

**STATE WATER RESOURCES CONTROL BOARD  
BOARD MEETING SESSION – CENTRAL COAST REGIONAL WATER BOARD  
FEBRUARY 4, 2014**

**ITEM 6**

**SUBJECT**

CONSIDERATION OF A PROPOSED RESOLUTION APPROVING AN AMENDMENT TO THE WATER QUALITY CONTROL PLAN FOR THE CENTRAL COASTAL BASIN TO ADOPT TOTAL MAXIMUM DAILY LOADS FOR NITROGEN COMPOUNDS AND ORTHOPHOSPHATE IN THE LOWER SANTA MARIA RIVER WATERSHED AND TRIBUTARIES TO OSO FLACO LAKE

**DISCUSSION**

On May 30, 2013, the Central Coast Regional Water Quality Control Board (Central Coast Water Board) adopted [Resolution No. R3-2013-0013](#) amending the Water Quality Control Plan for the Central Coastal Basin (Basin Plan) to establish total maximum daily loads (TMDLs) for nitrogen compounds and orthophosphate in the lower Santa Maria River watershed and tributaries to Oso Flaco Lake.

The geographic scope of this TMDL encompasses approximately 237 square miles of the lower Santa Maria River watershed and includes tributaries within the 16 square mile Oso Flaco Lake subwatershed. The TMDL project area corresponds with the Guadalupe Hydrologic Area (312.10) as contained in the Basin Plan, located along the coastal boundary of northern Santa Barbara County and southern San Luis Obispo County.

The Central Coast Water Board is required by federal law to develop TMDLs for waterbodies identified on the Clean Water Act section 303(d) list. Multiple waterbodies within the TMDL project area are listed on the Clean Water Act section 303(d) list for water quality impairments due to nitrate, unionized ammonia, and low dissolved oxygen. A wide range of designated current, potential, or future beneficial uses, including drinking water supply, aquatic habitat, and irrigation supply are not being supported in surface waterbodies of the TMDL project area.

The Central Coast Water Board's goals for establishing these TMDLs are to 1) establish the nitrate, un-ionized ammonia, and orthophosphate loading capacities in streams of the TMDL project area in accordance with Clean Water Act requirements; and 2) recommend a strategy to reduce loading of these pollutants in streams to acceptable levels, thereby ultimately rectifying the identified water quality impairments.

It is noteworthy that the U.S. Environmental Protection Agency (U.S. EPA) recently reported that nitrogen and phosphorus pollution, and the associated degradation of drinking and environmental water quality has the potential to become one of the costliest and most challenging environmental problems the nation faces<sup>1</sup>. More than half of the nation's streams, including most streams in the TMDL project area, have medium to high levels of nitrogen and

---

<sup>1</sup> U.S. Environmental Protection Agency: Memorandum from Acting Assistant Administrator Nancy K. Stoner. March 16, 2011. Subject: "Working in Partnership with States to Address Phosphorus and Nitrogen Pollution through Use of a Framework for State Nutrient Reductions".

phosphorus. According to U.S. EPA, nitrate drinking water standard violations have doubled nationwide in eight years. Algal blooms, resulting from the biostimulatory effects of nutrients (specifically, nitrogen and phosphorus), are steadily on the rise nationwide; related toxins have potentially serious health and ecological effects.

## Pollutant Sources

Staff conducted source analyses to identify the contributing sources of nitrogen compounds and phosphate to the project area waterbodies. Discharges of unionized ammonia, nitrate, and orthophosphate originating from irrigated agriculture, urban lands, grazing lands, and natural sources are contributing loads to receiving waters. These source categories are assigned allocations for unionized ammonia, nitrate, and orthophosphate to achieve the TMDL. Staff estimates that irrigated agriculture provides the overwhelming majority of controllable water column loads in the TMDL project area and this source category is not currently meeting its proposed load allocation.

## Numeric Water Quality Targets and Allocations

Numeric targets are water quality targets developed and used to ascertain when and where water quality objectives are achieved, and hence, when beneficial uses are protected.

- *Target for Nitrate (MUN standard)*

For impaired stream reaches that are required to support drinking water (MUN) and groundwater recharge (GWR) beneficial uses, staff is proposing a nitrate numeric target of 10 mg/L (nitrate as N) for this TMDL, which therefore is equal to the Basin Plan's numeric nitrate water quality objective protective of drinking water beneficial uses.

- *Target for Unionized Ammonia (toxicity objective)*

For unionized ammonia (a nitrogen compound), staff is proposing a numeric target of 0.025 mg/L (as N) for this TMDL, which therefore is equal to the Basin Plan's unionized ammonia numeric water quality objective protective against toxicity in surface waters.

- *Targets for Biostimulatory Substances (nitrate and orthophosphate)*

The Basin Plan contains the following narrative water quality objectives for biostimulatory substances:

*"Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses."*

Due to natural variability which influences biostimulatory problems, uniform national or state-wide numeric water quality criteria for nitrogen and phosphorus are not appropriate. Therefore, in order to implement the Basin Plan's narrative objective for biostimulatory substances the Central Coast Water Board is required to develop technically defensible numeric water quality criteria to assess attainment or non-attainment of the narrative water quality objective. To implement this narrative objective, staff evaluated available data, studies, established methodologies, technical guidance, peer-reviewed numeric criteria, and other information to estimate the levels of nitrogen and phosphorus that can be present without causing violations of the Basin Plan biostimulatory substances objective.

For biostimulatory substances (nitrate and orthophosphate), staff is proposing numeric targets that were developed using U.S. EPA-recommended methodologies, and supplemented by the California Nutrient Numeric Endpoint (CA NNE) approach<sup>2</sup>. It is worth noting that according to the USEPA, using a combination of recognized nutrient target development approaches will result in numeric criteria of greater scientific validity<sup>3</sup>.

On the basis of technical guidance and established methodologies, staff is proposing seasonal biostimulatory water quality targets for waters within the lower Santa Maria River watershed. The seasonal water quality targets for nitrate as nitrogen is 4.3 mg/L in the dry season and 8.0 mg/L in the wet season. The seasonal water quality targets for orthophosphate as phosphorus is 0.19 mg/L in the dry season and 0.3 mg/L in the wet season.

For Oso Flaco Lake tributaries staff is proposing year-round water quality targets of 5.7 mg/L for nitrate as nitrogen and 0.08 mg/L orthophosphate as phosphorus. The Central Coast Water Board will develop a nutrient TMDL for Oso Flaco Lake separately, at which time the proposed water quality numeric targets for Oso Flaco Lake tributaries may be revised.

Consistent with Clean Water Act requirements, implementing parties are assigned waste load allocations or load allocations equal to the identified numeric water quality targets. Waste load allocations are assigned to NPDES regulated municipal separate storm sewer system (MS4) entities in the TMDL project area. Load allocations are assigned to irrigated agricultural operation and to livestock and grazing operations in the TMDL project area.

## **Implementation Strategy**

### Irrigated Agriculture

Staff estimates that nutrient loads from irrigated lands constitute the largest source category of nutrient loading to waterbodies in the TMDL project area. Therefore, management measures will need to be implemented to achieve the proposed load allocations for irrigated lands. TMDL implementation and load allocations for owners and operators of irrigated lands will be implemented and achieved by complying with the conditions and requirements of the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Agricultural Order) and any renewals or revisions thereof. Owners and operators are required to comply with the requirements of the Agricultural Order and subsequent revisions of the Agricultural Order. Central Coast Water Board staff will prioritize implementation efforts in the TMDL Project Area aimed at addressing discharges of nutrients as described in the TMDL Final Project Report. The goals of implementing these load allocations can be summarized as follows:

- 1) Control discharges of nitrate to impaired waterbodies and groundwater<sup>4</sup>.
- 2) Implement management practices capable of achieving load allocations identified in this TMDL and demonstrate progress towards this goal during the TMDL implementation phase.

---

<sup>2</sup> The California nutrient numeric endpoints (NNE) approach was developed as a methodology for the development of nutrient numeric targets for use in the water quality programs of the California's Water Boards. The NNE approach is a risk-based approach in which algae and nutrient targets can be evaluated based on multiple lines of evidence; the intention of the NNE approach is to use nutrient response indicators to develop potential nutrient water quality criteria.

<sup>3</sup> See U.S. Environmental Protection Agency (2000). *Nutrient Criteria Technical Guidance Manual – Rivers and Streams*. EPA-822-B-00-002.

<sup>4</sup> Shallow, recently recharged groundwater is identified in this TMDL as a substantial source contributor of nitrate loads locally to stream waters of the TMDL project area.

### **Stormwater**

Waste load allocations (WLAs) will be incorporated into NPDES municipal separate storm sewer systems (MS4s) stormwater permits. The MS4s are considered relatively minor sources of nitrogen compounds and orthophosphate loads in the TMDL Project area, based on staff's source analysis and on available storm drain monitoring data. However, because these sources can potentially have significant localized effects on water quality, the MS4s are allocated waste load allocations. The Central Coast Water Board will address nitrogen compounds and orthophosphate discharged from the County of Santa Barbara, County of San Luis Obispo, City of Santa Maria, and City of Guadalupe, by regulating the MS4 entities under the provisions of an individual municipal stormwater permit or by the State Water Resource Control Board's General Permit for the Discharges of Storm Water from Small Municipal Separate Storm Sewer Systems (General Permit).

### **Grazing Lands-Domestic Animal Manure**

Based on available information, owners and operators of grazing operations and domestic animals on grazing lands are in compliance with their load allocation. As such, new regulatory mechanisms, reporting requirements, and formal regulatory oversight are deemed unnecessary for this source category, and are not being proposed. To maintain and protect existing water quality, owners and operators of grazing operations should begin or continue to self-monitor, self-assess, and make management decisions consistent with technical guidance from existing rangeland water quality management plans, for example, the *California Rangeland Water Quality Management Plan*, the *Central Coast Cattlemen's Grazing Lands Nonpoint Source Approach*, or in conjunction with other resources appropriate to private grazing lands. It is important to note that this source is currently subject to an approved Domestic Animal Waste Discharge Prohibition and livestock owners are subject to load allocations as contained in an approved indicator bacteria TMDL<sup>5</sup>. Implementation efforts by responsible parties to comply with this prohibition and with indicator bacteria load allocations will, as a practical matter, also reduce the risk of nitrogen and phosphorus loading to surface waters from domestic animal waste.

### **Monitoring and Milestones for Tracking Progress and Achieving the TMDLs**

The Agricultural Order, and any renewals or revisions thereof, shall include monitoring and reporting requirements that assess progress toward achieving load allocations. It should be noted that the Cooperative Monitoring Program (CMP) - the entity that collects data on behalf of growers - currently is collecting samples on a monthly basis at TMDL project area monitoring sites and proposed TMDL compliance sites. This is more than sufficient to satisfy the sampling frequencies recommended in the TMDL. At this time, staff anticipates that the current CMP monitoring efforts are adequate to assess receiving water quality and TMDL progress on behalf of irrigated agriculture.

Applicable NPDES permits that have waste load allocations (WLAs) associated with this TMDL shall contain effluent limits, conditions, and monitoring/reporting elements consistent with the requirement and assumptions of the WLAs in the TMDL.

There are several current monitoring efforts in the TMDL project area, including the Cooperative Monitoring Program, the City of Santa Maria, the Water Board's Central Coast Ambient Monitoring Program, as well as Oso Flaco Lake and tributary monitoring conducted by California Department of Parks and Recreation. These monitoring efforts may be used synergistically to

---

<sup>5</sup> Central Coast Water Board Resolution No. R3-2012-0002 (March 15, 2012).

help demonstrate compliance and progress towards attaining TMDL allocations. It is also important to reiterate that the Cooperative Monitoring Program is currently collecting monthly nitrate data from many of the impaired waterbodies, and this is sufficient to meet the proposed receiving water quality monitoring frequency requirement. Therefore, additional monitoring frequencies or requirements are unwarranted.

With regard to implementation progress milestones, staff recognizes that immediate compliance with water quality standards is not feasible. Therefore, staff is proposing temporal milestones as follows.

- First Interim Waste Load and Load Allocations: Within 12 years of the effective date of the TMDL (which is upon approval by the Office of Administrative Law); achieve the MUN nitrate standard (10 mg/L nitrate-N in receiving waters that are designated MUN) and the unionized ammonia water quality objective-based allocations;
- Second Interim Waste Load and Load Allocations: Within 20 years of the effective date of the TMDL; achieve the less stringent wet-season (Nov. 1 to Apr. 30) biostimulatory target-based allocations;
- Final Interim Waste Load and Load Allocations: Within 30 years of the effective date of the TMDL; achieve the more stringent dry-season (May 1 to Oct. 31) biostimulatory target-based allocations;

The 12 year timeframe to achieve the MUN nitrate standard and the Basin Plan objective for unionized ammonia is based primarily on the expectation that nearly all landowners and operators of irrigated agricultural activities will have completed Farm Water Quality Plans and be implementing management practices by the end of the first waiver cycle (5 years). Water quality benefits resulting from implementing nutrient-control management measures (e.g., grass swales and riparian buffers, etc.) may take a few years to be realized. Central Coast Water Board staff believe 12 years for the first interim waste load and load allocations is a reasonable timeframe to implement management measures and reduce nitrate levels consistent with the allocations and the numeric target. The 12 year benchmark is also consistent with the Central Coast Water Board's vision for the central coast region of healthy, functioning watersheds by the year 2025.

The 20 year timeframe to achieve the second interim waste load and load allocations (which are based on the less stringent wet-season biostimulatory targets) was identified as a reasonable time frame and intermediate benchmark prior to achieving the final, more-stringent final allocations. The basis for this timeline is that source controls (nutrient and irrigation efficiency improvements) and surface water treatment (e.g., constructed wetlands, buffer strips) are anticipated to result in improvements to surface water quality more rapidly than mitigation measures to reduce nitrate pollution in shallow groundwater. Shallow groundwater is a contributing source of nutrients to surface waters; shallow groundwater moves slowly; and shallow groundwater will require longer time frames to respond to the full effects of source control measures.

The 30-year timeline to meet more-stringent dry-season biostimulatory substances allocations is based on the estimate that legacy nutrient loads, which are unrelated to current practices and are originating from groundwater and baseflow, may locally continue to contribute elevated nutrients to project area surface waters for several decades. Therefore, Central Coast Water Board staff anticipates that it will take a significant amount of time for the attenuation of both legacy pollutant loads in shallow groundwater as well as the subsequent baseflow pollutant

loads to stream reaches. Further, special studies have indicated that shallow and perched groundwater zones are present in the lower Santa Maria River and Oso Flaco Lake watersheds west of Highway 1. Soils within the lower portions of these watersheds typically have low to moderate permeability, suggesting that a substantial amount of time is required to realize attenuation of nutrient pollution.

### **POLICY ISSUE**

Should the State Water Board approve the amendment to the Basin Plan to establish total maximum daily loads (TMDLs) for nitrogen compounds and orthophosphate in the Lower Santa Maria River Watershed and Tributaries to Oso Flaco Lake?

### **FISCAL IMPACT**

Central Coast Water Board and State Water Board staff work associated with or resulting from this action will be addressed with existing and future budgeted resources.

### **REGIONAL BOARD IMPACT**

Yes, approval of this resolution will amend the Water Quality Control Plan for the Central Coastal Basin (Basin Plan).

### **STAFF RECOMMENDATION**

That the State Water Board:

1. Approve the amendment to the Basin Plan adopted under Central Coast Water Board Resolution No. R3-2013-0013.
2. Authorize the Executive Director or designee to submit the amendment adopted under Central Coast Water Board Resolution No. R3-2013-0013 as approved and the administrative record for this action to the Office of Administrative Law and the TMDL to the U.S. Environmental Protection Agency for approval.

State Water Board action on this item will assist the Water Boards in reaching Goal 1 of the Strategic Plan Update: 2008-2012 to implement strategies to fully support the beneficial uses for all 2006-listed water bodies by 2030. In particular, approval of this item will assist in fulfilling Objective 1.1 to prepare, adopt, and implement TMDLs, designed to meet water quality standards, for all impaired water bodies on the 2006 list by 2019.