

**STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION**

STAFF REPORT FOR REGULAR MEETING MARCH 20-21, 2008

Prepared on February 28, 2008

ITEM: 21

SUBJECT: Sediment Control Progress In Santa Cruz County

SUMMARY

Throughout the Santa Cruz Mountains, sediment discharges (from natural landscape and human activity) threaten rivers, streams and coastal areas. Sediment discharges are a priority concern due to the threat to the beneficial uses of water, including aquatic life. Effectively addressing sediment discharges in Santa Cruz County and protecting these rivers and streams directly relates to our Vision of Healthy Watersheds and measurable goals of healthy aquatic habitat and sustainable land management.

Consistent with our Vision of Healthy Watersheds, Water Board staff is focusing efforts to align programs and activities with the Vision measurable goals, address core problems leading to water quality impairment, and produce results yielding tangible water quality improvement.

At the July 6, 2007 Board Meeting, Water Board members requested additional information related to the identification and correction of water quality threats related to the Timber Harvest Program and also requested that Timber Harvest Program staff work with Total Maximum Daily Load (TMDL) staff to develop a comprehensive picture of the various land uses contributing to sediment issues in Santa Cruz County watersheds. In addition, Water Board members requested that staff provide a San Lorenzo River Sediment TMDL status report. These items are addressed in this staff report. In addition, Water Board staff evaluated current regulatory programs, stakeholder involvement, and monitoring efforts aimed at addressing sediment discharges in Santa Cruz County to determine what, if any, modifications to the current approach could improve the overall protection of beneficial uses from sediment impacts in Santa Cruz County. Water Board staff concluded that the collective approach, implemented by Water Board staff and local agencies, is an effective strategy for pursuing our Vision and the measurable goals of healthy aquatic habitat and sustainable land management.

BACKGROUND

The Central Coast Water Board Vision of Healthy Watersheds represents a focusing of our water quality approach, providing a framework for conducting business and achieving measurable results. As part of the Vision activities, Water Board staff is developing tools to assess watershed health. While we do not yet have specific tools to measure the overall health of Santa Cruz County watersheds as it relates to sediment discharges, Water Board staff, in coordination with local agencies, can prioritize and identify gaps in implementation of water quality protection and improvement activities, develop feedback mechanisms to

effectively identify and respond to water quality issues, and monitor and assess relative water and habitat quality.

This staff report describes how the general approach to sediment discharges in Santa Cruz County has evolved and what mechanisms are in place now to advance water quality improvement. Specifically, this staff report addresses the following questions:

1. *How does Water Board staff, in coordination with local partner agencies, prioritize and identify gaps in efforts to address sediment discharge in Santa Cruz County watersheds?*
2. *What feedback mechanisms currently exist to effectively identify and respond to water quality issues?*
3. *What efforts currently exist to assess the relative water quality and overall health of the Santa Cruz County watersheds, especially related to sediment discharges?*

Historically, the Water Board focused regulatory action on point sources of pollution such as waste water treatment plants and industrial facilities, and relied principally on non-regulatory activities for controlling nonpoint source pollution. In recent years, consistent with the Nonpoint Source Implementation and Enforcement Policy of 2004, the Water Board broadened its regulatory focus to include both point and nonpoint sources of pollution including roads, agriculture, and timber harvest lands. Currently, Water Board staff takes a comprehensive approach to prioritizing programs that address sediment discharges based on numerous factors, including, the presence of salmonid habitat, and severity of the discharge, as well as feasibility and efficiency of regulating relative to water quality protection achieved.

One of the most effective non-regulatory tools for controlling nonpoint source pollution continues to be grant programs. The Water Board allocated numerous grants to nonprofit organizations to reduce erosion and sedimentation from rural roads and livestock operations, and supported the Integrated Watershed Restoration Program (IWRP) for Santa Cruz County to conduct an integrated and coordinated watershed effort that implements the highest priority projects and measures their success. Additionally, the Water Board developed conditional waivers for timber harvesting and irrigated agriculture.

A variety of governmental programs and activities address sediment discharges throughout the County of Santa Cruz. Additionally, nongovernmental organizations focus programs on specific watersheds identified as having a higher contribution of sediment. While many of these programs and management tools address all areas of County, some focus on specific watersheds such as the San Lorenzo River Sediment TMDLs, Santa Cruz County's San Lorenzo River Watershed Management Plan, and the Pajaro River Sediment TMDL.

As part of the June 2007 Triennial Review for the San Lorenzo River Sediment TMDL, Water Board staff evaluated current regulatory programs, level of stakeholder involvement, and monitoring efforts. Water Board staff discussed key efforts below and summarized all actions identified in the TMDL Implementation Plan in Attachment A: *Summary of Trackable Implementation Actions and Progress*. Staff concluded that Implementing Parties as well as

Water Board staff's current approach to addressing sediment discharges was substantial and should continue. Based on the review, Water Board staff did not recommend that modifications to the TMDLs and Implementation Plan be made at that time.

DISCUSSION

How does Water Board staff, in coordination with local partner agencies, prioritize and identify gaps in efforts to address sediment discharge in Santa Cruz County watersheds?

Throughout the Santa Cruz Mountains, sediment discharges threaten rivers, streams and coastal areas. Sources of these sediment discharges include natural erosion, timber harvests, poorly maintained roads, agriculture, construction, stormwater runoff, and grazing. Numerous Water Board programs are in place to control sediment discharges from a variety of categories (Table 1). Many of these sources have been identified in a TMDL and are being addressed by grants as well.

Table 1. Categories of sediment discharges and associated Water Board Programs.

Sources of Sediment Discharges	Water Board Program
Urban Runoff Construction Activity (> 1 acre), sand mines, rock quarries	NPDES Stormwater Regulation (Discharge Permits)
In-stream Projects	Clean Water Act Section 401 Water Quality Certification
Timber Harvesting (including roads)	Timber Harvest Regulation (Waivers of Waste Discharge Requirements)
Private/Public Roads	Nonpoint Source Pollution Regulation (Conditional Prohibitions)
Hydromodification	401 Water Quality Certification NPDES Stormwater Regulation (Discharge Permits)
Irrigated Agriculture	Agricultural Regulation (Waivers of Waste Discharge Requirements)
Rural properties, Grazing, Roads, Timber, Agriculture	Nonpoint Source Pollution Regulation (Conditional Prohibitions)
ALL	Enforcement

Timber Harvest Program

There are approximately 125,000 acres of harvestable timberland within Santa Cruz County. Currently there are fifty-nine permits either approved or requesting approval through the Water Board's Timber Harvest Program. Of these permits, thirty-one are Individual Waivers and twenty-eight are General Waivers. These fifty-nine projects represent a total of 9,466 acres,

with seventy percent of the projects, by acreage, located in either the Pajaro, San Lorenzo River, or San Vicente Creek Watersheds.

Prior to July 2005, the Water Board regulated timber harvest activities via Individual Waivers of Waste Discharge Requirements (Individual Waivers). In July 2005, the Water Board adopted the General Conditional Waiver of Waste Discharge Requirements – Timber Harvest Activities in the Central Coast Region (General Waiver). The General Waiver provides the Water Board with an additional tool for the regulation of lower threat timber harvest activities.

Water Board staff evaluates all proposed timber harvest activities based on timber harvest infrastructure, cumulative impacts to the watershed, and density of watercourses to determine a specific timber harvest's potential threat to water quality. Based on these Eligibility Criteria, the plan is either enrolled under the General Waiver or proposed for an Individual Waiver of Waste Discharge Requirements (Individual Waiver). Both the General and Individual Waivers include a monitoring and reporting program which includes turbidity grab samples triggered by storm-events and forensic monitoring. Through the Individual Waiver process, the Water Board is able to place site-specific requirements on the land management activities associated with the timber harvest. These site-specific requirements prevent or mitigate for any potential sediment discharges related to the timber harvest activities.

Prior to enrollment of a Timber Harvest Plan under the Individual or General Waiver, the Timber Harvest Plan must be approved by the California Department of Forestry and Fire Protection (Cal Fire). Water Board staff participates in this stage of the process as a member of the Cal Fire review team. Water Board staff reviews proposed Timber Harvest Plans and attends Cal Fire Preharvest Inspections as frequently as possible.

Water Board staff coordinates review and comment between Timber Harvest and TMDL Programs as appropriate. When Water Board staff or other review team member identifies a field condition that poses a threat to water quality, the team works together to make recommendations for the most appropriate actions to ensure the conditions are corrected at that site.

The regulatory tools within the Timber Harvest Program do not address sediment discharges outside the timber harvest boundaries such as poor land management on adjoining properties or public and private roads outside the timber harvest boundary. Water Board staff coordinates with other regulatory programs and agencies to address these other sources. Staff is developing feedback mechanisms to effectively identify and respond to water quality issues. For example, Water Board staff may notify the County of Santa Cruz so local enforcement staff can use their authorities to stop the actions causing problems, coordinate with the Water Board's, Stormwater Unit, as well as use the incident tracking mechanism discussed below to insure the situation is evaluated and staff responds to resolve the problem appropriately.

Additionally, Water Board staff is in the process of evaluating timber harvest lands through Geographic Information System (GIS) software. This GIS review allows Water Board staff to consider sediment impacts from timber harvest on a watershed scale. This spatial analysis of harvest areas allows Water Board staff to evaluate turbidity data collected through the timber harvest program against other data collected within the same watershed and land uses

upstream of the harvest area. Timber harvest program staff will continue to coordinate with other program staff to evaluate all potential sources of sediment on a watershed scale.

As part of the General Waiver process, Water Board staff must review the General Waiver on a five year cycle. In 2010, Water Board staff will recommend you either renew the General Waiver or take a different regulatory approach. This review cycle will allow Water Board staff to identify gaps, prioritize activities, and recommend modifications to the program. In addition to this five year review cycle, Water Board staff is committed to evaluating the effectiveness of the first 24 months of the existing monitoring and reporting program (including turbidity storm-events samples and forensic monitoring). Staff has begun this evaluation and plans to present it to you in July.

Finally, as needed, Water Board staff can and has taken enforcement action at sites where management activities violate conditions of the General or Individual Waivers and their associated monitoring and reporting programs. Such enforcement ranges from Notices of Violation to recommendations for administrative penalties.

Stormwater Regulation

The Water Board regulates stormwater discharges from industrial activity, construction activity, and Municipal Separate Storm Sewer Systems (MS4s). Construction activity is a potential cause of erosion resulting in sedimentation. Staff addresses sites larger than one acre through the General Permit for stormwater discharges from construction activities. Industrial activity is similarly regulated under a General Permit. In Santa Cruz County sand mines and rock quarries are regulated under the General Permit for industrial activity.

Currently, Water Board staff is working with the County of Santa Cruz and communities throughout the County to enroll them in the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (General Permit). Once enrolled, these entities will implement Storm Water Management Plans (SWMPs) that increase oversight of construction activity and all other potential sources of sediment delivered to storm drains. Water Board staff has developed a General Permit enrollment strategy that commences with a cross-program approach to identifying and addressing priority water quality issues within the areas covered by SWMPs. Where Water Board staff identifies sedimentation as a priority issue, MS4s will be expected to include best management practices in their SWMPs that explicitly address sedimentation. Staff has preliminarily identified the effects of urbanization on runoff and stream flows that in turn cause erosion resulting in sedimentation of stream channels (hydromodification) in Santa Cruz County. SWMPs for these areas will need to include hydromodification control standards.

Grants Program

Traditionally, grant projects are developed and funded on an individual project basis for controlling specific nonpoint sources of pollution at a very site-specific, local scale. In 2002, the Santa Cruz County Resource Conservation District (RCD), in coordination with other local organizations, recognized that watershed restoration is more effective as a coordinated county-wide effort and developed the concept for the Integrated Watershed Restoration Program (IWRP) for Santa Cruz County. The goal of IWRP is to support local watershed partners in developing projects and to coordinate agencies that provide technical assistance,

permits, and funds. Such coordination ensures that the highest priority projects are identified, funded, and implemented. The Water Board has allocated numerous rural roads grants to the RCD to control sediment discharges (exceeding \$1.8 million).

A diverse partnership of agencies including non profits, local governments, private consultants, and rural road associations formed the Rural Roads Erosion Control Assistance Program to implement its construction, education and outreach, and monitoring work. The Rural Roads Erosion Control Assistance Program resulted in the implementation of 13 erosion control projects on rural non-county roads in the San Lorenzo River Valley; education and outreach efforts to rural landowners and road associations including the development of a Best Management Practice (BMP) Training Program for local contractors, 6 road workshops, 5 watershed tours, and 4 technical training sessions for watershed groups, and education and outreach materials such as 6 individual newsletters. The program also resulted in the creation of a Private Roads Maintenance Guide for Santa Cruz County.

In December 2006, the RCD initiated a grant to continue technical assistance, conduct new road assessments, and to design and construct an additional 9-12 rural road erosion control projects. The Cost Share Implementation of Erosion and Sediment Control BMPs for Non County Roads grant is on-going and the RCD has scheduled projects to be implemented in Summer 2008.

Grantees use project effectiveness monitoring to assess whether specific erosion control projects or management practices have had the desired effect. All federal and state funding for watershed improvement projects, including 319(h), State Revolving Fund projects, and Propositions 13, 40, and 50 require that the benefits and effectiveness of each project be assessed by the project proponent.

The success of individual projects was documented using project effectiveness monitoring. The RCD used photo monitoring techniques to collect before, during, and after construction conditions for all erosion control projects. In order to expand its ability to quantitatively measure sediment load reductions, the RCD worked with Coastal Watershed Council (CWC) and Balance Hydrologics Inc. to develop a monitoring protocol to estimate total sediment load reductions for each project and the program as a whole. This monitoring protocol is now being field tested and refined for the erosion control projects implemented in 2006. The RCD estimated that these projects resulted in the implementation of measures that helped reduce erosion on 8,099 liner feet of road and reduced sediment loads by 2780 tons of sediment entering creeks over the next 10 years.

The Water Board funded a grant to the RCD titled IWRP *Phase 2* for \$4,048,135 to 1) construct 14 selected watershed and wetland restoration projects to improve water quality and habitat; 2) implement the Permit Coordination Program, including the construction of 6-10 additional restoration projects; and 3) monitor to determine whether project goals and objectives have been achieved. The project also included continuing the successful IWRP model infrastructure. IWRP is seeking to integrate the watershed programs of various state, federal, and local governments with each other and with the work being done by nonprofits and individuals. IWRP also includes specific performance measures to demonstrate tangible results.

With funding from the Department of Fish and Game, the County of Santa Cruz is currently preparing road erosion assessments for all county roads in the San Lorenzo River and Soquel Creek watersheds. To give a sense of the scale of needed road repairs, these assessments have identified over 49 million dollars worth of implementation projects.

Nonpoint Source Program

Historically, Water Board staff has relied on voluntary or self-determined efforts to control sediment loading in Santa Cruz County. Water Board staff has a long and successful history of directing nonpoint source controls in Santa Cruz County via funding nonprofits to address private roads and encouraging protective policies. These sources are also being addressed by the County of Santa Cruz through improved grading ordinances, and increased inspections and enforcement staff, and by other agencies such as California State Parks through improved assessment and prioritization of problem road segments and trails. In recent years, these efforts have become even more integrated as part of IWRP.

In May 2004, the State adopted the Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program (Nonpoint Source Policy). This policy requires the Water Board to regulate nonpoint sources of pollution with administrative tools (waste discharge requirements [WDRs], waivers of WDRs, and basin plan prohibitions) to comply with control measures, reporting, and monitoring requirements. While the Sediment TMDLs for the San Lorenzo River Watershed were developed prior to the Nonpoint Source Policy, the TMDLs required implementation and reporting by parties that discharge sediment which is consistent with the requirements in the Nonpoint Source Policy. As part of the June 2007 Triennial Review for the San Lorenzo River Sediment TMDL, Water Board staff evaluated current regulatory programs, level of stakeholder involvement, and monitoring efforts. Water Board staff summarized all actions identified in the TMDL Implementation Plan in Attachment A: *Summary of Trackable Implementation Actions and Progress*.

In the Pajaro River Watershed, nonpoint sources - rural properties, timber harvesting, roads, grazing, and hydromodification activities - are a source of sediment. In 2005, the Water Board adopted the Pajaro River Sediment TMDL; the Implementation Plan included a Basin Plan Land Disturbance Prohibition to control these sources. The TMDL and Implementation Plan became effective in November 2006 when they were approved as a Basin Plan amendment by the Office of Administrative Law (OAL). The first Triennial Review of the Pajaro River Sediment TMDL is scheduled in 2009. Water Board staff will be identifying and notifying owners and operators of lands where these activities occur later this year to establish requirements for sediment controls.

Clean Water Act Section 401 Water Quality Certification

The Water Board issues Water Quality Certifications for projects authorized per Clean Water Act Section 404 by the U.S. Army Corps of Engineers (Corps). Section 404 authorization is required for discharges if fill material to waters of the United States. The Section 401 Certification is the State's opportunity to evaluate the broader water quality impacts associated with the fill action and to condition approval on protecting beneficial uses.

Throughout Santa Cruz County the Water Board issues Section 401 Certifications for a range of projects, the majority of which fall into three categories: culvert installation and replacement,

bridge reconstruction, and stormwater outfalls. The County typically has the greatest number of projects of any single applicant. Their projects principally address road-related/stream crossings, but also include fish barrier removals. Though many projects are aimed at reducing hydromodification from existing infrastructure (e.g., undersized culverts), most projects involving the placement of fill in streams hold the potential to result in hydromodification and downstream erosion and sedimentation. For this reason, Water Board staff routinely conditions approval of projects on the full mitigation of hydromodification and related riparian impacts.

Ephemeral watercourses, or other waters deemed non-jurisdictional by the Corps, are not subject to Section 404 and are thus not subject to the Water Board's Section 401 Certification. Staff has a General WDR for projects that result in fill of non-jurisdictional waters that includes conditions similar to those used in Certifications. However, in Santa Cruz County Water Board staff receives few applications for work in non-jurisdictional waters, so we infrequently invoke the General WDR.

Agriculture Program

In the Pajaro River, irrigated agriculture is a source of sediment. Water Board staff regulates irrigated agriculture through the Conditional Waivers of Waste Discharge Requirements for Discharges from Irrigated Lands in the Central Coast Region. This program includes implementation, monitoring, and reporting to control sediment discharges from irrigated agriculture included in the Pajaro River Sediment TMDL.

What feedback mechanisms currently exist to effectively identify and respond to water quality issues?

Incident Tracking

Water Board staff is developing a system of tracking, prioritizing and responding to priority complaints and observations based on improved internal coordination and knowledge-sharing regarding the watershed and stream conditions (e.g. habitat sensitivity, water quality data), and history of problems from types or areas of landowners or facilities, etc. This will allow staff to respond more efficiently and effectively to incidents that are most problematic, in highest priority areas, as well as track numbers and nature of incidents that we do not or cannot respond to, enabling us to adapt our response strategy. This strategy will provide a more efficient and effective means to resolving incidents as they arise. This will also allow us to review and evaluate the types and locations of complaints and problems observed. If we observe patterns of incident types or locations we may decide to develop a broader, geographically-based and/or more efficient response than incident by incident.

Current implementation and monitoring efforts of Water Board staff and local partner agencies have evolved to be more focused, more comprehensive, more coordinated, and more effective. Staff based this on the following evidence: we receive relatively few complaints; we receive positive stakeholder feedback; and the programs are focusing on the largest sources in the highest priority areas. While numerous programs are in place that proactively control sediment loading, elimination of all source of sediment is unrealistic, and some discharges, including those from poorly managed roads still occur. In the past, Water Board staff has contacted the County of Santa Cruz and/or other staff regarding these incidents.

While Water Board staff has improved incident tracking and response, partnering agencies improved their response to violations, or incidents, that contribute to sediment loading.

The San Lorenzo Sediment TMDL identified the need to improve local code enforcement related to sediment discharges. The County of Santa Cruz improved their grading ordinance and increased staff resources to inspect and condition development consistent with the ordinance. This change allowed the Planning Department to better abate violations involving grading, erosion control, and riparian corridor development, which all contribute to increased sedimentation. As part of reporting for the Triennial Review, the County of Santa Cruz provided the numbers of complaints received and red tags issued for erosion-related violations in the San Lorenzo River watershed. In addition, the County of Santa Cruz implemented numerous actions identified in the TMDLs (Attachment A. *Summary of Trackable Implementation Actions and Progress*).

What efforts currently exist to assess the relative water quality and overall health of the Santa Cruz County watersheds, especially related to sediment discharges?

SAN LORENZO RIVER SEDIMENT TMDL TRIENNIAL REVIEW

TMDL Implementation Tracking

In 2003, the Water Board adopted the San Lorenzo River (including Carbonera Creek, Lompico Creek, and Shingle Mill Creek) Sediment Total Maximum Daily Load (TMDL) Basin Plan Amendment.

During TMDL development, Water Board staff developed Trackable Implementation Actions (Actions) that described actions that control the sediment problem in the San Lorenzo River watershed. Implementation tracking determined whether or not the identified Actions were undertaken. Implementing the actions and tracking their progress was the primary focus of the TMDL and the mechanism to protect water quality and the associated beneficial uses.

In 2005, Water Board staff, along with implementing parties developed a Triennial Reporting Form along with milestones and timeframes for each of the Actions. In January 2007, Water Board staff conducted the first Triennial Review of the San Lorenzo River Sediment TMDL. Staff requested implementing parties submit the form for activities that occurred between December 1, 2003 and November 30, 2006.

As part of the 2007 Triennial Review, Implementing Parties submitted information for all of the 21 total TMDL Actions. Water Board staff evaluated the status of the Actions (e.g. erosion assessments, implementation of rural road management practices, and environmental code enforcement) per the previously established milestones and timeframes. Water Board staff coordinated with other program staff and compiled a summary of the individual reporting forms, detailing the overall progress and status of each Action (Attachment A. *Summary of Trackable Implementation Actions and Progress*). Water Board staff concluded that in general, Implementing Parties made significant progress towards implementing the Actions (e.g. that control sediment discharges from roads, stormwater, and timber harvesting) and continued their commitment to sediment control implementation.

Comprehensive Monitoring

Following adoption of the San Lorenzo River Sediment TMDL, staff worked with the San Lorenzo River Technical Advisory Committee and developed a Comprehensive Monitoring Plan (CMP). Partnering agencies and organizations are conducting numerous water and habitat monitoring efforts in the Santa Cruz Mountains. Efforts include evaluating physical stream habitat, documenting coho salmon and steelhead populations, project effectiveness monitoring, and collecting monthly and continuous turbidity, flow, and suspended sediment. As part of the Pajaro River Sediment TMDL, efforts will include suspended sediment monitoring per the numeric targets as well. The San Lorenzo River Sediment TMDL identified the need to evaluate numeric target data in the context of other monitoring efforts, as part of the CMP. These efforts are discussed below.

Numeric Target Monitoring

Water Board staff allocated 2006-2007 TMDL funds (totaling \$54,000) towards numeric target monitoring. Concurrently, the Water Board contracted with Research Biologists at the Sierra Nevada Aquatic Research Laboratory, University of California, Santa Barbara (UCSB) to develop sediment and benthic invertebrate metrics on a regional scale. During the 2007 Triennial Review, Water Board staff collaborated with UCSB and agreed to build the sediment TMDL in the San Lorenzo River into the broader scope of sediment TMDLs for the Sierra and Coast Ranges.

In May 2007, UCSB researchers monitored sites for sediment and benthic invertebrates in both impaired and non-impaired reaches of the San Lorenzo along with 25 regional sites throughout the Sierra and Coast ranges.

UCSB researchers are currently assembling benthic invertebrate data from their sampling efforts in 2007. In addition, they surveyed physical habitat transects and used GIS to derive road densities within a 100 meter buffer of streams, and the impervious cover as well as D-50 particle size, percent fines and sand, and relative bed stability.

Preliminary data in Table 2 show that median particle size diameter (D50) were less than the numeric target of ≥ 69 mm, indicating impairment at all sites, with the most impaired reaches in the San Lorenzo upstream of Boulder Creek and below Henry Cowell State Park. Researchers also collected percent fines and sands, at all sites. Although the method is not directly comparable to the numeric target ($<21\%$), trends were similar, with a higher percent of fines in the San Lorenzo upstream of Boulder Creek (42%) and below Henry Cowell State Park (51%) than in tributaries to the San Lorenzo River.

Also shown in Table 2 is the percent of each watershed that is impervious. Note that the watershed area in the San Lorenzo River below Henry Cowell State Park, and in the Zayanate Creek and Kings Creek watersheds upstream of the San Lorenzo River were more pervious than researchers found in the Bear Creek and San Lorenzo River upstream of Boulder Creek. Water Board staff are planning to use watershed imperviousness percent along with other GIS layers of land use and natural erosion features to inform conditions and are learning how to link landscape information to in-stream water quality data.

Table 2. Physical substrate data and impervious cover data, Spring 2007.

Reach	Sand-Fines (%)	D50 median size (mm)	Watershed Impervious (%)
Kings Creek above San Lorenzo	27%	50.00	0.90%
San Lorenzo upstream of Boulder Creek (scout camp)	42%	8.00	0.28%
San Lorenzo below Henry Cowell State Park	51%	1.25	1.07%
Bear Creek above San Lorenzo	25%	40.00	0.25%
Zayanate Creek above San Lorenzo	24%	42.50	1.95%

In May 2008, UCSB researchers will survey the listed segments of the San Lorenzo River watershed, along with non-impaired segments, and integrate physical habitat and biological data to meet most of the current numeric target monitoring requirements and potentially additional, more meaningful benthic invertebrate numeric targets based on the outcomes of the Spring 2007 data. UCSB Researchers have chosen 32 locations, covering nearly all tributaries and most of the main stem river, and co-located with existing sites. In addition, some external watersheds will be included for further documenting reference conditions.

Together, these efforts will provide Water Board staff with a comprehensive picture of aquatic health in this area. While it is difficult to discern trends in the short-term, over time these data will provide a better understanding of the effects of sedimentation and associated turbidity, on aquatic habitat, and provide important feedback on efficacy of the TMDL Implementation Actions. Water Board staff will evaluate the numeric targets, as well as other relevant water and habitat quality monitoring data in detail during the next triennial review of the San Lorenzo River Sediment TMDL scheduled in 2010.

TMDL EVALUATION

Evaluation of progress towards achieving the San Lorenzo River Sediment TMDL consisted of a multi-pronged approach. As part of the 2007 Triennial Review, Water Board staff focused their evaluation on whether partnering agencies were implementing actions identified in the Implementation Plan. Water Board staff concluded that Implementing Parties made significant progress towards implementing the actions and continued their commitment to sediment control implementation.

As part of the 2007 Triennial Review, Water Board staff reviewed monitoring efforts and strategized an approach to monitoring key numeric targets to document long-term measurable outcomes. The collaborative partnership between UCSB and the Water Board will allow researchers and staff to apply the knowledge gained from the regional-scaled sediment TMDLs to the watershed-scale sediment TMDLs in the San Lorenzo River.

Triennial Reviews will serve as a tool to communicate progress towards tangible results demonstrating whether or not the Water Board and Implementing Parties are achieving the measurable goals of healthy aquatic habitat and sustainable land management. During the next Triennial Review of the San Lorenzo River Sediment TMDL scheduled in two years,

Water Board staff will evaluate the results of the numeric target monitoring in the context of the other physical habitat and biological monitoring efforts, including benthic invertebrates, sediment, turbidity, fisheries, and project effectiveness monitoring, and consider changes to the monitoring approach if efforts are not adequate to demonstrate measurable progress.

During each Triennial Review, Water Board staff reviews the monitoring information in conjunction with information gained from tracking implementation actions, and considers any changes needed to the Implementation Plan. If modifications are needed, staff will propose an amendment of the TMDL Implementation and Monitoring Plans in the Basin Plan to the Water Board for approval. In addition to determining whether or not sufficient progress has been made towards implementing actions per the established time schedules, and determining compliance with numeric targets, the evaluation process could also include the following outcomes: identification of the location of persistent problems, the relative degree of severity of problems, the appropriateness of the numeric targets, effectiveness of specific erosion-control projects, and ways to overcome obstacles to implementation.

Concurrently, Water Board staff is developing assessment tools to evaluate progress towards attainment of our Vision of Healthy Watersheds. These tools will allow direct measurement of healthy aquatic habitat and sustainable land management.

CONCLUSION

Water Board members, staff and stakeholders have prioritized sediment discharges in Santa Cruz County as a priority concern for the Water Board due to the threat to the beneficial uses of water including aquatic life. Water Board staff prioritizes and identifies gaps in implementation of water quality protection and improvement activities, develops feedback mechanisms to effectively identify and respond to water quality issues, and assesses relative water and habitat quality. Water Board staff is focusing efforts to align programs and activities with the Vision of Healthy Watersheds, address core problems leading to water quality impairment, and produce results yielding tangible water quality improvement. Current implementation and monitoring efforts of Water Board staff and local partner agencies have evolved to be more focused, more comprehensive, more coordinated, and more effective. In addition, mechanisms are being refined to identify issues, including incident tracking, monitoring, and future Vision assessment tools for measuring watershed health.

RECOMMENDATION

This is an informational item, no action required.

ATTACHMENTS:

A. Trackable Implementation Actions Table