

Section 5

Goals and Policies

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5.0 Goals and Policies

The roles of watershed districts have changed since the LMRWD was formed in 1960. These changed roles reflect different public values, which have reordered priorities for addressing issues. The LMRWD is affected by these changing values. Some of the purposes set forth in the original petition for establishment of the District conflict with the present-day purposes set forth in Minnesota Statutes 103B.201. Overall, today's goals of the LMRWD are consistent with the purposes stated in recent statutes, recognizing that LMRWD has an additional, commercial navigation role to fulfill. The goals and policies set forth in this section of the plan reflect the specific characteristics of LMRWD.

Prior to presenting the detailed goals and policies of LMRWD, this section of the plan first discusses the general purposes of a WMO and the specific purposes of LMRWD.

5.1 Watershed Management Purposes

The Metropolitan Surface Water Management Act (which defines a Watershed District as one form of a Watershed Management Organization, or WMO) states that the purposes of WMO water management programs (quoted from Minnesota Statutes 103B.201) are as follows:

1. Protect, preserve, and use natural surface and groundwater storage and retention systems.
2. Minimize public capital expenditures needed to correct flooding and water quality problems.
3. Identify and plan for means to effectively protect and improve surface and groundwater quality.
4. Establish more uniform local policies and official controls for surface and groundwater management.
5. Prevent erosion of soil into surface water systems.
6. Promote groundwater recharge.
7. Protect and enhance fish and wildlife habitat and water recreational facilities.
8. Secure the other benefits associated with the proper management of surface and groundwater.

5.2 LMRWD Purposes

The purposes of LMRWD, as given in the original petition and the Order forming the watershed district (see Section 2.1), include those listed in Section 5.1. An additional purpose imposed by the Order is to “cooperate with, aid, and assist the State or Federal Government . . . to provide . . . for . . . commercial river transportation.”

Specific characteristics of the watershed district include the following:

- District contains the upper reaches of the navigation pools created by Lock and Dam No. 2 on the Mississippi River at Hastings.
- Definition of District boundary generally follows the Minnesota River watershed up to the bluff line.
- Both the quantity and quality of surface water resources are very closely tied to groundwater.
- Unusual resources, including floodplain wetlands, calcareous fens and trout waters.
- Major river within the boundaries of LMRWD (other WMO and watershed district boundaries stop at major rivers).

Prior to the implementation of this plan, LMRWD's main activities included acquiring dredge material disposal sites, project review (developments, government projects, etc.), limited project inspections, and providing LMRWD funds to other entities for projects that generally benefit the District.

With this plan, LMRWD's proposed purposes and activities will differ from historical purposes and activities as follows:

- LMRWD will implement a data collection, assessment and planning program for the District's resources.
- LMRWD will expand its project review (developments, government projects, etc.), making the process more consistent, and obtaining more cooperation from the cities. The proposed joint resolutions will define the respective roles of LMRWD and the local units of government. The joint resolutions will be amended as resource assessments are completed to set specific limits and/or require special resource protection methods/strategies in the watershed.
- LMRWD will expand its project inspection program to verify that projects are meeting specified standards.
- LMRWD has and will continue implement a project review and permit program for the 3,346 acres annexed into the District on May 24, 2000. This will affect lands owned by the Metropolitan Airports Commission, Minnesota Department of Transportation, the City of Minneapolis.
- LMRWD will seek to enter into cooperative agreements with the federal agencies included in the 2000 Boundary Change order.
- LMRWD intends to change its role regarding LMRWD funding of projects that generally benefit the District. As resource plans are developed, LMRWD will either independently, or jointly with other entities in response to petitions, enter into projects identified in resource plans that benefit these resources. This is a new role and purpose for LMRWD.
- LMRWD will expand its commercial navigation initiatives; in addition to acquiring dredge material disposal sites, LMRWD will obtain easements to access the sites and enter into

other projects that benefit navigation and water quality in the river, such as bank erosion control.

The purpose of this plan is to guide watershed management in the District. The LMRWD Managers wish to study the important resources of the District, identify water management strategies, and work cooperatively with local agencies to meet the identified strategies. The Managers want to focus on the most effective initiatives, intending to operate without increasing LMRWD's total levy.

To accomplish these purposes, LMRWD defined its "customers" and elected to focus its efforts on four primary initiatives. LMRWD will provide services to, and communicate with, local governments (cities, townships, and counties); regional agencies (Metropolitan Council, MAC, MCES, etc.); state agencies (MDNR, MPCA, MDH, MDA, etc.); federal agencies (USACOE, USFW, etc.); and private citizens and organizations, generally in that order of priority.

LMRWD will accomplish this through joint resolutions. The joint resolutions will address the respective roles of LMRWD and the local units of government in water management. Appendix C contains a draft model joint resolution, Section 6.2.2 describes the administrative process regarding joint resolutions/joint powers agreements, and Section 6.2.3 describes the general content of the agreements.

LMRWD will focus on the following four initiatives: commercial navigation, resource evaluation and management, project review, and public information. Specifically, the LMRWD will:

- **Facilitate commercial navigation** in accordance with the purposes and obligations contained in the Order which established the District in 1960, by providing dredge material disposal sites.
- **Provide strategic resource evaluation and management.** LMRWD will undertake initiatives and work proactively with other agencies within the lower Minnesota River valley to undertake the following resource assessment, planning and implementation programs for the District's resources:
 1. Identify and inventory the resources.
 2. Assess the condition of the resources through inspection and analysis.
 3. Determine the potential of the resources (use attainability analyses).
 4. Work with other units of government to develop resource plans based on the results of the use attainability analyses. The level of analysis may vary, depending on the level of detail needed. Resource plans will identify the resource protection methods/strategies that need to be applied in the watershed and/or will set water quality limits for the resource. LMRWD will require amendment of local water management plans/joint resolutions to incorporate these limits and methods.

The primary goal of this effort is to provide information that LMRWD and the local units of government can use to develop and implement resource plans. The resource protection methods/strategies identified in the future resource plans may include

recommendations for construction of capital projects. LMRWD intends to construct such priority projects in response to petitions from the cities.

A secondary benefit of this effort will be to provide the general public with educational materials. The Managers will focus their efforts on those resources not addressed in detail by other agencies, prioritized generally as follows:

1. Minnesota River and floodplain
2. Upland lakes and wetlands
3. Floodplain lakes and wetlands
4. Minnesota River bluffs
5. Tributary streams
6. Endangered and threatened species, and species of special concern
7. Boiling Springs
8. Calcareous fens

The District will seek to properly consider and balance the interests of the District's resources, navigation, and other urban uses.

- **Project review.** Currently, LMRWD provides technical review of project proposals but does not issue permits for the majority of the District. The District will continue to provide technical review of projects, in accordance with a defined process and timetable. The District's purpose is to review development and project proposals for their impact on the District's resources and navigation, in accordance with the conditions of the joint resolutions or joint powers agreements LMRWD will enter into with each local unit of government. LMRWD relies on local units of government to forward project proposals to them for review and comment.

For the 2000 Boundary Change Area, the LMRWD has and will continue to implement a project review and permit program. The District will provide technical review and issue permits for projects occurring in this area in accordance with a defined process and timetable.

Appendix C contains a draft model joint resolution, Section 6.2.2 describes the administrative process regarding project review, and Section 6.2.3 describes the general content of the joint resolutions/joint powers agreements. LMRWD intends for this review and comment role to continue after the local units of government implement their water management plans. The conditions of the joint resolutions or joint powers agreements will require that the local units of government submit certain defined types of project proposals to LMRWD for review and comment, prior to the local unit of government approving the project.

If the project lies within the Minnesota River floodplain, then LMRWD also reviews the project for conformance with its floodplain regulations. See Section 5.5.1 for more information about LMRWD's role in floodplain management and Appendix B for the full text of the District's floodplain regulations.

LMRWD will support its technical review and comment process with an inspections program to verify that the projects are meeting the mutually-agreed upon standards listed or referenced in the joint resolution/agreement.

- **Provide public information services.** The District will undertake proactive, focused education and information programs regarding the District's resources (inventory, assessment and use attainability information) and navigation in the lower Minnesota River valley. LMRWD will also provide hydrologic information pertaining to the Minnesota River to local units of government for their use in planning and resource management. Section 5.6 provides more information about the District's proposed information and outreach program. These programs will emphasize the District's work described above, and seek to support the mutual goals of the District and local agencies in that regard.

LMRWD will perform these services by fulfilling the roles of project facilitator, project proposer, and regulator, in that order of priority:

1. Project Facilitator - LMRWD will need to work cooperatively with other units of government to inventory and assess the resources in the District.
2. Project Proposer - LMRWD may undertake projects, but will tend to limit involvement to those projects done jointly with other units of government or organizations in response to petitions. For example, LMRWD may enter into projects that will develop, protect, enhance, and/or restore the District's resources (erosion control, greenbelts, habitat creation, etc.) either independently, or jointly with other units of government or other organizations in response to petitions. If a city wants LMRWD to fund a project that will benefit the District's resources, the city will need to petition LMRWD for such a project. LMRWD will place a higher priority on undertaking projects that are identified in future resource plans (see also policy 4 in Section 5.14).

LMRWD will also enter into projects that benefit navigation (dredge material disposal sites, bank erosion control, etc.). LMRWD will fund bank erosion control projects only if initiated by a petition from a city.

LMRWD will undertake planning studies and capital projects to develop public access to, and facilitate public enjoyment of, the District's resources.

3. Regulator - LMRWD does not wish to duplicate the existing regulatory authority of other agencies. The LMRWD Managers believe that regulation is more properly performed at the local level (cities, townships, counties), rather than by LMRWD. As discussed earlier in this section, LMRWD will continue to provide technical review of projects, in accordance with the conditions of joint resolutions/agreements, but will not issue permits.

If the project lies within the Minnesota River floodplain, then LMRWD also reviews the project for conformance with its floodplain regulations. LMRWD will continue to apply its

floodplain program until local units of government develop and implement their own floodplain permit programs that conform with this plan.

If a joint resolution is rescinded, or if LMRWD finds that the local unit of government has failed to enforce the standards and policies of LMRWD, then LMRWD will adopt regulations after a public hearing, and begin operating a permit program in the local unit of government to enforce the LMRWD standards and policies.

The Managers do not believe the District should perform roles which are, or may be, more appropriately performed by other agencies within the District. Although the District contains that portion of the Minnesota River watershed extending generally to the bluff line, the District has no control over activities that affect the District but take place “over the bluff.” Many tributary streams originate outside LMRWD but pass through the District. Therefore, LMRWD will encourage local units of government within the District to initiate and perform flood control, runoff, and water management tasks.

The LMRWD has and will continue to implement a project review and permit program for the 2000 Boundary Change Area as discussed previously in this plan. The District will work cooperatively with the Minnehaha Creek Watershed District to allow review and comment on projects that occur within the “Contested Area” in the Lower Minnesota River Watershed District, but may have an impact on the Minnehaha Creek Watershed District.

The remainder of this section describes the specific goals and policies of the LMRWD, consistent with the Managers’ chosen roles, as described above.

5.3 Recreation, Fish and Wildlife, and Other Resource Uses

5.3.1 Wildlife, Open Space, and Recreation

The lower Minnesota River valley is a unique area which supports critical needs of many fish and wildlife species, and provides tremendous outdoor recreation and educational opportunities for the population of the Twin Cities metropolitan area. The goal of the LMRWD is:

- To maintain or improve the quality and quantity of fish and wildlife habitat, and outdoor recreation and educational opportunities.

Policies

1. LMRWD will encourage public and private landowners to maintain wetlands and open space areas for the benefit of wildlife. Suitable habitat is key to supporting fish and wildlife populations and such habitat can be provided incidentally to other activities.
2. LMRWD will support the DNR’s efforts to improve fishing opportunities in the lakes and streams of the District.
3. LMRWD will assess the condition and potential of the District’s resources.
4. LMRWD will assist in the development of resource plans for the management of the District’s resources (see Section 5.2.2 for listing).

5. LMRWD will support the Comprehensive Plan of the Minnesota Valley National Wildlife Refuge and the efforts of the U.S. Fish and Wildlife Service (USFWS) and DNR to preserve the valuable wildlife and other natural and cultural resources of the lower Minnesota River valley.
6. LMRWD will assist in the development of public access to, and facilitate public enjoyment of, the resources in the lower Minnesota River valley.
7. LMRWD will undertake petitioned projects either independently, or jointly with other units of government or other organizations to develop, protect, enhance, and/or restore the District's resources (erosion control, greenbelts, habitat creation, etc).

5.3.2 Shoreland Management

The goal of the LMRWD is:

- To maintain the integrity of shorelands in the LMRWD.

Policies

1. LMRWD will promote and encourage protection of non-disturbed shoreland areas and restoration of disturbed shorelines and streambanks to their natural state as much as possible.
2. LMRWD will discourage the removal of streambank and lakeshore vegetation during and after construction projects.
3. LMRWD encourages local units of government to identify, rank and map disturbed shoreland areas. Shoreland areas include streambanks, the banks of the Minnesota River, and lakeshore areas. Local units of government will be required to address this issue in their local water management plans.
4. LMRWD will undertake petitioned bank erosion control projects for bank erosion control on the Minnesota River and its tributaries.
5. LMRWD and local units of government will make available a map of DNR-regulated public waters. Local units of government exercising planning and zoning authority shall also include these maps with their local zoning plans. LMRWD and local governments shall use their best efforts to notify persons proposing or carrying out filling or other development activity in public waters that their activity may require a DNR permit.

5.3.3 LMRWD Water Resource Classification

There are many water resources located wholly within LMRWD, including the following tributary streams that originate from within LMRWD:

- Eagle Creek (trout stream) and Boiling Springs. Much of the tributary area is fully contained within LMRWD.
- Assumption Creek (trout stream).

- Unnamed stream from the Savage Fen.
- Kennaley’s Creek (trout stream).
- Unnamed trout streams #1, #4 and #7.
- Other unnamed streams that enter the Minnesota River or floodplain lakes.

Since these streams originate within LMRWD, it makes sense for LMRWD to manage these resources, in conjunction with others that are charged with managing these resources. For example, the MnDNR is responsible for managing trout streams, so LMRWD would need to work cooperatively with them on any projects affecting the trout streams.

To help manage water resources, the District classified water bodies and established management goals for each class. The standards and criteria in Section 5.13 are based on the classification system. Most water resource classification systems classify water resources based primarily on existing and future use by humans. However, the LMRWD system must also consider the unique environmental characteristics of the District’s water resources, specifically:

- Unique and rare water resources, including floodplain wetlands, calcareous fens and trout streams.
- Major river within the boundaries of LMRWD (other WMO and watershed district boundaries stop at major rivers).

The classification system, and the desirable water quality for each category, are described below.

5.3.3.1 Classification Categories

The LMRWD classification system for water resources classifies each water resource according to four categories of environmental characteristics, subclassified by five levels of human use. The four environmental characteristic categories are:

Minnesota River—The Minnesota River has been assigned a special classification to reflect the special efforts underway to improve the river’s water quality.

Floodplain—Water resources located within the Minnesota River floodplain.

Upland—Water resources located outside the Minnesota River floodplain which are not a unique resource.

Unique Resources—Water resources such as calcareous fens and trout waters.

The five levels of human use are:

Level I Activities —Swimming, scuba diving and snorkeling

Level II Activities—Sailboating, waterskiing, motorboating, canoeing, hiking, picnicking, wind surfing, and jet skiing

Level III Activities—Fishing, aesthetic viewing, and observing wildlife

Level IV Activities—Aesthetic viewing and observing wildlife

Level V Activities—Stormwater detention

Since these levels of human use are most applicable to lakes, ponds and wetlands, LMRWD may institute a separate classification system for streams based on the existing and attainable ecological use of each stream. The Use Attainability Analysis (UAA) method is a structured scientific assessment of the chemical, physical, and biological conditions in a water body. LMRWD will use this method for both lakes and streams to assess the current ecological integrity of each water body and develop management recommendations to maintain and/or improve the water body's ecological integrity. Although the UAA is used for both lakes and streams, it will be especially useful for streams.

5.3.3.2 Management Objectives

The different management objectives for water resources placed within each classification are described below. These classifications are based on environmental characteristics of the water resources. For this reason, wetlands could be classified as either floodplain, upland, or unique resources. The objectives are to be accomplished by initiatives of the LMRWD, or through the provisions of the local water management plans, as specified in Section 6, Implementation.

Minnesota River

The Minnesota River has been assigned a special classification to reflect the special efforts throughout the greater Minnesota River watershed to improve the river's water quality. Since so much of the Minnesota River's watershed is outside of LMRWD's control, LMRWD will not seek to regulate the water quality of the Minnesota River, but will cooperate to achieve the MPCA's water quality goals for MPCA Class 2C, 3B, 3C, 4A, 5 and 6 waters. The LMRWD's management goals for the Minnesota River will emphasize achieving the goal of 40% reduction in non-point source pollution to the Minnesota River (see Section 5.4), enhancement of natural uses and enhancement of existing Level II and III human uses (such as boating, fishing, hiking and biking).

Floodplain Category

This category applies to water resources located within the Minnesota River floodplain, which includes many of the Minnesota Valley National Wildlife Refuge lakes. Minnesota River floodwaters frequently inundate (about once each year) the floodplain water resources, greatly impacting those resources. The interactions of some of the floodplain water resources with the Minnesota River are managed to some degree. For example, levees were constructed which reduce the frequency of inundation, and outlets were installed to allow for manipulation of water levels. Other floodplain water resources are allowed to interact freely with the Minnesota River.

The LMRWD will encourage that water resources in the floodplain category be managed mainly to enhance the natural plant and animal communities, and to preserve existing Level III and Level IV human uses (such as fishing, hiking, biking, etc.). The LMRWD recognizes that there are other human activities that take place within floodplain lakes (such as swimming in Snelling

Lake) that are at a level higher than the general management goal. LMRWD's goal is to preserve those current human uses that require a higher water quality.

Upland Category

The water resources located outside the Minnesota River floodplain which are not a unique resource are in the upland category. Examples of these water resources include Credit River, stormwater ponds and Dean Lake. The LMRWD will encourage that upland water resources be managed for both the natural and human communities that use them. Management goals for these water resources will emphasize enhancing interaction of the human and natural communities, and managing the stormwater and human impacts on the water resources.

Various human activities occur within the upland water resources. LMRWD's management goal is to preserve the existing human use of the water resource. For example, stormwater detention basins would represent a Level V activity, wetlands would generally represent Level IV activity, streams (such as Credit River) would generally support Level III activities, and lakes (such as Dean Lake) would generally support Level II or III activities.

Unique Resources Category

Many unique resources located within LMRWD, such as calcareous fens and trout waters, warrant special management. These resources will be managed for specific, identified natural biologic communities of special importance or significance, in accordance with any existing or future official management plans, such as the DNR's *Savage Fen Resource Plan* and the Eagle Creek Aquatic Management Area plan. General management goals for these water resources are to understand, preserve, protect, and restore. LMRWD recognizes that human use of these resources occur; such uses can vary from Level I to Level IV.

5.3.3.3 Water Quality Goals

The desirable water quality for natural uses varies dramatically according to the special needs and sensitivity of the natural community. For instance, a trout fishery requires cold temperatures and high levels of dissolved oxygen whereas other fisheries are more tolerant. Natural uses must be considered when determinations are made regarding the appropriate level of protection for a particular water resource. If a water resource's use by the natural community requires better water quality than the human use, the water resource must be managed for the higher water quality.

The desirable water quality also varies significantly with the level of human activity, as described in the following paragraphs.

Water Quality for Level I Activities. Snorkeling, scuba diving and swimming are activities that are first affected as eutrophication progresses. Since water color and the resulting loss of clarity affect Level I activities, threshold limits for Level I activities have been established at a total phosphorus concentration of 30 µg/L, a chlorophyll concentration of approximately 10 µg/L, and a Secchi disc transparency of about 7 feet (2.0 meters) during the swimming season. These threshold chlorophyll and Secchi disc values define an approximate level of water quality which, if exceeded, have the potential to interfere with Level I activities. The presence of fecal coliform bacteria impairs swimmable use. The MPCA's fecal coliform bacteria limit for Class 2B waters is 200 organisms per 100 milliliters. LMRWD's responsibility encompasses watershed loadings. Since fecal coliform bacteria are a local issue,

it is the responsibility of the unit of government that owns and operates a swimming beach to monitor and manage the bacteria.

Water Quality for Level II Activities. Although rooted vegetation and algae blooms can be aesthetically and physically detrimental to the enjoyment of Level II recreational activities, such activities do not involve continual body contact and can be pursued under conditions of less water clarity and more aquatic vegetation than Level I activities.

Estimated Level II threshold limits are 45 µg/L for total phosphorus, 20 µg/L for chlorophyll and 3.3 feet (one meter) for Secchi disc transparency. These limits were determined by studying the water quality data from lakes with nuisance algae problems. It is generally the blue-green algae which reach nuisance levels. Chlorophyll concentrations exceeding 20 µg/L appear to have a significantly greater potential for developing noxious odors under suitable wind and temperature conditions than concentrations less than 20 µg/L.

Aquatic vegetation reaching within 1 or 2 feet of the water surface can interfere with boating activities, diminishing the enjoyment of these activities. Weed growth is related to water clarity, availability of nutrients and water depth. The lakes with clearest water often have the most serious rooted aquatic vegetation problems. Water depths of approximately 8 feet (2.5 meters) or less contribute to the problem since it is usually possible for light to penetrate to that depth, allowing bottom-rooted plants to reach the water surface. Secchi disc, chlorophyll and phosphorus data do not directly measure the weed growth potential for a lake, but a visual assessment of the situation during the summer is usually sufficient to determine if growth is extensive enough to interfere with Level II activities.

There are many recreational activities which do not require the use of the water surface but are nevertheless affected by the lake's eutrophic level. Examples are hiking and picnicking activities adjacent to the lake which can be affected by unsightly algae blooms, overabundant aquatic vegetation, and by odors from decaying algae and fish. Hiking and picnicking activities were, therefore, placed into Level II where aesthetic interferences should be kept at a minimum.

Water Quality for Level III Activities. Fishing is certainly more enjoyable in an aesthetically pleasant surrounding; however, the optimum lake conditions for warm water fish production may not correspond to conditions preferred for Level I or even Level II activities. In fact, studies have shown that warm water fish production increased predictably with increasing phosphorus levels. Based on data collected from a number of metropolitan area lakes, the recommended Level III limits are 40 µg/L summer average chlorophyll and about 75 µg/L summer average total phosphorus. The corresponding summer average Secchi disc reading would be about 2.0 feet (0.6 meters).

The ability of a lake to support a fishery is also dependent upon other factors such as lake morphometry, predator-prey relationships, habitat, species composition, and dissolved oxygen conditions under the ice during the winter months. A study of several lakes in the metropolitan area with game fish populations indicate that winterkill conditions are likely to occur periodically in eutrophic lakes with a mean depth of 13.3 feet (4 meters) or less. Lakes having a significant volume of winter inflow and outflow are normally less susceptible to winterkill than lakes with no continuous inflow and outflow.

Water Quality for Level IV Activities. Water resources in this category, such as wetlands, are not generally used for direct recreational activities, but may be enjoyed by the public. Uses

include aesthetic viewing activities, observing waterfowl and wildlife, and other appropriate public uses. Because the water quality of these resources varies greatly, specific water quality criteria have not been established. All wetlands not otherwise classified are considered to be in the Level IV Category.

Water Quality for Level V Activities. Not all water bodies are suitable for or are used for recreational activities. Level V designates a level of water quality which is past the point of optimum warm water game fish production and severely limits most recreational uses. Level V water resources have a primary (not exclusive) function as stormwater detention basins, used for runoff management. Level V includes nonwetland water bodies having a summer average phosphorus concentration greater than 75 µg/L and a summer average chlorophyll concentration greater than 40 µg/L. This corresponds to an average summer Secchi disc reading less than or equal to about 1.5 feet (0.5 meters).

The water quality categories established for evaluation of LMRWD water resources and target water quality goals for each category are shown in Table 5-1.

The proposed LMRWD water resource classification system considered criteria developed by MPCA, Metropolitan Council, and MDNR. Table 5-2 lists the LMRWD classification for LMRWD water resources and correlates it to the other agencies' classification systems. The other classifications include:

12. MPCA Swimmable Use Class (fully, partially, or not supporting)
13. MPCA Water Quality Standards (from MN Rules 7050.0220; see Table 5-3 for description of these standards)
14. Metropolitan Council—Priority Waters Class (Class 1 through Class 4; see Table 5-4 for descriptions)
15. MDNR Ecological Class (based on fisheries; see Table 5-5)

LMRWD established subwatersheds (see Figures 3-6a through 3-6g) and assigned a water quality category to each subwatershed, as shown in Table 5-6. The required level of water quality treatment will be based upon the subwatershed's water quality category (see Section 5.13). The LMRWD classification for individual water resources is also shown in Table 3-4. See Section 5.4—Water Quality, for more policies relating to water quality.

5.3.4 Commercial and Recreational Navigation

The philosophy of the District Managers since the establishment of LMRWD on March 23, 1960, is that its participation in the construction and maintenance of a good and usable navigation channel for the lower Minnesota River is a primary responsibility of the LMRWD. The District's goal is:

- To maintain and improve commercial navigation on the lower Minnesota River.
- To facilitate active and passive recreational use of the river corridor.

Policies

1. LMRWD will continue to work with the U.S. Army Corps of Engineers (COE) in the maintenance of the navigation channel on the lower Minnesota River. LMRWD will continue to acquire sites for the COE for placement of dredged material which are as environmentally safe and economically located as possible, and facilitate coordination between citizens, local governments, and the COE.
2. LMRWD will require local water management plans to show the LMRWD-identified existing and future dredged material disposal sites that are located within their boundaries.
3. LMRWD will continue to follow a process which fulfills Wetland Conservation Act and other legal requirements before a possible dredge material disposal site is used for placement of dredge materials. The District will perform a property survey, locate and delineate wetlands, perform any needed archaeological surveys, negotiate access to the site, and negotiate purchase or lease agreements. LMRWD will first try to avoid placement of dredged material in wetlands. If placement cannot be avoided, then wetland replacement will be accomplished as required by law.
4. LMRWD will use the results of future resource assessments and resource plans to assist the District in determining if a dredge disposal site is in an appropriate location. If LMRWD determines a site to be inappropriate, LMRWD will either drop the site from consideration (if proposed), or try to mitigate the adverse impacts of an existing site.
5. LMRWD will work with cities to obtain permanent road access to dredged material disposal sites.
6. LMRWD will review and comment on the comprehensive recreation plan for the Minnesota River valley, a cooperative effort of the Minnesota Valley National Wildlife Refuge, DNR, counties and local units of government.
7. LMRWD will undertake projects, either independently, or jointly with other units of government or other organizations, that benefit navigation (erosion control, dredge material sites, etc).
8. LMRWD will take the lead, or work cooperatively with the COE if they choose to lead, in developing a comprehensive public/private dredge material management plan. For example, such a plan might allow private dredging companies to use public sites in exchange for user fees in the form of a lease or some other contractual agreement

5.4 Water Quality

Improved water quality in the Minnesota River is a priority with State and Federal policy makers. More than 16,000 square miles of the Minnesota River watershed is beyond the control of the LMRWD, and management of in-stream water quality from these tributary areas will be left to agencies with wider influence and jurisdiction. However the LMRWD is committed to maintaining or improving the quality of waters originating within its boundaries, and assisting other municipalities and WMOs in achieving reductions in non-point loadings to the river within the LMRWD. Specific goals of the LMRWD are:

- To work with other units of government to achieve the goal of 40% reduction in non-point source pollution to the Minnesota River.
- To reduce non-point source pollution in the LMRWD.
- To assess and manage priority resources with the cooperation of local units of government and adjacent WMOs.

Policies

1. LMRWD will achieve water quality goals in cooperation with other units of government through stormwater runoff management controls and the District's proposed resource assessment and planning process (see Section 5.2.2).
2. LMRWD will require stormwater runoff management practices which lead to attainment of the water quality goals of LMRWD water bodies. These practices include both structural and non-structural methods which reduce runoff rates and non-point nutrient and pollutant loadings.
3. As part of the resource assessment process (see Section 5.2.2), LMRWD will develop and implement a water quality monitoring program to identify existing and changing conditions. Water quality monitoring activities will be coordinated with other governmental units whenever possible, to be cost effective and to avoid duplication of data collection efforts. Table 5-7 presents the general content of LMRWD's proposed water quality monitoring program for lakes, and the regulatory agencies' recommendations for water quality monitoring programs. Future monitoring data will be entered into the STORET database system.
4. LMRWD will participate in the Metropolitan Council's Watershed Outlet Monitoring Program to monitor the water quality of the tributary streams that discharge into the Minnesota River.
5. LMRWD will seek cooperative agreements with adjacent Water Management Organizations which contain provisions for quantity and quality requirements for surface water discharges into the LMRWD. Specifically, these agreements are to address the reduction of non-point source pollutants prior to discharge into the waters of the LMRWD. The future resource assessment plans may call for such agreements as part of implementation.
6. LMRWD will require local water management plans to address shoreland regulation issues (i.e. are MnDNR shoreland regulations required in the local unit of government, etc.).
7. LMRWD will require local water management plans to require the preparation of Runoff Management Plans (see Section 5.13) for all projects disturbing one or more acres of land (including removal of vegetation). LMRWD will review only those projects that meet the criteria listed in policy 2 of Section 5.13.
8. LMRWD will require local water management plans to include design standards for new stormwater ponds to reduce contaminant loadings in surface water runoff (i.e. National Urban Runoff Program design criteria).

5.5 Runoff Management and Flood Control

5.5.1 Floodplain

The natural function of river and stream floodplains is to carry or hold excess water during times of flooding. This function can be greatly hindered by restricting the channel and encroaching on the floodplain, aggravating the tendency for the river to flood and cause damage. The floodplain also provides habitat for many species of plant and animal life. The goal of the LMRWD is:

- To maintain natural water storage areas and the Minnesota River floodway.
- To protect the lakes and watercourses from encroachment in order to maintain discharge capacity.

Policies

1. LMRWD will continue to administer its Minnesota River Floodplain Regulations (see Appendix B) in a local unit of government until the local unit of government adopts either a) a DNR-approved floodplain ordinance, or b) a floodplain ordinance that conforms with this plan. At the time LMRWD is negotiating joint resolutions/agreements with the local units of government, LMRWD will review each local unit of government's floodplain ordinance to determine the differences between the LMRWD and local unit of government regulations. After the local unit of government adopts either a DNR-approved floodplain ordinance or a floodplain ordinance that conforms with this plan, it is their responsibility to regulate floodplain activities, unless the local unit of government gives the authority to LMRWD. Landowners must obtain permits from the appropriate governmental unit prior to making alterations in the Minnesota River floodplain.
2. LMRWD will continue to review and comment on project proposals in the Minnesota River floodplain that are located in local units of government which have adopted a DNR-approved floodplain ordinance that does not conform to this plan.
3. Local units of government are responsible for regulating activities in the floodplain of streams and other water bodies outside the Minnesota River floodplain, but tributary to the Minnesota River.
4. LMRWD will require that local units of government regulate land use adjacent to floodplains in accordance with state floodplain zoning regulations, including freeboard surcharge and floodway surcharge.
5. LMRWD will assemble technical data to assist local and other units of government to redefine the Minnesota River floodway and floodplain, where appropriate, and otherwise appropriately manage the floodplain.
6. LMRWD will review amendments/revisions to city comprehensive plans for their effect on the Minnesota River floodplain.

5.5.2 Stormwater Runoff

Providing for the management of runoff is a basic responsibility of local governments and the LMRWD. It is especially important to manage runoff in an urbanizing area such as LMRWD, which contains a high proportion of important industrial and commercial land. The LMRWD's goals are:

- To reduce to the greatest practical extent the public capital expenditures necessary to control excessive volumes and rates of stormwater runoff while pursuing the goals and policies of this plan.
- To prevent increases in the rates of stormwater runoff entering the LMRWD from other watershed districts and WMO's.
- To reduce non-point source pollution (including sediment) carried as stormwater runoff.
- To protect against increased flooding caused by land disturbing activities.
- To increase available water storage through construction of stormwater storage ponds.

Policies

1. As part of the local planning process, LMRWD will require local units of government to delineate subwatersheds and present detailed hydrologic information, including normal, 5-year (or 10-year), and 100-year existing/proposed water levels, 5-year (or 10-year) and 100-year existing/proposed flow rates, runoff volumes and storage volumes, and existing/proposed outlet information in the local plan. A hydrograph method based on sound hydrologic theory shall be used to analyze stormwater runoff for the design or analysis of flows in conveyors, streams, and channels and flows to ponds and wetlands. Reservoir routing procedures and critical duration 100-year runoff events shall be used for design of detention basins and outlets.
2. Local plans must include maps of the existing and proposed stormwater system, including ponds, pipes, drainageways, and stormwater outfalls.
3. LMRWD encourages the use of temporary surface stormwater storage facilities and infiltration techniques wherever practical and environmentally sound.
4. Local units of government that own, operate and maintain channels, drainageways and watercourses which discharge stormwater runoff within the District are responsible for the continued operation and maintenance of such systems. LMRWD will review and comment on all proposed projects affecting the channels, drainageways and watercourses within the District to prevent erosion, sedimentation and flooding problems.
5. LMRWD will require that local water management plans include an inventory of lake and stream outlets to the Minnesota River. The inventory must include the type, size and preferably the elevation of the outlet. LMRWD also requests that electronic versions of this information be given to the District for inclusion in its GIS database.
6. Local units of government will be required to adopt permit programs which conform to the goals, policies, standards and criteria presented in the LMRWD plan, including the runoff

water management plan requirements (see Section 5.13). Existing and/or proposed permit programs will need to be described in the local water management plan.

7. LMRWD will require that local water management plans set intercommunity flowrates according to the following criteria:
 - a. Planned flowrates, where the adjoining local plans agree as to both flowrate and timing of improvements (if proposed flowrates differ from existing flowrates).
 - b. Historic flowrates, established by existing infrastructure or historic written agreement between adjoining communities.
 - c. Where neither “a” nor “b” apply, predevelopment flowrates will apply, as calculated for a 100-year event. If the local unit of government and LMRWD cannot agree on the method or assumptions to use to calculate the predevelopment flowrates, it will be calculated using the rational formula, assuming a Rational Coefficient “C” of 0.10.
 - d. Where a landlocked basin is to be provided an outlet, the peak flowrate from the basin will be based on the following guideline: outflows will not be greater than the runoff from a 100-year, 1 hour event for predevelopment conditions (presumed to be 0.32 cfs/acre for a 1 acre watershed), adjusted in proportion to the reciprocal of the square root of the area (see Figure 5-1). The minimum allowable flowrate cannot be less than the equivalent of 9 inches of runoff in 30 days (0.0126 cfs/acre). LMRWD will consider other criteria proposed by local units of government.

LMRWD will also use these criteria to assist in the mediation or facilitation of an intercommunity flow dispute between adjoining communities.

8. LMRWD encourages local water management plans to manage stormwater and snowmelt runoff rates on a regional or subwatershed basis so that future peak rates of runoff crossing not only community boundaries, but also WMO boundaries, and/or entering major water bodies are below or equal to predevelopment rates for runoff-producing events of critical duration with return frequencies up to and including 100 years. LMRWD realizes that in some cases it may be necessary to deviate from this policy in order to relieve flooding problems. Communities may increase flowrates that are completely contained within their boundaries, provided the communities show that sufficient capacity exists in the downstream infrastructure, all necessary easements have been obtained, and water quality standards will be met.
9. The level of protection along all trunk conveyors, streams, and channels and around all wetlands, ponds, detention basins, and lakes shall be based on the critical-duration 100-year flood.
10. Lateral conveyors should be planned to provide discharge capacity for the critical-duration runoff event that is not less than a 5-year frequency event, preferably a 10-year frequency event (level of service). Where the planned level of service would cause hardship in operation of a downstream system, the owner may design for a lesser level of service if the following circumstances are present:

- The proposed new or replacement system will not have a longer life than that of the existing downstream system.
 - It is not practical to incorporate temporary measures into the new system to mitigate the effects of the new system on the downstream system.
11. LMRWD will provide technical review of project proposals for their impact on the District's resources and navigation, in accordance with the conditions of the joint resolutions or agreements LMRWD will enter into with each local unit of government.
 12. LMRWD will review amendments/revisions to city comprehensive plans for their effect on the District's resources.
 13. LMRWD has and will continue to implement a project review and permit program for the "2000 Boundary Change Area."

5.6 Enhancement of Public Participation; Information and Education

LMRWD's goals regarding information, education and public participation are as follows:

- To provide information that LMRWD and the local units of government can use to assist them in resource protection.
- To educate the public about LMRWD's resources and navigation in the lower Minnesota River valley.
- To develop more public involvement and interest in LMRWD and its activities.
- To maintain an active citizen advisory committee.
- To maintain a technical advisory committee.

The District will maintain an Advisory Committee composed of members of the general public as well as officials of local government units. The Advisory Committee was formed in 1997 to provide input during preparation of this plan regarding the citizen concerns in the District. After plan approval, the advisory committee's role will include providing input to LMRWD regarding proposed projects and assisting in implementing the information and education program.

The technical advisory committee will be consulted on an as-needed basis to provide technical input for project review and for LMRWD-proposed projects. The technical advisory committee is comprised of the technical representatives of the local units of government.

Lists of advisory committee members can be obtained from the LMRWD administrator.

Policies

1. LMRWD will publish an annual report summarizing its activities in newsletter form for public distribution.

2. LMRWD will collect and distribute hydrologic information pertaining to the Minnesota River that is needed by the local units of government for planning and resource management.
3. LMRWD will undertake proactive, focused education and information programs regarding the District's resources and navigation. Such information would likely include resource inventory, assessment and use attainability information, as it is developed.
4. LMRWD will maintain continuing interest of the citizen advisory committee members by encouraging their active involvement in programs (such as education outreach and data collection), review of proposed policies, and review of proposed projects and/or programs. Other functions may be added in the future.
5. LMRWD will raise public awareness of issues in the lower Minnesota River valley through support or assistance in development of public access to, and facilitating public enjoyment of, the resources in the valley.
6. LMRWD will develop an education outreach program to familiarize the local units of government and the public with LMRWD's activities. The outreach program will likely include the following:
 - LMRWD attendance at meetings of city councils, counties, the Minnesota River Joint Powers Board, public interest groups (such as Friends of the Minnesota River Valley), etc.
 - LMRWD presentations to schools, conferences, seminars, etc. regarding activities in LMRWD, water resource issues in LMRWD, etc.
 - Conducting public tours of the watershed to targeted groups, such as city engineers, public officials, environmental groups, and members of the citizen and technical advisory committees.
 - Encouraging other units of government to include information about LMRWD in their water resource-related documents.
 - Sponsorship of and/or participation in grass-roots level environmental initiatives, such as streambank cleanup, storm drain stenciling, etc.
 - Coordination with other groups and units of government in developing education programs or implementing their ongoing education efforts to produce targeted educational materials.
7. The LMRWD Managers and the Advisory Committee will meet regularly with the adjoining WMOs to determine how to cooperate with one another in managing the shared water resources.
8. The LMRWD Managers will organize a symposium of the WMOs adjacent to the LMRWD to discuss common issues associated with the lower Minnesota River.

5.7 Public Ditch Systems

There are no public ditches in LMRWD.

5.8 Groundwater Management

The quantity and quality of groundwater flows have a direct impact on the resources located in LMRWD, such as floodplain wetlands, calcareous fens and trout waters. Although groundwater management is important to maintain or improve the “health” of the surface waters, LMRWD does not intend to take an active groundwater protection role, since other units of government and other groups appear to be adequately addressing the issues. In addition, the counties are more likely to contain groundwater watersheds within their boundaries than LMRWD. The LMRWD goals are:

- To promote groundwater recharge.
- To protect groundwater from contamination to assure a safe source of drinking water.
- To support and assist in intercommunity evaluation of groundwater impacts on water supplies.
- To maintain good groundwater quality to protect the groundwater-sensitive water resources in the District.
- To maintain sufficient groundwater flows to assure the continued existence of those surface water resources whose main water source is groundwater.

Policies

1. LMRWD will support existing entities, such as the counties and the Southwest Metro Groundwater Work Group, in their groundwater management efforts. LMRWD could take a more active role in the future, if the counties determine they need additional assistance from LMRWD in groundwater management.
2. LMRWD will encourage the counties to identify areas with high groundwater recharge capabilities (those areas provide a direct route for contaminants to reach groundwater aquifers) and develop a groundwater recharge area protection policy. LMRWD will review such policies.
3. LMRWD will encourage sound land use and development practices which enhance groundwater infiltration without endangering ground water quality. LMRWD will encourage local governments to develop and include groundwater recharge methods as part of stormwater control.
4. LMRWD promotes the use of regional groundwater models to address calcareous fen and other sensitive resource protection issues. LMRWD will provide existing LMRWD information for use in regional groundwater modeling efforts.
5. LMRWD will consider groundwater sensitivity during review of proposed projects and when siting stormwater detention and retention ponds. LMRWD will consult with the counties to determine sensitivity.

6. LMRWD will review the Minnesota Department of Health's wellhead protection plans and promote their implementation.
7. LMRWD will review county groundwater protection ordinances.
8. LMRWD will discourage the routing of untreated stormwater runoff into mined areas.

5.9 Wetland Management

The goals of the LMRWD are:

- To preserve wetlands for water retention, recharge, soil conservation, wildlife habitat, aesthetics, and natural enhancement of water quality.
- To achieve no net loss of the District's wetlands in conformance with the WCA and the associated rules (MN Rules 8420).

Policies

1. LMRWD prefers that the local units of government continue as, or take on the role of, the local government units (LGUs) responsible for administration of the Wetland Conservation Act (WCA) and rules (MN Rules 8420). Most of the cities, townships and counties in LMRWD are the designated LGU. LMRWD will act as the LGU only if a local unit of government is not designated as the LGU and refuses to take on the LGU role.
2. LGUs must protect wetlands from impacts in the following order: avoid, minimize, mitigate. Mitigation of unavoidable wetland impacts must be accomplished through restoration (first priority), enhancement (second priority), or wetland creation (third priority).
3. In accordance with MN Rules 8410.0060, LGUs shall evaluate wetland functions and values either through development of a comprehensive wetland management plan which assesses the functions and values of the wetlands present, or on a case-by-case basis, as needed. LGUs shall use or require the use of the "Routine Assessment Methodology" or some other approved methodology to assess the functions and values of individual wetlands.
4. LMRWD encourages the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, DNR, counties, municipalities, and other governmental units to delineate the fens located in the District, with special emphasis placed on delineation of the Savage fen.
5. LMRWD will require local governments exercising planning and zoning authority or acting as LGU to maintain all wetland information and inventories, including National Wetland Inventory maps and any other wetland inventory information developed by the USFWS and the DNR, and to notify persons proposing to fill or undertake other development activity in areas identified as wetlands that their activity may come under the WCA rules and/or require a U.S. Army Corps of Engineers permit.
6. LMRWD will work with the LGUs to develop criteria for prioritizing wetlands.

7. LMRWD will protect District wetlands from the detrimental effects of erosion, sedimentation, and other non-point source pollutants by requiring that local governments implement the standards and criteria listed in Section 5.13.
8. LMRWD considers lands located within the Minnesota River floodplain and calcareous fens to be high priority areas for wetland preservation and restoration. Local management plans may designate additional areas as high priority for wetland preservation, restoration and establishment.
9. LMRWD will promote the creation of a wetland banking area within LMRWD so high quality wetlands are available for replacement.
10. LMRWD will review future changes to state rules and statutes addressing wetlands and make any necessary revisions to its policies and/or standards.
11. Upon receipt of recommended practices for discharges to wetlands, such as interagency policies, LMRWD will consider changing its policies and/or standards to incorporate such recommendations.
12. LMRWD encourages LGUs to track wetland losses, including 'de minimus' fill and excavation activities.
13. LMRWD will require local plans to include the following wetland-management related items:
 - Consider the need to establish buffer zones around wetlands.
 - Description of their wetland permitting process.
 - The need to develop ordinances that require inspection and enforcement of replaced and restored wetlands.
 - Description of a wetland management classification system (applies to LGUs only).
 - Identification of high priority areas for wetland preservation, restoration and establishment.
 - Description of method for assessing wetland functions and values.
 - Description of local wetland banking programs (if in place) or the need to develop a local wetland banking program.

5.10 Trout Waters

As stated in Section 5.3.1, one of the goals of LMRWD is to maintain or improve the quality and quantity of fish habitat. As discussed in Section 4.2.2, trout waters are and will continue to be threatened by development in their watersheds.

The Report on the Status of DNR Metro Region Trout Streams (DNR, 1996) recommends the following actions for the trout waters in LMRWD:

- Assumption Creek: public acquisition of a significant portion of the upstream watershed and a stream corridor.
- Eagle Creek: establishment of a watershed coordinator position (this has already been done) to assist local units of government in the implementation of watershed protection and in securing a stream corridor.
- Kennaley's Creek: continue monitoring restoration efforts.
- Other trout streams: develop education materials which can be provided to landowners.
- Courthouse Lake: do not allow stormwater diversions into the lake.

This trout stream report also recommends that local units of government responsible for zoning work cooperatively with watershed districts to more fully address trout resource protection.

The LMRWD Managers realize that there is a lack of data available regarding trout streams in the District. A goal of the Managers is to either collect or cooperate with other entities (such as the DNR) to collect data on these streams.

To protect streams from the negative impacts associated with development, *Site Planning for Urban Stream Protection* (Schueler, 1995) presents a stream protection strategy consisting of the following elements:

- Zone land according to its watershed.
- Protect sensitive areas from development.
- Establish stream buffer network.
- Modify zoning and subdivision codes to reduce creation of impervious cover.
- Limit the disturbance and erosion of soils during construction.
- Treat the quantity and quality of stormwater runoff (install BMPs).
- Maintain stream protection infrastructure.

Policies

1. LMRWD will work with the DNR, local governments, and others to implement the recommended actions described in the trout report (DNR, 1996).
2. LMRWD will work with the DNR Metro Trout Stream Watershed Protection Initiative staff and BWSR to develop education materials for distribution to landowners.
3. LMRWD will incorporate the strategies presented in *Site Planning for Urban Stream Protection* (Schueler, 1995) and/or other resource protection guidelines when developing resource plans for trout stream and trout lake subwatersheds. LMRWD assumes that the

DNR will be actively involved in development of the resource plans. LMRWD will promote implementation of these resource protection guidelines to the cities and counties.

4. LMRWD will encourage implementation of a model (if one becomes available) for trout water subwatersheds that predicts the effects of development and stormwater BMPs on stream temperature.

5.11 Erosion and Sediment Control

The goals of the LMRWD are:

- To prevent erosion and sedimentation to the greatest extent possible.
- To require local units of government to regulate land disturbing activities in order to protect against erosion and sedimentation and to limit the quantities of sediment entering the District's water resources.
- To implement soil protection and sedimentation controls whenever necessary to maintain health, safety, and welfare.
- To prevent the depletion of valuable topsoil.
- To maintain the natural state of bluffs, which are susceptible to severe erosion, so they may continue to provide a transition and buffer between the valley floodplain and the urbanized lands adjacent to the valley.
- To raise public awareness about the cost of erosion and sediment control versus the value of downstream water bodies and the value of eroded topsoil washed downstream.

Policies

1. Local water management plans must include requirements for the preparation of erosion control plans, in addition to runoff water management plans (see Section 5.13), which require the use of BMP's on project sites.
2. LMRWD will undertake an experimental bank erosion control project to find and apply the most economical and effective erosion control measures for the Minnesota River and its tributaries within LMRWD.
3. LMRWD will undertake petitioned projects, either independently, or jointly with other units of government or other organizations, that address bank erosion control for the Minnesota River and/or its tributaries within LMRWD.
4. LMRWD will require local units of government responsible for development review to fully undertake inspection and enforcement duties. This requirement will be included in the joint resolutions/agreements that LMRWD will enter into with each local unit of government (see Appendix C). LMRWD will also require local water management plans to address this inspection and enforcement requirement. Local governments can raise the additional money needed for inspection and enforcement through building permit fees, escrow charges,

performance bonds, letters of credit, etc., according to city/county ordinance and/or developer's agreements.

5. LMRWD will require local governmental units to identify the Minnesota River bluffs, show areas of steep slopes (12 to 18 percent), very steep slopes (greater than 18 percent), and areas of moderate, high, and extremely high erosion potential, and adopt policies for their planning and management, all to be included in their local water management plans.
6. LMRWD will work with the SWCD's and local units of government to identify and inventory gully erosion and resultant siltation sites within LMRWD.
7. LMRWD will undertake petitioned projects, either independently, or jointly with other units of government or other organizations, that correct gully erosion and resultant siltation sites within LMRWD. LMRWD will work cooperatively with the SWCDs to correct erosion and sediment control problems on agricultural land.
8. LMRWD will require local units of government to adopt ordinances which address erosion and sediment control, including the permitting, inspection, and enforcement of such controls; this requirement must be addressed the local water management plan. LMRWD recommends that local units of Government obtain copies of BWSR's Model Ordinance No. 1, Environmental Management Ordinance (including Shoreland Management features) and BWSR's Model Ordinance No. 2 (does *not* include Shoreland Management features). BWSR developed these ordinances for local governments to use as they implement WMO plans. The ordinances address many environmental issues, including erosion and sediment control.

5.12 Consistency with Goals and Policies of Other Governmental Agencies

It is the intent of LMRWD that the goals and policies presented in this plan be consistent with the goals and policies of other agencies.

Policy

1. LMRWD will work with other units of government and adjacent WMOs to assess resources and implement resource plans. This cooperation will allow LMRWD and other units of government to accomplish their common goals for the Minnesota River and its tributaries.
2. The LMRWD Managers and the Advisory Committee will meet regularly with the adjoining WMOs to determine how to cooperate with one another in managing the shared water resources.
3. The LMRWD Managers will continue their involvement and expand their participation in discussions with member counties, adjacent watershed organizations, state agencies, and the Metropolitan Council regarding water management boundary issues and possible expansion/contraction of the District boundaries. Through these discussions, LMRWD will seek to determine the best administrative arrangement to accomplish mutual goals.

5.13 LMRWD Standards and Criteria

Standards and criteria have been adopted to assist LMRWD in reaching its water resource goals. The LMRWD will work with the local governmental units to implement the District's standards for all work within the LMRWD.

Policies

1. The LMRWD standards and criteria, or an approved equivalent, must be incorporated into each local unit of government's local water management plan. Until the local management plan is approved, LMRWD will seek Joint Resolutions with all local governmental units, in which the parties will agree to implement LMRWD standards on proposals within their combined jurisdictions.
2. Local units of government shall submit project proposals to LMRWD for review and comment whenever the project meets any of the following criteria:
 - The project is a residential development affecting five (5) or more acres of land;
 - The project is a public/commercial/industrial development affecting one (1) or more acres of land;
 - The project involves construction or reconstruction of runoff management infrastructure where the contributing watershed is five (5) acres or more;
 - The project will result in diversion of surface water flows between defined subwatersheds;
 - The project will change intercommunity flowrates;
 - The project is located in the Minnesota River floodplain.
3. For projects within LMRWD meeting the above criteria, project proposers shall prepare and implement a Runoff Management Plan and an Erosion and Sediment Control Plan for the work, and shall submit plans, specifications, and computations which demonstrate compliance with applicable LMRWD standards for runoff treatment. Local water management plans and joint resolutions shall require LMRWD review of project proposals.

LMRWD will implement these policies by requiring entities proposing improvements or developments meeting the above criteria to submit a Runoff Management Plan and an Erosion and Sediment Control Plan. These plans shall be submitted to the appropriate local unit of government (city or county), prior to commencing construction or reconstruction of a site. The local units of government shall forward those plans to LMRWD for review and comment, in accordance with the requirements of the approved local water management plan or joint resolution/agreement. The local units of government shall consider LMRWD's comments prior to approving a proposed project, and shall implement the policies and standards of the LMRWD in their review.

LMRWD's program, over a majority of the District, is strictly review and comment; it is not a permit program. LMRWD requires review only for those projects meeting the criteria listed in policy 2, above. It is the local unit of government's responsibility to determine if a Runoff

Management Plan or an Erosion Control Plan is required for projects that do not require LMRWD review. Local governmental units are required to implement the standards of the LMRWD for all projects, regardless of size. The LMRWD will provide technical review for smaller projects, if requested, as a service to the local governmental unit.

For projects occurring with the “2000 Boundary Change Area,” the LMRWD has and will continue to implement a permit program. Pursuant to the cooperative agreements, projects proposed in this area require review and approval by the District.

5.13.1 Runoff Management Plans

Runoff Management Plans shall be prepared by a registered professional engineer. The Runoff Management Plan shall incorporate best management practices (BMPs). Table 5-8 is a checklist of BMPs, and Table 5-9 lists BMPs in order of complexity. Both of these tables are taken from *Protecting Water Quality in Urban Areas* (MPCA, 1989), and can be used as a guide in selecting the appropriate practices and measures. Projects located in a trout stream watershed should consider protection measures such as those contained in *Site Planning For Urban Stream Protection* (Schueler, 1995) or other publications.

The Runoff Management Plan shall include the following:

- Property lines and delineation of lands under ownership of the project proposer.
- Delineation of the subwatersheds contributing runoff from off-site, and proposed and existing subwatersheds on-site.
- Location, alignment and elevation of proposed and existing stormwater facilities.
- Delineation of existing on-site wetlands, shoreland and/or floodplain areas. Removal or disturbance of streambank and shoreland vegetation should be avoided. The plan shall address how unavoidable disturbances to this vegetation will be mitigated.
- Existing and proposed normal, 5-year and 100-year water elevations on-site (if site planning is utilizing the 10-year frequency event, that may be substituted for the 5-year event).
- Existing and proposed site contour elevations related to NGVD, 1929 datum.
- Construction plans and specifications of all proposed stormwater management facilities.
- Stormwater runoff volume and rate analyses for existing and proposed conditions.
- All hydrologic and hydraulic computations completed to design the proposed stormwater quality management facilities.
- Provision of outlots or easements for maintenance access to detention basins, constructed wetlands and other stormwater management facilities.
- Maintenance agreement between developer and local unit of government which addresses sweeping, pond inspection, sediment removal and disposal, etc.

- Documentation indicating conformance with an existing local water management plan.
- All inlets to detention basins, wetlands, etc., shall be placed at or below the normal water level.
- Identification of receiving water body, its subwatershed, and the subwatershed's water quality category (see Figures 3-6a through 3-6g and Table 5-6).

5.13.2 Erosion Control Plans

Erosion Control Plans shall be prepared by a qualified individual, and shall conform with MPCA's NPDES General Permit to Discharge Stormwater from Construction Sites and shall incorporate the appropriate BMPs described in *Protecting Water Quality in Urban Areas* (MPCA, 1989). The NPDES General Permit requirements cover both temporary and permanent erosion control. The erosion control plan shall contain sufficient detail to show erosion control methods on individual building sites, such as silt fence and gravel driveway entrances. Any applicable local standards shall be incorporated into the erosion control plan. Local governmental units are required to implement the standards of the LMRWD for all projects, regardless of size.

5.13.3 Design Criteria

LMRWD adopted the following criteria to meet water quality goals for water resources. As priority resource assessments and resource plans are completed, these criteria may be revised. They are not intended to restrict the design process associated with proposed projects within LMRWD, but they are minimum requirements which the local units of government must adopt for use during their project review process.

Runoff Management Plans shall comply with the following criteria:

- The peak rate of stormwater runoff from the developed subwatershed shall not exceed the existing peak rate of runoff for the 5-year (if site planning is utilizing the 10-year frequency event, that may be substituted for the 5-year event) and 100-year return frequency critical duration storm events on the watershed in which the site is located. For the purposes of this criteria, "subwatershed" may be the project site, or may be an area of greater size for which an approved local water management plan meets this criteria.
- A hydrograph method based on sound hydrologic theory shall be used to analyze stormwater runoff for the design or analysis of flows in conveyors, streams, and channels and flows to ponds and wetlands.
- Reservoir routing procedures and critical duration 100-year runoff events shall be used for design of detention basins and outlets.
- To the extent practical, stormwater runoff from the site after development or redevelopment shall conform with the LMRWD's design considerations according to the subwatershed's water quality category.

LMRWD supports the use of regional detention and treatment facilities for water quality improvement and water quantity control.

1. Where regional detention and treatment facilities that meet LMRWD standards are already in-place or planned to be constructed/installed within five (5) years, on-site detention and treatment facilities are not required.
2. To meet LMRWD standards in situations where regional detention and treatment facilities are either i) not in place and will not be constructed within five (5) years, or ii) do not meet LMRWD standards, then local units of government shall either:
 - Require construction of on-site detention and treatment basins meeting LMRWD standards, or
 - Require use of other water quality treatment measures, such as treatment devices/structures connected to the storm sewer system and/or infiltration practices, or
 - Collect an appropriate fee from project proposer for local unit of government to put towards construction of a future regional detention and treatment facility within LMRWD.

The size and design considerations for regional and on-site detention and treatment facilities are dependent on the subwatershed's water quality category (see Figures 3-6a through 3-6g and Table 5-6), the imperviousness of the development and the degree to which infiltration of runoff is encouraged. Design of detention and treatment basins as described in the site's Runoff Management Plan shall incorporate recommendations from the Nationwide Urban Runoff Program (NURP) and *Protecting Water Quality in Urban Areas* (MPCA, 1989), or other applicable publications. Project proposers should note that use of wet-detention basins as wetland mitigation sites is not permitted unless the design follows the relevant section of the MN Wetland Conservation Act of 1991 (see MN Rules 8420.0540 Subp. 10.B).

The following design considerations are required for detention and treatment basins based on the subwatershed's water quality category. The criteria were developed based on NURP standards and meet the Metropolitan Council's Model Storm Water Management Ordinance and Interim Guidelines design standards. *Local units of government must incorporate into their local water management plans and official controls (ordinances, permit review guidelines, etc.) any special design considerations developed in future resource plans.*

Level I and Level II Water Resources

- (1) A permanent pool ("dead storage") volume below the principal spillway (normal outlet) shall be provided which is greater than or equal to the runoff from a 2.5-inch 24-hour storm over the entire subwatershed for regional basins, or over the project site for on-site basins, assuming full development.
- (2) A permanent pool average depth (basin volume/basin area) which shall be > 4 feet, with a maximum depth of < 10 feet.
- (3) An emergency spillway (emergency outlet) adequate to control the 100-year frequency critical duration rainfall or runoff event.

- (4) Basin side slopes above the normal water level should be no steeper than 3:1 when possible, and preferably flatter. A basin shelf with a minimum width of 10 feet and 1 foot deep below the normal water level is recommended to enhance wildlife habitat, reduce potential safety hazards, and improve access for long-term maintenance.
- (5) To prevent short-circuiting, the distance between the major inlets and normal outlet shall be maximized.
- (6) A sufficient flood pool (“live storage”) volume above the normal outlet elevation shall be provided so that the peak discharge rate from the 100-year frequency, critical duration storm is not greater than the peak discharge for a similar storm and predevelopment watershed conditions.
- (7) An extended detention of runoff from the more frequent (1-year to 5-year) storms shall detain the runoff hydrograph at least 24 hours. This can be achieved through a principal spillway design which can include a perforated vertical riser, a small orifice outlet or a multiple-stage outlet (see Figure 4.2-4 of *Protecting Water Quality in Urban Areas*, MPCA (1989)).
- (8) If possible, the basin outlet should be designed to allow the basin to be drained for sediment removal.
- (9) Effective energy dissipation devices which reduce outlet velocities to 4 fps or less shall consist of stilling basins or other such measures to prevent erosion at all stormwater outfalls into the basin and at the detention basin outlet.
- (10) Trash and floatable debris skimming devices shall be placed on the outlet of all on-site detention basins to provide treatment up to the critical duration 5-year storm event. These devices can consist of baffled weirs, submerged outlets or other such measures. Velocities through baffled weir devices shall be less than 0.5 fps.
- (11) Waterborne sediment shall be prevented from leaving the site during and after construction to prevent sedimentation of downstream water bodies.
- (12) Runoff Management Plans shall conform with approved local water management plans.

Level III, Level IV and Level V Water Resources

- (1) A permanent pool (“dead storage”) volume below the principal spillway (normal outlet) shall be provided which is greater than or equal to the runoff from a 2.0-inch 24-hour storm over the entire subwatershed for regional basins, or over the project site for on-site basins, assuming full development.
- (2) All other requirements as listed in items 2 through 12 for Level I and Level II water resources.

Unique Resource Water Resources

LMRWD will work with the DNR and other governmental agencies to ensure that projects within the tributary watersheds of Unique Resource water resources (such as trout streams and calcareous fens) maintain the unique characteristics of the unique resource. Until specific design

considerations and criteria are developed through LMRWD's resource plans and/or by the DNR, at least Level I requirements must be applied to projects tributary to Unique Resources. Future design considerations and criteria could include: 1) providing infiltration basins instead of wet detention ponds for projects located in the watershed of a trout stream or trout lake, and 2) providing a riparian buffer zone and shade for projects located adjacent to trout streams.

5.14 LMRWD Administration/Financing

As stated in Section 5.2, the LMRWD Managers believe that regulation is more properly performed at the local level by the cities, townships, and counties, provided that regulation by these entities is consistent with the goals and policies of the LMRWD plan. LMRWD also believes that keeping regulation at the local level will reduce government duplication and its inherent costs. LMRWD's goals are:

- To keep regulation at the local level.
- To minimize costs to local government.
- To ensure local regulation is consistent with the LMRWD plan.

Policies

1. LMRWD will clearly define respective roles of LMRWD and the local units of government, especially in the interim period between LMRWD plan approval and local plan approval. The roles will be defined in an agreement with the local units of government (see Model Joint Resolution in Appendix C).
2. LMRWD will limit spending by financing the majority of the implementation program elements (see Section 6.3.7) through the administrative fund ad valorem tax levy.
3. LMRWD will fund projects benefitting commercial navigation through the existing 9-Foot Channel Fund or a new special assessment on benefitted properties, if the fund is depleted (see Section 6.3.7).
4. If not included in the LMRWD plan, LMRWD will undertake capital projects to develop, protect, enhance and/or restore the District's resources only if the projects are initiated by petition of a municipality (see Section 6.3.7). LMRWD will place a higher priority on undertaking petitioned projects that are identified as implementation projects in future resource plans. If no city petitions LMRWD for a project which LMRWD believes is a priority, LMRWD may consider initiating the project under the provisions of Chapter 103.
5. LMRWD will undertake bank erosion control projects on the Minnesota River and its tributaries only if the projects are initiated by petition of a municipality (see Section 6.3.7).
6. LMRWD will finance its implementation program elements in conformance with applicable statutes, LMRWD priorities and available financial resources.
7. Since the LMRWD Managers view the District's resources as regional resources, LMRWD will fund the resource assessment initiatives on a watershed-wide basis. If the annual administrative fund levy is not sufficient to cover the costs of the resource assessments, the

District may consider levying additional ad valorem levies under the provisions of 103D.905, Subd. 8 (survey and data acquisition fund).

8. LMRWD will review project plans for conformance with LMRWD policies and standards and provide review comments at no cost to the local government.
9. LMRWD will review amendments/revisions to city comprehensive plans for their effect on the District's water resources.
10. LMRWD will work cooperatively with local governments to resolve conflicts over the implementation of LMRWD standards and policies.

Table 5-1. Desired Uses and Water Quality for LMRWD Water Resources, by Category¹

Water Quality Category	Desired Uses/Characteristics	Desired Total Phosphorus Concentration (µg/L)	Desired Chlorophyll a Concentration (µg/L)	Desired Secchi Disc Depth (meters)
Level I	Level I water bodies fully support all water-based recreational activities including swimming, scuba diving and snorkeling ²	[TP] <30	[Chla] <10	2.0< SD <i>TSI_{SD}=50</i>
Level II	Level II water bodies are appropriate for all recreational uses except full body contact activities. Recreational activities for these water bodies include: sailboating, water skiing, motorboating, canoeing, wind surfing and jet skiing.	30< [TP] <45	10< [Chla] <20	1.0< SD <2.0 <i>60=TSI_{SD}>50</i>
Level III	Level III water bodies will support fishing (in lakes capable of supporting a fishery), aesthetic viewing activities and observing wildlife.	45< [TP] <75	20< [Chla] <40	0.6< SD <1.0 <i>70=TSI_{SD}>60</i>
Level IV	Level IV water resources are wetlands and may be suitable for aesthetic viewing activities, observing wildlife, and other appropriate public uses.	-	-	-
Level V	Level V water bodies are water resources generally intended for runoff management (i.e., stormwater detention) and have no significant recreational use values.	75< [TP]	40< [Chla]	0.6< SD <1.0 <i>TSI_{SD}>70</i>
Unique Resource	Trout waters, calcareous fens, etc.	3	3	3

¹ The desired uses and water quality parameters apply best to lakes, not streams.

² The presence of fecal coliform bacteria impairs swimmable use. The MPCA's fecal coliform bacteria limit for Class 2B waters is 200 organisms per 100 milliliters.

³ Water quality parameters to be determined on a case-by-case basis.

Table 5-2. Water Quality, Recreational Use, and Ecological Classifications of LMRWD Water Resources

Water Resource	LMRWD Water Resource Classification¹	MPCA Swimmable Use Class²	Applicable MPCA Water Quality Standard³	Metro Council Priority Waters Class⁴	MDNR Ecological Class⁵
Snelling Lake DNR #27-1P	Floodplain Level I	Fully Supporting	2B, 3B, 4A, 4B, 5, 6	2	43
Long Meadow Lake DNR #27-2P	Floodplain Level IV	Unspecified	2D, 3B, 3C, 4A, 4B, 5, 6	4	—
Coleman (Nine Mile) Lake DNR #27-13P	Floodplain Level IV	Unspecified	2D, 3B, 3C, 4A, 4B, 5, 6	4	—
Grass Lake DNR #27-80P	Floodplain Level IV	Unspecified	2D, 3B, 3C, 4A, 4B, 5, 6	4	—
Rice Lake DNR #27-132P	Floodplain Level IV	Unspecified	2D, 3B, 3C, 4A, 4B, 5, 6	4	—
Courthouse Lake DNR #10-5P	Unique Resource Level I	Fully Supporting	1B, 2A, 3B, 3C, 4A, 4B, 5, 6	3	30
Cyess Lake DNR #10-225W	Upland Level I	Fully Supporting	2B, 3B, 4A, 4B, 5, 6	2	30
Chaska Lake DNR #10-4P	Floodplain Level IV	Unspecified	2D, 3B, 3C, 4A, 4B, 5, 6	4	—
Gifford Lake DNR #70-118	Floodplain Level III/IV	Not Supporting/Unspecified	2B, 3B, 4A, 4B, 5, 6/ 2D, 3B, 3C, 4A, 4B, 5, 6	3/4	—
Nyssens Lake DNR #70-116 and 70-117	Floodplain Level III/IV	Not Supporting/Unspecified	2B, 3B, 4A, 4B, 5, 6/ 2D, 3B, 3C, 4A, 4B, 5, 6	3/4	—
Dean Lake DNR #70-74	Upland Level III	Not Supporting	2B, 3B, 4A, 4B, 5, 6	3	40
Blue Lake DNR #70-88	Floodplain Level IV	Unspecified	2D, 3B, 3C, 4A, 4B, 5, 6	4	—

Table 5-2 (cont.) Water Quality, Recreational Use, and Ecological Classifications of LMRWD Water Resources

Water Resource	LMRWD Water Resource Classification¹	MPCA Swimmable Use Class²	Applicable MPCA Water Quality Standard³	Metro Council Priority Waters Class⁴	MDNR Ecological Class⁵
Fisher Lake DNR #70-87	Floodplain Level IV	Unspecified	2D, 3B, 3C, 4A, 4B, 5, 6	4	—
Rice Lake DNR #70-25	Floodplain Level IV	Unspecified	2D, 3B, 3C, 4A, 4B, 5, 6	4	—
Shakopee Mill DNR #70-253	Floodplain Level III	Not Supporting	2B, 3B, 4A, 4B, 5, 6	3	40
Black Dog Lake DNR #19-83	Floodplain Level IV	Unspecified	2D, 3B, 3C, 4A, 4B, 5, 6	4	—
Unnamed DNR #19-128	Floodplain Level III	Not Supporting	2B, 3B, 4A, 4B, 5, 6	3	33
Gun Club Lake DNR #19-78	Floodplain Level IV	Unspecified	2D, 3B, 3C, 4A, 4B, 5, 6	4	—
Black Dog Preserve Fen	Unique Resource Level I	Unspecified	Outstanding Resource Value Water 2D, 3D, 4C, 5, 6	4	—
Fort Snelling State Park Fen	Unique Resource Level I	Unspecified	Outstanding Resource Value Water 2D, 3D, 4C, 5, 6	4	—
Nicols Meadow Fen	Unique Resource Level I	Unspecified	Outstanding Resource Value Water 2D, 3D, 4C, 5, 6	4	—
Savage Fen	Unique Resource Level I	Unspecified	Outstanding Resource Value Water 2D, 3D, 4C, 5, 6	4	—
Seminary Fen	Unique Resource Level I	Unspecified	Outstanding Resource Value Water 2D, 3D, 4C, 5, 6	4	—
Kennaley's Creek	Unique Resource Level I	Fully Supporting	1B, 2A, 3B, 3C, 4A, 4B, 5, 6	3	—

Table 5-2 (cont.) Water Quality, Recreational Use, and Ecological Classifications of LMRWD Water Resources

Water Resource	LMRWD Water Resource Classification¹	MPCA Swimmable Use Class²	Applicable MPCA Water Quality Standard³	Metro Council Priority Waters Class⁴	MDNR Ecological Class⁵
Eagle Creek	Unique Resource Level I	Fully Supporting	1B, 2A, 3B, 3C, 4A, 4B, 5, 6	3	—
Assumption Creek	Unique Resource Level I	Fully Supporting	1B, 2A, 3B, 3C, 4A, 4B, 5, 6	3	—
DNR Unnamed Stream #1	Unique Resource Level I	Fully Supporting	1B, 2A, 3B, 3C, 4A, 4B, 5, 6	3	—
DNR Unnamed Stream #4	Unique Resource Level I	Fully Supporting	1B, 2A, 3B, 3C, 4A, 4B, 5, 6	3	—
DNR Unnamed Stream #7	Unique Resource Level I	Fully Supporting	1B, 2A, 3B, 3C, 4A, 4B, 5, 6	3	—
Minnesota River	Minnesota River Level II/III	Partially Supporting/ Not Supporting	2C, 3B, 3C, 4A, 5, 6	3	—
Credit River	Upland Level III	Not Supporting	2B, 3B, 4A, 4B, 5, 6	3	—
Nine Mile Creek	Upland Level III	Not Supporting	2B, 3B, 4A, 4B, 5, 6	3	—
Riley Creek	Upland Level III	Not Supporting	2B, 3B, 4A, 4B, 5, 6	3	—
Purgatory Creek	Upland Level III	Not Supporting	2B, 3B, 4A, 4B, 5, 6	3	—
Bluff Creek	Upland Level III	Not Supporting	2B, 3B, 4A, 4B, 5, 6	3	—
East Chaska Creek	Upland Level III	Not Supporting	2B, 3B, 4A, 4B, 5, 6	3	—

Table 5-2 (cont.) Water Quality, Recreational Use, and Ecological Classifications of LMRWD Water Resources

Water Resource	LMRWD Water Resource Classification¹	MPCA Swimmable Use Class²	Applicable MPCA Water Quality Standard³	Metro Council Priority Waters Class⁴	MDNR Ecological Class⁵
West Chaska Creek	Upland Level III	Not Supporting	2B, 3B, 4A, 4B, 5, 6	3	—
Constructed Stormwater Detention Ponds	Upland Level V	Unspecified	2C, 3D, 4C, 5, 6	3, 4	—
Wetlands Not Otherwise Listed	Floodplain or Upland Level IV	Unspecified	2D, 3B, 3C, 4A, 4B, 5, 6	4	—
Streams Not Otherwise Listed	Upland Level IV	Unspecified	2D, 3B, 3C, 4A, 4B, 5, 6	4	—

¹ LMRWD Categories—see Section 5.3.3.1 and Table 5-1.

² MPCA Swimmable Use Classes.
 Fully Supporting = Fully supports swimmable and aesthetic uses; exhibits "impaired swimming" conditions and high algal levels less than 10% of the time.
 Fully Supporting-Threatened = Lakes exhibit "impaired swimming" conditions and high algal levels 11 to 25% of the time.
 Partially Supporting = Lakes exhibit "impaired swimming" conditions and high algal levels 26 to 50% of the time.
 Not Supporting = Lakes exhibit "no swimming" conditions greater than 25% of the time and "no recreation possible" on occasion. These lakes exhibit "high algal" levels greater than 50% of the time.

³ MPCA Water Quality Standards are described in detail in MN Rule 7050.0220; see also Table 5-3.

⁴ Metro Council Classes—see Table 5-4.

⁵ MDNR Ecological Classes—see Table 5-5.

Table 5-3. MPCA Classifications From MN Rules 7050

MPCA Classification	Description
Class 1A—Domestic consumption	Water meets both primary and secondary EPA drinking water standards without any kind of treatment. The standards ordinarily apply only to surface and underground waters with a high degree of natural protection.
Class 1B—Domestic consumption	After disinfection, the water will meet both primary and secondary EPA drinking water standards, except for bacteriological standards. The standards ordinarily apply only to surface and underground waters with a moderately high degree of natural protection.
Class 1C—Domestic consumption	After treatment such as coagulation, sedimentation, filtration, storage and disinfection, the water will meet both primary and secondary EPA drinking water standards. The standards ordinarily apply only to surface and ground waters not adequately protected against contamination.
Class 1D—Domestic consumption	Further treatment needed for the water to meet both primary and secondary EPA drinking water standards.
Class 2A—Aquatic Life and Recreation	Propagation and maintenance of <u>cold</u> water sport or commercial fishes and associated aquatic life and their habitats; suitable for all aquatic recreation, including bathing; and also protected as a source of drinking water.
Class 2B—Aquatic Life and Recreation	Propagation and maintenance of <u>cool</u> or warm water sport or commercial fishes and associated aquatic life and their habitats and suitable for all aquatic recreation, including bathing.
Class 2Bd—Aquatic Life and Recreation	Subgroup of Class 2B waters that are also protected for drinking water purposes.
Class 2C—Aquatic Life and Recreation	Propagation or maintenance of indigenous fish and associated aquatic life, suitable for boating and other forms of recreation (not bathing).
Class 2D—Aquatic Life and Recreation	Propagation or maintenance of a healthy community of aquatic and terrestrial species indigenous to wetlands and their habitats, suitable for boating and other forms of recreation for which the wetland may be usable.
Class 3A—Industrial consumption	Use for general industrial purposes, except for food processing, without chemical treatment other than softening.
Class 3B—Industrial consumption	Use for general industrial purposes, except for food processing, with only a moderate degree of treatment.
Class 3C—Industrial consumption	Use for industrial cooling and transport purposes, without a high degree of treatment needed.
Class 3D—Industrial consumption	Use for general industrial purposes, except for food processing, with only a moderate degree of treatment (standards are lower than for Class 3B).
Class 4A—Agriculture and wildlife	Irrigation uses.
Class 4B—Agriculture and wildlife	Use by wildlife and livestock without negative effects.
Class 4C—Agriculture and wildlife	Same as Class 4B, but also suitable for erosion control, groundwater recharge, low flow augmentation, stormwater retention and stream sedimentation.
Class 5—Aesthetic enjoyment and navigation	Suitable for aesthetic enjoyment of scenery, and avoid any interference with navigation or damaging effects on property.
Class 6—Other uses	Uses may be under other jurisdictions and in other areas to which the waters of the state are tributary, and may include other uses listed previously, plus any other possible beneficial uses.
Class 7—Limited Resource Value Waters	Surface waters for which a use attainability analysis has been completed and the waters found to be of limited resource value. These waters have intermittent or low flows. Standards protect aesthetic quality, secondary body contact use, and potable groundwater use.

Table 5-4. Metropolitan Council Priority Waters Classification - Based on Desired Uses

Metropolitan Council Classification	Description
Class 1	Waters with health implications; that is, drinking water and groundwater recharge areas.
Class 2	Multiple-use recreation waters; that is, waters with a public access, or waters located in or adjacent to regional parks and recreation areas.
Class 3	Single-use recreation waters; that is, waters used for recreational activities, which do not have a public access, or are not located in or adjacent to regional parks and recreation areas.
Class 4	Waters with only aesthetic appeal; that is, waters primarily used for aesthetic viewing (i.e., human use and contact are limited or nonexistent).

Metropolitan Council criteria taken from *Water Resource Management Development Guide* (Metropolitan Council, 1982).

Table 5-5. MDNR Ecological Classification - Lake Classes Found in LMRWD

MDNR Ecological Classification	Description
Class 30	A good, permanent fish lake that does not experience winterkill.
Class 33	A permanent fish lake which may winterkill on a rare occasion.
Class 40	A marginal fish lake which may be subject to occasional winterkill.
Class 43	A marginal fish lake and may winterkill frequently without the aid of aeration.

MDNR ecological criteria found in Schupp (1992) Minnesota Department of Natural Resources Investigational Report No. 417, *An ecological classification of Minnesota lakes with associated fish communities*, when classifying water bodies.

Table 5-6. Water Quality Categories for LMRWD Subwatersheds

Subwatershed Name	Water Quality Category
Ramsey County	
Pike Island	Level IV
Dakota County	
Mendota	Level V
Fort Snelling #3	Level IV
Gun Club Lake	Level IV
Fort Snelling #1	Level IV
Nicol's Fen—Kennaley's Creek	Level 1/Unique Resource
Trout Stream #1	Level I/Unique Resource
Black Dog East	Level IV
Trout Stream #4	Level I/Unique Resource
Black Dog West	Level IV
Trout Stream #7	Level 1/Unique Resource
Burnsville	Level IV
Hennepin County	
Snelling Lake	Level I ¹
Fort Snelling #2	Level IV
Long Meadow Lake	Level IV
MN Valley #4	Level IV
35W North	Level IV
Nine Mile Creek	Level III ²
MN Valley #3	Level IV
MN Valley #2	Level IV
MN Valley #1	Level IV
Purgatory Creek	Level I ³
Riley Creek-Grass Lake	Level IV
Rice Lake West	Level IV
Scott County	
Credit River	Level IV
Savage Fen	Level I/Unique Resource
Eagle Creek	Level I/Unique Resource
Rice Lake East	Level IV
Dean Lake	Level III
Blue Lake–Fisher Lake	Level IV
Shakopee East	Level IV
Shakopee West	Level IV
Nyssens Lake	Level III/IV
Gifford Lake	Level III/IV

Table 5-6 (cont). Water Quality Categories for LMRWD Subwatersheds

Subwatershed Name	Water Quality Category
Carver County	
Assumption Creek	Level 1/Unique Resource
Chaska-Chanhassen	Level IV
East Chaska Creek	Level IV
Courthouse Lake	Level I/Unique Resource
Oak Street	Level V
West Chaska Creek	Level IV
Chaska Lake	Level IV
Spring Creek	Level V
Carver Creek	Level IV

¹ Based on current use of lake.

² Based on fisheries data from Nine Mile Creek Watershed District.

³ Based on data from Riley Purgatory Bluff Creek Watershed District showing potential as trout stream.

Table 5-7. LMRWD Proposed Lake Sampling Program Compared to Programs Recommended by Regulatory Agencies

Parameter	LMRWD ^{1,2,5} Proposed Program	Metropolitan Council Recommended Program ^{2,3,4,5}			MPCA Recommended Program ^{2,5,6}		
		Level I Survey	Level 2 Management	Level 3 Intensive	Basic Program	Intermediate Program	Advanced Program
<u>Physical</u>							
Dissolved Oxygen	6	10 (5)	10+	14+	4	--	--
Temperature	6	10 (5)	10+	14+	--	--	--
Secchi Disc	6	10 (5)	10+	14+	10	--	--
Underwater Light	--	--	--	14+	--	--	--
Sediment Characterization	--	--	--	as needed	--	--	--
<u>Chemical</u>							
Phosphorus-Total	6	10 (5)	10+	14+	4	--	--
Phosphorus-Soluble Reactive	6	--	--	--	4	--	--
Phosphorus-Fractions	--	--	10+	14+	--	--	--
Nitrogen-Total	6	--	--	--	4	--	--
Nitrogen-Kjeldahl	--	10 (5)	10+	14+	--	--	--
Nitrogen-Nitrate	--	--	10+	14+	--	--	--
Nitrogen-Ammonia	--	--	3+	14+	--	--	--
Alkalinity	--	--	3+	14+	--	--	--
pH	6	--	10+	14+	--	--	--
Specific Conductance	6	--	10+	14+	--	--	--
Metals/Toxics	--	--	--	as needed	--	--	--
<u>Biological</u>							
Chlorophyll a	6	10 (5)	10+	14+	4	--	--
Phytoplankton	5	--	10+	14+	--	Identify algae	--
Zooplankton	5	--	10+	14+	--	--	Review Fisheries Management Plan for lake
Fish	--	--	--	1+	Obtain current fisheries data from MDNR	Analyze current & historical fish survey and stocking data	Analyze fishery & stocking data for trends
<u>General Water Quality</u>							
	--	--	--	--	Monthly samples (June-September)	6-10 samples during May- October and additional sites	8-10 samples during May-October
Macrophytes	2	--	2	2+	Review historical macrophyte data	Conduct macrophyte survey	Review Aquatic Plant Management Permit history
<u>Frequency</u>							
Consecutive Years of Sampling	1-2	1 (2)	2+	3+	--	--	--
In how many years?	3-5	3 (5)	5	10+	--	--	--

Table 5-8. Example Checklist of Common Best Management Practices (BMPs)*

Description of BMP	Was BMP used in Project?	Location Used or Basis for Nonusage:
1. Reduce area of impervious surface (pavement, roofs, etc.)		
2. French drains and other subsurface drains		
3. Infiltration trench and dry well		
4. Parking lot/rooftop runoff storage with outlet protection		
5. Detention basin with outlet protection.		
6. Wetland treatment area.		
7. Retention (infiltration) basin		
8. Parking lot oil/grease separators		
9. Storm drain inlet protection		
10. Riprap or other storm drain outlet protection		
11. Slope stabilization and erosion control measures		
12. Grit chambers/manholes		
13. Extended detention basin		
14. Other (describe).		

* Further descriptions of these and other BMPs can be found in "Protecting Water Quality in Urban Areas" (MPCA, 1989).

Table 5-9. Best Management Practices

Institutional Source Controls

- No Littering Ordinance
- Pet Waste Pet Litter "Pooper Scooper" Ordinance
- Chemical Use/Storage Ordinance
- Recycling Programs
- Public Education Programs
- Vacant Lot Cleanup Ordinance
- Spill Prevention Ordinance

Nonstructural Source Controls

- Program to Prevent Illicit Discharges
- Street Sweeping
- Cleaning of Storm Drains

Minor Structural Source Controls

- Diversion Channels
- Grass Swales
- Natural Channels to Reduce Erosion
- Vegetative Controls on Exposed Soils

Minor Structural Discharge Elimination Methods

- Development and Maintenance of Recharge Areas
- Development and Maintenance of Porous Pavement

Moderate Structural Controls for Floatables/Oils Removal

- Development and Maintenance of Parking Lot Oil/Grease Separators
- Development and Maintenance of Parking Lot and Rooftop Runoff Storage with Outlet Protection

Major Structural Controls for Floatables/Oils Removal

- Detention Basin with Outlet Protection
- Wetlands Treatment Area

Major Structural Controls for Floatables, Metals, Microorganisms, and Nutrient Removal

- Lime Precipitation, Filters, and Chlorinated/Dechlorinated to Detention Basins
- Lime Precipitation, Chlorination/Dechlorination to Wetlands