

City of Savage

**Comprehensive Wetland Protection
and Management Plan**

January 18, 2000

Prepared by:

**City of Savage
6000 McColl Drive
Savage, MN 55378
(612) 882-2660**

&

**WSB & Associates, Inc.
350 Westwood Lake Office
8441 Wayzata Boulevard
Minneapolis, MN 55426
(612) 541-4800**

Certification

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the State of Minnesota.

Jeffrey S. Sandberg, P.E.

Date: January 18, 2000

Reg. No 25393

Peter R. Willenbring, P.E.

Date: January 18, 2000

Reg. No. 15998

Table of Contents

	<u>Page</u>
I. Executive Summary	1
II. Glossary	4
III. Introduction	7
A. Description of Existing Resources	7
B. Extent of Development	8
C. Current Natural Resource Protection Measures	8
D. Intent of plan	9
IV. Purpose	11
V. Existing Regulatory Framework	12
A. Department of Natural Resources	12
B. U.S. Army Corps of Engineers	12
C. Wetland Conservation Act	13
D. Wetland Conservation Act Application Process and Timeline	16
VI. Wetland Inventory/Classification Methods	18
A. Background Information	18
B. Existing Classification Systems for Wetlands	18
C. Wetland Functions and Values Assessment	20
D. Database Information/Geographic Information Systems Map	21
VII. Wetland Inventory/Classification Results	22
A. Overview of Wetland Inventory Results	22
B. Subwatershed Descriptions	23
C. Potential Wetland Mitigation Locations	24
VIII. Wetland Protection and Management Strategies	25
A. General Wetland Management Strategies	25
B. Category Specific Wetland Management Strategies	26
C. Newly Created Wetlands	28
D. Stormwater Ponds	29
IX. Implementation Program	30
X. Enforcement, Amendments, and Appeals	32
XI. References	33

I. Executive Summary

Wetlands provide many benefits and, as such, are important resources to a community. They provide critical habitat for many types of birds, mammals, amphibians, reptiles, invertebrates, and plants. Wetlands can also act to improve water quality and provide water quantity control by storing water during storm events. Wetlands allow for groundwater interactions, whether it be recharge or discharge. Additionally, wetlands provide aesthetic value, nature observation areas, and areas for education and scientific research. Because of the importance of wetlands and the role wetlands play within a community, they must be considered during development review and city-wide planning in order to balance protection for these wetlands and development and growth of the city.

The City of Savage Comprehensive Wetland Protection and Management Plan (CWPM) has been developed to be in conformance with MN Rules 8420.0650 and meets the requirements of the Wetland Conservation Act (WCA). This Plan has been developed through the input of a Technical Panel and citizen input (see **Appendix A**). The CWPM will be adopted by ordinance and is to be used in conjunction with the City of Savage Comprehensive Water Resource Management Plan (1996) and the Land Use Plan.

The City of Savage CWPM provides a comprehensive approach for the protection and management of wetlands within the City and allows the City to have control over the rules governing decisions about these wetlands. The CWPM provides the City with an approach that could not be utilized by only following the Wetland Conservation Act. This CWPM provides the City greater control and flexibility over wetland protection and management, designates regional wetland mitigation sites, provides management strategies for different types of wetlands, and identifies potential regional stormwater ponding sites.

Section II provides a glossary of frequently used terms within the Plan and within the water resource profession. While the purpose of this glossary is to provide information to the user of this Plan, it is not a comprehensive resource. More information can be obtained at City Hall or within the Wetland Conservation Act in **Appendix B**.

Section III provides an introduction to the CWPM. It includes a description of existing resources, a discussion of the development within the City, provides an overview of current natural resource protection measures, and outlines the intent of this Plan. The CWPM encompasses all wetlands within the City with the exception of the Savage Fen. This plan excludes the Savage Fen because of the ecological and political issues surrounding the fen.

Section IV provides a listing of the objectives of the Savage CWPM.

Section V discusses the regulatory framework for wetlands. This section provides details of the role of the City as the Local Government Unit (LGU) for the Wetland Conservation Act and also provides a brief overview of other agency jurisdiction over wetlands, including the Department of Natural Resources (DNR), U.S. Corps of Engineers, the Minnesota Pollution Control Agency (MPCA), and the Watershed Districts.

The methods used to inventory and classify the wetlands within the City of Savage are contained in **Section VI**. The Minnesota Routine Assessment Method (MnRAM) version 2.0 (**Appendix H**) was used to identify the functions and values of the wetlands. This section also outlines the Circular 39 and Cowardin method of wetland classification. Wetlands within Savage were classified using both methods. No wetlands were delineated as part of these procedures.

Section VII provides the results of the wetland inventory and assessment. Approximately 300 wetlands were evaluated as part of this Plan. These wetland range in size from 200 square feet to over 150 acres. Wetland Types 1, 2, 3, 4, 5, 6, 7, and 8 are represented within the City of Savage. These wetlands are located within nature preserves such as Murphy-Hanrehan Regional Park to areas that have been greatly impacted such as gravel pits.

The inventory of wetlands in the City of Savage resulted in the following distribution of wetland types within the City based on Circular 39 methods:

Table 1. Number and wetland type of all wetlands inventoried within the City of Savage.

Wetland Type	Number of Wetlands
Type 1	4
Type 2	25
Type 3	107
Type 4	54
Type 5	57
Type 6	6
Type 7	46
Type 8	2
Total:	301

Detailed information about each wetland is included in **Appendix C**. A computer database of the wetland information has also been developed and is available at Savage City Hall.

Section VIII discusses the wetland protection and management strategies utilized by the City of Savage. These strategies include general protection and management practices such as public education, wetland delineation, and water quality protection. Also included in this section are the management categories for each wetland within the City and the specific management strategies for each category.

Based on the functions and values of the wetlands, wetlands were placed within one of the following management categories:

- Preserve:** Wetlands that are placed into the Preserve category received high functions and values ratings based on MnRAM 2.0. All reference wetlands and those wetlands within Murphy-Hanrehan Park have been placed in this category.
- Manage 1:** Wetlands that are placed in the Manage 1 category received high functions and values ratings, but showed some evidence of more disturbance/degradation than Preserve wetlands.
- Manage 2:** Wetlands that are placed in the Manage 2 category generally received moderate functions and values ratings. These wetlands generally had less diverse vegetation and had more evidence of disturbance than Manage 1 and Preserve wetlands.
- Utilize:** Wetlands that are placed in the Utilize category received the lowest functions and values ratings. These wetlands had little diversity, been impacted by disturbance, and/or were too small to provide suitable wildlife habitat.

These categories allow the City of Savage to actively protect and manage the wetlands within the City limits, plan for future development, and determine wetland needs. Newly created wetlands will initially be placed in the management category of the wetland that they are replacing or as otherwise specified by the City Engineer.

Stormwater ponds were not evaluated as part of this Plan. Stormwater ponds have been evaluated by the City through a separate process. Information about the stormwater pond survey can be obtained at City Hall.

Section IX outlines the implementation program. **Section X** provides information on enforcement, appeals, and the amendment procedure for this Plan. **Section XI** provides a list of references.

II. Glossary

Agricultural Land	Land used for horticultural, row, close grown, pasture, and hayland crops and any associated farmyards, field roads, and drainage systems.
Anaerobic	A condition that exists when oxygen has been depleted in the local environment (i.e. in a wetland soil).
Best Management Practices (BMPs)	State-approved and published practices that have been determined to be the most practical and effective means of controlling point and non-point pollutant levels for environmental quality goals.
Buffer	An upland area adjacent to a wetland that is covered with natural vegetation that experiences little to no human impact such as mowing.
Circular 39	A wetland classification method developed in 1956 by the U.S. Fish and Wildlife Service that categorizes wetlands into eight types.
Cowardin Method	A wetland classification method developed in 1979 by the U.S. Fish and Wildlife Service that categorizes wetlands by using a tier system.
Erosion	Process by which land or structures are worn away by water, wind, and waves.
Eutrophication	The process by which the nutrient content of a body of water increases and dissolved oxygen decreases.
Hydrophytic Vegetation	Macrophytic plant life growing in water, soil, or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content.
Hydric Soils	Soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part.

Local Government Unit (LGU)	Agency (city, town board, or watershed management organization) that has the primary responsibility for administration of the WCA. The City of Savage acts as the LGU within the city limits.
Monotypic Vegetation	Only one plant species is present within an area. Generally, these plant species are non-native and/or highly invasive.
No Net Loss	No reduction in the area and value of a wetland compared to existing conditions.
Non-point Source Pollution	Pollution originating at a variety of non-localized sources, such as street runoff, septic systems, atmospheric deposition, or groundwater.
NPDES	National Pollutant Discharge Elimination System. Treating stormwater to NPDES standards involves treating water from a ½ inch of runoff from the impervious watershed area.
NURP	Nationwide Urban Runoff Program. Treating stormwater to NURP recommendations involves treating water from at least a 2.5 inch rainfall event. Ponds are a minimum of 4 feet in depth.
OHWL	Ordinary High Water Level. DNR Protected Waters and Wetlands are regulated by the DNR at and below the OHWL.
Public Values of Wetlands	Public benefit and use of wetlands as determined based upon an assessment of the wetland functions listed in MN Rules 8420.0103.
Sedimentation Basin	A depression that utilizes the force of gravity to trap sediment and debris.
Sequencing	A five step process outlined in the WCA that evaluates the necessity of a project's impact on a wetland.

Shoreland Wetland Protection Zone

1000 ft from the ordinary high water level of a water basin that is a public water identified in the shoreland management ordinance or the shoreland area; or, 300 ft from the ordinary high water level of a watercourse identified in the shoreland management ordinance.

Technical Evaluation Panel (TEP)

A panel generally made up of the LGU, the local BWSR board conservationist, and a member of the County’s Soil and Water Conservation District. This panel provides technical wetland support to the LGU.

Wetland

Transitional land between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Wetlands must have a predominance of hydric soils, be inundated or saturated with water at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions, and under normal circumstances, support a prevalence of hydrophytic vegetation.

Wetland Mitigation Banking

A site where wetlands are restored or created in order to provide compensatory mitigation in advance of unavoidable, authorized wetland impacts. Credits, if available, can be withdrawn for mitigation of wetland impacts for a project. Credits can also be deposited if excess wetland is created as part of a project.

Wetland Mitigation

The compensation or replacement of unavoidable wetland impacts through restoration or creation of wetlands.

III. Introduction

A. Description of Existing Resources

The City of Savage is located in northern Scott County immediately south of the Minnesota River. There are over 320 wetlands within the City of Savage. All known wetlands within the City were evaluated with the exception of those areas where permission to access the site was either not granted or the site could not be accessed due to safety issues. In addition, the Savage Fen was not evaluated.

Wetlands and other natural resources of special interest exist within the City of Savage. These include the Savage Fen, Eagle Creek, Boiling Springs, cranberry bogs, Murphy-Hanrehan Park, the Credit River, and the Minnesota River.

Savage Fen

The Savage Fen Wetland Complex is an approximately 441 acre wetland that contains approximately 64 acres of calcareous fen. A calcareous fen is defined in MN Rules 8420.1020 as “a peat-accumulating wetland dominated by distinct groundwater inflows having specific chemical characteristics.” These chemical characteristics include a neutral to alkaline water pH, high concentrations of calcium, and low dissolved oxygen content.

This rare wetland type is located in the north central portion of the City of Savage. Although one of the purposes of the Savage CWPMP is to provide an inventory of all the wetlands within the City, the Savage Fen was not assessed because of the ecological and political issues surrounding the fen. This plan requires that a 50 foot wide buffer strip around the Savage Fen be maintained. Buffer strip width greater than 50 feet may be required by other State or Federal review agencies. This policy would be in effect until such time as a management plan for the Savage Fen is approved. Landowners that have already developed their property will be encouraged to implement this buffer strip. Any new development will be required to comply with this regulation.

Eagle Creek

Eagle Creek is a designated DNR trout stream. This stream is located in the northwest portion of the City and is fed in part by groundwater discharge. Eagle Creek has one of the few self-sustaining brown trout populations in the Metropolitan area.

Boiling Springs

Boiling Springs is the headwaters of Eagle Creek and a groundwater discharge area. Boiling Springs is located on the border between Shakopee and Savage.

DNR Wetlands 251W and 241W

These two DNR wetlands contain wild cranberry bogs. These wetlands are located in the west central portion of the City. While these bogs are not a threatened or endangered wetland type in Minnesota, it is rare for these bogs to occur so far south in the State.

Murphy-Hanrehan Park

This regional park is located in the southeastern corner of the City. This park encompasses the corner of Savage, the northeast corner of Credit River Township and a portion of Burnsville. Many of the reference wetlands used for the Savage CWPMP were found in the Park.

Credit River

Credit River runs the entire length of the City, discharges to the Minnesota River, and drains over half of the City. The river contains large wetland complexes and provides a corridor for a variety of wildlife. Although the wetlands associated with the Credit River were evaluated, they were not placed into management categories for this plan since the Shoreland Ordinance provides special provisions for the River.

Minnesota River

The Minnesota River is the northern border for the City of Savage and all of Savage eventually drains to the River. There are large wetland complexes associated with the Minnesota River. The river provides a corridor for wildlife habitat.

B. Extent of Development

According to the Metropolitan Council's Regional Blueprint, the population within the City of Savage is anticipated to double in the next 20 years. There currently is pressure to develop facilities to accommodate this growth and there is need for the City to have a comprehensive plan to assist in planning for the protection and management of wetlands within the City.

The northern portion of the City is mostly developed while the southern portion is developing rapidly. In the short term, new development causes erosion and sedimentation of wetland resources. In the long term, the development can reduce or eliminate wetland buffers and reduce wildlife habitat. The intent of this plan is to provide protection and management strategies for the City to minimize impact to wetlands, adequately plan for development, and create an inventory of existing wetland resources.

C. Current Natural Resource Protection Measures

The City of Savage has implemented a variety of natural resource protection measures in order to protect wetlands and water quality within the City. These measures include the following:

1. Wetland Monitoring Requirements

Replacement wetlands must be monitored for five years to evaluate the success of the mitigation area, identify management needs, and correct any problems that may arise. Vegetation and hydrology parameters must be measured at least once during the growing season. Monitoring reports must

be submitted to the City no later than December 31st of each year. A copy of the monitoring requirements and an annual report form can be found in **Appendix D**.

2. Wetland Markers/Signs

As of January 1999, all development projects occurring near wetlands are required to install special wetland marker signs at the buffer of the wetland to designate wetlands and inform of prohibited uses of the wetland areas. A sample of this sign can be found in **Appendix E**.

3. Erosion Control Policy

The City of Savage has adopted an erosion control policy that pertains to all construction activities within the City. This policy can be found in **Appendix F**. This policy states that erosion and sedimentation control measures, such as silt fence, bale checks, fiber blanket, and seeding, must be used in conjunction with the construction activity. In addition, a brochure has been developed entitled “Erosion Control for Home Builders/Owners” that has an overview of the erosion control policy and provides guidelines for home builders/owners so the construction project remains in compliance with the erosion control policy. A copy of this brochure can be found in **Appendix F**.

4. Public Education

The City’s Comprehensive Water Resource Management Plan outlines the City’s public education goals and policies. The plan states that the City will prepare and distribute an annual newsletter that provides information on pertinent water management issues. A copy of a newsletter is included in **Appendix G**.

5. Upland Buffer

The City requires a vegetated upland buffer around wetlands and water bodies. The minimum buffer size is 16.5 feet. Different buffer widths are outlined in **Section VIII** for the different wetland management classes.

D. Intent of plan

The intent of the City of Savage CWPMP is to provide a means for the City to protect and manage its wetlands by utilizing the flexibility within the Wetland Conservation Act. This plan provides guidelines for wetland protection and management, assistance with Wetland Conservation Act, and acts as a reference guide for developers to utilize when working near wetlands.

The development of protection and management strategies for wetlands within the City stems from the function and values assessment completed as part of this CWPMP. These management strategies allow the City to protect and manage the City's wetland resources by implementing the flexibility of the Wetland Conservation Act.

IV. Purpose

The purpose of the Savage CWPMP is to provide a comprehensive plan for the protection and management of the City's wetlands. This plan has been developed in accordance with the Wetland Conservation Act guidelines (MN Rules 8420.0650). This Plan allows the City to have greater control over wetland sequencing and it allows the City to protect and manage wetlands utilizing the flexibility outlined in the Wetland Conservation Act.

The objectives of this plan are to:

- C Identify, classify, and create an inventory of wetlands within the City of Savage
- C Identify wetland resources important to the City
- C Maintain data for use by residents and developers
- C Manage wetland resources toward improvement of their functions and values throughout the City
- C Outline a long-term wetland management strategy for the City
- C Focus limited resources in the most effective direction
- C Achieve no net loss in the quantity, quality, function, and biological diversity of Savage's existing wetlands
- C Increase the quantity, quality, function, and biological diversity of Savage's wetlands by enhancing diminished or drained wetlands
- C Avoid direct or indirect impacts from activities that destroy, diminish, or minimize the quantity, quality, and biological diversity of wetlands
- C Replace wetland values where avoidance of activity is not feasible or prudent
- C Optimize management of City surface water and wetlands by integrating all surface water related management plans and ordinances
- C Determine high and exceptional quality wetlands that would require additional protection considerations
- C Provide mechanisms for consistent wetland protection, management, restoration, and mitigation
- C Establish a wetland banking program account within the BWSR wetland bank to foster the retention of wetland functions and values within the City
- C Establish a set of development review guidelines for development adjacent to existing wetlands and stormwater ponds
- C Collect baseline data for future studies

V. Existing Regulatory Framework

The current regulatory framework for wetlands in Minnesota involves a variety of agencies. These agencies include the Department of Natural Resources (DNR), U.S. Corps of Engineers, the Watershed Districts, and the Local Government Units (LGUs). Although the Savage CWPMP has been developed to be in conformance with the Wetland Conservation Act, a brief discussion of the other regulatory agencies is included.

A. Department of Natural Resources

Public Waters and Wetlands are those that are regulated by the Minnesota Department of Natural Resources (DNR) at and below the ordinary high water level (OHWL). The location of these wetlands can be found on the DNR Protected Waters and Wetland Maps. Any water appropriation from or impact to a public water may require a permit from the DNR. The DNR Protected Waters and Wetlands are shown on **Figure 4** in **Appendix C.2**. The DNR Area Hydrologist can be contacted for more information on DNR regulations at (651) 772-7910.

B. U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers regulates the discharge of dredged or fill materials to wetlands and other water bodies through Section 404 of the Clean Water Act. Any impact, including filling, draining, or excavation, may require a permit from the Corps. Wetland delineations are also subject to U.S. Corps of Engineer approval. The area regulatory branch can be contacted for additional information of the Corps regulations at (651) 290-5375. Depending on the size and extent of the wetland impact, the Corps may involve the Minnesota Pollution Control Agency (MPCA). The MPCA can be contacted to obtain more information at (651) 296-8852.

GP/LOP-98MN

The GP/LOP-98-MN replaces all Nationwide Permits (NWP) under Section 404 of the Clean Water Act within Minnesota. The GP/LOP-98-MN went into effect on January 31, 2000. The intent of this permit is to create a more streamlined procedure by which projects will be covered under a General Permit (GP) or Letter of Permission (LOP). The MPCA has provided 401 certification for most of the GP/LOP-98-MN permit with a few exceptions.

The GPs are intended to be non-reporting and cover the following projects:

- C Projects that impact 400 sf or less of wetland
- C Projects that impact 1/3 acre or less of wetland for maintenance activities
- C Projects that are currently eligible for authorization under some Corps existing, non-controversial, non-reporting NWPs.

The LOPs require submission of an application and confirmation of approval in writing from the Corps. Eligible projects include projects that affect between 400 sf and 2 acres of wetland (or less than 5 acres of wetland for a road improvement project). The LOP eligible projects that affect more than 10,000 sf of wetland are subject to interagency review similar to the existing NWP review process.

Projects that affect more than 2 acres of wetland (or more than 5 acres for public road improvements and upgrades on existing roads), all projects in calcareous fens, or a project that affects Federal Wild and Scenic River would require Individual Permit review procedures.

For more information, the Corps of Engineers can be contacted at (651) 290-5375 or access their website at www.mvp.usace.army.mil.

C. Wetland Conservation Act

The Wetland Conservation Act (WCA) was first passed in 1991 and then subsequently amended (Minn. Laws Ch 354, Minn. Stat. 103G.222-.2373 and other scattered sections). The Board of Water and Soil Resources (BWSR) published MN Rules 8420 in accordance with the Wetland Conservation Act laws.

The intent of the WCA is to achieve a “no net loss” of wetlands in Minnesota. Therefore, the Wetland Conservation Act prohibits the filling and/or draining of wetlands unless the activity is exempt or wetlands are replaced by restoration/creation of wetland areas of at least equal public value.

The WCA is administered by Local Government Units (LGU’s). The City of Savage acts as the LGU for any wetland filling or draining with the City boundaries. The City can issue or deny permits depending on the wetland impact activity and whether or not the project has met the WCA replacement requirements and the requirements of this Plan. This Plan has been developed to be in conformance with the WCA. The WCA exemptions are discussed in MN Rules Chapter 8420 (8420.0122) in **Appendix B**. Sequencing and replacement are discussed below and can be found in their entirety in **Appendix B** (MN Rules 8420.0520):

1. Sequencing for Preserve, Manage 1, and Manage 2 Wetlands

When a wetland is proposed to be drained or filled, the project proposer must demonstrate that sequencing has taken place. Sequencing is a process by which wetland impacts are reviewed to ensure that impacts have been eliminated or reduced. For impacts to wetlands within the Preserve, Manage 1, and Manage 2 categories, the developer must provide a sequencing discussion as briefly outlined below (see **Appendix B** for sequencing details):

- a. **Avoidance:** Demonstration that wetland impacts have been avoided to the greatest extent possible.
- b. **Minimization:** Demonstration that to the extent that wetland impacts cannot be avoided, the degree and magnitude of the impact has been minimized.
- c. **Impact Rectification:** Demonstration that temporary impacts to wetlands will be rectified by repairing, restoring, or rehabilitating the affected wetland.
- d. **Impact Reduction or Elimination Over Time:** Demonstration that the wetland impacts will be reduced or eliminated over time by preservation and maintenance operations. This can be accomplished by using Best Management Practices (BMPs).
- e. **Replacement of Unavoidable Impacts:** If unavoidable wetland impacts still exist after efforts to avoid, minimize, rectify, reduce and eliminate the impact have been demonstrated, replacement/restoration of the impacted area must be completed.

2. **Sequencing for Utilize Wetlands**

The WCA allows for flexibility in the sequencing process and as part of the CWPMP. Based on the MnRAM assessment, wetlands of the lowest quality were placed in the Utilize category (see **Section VI.C** and **Figure 1**). This section of the plan serves as the sequencing discussion for the wetlands in the Utilize category.

The wetlands that were placed in the Utilize management category received the lowest ratings on the MnRAM assessment as compared to all other wetlands within the City of Savage. These wetlands have been greatly impacted by disturbance from grading, vegetation removal, stormwater inputs, etc., thereby reducing the functions and values. Due to the low quality nature of these wetlands, it is anticipated that a replacement wetland could be designed to have higher functions and values. Therefore, if deemed necessary by the City, the wetlands within the Utilize category could be filled or drained and replaced at a 2:1 ratio. If impact to Utilize wetlands is proposed, the project proposer will not be required to submit any additional sequencing discussions, but instead, reference this section in the wetland replacement application.

3. **Wetland Replacement**

Once sequencing has been completed and it has been determined that wetland impacts are unavoidable, the lost functions and values of the wetland must be replaced.

Because the City of Savage is located in a “less than 50% area” as defined in the WCA, wetland impacts must be replaced as outlined in **Table 5** in **Section VIII**. Replacement wetlands must replace functions and values lost from the impacted wetland. The functions and values can be determined using the relative functions and values index system in MN Rules 8420.0540 Subp. 10 or MnRAM.

Wetland replacement can be located within the project site. If this is not feasible and creates undue hardship, replacement locations can be within the same subwatershed as identified in the City’s Comprehensive Water Resource Management Plan and shown in **Figure 2** in **Appendix C.2**. If replacement within the same Savage subwatershed is not feasible, replacement within Watershed #33 (Minnesota River - Shakopee) as defined in the WCA will be required. However, the City strongly encourages that replacement occur within the city limits when possible. The City will also consider regional wetland mitigation sites within the City boundaries for wetland replacement. **Appendix I** shows potential wetland mitigation locations.

Wetland replacement may be completed in the form of New Wetland Credit (NWC) or in a combination of NWC and Public Value Credit (PVC). New Wetland Credit can be generated by the creation of new wetlands or through the restoration of wetlands that have been previously drained or filled. Public Value Credit can be obtained in a variety of ways including the restoration of drained wetlands, establishment/preservation of upland buffer, and through the creation of water quality treatment ponds. For a comprehensive description of NWC and PVC, see MN Rules 8420.0540 in **Appendix B**.

4. Wetland Replacement Plan Application

When the filling or draining of a wetland is unavoidable as outlined in the sequencing requirements, a replacement plan must be developed. Once a replacement plan has been developed in accordance with this CWPMP’s standards, a replacement plan application must be submitted to the City. A copy of a Wetland Conservation Act Replacement Plan Application can be found in **Appendix D**. The application summarizes the wetland impact, the wetland mitigation, and the monitoring plan. An application fee will be apply for all applications.

5. Replacement Wetland Monitoring

The City of Savage requires that replacement wetlands be monitored for five years after their establishment. A monitoring report must be submitted to the City no later than December 31st of each year. Monitoring requirements include a comparison of the as-built specifications, description of the wetland mitigation area, type of vegetation present, hydrologic monitoring reports, soil pit data, summary of management activities, and a color photograph. A

more detailed description of the requirements of the wetland monitoring report can be found in **Appendix D**.

At the end of the five year monitoring period, a wetland delineation must be conducted to verify that the area has met federal wetland criteria. The results of this delineation are to be included in the final monitoring report.

6. Wetland Delineation

For any site development activities within the City of Savage, the City requires the developer to submit a wetland delineation report that identifies the location and extent of any wetlands present on the site. Wetland delineations are to be performed by a professional wetland delineation consultant who has been trained in delineation or has extensive experience in the field. Delineations will be subject to verification by the City, the Technical Evaluation Panel (TEP), and the U.S. Corps of Engineers.

D. Wetland Conservation Act Application Process and Timeline

If a project proposes to drain or fill a wetland, the project proposer must submit a permit application prior to any wetland impact. A sample permit application can be found in **Appendix D**.

If the project proposes to impact less than 10,000 ft² of wetland, the City will mail a summary of the project within 10 days of receipt of the application to the TEP, the DNR, and anyone who has requested that type of information.

If the project proposes to impact more than 10,000 ft² of wetland, the City will mail a copy of the application and an invitation to submit comments within 10 days of receipt of the application to the TEP, Watershed District, the DNR, and anyone who has requested such information. The TEP, Watershed Districts, DNR and any other agencies will have at least 15 days to comment on the project.

Once the comment period has ended, the City will mail a *Notice of Decision* to all who received a summary or copy of the permit application. The City's decision is then effective and the project can commence provided that replacement of the wetland impacts occurs before or concurrently with the wetland impact and provided all other permits from other agencies such as the DNR, Corps, Watershed Districts, etc. have been obtained.

A project proposer can appeal the City's decision. This appeal must be made to BWSR within 15 days after the date on which the decision of the LGU is mailed to those required to receive notice of the decision. MN Rules 8420.0250 can be consulted for further information on appeals.

This Plan is intended to comply with all requirements of the WCA. Any future changes in the WCA would supercede the requirements outlined in this Plan.

VI. Wetland Inventory/Classification Methods

A. Background Information

Mapping for the area was initially reviewed to identify potential areas where wetlands may exist within the City. The City of Savage Comprehensive Water Resource Management Plan (1996) had identified and provided a limited evaluation of 334 wetlands within the City. The wetlands identified within the Water Resource Management Plan were based on wetlands shown on the National Wetland Inventory Map (NWI). Additional base mapping such as the DNR Protected Waters and Wetland Map, the soils maps for the area, and the Metropolitan Mosquito Control maps were utilized to identify additional wetland locations for the City's CWPMP.

After potential locations of wetlands were identified in the office, these locations were field verified for their presence. The presence or absence of a wetland was determined using the criteria for a wetland set forth in the 1987 Manual for Delineating and Identifying Jurisdictional Wetlands (U.S. Corps of Engineers, 1987).

It is important to note that wetland edges were not delineated as part of this project. A wetland delineation would need to be performed as part of any potential impact or development activity near the wetland (see **Section V.C.6**). In addition, the absence of a wetland from this plan does not necessarily mean that a wetland is not present on the site. Extreme efforts were taken to ensure that all wetlands within the City were evaluated as part of the development of this plan; however, the unintentional omission of a particular wetland does not grant permission to impact that wetland before going through the proper regulatory process.

B. Existing Classification Systems for Wetlands

Outlined below are the two different wetland classification systems that are utilized in Minnesota.

- C Circular 39 adapted from *Wetlands of the United States*
- C Cowardin System adapted from *Classification of Wetlands and Deepwater Habitats of the United States*

Circular 39

The Circular 39 was developed in 1956 by the U.S. Fish and Wildlife Service. This system breaks wetlands into eight categories. This system is a simple, quick way to categorize wetlands. These categories include the following:

- Type 1: Seasonally flooded basin or floodplain
- Type 2: Wet meadow
- Type 3: Shallow marsh
- Type 4: Deep marsh
- Type 5: Shallow open water

Type 6: Shrub swamp
Type 7: Wooded swamp
Type 8: Bog

Cowardin System

The Cowardin System was developed in 1979 also by the U.S. Fish and Wildlife Service. This system is more precise than the Circular 39 system. Cowardin describes wetlands using a tier system with each tier describing the wetland in more detail. The tier system is outlined as follows:

Tier 1 - Systems

Marine (not used in Minnesota)
Estuarine (not used in Minnesota)
Riverine
Lacustrine
Palustrine

Tier 2 - Subsystems

Riverine - Tidal, lower perennial, upper perennial, intermittent
Lacustrine - limnetic, littoral
Palustrine - no subsystems

Tier 3 - Classes

Rock
Unconsolidated bottom
Streambed
Aquatic bed
Emergent
Scrub-shrub
Forested
Open Water
Moss-Lichen

Finally, modifiers are added to the description to identify the type of water regime. These modifiers include the wetland being saturated, temporarily flooded, permanently flooded, etc. Other modifiers can be used as well that describe water chemistry, soil type, and whether the wetland has been ditched or farmed, etc.

An example of a Cowardin described wetland would be a PEMCd wetland. This classification indicates that the wetland has been described as palustrine (P) with emergent vegetation (EM) that is seasonally flooded (C) and has been affected by ditching or draining (d).

While both systems are used to classify the wetlands in the MnRAM assessment, the Circular 39 system was used to separate wetlands into management categories.

C. Wetland Functions and Values Assessment

After background information about the location of a potential wetland was obtained and the wetland was field verified, a functions and values assessment was performed on each wetland and a photograph of the wetland was taken for reference.

Functions and values of each wetland were evaluated using Minnesota Routine Assessment Method (MnRAM) 2.0. MnRAM was developed by the Interagency Wetland Group. MnRAM evaluates wetland functions and values based on the following categories in accordance with Wetland Conservation Act Rules:

- C Floral diversity and integrity
- C Water quality protection
- C Fish and wildlife habitat
- C Flood/stormwater attenuation
- C Groundwater interaction
- C Shoreline protection
- C Aesthetic/recreation/education and science
- C Commercial uses

A copy of MnRAM 2.0 can be found in **Appendix H**.

During the assessment process, it became evident that not enough information was available to adequately assess the groundwater interaction function of the wetlands within the City of Savage. Therefore, the groundwater assessment section of MnRAM was not included during the assessment of Savage's wetlands.

The City recognizes that groundwater interaction plays a very important role in many of the wetlands within the City. Some wetlands act as groundwater recharge areas, others act as discharge areas, and some act as both. The groundwater plays a vital role in the hydrology of the wetlands within the City. However, without adequate information the functions and values of the groundwater interaction cannot be adequately assessed. To assist in dealing with this issue, **Figure 3** in **Appendix C.2.**, shows areas that appear to be important groundwater recharge or discharge areas.

Figure 3 shows that groundwater discharge within the City is primarily located below the bluff line north of McColl Drive. The wetlands in this area are characteristic of groundwater discharge wetlands. This concurs with the information from the DNR, the Scott County Groundwater Plan, and the MLAEM Groundwater Model for the area. There are also other areas south of McColl Drive that appear to be important groundwater discharge areas. Based on information from water quality monitoring and/or surface water elevations, it appears that Dan Patch Lake and a few other scattered wetlands act primarily as groundwater discharge areas. The remaining wetlands within Savage were identified as groundwater recharge areas and are generally located south of McColl Drive.

After the MnRAM assessment was completed for the wetlands, the wetlands were placed into one of four management categories. The wetlands were placed into these management categories based on the following methods:

Table 2. Methods used for placing wetlands into Management Categories based on MnRAM Results

Wetland Type	Preserve	Manage 1	Manage 2	Utilize
Types 1, 2, 6, & 8	C Received 3 highs or more	C Received 2 highs with mostly mediums (includes tie between mediums and lows)	C Received 1 high C Received 2 highs with mostly lows	C Received lows and mediums
Types 3, 4, 5, & 7	C Received 4 highs or more	C Received 3 highs C Received 2 highs with mostly medium	C Received 1 high C Received 2 highs with mostly lows	C Received lows and mediums

This method was developed based on comparing wetlands to the reference wetlands within the City of Savage. Some wetlands were placed into a management category that did not follow the above conventions. This was done to take into consideration unique functions a wetland may provide such as providing a wildlife corridor. If a wetland’s category does not follow the above convention, it is noted in **Appendix C.1**.

D. Database Information/Geographic Information Systems Map

Information generated by the functions and values assessments for the City of Savage was compiled into a GIS Map and database. This database will be used by the City of Savage in conjunction with the CWPMP for city-wide planning and for informational purposes for developers and the general public. This database will be updated as necessary when new wetlands are created.

VII. Wetland Inventory/Classification Results

A. Overview of Wetland Inventory Results

Over 300 wetlands within the City of Savage were evaluated using MnRAM 2.0. All wetland types are represented within the City limits. Reference wetlands were found mainly within Murphy-Hanrehan Park located in the southeast corner of the City. **Table 1** in **Section 1** outlines in the number and type of wetlands that were evaluated within the City. Each wetland was placed into one of the four management categories based on the results of the MnRAM 2.0 assessment and input from the Technical Panel. **Table 3** shows the number of wetlands that were placed in each management category. A description of each management category can be seen in **Section VIII**. Summary sheets for each wetland can be found in **Appendix C.1**.

Table 3. Number of Wetlands in each Management Category

Management Category	Number of Wetlands
Preserve	80
Manage 1	92
Manage 2	66
Utilize	38
Not evaluated and/or not placed into Management Category	48

While an attempt was made to evaluate every known wetland, access to some wetlands was unavailable. Approximately six wetlands have been located via aerial photography on land within the gravel pit in southern Savage (Wetlands 31-117W, 31-151W, 31-160W, 31-161W, 31-162W, and 31-163W). Due to safety and access issues, these wetland were not evaluated.

Additionally, the City did not receive permission to access the following wetlands:

21-371W	17-374W	17-375W	17-376W	17-377W	17-378W
17-379W	17-380W	17-415W	16-447W	16-448W	17-449W
17-450W	17-451W	17-452W	17-453W	17-454W	15-437W
15-306W	32-436W				

Therefore, a MnRAM 2.0 assessment will need to be undertaken at the property owners expense if and when this land develops. The MnRAM 2.0 assessment will be required to be conducted by a trained wetland professional. Comparisons must be made to reference

wetlands corresponding to the assessed wetland type and the wetland will then be placed into a management category as outlined in **Section VI** of this plan.

The following sections provide an overview of each subwatershed and the type of wetlands within each. The MnRAM summary sheets for these subwatersheds can be found in **Appendix C.1**.

B. Subwatershed Descriptions

1. Credit River Subwatershed

The Credit River subwatershed is the largest subwatershed encompassing approximately 5700 acres and runs the entire length of Savage. Credit River runs from the south to the north and empties into the Minnesota River. The land use within the subwatershed is open space, park, and low density housing in the south to medium density/high density residential and commercial in the north. Murphy-Hanrehan Regional Park is located within this subwatershed. Also within this subwatershed are large wetland complexes associated with the Credit River. A gravel pit is also located in the southern portion of the subwatershed. Wetlands within the gravel pit were not evaluated due to safety issues and lack of access to the site.

Additionally, while wetlands associated with the Credit River were evaluated, they were not placed into management categories. The City's Shoreland Ordinance provides provisions for the Credit River and the City will defer to this ordinance for management of these wetlands.

2. Prior Lake Subwatershed

The Prior Lake subwatershed is a small subwatershed and encompasses approximately 460 acres within the City. It is located in west central Savage. Wetlands in this area drain to Prior Lake. This subwatershed contains open space and residential development.

3. Dan Patch Lake Subwatershed

The Dan Patch subwatershed is approximately 700 acres in size and is located in the west central portion of the City. It contains residential development with areas that are currently developing. Water bodies of special importance include Dan Patch and Twin Lakes as well as DNR Wetland 251W, which is a bog.

4. McColl Lake Subwatershed

McColl Lake subwatershed is approximately 160 acres in size and is located in the west central portion of the City. This subwatershed contains McColl Lake as well as DNR Wetland 241W, which is a bog. This area contains residential development and open space.

5. Rice Lake Subwatershed

Rice Lake subwatershed is 1025 acres in size and is located in the northwest corner of the City adjacent to the Minnesota River. Rice Lake is the main water body within this subwatershed. This area lies within the Minnesota River Valley National Wildlife Refuge.

6. Eagle Creek Subwatershed

Eagle Creek Subwatershed is located in northwestern Savage and is approximately 460 acres in size. Eagle Creek and the wetland complexes associated with it are the main water bodies within this subwatershed. This subwatershed is located below the bluff line and, therefore, many wetlands contain areas of groundwater discharge. This subwatershed contains residential development, areas that are currently developing, and open space.

7. Minnesota River Subwatershed

The Minnesota River borders Savage to the north. The Minnesota River subwatershed is located within the northern portion of the City and is approximately 2500 acres in size. This subwatershed contains residential, commercial, and industrial development. This subwatershed also contains the Savage Fen, wetlands associated with the Minnesota River, and an area within the Minnesota River Valley National Wildlife Refuge. This subwatershed is located below the bluff line and, therefore, many wetlands contain areas of groundwater discharge.

C. Potential Wetland Mitigation Locations

Wetlands and adjoining upland within the City were evaluated for their potential to be possible locations for wetland mitigation. To determine if an area had the potential to provide wetland mitigation, the following two factors were taken into account:

- C Open space existed adjacent to the wetland where the wetland could be expanded.
- C Portions of the wetland could be restored through revegetating a farmed wetland and/or reestablishing hydrology of a partially drained wetland.

This plan did not take into account if the land owner was willing to sell the land, nor was a feasibility study undertaken to determine if other outstanding factors may play a role in the use of these lands for wetland mitigation. **Figure 4** in **Appendix I** shows the locations of these areas. **Table 4** within the appendix outlines information about these areas.

VIII. Wetland Protection and Management Strategies

A. General Wetland Management Strategies

1. Water Quality

The City will continue to utilize Best Management Practices (BMPs) and other policies as outlined in the Comprehensive Water Resource Management Plan to ensure the protection of water resources within the City. As part of this program, the City will continue to sweep streets twice per year and maintain its regularly scheduled storm sewer maintenance program. In addition, the City has adopted an erosion control policy (**Appendix F**) and established a highly successful construction site erosion control program.

The City has begun monitoring the water quality of selected lakes such as Dan Patch Lake, Twin Lakes, Cates Lake, and McColl Pond. As resources are available, the City will continue these efforts to obtain water quality data of selected lakes and wetlands. The City also encourages citizen assisted monitoring. This data will be utilized to further define the stormwater treatment and public education needs of the City.

2. Noxious Weed Program

The City of Savage has an annual inspection program for noxious weeds. Property owners are notified of noxious weed problem areas where eradication should be undertaken. The City is also participating in a University of Minnesota program for biological control of purple loosestrife. It is the intent of the City to have this biological control program fully implemented by the year 2000.

3. Public Education

As outlined in the City's CWRMP, the City will continue to educate and inform the public on pertinent water resource management issues and increase public participation in water management activities. As part of this effort, all development occurring after January 1999 adjacent to wetlands is required to install special wetlands marker signs to designate wetlands and inform of prohibited uses of the wetland areas. An example of this sign is in **Appendix E**.

The City will also distribute an annual newsletter regarding pertinent water resource related information to its residents. A copy of this newsletter is included in **Appendix G**.

4. Delineation

As outlined in the City's CWRMP and in **Section V** of this plan, the City will require developers to submit a wetland delineation report performed by a qualified wetland specialist that identifies the location and extent of any wetlands within the site.

B. Category Specific Wetland Management Strategies

1. Management Classifications

Based on the MnRAM functions and values assessment, wetlands were placed into management categories. Wetlands were placed in one of the following categories:

a. Preserve Wetlands (P)

Wetlands that were placed into the Preserve category received high functions and values ratings based on MnRAM 2.0. All reference wetlands and those wetlands within Murphy-Hanrehan Park have been placed in this category. Avoidance of these wetlands is strongly encouraged.

b. Manage 1 Wetlands (M1)

Wetlands that were placed in the Manage 1 category received high functions and values ratings, but showed evidence of more disturbance/degradation than Preserve wetlands.

c. Manage 2 Wetlands (M2)

Wetlands that were placed in the Manage 2 category generally received moderate functions and values ratings. These wetlands generally had less diverse vegetation and had more evidence of disturbance than Manage 1 and Preserve wetland.

d. Utilize Wetlands (U)

Wetlands that were placed in the Utilize category received the lowest functions and values ratings. These wetlands had little diversity, had been impacted by disturbance, and/or were too small to provide suitable wildlife habitat.

Table 2 in **Section VI** outlines the specifics regarding how each type of wetland was placed into each management category.

2. Buffers

Buffer strips of vegetation around wetlands are effective management tools for protecting wetland systems. Vegetated buffers provide cover and nesting habitat for wildlife, reduce erosion into the wetland, provide vegetative diversity, and reduce the amount of pollutants in runoff prior to discharge into a wetland.

According to the City's Comprehensive Water Resource Management Plan, the City requires homeowners to establish a buffer strip of vegetation at least 16.5 feet wide around any water resources. As part of this CWPMP, buffer zones around wetlands in the four management classifications will be required for all new development or redevelopment as follows:

Preserve & Savage Fen:	50 feet
Manage 1:	40 feet
Manage 2:	30 feet
Utilize:	16.5 feet minimum

This policy requires a minimum 50 foot buffer strip around the Savage Fen. Buffer strips greater than 50 feet in width adjacent to the Savage Fen may be required by other State or Federal Agencies. This policy would be in effect until such time as a management plan for the Savage Fen is approved.

Landowners within areas that have already been developed will be encouraged to implement these buffer strips around the adjacent wetland.

3. Stormwater PreTreatment

Wetlands have the ability to provide stormwater attenuation and decrease the risks of flooding to adjacent land. However, the nutrients and sediment present in stormwater runoff can have a detrimental effect to wetlands. To reduce the amount of nutrient and sediment loading into wetlands, the following pretreatment will be required prior to discharge into the different management classes of wetlands:

Preserve:	Sediment and nutrient pretreatment required to at least NURP recommendations; consider diversion if possible
Manage 1:	Sediment and nutrient pretreatment required to NURP recommendations or equivalent
Manage 2:	Sediment and nutrient pretreatment required to NURP recommendations or equivalent
Utilize:	Pretreatment as per NPDES recommendations

4. Mitigation

The Wetland Conservation Act guidelines serve as a baseline for the evaluation of impacts and associated wetland replacement plans. This plan outlines guidelines for City Staff and Council to use during review of projects impacting wetlands in each management class to ensure the protection of wetlands.

Preserve:	Maximum protection under this Plan. Avoidance is strongly recommended. Sequencing required as outlined in Section V .
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Replacement of the wetland functions and values will be required at a 3:1 ratio and replacement of the buffer at a 1:1 ratio.

Manage 1: Maximum protection this Plan. Sequencing required as outlined in **Section V**. Replacement of the wetland functions and values at a 2:1 ratio and buffer at 1:1 ratio.

Manage 2: Sequencing required as outlined in **Section V** and replacement at a 2:1 ratio.

Utilize: Sequencing is provided in **Section V**. Replacement at a 2:1 ratio.

Except for MnDOT projects when MnDOT is the LGU, all wetland impacts within the City of Savage will be mitigated within the City as discussed in **Section V**. Wetlands created for mitigation purposes shall be monitored for five years as per the City of Savage Wetland Monitoring Report Requirements and include, at a minimum, a brief description of the mitigation area, comparison to as-built specifications, summary of water level measurements, summary of plant species present, summary of management activities, and a color photograph of the site. See **Appendix D** for more information.

The U.S. Corps of Engineers also requires mitigation of wetland impacts at a 1:1 ratio at the least. More information can be obtained regarding this requirement by contacting the U.S. Corps of Engineers at (651)290-5375.

C. Newly Created Wetlands

Newly created wetlands include wetlands deliberately created where none existed at the time this plan was adopted. New wetlands include wetlands created as part of a wetland mitigation/creation project. Wetland areas created by human activity not intended to produce a pond or wetland shall not become part of this plan. Newly created wetlands will initially be placed in the management category of the wetland that they are replacing or as otherwise specified by the City Engineer. The replacement wetland should be designed to reach the management category of the wetland that it is replacing.

The Technical Evaluation Panel (TEP) will review newly created wetlands after 5 years to determine if the wetland meets the management category of the wetland that it replaced. The TEP will determine if additional work is needed or if the management goal has been met or is attainable in the near future.

D. Stormwater Ponds

Existing and created stormwater ponds are not included as part of this CWPMP. Stormwater ponds have been inventoried by the City as part of a separate project and will be managed as outlined in the Stormwater Pond Management Plan.

Table 5. Overview of Wetland Management Categories and Descriptions

Management Class	Buffer Required	Management Strategy	Stormwater Management	Mitigation Requirement
PRESERVE	50 feet	Maintain functionality to greatest degree possible. Avoidance is strongly recommended. Minimize development impacts. Maximize monitoring and education.	Sediment and nutrient pretreatment to NURP recommendations; consider diversion or higher level of treatment.	Maximum protection under this Plan. Replacement of functions and values at a 3:1 ratio and buffer at a 1:1 ratio.
MANAGE 1	40 feet	Maintain or improve functionality. Apply Wetland Conservation Act sequencing standards. Implement monitoring and education.	Sediment and nutrient pretreatment to NURP recommendations	Maximum protection under this Plan. Replacement of functions and values at a 2:1 ratio and buffer at a 1:1 ratio.
MANAGE 2	30 feet	Maintain functionality. Apply Wetland Conservation Act sequencing standards.	Sediment and nutrient pretreatment to NURP recommendations	Wetland Conservation Act sequencing and replacement at a 2:1 ratio.
UTILIZE	16.5 feet	Allow utilization for stormwater. Allow WCA sequencing flexibility (see page 13 for sequencing discussion). Some wetlands could be restored for regional wetland mitigation project.	Pretreatment as per NPDES recommendations.	Sequencing as outlined on Page 13. Replacement at a 2:1 ratio.

IX. Implementation Program

As part of this CWPMP, several programs/projects have been identified to protect wetlands as the City continues to experience development pressure. The following lists programs and/or projects that have been identified by this plan.

A. Administer and enforce erosion and sediment control policies

The City currently has policies relating to erosion and sediment control outlined in **Appendix F**. The implementation of this item involves the ongoing administration of these policies.

B. Adopt buffer guidelines

The wetland buffer requirement outlined in **Section VIII** will be formally adopted by the City by ordinance. This ordinance will be inserted into **Appendix K**.

C. Create wetland banking account with BWSR

The City will establish a wetland banking account with BWSR to provide mitigation alternatives for projects within the City.

D. Educational Programs

The City will continue to implement its educational programs as outlined in this plan.

E. Water Quality Monitoring

The City will continue its water quality monitoring efforts of Dan Patch Lake, Twin Lakes, Cates Lake, and McColl Lake. The City encourages citizen assisted monitoring and will expand efforts to other water bodies as volunteers, staffing, and funding allows.

F. Fully Implement Biological Control Program for Purple Loosestrife

It is the City's intent to fully implement the University of Minnesota's purple loosestrife control program by the year 2000. This biological control is accomplished by the release of beetles that feed on the purple loosestrife plants.

G. Implement CWPMP

The City will adopt this plan by ordinance and continue to administer the WCA as outlined in the plan.

H. Develop Regulations for the Sale of Phosphorous-Containing Fertilizer

The City will develop regulations that will prohibit the sale of phosphorus-containing fertilizer within the City limits. Once this ordinance is developed, it will be placed into **Appendix J**.

X. Enforcement, Amendments, and Appeals

It is the intention of the City of Savage to have this Comprehensive Wetland Protection and Management Plan reviewed and approved by the Board of Water & Soil Resources (BWSR) and adopted through ordinance by the City. Once approved, no significant changes to this Plan can be made without the approval of BWSR. Significant changes to this Plan shall be made known to the following parties:

- C The Mayor, City Council, City Staff, and City Engineer
- C City of Savage CWPMP Technical Panel
- C Board of Water and Soil Resources

Minor changes and the additions and final classification of mitigation wetlands can be made by the City Engineer as outlined in the Plan. Minor changes can be made by City staff without outside review.

The management classification of a wetland(s) within the City can be appealed by the landowner, project proposer, or other interested party. This appeal must be submitted in writing to the City and include documentation supporting the reasons for placing a wetland into a different management category. This written appeal must be submitted to the City Engineer prior to or along with the wetland impact permit application. A fee, as set by the City, will be required for each wetland being appealed. The appeal will be reviewed by City Staff and the Technical Evaluation Panel. A decision will be made regarding the appeal within 60 days of receipt of the appropriate documentation from the appellant. The appellant will be notified in writing of the panel's decision.

The City's decision regarding the wetland impact permit application can be appealed by a project proposer. This appeal must be made to BWSR within 15 days after the date on which the decision of the City is mailed to those required to receive notice of the decision. MN Rules 8420.0250 in **Appendix B** can be consulted for further information.

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