

# Amendment to the Upper Rum River Watershed Management Organization (URRWMO) Watershed Management Plan

## Water Quality Standards for East Twin Lake, Lake George, and the Rum River

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*The following standards were recommended by a Technical Advisory Committee including representation from each URRWMO member city, local and state agencies, and the Builders Association of the Twin Cities. Each member community should consider this amendment as they update their local water plan for consistency with the URRWMO Plan.*

Effective date: Feb. 3, 2009 (date of URRWMO Board adoption)

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The URRWMO will implement policies designed to achieve a goal of non-degradation for water quality in their major recreational water bodies (East Twin Lake, Lake George, and the Rum River). This means that water quality will not be allowed to deteriorate. These water bodies have high water quality and high quality recreational opportunities.

The URRWMO has established water quality standards for each water body. These water quality standards are set for parameters that indicate a broad range of water quality issues and can be easily monitored (Table 1). Water quality standards are considered exceeded when the average value of any parameter over one year is poorer than the standard (Table 2). If water quality becomes worse than the specified standard, then investigative or corrective action is triggered (Table 3).

**Table 1. Water Quality Standard Parameters and Data Requirements**

<b>Water body Type</b>	<b>Parameters</b>	<b>Data Requirement</b>	<b>What to compare to the water quality standard</b>
Lake	Total phosphorus	10 measurements taken every two weeks from May-Sept	Average of measurements between May and September
	Chlorophyll-a		
	Secchi		
River or Stream	Total phosphorus	a minimum of 8, and preferably 10, measurements between March and November. Half of the measurements should be within 24 hours after a 1-inch or greater storm or major snowmelt, and half during baseflow.	Average of all measurements taken in a single year
	Total suspended solids		

**Table 2. Water Quality Standards (Thresholds)**

<b>Water Body</b>	<b>Parameter</b>	<b>Standard/ Threshold</b>
East Twin Lake	Total phosphorus	31.6 ug/L
	Chlorophyll-a	15.3 mg/L
	Secchi transparency	9.0 ft
Lake George	Total phosphorus	30.0 ug/L
	Chlorophyll-a	11.8 mg/L
	Secchi transparency	7.2 ft
Rum River	Total phosphorus	192 ug/L
	Total suspended solids	18.1 mg/L

**Table 3. Actions Triggered by Water Quality Standard Exceedances**

<b>Waterbody Type</b>	<b>Scenario</b>	<b>Action Triggered</b>
(1)Lakes or (2) portions of the Rum River within the URRWMO jurisdictional area	No exceedance	Continue monitoring every 2-3 years, and no less than twice in five years
	One year exceeds standard	Monitor the next year.
	Second consecutive year exceeds standard	The URRWMO Board will review the situation and determine appropriate action.
Rum River upstream of the URRWMO jurisdictional area	Rum River exceeds standards at the top of the URRWMO jurisdictional area two years in a row	The URRWMO will contact state and local agencies with jurisdiction over water management within the Rum River Watershed.

The URRWMO’s water quality standards allow for natural water quality variation. The lake standards allow water quality to vary within the range observed since 1980. During that period both lakes had a trend of improving or constant water quality. Only one year of monitoring data is available for the Rum River, but the water quality standards allow the variation seen in that one year (2004). Natural variation in water quality is further taken into account by comparing seasonal averages to the water quality standard, not individual measurements, because there is a higher degree of natural variation among individual measurements.

For the lakes, water quality standards were determined from the average annual observed water quality data from 1980-2006. The water quality standard is the average of the annual averages plus 1.96 standard deviations (or minus 1.96 standard deviations for Secchi transparency). Because the historical means from each year are normally distributed, 97.5% of annual averages are less than a water quality standard that is calculated in this way. In other words, in the lake’s current condition only 2.5% of years would be expected to have water quality readings poorer than the standard. Generally, this standard represents slightly poorer water quality than has been observed in any year since 1980.

For the Rum River, only one year (2004) of data from the bottom of the URRWMO area (Co. Rd. 7 bridge) was available, so the methodology used to calculate a water quality standard was different than that used for lakes. Individual samples from 2004 were used instead of the average values from several years. The water quality standard is the average of the 2004 monitoring data (N=8, 4 storm samples, 4 baseflow samples) plus 1.96 standard deviations. Both the total phosphorus and total suspended solids standards calculated in this manner are slightly worse than the maximum observed in 2004. The URRWMO

expects to revise the Rum River standard after more baseline monitoring data are collected.

In addition to the URRWMO's standards, State Rules provide additional protections for the Rum River. State Rule Chapter 7050.180 states "no person may cause or allow a new or expanded discharge of any sewage, industrial waste, or other waste" to a "state designated scenic or recreational river segments...unless there is not a prudent and feasible alternative" The Rum River throughout the URRWMO is state designated as scenic and recreational. The URRWMO relies upon this rule, in addition to the URRWMO water quality standards, to ensure Rum River water quality is not allowed to deteriorate.

The URRWMO will monitor for exceedances of water quality standards, as well as to maintain baseline data. The Rum River will be monitored annually for at least three years, beginning immediately, in order to accelerate baseline data collection so water quality standards can be refined. Monitoring will occur simultaneously at both the top and bottom of the URRWMO (or closest bridge crossings) in order to determine if the source of any problems is within the URRWMO or upstream. Monitoring will include at least eight samples between March and November. Half of the measurements should be within 24 hours after a 1-inch or greater storm or major snowmelt, and half during baseflow. At a minimum, the parameters monitored will include total phosphorus, total suspended solids, and turbidity. After the first three years the Rum River will be monitored every 2-3 years, and no less than two of every five years. East Twin Lake and Lake George already have adequate baseline data, and will be monitored every 2-3 years starting in 2008, and no less than two of every five years.

The URRWMO recognizes that baseline monitoring data for the Rum River's tributaries will be important to diagnosing the cause of any deterioration in water quality for the Rum River within the URRWMO. It may also provide early warning that the river is being negatively impacted by one or more tributaries. Therefore, the URRWMO will periodically monitor all major tributaries in the URRWMO.

The URRWMO will revisit the appropriateness these water quality standards when their Watershed Management Plan is next updated around 2017.