INTRODUCTION TO TOTAL MAXIMUM DAILY LOADS

WHAT IS A TMDL?

A total maximum daily load (TMDL) is a planning and management tool intended to identify, quantify, and control the sources of pollution within a given watershed such that water quality objectives are achieved and the beneficial uses of water are fully protected.

The term TMDL is used in two ways. First, it is the total maximum daily load of a pollutant that a water body can handle and still achieve acceptable water quality (this is also known as the loading capacity). Second, it is the document that includes all the supporting components.

WHAT TRIGGERS THE CREATION OF A TMDL?

Under Section 303(d) of the federal Clean Water Act, states are required to identify water bodies that do not meet water quality standards and are not supporting their beneficial uses. States also identify the pollutant or stressor causing the impairments. The result of this effort is the 303(d) List of Impaired Waters. Placement on the 303(d) List generally triggers development of a TMDL for each waterbody and associated pollutant/stressor.

COMPONENTS OF A TMDL PROJECT:

Problem Statement: The problem statement describes the impact of the pollutant on beneficial uses, describes the geographic scope of the impairment, and confirms the 303(d) impairment listing.

Numeric Targets: Numeric targets provide indicators of watershed health and express the desired future condition for each stressor addressed in a TMDL. Numeric targets are goals, not requirements. They provide a guidepost to landowners, resource managers, and the public by which to determine how close the TMDL is to re-creating an in-stream environment suitable of supporting beneficial uses, i.e., sustainable populations of salmonids or swimmable waters. They are not expected to be attained immediately, nor are they directly enforceable.

Source Analysis: Point, non-point, and background sources of pollutants of concern, as well as their magnitude and location, are described in the source analysis. In short, the source analysis describes where the pollution is coming from.

Loading Capacity: Also known as *the* TMDL, the loading capacity of a watershed is an estimate of how much pollution can reach the waterbody without impairing beneficial uses. It is defined as the sum of the individual waste load allocations to point sources, load allocations to non-point sources, natural background loading, and a margin of safety. The loading capacity can be determined by estimating historic loading, estimating loading in a reference stream, or modeling a watershed's dynamics under a scenario in which desired habitat conditions exist.

Load Allocation: The load allocation separates out the watershed's loading capacity to the different pollutant sources within the watershed. In short, the sum of the load allocations equals the loading capacity. Load allocations can be estimated for each of the different land use activities in a watershed. For example, sediment discharges can be expressed as tons per square mile per year, percent reduction, ratio of controllable versus natural load, or other appropriate measure.

Margin of Safety & Seasonal Variations: The margin of safety summarizes the qualitative and quantitative means by which the final load allocations account for any uncertainty in the data or data analysis. The seasonal variation section summarizes the changes which may vary in different years and at different times of the year (i.e., the discharges of sediment or increases of temperature and their associated effects on beneficial uses), and how the variations are addressed in the TMDL.

Implementation Plan & Actions: This is the strategy to meet the TMDL loading capacity and allocations. It can include specific directives to responsible parties for actions to take with due dates and reporting requirements. It can also be a plan to take additional actions or initiate additional study or planning efforts. The implementation plan is not required by the Clean Water Act, but by the California Water Code if the TMDL is being adopted through a Basin Plan Amendment.

Monitoring Plan: The monitoring plan describes what monitoring is necessary to determine if standards are being attained. As with the implementation plan, monitoring is not required by the CWA, but by the California Water Code.

FOR MORE INFORMATION:

North Coast Region's TMDL Webpage:
http://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/

North Coast Region's Current 303(d) List – a handy summary table:
http://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/303d/pdf/120524/Impaired_Waterbodies_2010_Table_05242012.pdf

State Water Resources Control Board's TMDL Webpage:
http://www.waterboards.ca.gov/water_issues/programs/tmdl/