic system that may also have problems. There is an old railroad maintenance yard in this area with hazardous waste issues that need to be addressed.

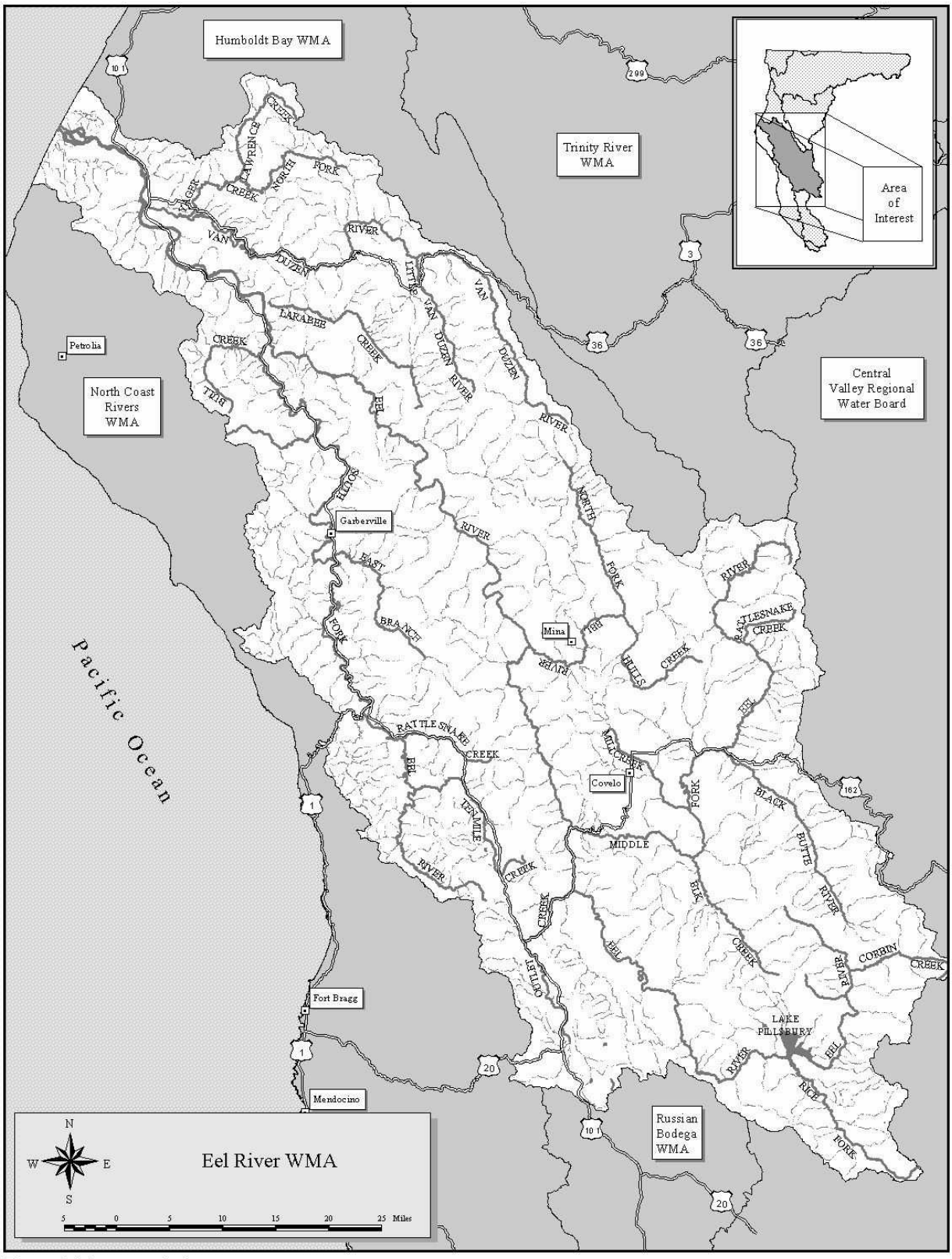


Figure 2.5.1. Eel River WMA

The landfill on Refuse Road is now closed and has been changed to a transfer station, but still needs to be investigated.

At the City of Willits, the treatment plant sometimes discharges to Outlet Creek in excess of the one (1) percent discharge rate. The City will be subject to Phase II of the NPDES storm water permits under which all storm water must be controlled. The Remco plant in Willits continues controlled discharges of VOCs to prevent spills to Baechtel Creek. The ground water plume contaminated with VOCs and hexavalent chrome continues to be cleaned up. The Page chrome pits that were used by Remco in the past and have contaminated ground water and soil are being monitored. In addition, the City has several above ground and under ground tanks that are potential problems.

At Laytonville, there are septic systems that are failing and the town wants to connect these systems to the sewer system that is in place. West of town there is a new vineyard that may be failing and needs investigation. At the Laytonville dump the local indian tribe has obtained a grant from USEPA to conduct ground water monitoring and they have detected arsenic that is also being detected in local private drinking water wells. The Northwestern Railroad has a rail line that runs parallel to the Eel River through highly erodable, unstable land where landslides are common. This railroad has been closed and there is an effort under way to open the line between Willits and Eureka. The Department of Toxic Substance Control, the Department of Fish and Game and the Regional Water Quality Control Board are all concerned with slide issues, fish issues, and debris cleanup issues involved with reopening the railroad line. Near Island Mountain there has been extensive sliding, and there are cleanup problems and a poor sewage system that needs investigation. The railroad has an old storage area here where hazardous wastes are contained in drums and tanks. The iron mine on Island Mountain is still discharging heavy metals to the river. Action is needed on these issues.

In the town of Garberville there is a gas station with leaking underground tanks and a bulk oil tank that is also leaking. In the surrounding areas private growers have problems with fuel tanks on electrical generators leaking and contaminating soil and possibly surface and ground water. Unical has a Waste Discharge Requirement for sparging ozone. At Humboldt Redwoods State Park near Weott there has been considerable restoration work done, especially in Bull Creek. The California Department of Transportation is also involved in restoration, erosion control and runoff projects in this area. The area along Highway 36 has soil stability problems and there is concern about the small communities along the highway that may have waste disposal problems.

In the lower Eel River area, the town of Scotia has a municipal runoff problem and Pacific Lumber Company has a permitted ash dump where Regional Water Board staff is currently taking enforcement action. There are also upland and in-stream quarries near Scotia that need investigation. At Rio Dell there are discharge problems from the municipal treatment plant in the summer and a sludge disposal problem. Eel River Saw Mill, which is being sold, has a NPDES storm water permit. The towns of Scotia, Ferndale, and Rio Dell will get Phase II NPDES storm water permits. At the town of Redcrest there is an underground tank that is leaking MTBE to the river and a failing onsite disposal system that needs investigation. In the Ferndale and Fortuna areas there are about 85 dairies, many with manure management problems and some dairies where cows have direct access to stream banks. Critical Coastal Area problems have been identified for the estuary as sedimentation/threat of sedimentation and threat of fish

population decline, for the river as sedimentation, and for the Van Duzen River as siltation. The pollutants are sediment and temperature from industrial and municipal point sources, silviculture, rangeland, and other nonpoint sources.

Pacific Lumber Company (PALCO) is harvesting heavily, above quantities in the Sustained Yield Plan, in the lower Eel River and Van Duzen River watersheds including Bear, Stitz and Jordan Creeks. PALCO is currently conducting a watershed analysis in this area and there is extensive Regional Water Board oversight. There is also cattle grazing on PALCO land and many roads that are poorly maintained and are contributing sediment to local creeks that are aggrading and causing flooding and domestic water supply problems. The Regional Water Board is conducting a watershed analysis in the lower Eel River area and conducting effectiveness monitoring downstream of where PALCO has installed BMPs.

Primary water quality issues in the Eel River WMA

- Sedimentation of streams
- Salmonid habitat degradation
- High water temperatures
- Ground water contamination

WATER QUALITY GOALS AND ACTIVITIES

The four goals for the Eel River WMA are related through the beneficial uses they address:

- **GOAL 1: Protect and enhance the salmonid resources (COLD)**
- **GOAL 2: Protect other surface water uses (MUN< AGR, REC-1, REC-2)**
- **GOAL 3: Protect ground water uses (MUN, IND, AGR, REC-1, REC-2)**
- **GOAL 4: Protect warm water fishery resources**

GOAL 1: Protect and enhance the salmonid resources (COLD)

The cold water fishery, specifically trout, steelhead, and salmon, is of concern regarding sedimentation and other potential impacts to habitat and water quality. The following nonpoint source issues were identified by the Regional Water Board staff and relate directly to concerns about the cold water fishery:

- Stream Sedimentation: A large portion of the watershed supports commercial timberlands. Logging roads are a concern due to increased runoff and delivery of sediment to local waterbodies. Changes in the morphology of channels have occurred from increased sedimentation rates. Sedimentation of small streams has caused localized flooding and accelerated erosion in some cases from redirected stream channels. Gravel extraction in the upper Eel watershed is a concern. Past and current timber harvest practices have decreased the canopy cover over tributaries and the mainstem of the river. High water temperatures are detrimental to cold water fisheries' reproduction.
- Dairy industry and grazing impacts the watershed from direct discharges of waste and/or whey, animals in the creeks and waterways, trampling of stream banks, and other erosion mechanisms.

- Ground water contamination concerns, as well as erosion and sedimentation issues should be included in outreach and education activities. Problem sites should receive enforcement per the State's Nonpoint Source Enforcement Policy.
- Herbicide application on private and public lands is a water quality concern.
- Interbasin transfers of water and regulated flows from dams affect sediment, flow, and temperature dynamics.

Point Source Issues

Current Activities

- Continue regulation of point sources.

Nonpoint Source Issues

Current Activities

- Implement and enforce best management practices for nonpoint source regulation.
- Work with the timber industry and USFS to address timber harvest impacts and issues such as erosion, herbicides, riparian management and road building and road abandonment.
- Investigate herbicide impacts to surface and ground water.
- Implement and enforce best management practices for nonpoint source regulation for herbicide applications. Work with CalTrans on discharges from roadwork.
- Promote grants for nonpoint source studies and implementation.
- Manage grant-funded projects.

Additional Needs

- Develop strategies for erosion prevention and reduction of sedimentation to support implementation of the TMDL process.
- Promote erosion prevention and sediment control educational materials and programs for small and rural landowners.
- Inspect construction sites for erosion prevention and sediment control measures, encourage local agencies to adopt and enforce local ordinances for erosion prevention and sediment control measures. Increase storm water program resources.
- Funds for coordinating functions with other agencies on a watershed basis, primarily through grant-funded projects, volunteer monitoring coordination, and public education and outreach.
- Promote Tax Incentives for erosion controls. Decreasing road density and decommissioning roads are two potential targets of a tax incentive program.
- Promote enhancement of riparian areas through grant funding, public education and outreach, and coordination and assistance to other agencies and groups.
- Improve habitat conditions for anadromous fishes by assisting and coordinating with CDFG and local agencies and groups in fishery assessment and emerging issues and by grant funding for stream rehabilitation. Obtain any data available on stream temperatures in this area.
- Increase coordination with Resource Conservation Districts and agricultural community to deal with rangeland and confined animal problems; erosion, bank erosion, animal waste in streams.
- Seal waste pits and ponds. Develop Regional Water Board approach to implementation of Rangeland Management Planning process.
- Increase active participation in the CalTrans Vegetation Management Advisory Committee and with CDF and timber industry on herbicide issues.

- Coordinate water rights/dams issues with SWRCB and other agencies.
- Participate in the process and decision criteria regarding gravel extractions.
- Encourage the local planning agencies to endorse the concept of a riparian corridor reserve and develop a model erosion control ordinance for all grading and building projects less than 5 acres in size.
- Coordinate with local agencies, CalTrans, and the Railroad Authority to develop and implement best management practices for erosion control.
- Develop and implement a focused sampling program for temperature, sediment loading, geomorphology changes and water quality in upper mainstem Eel River.
- Support CDFG efforts to identify the extent of squawfish predation on salmon and steelhead populations and evaluate management strategies to eliminate squawfish within the river and Lake Pillsbury.
- Coordinate with CDFG to evaluate removal of railroad debris
- Participate on the Regional Committee to develop a Local Coastal Plan and implement projects in the Critical Coastal Area of the Eel River.

GOAL 2: Protect other surface water uses (MUN, AGR, REC-1, REC-2)
Approximately 86% of the watershed area is privately owned and coordination between regulatory agencies and private groups within the watershed is poor. The compliance rate for existing WDR/NPDES programs is high. Existing regulatory programs related to point source discharges should be continued and increased emphasis placed on identifying and inspecting traditionally low priority and unregulated point source sites. Mercury in largemouth bass from Lake Pillsbury has been measured at concentrations exceeding FDA action levels for human consumption and the state Office of Health Hazard Assessment has issued a fish consumption advisory. Discharge from Lake Pillsbury may be contributing mercury to the Eel River watershed as well. Interbasin transfer of water between the Eel River and the Russian River may affect sediment budgets, flow rates, temperature dynamics and chemical concentrations within the Eel River. Lake Pillsbury may be acting as a source for squawfish found in the upper Eel River affecting recreational uses of the River.

Point Source Issues
Current Activities
- Continue point source regulatory programs.

Additional Needs
- Increase funding for identification and inspection of municipal, industrial and construction storm water facilities and traditionally unpermitted facilities such as junkyards, steam cleaners and maintenance yards.
- Increase inspections and develop general permits for lower priority land application facilities, recycling and composting facilities.
- Encourage improvements to publicly owned treatment plants adjacent to the river to reduce incidents of upsets and eliminate disposal of wastewater to gravel bars within the river channel.
- Coordinate and assist, as needed, during upcoming FERC permit reconsideration for Scott Dam. Negotiate flow releases and diversion schedules that enhance salmon and steelhead populations.

Nonpoint Source Issues
Current Activities

- Develop a sediment and temperature TMDL in conjunction with EPA.
- Increase coordination with RCD and agricultural community to address rangeland issues and confined animal problems related to nutrient runoff and erosion.
- Reduce erosion associated with timber harvest and road systems.
- Continue grant programs for watershed assessment, planning, and restoration.
- Continue the current Toxic Substance Monitoring Program and the SWAMP activities to develop and implement a focused sampling plan to assess water quality, sediment and bioaccumulation potential of mercury in upper mainstem Eel River.

Additional Needs
- Fund and implement a watershed-based sampling program that is prioritized and focused on specific issues/problems within the watershed.
- Identify existing information and develop a central repository for information including database and possibly GIS capabilities.
- Investigate the feasibility and impacts to beneficial uses if Eel River estuary and lower mainstem are dredged to remove documented sediment clogging in watershed.
- Streamline 401 water quality certification program for small dischargers and encourage better use of existing BMP's for erosion.
- Endorse the concept of establishing a "river corridor". Encourage local and state agencies to evaluate appropriate land uses and industrial activities within a "river corridor". Coordinate with local planning agencies to review existing zoning and reevaluate incompatible land uses along the "river corridor".
- Increase coordination with timber companies to monitor herbicide application and pre- and post application chemical handling and disposal.
- Establish and fund a watershed coordinator position to develop outreach programs that include joint participation among landowner, government agencies and other stakeholders.

GOAL 3: Protect ground water uses (MUN, IND. AGR, REC-1, REC-2)
Activities that occur in the Eel River WMA may result in the contamination and degradation of ground water. Beneficial uses identified for ground water in this watershed include, municipal, industrial, and agricultural water supply, and recreation. These uses may be impaired through discharges to ground water from chemical and biological materials. A few of the many activities which, if conducted improperly, are likely to impair ground water beneficial uses include: illegal disposal sites (including illegal landfills), vehicle and railroad maintenance yard operations, herbicide application, dairy operations, automotive wrecking yards or metal recycling activities, wood treatment facilities, underground tank operations, landfill operations, and other industrial facilities operations, publicly owned treatment works, and private septic systems.

Information needs to be gathered and placed into a database system to assist the following: (1) identify the location of the problem areas of the watershed, (2) identify the location of the sensitive areas of the watershed, and (3) identify restoration areas and activities associated with the watershed.

Point Source Issues
Current Activities
- Continue the point source regulation program.

Nonpoint Source Issues

Current Activities

- Continue on-going activities associated with known ground water contamination.
- Prevent access to waste pits and ponds.
- Continue to coordinate with the County to review septic system situations to avoid ground water contamination. This includes enforcement of the Basin Plan requirement to ensure that the County reports septage disposal.
- Continue active participation in the Vegetation Management Advisory Committee (CalTrans) and increase monitoring of the implementation of best management practices for herbicide applicators.
- Conduct follow-up activities.

Additional Needs

- Pursue additional Regional Water Board funding (PYs) for development of a database system to store, analyze, and assess existing information.
- Outreach and coordination as in other goals above.
- Pursue additional Regional Water Board funding (PYs) for staff and laboratory services to assess and address the illegal disposals and assess ground water quality.
- Prepare, develop, and implement a program to educate the public, local, city, and state agencies, along with private industry, on discharges of toxic chemicals.
- Encourage the agricultural community to advance to Chapter 15 requirements in order to avoid ground water contamination.
- Promote agronomic irrigation and agronomic disposal of wastes.

GOAL 4: Protect warm water fishery resources

The warm water fishery exists only in Lake Pillsbury, in the upper Eel River basin. Lake Pillsbury is a favored recreation area for residents of the North Coast. Contamination of the fisheries from naturally occurring mercury is a concern for sport fishing. Erosion of sediment above the dam exacerbates the level of mercury contaminated sediments entering the lake. Erosion of sediment from the upper portion of the basin may also be filling Lake Pillsbury. Existing information needs to be identified and collected to assess impacts to the lake and address problem areas. A database system is needed to identify the location of the problems areas, sensitive areas, and areas for restoration activities. For the warm water fishery, information gathering and assessment should be confined to Lake Pillsbury. Discharges to the lake are a concern and may contribute to the impacts to the warm water fishery. These include discharges due to boating activities, such as MTBE in gasoline, septic systems, industrial/construction site runoff, etc.

Point Source Issues

There are no specific point source issues in this part of the WMA.

Nonpoint Source Issues

Current Activities

Due to funding constraints, the Regional Water Board has little involvement in issues other than timber harvesting activities and mercury accumulation in fish species.

Additional Needs

- The actions for above goals regarding data gathering and assessment, coordination, and outreach all apply to this issue.

- Coordinate more closely with the local watershed groups, as well as the USFS, County Health and other local agencies.

IMPLEMENTATION STRATEGY

Significant strategy development and implementation for water quality protection and improvement are occurring in the Eel River WMA at the present time by many agencies, interest groups, and individuals. This document and the implementation of actions to address issues and achieve water quality goals are flexible.

See Appendix 2.5-A for a list of agencies and groups with interest or responsibility in the Eel River WMA.

The general emphasis in the WMA is to increase assessment activities (including monitoring coordination) and education/outreach, especially regarding erosion control and sedimentation. While maintaining a watchful eye on traditional point source dischargers, forestry related activities are a high priority.

Assessment and Monitoring

Additional assessment needs have been identified for erosion/sedimentation and ground water issues. Assessment of existing data was a key element in the TMDLs for the South Fork Eel and Van Duzen rivers. There is a need to organize surface and ground water data to more effectively describe conditions in the WMA and direct future monitoring activities. For instance, additional emphasis should be directed to evaluating the connection between surface and ground waters in urbanized/industrialized areas and the potential for cross-contamination. A system to gather and analyze existing information on a spatial perspective has been suggested.

A monitoring workshop has been suggested to improve coordination, standardize protocols, develop an information bank, and foster a volunteer monitoring program. The Regional Water Board will provide some staff assistance and request additional funding to assist the Humboldt RCD in continuing a temperature monitoring and screening program in the watershed. Likewise, the need to monitor both the implementation and effectiveness of watershed enhancement efforts should be addressed, as well as bacterial quality at popular recreation sites in the South Fork Eel and Van Duzen Rivers.

The Surface Water Ambient Monitoring Program (SWAMP) is a regionwide monitoring program that will monitor permanent stations for long-term trends as well as rotate into WMAs on a five-year basis. See http://www.waterboards.ca.gov/northcoast/programs/swamp.html. Up to five stations are scheduled as a permanent stations, sampling began in early 2001: South Fork at the confluence with the mainstem, Bull Creek, near Branscomb, Eel River at Dos Rios, and Middle Fork at Dos Rios. The rotation for intensive monitoring is scheduled for FY 2001-02 along with the Humboldt WMA is complete. In FY 04-05 there will be eight permanent stations and four rotating stations. Monitoring and assessment needs are detailed in Appendix 2.5-B.

Education and Outreach

Pollution prevention activities were highlighted as a high priority activity. Increased education and outreach should be addressed for erosion control, other storm water issues, confined animal facilities, management and disposal of toxins, monitoring and assessment, and the core regulatory program.

Coordination
Tied closely with education and outreach is the need for enhanced coordination. The Regional Water Board participates in activities that are aimed at improving communication and coordination to benefit improved water quality. Improving the interaction with other agencies and the public is a goal that will require additional funding or redirection of resources.

Core Regulatory
The Regional Water Board will maintain the current level of point source regulation (inspection, monitoring, and enforcement) on traditional dischargers, while increasing the level of involvement in storm water and confined animal waste management issues. There is concern about publicly owned treatment works discharging to infiltration ponds in the floodplain and the potential for recreational use impairment. In addition to core regulatory are the underground storage tanks program and toxic site cleanups. Additional emphasis should be directed to evaluating the connection between surface and ground waters in urbanized/industrialized areas and the potential for cross-contamination. Involvement in the gravel mining issues should continue, especially for stream channel geomorphology and potential effects on the anadromous salmonid resources.

Ground water
Ground water issues center on petroleum and metals contamination and the potential for cross contamination between surface and ground water. Groundwater and surface water contamination is 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.

Nonpoint Source
Continued involvement in the forestry issues is necessary to ensure protection of aquatic resources. The recent listing of coho salmon as threatened under the federal Endangered Species Act and the lawsuit against USEPA for TMDL development has put the spotlight on all land use activities that potentially may increase sedimentation or otherwise affect habitat. The Regional Water Board will increase work with local agencies and groups regarding land use effects on water quality, following the State Nonpoint Source Enforcement Policy (see Appendix B) to reduce nonpoint source pollution. An active outreach program will enhance the effectiveness of the program.

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.

Response to CWA section 303(d) requirements for waste load reductions included sediment TMDLs for the South Fork Eel River (adopted in December 1998) and Van Duzen River (adopted in December 1999). Additional information is contained in http://www.waterboards/northcoast/programs/tmdl/Status.html. Issues of listing additional streams in the WMA will be addressed through the water quality assessment process. In addition, the Regional Water Board staff will participate on the Regional Committee to develop a Critical Coastal Area Action Plan and implement projects in the Critical Coastal Area of the Eel River.

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.

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.

An estimated 25% of the timber harvested in the Region occurs in this WMA. The primary water quality issues are discharges of sediment due to surface erosion and mass wasting (landslides). Stream temperature is of specific concern in this area as are forest herbicide application. Mendocino National Forest is located in this area and is the primary federal timber agency.

Local Contracts/Agreements
The Regional Water Board will continue active involvement in the Clean Water Act section 319(h) grant program, the Water Bond grant programs, as well as promoting other programs like the California Department of Fish and Game restoration programs. Staff is currently managing a 319(h) grant that funds implementation of dairy improvements. Another 319(h) grant with the Humboldt County Resource Conservation District is to implement landowner improvement projects that will improve water quality and salmonid habitat.

Water Quality Planning
The Basin Plan review process feeds into the activities to the extent issues were identified in the Triennial Review and applicable to the Eel River WMA. The top priority issues are:

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

In additional, the water quality attainment strategies for the section 303(d) waterbodies will be incorporated into the Basin Plan.

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. Emerging issues of large magnitude or high priority may cause early re-evaluation and shifting priorities. The final evaluation will feed future assessment and problem identification.

BUDGET

The Regional Water Board will attempt to fund the highest priority actions as identified in this WMA to the extent funding constraints allow, and will pursue additional funding for those actions not currently addressed. Monitoring and assessment needs are detailed in Appendix 2.5-B.

Appendix 2.5-A
Stakeholders

Partial listing of agencies and groups in the Eel River WMA with an interest and/or responsibility for water quality:

United States
Environmental Protection Agency

Army Corps of Engineers
Forest Service
Bureau of Land Management
Geological Survey
National Biological Service
Fish and Wildlife Service
National Marine Fisheries Service (NOAA Fisheries)
Natural Resources Conservation Service

Native American
Round Valley Indian Reservation

California State
California Environmental Protection Agency
Resources Agency
Department of Fish and Game
Department of Health Services
Department of Parks and Recreation
Department of Pesticide Regulation
Office of Environmental Health and Hazard Assessment
Department of Toxic Substance Control
Department of Water Resources
California Coastal Conservancy
UC Agricultural Extension
Humboldt State University
College of the Redwoods

Humboldt and Mendocino County
Water Agency
Planning Department
Department of Environmental Health
Agricultural Commissioner's Office

Local Agencies
Resource Conservation Districts
    Mendocino County RCD
    Humboldt County RCD
local water districts - numerous
city planning departments
city public works departments

Public Interest Groups
Farm Bureau
United Dairymen
Cattlemen’s Association
Eel/Russian Commission
Trout Unlimited
Salmon Unlimited
California Forestry Association
Eel River Watershed Improvement Group
Eel River Watershed Protection & Restoration Association

Environmental Protection Information Center
Elk River Watershed Conservancy
Friends of the Eel River
Institute for Sustainable Forestry
Redwood Community Action Agency
Round Valley Resource Center
Willits Watershed Group
Salmon Forever
Humboldt Watershed Council
Pacific Lumber Company
Trees Foundation

Appendix 2.5-B

Monitoring priorities and needs detail for the Eel River Watershed Management Area

Additional assessment by Regional Water Board staff is needed to test hypotheses about support of beneficial uses MUN, REC1, COLD, RARE, or provide assessment information essential for program implementation. They are currently not funded.

The estimates are Regional Water Board needs on a per year basis.

1. Water temperature - $15,000 (0.1 PY + $4,000 supplies)
High water temperatures affect coldwater salmonid species such as the coho and chinook salmon that are listed as threatened under the federal Endangered Species Act). The Humboldt RCD has completed a CWA section 205(j) grant project to provide a broad picture of water temperatures in the basin. Their continuing efforts focus on specific problem areas, but need assistance.

2. Sedimentation - $188,000 (0.8 PY + $100,000)
The entire Eel River watershed is CWA section 303(d) listed for sediment impacts. The USEPA is developing TMDL waste reduction strategies, which will support gathering and assessment of existing information. Additional monitoring for the effectiveness of the actions is needed in the phased TMDL approach. The SWAMP will address this to some degree.

3. Bacterial studies - $32,000 (0.2 PY + $10,000 lab)
Contact recreation may be at risk in the Van Duzen and South Fork Eel. Data on bacterial and parasitic (Cryptosporidium, Giardia) presence is lacking.

4. Basic Assessment - $180,000 (1.0 PY + $70,000 lab)
No specific body of recent water quality data exists for the watershed as a whole. A focus on assessments and monitoring is needed to ensure new problems are not going unnoticed. Likewise, coordination of monitoring and assessment efforts and a compilation of existing data are needed, but will be supported to a degree by TMDL activities. Sampling of POTWs for MtBE, other petroleum products, and metals is needed, both influent and effluent.

5. Groundwater Data Assessment - $33,000 (0.3 PY)
A spatial organization of existing information is needed to first assess the extent of known problems. That will guide future focused monitoring and assessments and overall assessment of groundwater in the watershed.

6. Groundwater/Stormwater Data Collection - $75,000 (0.5 PY + $20,000)
Surface water and groundwater are contiguous in much of the watershed. Stormwater drainages are contributing animal waste products, gasoline, MtBE, metals (mostly Pb, Cr, Ni, Zn, Cu), solvents, and other petroleum products to the surface and ground waters to an unknown extent. There are problems in the Garberville and Fortuna areas, and suspect problems in the Willits, Carlotta, and Hydesville areas.

Surface Water Ambient Monitoring Program

The SWAMP addressed some monitoring issues in the WMA in FY 2000-01, and the issues were investigated more intensively in FY 2001-02. Six long-term stations were for setup in spring of 2001: South Fork at mainstem confluence, Bull Creek, near Branscomb, Eel River at Dos Rios, Middle Fork at Dos Rios; and North Fork at Mina. Other long-term stations in the WMA will be proposed if appropriate. The intensive survey will provide sampling sites in waterbodies in the WMA. Anticipated parameters are general water chemistry, nutrients, metals, organic chemicals, and sediment related parameters. Temperature and bacterial issues in the WMA will be addressed during the intensive survey. For this rotation, stations have been added at Benbow, Elder Creek, Hearst and Alder Point. In FY 04-05 there may be eight permanent stations and four rotating stations in this WMA.

Other Monitoring Programs

As mentioned above, the Humboldt RCD coordinates a temperature monitoring network in the WMA. The Regional Water Board supports and will assist that effort to the extent resources allow.

The mercury bioaccumulation in and below Lake Pillsbury is addressed through the Toxic Substance Monitoring Program and in coordination with the state Office of Health Hazard Assessment. Lake sediment analysis was performed during the spring of 2001 to supply data to Office of Environmental Health and Hazard Assessment. A food consumption advisory was issued in 2000.

SECTION 2.6

TRINITY RIVER WATERSHED MANAGEMENT AREA

The following draws upon information obtained through public input, agency contacts, and the experience of Regional Water Board staff. Presented in this document is a summary of knowledge regarding water quality issues and the existing and planned actions based on current Regional Water Board staff knowledge. The USEPA developed and adopted a TMDL for sediment in the South Fork Trinity River in 1998. The Regional Water Board is in the process of developing a region-wide TMDL sediment implementation policy that will compliment a Basin Plan Amendment for control of sediment discharges. The sediment TMDL for the Trinity River watershed (Upper, Middle and Lower) was adopted by USEPA in December 2001.

MANAGEMENT AREA DESCRIPTION

The Trinity River, a wild and scenic river located in northwestern California, is the largest tributary to the Klamath River. Its basin drains an area of about 2900 square miles of mountainous terrain, with its headwater streams originating in the Klamath and Coast Ranges. From its headwaters, the river flows 172 miles south and west through Trinity County, then north through Humboldt County and the Hoopa Valley and Yurok Indian reservations. The confluence with Klamath River at Weitchpec is about 43 miles upstream from the Pacific Ocean. In the early 1950's two major water-development features: Lewiston Dam and its reservoir and related facilities and Trinity Dam and its reservoir, known as Trinity Lake, which are jointly known as the Trinity River Diversion (TRD) of the Bureau of Reclamation's Central Valley Project (CVP) were installed above river-mile 112 and the community of Lewiston. Water stored and released from the Trinity Dam reservoir is used for power-generation and diverted to out-of-basin multiple uses throughout the Central Valley of California. Trinity River downstream of TRD is habitat for not only the anadromous salmonids and other native species, but also has populations of Brown trout.

This WMA is mostly rural with human population centered near Trinity Center, Weaverville, Lewiston, Hayfork and Hyampom. The only large-scale agriculture is cattle grazing. Timber harvest continues but at a reduced level than in the past on federal lands. The U.S. Forest Service and the Bureau of Land Management federally manage approximately 80 percent of the land in the Trinity WMA. Of the remaining 20 percent approximately half are industrial timberlands. Old access roads that are not maintained or properly decommissioned are a continual source of

sedimentation into the Trinity River and its tributaries. Tourism, including rafting, is part of the economy of this area.

Elevations range from 9,000 feet in the Trinity Alps to 250 feet at the confluence of the Trinity and Klamath Rivers near Weitchpec. Much of the Trinity WMA is prone to seismically induced landslides due to rapid ground acceleration from local and coastal seismic activity, especially during winter months when slope soils are saturated. Areas of granitic soils are productive but highly erosive. In addition, valley inner gorges, which are over steepened slopes adjacent to stream courses, are considered highly unstable. Ground water resources are relatively plentiful throughout the geologic systems, but are not well defined.

The highest elevations of the Trinity WMA are steep, treeless mountains. Below about six thousand feet elevation, the landscape is dominated by mixed conifer forests with some Red fir and Douglas fir stands with some hardwoods present. The lower elevations contain complex riparian vegetation, evergreen brush and some rangeland and chaparral. Annual precipitation averages 57 inches/year with a low of 37 inches in Weaverville and Hayfork and a higher rainfall of 75 inches in Trinity Center and 85 inches in the Hoopa Mountains. There are occasional summer thunderstorms that produce extensive runoff to streams and the river, and can set off wild fires. The TRD project diverts a majority of the upper-basin's water yield at Lewiston.

ASSESSMENT AND PROBLEM IDENTIFICATION

The quality of water in the basin ranges from the highest-quality pristine waters that emerge from the Trinity Alps wilderness into the northern mainstem tributaries, to various degrees of human-caused impairment in the mainstem and southern tributaries. The anadromous fishery has experienced severe decline in the last 40 years. Most notable is the destruction of fish habitat. Natural events and multiple land uses are responsible to varying degrees for sediment contributions through accelerated erosion and mass wasting and include timber production and harvest, road construction and maintenance, grazing, and gravel mining. Increased water temperatures in some parts of the watershed, are an issue. Additional logging, road construction and associated activities are recognized as sources of stream-impairing sediments and related summertime water temperature extremes. Also, recreational instream suction dredging for gold is a concern especially in the mainstem and canyon area. The hydrologic changes wrought by the TRD project and the geologic conditions of the basin have resulted in altered stream-channel conditions and fish habitats for many miles below Lewiston.

Concerns center around acid mine drainage from abandoned mines, mercury from historic gold mining, sediment release from subdivision development and eroded roads in areas with unstable soil and decomposed granite, septic tank use, aboveground and underground tanks, and lumber mills. These conditions and the precipitous drop in salmon and steelhead populations, which followed completion of the TRD projects in 1965, are commanding attention by US Congress, Secretary of Interior, Bureau of Reclamation, Native American tribes, and a broad collection of stakeholders (such as the Trinity River Task Force, Trinity County, and the South Fork Trinity CRMP).

Seven sub-basins are recognized in the Trinity WMA:

North Fork Trinity River
The North Fork Trinity River is a largely undeveloped 10,145-acre forested watershed that drains into the main Trinity River near the community of Helena. Most of this area is designated as wilderness and therefore, little timber harvesting is conducted. Some mining still takes place in the lower part of the watershed, however an assessment of the old and current mining sites on public lands needs to be conducted. Wild fires are also of concern in this subwatershed.

New River
The New River is a largely undeveloped 47,472-acre forested watershed that drains into the main Trinity River near the community of Hawkins Bar. Approximately half of the area is designated as wilderness and half as U.S. Forest Service land. The New River is designated as a wild and scenic river and is refugia for summer steelhead. Some mining takes place, however an assessment of the old and current mining sites on public lands remains to be conducted. There is a history of lightening-caused wild fires in the area. On the Forest Service land there are limited timber sales and roads that contribute to erosion and sedimentation. A burnt dump at Denny has been closed and needs to be investigated and assessed for hazardous materials and impacts on water quality.

Lower Trinity/Humboldt Section
This portion of the Trinity River is designated as a wild and scenic river. This area has experienced hydraulic mining in the past. Current mine practices consist of small placer sluicing and hard rock milling operations. An assessment of abandoned mines, and past and present mining activities need to be conducted. The Hoopa tribe has been recognized by the United States as a sovereign nation. The tribe has prepared and adopted its CWA-based water quality management plan and submitted it to US EPA for review and approval.

There are several contaminated sites in the area. The Copper Bluff Mine continues to emit toxins in the form of acid. Celtor chemical works, located on the Hoopa Valley Reservation, is a US EPA Superfund site. A remedial action plan has been implemented. Twelve sites are being investigated in the Hoopa/Willow Creek area where known releases from underground storage tanks occurred. A possible release from underground fuel tanks located at a closed gas station in Salyer needs to be investigated. There are PG&E electrical substations in Hoopa and Willow Creek. These are being investigated for historic releases of mineral oil that may have contained PCB's. Storm water discharges from these facilities are also being investigated. An unknown number of aboveground storage tanks exist in the area. There are also a number of lumber mills that have a history of using wood preservatives including pentcholorophenol that may be the source of soil and groundwater contamination. These sites need to be investigated. A burn dump at Burnt Ranch has been closed and needs to be investigated and assessed for hazardous materials and impacts on water quality.

Canyon Area
This portion of the Trinity River is designated as a wild and scenic river. The Canyon Area lies along both sides of the mainstem from Junction City west to the Trinity/Humboldt County line. Most of this area is under the jurisdiction of the U.S. Forest

Figure 2.6.1. Trinity River WMA

Service. The flow of the river keeps sediment from depositing on the streambed. Along this corridor there are homes, mills, the ranger station and Highway 299. Timber harvest is limited, but there are chronic landslides that block the highway and create the problem of soils deposition. Logging and roads create erosion hazards and potential sedimentation to the streams and the river. This area has experienced placer and hydraulic mining in the past. A burn dump at Big Bar has been closed and needs to be investigated and assessed for hazardous materials and impacts on water quality

Weaverville Area
This area extends from Junction City to the Lewiston Dam and is the area of highest human population in the Trinity WMA (Weaverville). The terrain in this area is relatively flat and as such is an area of sediment deposition. Logging operations and road building and use have caused erosion, sedimentation and elevated turbidity of streams and the river. Access roads need to be inspected for maintenance and erosion control measures of ongoing roadside and upslope slumping.

Twenty-one sites are being investigated in this area where known releases from underground storage tanks occurred resulting in significant gasoline contaminant plumes, some containing MtBE, in Weaverville. A possible release from underground fuel tanks located at a closed gas station in Weaverville needs to be investigated. There is a PG&E electrical substation located in Weaverville. This site is being investigated for historic releases of mineral oil that may have contained PCB's. Storm water discharges from this facility are also being investigated. Aboveground storage tanks need to be investigated. The possible discharge of wood treatment chemicals from the Trinity River Lumber Co. in Weaverville needs to be evaluated. The Weaverville landfill needs final closure plans developed per Chapter 15, Title 27 and assessed for release of hazardous waste to ground water as part of final closure. Old burn dumps need to be investigated and assessed for hazardous materials and impacts on water quality.

Historically, developed, unincorporated areas are unsewered with onsite disposal systems in marginal soils for subsurface disposal of septic tank effluent. These areas need to be investigated and assessed for compliance with the Individual Disposal System policy.

Upstream of Weaverville (including Trinity and Lewiston Lakes)
About half of this area is designated as wilderness area. The U.S. Forest Service controls the wilderness area where some grazing is still allowed. Logging on both private and U.S. Forest Service land has and is causing erosion and subsequent sedimentation of the streams and lakes. Twelve sites are being investigated in this area where known releases from underground storage tanks occurred. The discharge of heavy metals, fuels and wood treatment chemicals from an abandoned mill site near Douglas City is currently under investigation. Trinity and Lewiston Lakes are heavily used for recreational boating and personal watercraft. An investigation concerning releases of fuels and fuel oxygenates, especially MtBE, needs to be conducted. Septic tank systems need to be investigated and assessed for compliance and appropriate enforcement. Old burnt dumps at Carrville, Lewiston and Trinity Center also need to be investigated and assessed for hazardous materials and impacts on water quality.

Aboveground storage tanks in the area need to be investigated. The Trinity River Diversion not only decreases the amount of water in the system by sending water to the Sacramento Valley and the Central Valley Project, but also creates a temperature

elevation problem in the remaining water in the river and disrupts physical cues for migration and spawning of salmon. The Trinity River Fish Hatchery was constructed at the base of Lewiston Dam to help mitigate the loss of fisheries habitat resulting from the project, but the hatchery has not been effective in sustaining fish populations.

South Fork Trinity

The South Fork Trinity has not been dammed and is a Key Watershed in the U.S. Forest Service's Northwest Forest Plan. The South Fork Trinity is primarily mountainous, forested land, with two broad agricultural valleys occupied by the towns of Hayfork and Hyampton. Elevations in the basin range from more than 7,800 feet above sea level in the headwater areas, to less than 400 feet at the confluence with the Trinity River. This 604,000-acre area that is a mix of private and U.S. Forest Service administered public land, has experienced extensive timber harvesting in the past that has caused erosion and sedimentation of streams and the river. In addition, the area is susceptible to naturally occurring landslides and other mass-wasting events because of steep terrain, loosely consolidated soils (decomposed granite) and heavy precipitation. A sediment source analysis determined that sediment delivery to the stream averaged 1,053 tons/mi2/yr over the period 1944-1990. Sixty-four percent of that sediment was from mass wasting. There is a history of wild fires and the subsequent erosion and salvage logging issues. The South Fork Trinity CRMP is very active in this watershed.

Hayfork Creek is the largest tributary to the South Fork and historically has been the spawning area for steelhead and spring and fall chinook salmon. For example, in the South Fork Trinity spring chinook salmon populations have decline by 90 percent. This area, as in the past, has abandoned mines and small placer sluicing and hard rock milling operations that need to be investigated and assessed for release of toxic pollutants. The Kelly Mine on McCovey Gulch in Hayfork has drainage discharges containing chromium and arsenic affecting domestic diversions downstream. The Trinity County Health Department has posted the creek for metals contamination and notified homeowners not to drink the water.

Fourteen sites where known releases from underground storage tanks occurred are being investigated in this area. In the Hyampom area, several domestic wells were contaminated with MtBE from an underground fuel tank release. There are PG&E electrical substations in Hyampom and Wildwood that are being investigated for historic releases of mineral oil that may have contained PCB's. Storm water discharges from these facilities are also being investigated. Aboveground storage tanks need to be investigated. Several former mill sites remain open in the area, and need to be investigated to verify that any threat to water quality has been abated. Old burnt dumps need to be investigated and assessed for hazardous materials and impacts on water quality. In the Hayfork area the landfill needs final closure plans developed per Chapter 15, Title 27 and assessed for release of hazardous waste to ground water as part of final closure.

Primary water quality issues in the Trinity River WMA

- Sedimentation of streams
- High water temperatures
- Mercury contamination in fish
- Historic wood treatment facility contamination

WATER QUALITY GOALS AND ACTIONS

The Regional Water Board prioritized goals and actions to address issues associated with the goals. The broad goals for the WMA include improving the anadromous fishery through sediment reductions and habitat enhancements, and maintaining the other high beneficial uses of both surface and ground water. The three goals for the Trinity River are related through the beneficial uses they address:

- **GOAL 1: Protect and enhance salmonid resources (COLD, MIGR, SPWN, RARE)**
- **GOAL 2: Protect and enhance ground water resources and attendant beneficial uses**
- **GOAL 3: Protect all other surface water uses**

GOAL 1: Protect and enhance salmonid resources (COLD, MIGR, SPWN, RARE)
Upslope erosion controls are needed to reduce sediment delivery to waterways in the Trinity WMA. The Regional Water Board must promote and develop considerations for the stability of stream channels and maintenance of channel form consistent with a functioning hydrologic channel. The riparian and instream habitats must be enhanced. Instream temperatures for cold-water habitat and adequate stream flows to protect and enhance salmonid resources and COLD will be managed.

GOAL 2: Protect and enhance ground water resources and attendant beneficial uses
The underground storage tanks and toxics remediation programs are aimed at addressing the issues associated with this goal. While pollution/contamination issues are site specific and localized, ground water in those areas is an important resource and supports beneficial uses.

GOAL 3: Protect all other surface water uses
The actions above for GOAL 1 largely serve to protect all other uses, however additional issues with regard to beneficial use impairment may arise in the future. If issues do arise, they will be addressed through this process.

IMPLEMENTATION STRATEGY

Congress created the Trinity River Task Force (TRTF) in 1971. Its mandate is to formulate and implement a management program to restore fish and wildlife populations in the Trinity River Basin. The TRTF seeks to achieve temperature objectives that meet the life cycle needs of the fish. Congress has also funded numerous water-resource and fishery studies and directed that US Secretary of Interior (SOI) require actions by the relevant federal agencies to restore the river's fisheries.

The federal government (Secretary of Interior) approved an EIR for which the preferred alternative for below the dam is 1) introduction of gravel, 2) removal or flushing of sediment, 3) decreased flow to the Central Valley, and 4) increase flows to the mainstem of the Trinity River. The increased flows are based on five water-year types (flow into the Trinity Reservoir before April) and could be 255,000 acre-feet per year. The final EIR was approved in November 2000, with the federal Record of Decision at the end of 2000. Trinity County is the lead agency for CEQA and certified the EIR in the summer of 2000. The Regional Water Board will issue 401 water quality certifications for restoration projects and Waste Discharge Requirements for the bank feathering projects. Trinity County may be asking the State Water Board to modify the water right permits held by the Bureau of Reclamation to validate the increased flows and attempt to meet the temperature objectives in the Basin Plan. In addition, four bridges along the river will have to be raised to accommodate the increased flows, but funding for the bridge work has not been appropriated by any agency.

Restoration and habitat enhancement projects in the watershed need to be reviewed for implementation of best management practices (BMPs); and regulated in conformance with these permits to protect water quality objectives and beneficial uses. Those activities that pose a significant threat to water quality will necessitate prescription of waste discharge requirements (Non-Chapter 15 WDR) for protection of water quality objectives and compliance with Basin Plan Waste Discharge Prohibitions. Finally, these types of projects will require staff to investigate and assess the management practices and controls that are being followed to minimize adverse effects to waters from the activities.

Both the Trinity River (mainstem) and the South Fork of the Trinity River have been declared as impaired by sediment and placed on the Clean Water Act section 303(d) list for impaired waters. The USEPA developed and adopted a TMDL for sediment in the South Fork Trinity River in 1998. Implementation of that TMDL is dependent on funding at the Regional Water Board level. 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.

In 1981 the State Water Resources Control Board (SWRCB) established a Management Agency Agreement with the U.S. Forest Service. The SWRCB certified the plan entitled “Water Quality Management for National Forest System Lands in California”(this is essentially the USFS 208 plan), designated USFS as the management agency, and executed the MAA with USFS. This Water Quality Management (WQM) plan sets forth process standards as BMPs and addresses timber management, road and building site construction, mining, recreation, vegetative manipulation, fire suppression and fuels management, watershed management, and range management. USEPA approved all these actions. Under this agreement the Regional Board waives direct regulation on Forest Service-maintained land except under special conditions. The Regional Board maintains the responsibility of oversight for implementation of the WQM plan. The Forest Service evaluates and monitors BMP implementation.

The Trinity WMA is subject to superior powers: The federal Secretary of Interior, the Central Valley Project, the Tribal Trust powers, the State of California's appropriative water rights via the SWRCB and the Hoopa Tribe's sovereign status. Their authorities should be exercised in concert with Regional Water Board's authority.

Assessment and Monitoring
Assessment of existing information was used in the development of the TMDL strategy. The TRTF has been funding assessment and monitoring activities and will likely continue to do so in the future. Focussed monitoring in the long term will be associated with determining the effectiveness of management practices to reduce erosion and sedimentation and lower temperatures, and determining trends towards the desired future condition. In-stream monitoring will be necessary to keep track of cross-section changes, thalwag profiles, embededness, turbidity, dissolved oxygen, gravel quality, riparian function, and fish productivity. Water quality characteristics will be monitored at two permanent stations under the SWAMP: Trinity River at Lewiston and Weitchpec. The intensive survey in FY 2003-04 provided significantly more information on the WMA. The RCD and CRMP collect new data that is not being collected by others. Also, both the U.S. Forest Service and Bureau of Land Management have local expertise in assessment and monitoring that should be utilized in cooperative efforts. The Toxic Substance Monitoring program documented mercury contamination in fish and the Office of Environmental Health and Hazard Assessment will publish health advisories. Timber companies are also collecting new data. See http://www.krisweb.com/ for information and data.

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.

Watershed Coordination
The Regional Water Board currently coordinates with local agencies, CRMPs and watershed groups, and State and federal agencies on an as-needed basis. Improved coordination is sought as part of the TMDL implementation process, especially with the Division of Water Rights. More coordination with the Trinity River Task Force and the South Fork Trinity CRMP for the TMDL process is needed.

Core Regulatory
The current level of point source regulation (inspection, monitoring, and enforcement) on traditional dischargers is anticipated and covers above ground tanks, underground tanks, Department of Defense sites, waste discharge requirements, NPDES, storm water pollution control, landfills, as well as construction related pollution, gravel management, and placer mining.

Water Quality Certification
The Clean Water Act section 404 permitting and associated section 401 Water Quality Certification required of the Regional Water Board have been streamlined significantly and follow the California Department of Fish and Game's California Salmonid Stream Habitat Restoration Manual. Adequate staff funding is needed to completely implement the 404/401 programs. Staff continues to pursue innovative approaches to assure appropriate review and certification of all projects. High priority projects (those with a potential for adverse impacts) will continue to receive a complete review.

Ground water
Ground water issues center on petroleum contamination and will continue to receive the current level of activity. Groundwater and surface water contamination is 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. Additional investigation, sampling and monitoring, and enforcement actions are warranted, but insufficient resources exist to address this historical toxic chemical problem.

Nonpoint Source
Continued involvement in forestry, grazing, and county road issues is necessary to ensure protection of aquatic resources. The Regional Water Board continues implementation of the MAA with U.S. Forest Service for non-timber nonpoint source issues on a very limited basis due to a lack of staff resources. The listing of coho salmon as threatened under the federal Endangered Species Act has put the spotlight on all land use activities that 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.

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 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.

Local Contacts/Agreements
The Regional Water Board continues active involvement in the Clean Water Act section 319(h) grant program, as well as Water Bond grant programs, and promoting other programs like the California Department of Fish and Game programs.

Water Quality Planning
The Basin Plan review process feeds into the activities to the extent issues were identified in the Triennial Review and applicable to the Trinity WMA. The top priority issues are:

- Review the Nonpoint Source Control Measures
- Adopt an implementation plan for sediment reduction

Additionally, the TMDL strategy will be incorporated into the Basin Plan at some future date.

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 final evaluation once the Trinity River TMDL is completed will feed future assessment and problem identification.

Appendix 2.6-A
Stakeholders

Partial list of agencies and groups with jurisdiction and/or interest in water quality in the Trinity River WMA:

United States
Trinity River Basin Fisheries Task Force
Bureau of Reclamation
Forest Service
Bureau of Land Management
Environmental Protection Agency, Regions IX & X
Army Corps of Engineers
Geological Survey
National Biological Service
Fish and Wildlife Service
National Marine Fisheries Service (NOAA Fisheries)
Natural Resources Conservation Service

Native American
Hoopa Tribe
Yurok Tribe
Karuk Tribe

California State
Department of Fish and Game

Department of Health Services
Department of Pesticide Regulation
Office of Environmental Health and Hazard Assessment
Department of Toxic Substance Control
Department of Water Resources
California Coastal Conservancy
UC Agricultural Extension
Department of Parks and Recreation

County and Local Agencies
Trinity County Resource Conservation District
County Agricultural Commissioners
city planning departments
city public works departments

Companies, Organizations, and Public Interest Groups
American Fisheries Society, Humboldt Chapter
Timberland owners
Farm Bureaus
South Fork Trinity River CRMP
Friends of Trinity River
Simpson Timber Company
Sierra Pacific Lumber Company
Trinity River Group CRMP

Surface Water Monitoring Program

SWAMP has established both permanent and rotating stations in the WMA. For FY 04-05 two permanent and one rotating will be sampled. Monitoring parameters include filed parameters (dissolved oxygen, pH, turbidity, water temperature), general nutrients, general metals, trace metals, total organic carbon (TOC), chlorophyll-a, organic compounds (pesticides and PBCs), triazine herbicides, glyphosate and herbicide surfactants. Selected sites from this WMA will also be screened for estorgenic endocrine disrupting compounds.

SECTION 3

REGIONAL ACTIVITIES

As introduced previously, some programs are regional (not prioritized on a watershed basis). For instance, some mandated non-discretionary activities, such as core regulatory and underground tank cleanups, be carried out throughout the Region. To the extent possible, all activities are included in individual WMA plans. The following explanation of individual programs addresses those activities that occur region wide where the process of prioritizing by WMA has not occurred. For Regional Water Board water quality priorities see Appendix E.

Assessment

The intent for the future is to develop or promote the development of a watershed restoration action plan for every watershed in the Region, building upon true watershed assessments. Due to resource constraints, assessments of waterbody conditions outside of targeted WMAs are on a case-by-case basis and generally associated with specific pollution events or localized concerns. Current assessments generally are mostly qualitative and in association with the regional Water Quality Assessment and Clean Water Act section 303(d) listings. Assessment of watersheds as ecological and economic units is essential to planning and resource allocation. At this time, such assessments are partially addressed in TMDL Implementation Policy, habitat conservation plans, and by local watershed groups and local agencies. A program spearheaded by the California Resources Agency, called the North Coast Watershed Assessment Program, has provided data from multiple sources for watershed assessment in targeted watersheds. The local efforts are sometimes supported by various funding sources.

The North Coast Watershed Assessment Program (NCWAP) was a multi-agency approach to gathering, developing, analyzing and presenting watershed assessments and data for north coast watersheds. In addition to the North Coast Regional Water Board, four agencies within the Resources Agency were involved: Department of Fish and Game, Department of Forestry and Fire Protection, Division of Mines and Geology, and Department of Water Resources. Each had specific tasks relating to gathering existing data, filling information gaps by collecting new data, analyzing the data, and presenting the resulting watershed assessments in a standardized format for agency, landowners, and watershed groups. NCWAP was closely coordinated with SWAMP and the outreach functions of the WMI Coordinator in the Regional Water Board. Activities associated with the NCWAP are detailed in individual WMA sections of this document. Even though NCWAP originated as a seven-year program intended to cover the whole north coast, funding for NCWAP was not allocated beyond FY 03-04.

Monitoring

The Surface Water Ambient Monitoring Program (SWAMP) for the North Coast Region consists of permanent sites with routine monitoring of core metrics for long-term trend detection and roving or rotating stations that will provide more detailed monitoring on a watershed basis, returning to each WMA on a five-year basis. The permanent stations' data will be applicable to a trend analysis as well as testing differences within stations, among stations, and between watersheds. Selection of the metrics is based on a standard suite to provide a broad view of water quality and watershed

health. See http://www.waterboards.ca.gov/northcoast/programs/swamp.html for SWAMP information.

The rotating approach is a stratified random design, with the major stratification being at the WMA scale. Selection of the metrics for this component of the program will be based on specific watershed characteristics, such as geology, hydrology, water supply, and land use patterns; drawing heavily from monitoring needs identified in the individual WMA sections in the WMI Chapter.

Objectives of SWAMP

- Develop baseline data for long-term trend detection of ambient water quality conditions in the Region
- Identify and characterize water quality problem areas
- Identify and characterize reference streams/stream reaches
- Document water quality improvements
- Make water quality information available to the public

Monitoring activities are detailed for each WMA in the individual sections of this document. Coordination with other monitoring programs is essential, including: State Mussel Watch, Toxic Substances Monitoring, Coastal Fish Consumption Monitoring, and other agency programs and special studies.

The rotation of the program began in the north coastal WMA in FY 2000-01, and moves into the Humboldt Bay and Eel WMAs in FY 2001-02, Klamath WMA in FY 2002-03, and Russian/Bodega WMA in FY 2003-04 and FY 2004-05 with some exceptions. Screening for estrogen disruptors began in FY 2000-01 in the Russian/Bodega WMA as a special study to test its efficacy elsewhere. Stream gages were installed or existing gages funded where they were most needed to support the long-term stations in FY 2000-01. These are modified as the rotation through WMAs occurs.

Tracking

As an adjunct to the monitoring efforts a comprehensive set of databases will be utilized to track trends in water quality, compliance with waste discharge requirements, effectiveness of restoration projects, and installation of BMPs including applied NPS management measures and practices. These databases will include SWIMS, SINC, self- monitoring reports, Timber Harvest Plans (THPs) post-harvest inspections, and grant project reports via a survey form submitted to the State Water Resources Control Board (SWRCB). The SWRCB has a contract with the Information Center for the Environment (ICE) at U.C. Davis to track the effectiveness of management measures addressed in grant projects. This information will be available through the CERES database, designated as the Natural Resources Project Inventory (NRPI). The databases will also include data from volunteer monitoring efforts. Each regional board has the benefit of one-third of a PY (housed at the SWRCB in Sacramento) to help implement volunteer monitoring in the region. Local Resource Conservation Districts are actively promoting volunteer monitoring and gathering of data. Any information from these data sources that is appropriate will be incorporated into a developing GIS system. For a discussion of the Geographic Information System see the end of this section. In addition, the USEPA has the Grant Reporting and Tracking System (GRTS) to keep track of CWA section 319(h) grants. The Regional Water Board will contribute to this database. Also, a database to keep track of outreach and education activities is being developed and tested.

Core Regulatory

Waste discharger permit issuance/updates and compliance inspections occur on a scheduled basis per the SWRCB Administrative Procedures Manual. These permits are issued under the federal NPDES program or as WDRs. Internally within the Regional Water Board dischargers are prioritized by category, those of highest priority receiving attention first. As resources allow, staff will work through the priority list. Storm water program activities are targeting the highest priorities as well. Enforcement occurs on an as-needed basis, regardless of location.

Ground water

Ground water supplies high quality drinking water and irrigation water as well as industrial service supply and wildlife habitat supply. Ground water is also a source of freshwater to replenish streams and lakes. Historic and ongoing agricultural, urban, and industrial activities can, and have, degraded and contaminated the quality of ground water. Discharges to ground water from these activities include: underground and aboveground tank and sump leaks, agricultural and industrial chemical spills, landfill leachate, septic system failures, and chemical seepage via shallow drainage wells and abandoned wells. Impacts on ground water quality from these discharges are often long-term, difficult and costly to remediate. Therefore, prompt and expedient efforts to cleanup and contain source areas must be undertaken. Regional Water Board programs for ground water protection include the Underground Storage Tank Program, Aboveground Tank Program, and Spills, Leaks, Investigation and Cleanup Program.

Significant efforts are occurring in the Underground Storage Tank Program and other ground water programs. Though considerable work is done within the WMAs, the prioritization of activities is not necessarily on a watershed basis. Groundwater and surface water contamination is 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. Ground water contamination of aquifers used for drinking water is also a major concern. Additional investigation, sampling and monitoring, and enforcement actions are warranted, but insufficient resources exist to address toxic chemical contamination of ground water. To the extent possible these actions have been incorporated into the WMA sections.

Water Quality Certification

Certification pursuant to Clean Water Act sections 401 and 404 occur on an as-needed basis as well. Currently staff are attending program manager roundtables for 401 certifications for the lower Russian River watershed, finalizing new 401certification application package, and coordinating with the Army Corps of Engineers and CDFG regarding the Santa Rosa Plains wetlands. Projects potentially involving wetlands in all watersheds are reviewed. Funding is limited for the following needed activities: inspections and enforcement of wetland related activities, and development of an integrated permitting program to streamline the permitting process.

The North Coast Region's Water Quality Certification Program has become more developed over the past few years as a result of regulatory changes to the overall CWA section 401 program in July 2000. These changes to the program resulted in two major changes to the CWA section 401 program including: 1) the elimination of the ability to waive a water quality certification, and 2) the delegation of certification rights from the State Water Resources Control Board (SWRCB) to the Regional Water Quality Control Boards. Since July of 2000, the Regional Water Board has taken a very active role in administering the CWA section 401 program, and has also used it's Porter-

Cologne Act Authority in conjunction with the 401 authority, to insure the protection and proper management of the wetland resources in the Region. See the Wetlands Program below.

Nonpoint Source

Non-timber nonpoint source activities occur within the WMAs. For a listing of nonpoint source problems in the Region see Appendix B Nonpoint Source Program Table 1. Table 2 describes the education, outreach, and technical assistance efforts. Table 3 shows general waivers and Table 4 contains the Regional Water Board's partners. Timber harvest related nonpoint source activities are receiving increased attention in CWA section 303(d) listed waterbodies and are detailed in the individual WMA sections. Other nonpoint source areas of concern are confined animal facilities and storm water runoff. See Appendix B.

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.

The North Coast Region has about 85 of its watershed areas designated as impaired by excess sediment from nonpoint sources under section 303(d) of the CWA. See Appendix B Table 1. The primary impaired beneficial uses are cold freshwater habitat, estuarine habitat, spawning, reproduction, and/or early development and municipal water supply. Salmonid species are listed as threaten or candidate species under the Federal Endangered Species Act. The Regional

Water Board is required to develop Total Maximum Daily Load (TMDL) plans (see http://www.waterboards.ca.gov/northcoast/programs/tmdl/Status.html) to recover the beneficial uses.

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. The goals of the proposed TMDL Implementation Policy are to control sediment waste discharges so that TMDLs are met, sediment water quality objectives are attained, and beneficial uses are no longer adversely affected by sediment. The proposed Sediment TMDL Implementation Policy takes the form of a Resolution from the Regional Water Board. Through the Resolution, as currently proposed, the Regional Water Board will find that there is an immediate need to re-focus staff efforts to rely on the comprehensive regulatory tools provided by the Porter-Cologne Water Quality Control Act and the federal Clean Water Act to address anthropogenic sediment waste discharges and to attain the above stated goals. Through the Resolution, the Regional Water Board will also give direction to the Executive Officer to develop a workplan describing how and when actions will be taken to address sediment waste discharges. Such actions include the development of a monitoring strategy and a sediment control guidance, the use of available authorities and tools to more effectively address sediment waste discharges, memoranda of understanding with other agencies, and cooperation with landowners, stakeholders, and organizations in a non-enforcement and/or regulatory manner. The Regional Water Board considered the proposed TMDL Implementation Policy on November 29, 2004.

The TMDL Implementation Policy basically sets out commitments for staff, including using available regulatory tools to control sediment discharges. 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. For example, the amendment will state that dischargers have to control their existing discharges by developing and implementing an inventory, prioritization, control plan, and monitoring plan. Without the amendment, staff would have to rely on CAOs and WDRs to have this work done. The Regional Sediment Amendment will provide a much more effective and efficient tool.

A primary net of monitoring stations is needed to document the recovery of streams due to effects of sediment. Possible approaches include measuring cross sections in depositional reaches of major streams, measure width/depth ratios on depositional reaches over time, or include turbidity, suspended sediment and flow as additional parameters.

Wetlands

The North Coast Region contains many different variations of wetland habitat including coastal freshwater and estuarine wetlands, seasonal wetlands, vernal pools, and prior converted or altered wetland habitat. Many of these wetland areas provide habitat for rare and endangered species as well as species of special concern. In the northern portion of the region the dominant wetlands are seasonal and coastal while in the southern portion of the region vernal pools and seasonal wetlands are the dominant types of wetland habitat present. The majority of these habitats are threatened throughout the region by increasing development and land conversion activities such as housing, commercial developments, and vineyard production. In the Santa Rosa Plain, an area of 55,000 acres in Sonoma County, projects proposing the filling of vernal pools and seasonal wetlands are increasing. Long-term goals are directed toward wetland protection, mitigation of necessary impacts, restoration and enhancement and overall resource management.

Proposed projects potentially involving wetlands in all watersheds within the North Coast Region are reviewed and appropriate actions are taken. The CWA section 401 program in the North Coast Region is grossly under-funded. This leaves the protection and management of the Region's

wetland resources at jeopardy. Funding does not currently exist for the following important activities: 1) thorough inspections and enforcement for all projects potentially affecting wetland habitat, 2) follow-up of mitigation projects to insure success criteria, 3) thorough review of wetland mitigation monitoring reports to insure success criteria have been met, and 4) development of an integrated permitting program or Regional General Permit to streamline the permitting process.

Currently staff that work on CWA section 401 permit applications hold monthly in-house meetings to discuss all the pertinent issues of the program, exchange successes and problems, and outline needed changes to the program. In addition, staff attends the Statewide CWA section 401 roundtable held by the SWRCB, Regional Exchange meetings, and other Resource Agency meetings. The North Coast Region has also become involved in the Interagency Mitigation Banking Review Team (MBRT), made up of the U.S. Army Corps of Engineers (ACOE), California Department of Fish and Game (DFG), U.S. Fish and Wildlife (USFWS), and the U.S. Environmental Protection Agency (USEPA), and has recently become a signatory agency in the review and approval of proposed mitigation banks. The Regional Water Board staff has improved coordination with the ACOE, DFG, USFWS, USEPA and affected municipalities and residents regarding the permit activities that affect wetlands on the Santa Rosa Plain and the northern portion of the region. Increased coordination among the regulatory and local agencies has led to some streamlining of the permitting process as well as insuring that appropriate mitigation measures where required on numerous projects.

Local Contracts/Agreements

Clean Water Act section 319(h), state Water Bonds (Propositions 13, 40 and 50) and other funding sources provide grant funds for projects in the Region. All grants are targeted by WMA. Priority is given to 319(h) grant proposals that are for TMDL activities, fish habitat restoration and riparian enhancement, and for erosion and sediment control. See Appendix E for targeted implementation and planning projects. The Regional Water Board has a unit dedicated to solicitation, selection, and management of grant projects and generally manages about $10 million to $12 million in grant projects at any one time. See Appendix F for a list og grant projects in the North Coast region.

The Regional Water Board's Grants Unit is responsible for coordination and administration of various federal and state-funded grant programs for water quality protection. These funds have originated from a number of different sources and vary in funding levels through the years. Most common have been grant funds from the federal Clean Water Act, passed through the US Environmental Protection Agency, and also from voter-approved state proposition funds. Funding encompasses a variety of water quality issues, including watershed and fisheries restoration, Total Maximum Daily Load projects, other non-point source control projects, and municipal wastewater treatment plants.

Grant projects funded in the North Coast Region reflect both Regional Water Board and local watershed priorities and water quality problems facing the region. The grants program in the North Coast Region is viewed as an important component towards meeting Regional Water Board program water quality goals, and is carried out by staff in close coordination with local watershed groups, communities, and other stakeholders in a manner that reflects local needs.

Coastal and Beach Areas

The North Coast Region has 340 miles of ocean beaches and numerous miles of fresh water beaches along rivers. These areas are sites of many beneficial uses including wildlife, estuarine, aquatic, marine and wetland habitats, protection of rare and endangered species, contact and non-contact recreation, commercial and sport fishing, shellfish harvesting, and navigation. Land use adjacent to these areas impacts these beneficial uses. For example, urbanization, agriculture or timber harvesting alters water flows, decreases water quality, and promotes the filling of bays and estuaries by sediment. Some of the main concerns are pollution from pathogens, nutrients,

toxins, including metals, pesticides, and sediment. Issues in these areas are storm water runoff, dry weather urban runoff, oils seeps and spills, vessel traffic, pollution from marinas, sediment re-suspension, low dissolved oxygen, flooding and failing septic systems. Both acute health risks from pathogens and chronic health risks from contaminated fish consumption are issues that must be addressed.

Control of nonpoint source pollution and monitoring are two methods of controlling the risks to the public and the environment. Monitoring must include monitoring of the water column and sediment, tissue analysis of fish and shellfish, and assessment of the benthic invertebrate community. This monitoring is partially covered by the State Mussel Watch and Toxic Substances Monitoring Programs, but there is a lack of proper resources for the concentrated monitoring effort that is needed at beaches, both ocean and fresh water beaches. The North Coast Region needs to increase monitoring, assessment, and reporting, and improve interactions with public health agencies about data coordination and when to post warning signs at beaches. A concerted effort needs to be done on public education, resource stewardship and habitat protection. In addition, the Regional Water Board is participating in the Critical Coastal Area (CCA) effort by the California Coastal Commission. CCAs are described in Appendix C and mentioned in individual WMA sections of the Chapter.

Water Quality Legislation

The Porter-Cologne Water Quality Control Act (California Water Code) was enacted by the State of California in 1969 and became effective January 1, 1970. This legislation authorizes the State Water Board to adopt, review, and revise policies for all waters of the state (including both surface and ground waters) and directs the Regional Water Boards to develop regional Basin Plans. The California Water Code (§13170) also authorizes the State Water Board to adopt water quality control plans on its own initiative. In the event of inconsistencies among various State and Regional Water Board plans, the more stringent provisions apply.

The Clean Water Act (CWA), enacted by the federal government in 1972, was designed to restore and maintain the chemical, physical, and biological integrity of the nation's waters. One of the national goals states that wherever attainable water quality should provide for the protection and propagation of fish, shellfish, and wildlife, and provide for recreation in and on the water (i.e., fishable, swimmable). The CWA (§303[c]) directs states to establish water quality standards for all "waters of the United States" and to review and update such standards on a triennial basis. Other provisions of the CWA related to basin planning include section 208, which authorizes the preparation of waste treatment management plans, and section 319 (added by 1987 amendments) which mandates specific actions for the control of pollution from nonpoint sources. The 1987 amendments to the CWA (§307[a]) also mandate that states adopt numerical standards for all priority pollutants.

The USEPA has delegated responsibility for implementation of portions of the CWA to the State and Regional Water Boards, including water quality planning and control programs such as the National Pollutant Discharge Elimination System (NPDES). The Code of Federal Regulations (Title 40, CFR) and USEPA guidance documents provide direction for implementation of the CWA. Besides state and federal laws, several court decisions provide guidance for basin planning. One decision reaffirmed the public trust doctrine, holding that the public trust is "an affirmation of the duty of the state to protect the people's common heritage in streams, lakes, marshlands, and tidelands, surrendering that right of protection only in rare cases when the abandonment of that

right is consistent with the purposes of the trust." Public trust encompasses uses of water for drinking, commerce, navigation, fisheries, and recreation.

Basin Plans

Regional Board Basin Plans are designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. Specifically, Basin Plans: 1) designate beneficial uses for surface and ground waters, 2) set narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's antidegradation policy, and 3) describe implementation programs to protect all waters in the Region. In addition, Basin Plan incorporates (by reference) all applicable State and Regional Water Board plans and policies and other pertinent water quality policies and regulations. Basin Plans are resources for the Regional Water Boards and others who use water and/or discharge wastewater. Other agencies and organizations involved in environmental permitting and resource management activities also use Basin Plans. Finally, Basin Plans provide valuable information to the public about local water quality issues.

Basin Plans are reviewed and updated as necessary. Following adoption by Regional Water Boards, the Basin Plans and subsequent amendments must be approved by the State Water Board, the State Office of Administrative Law (OAL), and the United States Environmental Protection Agency (USEPA). As part of the State's Continuing Planning Process, components of Basin Plans are reviewed as new data and information become available or as specific needs arise. Comprehensive updates of Basin Plans occur in response to state and federal legislative requirements and as funding becomes available. State Water Board and other governmental entities' (federal, state and local) plans, that can affect water quality, are incorporated into the planning process. In addition, Basin Plans provide consistent long-term standards and program guidance for the Region.

Beneficial Uses

Beneficial uses form the cornerstone of water quality protection under Basin Plans (see Appendix A for beneficial use definitions). Once beneficial uses are designated, appropriate water quality objectives can be established and programs that maintain or enhance water quality can be implemented to ensure the protection of beneficial uses. The designated beneficial uses, together with water quality objectives (referred to as criteria in federal regulations), form water quality standards. Such standards are mandated for all waterbodies within the state under the California Water Code. In addition, the CWA mandates standards for all surface waters, including wetlands.

Beneficial uses can be designated for a waterbody in a number of ways. Those beneficial uses that have been attained for a waterbody on, or after, November 28, 1975, must be designated as "existing" in the Basin Plans. Other uses can be designated, whether or not they have been attained on a waterbody, in order to implement either federal or state mandates and goals (such as fishable and swimmable) for regional waters. Beneficial uses of streams that have intermittent flows are designated as intermittent. During dry periods, however, shallow ground water or small pools of water can support some beneficial uses associated with intermittent streams; accordingly, such beneficial uses (e.g., wildlife habitat) must be protected throughout the year and are designated "existing." In addition, beneficial uses can be designated as "potential" for several reasons, including: implementation of the State Board’s policy entitled “Sources of Drinking Water Policy” (State Board Resolution No. 88-63), plans to put the water to such future use, potential to put the water to such future use, designation of a use by the Regional Water Board as a regional water quality goal, or public desire to put the water to such future use. See Appendix A for a list of beneficial uses and their definitions.

The Sources of Drinking Water Policy states that "All surface and ground waters of the State are considered suitable, or potentially suitable, for municipal or domestic waters supply and should be so designated by the Regional Boards ...[with certain exceptions which must be adopted by the Regional Board]."

Water Quality Objectives
The CWA (§303) requires states to develop water quality standards for all waters and to submit to the USEPA for approval all new or revised water quality standards that are established for inland surface and ocean waters. Water quality standards consist of a combination of beneficial uses and water quality objectives, as well as an antidegradation policy. Water quality objectives may be expressed as either numeric limits or a narrative statement.

In addition to the federal mandate, the California Water Code (§13241) specifies that each Regional Water Board shall establish water quality objectives. The Water Code defines water quality objectives as "the allowable limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area." Thus, water quality objectives are intended 1) to protect the public health and welfare, and 2) to maintain or enhance water quality in relation to the designated existing and potential beneficial uses of the water. Water quality objectives are achieved through Waste Discharge Requirements and other programs. These objectives, when compared with future water quality data, also provide the basis for identifying trends toward degradation or enhancement of regional waters.

There are also site-specific objectives. If a priority pollutant or criterion is inappropriate for a particular waterbody (i.e., it does not protect the beneficial uses or, based on site-specific conditions, a less stringent standard may be warranted), a water quality objective that differs from the applicable criterion or objective may be developed for the site. Scientifically defensible methods appropriate to the situation must be used to derive the objectives.

Triennial Review Process
The California Water Code, (§13240), directs the State and Regional Water Boards to periodically review and update Basin Plans. Furthermore, the CWA (§303 [c]) directs states to review water quality standards every three years (triennial review) and, as appropriate, modify and adopt new standards. In the Triennial Review Process, basin planning issues are formally identified and ranked during the public hearing process. These and other modifications to the Basin Plan are implemented through Basin Plan amendments as described below. In addition, the Regional Water Board can amend the Basin Plan as needed. Such amendments need not coincide with the Triennial Review Process.

Water Quality Planning
Adopted by the Regional Board in October 2004, the 2004 Triennial Review of the Basin Plan resulted in a Priority List of Planning Issues that describes the planning efforts the Regional Water Board intends to address in the next three years. The following table describes the proposed near and long-term resource allocations for Basin Planning activities and includes all the issues from the Priority List. Priority issues 1- 14 are anticipated to commence during the present triennial review period (2004-2007).

2004 Triennial Review Priority List and Workplan

Issue #	Issue Description	Estimated Staff Resources

		FY 04-05	FY 05-06	FY 06-07	FY 07-08	Total PYs
1	Regionwide Sediment Amendment (underway)	[0.5]	0	0	0	[0.5]
2	Clarify the Antidegradation Policy Language in the Basin Plan (underway)	0.3	0	0	0	0.3
3	Clarification of Seasonal Waste Discharge Prohibition for Incidental Runoff of Recycled Water and Potentially "Low Threat" Discharges	0.2 [0.3]	0	0	0	0.5
4	Complete an Amendment for the Protection of Cold Water Salmonid Habitat to Include DO and Temperature Objectives (underway)	0.5	0.3	0	0	0.8
5	Regional Update to the Water Quality Objectives for Bacteria (to include the Russian River) ♦♦#	0	0.4 [0.25]	0	0	0.65
6	Amend Section 4. Implementation Plans to Include TMDL Implementation Strategies (Action Plans) for 303 (d) Listed Waterbodies (To include Klamath and Trinity River Implementation Plans)	[1.0]	[1.0]	[1.0]	[1.0]	[4.0]
7	Consider Including a Policy Regarding Water Quality-Based Effluent Limitations and Mixing Zones**	0.1 [1.1]	0.25 [2.5]	0	0	3.95
8	Develop a Wetland and Riparian Protection Policy♦♦	0	0.7 [0.25]	0.25	0	1.2
9	Add Water Quality Objectives for Ammonia●	0	0	0.5	0	0.5
10	Consider Site Specific Objectives for Nutrients●#	0	0	0.5	0.25	0.75
11	Consider a Policy Describing Implementation of Narrative Water Quality Objectives for Surface and Groundwater ♦♦	0	0	0.5	0.25	0.75
12	Complete Editorial Revisions & Minor Clarifications or Corrections to Text Including Reference to New Laws, Plans & Regulations*	0	0.1 [0.5]	0	0	0.6
13	Update the Water Quality Objectives for Groundwater ♦♦	0	0	0	0.25 [0.25]	0.5
14	Address Russian and Eel River Priorities	[3.5]	[7.0]	[7.0]	[3.5]	[21.0]
15	Consider a Policy Addressing In-Stream Flow Issues	0	0	0	0	0
16	Develop a Road Management Policy	0	0	0	0	0
17	Review the Policy on the Control of Water Quality with Respect to On-site Wastewater Treatment and Disposal ●#	0	0	0	0	0
18	Add Biocriteria Objectives #	0	0	0	0	0

19	Review the Policy for Waivers of WDRs for Specific Types of Discharges.	**0**	**0**	**0**	**0**	**0**
20	Update the Beneficial Use Chapter #	**0**	**0**	**0**	**0**	**0**
21	Develop Basin Plan Language Requiring Waste Discharges to Comply with the California Toxics Rule Review Chemical Objectives in Section 3. Water Quality Objectives	**0**	**0**	**0**	**0**	**0**
22	Consider Seasonal Beneficial Uses and Objectives	**0**	**0**	**0**	**0**	**0**
23	Consider Updating the Policy on Pesticide Application	**0**	**0**	**0**	**0**	**0**
24	Explore Adding Activity-Based Action Plans into the Basin Plan (To Include Gravel Mining)**	**0**	**0**	**0**	**0**	**0**
25	Review the Seasonal Waste Discharge Prohibitions in Section 4. Implementation Plans**	**0**	**0**	**0**	**0**	**0**
26	Review the Issue of Endocrine Disrupters and Consider Water Quality Objectives**	**0**	**0**	**0**	**0**	**0**
27	Consider an Amendment Addressing Composting Operations •	**0**	**0**	**0**	**0**	**0**
28	Review Basin Plan for Consistency with Statewide Plans & Policies	**0**	**0**	**0**	**0**	**0**
29	Add Objectives for Total Residual Chlorine	**0**	**0**	**0**	**0**	**0**
30	Consider Updating the Sediment TMDL Action Plan for the Garcia River	**0**	**0**	**0**	**0**	**0**
	Resources for Triennial Review	**0.2**	**0.1**	**0**	**0**	**0**
	SUBTOTAL	**4.2**	**6.35**	**2.75**	**2.0**	**15.3**
	Funding Supported by TMDL resources [shown in brackets]	**[1.5]**	**[1.0]**	**[1.0]**	**[1.0]**	**[4.5]**
	Funding Supported Core-Regulatory, Cleanups, or Timber Division Resources [shown in brackets]	**[3.8]**	**[8.0]**	**[7.0]**	**[3.75]**	**[22.55]**
	Funding Supported by Interested Parties [shown in brackets]	**[1.1]**	**[2.5]**	**0**	**0**	**[3.6]**
	TOTAL TRIENNIAL REVIEW RESOURCES (subtotal resources minus funding supported by other division resources, and by interested parties)	**1.3**	**1.85**	**1.75**	**0.75**	**5.65**

*Editorial issues include, but are not limited to, the following: Update the Action Plan for the Santa Rosa Area, Update the Policy on the Disposal of Solid Wastes; Amend the Basin Plan to incorporate Waivers of WDRs and remove expired waivers, Add recognition of region and statewide programs including: SWAMP, GAMA, WMI)

****** The estimated staff effort assumes completion of a Basin Plan Amendment through Board adoption except in cases where indicated

♦♦ Amendment for this issue has been completed or is underway by another Regional Water Board. The North Coast Region will consider specific language.

Issue is on the Statewide Basin Planning List of top 5 issues to potentially be addressed with assistance by State Water Board.

• Issue currently undergoing workgroup review by the State Water Board or USEPA.

Basin Plan Amendments

Amending Basin Plans involves the preparation of an amendment, an environmental checklist, and a staff report. Public workshops can be held to inform the public about planning issues before formal action is scheduled on the amendments. Following a public review period of at least 30 days, the Regional Water Boards respond to public comments. Subsequently, the Regional Water Boards can take action on the draft amendments at a public hearing. The Basin Planning process has been certified as functionally equivalent to CEQA.

Following adoption by Regional Water Boards, Basin Plan amendments and supporting documents are submitted to the State Water Board for review and approval. Basin Plan amendments approved by the State Water Board must also be reviewed and approved by the State Office of Administrative Law (OAL). All amendments take effect upon approval by the OAL. In addition, the USEPA must review and approve those Basin Plan amendments that involve changes in state standards to ensure such changes do not conflict with federal regulations.

Statement of Policy with Respect to Maintaining High Quality of Waters in California

A key element of California's water quality standards is the state's Antidegradation Policy. This policy, formally referred to as the Statement of Policy with Respect to Maintaining High Quality Waters in California (State Board Resolution No.68-16), restricts degradation of surface or ground waters. In particular, this policy protects waterbodies where existing quality is higher than is necessary for the protection of beneficial uses.

Under the Antidegradation Policy, any actions that can adversely affect water quality in all surface and ground waters: 1) must be consistent with the maximum benefit to the people of the state, 2) must not unreasonably affect present and anticipated beneficial use of such water, and 3) must not result in water quality less than that prescribed in water quality plans and policies. Furthermore, any actions that can adversely affect surface waters are also subject to the federal Antidegradation Policy (40 CFR 131.12), developed under the CWA. The USEPA, Region IX, has also issued detailed guidance for the implementation of federal antidegradation regulations for surface waters within its jurisdiction. The Federal Clean Water Act §303(c)(2)(B) requires that states adopt numeric criteria for priority pollutants as part of the states' water quality standards.

Geographic Information Systems

Geographic Information Systems (GIS) has proven to be a very effective tool for use by staff of the State Water Board and Regional Water Boards in preparing TMDL's and implementing the Watershed Management approach. SWRCB funding has gone to support integration of the GEOWBS (developed for USEPA 305(b) reporting) into a desktop data management tool.

Many kinds of information currently in use at the Regional Water Board are well suited to the kinds of analysis made possible by GIS. Some more familiar topics include: 1) the identification of sources of pollution, especially diffuse (non point) sources of pollution, through analysis of temporal and spatial data sets; 2) calculation of road density, coupled with predictive erosion potential estimates and prioritization of probable sources; 3) analysis of past, present and potential landslide areas; 4) assessment of trends in water temperature variations and analysis of their causes; 5) analysis of the singular and cumulative effects of water diversions on multiple other beneficial uses of water in the watershed; 6) studies of ground water contamination plumes, their

sources, extent and interaction with surface waters, and; 7) the ability to integrate multiple issues within a watershed at one time. Rather than treating each issue individually, for example, site mitigation effects and studies of diffuse pollution can be integrated to both mitigate and protect resources. While existing program-focused database sets provide for some of these analyses to be performed now, the communication and prediction of effects of multiple aspects at the same time is best facilitated through GIS displays of relational database interactions.

Existing GIS resources represent a powerful and cost-effective tool to assist State and Regional Water Board staff in implementing the Watershed Management approach and preparing TMDL's for impaired water bodies. The TMDL development efforts at the Regional Water Board rely heavily on in-house and contract-based work.

GeoWBS Program: The GIS-enhanced Water Body System database (GeoWBS) is designed to accomplish CWA section 305 (b) assessment and section 303 (d) reporting requirements. For the 2003 CWA section 305 (b) water quality assessment update, the Regional Water Board entered the 2002 CWA section 303 (d) listed water bodies and water bodies from watersheds identified in the 2002 WMI Chapters for review into the GeoWBS system. In addition, the GeoWBS will be used for the next CWA sections 305(b) and 303 (d) updates and for on going TMDL status reporting.

State Water Board Plans

Plan for California Nonpoint Source Pollution Control Program (Nonpoint Source Program)
This plan is discussed in Appendix B.

Ocean Plan
The State Water Board adopted the Water Quality Control Plan for Ocean Waters of California in 1974 and amended this plan in 1988,1990, and 1997. It is currently (12/04) undergoing another revision. This plan, which is referred to as the Ocean Plan, establishes beneficial uses and water quality objectives for waters of the Pacific Ocean adjacent to the California coast outside of enclosed bays, estuaries, and coastal lagoons. The Ocean Plan also prescribes effluent quality requirements and management principles for waste discharges and specifies certain waste discharge prohibitions. Prohibitions include discharges of specific hazardous substances and sludge, bypasses of untreated waste, and discharges that impact Areas of Special Biological Significance (ASBS) also known as State Water Quality Protection Areas (SWQPAs).

Estuaries and Inland Waters Plan
State Water Board adopted the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California on March 2, 2000. The Policy is subject to review and approval by the USEPA, Region IX; meanwhile, the Policy went into effect upon the California Toxics Rule (CTR) being published in the Federal Register on May 18, 2000. In addition, the Policy was effective on Apri1 28, 2000 with respect to the priority pollutant criteria promulgated for California by USEPA through the National Toxics Rule (NTR) and to the priority pollutant objectives established by Regional Water Boards in their Basin Plans. The Policy represents the first phase in developing a new Inland Surface Waters Plan and Enclosed Bays and Estuaries Plan.

"Alaska Rule"
Previously, USEPA's water quality standards regulations provided that a State's and Tribe's water quality standards were in effect once adopted by the State or Tribe. USEPA had 60 days to approve or 90 days to disapprove such standards. A State or Tribal water quality standard remained in effect, even if USEPA disapproved it, until the State or Tribe revised it or USEPA promulgated a Federal rule to supersede the State or Tribal standard. Following a lawsuit in 1996 involving USEPA and a coalition of environmental groups, and a subsequent settlement

agreement, USEPA revised its regulations concerning the time State and Tribal water quality standards become effective for CWA purposes. Any State or Tribal water quality standards which went into effect under the old rule and was submitted to USEPA prior to March 30, 2000, remain in effect for CWA purposes, whether or not approved by USEPA, until replaced by federal water quality standards or approved State or Tribal standards. Any State or Tribal water quality standards that were submitted to USEPA after March 30, 2000, do not become "applicable" water quality standards for CWA purposes until approved by USEPA.

APPENDIX A

BENEFICIAL USE DEFINITIONS

For Beneficial Uses on each waterbody see
http://www.swrcb.ca.gov/rwqcb1/programs/basinplan/06_2003/06_2003FINALBeneficialUseAmendment.pdf

Municipal and Domestic Supply (MUN) -- Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.

Agricultural Supply (AGR) -- Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

Industrial Service Supply (IND) -- Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well depressurization.

Industrial Process Supply (PROC) -- Uses of water for industrial activities that depend primarily on water quality.

Groundwater Recharge (GWR) -- Uses of water for natural or artificial recharge of groundwater for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.

Water Contact Recreation (REC-1) -- Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white-water activities, fishing, or use of natural hot springs.

Non-Contact Water Recreation (REC-2) -- Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

Commercial and Sport Fishing (COMM) -- Uses of water for commercial or recreational collection of fish, shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.

Warm Freshwater Habitat (WARM) -- Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Cold Freshwater Habitat (COLD) -- Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Marine Habitat (MAR) -- Uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).

Wildlife Habitat (WILD) -- Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Preservation of Areas of Special Biological Significance (BIOL) -- Includes marine life refuges, ecological reserves and designated areas of special biological significance, such as areas where kelp propagation and maintenance are features of the marine environment requiring special protection.

Rare, Threatened, or Endangered Species (RARE) -- Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered.

Migration of Aquatic Organisms (MIGR) -- Uses of water that support habitats necessary for migration or other temporary activities by aquatic organisms, such as anadromous fish.

Spawning, Reproduction, and/or Early Development (SPWN) -- Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

Shellfish Harvesting (SHELL) -- Uses of water that support habitats suitable for the collection of filter-feeding shellfish (e.g., clams, oysters, and mussels) for human consumption, commercial, or sports purposes.

Navigation (NAV) – Uses of water for shipping, travel, or other transportation by private. Military or commercial vessels

Hydropower Generation (POW) -- Uses of water for hydropower generation.

Freshwater Replenishment (FRSH) – Uses of water for natural or artificial maintenance of surface water quantity or quality (e.g., salinity).

Aquaculture (AQUA) – Uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes.

Inland Saline Water Habitat (SAL) – Uses of water that support inland saline water ecosystems including, but not limited to, preservation, or enhancement of aquatic saline habitats, vegetation, fish, or wildlife, including invertebrates.

Estuarine Habitat (EST) – Uses of water that support estuarine ecosystems including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds).

Biologically Significant Areas (BSA): Uses of water that support areas or habitats that have been officially designated as biologically significant, such as established refuges, parks, sanctuaries, ecological reserves, and State Water Quality Protection Areas (SWQPAs), where the preservation of natural resources requires special protection.

Water Quality Enhancement (WQE): Beneficial uses of waters, including wetlands and other waterbodies, that support natural enhancement or improvement of water quality in or downstream of a waterbody including, but not limited to, erosion control, filtration and purification of naturally occurring water pollutants, streambank stabilization, maintenance of channel integrity, and siltation control.

Flood Peak Attenuation/Flood Water Storage (FLD): Beneficial uses of riparian wetlands in flood plain areas and other wetlands that receive natural surface drainage and buffer its passage to receiving waters.

Wetland Habitat (WET): Uses of water that support natural and man-made wetland ecosystems, including, but not limited to, preservation or enhancement of unique wetland functions, vegetation, fish, shellfish, invertebrates, insects, and wildlife habitat.

Native American Culture (CUL): Uses of water that support the cultural and/or traditional rights of indigenous people such as subsistence fishing, basket weaving and jewelry material collection, navigation to traditional ceremonial locations, and ceremonial uses.

APPENDIX B

NONPOINT SOURCE PROGRAM

Nonpoint source pollution is the leading cause of water quality impairment in California. California's Nonpoint Source (NPS) Pollution Control Program has been in effect since 1988. In January 2000 the lead State agencies for the NPS Program, the SWRCB and CCC in coordination with the RWQCBs released the "Plan for California's Nonpoint Source Pollution Control Program" (NPS Program Plan). The NPS Program Plan enhances the State's efforts to protect water quality, and to conform to the Clean Water Act section 319 (CWA 319) and section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA). The State's long-term goal is to "improve water quality by implementing the management measures identified in the California Management Measures for Polluted Runoff Report (CAMMPR) by 2013." Specific goals of the NPS Program Plan are: 1) Track, monitor, assess, and report program activities, 2) Target program activities, 3) Coordinate with public and private partners in all aspects of the program, 4) Provide financial and technical assistance and education and, 5) Implement the 61 management measures. Please see http://www.waterboards.ca.gov/nps/5yrplan.html for the state's five-year NPS implementation plan. Also see http://www.waterboards.ca.gov/nps/encyclopedia.html for the NPS encyclopedia that contains various management measures for controlling nonpoint source pollution.

Long-term Goals for NPS Program in the North Coast Region

- Expand the implementation of management measures to control nonpoint source pollution in the Region.
- Promote the development and use of watershed management plans for the prevention and control of nonpoint source pollution.
- Encourage and facilitate effectiveness monitoring of nonpoint source pollution control projects.
- Track the implementation and effectiveness of nonpoint source pollution control practices.

The Nonpoint Source Program mainly focuses on six categories of activities: 1) Forestry; 2) Boating and Marinas; 3) Agriculture; 4) Urban Runoff; 5) Wetlands; and 6) Hydromodification. A seventh category, Miscellaneous, includes other types of Non Point Source discharges, such as those from abandoned mines, but the State Water Resources Control Board has not identified these as priority Non Point Source pollution sources at this time.

Nonpoint source activities in each of the six major categories overlap with State and/or Regional Water Board activities funded through other sources. For example, many forestry activities are regulated by the Regional Water Board through the general -funded Forestry program and many activities which generate urban runoff are regulated by the State and Regional Water Board through the federally funded National Pollutant Discharge Elimination System, or NPDES program. The discussion below briefly describes many of the major activities responsible for pollution discharge under each of the six categories and the methods by which the North Coast Regional Water Board regulates these activities, both through the Non Point Source and other programs.

Forestry
Forestry activities in the North Coast Region primarily include commercial Timber Harvest Plans regulated by the California Department of Forestry; timber activities conducted on U.S. Forest Service (USFS) lands; timber land conversions to new land uses such as home development, vineyards, or other agricultural uses; emergency and exemption plans; and illegal logging. At present, the North Coast Regional Water Board oversees commercial logging and forestry activities conducted on USFS lands through the General Funded Forestry program. Through the Non Point Source program, staffs oversee timber land conversions, exemption or emergency plans which have created water quality problems, and illegal logging which has caused or which may cause water quality problems.

Agriculture
Major agriculture activities in the North Coast Region include confined animal facilities; grazing; vineyards; orchards; and cultivation of various other crops, such as strawberries, lily bulbs, and forage crops. The North Coast Region is also home to a substantial amount of illegal, unregulated marijuana farming. The State/Regional Water Board presently regulates confined animal feeding operations involving 700 or more animals through the NPDES program. Regional Water Board staff in the NPDES, Non Point Source, and (General funded) Basin Planning programs are presently evaluating and considering appropriate types and levels of regulatory oversight for agricultural activities that may cause discharges of nutrients, sediments, and/or agricultural chemicals to surface or ground waters. In addition, through the Non Point Source program, Regional Water Board staff oversee development of new vineyards associated with timber land conversions and inspect, take regulatory action on vineyards which are causing water quality pollution problems, review vineyard properties which participate in or are proposed for participation in the CWA section 319(h)-funded Fish Friendly Farming program, and review pesticide applications which are proposed within or adjacent to receiving waters. Finally, under the Non Point Source program, North Coast Regional Water Board staff participates in and/or conducts numerous public outreach and educational activities intended to reduce the amount of water quality pollution associated with non point source discharges from agricultural areas/activities.

Boating and Marinas
The North Coast Region has a number of public and private marinas, both along the Pacific coast, as well as on inland water bodies, such as Lake Sonoma, Lake Mendocino, Lewiston Lake, etc. At present, North Coast Regional Water Board oversight of these facilities, through any program, is minimal. Under the Non Point Source program, staff periodically participate in statewide Interagency Coordinating Committee meetings for Boating and Marinas, and have drafted a preliminary marina inspection checklist based on the California Coastal Commission's Clean Marina Checklist.

Urban Runoff

The North Coast Regional Water Board regulates runoff from urban areas, various industrial activities, construction activities, and Caltrans facilities through the NPDES program. Under the Non Point Source program, the Regional Water Board reviews and takes appropriate action on County and private rural roads that are causing water quality pollution. In addition, Regional Water Board staff reviews and comments on county road management plans and programs, and participate in outreach and educational efforts intended to reduce non point source pollution from rural roads.

Wetlands

The North Coast Regional Water Board mainly regulates activities in wetlands through the Clean Water Act Section 401 Water Quality Certification (WQC) program. However, to a lesser extent, under the Non Point Source program, staff review proposed new or past illegal wetlands destruction associated with projects in which Non Point Source staff are the lead, such as agricultural or rural road projects.

Hydromodification

Similar to its wetlands oversight, the North Coast Regional Water Board regulates hydromodification projects under either the WQC program or through the Non Point Source program, depending in large part on the type of project with which the hydromodification is associated. For example, Non Point Source staff review proposed new or past illegal hydromodification, including stream filling or reservoir construction, when these activities are associated with vineyards or rural roads. In addition, Non Point Source staff periodically comment on projects involving water withdrawal, where beneficial use impacts may occur.

MANAGEMENT OF NONPOINT SOURCE (NPS) POLLUTION

Background

Management of NPS pollution is based upon the requirements of the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). The Porter-Cologne Act, Division 7 of the California Water Code, establishes a comprehensive program for the protection of water quality and beneficial uses of the State's waters and makes explicitly clear the law applies to nonpoint as well as point source discharges. The Porter-Cologne Act also establishes the administrative permitting authority—in the form of Waste Discharge Requirements (WDRs), waivers of WDRs or basin plan prohibitions—to be used to control NPS discharges. Additional legislative requirements state that all waivers must be conditional, they are to be re-evaluated and subsequently reissued every five years, and the RWQCBs must require compliance with waiver conditions.

California's Nonpoint Source (NPS) Pollution Control Program has been in effect since 1988 and was updated in January 2000. In August 2004 the Office of Administrative Law adopted the Policy for the Implementation and Enforcement of the Nonpoint Source Pollution Control Program (NPS Policy). See http://www.waterboards.ca.gov/nps/docs/oalfinalcopy052604.doc. The policy explains how

the Porter-Cologne Act mandates and authorities will be used to implement and enforce the NPS Program Plan adopted by the SWRCB in 1999. The NPS Policy also provides a bridge between the NPS Program Plan and the SWRCB Enforcement Policy. The policy makes clear that the Porter-Cologne Act requires all NPS discharges must be under regulation, WDRs, waivers, or Basin Plan Prohibitions. The policy supersedes certain elements of the NPS Program Plan and formally eliminates the "three-tiered approach" in informal use. The NPS Policy clarifies existing authorities and supercedes the NPS Program Plan with respect to the regulatory and enforcement aspects of the NPS Program.

NPS Policy Requirements

The NPS Policy provides for the development of and establishes the requirements for NPS control implementation programs. Individual dischargers may develop implementation programs, a RWQCB, the SWRCB or third party coalitions. Third party coalitions are defined as entities or organizations that are not under the permitting authority of the SWRCB or a RWQCB.

In structuring effective NPS control implementation programs, five key elements have been identified as essential to a successful NPS control program, and all NPS control implementation programs must address these five elements. The elements reflect the information needed by the RWQCBs before they can determine if there is a reasonable likelihood a particular implementation program will meet water quality objectives and protect the designated beneficial uses of the particular water body affected. The elements are:

Key Element 1: An NPS Implementation Program's ultimate purpose shall be explicitly stated and applicable to the problems causing water quality impairment and the water quality objectives and beneficial uses (including applicable antidegradation requirements) the program is designed to protect.

Key Element 2: The program shall include a description of the MPs and additional program elements expected to be implemented, the process used to select or develop the MPs, and the process to be used to ensure and verify proper implementation.

Key Element 3: Where a RWQCB determines it is necessary to allow time to achieve water quality requirements, a specific time schedule and corresponding quantifiable milestones designed to measure progress shall be established.

Key Element 4:The Implementation Program shall include sufficient feedback mechanisms so that a determination can be made by the RWQCB, the discharger or the public, that the program is achieving its stated purposes or that additional or different MPs or other actions are required.

Key Element 5: Each RWQCB shall make clear in advance the potential consequences for failure to achieve a programs stated purposes. By thinking through the potential need to eventually have to take an enforcement action to achieve the goals of a particular implementation program, a RWQCB is encouraged to more thoughtfully and effectively integrate use of the administrative tools with the structure of a particular implementation program in a manner designed to most likely achieve success.

"On-The Ground" NPS control implementation responsibility. The policy very clearly states that under all circumstances, it is the individual discharger who is responsible for compliance with NPS pollution prevention and control measures, even when that discharger is a

member of a third-party coalition. The policy also makes clear that any necessary enforcement action taken will be taken against non-compliant individual dischargers, not the third-party organization or representative.

Regulatory Overlap

There are overlaps between the NPS and the NPDES Programs with certain discharges. An overlap exists for Confined Animal Facility (CAFs) Wastewater and Runoff and the Storm Water Programs.

Confined Animal Facility (CAF) Wastewater and Runoff

In 1962 there were over 8,000 dairies in California and the average size was less than 100 milk cows. Historically, waste discharges from these small dairies and other CAFs were managed under the principles that became the NPS Program, if at all. In the 1970's, some regional boards began to regulate CAFs, primarily dairies and feedlots, (or "animal feeding operations", per USEPA) through waste discharge requirements, to control indiscriminate discharges of wastewaters and to discourage excessive applications of manure fertilizer to cropland. Now there are approximately 2,200 dairies with an average of about 800 milk cows each. Most of these dairies are, or soon will be, operating under an individual or general NPDES permit or WDRs or waivers of WDRs.

Activities at CAFs can be addressed under point source or NPS programs depending on the particular activity. Point-source regulatory programs are generally applied to physical facilities such as animal housing, solid and liquid manure storage areas, and wastewater holding ponds. Activities addressed under the NPS Program include erosion and pollutant loading associated with livestock grazing in creeks and riparian areas and movement of chemical and biological pollutants from stored animal wastes and animal wastes applied to cropland as fertilizer or soil amendment.

Storm Water Program

The Urban Category of the NPS Program addresses pollutants in storm water and non-storm water that are carried by runoff from urbanized areas. As water washes over the land, whether it comes from rain, car washing or the watering of lawns, it intercepts and picks up an array of contaminants that it encounters along the way.

The Urban NPS Program and Storm Water Programs are intricately linked in that both programs address aspects of urban runoff pollution. With respect to programs within the SWRCB and the RWQCBs, urban runoff is addressed primarily through the National Pollutant Discharge Elimination System (NPDES) Permitting Program, although the SWRCB NPS Program will apply where the runoff is not regulated as a permitted point source discharge.

The expansion of the storm water NPDES Program to smaller construction sites and smaller communities has resulted in applying NPDES requirements in areas where NPS was previously the sole regulatory program. Note that the NPDES Program supersedes the SWRCB or RWQCB NPS Program in the areas where there is overlap. NPDES permits require implementation of best management practices (BMPs), that may or may not be similar to the Management Measures in the NPS Program. However, the SWRCB/RWQCB's NPDES Program does not supersede the planning and land use activities of other State agencies, such as the California Coastal Commission or Bay Conservation and Development Commission (BCDC), which they are responsible for implementing under their own regulatory authorities. The authority of the SWRCB/RWQCBs

NPS Program still applies for land use activities not covered by NPDES permits, and for municipalities, construction sites and industries that fall outside of the Phase I and Phase II Storm Water Programs.

Primary Nonpoint Source Problems in the North Coast Region

- Excess sediment production and siltation of waterbodies, much of it from roads, logging, and grazing
- Increased water temperatures, resulting from alterations to the riparian corridor
- Nutrient enrichment
- Waste discharge and storm water runoff

North Coast Regional Water Board efforts to address these pollutants include:

Sediment

- Road construction, maintenance, repair, and abandonment oversight and outreach through the forestry and the NPS programs
- Review of timberland conversions and response to complaints regarding sediment discharges from various sources and activities
- Regulation of new construction involving soil disturbance of an acre or more through the NPDES construction stormwater program
- Road and stream restoration projects through the NPS grant program
- Development and implementation of TMDLs for sediment
- Development of the Regionwide Sediment Amendment for incorporation into the Basin Plan
- Participation with other agencies in cooperative efforts to address NPS sediment problems, including participation in the Interagency Coordinating Committees and the Critical Coastal Area program

Temperature

- Oversight of activities involving possible canopy removal over stream, through the forestry program
- Development and implementation of TMDLs for temperature
- Participation with other agencies in cooperative efforts to address NPS temperature problems, including participation in the Klamath Basin Fisheries Health Assessment Team efforts and the Critical Coastal Area Program

Nutrients

- Oversight of dairy waste management for confined animal facilities involving 700 or more animals
- Complaint response and cooperative efforts with Resource Conservation Districts, UC Extension, and County farm bureaus and agricultural commissions
- Development and implementation of TMDLs for nutrients
- Participation with other agencies in cooperative efforts to address NPS nutrient problems, including participation in the Klamath Basin Fisheries Health Assessment Team efforts and the Critical Coastal Area Program

Waste Discharge and Storm Water Runoff

- Regulation of new construction involving soil disturbance of an acre or more through the NPDES construction storm water program
- Issuance of Phase II NPDES storm water permits to small communities
- Complaint response and cooperative efforts with other local agencies
- Develop and conduct public outreach and educational workshops
- Take enforcement actions when necessary

A summary of water quality assessment in terms of geographical areas and NPS categories can be found in Table 1. Table 1 is generated from the CWA section 303(d) list.

Many waterbodies in the region are high quality waters with respect to water chemistry and conventional pollutants (when sedimentation and temperature problems are removed from the analysis). The Smith River is a jewel among north coast rivers and deserves special recognition and protection as outstanding quality. Other rivers of high quality that require protection include the Mad, Trinity, Eel, Russian, and a number of smaller coastal rivers. The Klamath and Shasta Rivers, the Laguna de Santa Rosa, Stemple Creek, and Americano Creek are nutrient enriched partially from nonpoint sources to varying degrees. As resources permit, the Regional Water Board is addressing those problems through outreach and special assessments to document extent of problems and sources.

Specific short-term (1–5 years) objectives for each Watershed Management Area are in the individual WMA sections.

Long-term goals to address NPS problems include the critical tool of assessment of the waterbodies to determine extent of problems and quantify sources. Using the assessment information in an outreach program, the Regional Water Board strives to bring awareness to landowners about their part in reducing NPS pollution. This fostering of stewardship for the aquatic resource is complimented by an active grant program aimed at demonstration of practices to reduce NPS impacts and actual restoration of waterbodies.

Table 2 is a compilation of education, outreach and technical assistance for the region. Table 3 is a list of Waivers of Waste Discharge by category. Table 4 is a list of key partners with the North Coast Region who share responsibility for specific water quality issues.

In addition, the staff at the Regional Board participate on several statewide efforts such as the California Bio-diversity Council Workgroup, the Watershed Protection Council, the Anadromous Fisheries Council, the 401 Certification Group, the Urban Runoff Task Force, and the Storm Water Task Force. We also are involved in Section 7 consultations with the Army Corps of Engineers and local efforts to address NPS problems in the Humboldt Bay area, the Upper Klamath River, the Russian River, and coastal tributaries.

TABLE 1: North Coast Regional NPS Problems by Management Measure Category

Pollutant(s) Impairing or Threatening Beneficial Uses Arranged by NPS Management Measure Category (derived from the 2002 CWA section 303(d) list)

Watershed/waterbody	Agriculture	Silviculture	Urban	Marinas & Recreational Boating	Hydromodification	Wetlands & Vegetated Treatment Systems
RUSSIAN/BODEGA WMA						
Estero Americano (199 ac)	Sediment/silt Nutrients				Sediment/silt	Sediment/silt
Americano Creek (38 mi)	Nutrients					
Stemple Creek (61 mi)	Sediment/silt Nutrients		Sediment/silt		Nutrients	Nutrients
Laguna de Santa Rosa (96 mi)	DO Nutrients		Sediment/silt		Sediment/silt Temperature	Sediment/silt Temperature
Russian R. Lower Austin Creek (81 mi)		Sediment/silt	Sediment/silt		Sediment/silt Temperature	Temperature
Russian R. Lower Guerneville (195 mi)	Sediment/silt	Sediment/silt	Sediment/silt Pathogens		Sediment/silt	Sediment/silt
Russian R. Middle Big Sulphur Creek (85 mi)	Sediment/silt from geothermal development				Temperature	Temperature
Russian R. Middle Dry Creek (255 mi)	Sediment/silt	Sediment/silt	Sediment/silt		Sediment/silt Temperature	Sediment/silt Temperature
Russian R. Middle Geyserville (243 mi)	Sediment/silt	Sediment/silt	Sediment/silt		Sediment/silt Temperature	Sediment/silt Temperature
Russian R. Middle Mark West Creek (99 mi)	Sediment/silt	Sediment/silt	Sediment/silt		Temperature Sediment/silt	Sediment/silt Temperature
Russian R. Upper Coyote Valley (171 mi)	Sediment/silt	Sediment/silt	Sediment/silt		Sediment/silt Temperature	Sediment/silt Temperature
Russian R. Upper Forsythe Creek (122 mi)					Sediment/silt Temperature	Temperature

Russian R. Upper Ukiah (460 mi)	Sediment/silt	Sediment/silt	Sediment/silt		Sediment/silt Temperature	Sediment/silt Temperature
Santa Rosa Creek (87 mi)	Sediment/silt		Sediment/silt Pathogens		Sediment/silt Temperature	Sediment/silt Temperature
Lake Sonoma (2377 ac)	Mercury from natural sources					
Lake Mendocino (1704 ac)	Mercury from natural sources					
KLAMATH WMA						
Klamath R. Butte Valley (265 mi)	Nutrients					
Klamath R. Lost River , Clear Lake Boles (601 mi)	Temperature				Nutrients Temperature	
Klamath R. Lost River, Tule Lake and Mt Dome (612 mi)	Nutrients Temperature				Nutrients Temperature	Nutrients Temperature
Klamath R. Lower, Klamath Glen (609 mi)	Nutrients Organics/D.O.				Temperature Organics/D.O.	Temperature
Klamath R. Middle Iron Gate Dam to Scott R. (548 mi)	Nutrients Organics/D.O.				Temperature	Temperature
Klamath R. Middle Oregon to Iron Gate Dam (129 mi)	Nutrients Organics/D.O.				Temperature Organics/D.O.	
Klamath R. Middle Scott R. to Trinity R. (1389 mi)	Nutrients Organics/D.O.				Nutrients Organics/D.O. Temperature	Temperature
Salmon River (871 mi)						Temperature
Scott River (902 mi)	Sediment/silt Temperature	Sediment/silt Temperature			Sediment/silt Temperature	Temperature
Shasta River (630 mi)	Organics/D.O. Temperature				Organics/D.O. Temperature	Temperature
Tule Lake and Lower Klamath Lake National Wildlfie Refuge (26998 ac)	pH (high) from Nutrient Cycling					
NORTH COAST RIVERS WMA						
Navarro River Delta (48 ac)	Sediment/silt	Sediment/silt				

Albion River (77 mi)		Sediment/silt				
Big River (225 mi)		Sediment/silt			Temperature	Temperature
Garcia River (154 mi) (Temperature impairment for mainstem and upper tributaries)	Temperature Sediment/silt	Temperature Sediment/silt			Temperature Sediment/silt	Temperature
Gualala River (445 mi)	Sediment/silt	Sediment/silt	Sediment/silt		Temperature	Temperature
Mattole River (503 mi)	Sediment/silt Temperature	Sediment/silt Temperature	Sediment/silt Temperature		Sediment/silt Temperature	Sediment/silt Temperature
Navarro River Delta (48 ac)	Sediment/silt	Sediment/silt	Sediment/silt			
Navarro River (415 mi)	Sediment/silt Temperature	Sediment/silt	Sediment/silt		Sediment/silt Temperature	Sediment/silt Temperature
Noyo River (144 mi)		Sediment/silt				
Ten Mile River (162 mi)		Sediment/silt			Temperature	Temperature
HUMBOLDT BAY WMA						
Elk River (88 mi)		Sediment/silt			Sediment/silt	Sediment/silt
Freshwater Creek (84 mi)		Sediment/silt			Sediment/silt	Sediment/silt
Mad River (645 mi)		Sediment/silt Turbidity			Sediment/silt Temperature	Temperature
Redwood Creek (332 mi)	Sediment/silt	Sediment/silt Temperature	Sediment/silt		Sediment/silt Temperature	Sediment/silt
Humboldt Bay (16075 ac)			PCBs			
EEL RIVER WMA						
Eel River Delta (6350 ac), Lower Eel River (426 mi)	Sediment/silt Temperature	Sediment/silt Temperature				Temperature
Eel River Middle Fork (1071 mi)	Sediment/silt Temperature	Sediment/silt Temperature				Temperature
Eel River Main Middle Fork (674 mi)	Sediment/silt Temperature	Sediment/silt Temperature	Sediment/silt		Sediment/silt Temperature	Sediment/silt Temperature
Eel River North Fork (382 mi)		Sediment/silt			Temperature	Temperature
Eel River South Fork (943 mi)	Sediment/silt Temperature	Sediment/silt Temperature			Sediment/silt Temperature	Sediment/silt Temperature
Eel River Upper Main Fork (1141 mi)	Sediment/silt Temperature	Sediment/silt Temperature	Sediment/silt		Sediment/silt Temperature	Sediment/silt Temperature

Eel River Upper Main Lake Pillsbury (1973 ac)	Mercury from natural sources and mine tailings					
Van Duzen River (585 mi)	Sediment/silt	Sediment/silt	Sediment/silt		Sediment/silt	Sediment/silt
Jacoby Creek (19 mi)		Sediment/silt	Sediment/silt		Sediment/silt	Sediment/silt
Lake Pillsbury (2215 ac)	Mercury from natural sources					
TRINITY RIVER WMA						
Trinity River East Fork (92 mi)		Sediment/silt			Sediment/silt	Sediment/silt
Trinity River South Fork (1161mi)	Sediment/silt Temperature	Sediment/silt			Temperature	Temperature
Trinity River, Lower Trinity (1256 mi)		Sediment/silt			Sediment/silt	Sediment/silt
Trinity River, Middle Trinity (331 mi)		Sediment/silt			Sediment/silt	
Trinity River, Upper Trinity (570 mi)		Sediment/silt			Sediment/silt	Sediment/silt

TABLE 2: Education, Outreach, and Technical Assistance

Target Audience	Education/Outreach/ Assistance Goals	Product(s)	Staff or Contract	Management Measure Category*
Water quality monitors	• Monitoring Study Group • Measure effectiveness of BMPs	• Design of monitoring programs	Staff	2
Public and timber industry	• Cumulative Watershed Effects Workshop • Educate about the current process	• Evaluate cumulative watershed effects	Staff	2
Staff, agencies, timber industry	• Erosion Control Seminar • Convey newest/best techniques of erosion control	• Erosion control on roads and large land clearings (such as vineyards)	Staff	2
Forest herbicide users	• Weed Seminar • Review/update on regulations	• Protect water quality from herbicides	Staff	2
Agencies and watershed groups	• Completion of Watershed Assessment Efforts • Assessment goals for individual WMAs	• Completed watershed assessments	Staff	1,2,3, 5,6
Elementary school children	• Understanding the importance of clean water	• Active citizens	Staff	1G, 2L, 3.6, 4.3, 5.4, 6D
Agricultural producers and ranchers	• Improve management practices • Improve riparian functioning	• Reduce erosion and sedimentation • Reduce nutrient discharge	Staff	1B, 1C
Watershed groups and nonprofits	• Promote various grant programs	• Grant projects	Staff	Various
Public, local agencies and industry	• Reduce discharges of toxic chemicals	• Compliance with permits and WDRs	Staff	1G, 2L
Landowners	• TMDL requirements	• Reduction in nonpoint source pollution	Staff	various

* Management measures in the Plan for California's Nonpoint Source Pollution Control Program. See http://www.waterboards.ca.gov/nps/protecting.html

TABLE 3: WAIVERS OF WASTE DISCHARGE (General Categories)

Waiver Description	Management Measures*	Review Schedule
Air conditioner, non-contact cooling and elevated temperature waters	3.3	**All waivers will be reviewed by October 2007**
Minor dredge operations	5.1	
Test pumping of fresh water wells	N/A	
Storm water runoff	3.1, 3.2, 3.3	
Confined animal wastes	1B	
Small, short-term sand, gravel, and quarry operations	5.1	
Swimming pool discharges	3.3	
Food processing wastes spread on land	1C, 1F	
Agricultural commodity wastes	1C, 1F	
Industrial wastes used for soil amendments	1C, 1F	
Irrigation return water	1F	
Individual sewage disposal systems and small community, commercial, institutional, and industrial operations which utilize on-site wastewater treatment and disposal for domestic wastes	3.4	
Dewatering at construction projects	3.2	
Use of reclaimed wastewater for soil compaction or dust control, and other construction purposes	3.2	
Discharge from flushing of domestic water lines and tanks	3.3	
Lake or reservoir drainage projects	N/A	
Discharge from hydrostatic test lines	3.2, 3.3	
Low volume, non-contaminated wastewaters generated by the installation and purging of monitoring wells during ground water contamination investigations	3.1, 3.2, 3.3	
Pumped/Drained Water From Storage Tank Excavations	3.3, 3.5	
Soil Stabilizing Agents	1A, 2F,3.1, 3.2, 3.3, 3.5, 5.3	
Winery Operations with volumes	1C	

less than 200 gallons of wine per year		
Discharges associated with the incineration of soils contaminated with petroleum hydrocarbons	3.3	

Timber harvest will have a separate waiver. For more information on waivers see Adopted Orders, Resolution No. 2002-0080 at http://www.waterboards.ca.gov/northcoast
* Management Measures from the *Plan for California's Nonpoint Source Pollution Control Program.* See http://www.waterboards.ca.gov/nps/protecting.html

TABLE 4: NORTH COAST REGION KEY PARTNERS

Existing or Potential Partner Agency:	MOU/MAA Title Content of potential/revised agreements:	Target date for review (existing) or adoption (potential):	Management Measure Categories*
Sonoma County Public Health Department	Joint Innovative Individual Waste Treatment and Disposal System Evaluation Agreement. The purpose of the agreement is to determine if alternative types of individual wastewater treatment and disposal systems are applicable given the climate and geological restrictions in the County. Criteria are based on disease organism control and domestic wastewater chemical control.	Originally established in 1978 and last revised in 1984, an update review is expected to begin in FY 04-05.	3.4A
Oregon Department of Environmental Quality, and US EPA Regions 9 and 10	Memo of Agreement Klamath River/ Lost River TMDL Development. The agreement describes the roles and responsibilities of the four agencies working together to develop TMDLs for the Lost and Klamath Rivers for nutrients and temperature.	The agreement will terminate after the TMDL development is complete.	!C, 1D, 1E, 1F
Humboldt Bay Shellfish Technical Advisory Committee (includes: shellfish industries, local wastewater treatment plants, regulatory agencies, agricultural & environmental interests)	Regional Water Board Resolution No. 94-78 established the TAC per the Shellfish Protection Act of 1993. The purpose of the TAC is to advise and assist the Regional Water Board in developing an investigation and recommendation strategy to control pollution from commercial shellfish growing waters in Humboldt Bay and to pursue appropriate funding.	The bacteriological study and data collection are complete. Recommendations are forthcoming and will be implemented by local industry and agencies.	4.2B (maybe 1B, 1C)

* Management measures from the *Plan for California's Nonpoint Source Pollution Control Program.* See http://www.waterboards.ca.gov/nps/protecting.html

APPENDIX C

CRITICAL COASTAL AREAS

Critical Coastal Areas (CCAs) are specially designated land areas of the California coast where state, federal and local government agencies and other stakeholders have agreed to improve water quality or protect exceptional coastal water quality from the impact or threat of nonpoint source pollution, by coordinating expertise and resources. The *Plan for California's Nonpoint Source Pollution Control Program* (NPS Plan, http://www.waterboards.ca.gov/nps/protecting.html) includes requirements for CCAs designation. The intent of CCA designation is to direct needed attention to coastal areas of special biological, social, and environmental significance, and to provide an impetus for these areas to receive special support and resources. These areas include Environmentally Sensitive Habitat Areas (ESHA) currently designated in the California's Coastal Zone Management (CZM) program, as well as areas adjacent to Areas of Special Biological Significance (ASBS), California's National Estuarine Research Reserves (NERR), National Estuary Program (NEP), and National Marine Sanctuaries.

The Critical Coastal Program was established to coordinate actions within identified CCAs through an interagency committee (CCA Committee) led by the California Coastal Commission, the SWRCB, six coastal RWQCBs and the public to identify CCAs and develop additional Management Measures (MM) necessary to protect these areas. Table 5 shows the twenty-one CCAs in the North Coast Region along with the method of CCA classification. Criteria used to identify the CCA in the 2002 list were: 1) CCAs included on the 1995 CCA list; 2) Coastal areas adjacent to impaired waters on the 1998 303(d) list that flow into Marine Management Areas; 3) Coastal areas adjacent to State Water Quality Protection Areas (also known as Areas of Special Biological Significance); and 4) Shoreline areas within San Francisco Bay adjacent to impaired waters on the 1998 303(d) list that flow into wildlife refuges or waterfront parks or beaches.

Goals of the CCA Program

- To ensure that the Management Measures (MMs) and Management Practices (MPs) of the NPS Plan are fully implemented;
- To provide a mechanism to develop and apply additional MMs as needed to achieve or maintain high quality water in CCAs; and
- To develop Action Plans for each CCA to improve degraded water quality and to protect exceptional water quality.

The California Coastal Commission, the SWRCB, the coastal RWQCB, local and regional municipalities, regional organizations, and local stakeholders (interest groups) form Regional Committees. The coast has been split into four areas and there is one Regional Committee for each area. These committees conduct public workshops, nominate CCAs for pilot projects, evaluate the CCA for data and resources, and define the CCA boundary and watershed planning areas. The Committee then develops a CCA Action Plan, identifies available resources to implement the CCA Action Plan, and develops a strategy and schedule for the creation of additional management measures. With input from the workshop and an interest group survey the Committee will select a pilot project. The

selection criteria for the pilot project includes: 1) potential for water quality improvement or protection; 2) evidence of water quality impairment or high water quality threatened by nonpoint source pollution; 3) degree of agency and public support (watershed groups); 4) identification of impacts to coastal resources; and 5) areas where nonpoint source pollution is the source of impairment.

The following is detailed information on each Critical Coastal Area in the North Coast Region. For maps of the CCAs on the north coast see http://www.coastal.ca.gov/nps/cca-map1-2.pdf and http://www.coastal.ca.gov/nps/cca-map2-2.pdf.

The Critical Coastal Areas in the **Russian River/Bodega Bay WMA** are the Bodega Marine Life Refuge, Americano Creek and the Estero Americano, and Stemple Creek and the Estero de San Antonio.

Bodega Marine Life Refuge ASBS/SWQPA in Sonoma County is 1.6 mile long and encompasses 150 acres of marine habitat. The CCA is located on a somewhat undeveloped part of the Bodega headland. Much of this SWQPA falls into a managed marine life refuge (University of California) and there are restoration projects onshore. The coastal features include some highly defined natural gullies located in sheer cliffs. This CCA includes the University of California Bodega Marine Lab. The marine laboratory discharges waste seawater as well as storm water runoff into the SWQPA. There is limited public access between Horseshoe Cove near the lab and the southern boundary; much of this southern area is composed of many ecological study areas associated with university research projects.

Americano Creek and the Estero Americano constitute a Critical Coastal Area and form a portion of the northwestern border between Sonoma and Marin Counties. The entire Estero and a 6.5 river mile portion of Americano Creek are within the coastal zone. Just over half of the Estero Americano is considered impaired, and the remaining estuary has intermediate quality waters. The predominant land use in the watershed is grazing and dairy activities, and has seen little change in the past two decades. Almost all of the land in the watershed is under private ownership. Estero Americano waters discharge into the Gulf of the Farallones National Marine Sanctuary (NMS) designated by the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce. The identified problems of sedimentation, low dissolved oxygen, high ammonia levels from NPS discharges have impaired fish and wildlife habitat. The pollutant is nutrients and the sources of the pollutant are pasture lands and manure lagoons.

The **Stemple Creek** watershed begins just east of Petaluma in Sonoma County and empties into Bodega Bay via the **Estero de San Antonio** in Marin County. This estero is a Critical Coastal Area**.** The entire Estero and approximately 2 river miles of Stemple Creek are located within the Marin County coastal zone. The Sonoma County portion of Stemple

Creek lies outside the coastal zone. Almost the entire watershed is under agricultural production, mainly sheep and cattle grazing and dairy farming. Historically, potato farming was a major industry, and poor farming practices lead to degradation of the watershed. Identified problems are sedimentation, low dissolved oxygen and high ammonia levels from NPS discharges. The main pollutant is nutrients and the sources are pasture and manure lagoons.

The Klamath River and its delta and estuary are designated as a Critical Coastal Area within the coastal zone; the land along the ocean shoreline at the river mouth is within Redwood National Park. Along the riverbanks, one finds privately owned land with visitor-serving facilities, R.V. parks, boat launching facilities (the estuary is a popular fishing locale), motels and inns, and retail stores. The hillsides in the coastal zone have some commercial stands of timber, grazing occurs in the floodplain, and scattered rural residential development lies along local roads and on hillsides. The Klamath River discharges into the Redwood National Park, Area of Special Biological Significance (ASBS) designated by the State Water Resources Control Board. In 1972, sections of the Klamath River were designated by the California Wild and Scenic Rivers System. In 1981 the Klamath River was also designated as a National Wild and Scenic River. The existing and future beneficial uses of the waters of the Klamath River Estuary are targeted for maximum protection pursuant to the Bay Protection and Toxic Cleanup Act (California Water Code §§ 13390 et seq.).

The Mattole River is located in southern Humboldt County, approximately 15 miles south of Humboldt Bay. It has been designated a Critical Coastal Area. The river extends inland about 15 miles, with approximately 2 river miles located in the coastal zone. Land uses in the watershed include timber harvesting (primarily in the headwaters and upper river areas) and livestock agriculture (primarily in the lower river watershed areas). The coastal zone portion of the watershed is not heavily developed. The Mattole River is the northern boundary of the King Range National Conservation Area managed by the National Park Service (NPS). The Mattole River empties into the Clem Miller State Seashore. The Mattole River is also the northern boundary for the King Range Area of Special Biological Significance (ASBS) that is designated by the State Water Resources Control Board. The identified problems are sedimentation from natural and human sources. The pollutants are siltation and temperature from rangeland and silviculture.

In addition, the **King Range National Conservation Area** is a Critical Coastal Area in the Mattole River watershed. Kings Range National Conservation Area ASBS/SWQPA has 32.7 miles of coastline, with 25,055 acres of marine habitat. The northern portion of this CCA is mostly wilderness, managed by the Bureau of Land Management. It includes perennial and ephemeral streams, and natural groundwater springs/seeps that drain to the ocean. There is no development in the northern area except for a few sporadic cabins that have outhouse facilities and also some well-established campsites at the larger stream mouths. Big Flat Creek is one of the largest streams in this area. Immediately north of this CCA is the mouth of the Mattole River (303d listed), which is impaired by sediment and temperature. The southern portion of this CCA includes the town of Shelter Cove on approximately 2 miles of developed coastline with houses, businesses, a golf course, an airstrip, and parking lots along the shore. In Shelter Cove there is also a fish cleaning station and a boat launch. A sewage treatment plant (secondary treatment) serving Shelter Cove is allowed to discharge into this SWQPA under an exception from the Ocean Plan ASBS discharge prohibition, issued by the State Water Resources Control Board.

The **Noyo River** is located in northern Mendocino County and reaches the ocean approximately 2 miles south of Fort Bragg. The watershed is dominated by redwood and Douglas fir forest on rugged, mountainous terrain. Annual rainfall is 39 inches. Timber harvesting is the predominant land use. At the mouth of the Noyo River are a marina and associated fish processing facilities in support of the fishing industry. In terms of the Critical Coastal Area, the problems for the Noyo River and its estuary are sedimentation, threat to fish population decline, and threat of sedimentation. The identified pollutants are silt and sediment from silviculture, grazing and road construction. The existing and future beneficial uses of the waters of the Noyo River Estuary are targeted for maximum protection pursuant to the Bay Protection and Toxic Cleanup Act (California Water Code §§ 13390 et seq.).

The **Pygmy Forest Staircase ASBS/SWQPA** in Mendocino County encompasses 1.5 miles of coastline and 203 acres of marine habitat. This SWQPA includes Jughandle Cove, at the mouth of Jughandle Creek, a perennial stream. The CCA's largely natural watershed includes Jughandle State Reserve, managed by the California State Department of Parks and Recreation, and includes the Pygmy Forest Ecological Staircase trail. This is a popular location for recreation, education, and scientific study. The watershed includes State Highway 1, which crosses over Jughandle Creek at a point approximately 100 meters upstream of the SWQPA. Jughandle Creek may also be a source of sediment load (siltation) in the winter due to past logging operations. Homes in the area have septic systems and there is also a lumber mill that may contribute pollutants into the watershed. With the exception of nonpoint source runoff from the parking lot and associated access trail there are no other potential sources of pollutants known to drain directly into the SWQPA.

The **Big River** watershed extends east of the town of Mendocino, with approximately 5.5 river miles within the coastal zone. The Big River estuary is one of the largest relatively undisturbed estuaries remaining along the California coast. The Big River empties into the Mendocino Coast State Seashore. The mouth of the Big River lies adjacent to the Mendocino Headlands State Park. Of particular note in the Big River watershed are the brackish and freshwater bogs, the extensive estuary, and the freshwater marshes. There are eight freshwater marshes within the first seven miles of the estuary valley. Salt water extends up the Big River estuary approximately 8.3 miles in the summer and three miles during the winter. The mouth of the river stays open all year. Plants common in the brackish and freshwater bogs include: sedge, yellow skunk cabbage, common spike rush, bulrush, water hemlock, willow herb, brooklime, and cattail. The estuary contains eelgrass, pondweed, water plantain, sedge, low club rush, and brass buttons. The marshes include sedge, cattail, yellow pond lily, water hemlock, yellow cress, pondweed, azolla, duckweed, and bladderwort. The problem in this Critical Coastal Area is sedimentation from natural and human sources. The pollutants are silt and sediment from siviculture and other nonpoint sources.

The **Albion River** has a large estuary with tidal intrusion extending as much as five miles. It contains over two miles of eel grass beds, as well as algae, sea lettuce, rockweed, and red laver. This area has been designated as a Critical Coastal Area. Approximately 4 river miles are within the coastal zone. The town of Albion is located at the mouth of the river and supports a thriving fishing harbor. The harbor has had small episodic oil spills associated with the fishing industry. The Albion River empties into the Mendocino Coast State Seashore. The Critical Coastal Area problem is sedimentation from human and natural sources. The pollutant is siltation from silviculture.

The **Navarro River** empties into the Mendocino Coast State Seashore. The State Legislature or Parks and Recreation Commission designate State Seashores with the intent to preserve outstanding natural, scenic, cultural, ecological, and recreational values of the coastline as an ecological region. Sedimentation from natural and human sources has impacted beneficial uses of the Navarro River watershed. The Navarro River and its watershed are within the jurisdiction of the County of Mendocino. A review of the County's LCP policies revealed that many urban development management measures are addressed and that management measures concerning the protection of wetlands and riparian corridors are also fairly complete. However, the land use activity that is generating significant pollution in the Navarro River Critical Coastal Area is not urban development, boating, or agriculture, but forestry. The Mendocino County LCP does not contain policies for timber harvest, although the County is not required to have such policies because of the Coastal Act exemption limiting the definition of new development. Therefore, it cannot be concluded that the LCP has gaps that need to be filled in order to address the *significant* pollutants and the associated land use activity. Instead, if the Commission is to participate in the development or the implementation of additional management measures for forestry in this Critical Coastal Area, it will be through participation as part of a watershed planning group effort. The pollutants are silt and sediment from silviculture and other nonpoint sources.

The **Garcia River** is a Critical Coastal Area. This designation stems from sedimentation from natural and human sources such as silvicultural and other nonpoint sources. About 5.5 river miles of the Garcia River are within the coastal zone. Much of the upper watershed is forested while the lower portion is mostly in agriculture. Most of the watershed surrounding the North Fork Garcia River and headwater tributaries is under active timber harvest and is privately owned. Agriculture and cattle ranching as well as gravel mining within the lower Garcia watershed are the predominant activities. The Garcia River empties into the Mendocino Coast State Seashore. Arena Rock Marine Natural Preserve lies just to the north of the mouth of the River. Offshore the mouth of the Garcia River is the Manchester State Underwater Recreation Area. Sedimentation from human and natural sources has impacted the beneficial uses. Pollutant sources are silviculture and other nonpoint sources.

Kelp Beds at Saunders Reef ASBS/SWQPA has 1.6 miles of coastline and 730 acres of marine habitat. It is located in a fairly rural part of Mendocino County. Highway One runs through the CCA, parallel to the coastline, and contributes storm water runoff to the SWQPA. There are also two parking lots/turnouts that may contribute nonpoint source pollution. The southern end has houses inland of the SWQPA and directly adjacent to the southern boundary point. These homes are served by septic tanks and due to the soil conditions; drainage from these septic tanks may escape into this SWQPA.

The Critical Coastal Areas in the Gualala River watershed are **Del Mar Landing Ecological Reserve** and **Gerstle Cove**. The Del Mar Landing Ecological Reserve ASBS/SWQPA in Sonoma County has only 0.6 miles of coastline and 53 acres of marine habitat. This SWQPA overlaps the Del Mar Landing Ecological Reserve in which commercial and some forms of recreational fishing are prohibited. The CCA's watershed area immediately adjacent to this SWQPA is a part of the Sea Ranch private community. There are several homes and a walking trail along the coastline. Native vegetation is employed in the landscape.

The watershed area includes State Highway 1, which is less than a half- mile from the coast. With the exception of four nonpoint source and storm water conveyances there are no other potential sources of pollutants known to drain directly into or near the SWQPA. There are 8

natural gullies draining into or near the SWQPA. These ephemeral streams may carry pollutants from upstream sources. Homes in the area have septic systems that may contribute pollutants into the watershed. A golf course is located approximately a half mile north of the SWQPA.

Gerstle Cove ASBS/SWQPA in Sonoma County has 0.6 miles of coastline and 10 acres of marine habitat, including the Gerstle Cove Reserve, which is closed to recreational and some forms of commercial fishing. This SWQPA also lies within Salt Point State Park, which also occupies the CCA watershed area adjacent to it. The cove hosts many divers and fisherman.

The watershed includes State Highway 1, which is less than a half- mile from the coast. Closer to the SWQPA the State Park facilities include a public restroom and fish cleaning station (both apparently served by a septic tank), a campground, access roads, parking lots, and a visitor's center. There are eight discharges from park facilities that carry storm water runoff into the SWQPA. In addition, there are six naturally occurring gullies that may carry non-point source pollutants, and seven groundwater seeps along the coast. A large number of these drainages are associated with an actively used recreation area.

Redwood Creek, Kelp Beds at Trinidad Head, and the Mad River Redwood Creek reaches the ocean about 8 miles south of the Humboldt-Del Norte County border. Almost 3 river miles of Redwood Creek are within the coastal zone. Most of the lower one-third of Redwood Creek and a portion of the estuary lie within Redwood National Park; the upper two-thirds of the watershed is mostly private land. The creek is both the domestic water supply for the town of Orick and supports an anadromous fishery. The estuary is very important for juvenile salmonid rearing. Juvenile steelhead is abundant in the estuary, and chinook salmon are apparently dependent on estuary rearing. Redwood Creek is "threatened" because of sedimentation. Timber harvesting in the watershed (in present times outside the coastal zone) has contributed to the major decline of the anadromous fishery (steelhead and coho salmon) by filling in pools and spawning habitat. The lower 3.4 miles of the creek have also been dredged, channelized, and lined with levees by the U.S. Army Corps of Engineers after the floods in 1964. Portions of the floodplain are grazed. The only significant urban development is the town of Orick that is located in the floodplain just inland of the coastal zone. There are also scattered homes built on large lots along local roads and hillsides. Seasonally, recreational vehicles park along Highway 1 between Freshwater Lagoon and the ocean.

The lower third of the watershed is part of Redwood National Park managed by the National Park Service (NPS). The CDFG (1996) recommends seeking a "Sensitive Watershed" Designation with the Board of Forestry if watershed restoration activities in the upper watershed are not accelerated. Identified problems in this Critical Coastal Areas are sedimentation from natural and human sources and loss of vegetation along the levee and within the creek. Siltation and temperature are the pollutants from rangeland and silviculture. Three miles of flood-control levees built in 1968 on the lower river (from the Prairie Creek confluence to the estuary) have caused the stream to become channelized; one effect has been a reduction of habitat diversity. The levees have also affected the estuary by changing hydrology and sedimentation patterns and resulting in a decrease in total water volume. Levee maintenance has resulted in a loss of riparian vegetation. In addition, dams on Redwood Creek that are located upstream of the park might be the source of elevated water temperatures and other impacts.

The **Mad River** is located just north of Arcata in Humboldt County. Its watershed extends inland about 100 miles to the southeast, approximately 5.5 river miles lie in the coastal zone. Major land uses in the watershed include forestry, agricultural grazing lands, gravel extraction (out-side the coastal zone), and rural-residential/urban development.

The Mad River is a major municipal and industrial water supply for the Humboldt Bay region. A portion of the town of McKinleyville lies within the coastal zone and much of the coastal zone bottom-lands/floodplain that are not in public ownership are grazed. The town has a secondary-level treatment sewage collection system which discharges into the Mad River when adequate flows are present; during low flows the city uses percolation ponds instead of discharging to the river. Much of the spit separating the Mad River estuary and the ocean has been incorporated into the 150-acre Mad River County Beach. The State manages both the 30-acre Azalea State Preserve on the north side of the river, and the Mad River Fish Hatchery, where anadromous fish are raised for release along the North Coast. The existing and future beneficial uses of the waters of the Mad River Estuary are targeted for maximum protection pursuant to the Bay Protection and Toxic Cleanup Act (California Water Code §§ 13390 et seq.). The Mad River and estuary have problems of sedimentation/threat of sedimentation and threat of fish population decline. The pollutants are siltation and turbidity from industrial and municipal sources, silviculture and other nonpoint sources.

The **Redwoods National Park ASBS/SWQPA** has 35.9 miles of rugged coastline and has 62,643 acres of marine habitat. Redwood National and State Parks, jointly managed by the National Park Service and the California Dept. of Parks and Recreation, occupy the majority of this CCA. Rugged cliffs and sparse primitive campgrounds dominate this region. Much of the coastal access is limited to foot traffic. Most of the drainage into the coastal waters is runoff from rural and wilderness watersheds. This SWQPA has 27 streams emptying into it, including the Klamath River, Cushing Creek and Redwood Creek. The Klamath River is 303d listed, being impaired for nutrients and temperature. Redwood Creek is 303d listed, being impaired for sediment and temperature. There are total of 41direct discharges into the SWQPA. Highway 1, located parallel to and sometimes near the SWQPA, discharges storm water runoff. The National Park Service facility near Requa discharges treated sanitary waste on a cliff into the SWQPA.

The **Kelp Beds at Trinidad Head ASBS/SWQPA** in Humboldt County is 1.8 miles long and encompasses 297 acres of marine habitat. Adjacent to the SWQPA the CCA includes both rural and partly developed urban watersheds. Few houses line the northern coastline, but the Trinidad area becomes more populated near the headland, where the Humboldt State University Marine Lab is located. There are residences and commercial structures in Trinidad that are currently being served by septic systems. Trinidad also has seasonal boating facilities (mooring field, a vessel haulout/launch facilities and pier facilities). There is also a fish cleaning station on the pier that is a source of decomposing fish wastes; there is a an accumulation of discarded metal objects at the base of the pier. Waste seawater from the marine laboratory and a storm drain from the City of Trinidad discharge directly into the SWQPA. Numerous seeps, possibly contaminated from septic tank wastes, also flow from the coastal bluffs into the SWQPA.

The **Eel River** is designated as a Critical Coastal Area. The Eel River flows northwest from its headwaters in southeastern Mendocino County, through Mendocino and southern Humboldt Counties, to the Eel River Delta 10 miles south of Humboldt Bay. Approximately 8 river miles of the Eel River are within the coastal zone. The river supports anadromous populations of steelhead trout, coho, and chinook salmon, and possibly cutthroat trout. The

Eel River watershed contains highly erodible soils on steep slopes. The watershed is lightly populated with concentrations occurring in valleys that are heavily forested. Timber harvesting is a major land use. The River receives industrial discharges from a large sawmill, municipal waste discharges from 8 communities, and urban runoff from communities and industrial facilities. Closer to the estuary, livestock grazing, dairies (approximately 85 dairies are located in the Eel River Delta), and gravel mining (which occurs at up to 11 sites within the lower Eel River) are important land uses. There is one small community in the coastal zone, Loleta, which has very slow growth, and a few scattered residences. Much of the land in the coastal zone is privately owned. The Eel River empties into the Clem Miller State Seashore and is a designated State Wildlife Area. In 1972 sections of the Eel River were designated by the California Wild and Scenic Rivers System. In 1981, the Eel River was designated a National Wild and Scenic River. The existing and future beneficial uses of the waters of the Eel River Estuary are targeted for maximum protection pursuant to the Bay Protection and Toxic Cleanup Act (California Water Code §§ 13390 et seq.).

Details on the Pudding Creek CCA are forthcoming.

To learn more about the CCA program and strategic plan go to http://www.coastal.ca.gov/nps/cca-nps.html. This site also contains maps of the CCAs for the entire State of California including the North Coast Region.

Table 5 includes method of CCA classification: 1) 1998 303(d) listed waterbodies flowing into Marine Managed Areas (MMAs); 2) Stormwater Quality Protection Areas (SWQPAs, formerly Areas of Special Biological Significance, ASBSs); and 3) original 1995 CCA list consisting of 303(d) listed waterbodies.

TABLE 5: CALIFORNIA'S CRITICAL COASTAL AREAS
2002 LIST

North Coast Region					
CCA #	**CCA Name**	**1998 303(d) listed waterbodies flowing into MMAs**	**SWQPA**	**1995 CCA list**	**Notes and additional designations**
1	Klamath River	x	x	x	
2	Redwood Creek	x	x	x	
3	Redwood National Park		x		Park includes Klamath and Redwood CCAs within boarders
4	Kelpbeds at Trinidad Head		x		
5	Mad River			x	

6	Eel River			x	
7	Mattole River	x		x	
8	King Range National Conservation Area		x		
9	Pudding Creek	x			
10	Noyo River			x	
11	Pygmy Forest Ecological staircase		x		
12	Big River			x	
13	Albion River			x	
14	Navarro River			x	
15	Garcia River	x		x	
16	Kelpbeds at Saunders Reef		x		
17	Del Mar Landing Ecological Reserve		x		
18	Gerstle Cove		x		
19	Bodega Marine Life Refuge		x		
20	Estero Americano	x		x	
21	Estero de San Antonio	x		x	

APPENDIX D

ACRONYMS

AMD	Acid Mine Drainage
AFB	Air Force Base
AFO	Animal Facility Operation
ASBS	Areas of Special Biological Significance
ACOE	Army Corps of Engineers
BPTCP	Bay Protection Toxic Cleanup Program
BTEX	Benzene, toluene, ethylbenzene and xylene
BMP	Best Management Practices
BLM	Bureau of Land Management
BOR	Bureau of Reclamation
CCC	California Coastal Commission
CDFG	California Department of Fish and Game
CDF	California Department of Forestry
CalTrans	California Department of Transportation
CEQA	California Environmental Quality Act
CERES	California Environmental Resource Evaluation System
CAMMPR	California Management Measures for Polluted Runoff Report
CARA	California River Assessment
CTR	California Toxics Rule
CVP	Central Valley Project
CWA	Clean Water Act
CZARA	Coastal Zone Act Reauthorization Amendments
CFR	Code of Federal Regulations
CAFO	Confined Animal Facility Operation
CRMP	Coordinated Resource Management Planning
DG	Decomposed Granite
DNA	Deoxyribonucleic acid
DFG	Department of Fish and Game (State of California)
DWR	Department of Water Resources
DOD	Department of Defense
DO	Dissolved Oxygen
DMG	Division of Mines and Geology
ESU	Ecologically Significant Unit
ERO	Ecosystem Restoration Office
ESA	Endangered Species Act
EIR	Environmental Impact Report
EIS	Environmental Impact Study
FESA	Federal Endangered Species Act
FERC	Federal Energy Regulatory Commission
FY	Fiscal Year
FUD	Formerly Used Defense Site
GIS	Geographic Information System
GEOWBS	GIS-enhanced Water Body System
GRI	Gualala Redwoods Incorporated
GRWC	Gualala River Watershed Council
HCP	Habitat Conservation Plan
HSU	Humboldt State University

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pH	Hydrogen ion concentration
HUC	Hydrologic Unit
HVOC	Halogenated Volatile Organic Carbon
ICE	Information Center for the Environment
KRBFTF	Klamath River Basin Fisheries Task Force
KRIS	Klamath River Information System
LCP	Local Coastal Plan
LF	Landfill
LWD	Large Woody Debris
MAA	Management Agency Agreement
MM	Management Measures
MOU	Memorandum of Understanding
MRC	Mendocino Redwood Company
MTBE	Methyl tertiary butyl ether
MBRT	Mitigation Bank Review Team
NEPA	National Environmental Quality Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollution Discharge Elimination System
NTR	National Toxics Rule
NPS	Nonpoint Source
NCR	North Coast Region
NCRWQCB	North Coast Regional Water Quality Control Board
NCWAP	North Coast Watershed Assessment Program
OAL	Office of Administrative Law (State of California)
ODEQ	Oregon Department of Environmental Quality
PG&E	Pacific Gas and Electric
PALCO	Pacific Lumber Company
PCE	Perchloroethylene (tetrachloroethylene)
PY	Person Year
PCB	Polychloronated biphenyls
POTW	Publicly Owned Treatment Works
QA/QC	Quality Assurance/Quality Control
RV	Recreational Vehicle
RCAA	Redwood Community Action Agency
RB	Regional Board
RWQCB	Regional Water Quality Control Board
RCD	Resource Conservation District
RRWC	Russian River Watershed Council
SOI	Secretary of Interior
SB	Senate Bill
SWANCC	Solid Waste Association of Northern Cook Counties
SCWA	Sonoma County Water Agency
SC	Specific Conductance
SLIC	Spills, Leaks, Investigations and Cleanups
SCC	State Coastal Conservancy
SINC	System for Information on Noncompliance
SWM	State Mussel Watch
SWRCB	State Water Resources Control Board
SWAMP	Surface Water Ambient Monitoring Program

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SWIMS	Surface Water Information Management System
SYP	Sustained Yield Plan
TAC	Technical Advisory Committee
THP	Timber Harvest Plan
TID	Tulelake Irrigation District
TMDL	Total Maximum Daily Load
TPZ	Timber Production Zone
TSD	Technical Support Document (for TMDLs)
TSMP	Toxic Substance Monitoring Program
TRD	Trinity River Diversion
TRTF	Trinity River Task Force
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USFS	United States Forest Service
USGS	United States Geological Service
UC	University of California
V*	Method of Measuring Sediment Depth
WDR	Waste Discharge Requirements
WRS	Waste Reduction Strategy
WWTP	Waste Water Treatment Plant
WQAS	Water Quality Attainment Strategy
WQM	Water Quality Management
WQMP	Water Quality Management Plan
WAG	Watershed Advisory Group
WMA	Watershed Management Area
WMI	Watershed Management Initiative
WW II	World War II
YMCA	Young Men's Christian Association

APPENDIX D

ACRONYMS

APPENDIX E

WATER QUALITY PRIORITIES

There are several overarching water quality issues facing the North Coast RWQCB. The coastline in this region has world-renowned beauty and is relatively pristine. The Regional Water Board is challenged with protection of this national asset. Coastal streams were once abundant with anadromous fish. However, severe declines in fish populations have put these species on the threatened and endangered species lists of the Endangered Species Act. The Regional Water Board works tirelessly on the protection and restoration of this beneficial use. The highest beneficial use is for drinking water, and this is an issue of utmost importance. The Regional Water Board actively endeavors to protect this resource. In addition, the issue of impaired waterbodies is addressed not only by permitting and cleanup activities, but also by pollution prevention through a strong regulatory program.

More specifically, water quality problems include contamination of surface water due to nonpoint source pollution from storm water runoff, erosion and sedimentation (roads, agriculture, and timber harvest), failing septic tanks, channel modification, gravel mining and dairies, and MTBE and dioxin contamination. Ground water contamination from PCE and leaking underground tanks and health and safety issues from contaminated areas that are open to the public are also priority issues. High priority water quality problems due to point sources include chronic violations by POTWs and lack of permit compliance.

The major water quality priorities as first described in the Introduction of this document are reiterated below. In addition to Regional Board-directed priorities, priorities are mandated by legislation, statute, regulation, State Water Board, Cal-EPA, USEPA, and from the mission and need to protect, restore, or enhance water quality. A list of the highest of these collective priorities follows. These are not necessarily arranged in priority order; however, TMDL-related work is considered the highest statewide priority. These Board priorities are further highlighted in the watershed and region-wide sections as appropriate. Grant funding may aid in addressing some of these priorities, at least in part, while others will need to remain within the sole purview of the Board. These priority activities can be used by external stakeholders for pursuit of grant funding or by internal stakeholders for workplan development.

Highest Priority Activities in the North Coast Region

- Implementing TMDLs for sediment in 16 coastal watersheds
- Completing all Klamath Basin TMDLs by December 2005
- Maintaining the core regulatory program for regulated dischargers, including stormwater
- Developing a monitoring strategy for the region and integrating SWAMP with TMDL monitoring
- Regulating vineyards and timber activities
- Developing policies for runoff from roads
- Maintaining the ground water cleanup programs for high priority sites
- Improving outreach and community involvement in decisions
- Fostering watershed groups and citizen monitoring
- Protecting Critical Coastal Areas
- Promote water recycling activities
- Developing a freshwater beach program with the Sonoma Co. Health Dept. for the Russian River

Potential Projects and Activities to Meet Board Priorities or Otherwise Improve Water Quality

Table 8 lists activities or projects that the Regional Water Board, or stakeholders, see as potential projects for improvement of water quality and beneficial uses in the various watersheds (or region-wide). Those projects most directly involved with the funding priorities listed above are highlighted in **bold**, however, projects not directly involved with addressing one of the major water quality priorities may still be competitive during grant-funding cycles. Several of the priority activities listed above such as maintaining the core regulatory program are not conducive to grant funded projects and are conducted by the Regional Water Board.

Funding (**http://calwatershedfunds.org/index.php**) is available from a large variety of state and federal agencies as well as private groups and these should be utilized as fully as possible even when a proposal involves addressing one of the Regional Water Board's water quality priorities. Funding source requirements should be carefully researched to ensure a good match with potential projects.

In addition, there is a list of projects that proponents can apply for a loan from the State Revolving Fund (SFR) program at the State Water Resources Control Board. Please see **http://www.waterboards.ca.gov/cwphome/srf/srf_plist.html**

For Table 6, since funding sources often reference an activity or endpoint such as restoration or water quality improvement, the potential projects are organized generally by those endpoints.

Table 6 Target Projects and Activities

Project Type and Description	Watershed Management Areas						
	Russian River/Bodega Bay WMA	Klamath WMA	North Coast Rivers WMA	Humboldt Bay WMA	Eel River WMA	Trinity River WMA	Region-wide
Implement BMPs/Improve Water Quality							
Rehabilitate abandoned mines to improve water quality; address abandoned mine dam failures to prevent/control sediment releases; monitor water quality downstream from abandoned mines (especially for mercury); restore riparian habitat and function to river reaches affected by mine tailings.		X				X	
Implement BMPs to prevent/reduce contaminated runoff from horse and cattle operations; implement pasture rotation for erosion and nutrient control; recycle agricultural waste including dairy waste to reduce pathogen and nutrient loading to surface and ground water; develop alternative stock watering systems, construct livestock fencing to protect riparian areas	**X**	**X**	**X**	**X**		**X**	
Implement agricultural practices to reduce pesticides in surface waters							**X**
Implementation of a program to reduce runoff discharges from residential, commercial, and industrial properties and improve stream habitat	**X**						
Wetland, polishing marsh for storm water runoff	**X**						
Coordinate permitting efforts and/or streamline permit process for restoration projects							X
Implement technical TMDLs in cooperative efforts with private and federal landowners							**X**
Implement forest fuels reduction management		X	X			X	

Table 6 Target Projects and Activities							
	Watershed Management Areas						
Project Type and Description	**Russian River/Bodega Bay WMA**	**Klamath WMA**	**North Coast Rivers WMA**	**Humboldt Bay WMA**	**Eel River WMA**	**Trinity River WMA**	**Region-wide**
Decommission, upgrade, storm proof, restore and maintain roads for erosion control to reduce sediment loading			**X**	**X**	**X**		
Conduct parking lot storm water management including porous pavement projects							**X**
Road erosion control under powerlines, secure utility easement access							**X**
Use erosion control BMPs in developing and maintaining hiking trails							**X**
Convert septic systems to sewer systems, develop filtration system for sediment trapping and water re-use	**X**						
Promote the coordination of Klamath River and Trinity River dam releases to maximize beneficial uses		X					
Implement program to reduce the amount of water used by agriculture either through increased efficiencies or land acquisitions		**X**					
Improve irrigation tail water recovery to reduce nonpoint source pollution and water consumption		X					
Pipe or line irrigation diversion ditches to increase stream flows		**X**					
Habitat Restoration/Beneficial Use Enhancement							
Protect/restore/enhance historic flood plains							**X**
Stream restoration, road restoration/retirement or other erosion/sedimentation reduction activities, especially where TMDLs are established							**X**
Develop and implement BMPs for noxious weed control in water ways and/or control of invasive plant species							X
Implement riparian revegetation and stream canopy enhancement using native plants							**X**
Riparian revegetation, channel protection and animal exclusion zones as set forth in an approved technical TMDL	**X**		**X**				
Install streambank stabilization and restoration measures including bioengineering							X
Large woody debris (LWD) recruitment and placement, and protection of LWD recruitment areas to create fish habitat							**X**
Install fish screens on diversion outlets		**X**					
Identify, protect and enhance salmonid refugia in streams							**X**
Re-create wetlands in flood prone areas and freshwater portions of upper tidal and low gradient channels of coastal streams							**X**
Protect, restore, and enhance wetlands, riparian areas, estuaries, and adjacent lands. Restore fluvial processes in wetland areas.							**X**
Assess loading and impacts							
Evaluate wildlife health in estuaries due to cumulative effects from the watershed							**X**
Evaluate hydrological connections between estuaries, wetlands and streams							**X**
Inventory of surface and ground water withdrawals for agricultural and upland areas							**X**
Assessments and inventories of roads as sediment sources to streams in watersheds where sediment TMDLs are established or are pending in the next five years including recommendations for							**X**

Table 6 Target Projects and Activities							
	Watershed Management Areas						
Project Type and Description	**Russian River/Bodega Bay WMA**	**Klamath WMA**	**North Coast Rivers WMA**	**Humboldt Bay WMA**	**Eel River WMA**	**Trinity River WMA**	**Region-wide**
implementation of road improvements							
Evaluate and monitor urban storm water runoff, research control measure for reduction of future storm water pollutants	X						
Develop GIS map layers of sediment sources in Freshwater Creek and Elk River				X			
Identify sources of HVOCs in Santa Rosa Creek	X						
Conduct water quality assessment of salmonid restoration							X
Assess, inventory and prioritize tributaries with salmonid fish passage deficiencies from iron Gate dam to the confluence with Trinity River, develop an ArcView watershed planning tool for all tributaries						X	
Assessment of natural and anthropogenic origins of aluminum	X						
Conduct temperature and nutrient baseline sampling and modeling to analyze limited water quality conditions and predict impacts of different flow regimes		X					
Stream Channel assessments							X
Research-oriented studies							
Evaluate the effects of water impoundments on the watershed and wildlife habitat		X					
Evaluate the impacts of ground water withdrawal on streams and the effects of vegetation management on ground water							X
Develop mitigation standards and/or BMPs for toxics such as mercury in mine tailing and aggregate mining						X	
Conduct a feasibility study for dam removal	X		X				
Develop a feasibility study for fish passage improvement	X		X				
Develop an incentive program to reduce the use of two-stroke engines in reservoir and water ways							X
Temperature modeling to predict impacts of different riparian land use	X		X				
Develop and use hydrodynamic water quality and flow models including data collection for "ground truthing"		X				X	
Study to determine the effects of over-drafting of ground water in watershed areas associated with vineyard development							X
Study the relationship of turbidity and total dissolves solids and total suspended solids							X
Study/inventory and mapping of wetlands							X
Develop an emergency action response plan for droughts regarding salmonids and irrigation efficiencies improvement planning		X					
Alternative water diversion demonstrations to reduce the adverse impacts from irrigation and non-irrigation situations							X
Monitoring							
GIS map layers of sources, monitoring wells, and groundwater pollution	X						

Table 6 Target Projects and Activities							
	Watershed Management Areas						
Project Type and Description	**Russian River/Bodega Bay WMA**	**Klamath WMA**	**North Coast Rivers WMA**	**Humboldt Bay WMA**	**Eel River WMA**	**Trinity River WMA**	**Region-wide**
Develop self-assessment monitoring program for vineyard managers to assess cold water fisheries impacts from vineyards	**X**		**X**				
Develop and implement a monitoring program for turbidity and suspended sediment	**X**		**X**	**X**	**X**	**X**	
Develop and implement a monitoring program for streambed and habitat parameters including V star							**X**
Monitor urban creeks for nutrients, CTR pollutants, and bacterial loading characteristics	**X**			**X**			
"All party" monitoring for upslope risk assessment and mitigation effectiveness monitoring for timber harvesting							X
Implement flow monitoring and availability of flow gauges							**X**
Conduct bacteriological sampling in summer recreation areas including ocean beaches with emphasis on QA/AC	X						
Baseline monitoring for water quality to include bacteria, oil, grease, fuels, nutrients, sediment/turbidity, storm water and waste water, and fish, macroinvertebrate, and shellfish populations in coastal estuaries and streams							**X**
Monitor ground water quality for constituents not currently being monitored, such as pesticides, including small, private wells							X
Effectiveness monitoring of implementation projects and activities to determine impacts on aquatic species and other beneficial uses							**X**
Implement and utilize citizens' monitoring or establish a volunteer monitoring network to track effectiveness of management measures and establish baseline conditions							X
Promote self-monitoring for nutrients and sediment from dairies	X			X			
Conduct trend monitoring for water quality, temperature macroinvertibrates, riparian habitat, gravel quality etc.							**X**
Education and Outreach							
Salmonid habitat/aquatic species education for agencies, organizations, landowners and private organizations							**X**
Bioengineering education for agencies, organizations, landowners and private organizations							**X**
Heavy equipment operation training for restoration and road work, and technology transfer to organizations and landowners							**X**
Landowner outreach and education for road decommissioning/storm-proofing/maintenance							X
Stakeholder education and outreach on cumulative effects of water withdrawals (diversions) from tributaries							X
Provide education and outreach to urban citizens and stream side property owners on nonpoint source pollution, especially from septic systems and pesticide and fertilizer use							X
"Shrimp Club" type education/outreach/restoration	X						
Form partnerships with public agencies, organizations, and stakeholders to plan,							**X**

Table 6 Target Projects and Activities							
	Watershed Management Areas						
Project Type and Description	**Russian River/Bodega Bay WMA**	**Klamath WMA**	**North Coast Rivers WMA**	**Humboldt Bay WMA**	**Eel River WMA**	**Trinity River WMA**	**Region-wide**
implement, and monitor projects							
Technology transfer for vineyard installation, education and outreach; changes to BMPs and innovative technology for vineyards on slopes > 30% and adjacent to water courses			X				
Watershed Planning							
Watershed planning and assessment using an adaptive management approach							X
Develop regional watershed group networks							X
Monitoring, TMDL development and implementation planning		**X**	**X**				
Develop a restoration plan that incorporates the TMDL and the North Coast Watershed Assessment in the Big River			**X**				
Collect and provide information to revise TMDL for EPA approval, revise Enhancement Plan for Stemple Creek	**X**						
Land Acquisition							
Land acquisition for growing trees for riparian canopy and irrigation water use, habitat improvement, preservation and restoration for a buffer from adjacent land use, and protect and restore riparian areas	X		X			X	
Acquisitions of conservation easements, fee title lands and trusts to prevent surface water quality degradation from timber harvest, urban development, agricultural activities, and roads							X
Municipal Wastewater Control							
Upgrade POTWs in disadvantaged communities with a threat to public health or impaired water bodies, or under compliance and/or enforcement orders							**X**
Eliminate cross connections between sewer pipes and storm water pipes							**X**
Install treatment wetlands to “polish” treated waste water							**X**

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NORTH COAST REGIONAL WATER QUALITY CONTROL BOARD GRANTS: CWA 205(j), 319(h), and State Propositions					
Grant Contract Name (T)*	**Contractor**	**Staff**	**Grant Amount**	**Status**	**Watershed**
205(j)					
Russian River Toxic Early Warning Study (1988)	NC Regional Water Quality Board	R. Klamt	$129,702	Complete	Russian/Bodega Russian River
Pesticides in Smith River Groundwater (1989)	NC Regional Water Quality Board	R. Klamt	$97,500	Complete	North Coast WMA Smith River
Laguna de Santa Rosa NPS Study (1992)	NC Regional Water Quality Board	R. Klamt	$75,000	Complete	Russian/Bodega WMA Laguna de Santa Rosa
Laguna de Santa Rosa WQ Assessment (1994)	NC Regional Water Quality Board	R. Klamt	$60,000	Complete	Russian/Bodega WMA Laguna de Santa Rosa
Garcia River Gravel Management Plan (1996)	Mendocino Co. Water Agency	D. Slota	$100,000	Complete	North Coast WMA Garcia River
Russian River Gravel Management Plan (1997)	Mendocino Co. Water Agency	D. Slota	$151,915	Complete	Russian/Bodega Russian River
Agriculture and Animal Waste in the Eel River (1998)	Humboldt Co. Resource Conservation District	D.Moxon	$82,000	Complete	Eel River WMA Eel River
Eel River Watershed Monitoring Study (1998)	Humboldt Co. Resource Conservation District	G. Friedrichsen	$80,000	Complete	Eel River WMA Eel River
Navarro River Watershed Management Plan (1998)	Mendocino Co. Water Agency	D. Slota	$130,000	Complete	North Coast WMA Navarro River
Eel River Watersheds Cooperative Planning Effort (1999)	Humboldt Co. Resource Conservation District	J. LaBoyteaux	$109,000	Complete	Eel River WMA Eel River
Moffet Creek Upland Gross Assessment (2000)	Siskiyoou Resource Conservation District	M. Duguay	$90,968	Complete	Klamath WMA Scott River
South Fork Trinity WQ Monitoring (2001)	Trinity Resource Conservation District	P. Frost	$124,500	Complete	Triniy River WMA So Fork Trinity
Jenner Gulch WQ Assessment (2002)	Sonoma Co. Public Works	P. Zentner	$107,555	Active	Russian/Bodega WMA Russian River
Americano Creek Watershed Management Plan (2003)	Goldridge Resource Conservation District	P. Zentner	$120,000	Active	North Coast WMA Americano Creek
319(H)					
Tomki Creek (1990)	Mendocino Co. Resource Conservation District	W.Winchester	$100,000	Complete	Eel River WMA Tomki Creek

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Willow Creek Watershed (1990)	US Forest Service	W.Winchester	$60,000	Complete	Trinity River WMA Willow Creek
Animal Waste Control I (1991)	Goldridge Resource Conservation District	D.Salisbury	$168,808	Complete	Russian/Bodega WMA Americano and Stemple Creeks
Klamath Basin I (1991)	Klamath River Basin Fisheries Task Force	W. Winchester	$102,375	Complete	Klamath WMA Klamath and Lost Rivers
Tomki Creek II (1991)	Mendocino Co. Resource Conservation District	W. Winchester	$30,000	Complete	Eel River WMA Tomki Creek
Tomki Video (1991)	Mendocino Co. Resource Conservation District	W. Winchester	$18,000	Complete	Eel River WMA Tomki Creek
Projects Monitoring (1991)	NC Regional Water Quality Board	W. Winchester	$15,520	Complete	Russian/Bodgea WMA Americano and Stemple Creeks and Laguna de Santa Rosa
Septic Tanks (1991)	Sonoma County Health Department	W. Winchester	$2,690	Complete	Russian/Boedga WMA Russian River
Piner High School Urban Runoff (1992)	City of Santa Rosa	W. Winchester	$43,000	Complete	Russian/Bodega WMA Piner Creek
Animal Waste Control II (1992)	Goldridge Resource Conservation District	W. Winchester	$100,000	Complete	Russian/Bodgea WMA Americano and Stemple Creeks and Laguna de Santa Rosa
Klamath Basin II (1993)	Klamath River Basin Fisheries Task Force	W. Winchester	$66,055	Complete	Klamath WMA Klamath and Lost Rivers
Dairy Waste Control (1994)	City of Santa Rosa	W. Winchester	$84,854	Complete	Russian/Bodega WMA Laguna de Santa Rosa
Animal Waste/Rangeland (1994)	Marin Co. Resource Conservation District	W. Winchester	$76,646	Complete	Russian/Bodega WMA Stemple Creek
Klamath Basin III (1994)	Klamath River Basin Fisheries Task Force	W. Winchester	$285,000	Complete	Klamath WMA Klamath and Lost Rivers
Russian River Basin I (1995)	Sotoyome Resource Conservtion District	C. Goodwin	$275,000	Complete	Russian /Bodega WMA Russian River
Klamath Basin IV (1995)	Klamath River Basin Fisheries Task Force	W. Winchester	$330,000	Complete	Klamath WMA Klamath and Lost Rivers

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Garcia River (1996)	Mendocino Co. Resource Conservation District	L. Clyde	$207,900	Complete	North Coast WMA Garcia River
Eel Delta Daries (1996)	State Coastal Conservancy	L. Clyde	$188,856	Complete	Eel River WMA Eel River
Russian River Basin II (1997)	Sotoyome Resource Conservtion District	J. Blake	$187,500	Complete	Russian /Bodega WMA Russian River
Humboldt Bay Watersheds (1997)	Redwood Community Action Agency	B. Gwynne	$185,456	Complete	Humboldt Bay WMA Humboldt Bay Tributaries
Klamath Basin V (1997)	Klamath River Basin Fisheries Task Force	B. Reed	$187,500	Complete	Klamath WMA Klamath and Lost Rivers
Humboldt Bay Watershed Enhancement (1998)	Redwood Community Action Agency	B. Gwynne	$239,315	Complete	Humboldt Bay WMA Humboldt Bay Tributaries
Klamath Basin VI (1998)	Klamath River Basin Fisheries Task Force	B. Reed	$180,000	Complete	Klamath WMA Klamath and Lost Rivers
Sediment Reduction Gualala (T) (2000)	Sotoyome Resource Conservtion District	L. Clyde	$342,250	Complete	North Coast WMA Gualala River
Eel River Sediment (I) (T) (2000)	Humboldt County Resource Conservation District	M. Fortner	$248,751	Complete	Eel River WMA Eel River
Eel River Sediment (II) (T) (2001)	Humboldt County Resource Conservation District	M. Fortner	$350,000	Active	Eel River WMA Eel River
Mattole River Restoration (T) (2001)	Mattole Restoration Council	M. Fortner	$129,800	Complete	North Coast WMA Mattole River
Five Counties Effort (T) (2000)	Trinity County Planning Dept.	M. Fortner	$348,000	Complete	Trinity River WMA Trinity River
Eel, Humboldt, Trinity Agriculture Management Phase II (T)(2001)	Humboldt County Resource Conservation District	B Zabinsky	$349,510	Active	Eel River WMA Eel River
Fish Friendly Farming (T) (2001)	Sotoyome Resource Conservtion District	S. Gergus	$454,300	Active	Russian/Bodega WMA Russian River
Permit Coordination (T) (2002)	Sustainable Conservation	J. Blake	$129,950	Active	Humboldt Bay WMA Humboldt Bay Tributaries
South Fork Trinity (T) (2002)	Trinity Resource Conservation District	M. Fortner	$450,000	Active	Trinity River WMA So. Fork Trinity River
Upper Redwood Creek (2003)	Pacific Coast/Wildlife/Wetlands	M. Fortner	$250,000	Active	Humboldt Bay WMA Redwood Creek
Middle Mattole Restoration (T) (2003)	Mattole Restoration Council	R. Bosworth	$397,940	Active	North Coast WMA Mattole River
Eel River Sediment (III) (T) (2003)	Humboldt County Resource Conservation District	M. Fortner	$500,000	Active	Eel River WMA Eel River

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Garcia River Monitoring (T) (2002)	Mendocino Co. Resource Conservation District	B. Reed	$107,485	Active	North Coast WMA Garcia River
Upper Redwood Creek (2004)	Pacific Coast/Wildlife/Wetlands	M. Fortner	$245,325	Pending	Humboldt Bay WMA Redwood Creek
Van Duzen Watershed Sediment Reduction (2004)	Yager/VanDuzen Environmental Stewards	J. Blake	$500,000	Pending	Eel River WMA Van Duzen River
Mattole River/Range Partnership Implementation(T) (2004)	Mattole Restoration Council	K. Daly	$500,000	Pending	North Coast WMA Mattole River
PROP 13 (PHASE 1) - 2002					
Scott River Plan/Assessment (T)	Siskiyou Resource Conservation District	J. Blake	$185,621	Complete	Klamath WMA Scott River
East Ishi Pishi Plan (T)	Northern CA Indian Development. Council	J. Blake	$199,537	Complete	Klamath WMA Salmon River
Steinacher Road Decommissioning. (T)	Northern CA Indian Development. Council	J. Blake	$450,000	Complete	Klamath WMA Salmon River
Ancestor Creek Fish Passage (T)	Mendocino County DOT		$172,507	Canceled	
Mattole Good Roads Clear Creeks (T)	Mattole Restoration Council	J. Blake	$197,144	Complete	North Coast WMA Mattole River
French Creek Riparian Protection (T)	Siskiyou Resource Conservation District	J. Blake	$84,520	Active	Klamath WMA French Creek
Bull Creek Watershed (T)	Redwood Community Action Agency	J. Blake	$511,387	Active	Humboldt Bay WMA Bull Creek
Mad River/Lindsay Creek Model	Redwood Community Action Agency	B. Reed	$200,000	Active	Humboldt Bay WMA Mad River
Bluewater Road (Garcia) (T)	Mendocino Co. Resource Conservation District	L. Clyde	$72,660	Active	North Coast WMA Garcia River
PROP 13 (PHASE II) - 2003					
Humboldt Agriculture (Phase III) (T)	Humboldt County Resource Conservation District	B Zabinsky	$506,000	Active	Eel River WMA Eel River
WWMP Treatment Wetlands	McKinley Community Services District	J. Blake	$650,000	Active	Humboldt Bay WMA Mad River
Characterizing Sediment (T)	University of California Davis	B. Reed	$306,736	Active	Rusain/Bodega WMA Russian River (and Tomales Bay)
Mill Creek Sediment Reduction (T)	Rural Human Services	J. Blake	$500,000	Active	North Coast WMA Smith River
Trinidad WWTS Management	City of Trinidad	J. Blake	$94,000	Active	Humboldt Bay WMA
Sinkyone Watershed (T)	Intertribal Sinkyone Society	JG/B. Reed	$252,713	Active	North Coast WMA
Sewer System (Westside Park)	Sonoma County Regional Parks Department	B. Reed	$400,000	Active	Russian/Bodega WMA Bodega Bay

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Humboldt Bay WQIP (T)	Redwood Community Action Agency	AW/B. Reed	$250,000	Active	Humboldt Bay WMA Humboldt Bay Tributaries
Eel River Sediment Reduction (T)	Humboldt County Resource Conservation District	J. Blake	$200,000	Active	Eel River WMA Eel River
South Humboldt Bay Coastal (T)	Pacific Coast/Wildlife/Wetlands	M. Fortner	$239,000	Active	Humboldt Bay WMA
Bodega Bay Watershed (T)	Goldridge Resource Conservation District	B. Reed	$400,000	Active	Russian/Bodega WMA Tributaries to Bodega Bay
Monte Rio Wastewater (T)	Sonoma County Permit & Resource Management	M. Dougherty	$1,000,000	Active	Russian/Bodega WMA Russian River
Willow Creek Restoration Project (T)	Land Partners - Stewardship	B. Reed	$400,000	Active	Russian/Bodega WMA Russian River
Coastal Tributary Enhancement (T)	Sotoyome Resource Conservtion District	B. Reed	$200,000	Active	North Coast WMA Various
Lower Russian River Monitoring (T)	Community Clean Water Institute	E. Dudik	$50,000	Active	Russian/Bodega WMA Russian River
PROP 13 (PHASE III) Coastal NPS-2004					
Sanitary Sewer/Stormwater Drainage Systems	City of Fort Bragg	J. Blake	$ 480,858	Active	North Coast WMA Noyo River
Monte Rio Wastewater (T)	Sonoma County Permit & Resource Management	M. Fortner	$ 1,780,272	Active	Russian/Bodega WMA Russian River
PROP 13 (PHASE III) NPS-2004					
Assessment and Riparian Restoration Project	Circuit Riders Productions	B. Reed	$609,000	Active	Russain/Bodega WMA Russian River, North Coast WMA Gualala River
PROP 13 PRISM - 2004					
Russian River Pesticide Survey	Friends of the Russian River	M. Fortner	$ 108,928	Active	Russian/Bodega WMA Russian River
CAL FED - 2004					
Upper Trinity River	Trinity County	M. Fortner	$ 254,704	Active	Trinity River WMA Trinity River above dam
CUMULATIVE TOTAL OF CURRENT GRANTS			$20,561,513		
*(T) REPRESENTS TMDL-RELATED CONTRACTS					

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