UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

December 30, 2010

Mr. John Madras
Director, Water Protection Program
Water Protection and Soil Conservation Division
Missouri Department of Natural Resources
1101 Riverside Drive
Jefferson City, Missouri 65101

Dear Mr. Madras:

Re: Approval of Lake Taneycomo TMDL

This letter responds to the Missouri Department of Natural Resources (MDNR) submission of a Total Maximum Daily Load (TMDL) document which contains a low dissolved oxygen TMDL for Lake Taneycomo segment 7314. The document was received by the United States Environmental Protection Agency (EPA), Region 7, on November 19, 2010.

Lake Taneycomo was identified on the EPA-approved 2008 Missouri § 303(d) List as impaired for low dissolved oxygen. This submission fulfills the Clean Water Act statutory requirement to develop TMDLs for impairments listed on a state's § 303(d) List. The specific impairment (water body segment and pollutant) are:

Water Body Name	WBID	Pollutant
Lake Taneycomo	MO_7314	low dissolved oxygen

EPA has completed its review of the TMDL document with supporting documentation and information. By this letter, EPA approves the submitted TMDL. Enclosed with this letter is the EPA Region 7 TMDL Decision Document summarizing the rationale for EPA's approval of the TMDL. EPA believes the separate elements of the TMDL document, described in the enclosed form adequately address the pollutant of concern, taking into consideration seasonal variation and a margin of safety. Although EPA does not approve the monitoring plan submitted by the state, EPA acknowledges the state's efforts. EPA understands that the state may use the monitoring plan to gauge the effectiveness of the TMDL document and determine if future revisions are necessary or appropriate to meet applicable water quality standards.

EPA is currently in consultation under Section 7 of the Endangered Species Act with the United States Fish and Wildlife Service regarding the Lake Taneycomo TMDL. While we are approving this TMDL at the present time, we may decide that changes to the TMDL document are warranted based upon the results of the consultation when it is completed.

We appreciate the thoughtful effort that MDNR has put into this TMDL. We will continue to cooperate with and assist, as appropriate, in future efforts by MDNR to develop TMDLs.

Sincerely,

William A. Spratlin
Director
Water, Wetlands and Pesticides Division

Enclosure

cc: Mr. John Hoke
Missouri Department of Natural Resources

Mr. Gerald Babao
American Canoe Association

Mr. Paul Sanford
American Canoe Association

Mr. Scott Dye
Sierra Club

Mr. John Simpson
KS Natural Resource Council

EPA Region 7 TMDL Review

TMDL ID: MO_7314 **State:** MO

Document Name: LAKE TANEYCOMO

Basin(s): UPPER WHITE - BULL SHOALS LAKE RIVER BASIN

HUC(s): 11010003

Water body(ies): LAKE TANEYCOMO, TANEYCOMO, LAKE

Tributary(ies): JAMES RIVER, TABLE ROCK LAKE

Pollutant(s): LOW DISSOLVED OXYGEN

Submittal Date: 11/19/2010 **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.

This TMDL document was formally submitted by the Missouri Department of Natural Resources (MDNR). The United States Environmental Protection Agency (EPA) received this document by mail on November 19, 2010.

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.

Lake Taneycomo is not meeting the dissolved oxygen (DO) minimum water quality criterion of 6 milligrams per liter (mg/L) required to maintain a cold-water fishery designated use, and requires development of a TMDL. This impairment was identified and acknowledged by being included on Missouri's 1994, 1998, 2002, 2004/2006 and 2008 303(d) Lists for low DO.

For the purpose of this TMDL, the Lake Taneycomo watershed consists only of those lands draining into Lake Taneycomo below Table Rock Dam. Lake Taneycomo is approximately 2000 surface acres in size and was a warm-water reservoir until Table Rock Dam was completed 22 miles upstream from Ozark Beach Dam in 1958. For the purpose of this TMDL, Lake Taneycomo is considered to be the entire water body from Ozark Beach Dam upstream to Table Rock Dam, as it is represented in Missouri water quality rules. The construction of Table Rock Dam, approximately eight miles upstream and southwest of the city of Branson, resulted in Lake Taneycomo becoming the dam's "tailwater."

Lake Taneycomo has the characteristics of both a river and a lake. The shallow, colder water just downstream of Table Rock Dam averages 48 degrees Fahrenheit (°F) and resembles a river. The average temperature of the water gets warmer and the depth of the lake deepens as it proceeds downstream, reaching depths over 50 feet near the Ozark Beach Dam. When Table Rock Dam is generating power, the current is strong throughout Lake Taneycomo's entire length, its water temperature drops and for all practical purposes, it becomes a deep, cold, fast-running river. The cool water from the dam flows beneath a warmer surface layer through the lake, maintaining a distinct thermal and chemical identity. The depth, temperature and flow in Lake Taneycomo are dependent on the number of turbines generating electricity and the volume of discharge from each turbine.

Table Rock Dam provides water to Lake Taneycomo from the lower water layer (hypolimnion) of Table Rock Lake. This hypolimnetic water is reported to have a temperature range between 45 and 55°F from May through

December. As a result, the formerly exclusive warm-water fishery in Lake Taneycomo declined and was largely replaced by a cold water fishery.

Thermal stratification is the layering of waters with drastically different water temperatures. The normal thermal stratification that develops during the summer in the Table Rock Lake results in cold, dense water in the lower depths of the lake not mixing with the warmer, less dense surface waters. Sunlight does not reach the deepest layers of the lake and without light, no plants can live in the lower levels. Without plants, no DO is produced through photosynthesis. Dead plant and animal material, as well as associated organic products, continually settle to the bottom of the lake and decompose – a process of biological oxidation that uses available DO.

These oxidative processes occur constantly in the hypolimnion and their intensity is proportional to the amount of organic matter reaching the hypolimnion from the upper zones of the lake. As a result, the oxygen concentration of the hypolimnion becomes progressively more reduced and undersaturated as the year progresses, while the warmer, more oxygenated, surface layer (epilimnion) floats upon the relatively undisturbed lower layer. These conditions result in the hypolimnion of most Midwestern lakes and reservoirs, including Table Rock Lake, becoming depleted of DO by the late summer/early fall months and remaining so until fall "turnover." Fall turnover occurs when wind energy, combined with cooling and increasing heaviness of the lake's surface layer, result in the surface layer mixing down into the formerly stratified lower layers.

Most Midwestern lakes naturally turn over in the fall and spring. However, Table Rock Lake, with its large water volume and southern location and climate, only experiences turnover late in the year and remains mixed until the start of stratification in the spring. As a result of pre-turnover stratification, Table Rock Lake historically experiences periods of up to six months (July-December) when DO concentrations are less than 4 mg/L in the hypolimnetic layer of Table Rock Lake. Accordingly, DO levels have been low enough to cause concern for the downstream aquatic life in Lake Taneycomo and these five to six months have been deemed the "low DO season." After Table Rock Lake turns over later in the year, satisfactory DO levels in Lake Taneycomo are usually restored.

At low flow conditions (100 cubic feet per second [cfs]), 20 degrees Celsius and 32.2 percent reduction, the LC is 1,510.6 pounds per day (lb/day) of oxygen demand. At high flow conditions (15,135 cfs) 20 degrees Celsius and 32.2 percent reduction, the LC is 228,629.3 lb/day of oxygen demand. At minimum flow conditions (380 cfs) 20 degrees Celsius and 32.2 percent reduction, the LC is 5,740.3 lb/day of oxygen demand. The water quality condition addressed by this TMDL is low DO, based on the 6 mg/L minimum water quality criterion required to maintain a cold-water fishery in Lake Taneycomo. Targeting the DO water quality criterion protects the Protection of Aquatic Life (Cold-Water Fishery) use and ensures the TMDL should result in WQS attainment.

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.

All classified waters of the state, as per Missouri WQS, must provide suitable conditions for aquatic life, including both the physical habitat and the quality of the water. The water quality condition addressed by this TMDL is low DO, based on the 6 mg/L minimum water quality criterion required to maintain a cold-water fishery in Lake Taneycomo.

Lake Taneycomo has the following designated beneficial uses per 10 Code of State Regulations (CSR) at 20-7.031, Table G:
Livestock and Wildlife Watering
Protection of Aquatic Life (Cold-Water Fishery)
Human Health Protection (Fish Consumption)
Whole Body Contact Recreation (A)
Secondary Contact Recreation
Drinking Water Supply

The lake classification and beneficial designated uses may be found in Missouri's WQS rules at 10 CSR 20-7.031 (1)(C) and (F) and Table G. The designated beneficial use that has been assessed as impaired is the Protection of Aquatic Life (Cold-Water Fishery) use.

The Missouri water quality criterion for DO in cold-water fisheries is an instantaneous minimum of 6 mg/L (10 CSR 20-7.031, Table A). The primary TMDL water quality endpoint is to meet the 6 mg/L DO minimum at all times in Lake Taneycomo. MDNR uses water quality data collected at the United States Geological Survey (USGS) gage at the College of the Ozarks (USGS-07053600, approximately 5.8 miles downstream from Table Rock Dam) to assess compliance with the applicable water quality criterion in Lake Taneycomo.

Specific reference to protecting the unique character and water quality found in Lake Taneycomo is made in state

rule at 10 CSR 20-7.031(9): "Lake Taneycomo. The commission wishes to recognize the uniqueness of Lake Taneycomo with respect to its high water clarity, its importance as a trout fishery and as the central natural resource in the rapidly developing Branson area and threats to the lake's water quality imposed by development. An especially stringent antidegradation policy will be observed in the development of effluent rules, discharge permits and nonpoint source management plans, and permits to assure that the high visual quality and aquatic resources are maintained. The use of the best treatment technology for point- and nonpoint source discharges in the lake's watershed between Table Rock Lake and Power Site Dam will be the guiding principle in establishing limitations.

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.

The target is directly linked to the WQS of a daily minimum criterion of 6 mg/L. There is an established link between the upstream Table Rock Lake hypolimnetic water that is oxygen deficient and the low DO measurements found in Lake Taneycomo.

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 immediate lake watershed is primarily forest (68 percent), grassland (21percent) and 7.5 percent urban. The remaining 3.5 percent of area in the watershed is water or barren land.

At the time this TMDL was developed, there were 215 permitted point sources in the Lake Taneycomo watershed, and many more in the watershed of Table Rock Lake. A comprehensive list of the 215 currently discharging facilities (site specific – domestic, site specific – non-domestic, general and storm water) in the Lake Taneycomo watershed, as well as their design flows, can be found in Appendix B of the TMDL document.

A site specific domestic wastewater permit is one that predominately regulates the treatment and processing of human sewage. Currently, there are 41 domestic wastewater treatment facilities (WWTF) in the Lake Taneycomo watershed.

A site specific non-domestic wastewater permit is one that predominantly regulates the treatment and processing of wastewater other than human sewage. Currently, there are three non-domestic WWTFs in the Lake Taneycomo watershed.

Various activities associated with agriculture and urbanization in lake watersheds can contribute organic matter to a lake's hypolimnion. Nonpoint sources of pollution include storm water runoff from cattle pastures, dairy and poultry operations and from urban areas not covered by Municipal Separate Storm Sewer System (MS4) permits. Pollutants from these sources that could directly or indirectly affect DO include nitrogen, phosphorus and oxygen-demanding substances.

Another potential nonpoint source of these pollutants is seepage from onsite wastewater treatment systems. Two of the most important nonpoint source-related issues in the Table Rock Lake and Lake Taneycomo watersheds are onsite wastewater treatment systems and riparian zones.

Onsite wastewater treatment systems (e.g., individual home septic systems) are considered potential "nonpoint" sources of pollution. Onsite wastewater treatment systems that are properly designed and maintained should not serve as a source of contamination to surface or groundwater. However, onsite wastewater treatment systems do fail for a variety of reasons. When these systems fail hydraulically (surface breakouts) or hydrogeologically (inadequate soil filtration), there can be adverse effects to surface waters. Failing onsite wastewater treatment systems are sources of nutrients and oxygen demanding substances that can reach nearby streams through both surface runoff and ground water flows.

Riparian corridor conditions can also have a strong influence on controlling nonpoint sources of pollution and

DO concentrations in tributary streams and, eventually, lakes and reservoirs. Well-vegetated riparian areas are a vital functional component of stream ecosystems and are instrumental in the detention, removal and assimilation of sediment, excess nutrients and other pollutants before they reach a stream. In essence, they act as buffers. Therefore, a stream with a well-vegetated riparian corridor is better protected from the impacts of storm water laden with sediment, nutrients and pesticides than is a stream with a poorly vegetated corridor. Trees also provide a root system that helps stabilize streambanks and resist bank erosion more effectively than roots of grasses, row crops or shrubbery. Wooded riparian corridors can also provide shade that reduces stream temperatures, which can increase the dissolved oxygen saturation capacity of the stream. Best management practices (BMPs) that include preservation and/or reestablishment of healthy riparian corridors could contribute to improved DO in tributaries of both Table Rock Lake and Lake Taneycomo.

Nutrient and organic material contributions from both point and nonpoint sources in the upstream watershed can be a factor contributing to low DO concentrations below dams. The growth of human populations within the Table Rock Lake and Lake Taneycomo watersheds in the past three decades is well known. It has been suggested that the addition of nutrients and oxygen-consuming substances from anthropogenic sources in the watershed of Table Rock Lake has contributed to the low DO problem in Lake Taneycomo. The fact that Table Rock Lake has been listed on Missouri's 303(d) List as impaired by nutrients since 2002 illustrates the negative impact an overabundant influx of nutrients (from both point and nonpoint sources) can have on lake water quality. Even though nutrients have not been concluded to be an immediate source of the low DO impairment in Lake Taneycomo, the potential influence of point and nonpoint sources of pollution was reviewed.

Continuing urban and suburban development in the Table Rock Lake and Lake Taneycomo watersheds will likely increase point source sewage and storm water (MS4) loading to area streams and both reservoirs. If BMPs are not voluntarily adopted to control nonpoint sources of pollution, contributions of nutrients and oxygen-demanding substances from storm water runoff and other sources are also likely to increase.

All potential sources seem to have been discussed.

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 relationship between source loading of nutrients, oxygen-demanding substances and water quality in Lake Taneycomo was examined through the use of the HEC-RAS hydraulic and water quality model. The HEC-RAS model was developed by the U.S. Army Corps of Engineers and chosen by EPA to evaluate the downstream effects of the releases from Table Rock Dam on the hydrodynamics and water quality of Lake Taneycomo. The model was used to characterize the temporal and spatial patterns of DO downstream of the dam and to determine conditions that would result in compliance with the minimum DO criterion in Lake Taneycomo.

The LC of oxygen demand for water coming in to Lake Taneycomo from Table Rock Lake was modeled for three critical conditions. The first critical condition models extreme minimum flow releases from Table Rock Dam during non-generation times. Flow from Table Rock Dam during this condition includes average flow from one operating house unit and wicket gate leakage from the non-operational house unit and four main turbines.

The second critical condition models extreme high flow releases from Table Rock Dam during generation times. Flow from Table Rock Dam during this condition includes leakage from the non-operating house unit and maximum flow from the operational house unit and four main turbines.

The third critical condition simulates a minimum flow condition from Table Rock Dam based upon recommendations found in the White River Minimum Flows Reallocation Study Report, July 2004. Each of the critical conditions assumed DO concentrations of 0.1 mg/L in the water in Table Rock Lake at the penstocks.

At low flow conditions (100 cfs), 20 degrees Celsius and 32.2 percent reduction, the LC is 1,510.6 lb/day of oxygen demand. At high flow conditions (15,135 cfs) 20 degrees Celsius and 32.2 percent reduction, the LC is 228,629.3 lb/day of oxygen demand. At minimum flow conditions (380 cfs) 20 degrees Celsius and 32.2 percent reduction, the LC is 5,740.3 lb/day of oxygen demand.

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.

Due to the location and relative size of their discharges, the 41 domestic site specific permits within the Lake Taneycomo watershed are not significantly contributing to the low DO water quality impairment below Table Rock Dam. Because these facilities were not considered to be significantly causing or contributing to the impairment by MDNR, the WLA for these permits is set at current permit limits, terms and conditions. An analysis of facility compliance history, sampling results, permit effluent limitations and TMDL WLAs will be conducted during reissuance of site specific permits.
Because the 32 general and 139 storm water permits within the watershed were not considered to be causing or contributing to the water quality impairment by MDNR, the WLA for these permits is set at current permit limits, terms and conditions.

Due to the composition of their discharges, none of the three non-domestic WWTFs were considered to be causing or contributing to the low DO impairment of Lake Taneycomo by MDNR. As a result, the WLA for nondomestic permitted facilities is set at current permit limits, terms and conditions.

At low flow conditions (100 cfs), 20 degrees Celsius and 32.2 percent reduction, the LC is 1,510.6 lb/day of oxygen demand. At high flow conditions (15,135 cfs) 20 degrees Celsius and 32.2 percent reduction, the LC is 228,629.3 lb/day of oxygen demand. At minimum flow conditions (380 cfs) 20 degrees Celsius and 32.2 percent reduction, the LC is 5,740.3 lb/day of oxygen demand.

The WLAs listed in this TMDL do not preclude the establishment of future new or expanded sources of oxygen demanding substances in the Lake Taneycomo or Table Rock Lake watersheds. Any future new or expanded point sources should be evaluated in light of established TMDLs, WQS and MDNR's antidegradation rule and implementation procedures.

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.

MDNR concluded that there are no significant contributors of oxygen demand, the LA portion of the Lake Taneycomo therefore was set at zero.

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.

An implicit MOS was used in this TMDL through conservative model assumptions and calculations. For each of the model simulations (low flow, high flow and minimum flows), conservative worst-case hydrologic and chemical conditions were used. A conservative estimate of DO concentrations in the hypolimnion of Table Rock Lake was used (0.1 mg/L). Also, due to lack of field water quality data for two tributaries entering Lake Taneycomo (Bull Creek and West Fork Roark Creek), the corresponding effluent data from point source dischargers (Rockaway Beach WWTF and Stonebridge Village WWTF) were used for the TMDL modeling of nutrient impacts. This is a conservative assumption because no dilution or decay was accounted for point source discharges traveling through the tributaries before entering Lake Taneycomo. Furthermore, the model was run under a worst-case hydrologic condition when stratified Table Rock Lake releases large volume of flows with low DO to Lake Taneycomo during late summer months.

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.

DO levels that threaten the integrity of aquatic communities generally occur during low flow periods, when flows are minimal and reaeration potential is reduced. However, for Lake Taneycomo and other water bodies downstream of impoundments, critical conditions may also occur during high flow events during maximum generation or flood control periods. Due to the well-documented exceedances of minimum DO during both low

and high flow releases from Table Rock Dam, these times will be considered the critical condition bounds for the Lake Taneycomo TMDL. In addition, the recommended minimum flow release from Table Rock Dam will be modeled and considered a potential future critical condition should it be implemented

DO concentrations may vary as the low DO season (July through December) progresses; with lower DO concentrations generally occurring right before turnover. In particular, due to thermal stratification in Table Rock Lake during summer and autumn, cold water in the hypolimnetic layer of the lake does not mix with the warmer surface water and becomes depleted of DO resulting in lower concentrations of DO entering Lake Taneycomo. The hydrologic condition in the late summer through early winter was determined to have the most severe impacts on the aquatic life use for Lake Taneycomo. If the lake is protected during this critical period, then other flow conditions under seasonal variations are protected as well.

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)].

Before finalizing this TMDL, MDNR's Water Protection Program notified the public that a 45-day comment period was open from July 30 through September 13, 2010, by placing a Public Notice, the draft TMDL and the associated TMDL Information Sheet on MDNR's Website, thus making them available to anyone with access to the Internet. Public notices soliciting comment on the draft TMDL are also routinely distributed via mail and electronic mail to stakeholders in the watershed, and other potentially impacted parties. In this case, those receiving the public notice announcement included the Missouri Clean Water Commission, the Missouri Water Quality Coordinating Committee and 25 Lakes of Missouri Volunteer Program volunteers in the area. Specific staff members from MDNR's Water Resources Center, MDC, USACE, SWPA, TVA and Empire District Electric Company who assisted in the compilation of information presented in this document, also received notification. Others receiving the public notice included the White River Dissolved Oxygen Committee, county commissions in the three counties included in the Lake Taneycomo watershed (Taney, Stone and Christian), three State House Representatives and two State Senators for Taney, Stone and Christian counties, and the watershed's congressional delegation. MDNR received comments from 20 persons/entities. After the close of the public comment period, MDNR reviewed all comments, wrote and sent responses to the comments and edited the TMDL as appropriate in response to comments, before submitting the TMDL and supporting documents to EPA Region 7 for review and approval.

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].

MDNR will continue to review water quality data collected from the USGS gage at College of the Ozarks to assess compliance with the 6 mg/L DO minimum criterion for the cold-water fishery in Lake Taneycomo. The gage collects data on a continuous basis and MDNR will assess all readily available data every 303(d) listing cycle.

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.

EPA believes that point source permitting authority and nonpoint source measures discussed in the implementation plan (see Sections 10 - 12 of the TMDL) provides reasonable assurances that the TMDL allocations can be achieved.

MDNR has the authority to issue and enforce state operating permits. Inclusion of effluent limits into a state operating permit and requiring that effluent and instream monitoring be reported to MDNR should provide reasonable assurance that instream WQS will be met. Section 301(b)(1)(C) requires that point source permits have effluent limits as stringent as necessary to meet WQS. However, for WLAs to serve that purpose, they must themselves be stringent enough so that (in conjunction with the water body's other loadings) they meet WQS. This generally occurs when the TMDL's combined nonpoint source LAs and point source WLAs do not exceed the WQS-based LC and there is reasonable assurance that the TMDL's allocations can be achieved. Discussion of reduction efforts relating to nonpoint sources can be found in the implementation section of the TMDL.