EPA Region 7 TMDL Review

TMDL ID: LP2-21100 **State:** NE
Document Name: MIDDLE CREEK

Basin(s): LOWER PLATTE BASIN, MISSOURI -LOWER PLATTE
HUC(s): 10200203
Water body(ies): MIDDLE CREEK - HDWTRS
Tributary(ies): NONE
Pollutant(s): ATRAZINE

Submittal Date: 6/26/2007 **Approved:** Yes

Submittal Letter

State submittal letter indicates final Total Maximum Daily Load(s) (TMDL) for specific pollutant(s)/water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act [40 CFR § 130.7(c)(1)]. Include date submitted letter was received by EPA, date of receipt of any revisions, and the date of original approval if submittal is a phase II TMDL.

The TMDL was officially submitted by the State of Nebraska and received by the EPA on June 26, 2007.

Water Quality Standards Attainment

The water body's loading capacity (LC) for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards (WQS) [40 CFR § 130.7(c)(1)]. A statement that WQS will be attained is made.

Middle Creek was listed on the State of Nebraska's 303(d) list for an atrazine impairment. The loading capacity for Middle Creek has been directly linked to the chronic water quality standard (WQS) for atrazine, 12 micrograms per liter (ug/L). Using a range of potential flow data, maximum daily loads for Middle Creek are calculated in Appendix B of the TMDL to meet the 12 ug/L WQS. These range from 0.03 kg/day to 2.94 kg/day for flows between 1 cubic feet per second (cfs) and 100 cfs. The WQS are the target or endpoint of this TMDL. Based on the analytical data for Middle Creek, a 73% reduction is called for in the TMDL. If this reduction occurs, the water body should meet the WQS.

Numeric Target(s)

Submittal describes applicable WQS, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

The TMDL describes all applicable WQS and all beneficial uses (aquatic life, agriculture water supply, and aesthetics). The impaired use is the aquatic life use. The target is a maximum

concentration of 12 ug/L of atrazine, a state WQS, in the stream.

Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety (MOS) that do not exceed the LC. If submittal is a phase II TMDL there are refined relationships linking the load to WQS attainment. If there is an increase in the TMDL there is a refined relationship specified to validate the increase in TMDL (either load allocation (LA) or waste load allocation (WLA)). This section will compare and validate the change in targeted load between the versions.

Atrazine is the pollutant of concern in the TMDL. As part of the Salt Valley Lakes Runoff Monitoring program, water samples are collected at a monitoring location on Middle Creek for atrazine. The atrazine water sample analytical results from 2002 through 2004 are included in the TMDL.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, nonpoint and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered. If this is a phase II TMDL any new sources or removed sources will be specified and explained.

Land use in the watershed is described as mostly agricultural. Since atrazine is one of the most commonly used pesticides in the country and the land use is dominated by agriculture, the TMDL concludes that point sources are not contributing atrazine to Middle Creek. Because atrazine does not occur naturally, natural background is set at zero as well. It seems all significant sources have been considered.

Allocation - Loading Capacity

Submittal identifies appropriate WLA for point, and load allocations for nonpoint sources. If no point sources are present the WLA is stated as zero. If no nonpoint sources are present, the LA is stated as zero [40 CFR § 130.2(i)]. If this is a phase II TMDL the change in LC will be documented in this section.

The LC is given in terms of WLA, LA, background, and MOS. It is also expressed as the product of WQS, flow, and a conversion factor. The LC is determined in such a way as to ensure that it meets the atrazine WQS of 12 ug/L.

WLA Comment

Submittal lists individual WLAs for each identified point source [40 CFR § 130.2(h)]. If a WLA is not assigned it must be shown that the discharge does not cause or contribute to WQS excursions, the source is contained in a general permit addressed by the TMDL, or extenuating circumstances exist which prevent assignment of individual WLAs. Any such exceptions must be explained to a satisfactory degree. If a WLA of zero is assigned to any facility it must be stated as such [40 CFR § 130.2(i)]. If this is a phase II TMDL any differences in phase I and phase II WLAs will be documented in this section.

As there are no point sources contributing atrazine to Middle Creek, since the watershed is dominated by agriculture, the WLA for this TMDL is set at zero.

LA Comment

Includes all nonpoint sources loads, natural background, and potential for future growth. If no nonpoint sources are identified the LA must be given as zero [40 CFR § 130.2(g)]. If this is a phase II TMDL any differences in phase I and phase II LAs will be documented in this section.

As the WLA and background sources are set at zero, the entire LC is equal to the LA. The LA is given in the TMDL as the product of the chronic WQS (12 ug/L of atrazine), the stream flow, and a conversion factor. Several example maximum daily loads are calculated in the TMDL to meet the chronic WQS. At a flow of 10 cubic feet per second the LA would be 0.29 kg/day.

Margin of Safety

Submittal describes explicit and/or implicit MOS for each pollutant [40 CFR § 130.7(c)(1)]. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided. If this is a phase II TMDL any differences in MOS will be documented in this section.

The targeted atrazine reduction of 73% during the critical period will result in no exceedances of the chronic WQS and is accepted as an implicit MOS.

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL (s) [40 CFR § 130.7(c)(1)]. Critical conditions are factors such as flow or temperature which may lead to the excursion of WQS. If this is a phase II TMDL any differences in conditions will be documented in this section.

Seasonal variation and critical environmental conditions for Middle Creek are taken into account by the analytical data used. Noting that a larger number of chronic WQS exceedances occur during the spring/summer period when precipitation and atrazine application are increased, the TMDL focuses on that seasonal data when determining the atrazine reduction.

Public Participation

Submittal describes required public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s) [40 CFR § 130.7(c)(1)(ii)].

Public participation included advertising the availability of the draft TMDL for comment in the local newspaper. Additionally, the draft TMDL was posted on the NDEQ web site. The comment period lasted from May 14, 2007 to June 18, 2007. Interested stakeholders were notified of the draft TMDL and comment period via e-mail. No public comments were received during the public comment period.

Monitoring Plan for TMDL(s) Under Phased Approach

The TMDL identifies a monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used) [40 CFR § 130.7].

Monitoring of atrazine in Middle Creek will continue to be conducted as part of the Salt Valley Lake Runoff Monitoring Program. Per the TMDL, the program targets four sample collection events per water body per year.

Reasonable Assurance

Reasonable assurance only applies when less stringent WLAs are assigned based on the assumption of nonpoint source reductions in the LA will be met [40 CFR § 130.2(i)]. This section can also contain statements made by the state concerning the state's authority to control pollutant loads.

There are no point source loadings in the watershed so reasonable assurance is not required. A number of government and non-government organizations are identified in the TMDL as possible implementing participants.