

Established Nutrient-Related Water Quality Standards for the Newport Bay Watershed

Water Quality Standards – Newport Bay and its tributary streams are defined in the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) as waters of the State. The Basin Plan establishes water quality standards for all the ground and surface waters of the Santa Ana River Basin. Water quality standards consist of beneficial uses, water quality objectives, and an anti-degradation statement.

Beneficial Uses

Beneficial uses are the various ways that water can be used for the benefit of people and/or wildlife. The Basin Plan identifies five beneficial uses for freshwater tributaries to Newport Bay and eleven beneficial uses for Newport Bay.

Table 1 lists the beneficial uses established for streams in the San Diego Creek Watershed. These beneficial uses apply to the streams listed in the Basin Plan (Reach 1 and 2 of San Diego Creek, Bonita Creek, Serrano Creek, Peters Canyon Wash, Hicks Canyon Wash, Bee Canyon Wash, Borrego Canyon Wash, Agua Chionon Wash, Laguna Canyon Wash, Rattlesnake Canyon Wash, and Sand Canyon Wash) as well as other tributaries to these streams (SARWQCB 2008).

Table 1: Beneficial Uses of Inland Surface Streams

Beneficial Use	Description
REC1	Water contact recreation (e.g. swimming, wading, fishing)
REC2	Non-contact water recreation (e.g. sunbathing, birding, sightseeing)
GWR	Groundwater recharge
WARM	Warm freshwater habitat (including fish, wildlife, and invertebrates)
WILD	Wildlife habitat

Reach 1 of San Diego Creek (below Jeffrey Rd.) is excluded from the GWR beneficial use while Sand Canyon Wash has an additional beneficial use (RARE - Rare, threatened, or endangered species habitat). All the beneficial uses are listed as being intermittent except in Reach 1 of San Diego Creek.

Table 2 lists the beneficial uses established in the Basin Plan for Upper Newport Bay (SARWQCB 1995).

Table 2: Beneficial Uses of Upper Newport Bay

Beneficial Use	Description
REC1	Water contact recreation (e.g. swimming, wading, fishing)
REC2	Non-contact water recreation (e.g. sunbathing, boating, sightseeing)
COMM	Commercial sport fishing
BIOL	Preservation of biological habitats of special significance
WILD	Wildlife habitat
RARE	Rare, threatened, or endangered species habitat
SPWN	Habitat for reproduction and early development of fish and wildlife
MAR	Marine ecosystems
SHEL	Shellfish harvesting
EST	Estuarine ecosystems

Adverse impacts to these beneficial uses that result from discharges of nutrients are violations of water quality objectives. The Basin Plan includes both numeric and narrative water quality objectives relevant to nutrients.

Water Quality Objectives

Water quality objectives are defined as “limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area.” The Basin Plan specifies nutrient-related numeric limits and narrative statements for Newport Bay and its tributaries.

Numeric Water Quality Objectives

Table 3 lists the nutrient-related numeric water quality objectives for San Diego Creek and Newport Bay.

Table 3: Nutrient-Related Numeric Water Quality Objectives

Water Body	Parameter	Water Quality Objective	Reference
All Inland Surface Waters	Dissolved Oxygen	5 mg/L	Basin Plan 1995
	Ammonia	Variable	U.S. EPA 1999
	pH	6.5 ≤ and ≤ 8.5	U.S. EPA 1999
San Diego Creek Reach 1	Total Inorganic Nitrogen	13 mg/L	Basin Plan 1995
San Diego Creek Reach 2	Total Inorganic Nitrogen	5 mg/L	Basin Plan 1995
Upper Newport Bay	Ammonia	Variable	U.S. EPA 1989
	pH	7 ≤ and ≤ 8.6	Basin Plan 1995

Total Inorganic Nitrogen (TIN): A 5 mg/L total inorganic nitrogen objective was established for Reach 2 of San Diego Creek in 1975, while the total inorganic nitrogen objective for Reach 1 (13 mg/L) was established in 1983. The Basin Plan does not specify an averaging period for these objectives.

Ammonia: Ammonia is one of the main species of nitrogen found in surface water, although at much lower concentrations than nitrate or organic nitrogen. Unionized ammonia is toxic to aquatic organisms. The Basin Plan includes separate freshwater and saltwater numeric water quality objectives for ammonia that are specified as a function of ambient pH, temperature, and in the case of Upper Newport Bay, ionic strength. These parameters affect the percentage of total ammonia that is present in the unionized form.

Dissolved Oxygen: The Basin Plan specifies a 5 mg/L numeric objective for dissolved oxygen in freshwaters designated as WARM. This objective applies to San Diego Creek. The Basin Plan does not specify an averaging period for this objective. The Basin Plan also specifies the following:

In addition, waste discharges shall not cause the median dissolved oxygen concentration to fall below 85% of saturation or the 95th percentile concentration to fall below 75% of saturation within a 30-day period.”

A numeric objective for dissolved oxygen in estuaries or bays such as Upper Newport Bay has not yet been established.

pH: The Basin Plan states that the pH in inland streams shall not be raised above 8.5 or lowered below 6.5 as a result of controllable water quality factors. Similarly for bays and estuaries such as Newport Bay, the Basin Plan states that the pH shall not be raised above 8.6 or lowered below 7.0 as a result of controllable water quality factors. In addition, the Basin Plan states that ambient pH levels in Bays and estuaries shall not be changed more than 0.2 units as a result of controllable water quality factors.

Narrative Water Quality Objectives

The Basin Plan includes three narrative water quality objectives that are relevant to nutrient discharges to bays and estuaries:

- (1) *“Enclosed bay and estuarine communities and populations, including vertebrate, invertebrate, and plant species, shall not be degraded as a result of the discharge of waste. Degradation is damage to an aquatic community or population with the result that a balanced community no longer exists. A balanced community is one that is (1) diverse, (2) has the ability to sustain itself through cyclic seasonal changes, (3) includes necessary food chain species, and (4) is not dominated by pollution tolerant species, unless that domination is caused by physical habitat limitations.”*
- (2) *“Waste discharges shall not contribute to excessive algal growth in receiving waters.”*
- (3) *“The dissolved oxygen content of enclosed bays and estuaries shall not be depressed to levels that adversely affect beneficial uses as a result of controllable water quality factors.”*

The Basin Plan includes one narrative water quality objective relevant to nutrient discharges to inland surface waters:

“Waste discharges shall not contribute to excessive algal growth in inland surface receiving waters.”

The narrative water quality objectives specified in the Basin Plan apply to all inland surface waters within the Santa Ana Basin Region.

Use of the Basin Plan narrative objectives to assess numeric water quality data requires specification of numeric indicators or translators. Development of numeric indicators or translators is encouraged by U.S. EPA, which issued a memo in May 2007 calling on States to accelerate their efforts to adopt numeric nutrient standards or numeric translators for narrative standards (US EPA 2007).

Anti-degradation – State Water Resources Control Board (SWRCB) policy requires continued maintenance of existing high quality waters unless there is a demonstration that allowing some degradation is consistent with the maximum benefit to the people of the state and that such degradation would not unreasonably affect existing or potential beneficial use. In addition, under the Federal anti-degradation policy, a reduction in water quality can be allowed only if there is a demonstration that such a reduction is necessary to accommodate important economic or social development.

Total Maximum Daily Load (TMDL)

A TMDL is a written plan that describes how an impaired water body will meet water quality standards. An impaired waterbody is any water that is not meeting the established water quality standards for that water. San Diego Creek and Newport Bay were listed as impaired waterbodies in 1996, due in part to violations of nutrient-related water quality standards. As a result, the Santa Ana Regional Water Quality Control Board adopted a nutrient TMDL in 1998. The TMDL was subsequently approved by the SWRCB in October 1998, and by the U.S. EPA in February 1999.

Although the nutrient TMDL has been under implementation since 1999, nutrient-related water quality standards are still not being achieved in San Diego Creek and Newport Bay.