Total Maximum Daily Loads (TMDLs)

Background – Under the 1972 federal Clean Water Act (CWA), all states, territories, and authorized tribes are required to establish a goal of water quality sufficient to support of propagation of fish, shellfish, wildlife and recreation in and on the water. Included in this goal is the elimination of pollutant discharges into navigable waters.

In Washington state, the Department of Ecology (DOE) is delegated federal CWA authority by the Environmental Protection Agency (EPA) to implement these federal standards. At the same time, the Department of Ecology must implement our own state's water quality standards which are more stringent than those under the CWA.

In regulating our state's waters for pollutants, the federal CWA requires the state to do an assessment of the health of our state's water bodies known as the 305(b) Report. In addition, Section 303(d) of the CWA requires states to prepare a list of the specific water bodies or segments of water bodies that do not meet the state water quality standards. This is known as the 303(d) List. To address the water quality problems on those water bodies listed as impaired or on the 303(d) List, the DOE must develop water cleanup plans that are known as "total maximum daily loads" or TMDLs.

What is a TMDL?

The Total Maximum Daily Load (TDML) is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, as well as an allocation of that amount of pollutant to its various sources.

TMDLs are used to restore water bodies, such as streams, rivers, lakes and estuaries, to good water quality. TMDL plans include the following:

- Description of the type, amount and sources of water pollution in a particular water body or segment.
- Analysis of the amount of that pollution that needs to be reduced or eliminated in order to attain water quality.
- Strategy to control pollution.
- Monitoring plan to assess effectiveness.

Pollutants Which Require a TMDL

Under federal rules, pollution is defined as any impairment of beneficial use of the water. Most pollution is caused by substances which can have numerical criteria for determining impairment to the water body. Some of these are toxic chemicals, waste material, nutrients, sediments, temperature, dissolved oxygen, pH, nitrogen, phosphorus, turbidity and hardness.

In addition, the Department of Ecology believes there are non-numeric or narrative impairments which it must consider in assessing water quality. The following are some examples of non-pollutants that nonetheless cause impairment, and thus pollution:

- Physical habitat alterations, including: stream channelization, loss of spawning gravels, reduced pool/riffle ratios, loss of large woody debris.
- Physical barriers to fish migration, such as dams and culverts

- Flow alterations, including low flows and flashier systems which create conditions of low flows and high run-off.
- Impaired biologic communities, when the impairment is not linked or suspected to be linked to a pollutant.

(Department of Ecology, Water Quality Program Policy 1-11)

Who is Affected by a TMDL?

Every facility in the state which directly discharges into a water body is required to have a National Pollution Discharge Elimination System (NPDES) permit. These facilities are also known as *source point* dischargers, as any pollutants which come out of their facility can be easily monitored for pollution. These are "end of pipe" discharges. They generally come from cities and industries, and include such facilities as waste water treatment facilities, pulp and paper mills, and other businesses.

Non-point sources of pollutants are the largest contributor of pollutants to our state's water bodies and cannot be monitored readily. Most of these sources of pollutants are from the everyday activities such as the use of household and garden chemicals, runoff from urban streets, failing septic systems, agriculture and logging.

As the Department of Ecology has been delegated federal authority by the EPA to issue National Pollution Discharge Elimination System (NPDES) permits for *point source* discharges, the Department can condition these permits to limit the amount or load of a specific pollutant into a 303(d) listed water body. For *non-point source* discharges, the Department attempts to control these many and varied sources of pollution by working with other agencies, local governments, landowners and citizens to identify and implement specific pollution controls or "best management practices." In order to discharge urban stormwater runoff, however, cities having Municipal Separate Stormwater Systems (MS4s) are regulated by the state's Municipal Stormwater Permit, which is a general NPDES permit.

Sources of Funding for Addressing TMDLs

Primary funding for the state TMDL program include Centennial Clean Water Funds, federal 319 Funds, and State Clean Water Revolving Funds. There is a variety of other state and federal programs that may provide funds – CREP, Salmon Recovery, Watershed Planning Act, and the Public Works Trust Fund.

Problems Associated with TMDLs

Credible Data

Prior to 2004, obtaining credible data assess the conditions of our state's water bodies had been a concern of many in the Legislature. The policy guidance document used in assessing the water quality conditions of state water bodies at that time was the Water Quality Program Policy 1-11 (WQP Policy 1-11). This document, last revised in September of 2002, established criteria for who could perform data collections, the types of pollutants, the conditions under which samples of these pollutants are done and other factors.

In 1998-2002, the Department received more than 34,000 data samples from municipalities, DOE staff, tribal members, environmental associations, individuals, and a wide range of other public participants. In no case did the Department reject any of the data samples submitted to assess water quality. More than 99 percent of the data received was used in Ecology's assessment of the water quality conditions of our state's water bodies. In addition, there were concerns by many legislators that Ecology did not fully evaluate the natural conditions of a water body in making a determination that it should be on the state 303 (d) List. Some of their concerns involved sampling for freshwater temperature and pH, marine water temperature, and pH and dissolved oxygen.

During the 2004 Session, **SB 5957** was passed into law which established criteria for water quality data to be accepted by DOE as credible. Examples of the criteria include the following of quality control procedures, data must be representative of the conditions at the time of collection, and scientific protocols must be used for the sampling and analysis. Furthermore, individuals who knowingly submit false data are guilty of a gross misdemeanor.

Liberty Lake Example

Impairments or pollution of lakes, streams, and rivers can either be one or a combination of parameters such as temperature, sedimentation, bacteria, habitat, excessive nutrients, organic wastes, or toxic substances. In order to clean up these impaired water bodies, TMDLs identify the maximum amount of pollutant allowed to be released into a waterbody so as not to impair the beneficial uses of the water. The TMDLs then become the standard by which all discharges into the waterbody are even permitted. (This includes both point and non-point sources of discharge). Once a TMDL has been determined for a waterbody, the ability of a waste water treatment facility, a city stormwater system, or a business to discharge in the waterbody can be severely limited, with unforeseen and unwanted consequences. Such is the case with the Liberty Lake Water & Sewer District.

Not too long ago, a wastewater treatment facility upgrade was planned for the residents of Liberty Lake. When the facility's NPDES permit for discharging into the Spokane River needed to be renewed, the DOE refused to renew the existing permit to allow a compliance schedule wherein the facility could double its capacity from one million gallons per day to two million gallons per day, address phosphorus concerns which their existing facility was incapable of doing, and address dissolved oxygen demands. Instead the DOE reduced its daily and monthly load limitations for dissolved oxygen to the facility's existing daily and monthly averages. *This was done with only a study underway on the Spokane River, and before the TMDL had been adopted by DOE.* The DOE action created additional costs to the ratepayers in both time and money without improvement to the water quality of the Spokane River.

Reclaimed Water

Another unforeseen consequence of TMDLs is the need for wastewater treatment facilities to spend enormous sums of money collected from ratepayers and permits for the reclaiming of wastewater. Reclaimed water is not considered drinkable even though it is brought to the level of Class A water (comparable to the quality of a swimming pool). The cost of building infrastructure to accommodate reclaimed water at the Lacey, Olympia, Tumwater, Thurston County (LOTT) facility is running in the tens of millions of dollars. Twenty percent of fees paid by ratepayers and $3,400 in permit fees for new connections to the LOTT treatment facility are dedicated for its reclaimed water program. A feasibility study done on the project determined that *at no time in the foreseeable future will the project ever pay for itself.* The stated reason for spending so much money on this reclaimed water project is to reduce the load limitations of discharges into Budd Inlet which has a TMDL for low-dissolved oxygen, most of which is due to its natural condition of poor circulation.

Dishwashing Detergent

Because several bodies of water around the state have a TMDL for dissolved oxygen being too low, legislation has been passed to limit the amount of phosphorus, which can sometimes further increase low-dissolved oxygen, in dishwashing detergents that may be purchased within the state. HB 2322 (2006) and HB 2263 (2008) both became law further reducing the ability of residents to purchase dishwashing products containing more than 0.5% phosphorus by weight. (Note: the industry standard is no more than 8.7% phosphorus by weight). The two primary bodies of water that were the focus of these bills are Lake Whatcom (near Bellingham) and that portion of the Spokane River in Spokane County.

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