

1.0 Executive Summary

The *City of Edina Comprehensive Water Resource Management Plan* is comprised of the Executive Summary, Section 1, and fifteen additional sections, which are described as follows:

Section 2: Introduction—presents background information regarding the city, general watershed information, and plan purposes.

Section 3: Policies for Stormwater Management—presents background information, goals, policies and design standards covering runoff management and flood control, water quality management, erosion and sediment control, wetlands, floodplain management, recreation, habitat and shoreland management, groundwater, the City’s education goals, and National Pollutant Discharge Elimination System (NPDES) considerations.

Section 4: Methodology for Modeling—describes the data, methods and assumptions used for the stormwater analyses.

Sections 5 through 14 (Watershed Descriptions and Recommendations)—describes the general drainage area, drainage patterns within the area, the stormwater system analysis and results, and implementation recommendations for each of the following ten major drainage areas in the city: Nine Mile Creek- North, Nine Mile Creek- Central, Nine Mile Creek- South, Lake Cornelia/Lake Edina/Adam’s Hill, Nine Mile South Fork, Southwest Ponds, T.H. 169 North, Northeast Minnehaha, Southeast Minnehaha, and Northwest Minnehaha.

Section 15: Issues and Implementation Program—describes the significant components of the City’s CWRMP implementation program, including its NPDES Phase II MS4 permit, specific requirements of the NMCWD and MCWD, financial considerations, ordinance implementation and official controls, and implementation priorities.

Section 16: Wetlands—Discusses the wetland inventories completed for the City of Edina and the assessment methodologies and results.

1.1 Stormwater Management Goals & Policies

1.1.1 Runoff Management & Flood Control (Section 3.1)

1. No flow rate increases in already overtaxed stormwater systems.
2. Place high priority on providing 100-year level of protection for the City’s stormwater system.
3. Require 10-year level of service for new stormwater systems and for existing systems as opportunities arise.

4. For new development and redevelopment, peak flow rates will be limited in accordance with the applicable rules of the Nine Mile Creek Watershed District and/or Minnehaha Creek Watershed District.
5. Adopt and implement a stormwater management ordinance reflecting the policies and design standards detailed in [Section 3.1](#).

1.1.2 Water Quality Management ([Sections 3.2 and 3.3](#))

1. Modify City review, permitting, and enforcement processes for construction activities to ensure water quality goals are met.
2. Heighten community awareness of water quality management through education and training.
3. Manage City water resources so that the beneficial uses of streams, wetlands, ponds, and lakes remain available to the community.
4. Work with the adjacent municipalities to encourage upstream pollutant reduction in areas closer to the source of such pollutants.
5. Encourage use of regional detention areas as opposed to individual on-site detention to reduce flooding, control discharge rates, and provide for water quality management.
6. As required by the Nine Mile Creek Watershed District and Minnehaha Creek Watershed Districts, stormwater retention is required in locations where soil conditions permit and where groundwater supplies will not be impacted.
7. Adopt and implement a stormwater management ordinance reflecting the water quality management standards detailed in [Section 3.2.3](#) and the erosion and sediment control policies detailed in [Section 3.3](#).
8. Work with the MPCA, Nine Mile Creek Watershed District, and Minnehaha Creek Watershed District to implement the recommendations and/or requirements of existing or future Total Maximum Daily Loads (TMDLs) throughout the city.
9. Require erosion and sediment controls and submittal of erosion and sediment control plans for proposed construction activities.
10. Erosion and sediment controls shall conform to the requirements of the Nine Mile Creek Watershed District or Minnehaha Creek Watershed District, depending on project location.
11. Direct that entities proposing construction projects that disturb more than 1 acre of land will need to apply for coverage under the MPCA's General NPDES Construction Stormwater Permit.

1.1.3 Wetland Protection ([Section 3.4](#))

1. Achieve no net loss of wetlands, including acreage, functions, and values.
2. Discourage wetland alteration. Unavoidable wetland alterations must be mitigated in conformance with the Wetland Conservation Act (WCA) requirements and the requirements of the Nine Mile Creek Watershed District or Minnehaha Creek Watershed District, and must be guided by the following principles, in descending order: avoid the impact, minimize the

impact, rectify the impact, reduce or eliminate the impact over time, and compensate for the impact.

3. Work in conjunction with the local government units (LGU) responsible for administering the Wetland Conservation Act in the City of Edina, the Nine Mile Creek Watershed District and the Minnehaha Creek Watershed District, on issues pertaining to wetland alterations within the city boundary.
4. Maintain and periodically update the wetland inventory data and the wetland management classifications provided in this plan.
5. Seek to restore previously existing wetlands and enhance existing wetlands.
6. Provide buffer zones of native vegetation, where feasible, around ponds and wetlands to provide habitat. The City will work with the Nine Mile Creek Watershed District and Minnehaha Creek Watershed District to educate the public regarding wetland protection and the importance of creating and maintaining vegetative buffers. Land use and property ownership may limit the ability to provide buffer zones.
7. Encourage the minimization of water level fluctuations (bounce), where feasible, in wetlands or detention basins to prevent adverse habitat changes.
8. Involve the appropriate regulatory agencies (MPCA, U.S. Army Corps of Engineers, and the MnDNR) in the planning of any proposed water quality or flood control facilities identified in this plan that may be located within a wetland.

1.2 Problems, Issues and Potential Solutions

This section summarizes the City's 2010-2019 water resources implementation program, and potential stormwater management improvements identified in [Sections 5 through 15](#) of the plan.

1.2.1 Water Resources Implementation Program

This plan serves as a master plan for the City's water resources management and storm drainage system. The City will work with residents to implement structural (capital) improvements and non-structural programs to address existing water resource problems within the city and to prevent future problems from occurring. The implementation program identifies and prioritizes the programs and improvements, and provides cost estimates for budgeting purposes. [Table 1.1](#) presents the City's water resource-related implementation program for 2010-2019, which includes the City's non-structural (administration) programs and structural (capital) improvement program.

1.2.2 Runoff Management and Flood Control

The hydrologic and hydraulic modeling analyses of the current stormwater system identified several areas throughout the City where the desired 100-year level of protection may not be provided. These problem areas and potential solutions are discussed in detail in [Sections 5 through 14](#), and are summarized and prioritized in [Table 1.2](#). In addition to evaluating the level of protection provided by the current stormwater system, the level of service provided was also evaluated. From this

analysis, it was determined that the storm sewer throughout many areas of the city is not currently providing the desired 10-year level of service. The areas where the storm sewer does not offer sufficient capacity and street flow occurs during a 10-year frequency event are depicted in figures in [Sections 5 through 14](#). The capacity of these storm sewer systems should be evaluated and upgraded as opportunities arise.

1.2.3 Water Quality Management

To protect the water quality of Nine Mile Creek and Minnehaha Creek, the effectiveness of the stormwater system in removing stormwater pollutants such as phosphorus was evaluated and water quality management recommendations have been made for potential pond upgrades throughout the city. These recommendations are discussed in [Sections 5 through 14](#), and are summarized and prioritized in [Table 1.2](#).

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Table 1.1 Water Resources Implementation Program

Project Name / Location	Description	Proposed Improvement	Cost Estimate¹ (\$)	Proposed Year³	Funding Source
Plan Amendments	This Water Resources Management Plan may need to be amended periodically.	This plan will be amended as required.	As Required	As Required	SW Utility
Plan Update/Revision	This Water Resources Management Plan will expire in 2019 and need to be updated/ revised to be consistent with WMO plans and policies and state and federal rules.	This Plan will be updated to maintain compliance with state and federal rules and WMO policies.	100,000	2018-2020	SW Utility
City-wide education and resident involvement program	Implement the City’s Education Program including educational and outreach tasks called out in the City’s SWPPP	Maintain the education program to educate residents about the Plan and about various water related issues.	10,000/yr	Ongoing	SW Utility
Illicit discharge detection and elimination	Continue implementation of the SWPPP Illicit discharge detection and elimination tasks	Inventory, mapping, inspection, enforcement and education.	City Staff	Ongoing	SW Utility
Develop Interactive GIS water resources web mapping tool	Development of a web-based mapping system for sharing water resource information with the interested public	Water resources information will be more easily accessible to interested public via the City’s website.	11,000	2009-2010	SW Utility
Maintenance of Interactive GIS water resources web mapping tool	Annual updates and maintenance activities for interactive GIS web mapping tool, as needed.	Web mapping tool will have continued functionality and reflect most up-to-date information available.	3,000	Ongoing	SW Utility
Illicit discharge ordinance review	Review existing City ordinances and develop/adopt an illicit discharge ordinance, as necessary.	City ordinances consistent with illicit discharge requirements of NPDES Phase II MS4 General Permit	City Staff	Ongoing	SW Utility
Construction site stormwater runoff control	Maintain construction site stormwater runoff control program and SWPPP tasks	Plan review, inspection, enforcement and education	City Staff	Ongoing	SW Utility
Post construction stormwater management	Maintain the post construction stormwater management and SWPPP tasks	Design standards and review, education	City Staff	Ongoing	SW Utility
BMPs–Housekeeping, Street Sweeping, & Storm Drainage System Maintenance	Maintain the City’s Pollution prevention – Good housekeeping practices and related SWPPP tasks including Street sweeping and system maintenance.	Street sweeping, structure clean-out, City facility operations and maintenance and training, inspections and recording with concentration of efforts in target areas.	City Staff	Ongoing	SW Utility
Storm Drainage System Inventory	Continue inventorying storm sewers, manholes, catch basins, etc.	Complete inventory. Tie inventory into the City's GIS and CityWorks system.	City Staff	Ongoing	SW Utility

Project Name / Location	Description	Proposed Improvement	Cost Estimate¹ (\$)	Proposed Year³	Funding Source
Updates to Hydrologic and Hydraulic Modeling	Annual updates to City's stormwater management system modeling to reflect infrastructure improvements	Current, up-to-date modeling results.	10,000/year		
Impaired Waters Tracking and Review	Monitor impaired waters list and respond with review and implementation as needed per the SWPPP.	The City will remain fully informed and responsive to impaired waters issues.	City Staff	Ongoing	SW Utility
Nondegradation Report Follow-up	City-wide loading assessment	Determine pollutant load reduction necessary for nondegradation of water bodies	5,000	TBD	SW Utility
Annual SWPPP update and meeting	Make any needed updates to the City's SWPPP and hold an annual public meeting to receive public input.	Involve residents in water resource issue development and implementation tasks.	City Staff	Ongoing	SW Utility
BMPs - Sedimentation Pond Maintenance	Sedimentation ponds require frequent cleaning and maintenance.	Develop and implement a program to inspect, clean and maintain sedimentation and water quality ponds and lakes.	2,800,000 / 10 years	Ongoing	SW Utility
Miscellaneous Drainage Improvements	Miscellaneous Drainage Improvements	Miscellaneous Drainage Improvements	23,000,000/ 10 years	Ongoing	SW Utility
Infiltration and Inflow reduction	Reduce the amount of infiltration and inflow to the sanitary sewer system	Reduce the amount of infiltration and inflow to the sanitary sewer system	200,000/year	Ongoing	SW Utility
Participation in Nine Mile Creek Chloride TMDL	Participate in stakeholder process for Nine Mile Creek Chloride TMDL		City Staff	2009-2010	SW Utility
Implementation of Nine Mile Creek Chloride TMDL	Implement the requirements of the Nine Mile Creek Chloride TMDL	To be determined	TBD	2010-2020	SW Utility/ NMCWD/ Grant Funding
Participation in Minnehaha Creek/Lake Hiawatha TMDL Development	Participate in stakeholder process for Minnehaha Creek/Lake Hiawatha TMDL development		City Staff	2009-2012	SW Utility
Implementation of Minnehaha Creek/Lake Hiawatha TMDL	Implement the requirements of the Minnehaha Creek/Lake Hiawatha TMDL loading allocation and implementation plan.	To be determined	TBD	2012-2020	SW Utility/ MCWD/ Grant Funding
Participation in the NMCWD Lake Cornelia Use Attainability Analysis (UAA) development	Partner with the NMCWD to evaluate potential remedial measures for improving the water quality of Lake Cornelia.		City Staff	2009-2010	SW Utility

Project Name / Location	Description	Proposed Improvement	Cost Estimate¹ (\$)	Proposed Year³	Funding Source
Participation in Lake Cornelia TMDL Development	Participate in stakeholder process for Lake Cornelia TMDL		City Staff	2013-2018	SW Utility
Implementation of recommendations from the NMCWD Lake Cornelia UAA and Lake Cornelia TMDL	Partner with the NMCWD to implement the recommended remedial measures to improve the water quality of Lake Cornelia	To be determined	TBD	2010-2020	SW Utility/ NMCWD/ Grant Funding
Participation in Lake Edina TMDL Development	Participate in stakeholder process for Lake Edina TMDL		City Staff	2013-2018	SW Utility
Implementation of Lake Edina TMDL	Implement the requirements of the Lake Edina TMDL loading allocation and implementation plan.	To be determined	TBD	2018-2020	SW Utility/ NMCWD/ Grant Funding
Implementation of recommendations from the Draft NMCWD Mirror Lake UAA	Partner with the NMCWD to implement recommended remedial measures to improve the water quality of Mirror Lake	To be determined	TBD		SW Utility/ NMCWD/ Grant Funding
Implementation of recommendations from the Draft NMCWD Arrowhead and Indianhead Lakes UAA	Partner with the NMCWD to implement recommended remedial measures to improve the water quality of Arrowhead and Indianhead Lakes	To be determined	TBD		SW Utility/ NMCWD/ Grant Funding
Minnehaha Creek Reach 14 Stream Restoration	Stream Improvement Project	Streambank stabilization, in-stream habitat enhancement, and buffer enhancement.			MCWD
Zoning Ordinance Revisions	Revise zoning ordinance to include wetland management aspects.		City Staff	2009-2010	SW Utility
Stormwater Management Ordinance Development	Develop and implement stormwater management ordinance reflecting the policies and design standards detailed in the CWRMP.		City Staff	2010-2012	SW Utility
1 TBD – To be determined					

Table 1.2 Potential Implementation Activities (including Capital Improvements)

Project Name/Location	Description	Proposed Improvement	Priority¹
<i>Nine Mile Creek-North</i>			
Subwatershed ML_19 (505, 509, 513 Tyler Ct)	Flooding problem	Upgrade to larger pipe.	C-40
Subwatershed HL_2 (Hawkes Drive)	Flooding problem	Construction of overflow swale between homes	C-41
Subwatershed HL_18 (5711 & 5717 Grove St)	Flooding problem	Upgrade to larger pipes	C-22
Subwatershed HL_25 (5516 & 5520 Dundee Rd)	Flooding problem	Perform detailed field survey. Additional pumping capacity may be required at lift station.	E-3
Subwatershed MD_22 (6009 Leslie Ln)	Flooding problem	Upgrade to larger pipes.	C-39
Subwatershed MD_28 (5316 Schaeffer Rd)	Flooding problem	Maintain road overflow and positive overflow swale.	C-18
Subwatersheds NMN_90, NMN_23 (Fountain Woods Apartments)	Flooding problem	Privately owned drainage system. Notify owners of flood potential.	E-2
Pond MD_3 (Bredesen Park, east of parking area)	Water Quality Improvement	Excavate to remove accumulated sediment.	C-12
Pond MD_15 (Sun Road)	Water Quality Improvement	Provide additional 0.3 acre-feet of dead storage volume.	C-10
Pond NMN_24 (Between Waterford Ct and Habitat Ct)	Water Quality Improvement	Increase pond depth.	C-7
Pond NMN_27 (Northeast of T.H. 62 & T.H. 169)	Water Quality Improvement	Provide additional 1.4 acre-feet of dead storage volume.	C-8
Pond NMN_49 (West of 5521 Malibu Drive)	Water Quality Improvement	Provide additional 0.2 acre-feet of dead storage volume.	C-11
<i>Nine Mile Creek- Central</i>			
Manhole 457 (6005 & 6009 Crescent Dr)	Flooding problem	Construction of a positive overflow channel.	C-38
Subwatershed IP_4 (Cherokee Trail & Gleason backyard depression area)	Flooding problem	Work with homeowners to evaluate construction of a low level outlet from landlocked depression.	C-37
Subwatershed NMC_80 (5339 West 64th St)	Flooding problem	Upgrade to larger pipes at Ridgeview Dr and Valley Ln.	C-36
Subwatersheds NMC_86, NMC_120 (Valley View Rd & Hillside Rd)	Flooding problem	Upgrade to larger pipe.	C-35
Subwatersheds NMC_71, NMC_103 (West 66th St & Naomi Dr)	Flooding problem	Provide additional outlet capacity from backyard depression area through gravity outlet system (1) or pumped outlet (2).	C-44

Subwatershed NMC_106 (6712, 6716, 6720 Ridgeview Dr)	Flooding problem	Installation of a gravity storm sewer system at backyard depression.	C-34
Subwatershed NMC_107 (6808, 6812, 6816, 6820 Ridgeview Dr)	Flooding problem	Installation of a gravity storm sewer system at backyard depression.	C-33
Lake Cornelia/Lake Edina/Adam's Hill			
Subwatersheds NC_62, NC_3 (Swimming Pool Pond/ North Lake Cornelia)	Flooding problem	Upgrade pipe and outlet structure.	C-31
Subwatershed NC_11 (6312, 6316, 6321, 6329 Tingdale Ave)	Flooding problem	No recommendation at this time. Further analysis required.	E-9
Subwatersheds NC_40, NC_26 (St. Johns/Ashcroft & West 64th St)	Flooding problem	Installation of additional pipe to drain T.H. 62 median ditch and prevent upstream flooding.	C-21
Subwatersheds NC_86, NC_97, NC_99 (Barrie Rd & Heritage Dr)	Flooding problem	No recommendation at this time. Reevaluation of T.H. 62 system will be required.	E-10
Subwatershed NC_88 (York Ave & West 64th St)	Flooding problem	Increase pump capacity. Adjust pump on/off elevations.	E-1
Subwatershed NC_132 (T.H. 62 at France Ave)	Flooding problem	No recommendation at this time. Reevaluation of T.H. 62 system will be required.	E-14
Subwatershed NC_135 (Parnell Ave & Valley View Rd)	Flooding problem	No recommendation at this time. Further analysis required.	E-13
Subwatersheds LE_53, LE_7, LE_10 (Hibiscus Ave)	Flooding problem	Construct positive overflow swale.	C-31
Pond LE_38 (West of Lake Edina)	Water Quality Improvement	Provide additional 1.4 acre-feet of dead storage volume within MnDOT right-of-way	C-9
Nine Mile Creek- South			
Subwatershed CL_51 (7001 & 7025 France Ave)	Flooding problem	No recommendation at this time.	E-11
Pond SP_1 (Border Basin - West of Minnesota Dr & West 77th St)	Water Quality Improvement	Provide additional 21.5 acre-feet of dead storage volume.	C-2
Subwatershed NMS_1 (Southwest quadrant of the T.H. 100 & West 77th St interchange)	Water Quality Improvement	Construct water quality basin.	C-1
Ponds NMS_72, NMS_74 (Fred Richards Golf Course)	Water Quality Improvement	Increase pond depths.	C-6
Pond NMS_76 (Fred Richards Golf Course)	Water Quality Improvement	Provide additional 2.5 acre-feet of dead storage volume.	C-4
Pond NMS_104 (Fred Richards Golf Course)	Water Quality Improvement	Provide additional 0.2 acre-feet of dead storage volume.	C-5

<i>Nine Mile South Fork</i>			
Subwatershed AH_31 (6309 Post Lane)	Flooding problem	Construction of two control structures to restrict flow through the existing storm sewer system.	C-42
Subwatershed NMSB_62 (Braemar Golf Course)	Flooding problem	No recommendation at this time. Further analysis required.	E-12
Subwatershed NMSB_70 (7009 & 7013 Sally Ln Backyard Depression Area)	Flooding problem	Perform detailed field survey. Positive overflow swale may be necessary.	E-7
Subwatersheds NMSB_83, NMSB_84 (Paiute Pass & Sally Ln)	Flooding problem	Perform detailed field survey. Positive overflow swale from backyard depression may be necessary.	E-8
Ponds NMSB_3, NMSB_2 (Braemar Golf Course)	Water Quality Improvement	Provide additional 1.2 acre-feet of dead storage volume.	C-13
Pond NMSB_7 (Braemar Golf Course)	Water Quality Improvement	Increase pond depth.	C-15
Pond NMSB_12 (Braemar Golf Course)	Water Quality Improvement	Regular maintenance.	C-3
Pond NMSB_85 (Braemar Golf Course)	Water Quality Improvement	Provide additional 1.2 acre-feet of dead storage volume.	C-16
Pond NMSB_86 (Braemar Golf Course)	Water Quality Improvement	Provide additional 0.15 acre-feet of dead storage volume.	C-14
<i>Southwest Ponds</i>			
Subwatershed SWP_14 (7411 Coventry Way)	Flooding problem	Installation of flapgate.	C-17
Subwatershed SWP_46 (7317 Cahill Road)	Flooding problem	No recommendation at this time. Further analysis required.	E-6
Subwatershed NM494_4 (7709 Stonewood Court)	Flooding problem	Upgrade to larger pipes.	C-43
<i>Northeast Minnehaha Creek</i>			
White Oaks Landlocked Area Flooding Analysis and Feasibility Study (if necessary)	Flooding problem	Complete stormwater analysis to determine potential flooding impacts of 100-year snowmelt event to structures surrounding the landlocked areas	E-16
Subwatershed MS_3 (4300, 4214, & 4212 Branson St)	Flooding problem	Install catchbasin in backyard depression and upgrade to larger pipe.	C-24
Subwatershed MS_7 (4140 & 4150 West 44th St)	Flooding problem	Provide additional storage capacity in backyard depression.	C-25
Subwatershed MS_17 (4308 France Ave)	Flooding problem	Work with homeowners to evaluate installation of gravity system to drain backyard depression area.	C-23
Subwatershed MS_40 (4000 West 42nd St and 4100, 4104, & 4108 France Ave)	Flooding problem	Implement recommendations of the 2006 Weber Park Pond Feasibility Study	C-45

<i>Southeast Minnehaha Creek</i>			
Complete stormwater analysis to determine potential flooding impacts of Minnehaha Creek overtopping just north of West 58 th Street.	Flooding problem	Complete stormwater analysis to determine potential flooding impacts of Minnehaha Creek overtopping just north of West 58 th Street.	E-15
Subwatershed LP_15 (6213 Ewing Ave)	Flooding problem	Upgrade to larger pipes.	C-26
Subwatershed LP_24 (5837, 5833, 5829, & 5825 South Chowen Ave)	Flooding problem	Installation of a catchbasin in backyard depression area.	C-27
Subwatershed LP_27 (Chowen Ave & West 60th St)	Flooding problem	Perform detailed survey/verification of storm sewer to verify pipe sizes, inverts, and low point of entry.	E-4
Subwatershed MHS_4 (3600 West Fuller St)	Flooding problem	Installation of a catchbasin in backyard depression and storm sewer along Beard Ave.	C-19
Subwatersheds MHS_24, MHS_66 (5609, 5605 Dalrymple Rd & 5610, 5612 St. Andrews Ave)	Flooding problem	Construct surface overflow swale (1) or upgrade to larger pipes (2).	C-29
Subwatershed MHS_79 (5605, 5609, 5613, 5617, 5621, 5625, & 5629 Beard Ave)	Flooding problem	Upgrade to larger pipes. Install catchbasin in alley.	C-20
Subwatershed MHS_89 (5840 & 5836 Ashcroft Ave)	Flooding problem	Work with homeowners to evaluate installation of catch basin from backyard depression.	C-28
Subwatershed ML_7 (5213 & 5217 Richwood Ave)	Flooding problem	Perform detailed field survey of wetland storage. Further analysis required.	E-5
Subwatershed ML_12 (5701 Dale Avenue)	Flooding problem	Upgrade to larger pipes.	C-30
<i>Northwest Minnehaha Creek</i>			
Interlachen Landlocked Area	Flooding problem	Construct/raise embankment between landlocked wetland and Meadowbrook Golf Course. Develop management plan for pumped outlet.	C-46
¹ C indicates a construction project, E indicates that an engineering study is required			