RESOLUTION NO. R3-2002-0063

ATTACHMENT—PROPOSED BASIN PLAN AMENDMENTS

1. Revise the September 8, 1994 Basin Plan, Chapter Four, as follows:

Add the following to chapter 4 under the section, IX A:

IX.B SAN LORENZO RIVER TOTAL MAXIMUM DAILY LOAD FOR SEDIMENT (INCLUDING CARBONERA CREEK, LOMPICO CREEK, AND SHINGLE MILL CREEK)

This TMDL was adopted by the Regional Water Quality Control Board on May 16, 2003.
This TMDL was approved by:

The State Water Resources Control Board on insert date.
The California Office of Administrative Law on insert date (effective date).
The U.S. Environmental Protection Agency on insert date.

TMDL ELEMENTS

Problem Statement:
The natural processes of erosion and sedimentation in the San Lorenzo River Watershed have been accelerated due to anthropogenic watershed disturbances. Studies conducted by various authors have concluded that erosion rates were two to four times natural rates. These studies have also documented and quantified the decline in anadromous fisheries and the quality of fish habitat. Excessive Sedimentation has interfered with the beneficial uses of these waterbodies including, Fish and Wildlife (RARE, MIGR, SPWN, WILD).

Numeric Targets (interpretation of the narrative water quality objectives for settleable solids and sediment):
Because the sediment objectives in the Basin Plan are narrative, rather than numeric, this Basin Plan amendment establishes numeric targets as indicators of water quality that are supportive of beneficial uses. The numeric targets serve to interpret the narrative water quality objectives and provide a measure with which to determine if the objectives and the TMDL are being met. The combination of these parameters is considered an effective approach in lieu of directly measuring sediment loading to the listed waterbodies. Attainment of Numeric Targets will be measured over a ten-year rolling time period. Numeric targets for the listed waterbodies and compliance points on tributaries are as follows:

Parameter	Numeric Target[1]
Residual Pool Volume (V*)[2]	V* = Mean values ≤ 0.21 Max values ≤ 0.45
Median Diameter (D_{50}) of Sediment Particles in Spawning Gravels	D_{50} = Mean values ≥69 mm Minimum values ≥ 37 mm
Percent of Fine Fines (< 0.85 mm) in Spawning Gravels	Percent fine fines ≤ 21%
Percent of Coarse Fines (< 6.0 mm) in Spawning Gravels	Percent coarse fines ≤ 30%

[1] Target values are for sampling reach(es) within an individual waterbody.

[2] Residual Pool Volume refers to the portion of a pool in a stream that is available for fish to occupy. Pool habitat is the primary habitat for steelhead in summer. Overwintering habitat requirements include deeper pools, undercut banks, side channels, and especially large, unembedded rocks, which provide shelter for fish against the high flows of winter. V* gives a direct measurement of the impact of sediment on pool volume. It is the ratio of the amount of *pool volume filled by fine, mobile sediment*, to *total pool volume*. Qualifying pools are those having a gradient less than 5%, a minimum depth twice the riffle-crest depth, a fairly even spacing between tributaries, and are located on streams fifth order or smaller.

Total Maximum Daily Load and Load Allocations

The Total Maximum Daily Load (expressed here as an annual load) was based on reductions necessary to achieve desired conditions of streambed sediment parameters (embeddedness and fraction of sediment particles less than 4mm in diameter). Desired conditions taken from values published in the scientific literature were 27% lower on average for the San Lorenzo River, Carbonera Creek and Shingle Mill Creek, and 24% lower on Lompico Creek, than measured values in these waterbodies, respectively. Load allocations were based on percent attainable reductions in each sediment source category.

Natural background sediment load was not calculated as a separate allocation of the TMDL. The Mass Wasting and Channel/Bank Erosion categories account for natural and anthropogenic loads associated with these processes. The load from Timber Harvest Plan Roads, Public/Private Roads, Timber Harvest Plan Lands and Other Urban and Rural Lands is assumed to be entirely anthropogenically derived and controllable.

Sediment Source Category	Allocations (tons/year)			
	Shingle Mill Creek	Carbonera Creek	Lompico Creek	San Lorenzo River
Upland Timber Harvest Plan (THP) Roads	0	419	362	25,215
Streamside THP Roads on Steep Slopes	0	182	164	10,949
Upland Public/Private Roads	146	1,235	367	13,835
Streamside Public/Private Roads on Steep Slopes	77	135	239	6,178
THP Land	0	23	16	1,057
Other Urban and Rural Land	310	2,622	965	43,368
Mass Wasting	0	4,082	6,440	157,388
Channel/Bank Erosion	324	3,030	989	48,149
Total Allocation = TMDL[3]	**857**	**11,728**	**9,542**	**306,139**

Implementation Plan

The sediment load to the San Lorenzo River, Lompico Creek, Carbonera Creek, and Shingle Mill Creek derives from nonpoint sources (NPS) and point sources. As such, implementation to achieve the TMDL will rely on the State's Plan for NPS pollution control (CWC §13369) and on existing and anticipated independent regulatory programs for regulated storm water discharges.

At this time implementation emphasizes the activities of the Santa Cruz County Departments of Planning and Public Works, the Santa Cruz County Resource Conservation District, and other public and private groups, not currently identified as dischargers responsible for causing erosion, to implement self-determined activities (Implementation Actions C through R, see following list, Trackable Implementation Actions). Regional Board staff will meet annually with these "Implementing Parties" identified in the list of Trackable Implementation Actions to provide technical assistance, and to evaluate and track progress (See following Implementation Compliance Schedule). By the end of the first year of implementation, the Regional Board and the implementing parties will establish a time schedule for completion of Trackable Implementation Actions C

[3] The term "Total Maximum Daily Load" or "TMDL" is used here for familiarity. The allowable loads for the San Lorenzo River and its tributaries are actually expressed as a Total Annual Loads (tons/year). This expression of load accounts for seasonal variation in sediment loads explained by the seasonality of rainfall in this region of the Central Coast.

through R. If the Regional Board along with implementing parties do not establish the time schedule by the end of year one, Regional Board Staff will present a time schedule for completion of these actions as a Basin Plan Amendment. If the Regional Board determines that the implementing parties have failed to complete these self-determined activities and/or resulting management practices have failed to reduce sedimentation per the time schedule established, Regional Board staff intends to conduct inspections and investigations to identify individual responsible dischargers (e.g., landowners or regulated public agencies). Regional Board staff may rely on Section 13267 of the California Water Code and other appropriate authorities for investigation and identification of individual responsible dischargers. Regional Board staff will also rely on Section 13267 of the California Water Code to require reporting and/or monitoring to determine the level of implementation of management practices to reduce sedimentation. If necessary, the Regional Board may rely on enforcement authority, pursuant to California Water Code Section 13304, to require dischargers to clean up and abate sediment discharges and/or prevent the threat of discharges. The Implementation Actions identified in this Implementation Plan do not identify the specific management practices that will result in sediment reduction. As such the management practices developed through pursuit of the Implementation Actions are not intended to be independently enforceable by the Regional Board. Therefore, the Regional Board will rely on scheduled 3-year reviews to track Implementation Actions and the effectiveness of management practices to determine whether to continue with Tier 1, self-determined implementation. This portion of the implementation program currently relies on voluntary compliance and so is not regulatory. If, in future years, self-determined actions have not been completed, staff will develop a regulatory approach (rather than a self-determined approach) and present a revised implementation plan to the Regional Board as a Basin Plan amendment.

To regulate sediment discharges derived from regulated storm water discharges, implementation relies on National Pollutant Discharge Elimination System (NPDES) general permits covering municipalities and construction activities anticipated to be in place by March 2003. Implementation Actions S, T and U (see following list, Trackable Implementation Actions) identify actions that will be required of entities enrolling in these general permits. These entities are identified as "Responsible Dischargers" on this list. These actions will be required pursuant to the terms of the general permits, so this portion of the implementation program also does not impose any new regulatory requirements. To the extent the discharge is addressed by a Storm Water Permit, the Regional Board anticipates that management practices developed from any of the Implementation Actions (in the list of Trackable Implementation Actions) will be included in Storm Water Management Plans and Storm Water Pollution Prevention Plans. If the management practices are not included in these Plans, the Regional Board will work with dischargers to condition the Plans on an individual basis, will consider issuing individual Storm Water permits or waste discharge requirements, and/or, if necessary take actions to enforce the terms of the permits or waste discharge requirements. The Regional Board will take any such actions on a case-by-case basis using existing authority or if necessary, by amendment of the TMDL implementation program.

Margin of Safety

A margin of safety has been established implicitly in the TMDL calculation through conservative assumptions used in establishing the percent reduction from existing loads necessary to protect beneficial uses.

Monitoring

The TMDL will be evaluated by monitoring the four numeric targets specified above, as well as by tracking progress in implementation of voluntary and required implementation actions. Responsibility for tracking, reporting status, and evaluating the effectiveness of voluntary implementation actions, is shared by the Regional Board and participating members of the San Lorenzo River Technical Advisory Committee. Initially the Regional Board will be responsible for monitoring numeric targets. Any monitoring besides that for numeric targets, including turbidity monitoring by the San Lorenzo Valley Water District and the City of Santa Cruz Water Agency, as well as "comprehensive" monitoring of parameters affecting cold water fisheries conducted by various agencies, will be on a voluntary basis. Monitoring efforts pursuant to existing or anticipated regulatory programs or other voluntary efforts will be evaluated along with monitoring for numeric

targets. The Board will evaluate progress on implementation actions in consultation with the San Lorenzo River Technical Advisory Committee. As more information is obtained concerning sources, locations and rates of sedimentation, TMDL numeric targets and implementation projects may be amended or modified through an amendment to the Basin Plan, as appropriate.

Trackable Implementation Actions to Address Sources of Erosion and Sedimentation

Source Category	Implementation Action	Implementing Party
Roads: Upland and Streamside Timber Harvest Plans	A Increase presence at Pre-Harvest Inspections to 100% of Class I and Class II watercourses (watercourses supporting use for domestic water supply, fish, and/or aquatic habitat for non-fish aquatic species).	Regional Water Quality Control Board (RWQCB)
	B Perform Post-Harvest Inspections 3 to 5 years after harvest on Timber Harvest Plans with Class I and Class II watercourse crossings.	RWQCB
	C Convene a Working Group of federal, state, and local agencies, and timberland owners and foresters to develop specific timber harvesting management practices for the San Lorenzo River Watershed.	National Marine Fisheries Service (NMFS), California Department of Forestry and Fire Protection (CDF), Santa Cruz County (County) Planning, RWQCB, Timber Owners and Foresters
	D Enforce erosion control ordinance following 3-year Timber Harvest Plan maintenance period.	County Planning
	E Develop strategy for more effective enforcement of County code violations pertaining to erosion control and sedimentation prevention throughout the San Lorenzo Watershed.	County Planning
	F RWQCB will review evidence of Timber Harvest Plan Best Management Practices developed pursuant to Section 916.9 of 2001 Forest Practices Act during Pre-Harvest and Post-Harvest Inspections.	CDF, Timber Harvest Plan Submitter, RWQCB
Roads: Upland and Streamside Public/Private	E *See above*	
	G Create public road database to inventory and prioritize problems for correction.	County Public Works, Caltrans, Cities of Santa Cruz and Scotts Valley
	H Develop a Public Road Maintenance Best Management Practices (BMP) Program.	County Public Works and Planning
	I Improve public road spoils management and disposal: develop spoils disposal site(s) in or near the San Lorenzo Watershed.	County Public Works and Caltrans
	J Assess State Park roads and trails for erosion into San Lorenzo River and tributaries. Develop a program for funding and addressing any identified problems.	California Department of Parks and Recreation
	K Develop and implement private road improvement program.	Santa Cruz Resource Conservation District (RCD)-lead, Natural Resources Conservation Service, County Department of Environmental Health, RWQCB, California Department of Fish and Game, landowners
Developed Parcels: THP Lands	A-F *See above*	
Developed Parcels: Other Urban and Rural Land	E *See above*	
	L Evaluate need to revise erosion control provisions in County Grading Regulations and Erosion Control Ordinance to better protect sandy-soil areas.	County Planning
	M Evaluate need to revise erosion control provisions in City of Scotts Valley Grading Regulations and Erosion Control Ordinance to better protect sandy-soil areas.	City of Scotts Valley

Source Category	Implementation Action	Implementing Party
	N Evaluate need to revise erosion control provisions in City of Santa Cruz Grading Regulations and Erosion Control Ordinance to better protect sandy-soil areas.	City of Santa Cruz
	O Promote improved livestock management practices to reduce discharge of sediment.	RCD, Santa Cruz Horsemen, County Planning, County Environmental Health Services, Livestock Owners
	P Implement education programs and modify policies and procedures to improve riparian corridor protection, maintain channel integrity, implement alternatives to hard bank protection, and retain woody material.	County Planning, DFG, Cities
Mass Wasting	Q Develop strategy to reduce erosion from discrete sources, including Mount Hermon slide, Bean Creek Road slides, McEnery Road, Skypark, Rancho Rio and Monte Fiore.	County, City of Scotts Valley
	R Develop strategy to address accelerating the mitigation of quarry impacts at Hanson Aggregates site.	County Planning, California Division of Mines and Geology
Streambanks	A-H, J-N, P *See above*	
Source Category	**Implementation Action**	**Responsible Dischargers**
All Roads, Developed, and Developing Parcels	S Develop and implement Storm Water Management Plans (SWMPs) and Storm Water Pollution Prevention Plans (SWPPPs) consistent with NPDES Phase II Storm Water regulations.	County Planning and Public Works, City of Santa Cruz, City of Scotts Valley, construction site operators and owners.
	T Identify the San Lorenzo River Watershed as a priority for site inspection and enforcement of control measures in SWMPs and SWPPPs. Establish mechanism by which operators and owners of one-acre and greater construction projects are notified of the requirement to prepare SWPPPs.	County Planning and Public Works, City of Santa Cruz, City of Scotts Valley, construction site operators and owners.
	U Consider incorporation of sediment control programs/projects into SWMPs and SWPPPs.	County Planning and Public Works, City of Santa Cruz, City of Scotts Valley, construction site operators and owners.

Implementation Compliance Schedule

Action Implementation Year	IMPLEMENTATION MILESTONE	MONITORING ACTIVITY
	San Lorenzo River Mainstem and Tributaries	***San Lorenzo River Mainstem and Tributaries***
1	Regional Board (RB) staff and San Lorenzo River Technical Advisory Committee (SLR TAC) meet to: a) review progress on implementation actions; b) adopt Comprehensive Monitoring Program; and c) establish time schedules for Implementation Actions. RB and County staff meet to review inclusion of high priority status of San Lorenzo Watershed in Stormwater Management Plan.	Refine sampling strategy for comprehensive monitoring plan; Turbidity by water agencies.
2	RB staff and SLR TAC meet to review progress on implementation actions and monitoring.	Full suite of Numeric Target Parameters at compliance points; Turbidity by water agencies.
3	Implementing Parties submit report on progress of actions; RB staff and SLR TAC meet to review progress on implementation actions and monitoring; RB staff consider modifications to Trackable Implementation Actions; RB requests implementation tracking report from Implementing Parties if not provided;	Turbidity by water agencies.
4	RB staff and SLR TAC meet to review progress on implementation actions;	Turbidity by water agencies.
5	RB staff and SLR TAC meet to review progress on implementation actions;	Full suite of Numeric Target Parameters at compliance points; Turbidity by water agencies.
6	Implementing Parties submit report on progress of actions; RB staff and SLR TAC meet to review progress on implementation actions and monitoring; RB staff consider modifications to Trackable Implementation Actions; RB requests implementation tracking report from Implementing Parties if not provided;	Turbidity by water agencies.
7	RB staff and SLR TAC meet to review progress on implementation actions;	Turbidity by water agencies.
8	RB staff and SLR TAC meet to review progress on implementation actions;	Full suite on compliance points; Turbidity by water agencies.
9	Implementing Parties submit report on progress of actions; RB staff and SLR TAC meet to review progress on implementation actions and monitoring; RB staff consider modifications to Trackable Implementation Actions; RB requests implementation tracking report from Implementing Parties if not provided;	Turbidity by water agencies.
10	RB staff and SLR TAC meet to review progress on implementation actions;	Turbidity by water agencies.
11	RB staff and SLR TAC meet to review progress on implementation actions; RB staff calculate 10-year rolling average of streambed sediment data and turbidity;	Full suite of Numeric Target Parameters at compliance points; Turbidity by water agencies.

[4] Direct measurement of sediment loading is not proposed for this TMDL. Parameters characterizing the effect of loading are to be measured instead, and are identified as Numeric Targets. This 25-year schedule for achieving the TMDL acknowledges that implementation actions taken in the near term are expected to take years to produce a response as measured through Numeric Target monitoring.

At End of Implementation Year	IMPLEMENTATION MILESTONE	MONITORING ACTIVITY
12	Implementing Parties submit report on progress of actions; RB staff and SLR TAC meet to review progress on implementation actions and monitoring; RB staff consider modifications to Trackable Implementation Actions; RB requests implementation tracking report from Implementing Parties if not provided; RB staff calculate 10-year rolling average of streambed sediment data and turbidity;	Turbidity by water agencies.
13	RB staff and SLR TAC meet to review progress on implementation actions; RB staff calculate 10-year rolling average of streambed sediment data and turbidity;	Turbidity by water agencies.
14	RB staff and SLR TAC meet to review progress on implementation actions; RB staff calculate 10-year rolling average of streambed sediment data and turbidity;	Full suite of Numeric Target Parameters at compliance points; Turbidity by water agencies.
15	Implementing Parties submit report on progress of actions; RB staff and SLR TAC meet to review progress on implementation actions and monitoring; RB staff consider modifications to Trackable Implementation Actions; RB requests implementation tracking report from Implementing Parties if not provided; RB staff calculate 10-year rolling average of streambed sediment data and turbidity;	Turbidity by water agencies.
16-24	*Repeat as above with 1- and 3-year milestones*	
25	**Numeric Targets Achieved;** **Load reduction Achieved**	