Fact Sheet

San Diego regional water board to consider using stream biology measurements to improve regulations

Would work in tandem with existing chemical monitoring of streams

Overview: The objective of the Clean Water Act is "to restore and maintain the chemical, physical and biological integrity of the Nations waters." Even after 48 years, the focus of water quality protection has been largely on end of pipe water chemistry, missing critical information about biological integrity of the rivers and streams. The water quality objectives in the San Diego Regional Water Quality Control Board's Basin Plan for freshwater streams rely primarily on chemical monitoring to identify pollutants and assess ecosystem conditions. Due to the limitations of this approach, including the number of chemicals and matrices that can be evaluated and the inability to detect impairment caused by pollution (as opposed to a specific pollutant), biological objectives are needed for a more accurate assessment of the stream.

On November 18, 2020, the board will consider a Basin Plan amendment that strengthens regulations and adds a measurement of stream biology – the California Stream Condition Index (CSCI) – to identify impaired habitats, gauge potential effects of pollution, and more accurately evaluate overall ecosystem health.

What is the process?

Board staff and certain entities regulated by the board will take biological samples of invertebrates – mostly aquatic insects, but also crustaceans, mollusks, and worms – that naturally live on the bottom of stream channels, while continuing to collect water samples for chemical analysis. The biological samples are then taken to a laboratory for identification. Evaluating the biological condition of waterbodies allows the board, other regulatory and regulated agencies, and the community at-large to take a more balanced and holistic approach to determining priorities for stream protection and restoration. This approach more effectively integrates ecosystem beneficial uses with those related to human health for drinking water, recreation, and fish and shellfish consumption.

How does stream biological measurement work?

The CSCI is a statewide, scientifically peer-reviewed biological scoring tool for assessing the health of freshwater streams. Scores determine whether the biological condition is intact or impaired by comparisons to a database of reference conditions.

- The index uses benthic macroinvertebrates (BMIs) found in streams as a measure of biological condition.
- Analyses are compared to reference stream conditions based on natural factors such as geology, elevation, and climate.

- Two types of data are calculated. Biological data are generated from BMI samples collected in accordance with standard statewide protocols and environmental data are collected following standard geographic information system (GIS) protocols.

Where would the stream biological objective apply?

With some exceptions, the objective would apply to freshwater streams in the San Diego region and include parts of western San Diego, southwestern Riverside and southern Orange Counties. Exceptions include ephemeral streams that generally lack enough flow to measure and streams with hardened streambeds, such as concrete-lined stream channels. Hardened streambeds are extremely unlikely to generate a good condition CSCI score because the stream bottom cannot support a diverse BMI community. Although the CSCI measures hardened channels just as accurately as other streams, the new regulation would require more case studies and information on their potential restoration. By contrast, examples show that modified channels with soft streambeds can achieve high CSCI scores where management measures protect the quality and flow of water.

Which water board permittees will be most affected?

All large municipal storm water permittees would be required to use the measurements to assess the conditions in streams receiving storm water discharges to ensure pollution levels do not harm fish and wildlife and to prioritize actions to address impacts. Permittees found to cause or contribute to a low score will be required to improve their management of storm water pollutants. Using the index in combination with insights from the chemical pollutants will help determine appropriate actions. Along with municipal storm water permittees, dischargers who pose the greatest risk to aquatic life would be required to use the tool to evaluate stream conditions. This category includes, among others, large construction projects along stream banks that discharge into a stream, but exempts most industrial, construction, and agricultural sites because current monitoring programs sufficiently address their risk to stream health.

More information can be found on the San Diego Water Board's project site and the State Water Board's bioassessment data tools page.

The San Diego Water Board is a state agency responsible for implementing provisions of the federal Clean Water Act and the California Water Code to protect the quality of water in the ocean, streams, bays, and underground aquifers. The Basin Plan designates beneficial uses for water bodies within the region and establishes water quality objectives and implementation plans to protect those beneficial uses.

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