## 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.

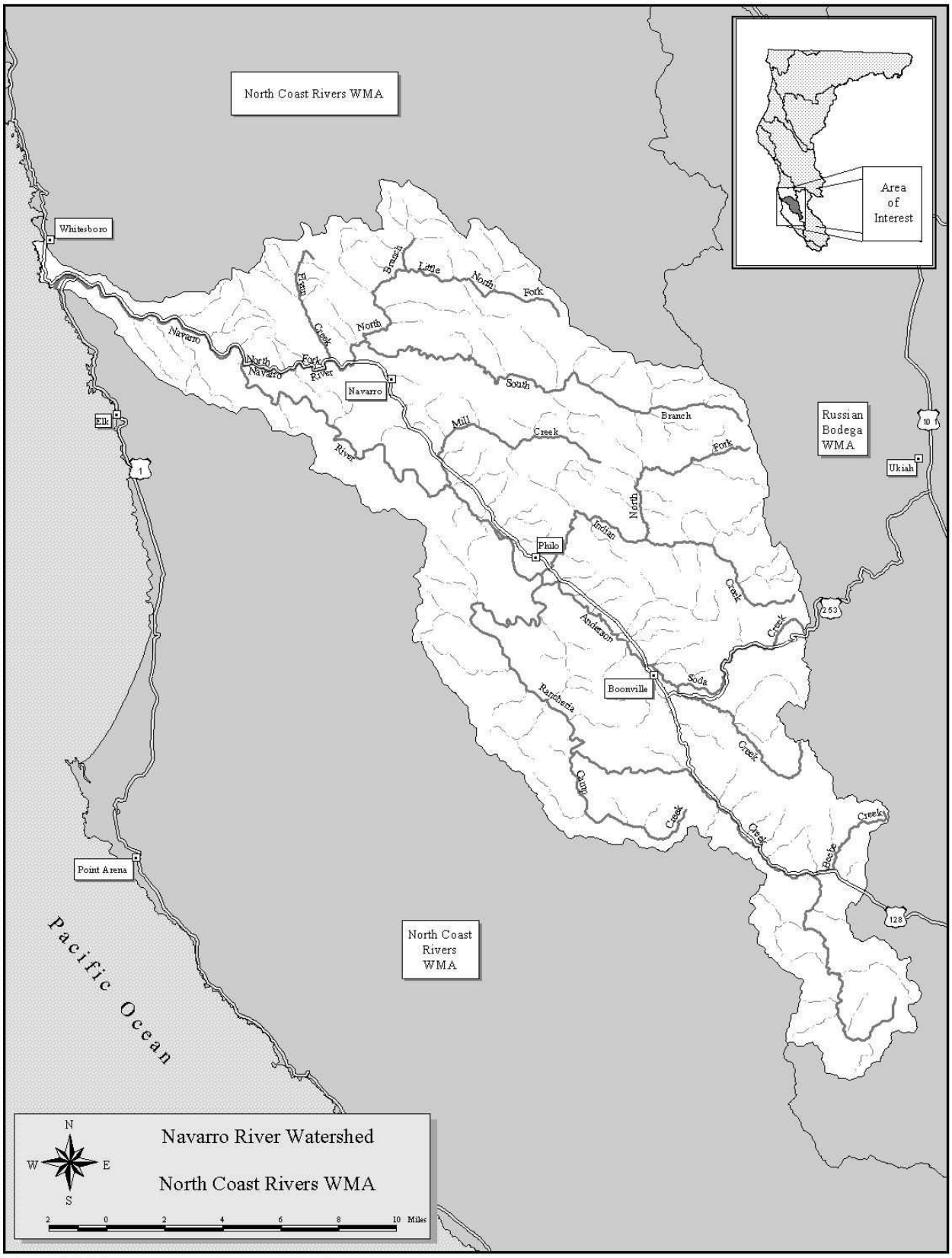


**Figure 2.3.8.1.** Navarro River Watershed

**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.