T. D. Hofstra 1998

United States Department of the Interior

CALIFORNIA DEPARTMENT OF PARKS AND RECREATION
Redwood National and State Parks
1125 16th Street
Arcata, California 95521

CALIFORNIA STATE PARKS

IN REPLY REFER TO:

A44

November 18, 1998

Liberty Cachuela
Water Division (WTR-2)
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, California 94105

Dear Ms. Cachuela:

Thank you for the opportunity to comment on the proposed Total Maximum Daily Load (TMDL) for Redwood Creek. Redwood National and State Parks (RNSP) is situated at the downstream end of Redwood Creek and encompasses about 40 percent of the entire Redwood Creek basin. The resources found in RNSP are public trust resources of national and international significance. Because of the park's downstream location, park resources are vulnerable to sedimentation originating from areas upstream of the park.

In general, RNSP supports the development of a Water Quality Attainment Strategy (WQAS) and a TMDL for Redwood Creek. However, we and many of the landowners have found the development process very confusing. It is unclear to us why the Environmental Protection Agency and the Regional Water Quality Control Board (RWQCB) have each developed their own separate and different versions of the TMDL. In the future, we hope that both agencies can resolve underlying differences before releasing documents for public review and comment.

Redwood Creek has been recovering from sediment impacts associated with past large floods and earlier forest practices for over 20 years. It is important to note that the recovery trend has occurred during a period of low to moderate rainfall that has not adequately tested current forest practices in Redwood Creek. Without a doubt, forest practices have improved significantly over the last decade. But, we remain concerned about the potential sediment impacts to Redwood Creek and downstream park resources from poorly designed and unmaintained logging roads, and silvicultural practices along streams and on unstable areas. The need for a WQAS, including a TMDL and Implementation Plan, is based largely upon forest practices that, for too long, have not given adequate consideration to water quality and aquatic habitat, which are also public trust resources.

Erosion from roads is preventable or can be minimized significantly during large storms if roads are properly designed and maintained. There are over 1000 miles of roads on private lands in the Redwood Creek basin, most of which were built before current forest practices. Several studies show that roads and landings are significant sediment sources to Redwood Creek during large storms. Despite this knowledge of erosional processes and linkage to land management practices, current forest practices still do not limit the miles of road that can be built, nor do they require routine inspection or long-term maintenance of roads. The potential for offsite cumulative impacts from erosion of roads, such as stream channel erosion and streamside landslides, are largely ignored.

Landowner and agency cooperation will be a key element to the successful implementation of the WQAS in Redwood Creek. Cooperation will be partly based on the reasonableness of assumptions and requirements contained in the TMDL and subsequent Implementation Plan. The following are our comments on numeric targets and the TMDL.

Numerical Targets

RNSP recommends that targets be presented only in the context of desired future conditions for Redwood Creek, and in narrative form for trend monitoring. We do not support the use of instream numeric targets as the only measure of water quality and aquatic habitat conditions. The proposed targets recognize that a problem exists only after the damage occurs. The instream targets do not take into account the variability within the basin, nor do they identify the source of sediment or establish accountability. The main channel of Redwood Creek has three distinct reaches (upper, middle, lower), each with its own unique characteristics. Logic follows that substrate materials, particle size, pool frequency and depth, and large woody debris loading would also vary through these reaches. Past experience in Redwood Creek also suggests there is inherent variability with channel bed sampling techniques that could render repetitive sampling not reproducible. If the EPA and RWQCB insist on retaining instream targets in the TMDL, then new targets should be developed that are reach-specific and based on relevant watershed information.

The TMDL should include hillslope targets to reach water quality objectives. Because sediment originates from hillslope areas, hillslope targets can be directly linked to downstream channel conditions. By shifting the focus to hillslope areas, the attainment strategy would become proactive by preventing erosion at its source rather than reactive after erosion and channel degradation have already occurred. Clearly, stream channel and aquatic habitat degradation is a sediment production and routing problem. Hillslope targets go directly to the source of a problem, prevent erosion, and establish accountability through land ownership. We recognize that hillslope targets are not traditionally used for water quality matters, but we believe they will work.

The park requests the inclusion of hillslope targets in the TMDL. The following are our recommendations of appropriate hillslope targets for Redwood Creek that address sediment reduction and fish habitat improvement:

- permanently eliminate diversion potentials at stream crossing,
- ensure culverts at stream crossings are sized for at least a 50-year storm,

- pull back landings and road fills on slopes greater than 50 percent and capable of sediment delivery to stream channels,
- eliminate road systems from inner gorge slopes,
- decommission roads to reduce road density (currently about 7 miles/square mile) to about 4-5 miles/square mile, with a focus on lower hillslope positioned roads,
- establish road surface drainage by use of permanently installed rolling dips and outsloped road surfaces, where appropriate,
- establish routine, long-term, road inspection and maintenance programs, and
- eliminate clearcutting of steep, potentially unstable streamside areas.

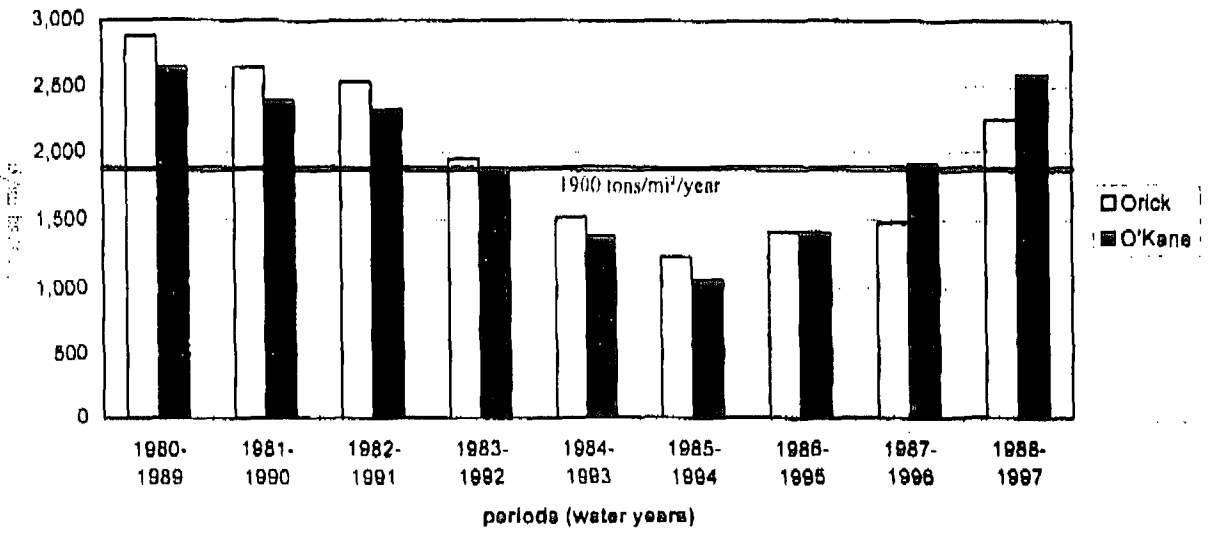
TMDL Allocations and Source Loading Estimates

While we believe the total allowable sediment load of 1900 tons/mile^2/year is a reasonable estimate, but it was developed using studies that were not intended for this purpose. The allowable load has been estimated using sediment budget studies for Redwood Creek. The original purpose of the study was to identify the most important erosional processes that contributed to the total sediment load of Redwood Creek for a 27-year period (1954-1980) containing five large (>25-year recurrence interval) storms. The study quantified, in a relative sense, the amount of sediment contributed by different erosional processes. Based on sediment sampling methods, we know there can be as much as a 30 percent error in the sediment data. Also, streamflow and sediment measurements for Redwood Creek did not begin until 1971. The sediment yields for the period 1954-1970, therefore, are estimated values and are probably subject to an even greater error.

To see how reasonable the TMDL might be, it was compared to recent events by plotting the 10-year rolling averages for Redwood Creek from 1980 to 1997 (Figure 1). The years between 1980 and 1995 were marked by low to moderate rainfall with the largest storm having a 5-year recurrence interval. During this period, total sediment loads (suspended and bedload) at the Orick station were consistently higher than at O'Kane (as expected because of Orick's larger drainage area) and the 10-year rolling averages eventually fell below the TMDL threshold. This period coincided with recovery trends for the main channel of Redwood Creek, when it was flushing stored sediment from its channel. Since 1995, with the onset of higher rainfall, this trend has reversed. Sediment loads at both stations increased above threshold limits, and the O'Kane station began recording higher sediment loads than the station at Orick. Despite its relatively low (3-year return interval) rainfall intensity, the January 1, 1997 storm was the largest (11-year) flood since 1975. Significant erosion occurred from roads and cutover streamside areas in many parts of the basin, especially in areas upstream from the O'Kane station. The TMDL sediment threshold was exceeded during these winter storms, indicating the TMDL for Redwood Creek is probably a reasonable threshold for land management practices in the Redwood Creek basin.

The greatest value of the Source Allocation Table (Table 2) for the TMDL is the relative priority placed on the different erosional processes that can be prevented or controlled. The priority agrees with past studies in Redwood Creek that suggest streamside landsliding and road related erosion, especially gullying and landsliding from stream diversions, can be major sediment sources during large storms. Accordingly, future implementation efforts should focus on preventing erosion from potentially unstable streamside areas and roads.

Figure 1. 10-year Rolling Averages, Orick vs O'Kane



Corrections to Information Found in the TMDL

Please note that the following corrections are needed to clarify references and information provided by RNSP.

On Page 31, Par. 1 & 2, statements should be corrected as follows:

Panther Creek is located on the west side of the valley and *has experienced moderate timber harvesting during the last decade.* Most of Panther Creek basin was also harvested several decades ago although *increased* logging has resumed in the last 2 years.

Lacks Creek is a large tributary on the east side of the valley which has experienced relatively little timber harvesting *during the last decade.*

On Page 34, Par. 3, the description of channel storage and sediment movement in lower Redwood Creek is inaccurate. Channel cross section surveys from 1996-1998 document continued channel aggradation or infilling for several miles below the Tall Trees Grove. The persistence of sediment impacts in lower Redwood Creek for more than 20 years has most likely impacted several life cycles of salmon. Also from 1977 to 1995, studies show that the number of pools and mean pool depth in lower Redwood Creek increased. However, following the 1997 storm (11-year recurrence interval), this trend of pool recovery was reversed. In addition, air photo analysis indicates the 1997 flood caused about 150 new or reactivated streamside landslides along the main channel of Redwood Creek.

Thank you again for the opportunity to comment on the proposed TMDL for Redwood Creek. We hope you find our comments useful, and look forward to working with you, the RWQCB and Redwood Creek landowners to improve water quality and fisheries habitat in the Redwood Creek basin.

Sincerely,

Dawn McGuire
for

Terrence D. Hofstra
Chief, Resources Management and Science

cc: Superintendent, Redwood National and State Parks
Bruce Gwynn, Regional Water Quality Control Board
Redwood Creek Landowners Association