

Nogales Wash Total Maximum Daily Load - March 2009

WHAT IS A TOTAL MAXIMUM DAILY LOAD?

Total Maximum Daily Load (TMDL) is a term used to describe the amount of a pollutant that a stream or lake can receive and still meet water quality standards. A TMDL study identifies sources of pollution and potential reductions needed to attain standards. **Point sources** (such as municipal or industrial discharges) and **nonpoint sources** (such as runoff from urban or agricultural lands and natural background) are considered in calculating the TMDL. The study must also account for seasonal variation and include a margin of safety.

WHY DO WE PREPARE A TMDL?

The objective of the federal Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. To fulfill this objective, states assess their surface waters and identify which waters do not meet state surface water quality standards. A TMDL must be completed for each pollutant "impairing" (i.e. not meeting surface water quality standards) these water bodies.

TMDL STUDY AND IMPLEMENTATION

The TMDL study will examine the source and the extent of the water quality impairment, providing the appropriate information necessary for planning implementation actions designed to achieve surface water quality standards. Whereas the TMDL study establishes a pollution budget for an impaired surface water, the accompanying TMDL implementation plan provides an action plan outlining the affordable, efficient, and effective alternatives to restore water quality.

During both the TMDL study and implementation planning processes, the Arizona Department of Environmental Quality (ADEQ) involves stakeholders by coordinating public meetings and encouraging comments and input. Additionally, ADEQ will help stakeholders identify funding sources (such as Water Quality Improvement Grants) that can help pay for water quality improvements.

FOR MORE INFORMATION

ADEQ encourages interest and involvement in the Nogales Wash *TMDL study*. For more information on TMDL studies, please refer to the ADEQ Web site: www.azdeq.gov/environ/water/assessment/tmdl.html

NOGALES WASH TMDL BACKGROUND

Nogales Wash is the main drainage for the cities of Nogales, Sonora, Mexico and Nogales, Arizona. The Wash flows north into Nogales, Arizona in a concrete tunnel that emerges into an open concrete channel. It eventually returns to a natural sediment bed channel before its confluence with Potrero Creek. Heavy rains can flush many pollutants from the urban landscape into the wash and large volumes of rain water can enter wastewater infrastructure in Nogales, Sonora causing overflows that introduce sewage to Nogales Wash. Even during base flow conditions sewage can escape from the collection system and pollute the wash. The current surface water quality standards developed for the Nogales Wash segment considered in this document are intended to protect the water's designated uses: Aquatic and Wildlife warm water (A&Ww) and Partial Body Contact (PBC).

Assessment of Nogales Wash water quality data has concluded that pollutant loadings of *Escherichia coli* (*E. coli*), ammonia, chlorine, and dissolved copper exceed surface water quality standards. The reach from the Mexico border to Potrero Creek has been placed on Arizona's 2006/2008 303(d) list of impaired waters for all three parameters. The most stringent water quality standard for *E. coli* to protect the designated use of PBC has been consistently and excessively exceeded due to insufficient wastewater infrastructure in Mexico. Chlorine in this stream reach exceeded A&Ww water quality standards in every sample collected during the assessment period. Chlorine is added directly to the stream in an effort to reduce pathogens from untreated sewage entering into Arizona from Mexico; however, chlorine is toxic to aquatic life. Ammonia, also toxic to aquatic life, is similarly attributed to insufficient wastewater treatment in Mexico. The exceedances of dissolved copper may be attributed to anthropogenic sources such as the maquiladoras in Mexico, but determining both industrial and natural background sources of copper in the watershed as part of the TMDL will be necessary.

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