

# **Stormwater Utility Use in the Twin Cities Metropolitan Area**

**February 2000**

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***T***he mission of the Metropolitan Council is to improve regional competitiveness in the global economy so that this is one of the best places to live, work, raise a family and grow a business.

The Metropolitan Council coordinates regional planning and guides development in the seven-county area through joint action with the public and private sectors. The Council also operates regional services, including wastewater collection and treatment, transit and the Metro HRA – an affordable-housing service that provides assistance to low-income families in the region. Created by the legislature in 1967, the Council establishes policies for airports, regional parks, highways and transit, sewers, air and water quality, land use and affordable housing, and provides planning and technical assistance to communities in the Twin Cities region.

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# Introduction

Stormwater utilities (SWUs) have become a popular method of municipal stormwater financing, both nationwide and locally, during the past 20 years. Simply stated, SWUs charge fees to property owners for using the local stormwater drainage system. SWU user fees typically are commensurate to the estimated amount of surface water runoff discharged from each land parcel to the stormwater system. All property within a city, with few exceptions, are charged the utility fee, similar to sanitary sewer utilities. By law, revenue generated by the utility must be dedicated to surface water management. In a recent survey of 97 SWUs in 20 states (Black and Veatch, 1996), Black and Veatch found the most common activities financed by SWU revenues include street sweeping, public education, erosion/sediment control, stormwater quality management, household toxin collection, illegal discharge detection, storm drain stenciling, and commercial/industrial regulation.

In 1983, the Minnesota State Legislature amended M.S. 444.075 to include user fees in the slate of local revenue sources that could be used for funding surface water management, originally consisting of property tax, assessments, permit fees, and developer's contributions. The City of Roseville adopted the Twin City Metropolitan Area's (TCMA) first stormwater utility (SWU) in 1984. SWUs were adopted in other U.S. cities prior to their approved use in Minnesota, for example in the City of Bellevue, Washington (adopted 1974), the City of Tacoma, Washington (1977), the City of Corvallis, Oregon (1980), City of Boulder, Colorado (1983), and King County / Seattle, Washington (1979) (Metropolitan Council of the Twin Cities Area, 1983).

Metropolitan Council staff have perceived an increased interest in stormwater utilities by TCMA cities since the passage of the Metropolitan Water Management Act (M.S. 103B). This 1982 legislation requires local units of government within the seven county metropolitan area to prepare local water management plans. Among other things, the local plans are required to include sections on necessary improvements for water quantity and quality control, best management practice implementation schedule, capital improvement plan, and stormsewer system maintenance schedule and cost estimate. Since stormwater utilities generate a dedicated, predictable annual revenue, this financing mechanism has been increasingly adopted by cities to provide funding for local plan preparation and implementation, as well as for maintenance and operation of the existing stormwater system. This document has been prepared to provide information and guidance for those cities considering implementation of stormwater utilities. The first section of the report provides guidance for stormwater utility formation; the second section provides the results of a survey of stormwater utility use in 140 communities in the TCMA.

# Overview of Stormwater Utility Formation

The primary financing principle behind a stormwater utility fee is that stormwater runoff contributing properties pay, rather than those benefiting from a stormwater conveyance or treatment system. The fee is typically commensurate with surface water runoff volume or pollution load contributed by each property. On the other hand, assessment for improvement must be commensurate with the increase in property value resulting from the improvement; no benefit, no assessment. In the TCMA, stormwater utility fees are usually billed quarterly or monthly to property owners, and are included in the same bill with sanitary sewer and water utility charges.

While there is no one-size-fits-all procedure for cities to follow when establishing a stormwater utility, several steps are crucial (Linsey, 1988; City of Roseville, 1985; Hodges, 1991):

## **1. Estimate revenue requirements**

Accurate estimation of required revenue is crucial for setting appropriate fees. Estimated costs should be collected for planning and administration, maintenance and operational needs, necessary and projected system upgrades, and other miscellaneous needs and activities.

## **2. Determine the administrative structure for the utility**

Most TCMA cities with stormwater utilities use the Public Works Department to administer the utility. Several cities subcontract with consulting firms to maintain databases and update fee structures. The municipal billing department or private utility billing service typically handles stormwater utility billing, with the stormwater utility fee included on the same bill with water and sanitary sewer charges.

## **3. Develop a fee structure and fee calculation method**

Calculation of SWU fees is typically based on land use and the amount of impervious area associated with each land use type. The volume of stormwater runoff produced is directly proportional to the amount of impervious area, everything else being equal. Most SWU fees in the TCMA are calculated using “Residential Equivalency Factors” (REFs). An REF is calculated from the ratio of the average volume of surface runoff generated by one acre of given land use to the average volume of runoff generated by one acre of typical single family residential land, during a standard rainfall event (typically 2”-24 hour event assuming Soil Conservation Service (SCS) “Type B” soil conditions). Therefore, single family residential property has an REF of 1.0; property developed less intensively (such as parks or cemeteries) will have an REF less than 1.0. Property developed more intensively than single-family residential (such as commercial, industrial, or institutional) will have an REF greater than 1.0. A quarterly rate for one REF is set periodically by the city council, and the SWU fee for each property is calculated by multiplying the REF value by the quarterly rate.

Most TCMA cities have incorporated into their SWU ordinances an appeal process to provide credits and/or adjustments to stormwater utility fees under certain circumstances. For example, many SWU ordinances allow adjustments to the fee when parcel runoff differs by more than 20% from the appropriate land use standard. Also, most ordinances allow a parcel to be credited for up to 50% of the stormwater drainage fee for onsite measures which are owned and maintained by the applicant which effectively reduce the discharge of sediment and nutrients from the site. Alternately, parcels may be credited for up to 25% of the fee for onsite measures

that limit stormwater discharge rates. Formulas and methods necessary for calculating credits or adjustments are typically included in the SWU ordinances.

Significant cost may be incurred during development of the fee structure. Detailed mapping, digitizing, and development of a database may be required. It may be necessary for some cities to contract out this work to an engineering consulting firm.

#### **4. Develop goals, a position statement, and comprehensive project plan**

It is critical to develop goals, position statements, and an overall plan before a SWU is proposed to city managers, and certainly before actual charges are initiated. The project plan should include a preliminary analysis of existing problems and future needs, financial projections, estimated startup costs, identification of the revenue base, and identification of activities and projects to be covered by the SWU.

#### **5. Assess the political climate and sell idea to decision makers**

The success or failure of a proposed SWU may be determined by the political climate of the city government and the citizenry. Election time upheaval, hostility between council members, citizens concerns about perceived new taxation, budget constraints, complaints about flooding and other water management issues, and numerous other issues will affect a city council's attitude towards SWU implementation. Careful preparation of materials to be presented to city managers and council members is crucial. Examples of materials for presentation include projections of future needs for stormwater management, tables comparing the impact of various funding mechanisms on future city budgets, and examples of how a SWU could be implemented within the existing city structure.

#### **6. Development and adoption of SWU ordinances**

Legal opinion must be obtained to verify statutory authority prior to adoption of SWU legislation. A SWU must be established and defined by an ordinance specifying the scope of the utility actions and financial structure, including rates and calculation methods. Stormwater ordinances developed recently in the TCMA have contained most or all of the following sections:

- A statement of statutory authority for establishment of the SWU
- Definitions
- Findings and determinations
- Rates and Charges
- Land use classifications and residential equivalency factors (REFs)
- Adjustment of charges, credits, and exemptions
- Requirements for public hearing and notice
- Payment of fee
- Delinquent accounts and payment options
- Use of revenues

Copies of SWU ordinances adopted by the Cities of Roseville and Bloomington are included in Appendix A.

### **7. Implementation of a staff education program**

For a successful implementation of the SWU and positive public relations, it is critical that city staff, particularly those that work with the public, are educated as to the operation and benefits of the new utility. During implementation of its new SWU, the City of Roseville held meetings with staff and its private utility billing service. The City of St. Paul created SWU reference sheets for employees in the public works and utility billing departments to keep near their phones. The sheets provide contact phone numbers, concise information about the SWU, and answers to frequently asked questions so that the employees could answer public questions in a polite, efficient, and factual manner.

### **8. Implementation of a public information program**

In the Black and Veatch SWU survey (Black and Veatch, 1996), over 60% of participants felt that public information/education was essential to the success of a SWU; less than 1% felt that public education was unnecessary. Communities attempting to implement SWU have found that public involvement and support is crucial for success, both during the planning stage and implementation phase. The Black and Veatch survey found the most effective tools identified by cities for public education include bill inserts, brochures and flyers, public school programs, public hearings and presentations, direct mailings, and newspaper articles. The City of Roseville (1985) used a combination of tools to inform its citizens. During the SWU planning stage, several news releases were published in the local paper and special mailings were sent to each property owner. In addition, presentations were made to local civic organizations. Once the SWU was passed by the city council, additional news releases were published and a second flier was mailed to property owners. Finally, a letter explaining the new utility was included with the first bill with the additional fee.

It has been found advantageous to establish public advisory committees during the development of SWUs (Davis, Hatoum, and Rose, 1999). Potential members include citizens, members of the chamber of commerce, civic organizations, environmental groups, tax watchdogs, and builder associations.

## **Advantages and Disadvantages of SWUs**

Cities that have adopted SWU have identified advantages and disadvantages of SWU. In general, the advantages of SWUs include:

- SWUs are a fair way of collecting funds for surface water management. Those properties that contribute runoff and pollutant load and therefore create the need for surface water management and pollutant mitigation pay for the program.
- In most cities, the fee is commensurate with the runoff volume or pollutant load produced from each property. Typically the fee for each property is calculated from the area and percent of impervious land cover or land use. Therefore, the less runoff produced by a property, the lower the stormwater utility fee.
- The SWU provides a predictable and dependable amount of annual revenue that is dedicated to the implementation of surface water management, therefore there is no competition with other governmental services for general revenues.
- The SWU revenues must be placed in a separate fund dedicated solely to the purpose of surface water management.
- SWUs provide predictable funding levels that allow for the orderly implementation of surface water management projects and activities.
- SWUs are easily understood by the general public, since as with water or sewer utilities, the more they use the system the more they pay.
- SWUs are legally defensible.
- Implementation of SWU may result in a tax levy reduction.
- SWUs are relatively simple to develop, explain, and implement.

Disadvantages of SWUs include:

- Politicians and the public may view SWUs as yet another “tax”, therefore it may be difficult for city managers to gain the necessary support and approval.
- Adoption of a SWU will result in initial administrative costs for development of the ordinance and billing system, and for necessary public education.

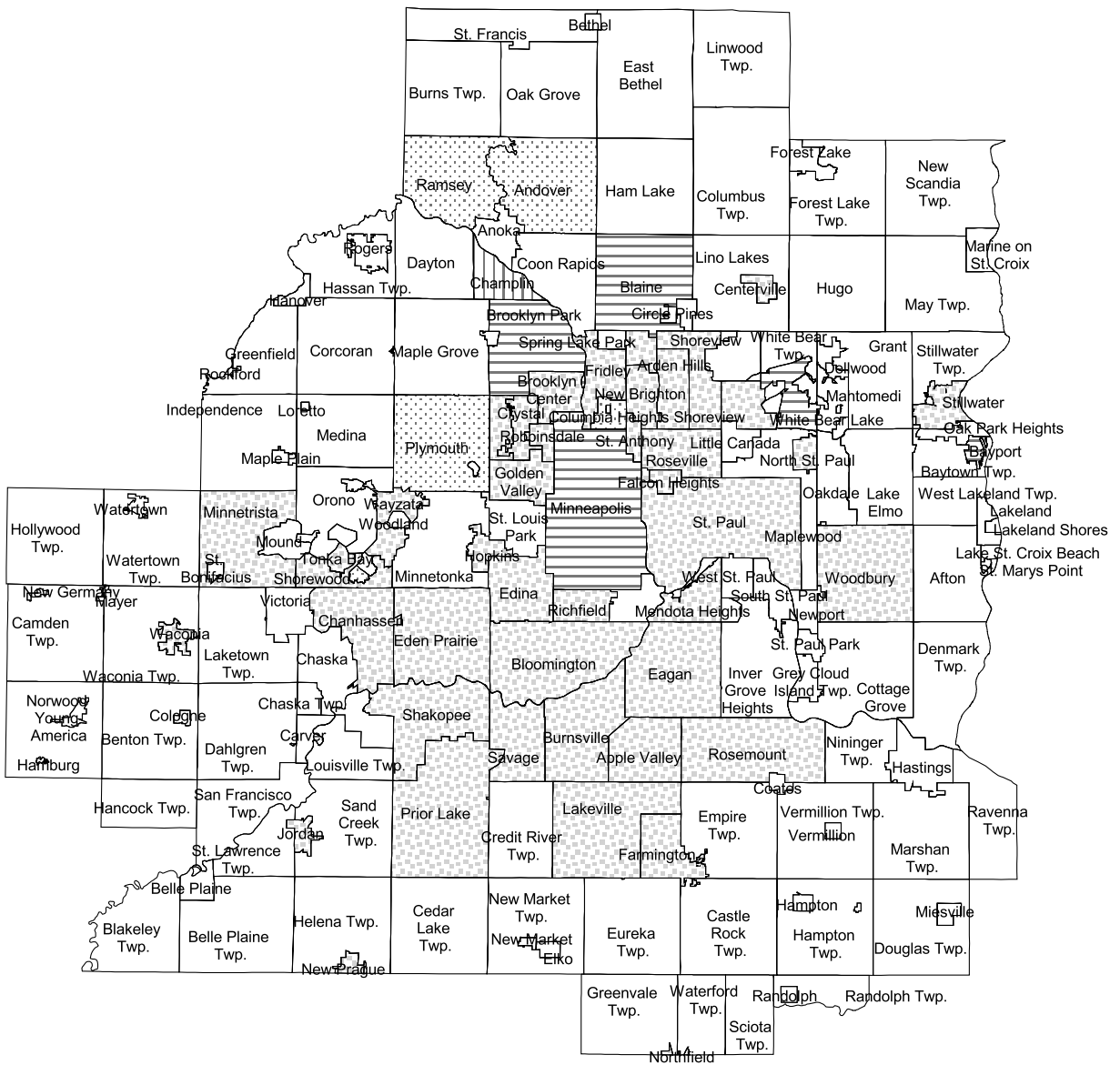
## Results of the TCMA Stormwater Utility Survey

During 1998 and 1999, Metropolitan Council – Environmental Services staff surveyed 140 TCMA communities to determine the extent SWUs are used to fund surface water management activities. The survey was limited to cities and towns; townships were not surveyed. If a community reported that a SWU had been implemented, the following information was collected: the year the SWU had been implemented, the 1997 revenue generated by the SWU, the types of activities and projects funded by the SWU, and the quarterly rate for a typical single family residential dwelling.




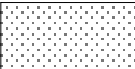
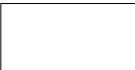
Of 140 communities surveyed, 45 have implemented SWUs (Figure 1). Of the remaining communities, five plan to implement SWUs in the next two years and one has rescinded its SWU prior to implementation. The remainder have either considered and rejected the possibility of implementing a SWU, are in the process of planning a SWU, or simply have no interest in considering one at this time.

The Cities of Roseville and Golden Valley instituted the first TCMA SWUs in 1984; however, over 60% of the SWUs in the Metro area were instituted during the period 1990 – 1994 (Figure 2). This increase in SWU implementation is likely related to the passage of the Metropolitan Area Local Water Management Act (M.S. 103B.235, MN Rules Chapter 8410), which requires TCMA cities to prepare and implement surface water management plans as part of their comprehensive plan preparation.

A summary of the survey results for cities with SWUs is included in Table 1; the complete data set is tabulated in Appendix B. It is obvious that there is a large variation in annual fees for single-family residential properties in the TCMA. In general, higher fees are charged by developed (or rapidly developing) cities in the implementation phase of their surface water management plans. Lower fees are typically charged by smaller or slowly developing cities or cities that are just beginning the local surface water management plan process (Figure 3). Typically, the annual fee for single-family residential property is equal to one Residential Equivalency Factor (REF), which is used to calculate fees for land uses other than single-family residential, as described previously. Frequency analysis of annual fees charged for single-family residential properties in the TCMA reveals that fees in the range of \$20 to \$30 are charged most frequently (Figure 4).



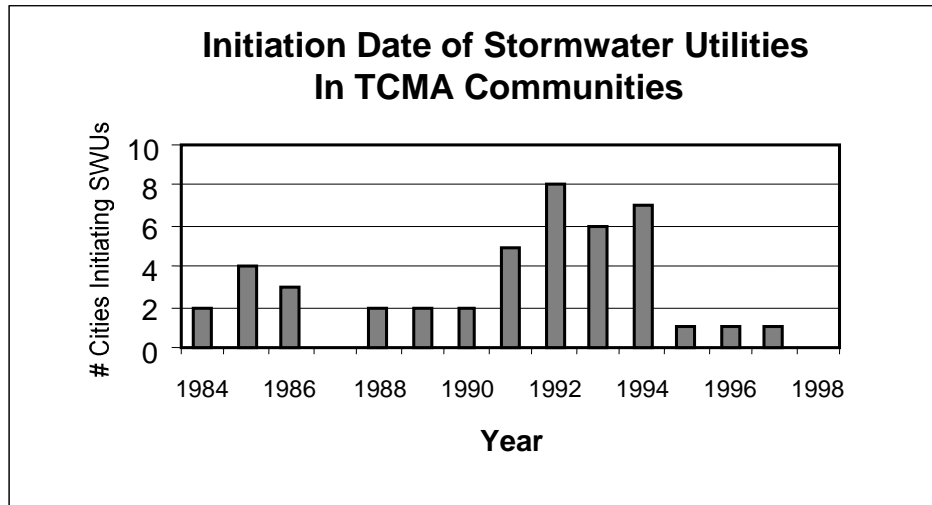
**Survey Overview**

-  City has SWU
-  City has rescinded SWU
-  City has rejected SWU
-  City plans to institute SWU
-  No SWU / Not Surveyed



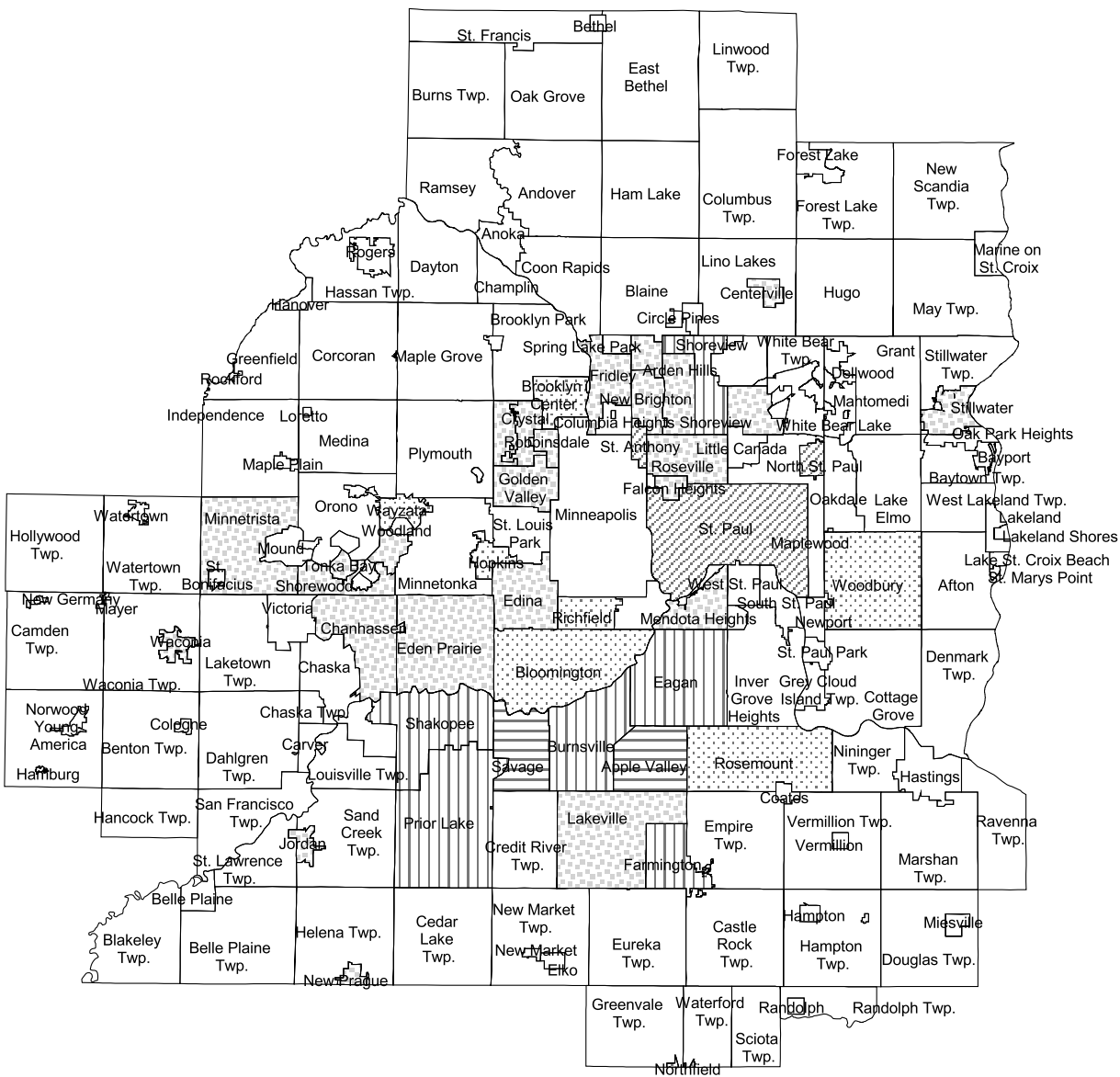
**Figure 1:  
Results of 1998-1999 TCMA  
Stormwater Utility (SWU) Survey**

**Figure 2**

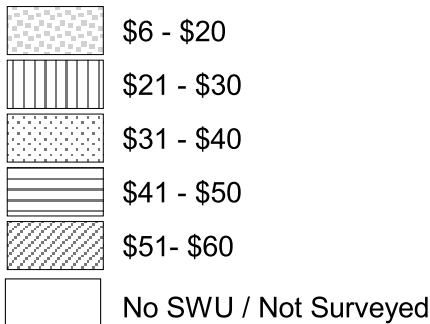


**Table 1: TCMA Stormwater Utility Survey Results**

Summary Statistics	Number	Mean	Median	Minimum	Maximum
Municipalities Surveyed	140	----	-----	----	----
Municipalities with SWUs	45	----	-----	----	----
Annual Fee for Typical Single Family Residence (~ 1/3 – 1/4 acre lot)	45	\$24.34	\$19.20	\$6.00	\$60.00
SWU fees collected during 1997	45	\$514,317	\$229,248	\$8,310	\$8,728,000
SWU fees collected during 1997 – Normalized by total municipality area (\$/acre)	45	\$53.30	\$38.64	\$0.43	\$243.69



Annual Fee for SFR (\$)

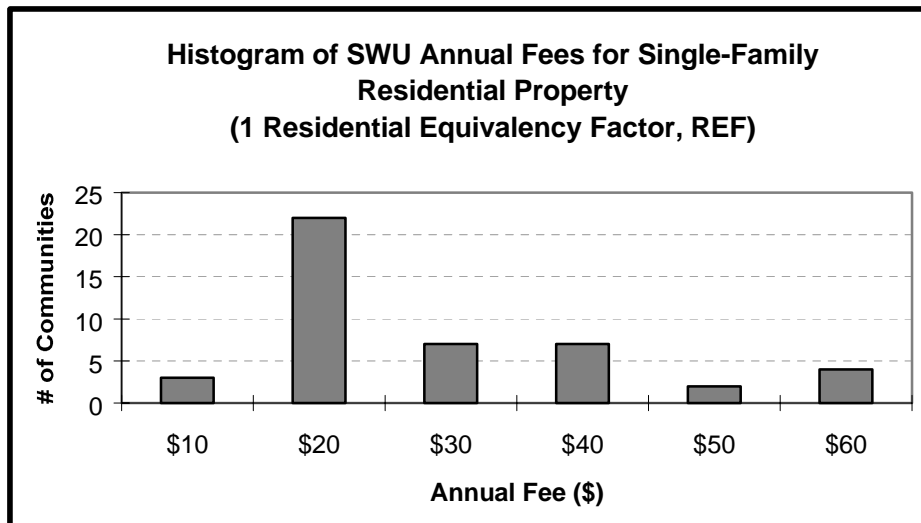


5 0 5 10 Miles



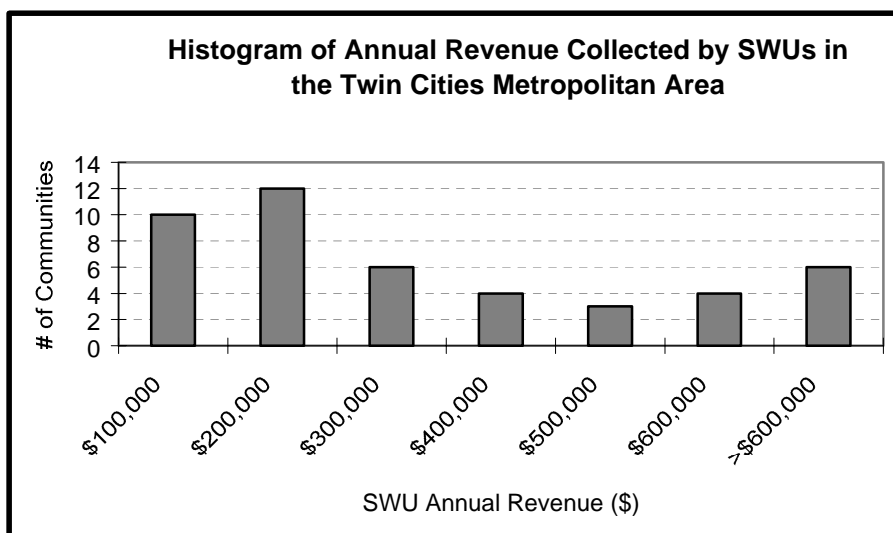
**Figure 3:**  
**TCMA Stormwater Utility Survey**  
**Size of 1997 Annual Fee for**  
**Single-Family Residential**  
**Properties**

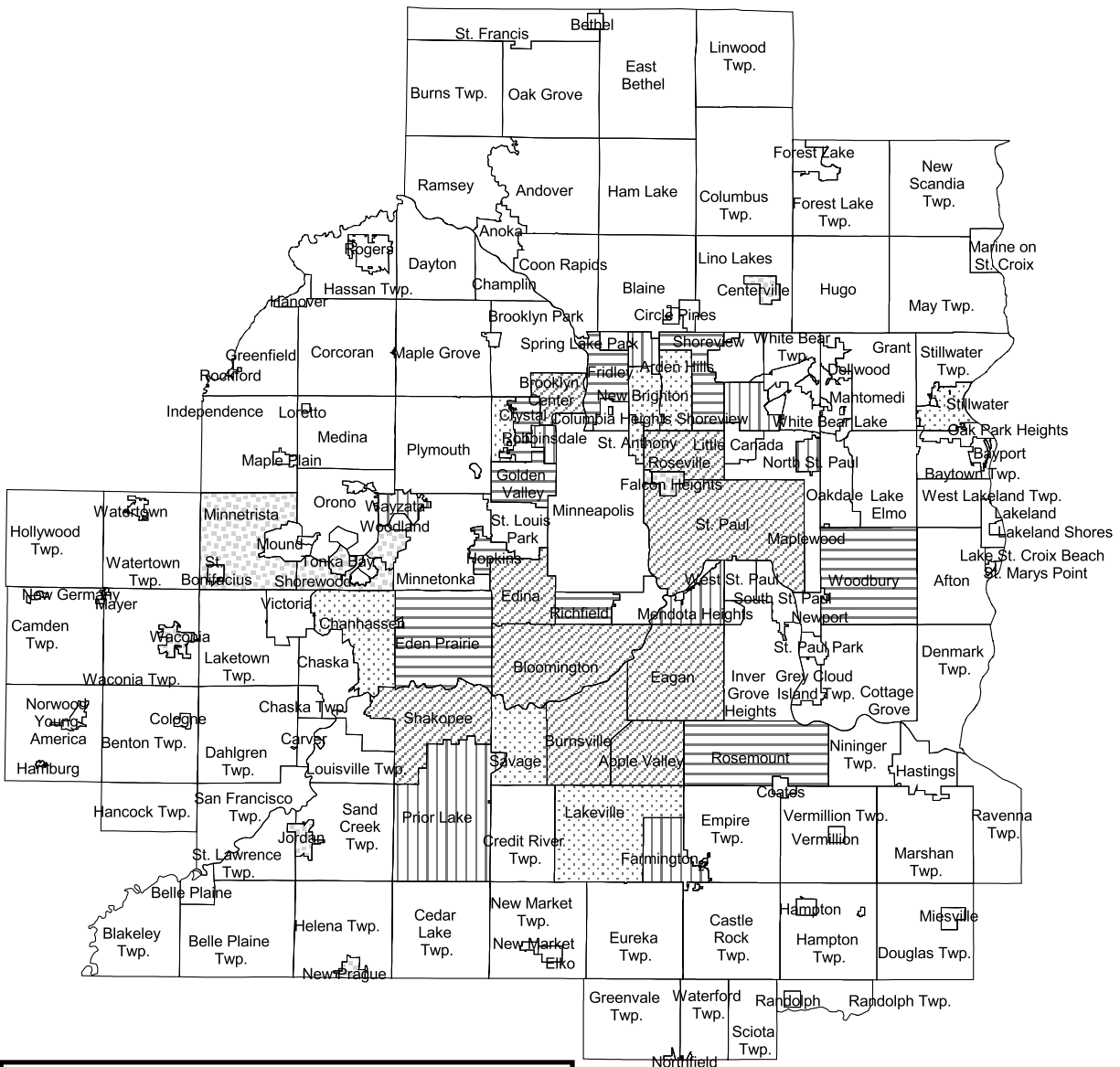
**Figure 4**



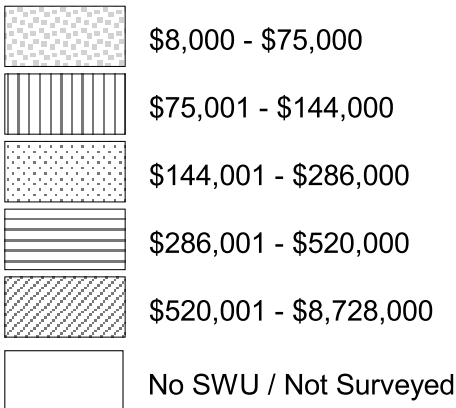
There is also a wide variation in total annual SWU revenue collected in the TCMA. The total revenue collected is dependent on the size of the city, as well as intensity of development and amount of high-impervious land use within the city (Figure 5). Frequency analysis of SWU revenue collected by TCMA communities reveals that revenues in the ranges of \$100,000 to \$300,000 were collected most often (Figure 6). Six communities of the 45 surveyed collected revenues in excess of \$600,000. To remove disparity caused by differing surface areas of the cities, the total annual SWU fees were normalized on an areal basis (Figure 7). The total of all SWU fees collected by the 45 communities with SWUs in 1997 was \$23,136,145.

**Figure 6**





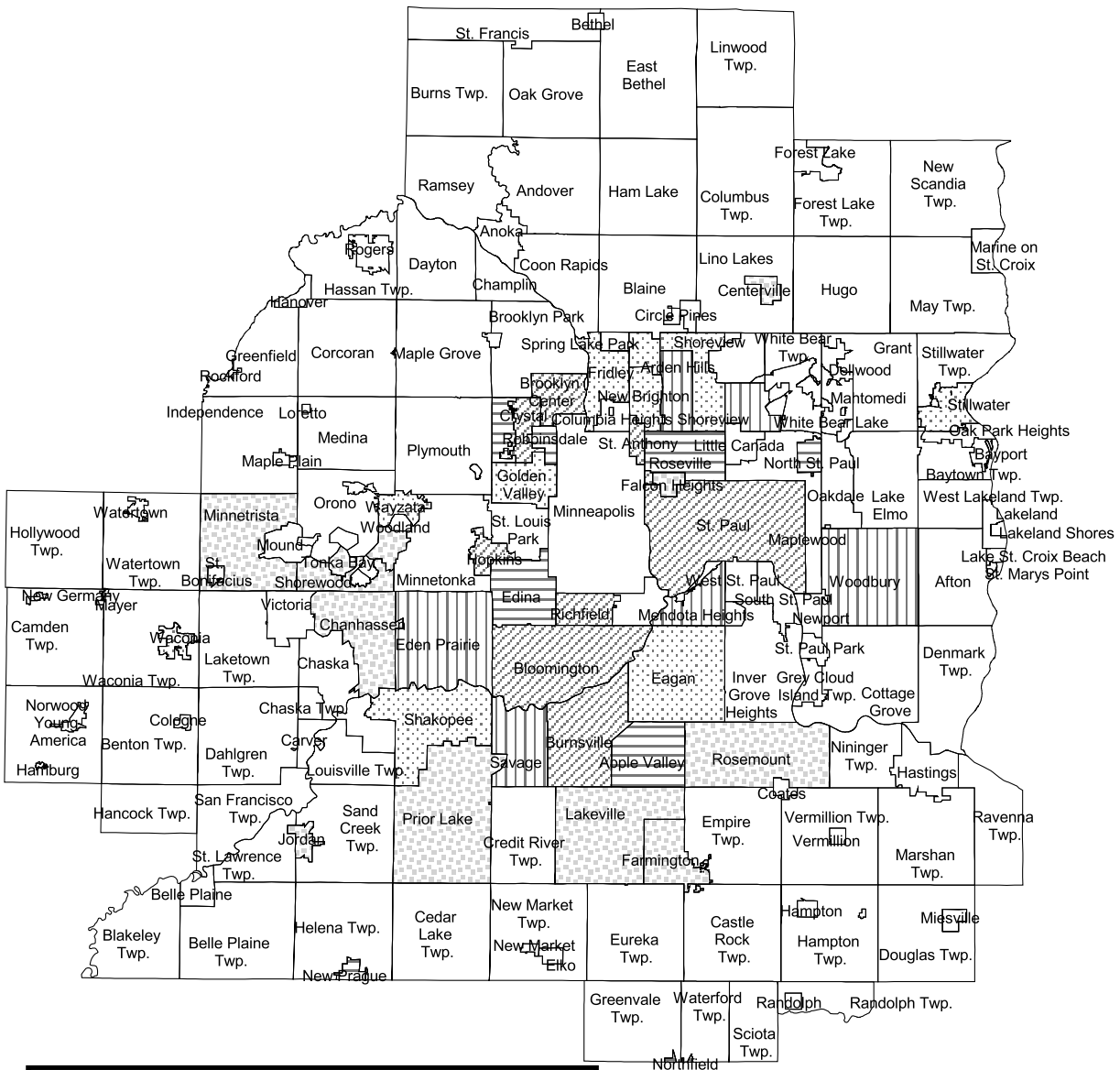
Annual SWU Revenue (\$)



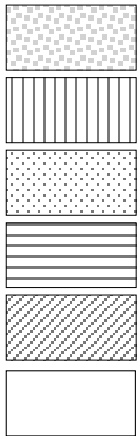
**Figure 5:**  
**TCMA Stormwater Utility Survey**  
**1997 Total Annual Stormwater**  
**Utility Revenues**

5 0 5 10 Miles





**Annual SWU Revenue Normalized  
By Community Area (\$ / acre)**



\$0 - \$20

\$21 - \$30

\$31 - \$45

\$46 - \$80

\$81 - \$245

No SWU / Not Surveyed

5 0 5 10 Miles



**Figure 7:  
TCMA Stormwater Utility Survey  
1997 Annual Stormwater Utility  
Revenue Normalized by  
Total Municipal Area**

TCMA cities use SWU funds for a variety of projects and activities, as summarized by the following list assembled from the survey data:

1. General maintenance of existing stormwater system. Includes cleaning of catchbasins and pond inlet/outlets, dredging/cleaning of detention basins, street sweeping, and other maintenance activities. Note that a few cities fund street sweeping using their public works budget, not the stormwater utility fund. Some cities do not use their SWU fees for maintenance; instead, maintenance is funded by general public works budget.
2. Administration and personnel costs associated with stormwater-related maintenance and activities.
3. Construction of new stormsewer lines / capital improvement. Note that many cities assess residents for this activity, and do not use funds from the SWU.
4. Updates of Flood Emergency Management Agency (FEMA) insurance studies.
5. Upgrades of existing stormwater systems, including increasing pipe capacities and water quality Best Management Practices (BMP) retrofits.
6. Water quality-related projects, including coagulant dosing plants, dredging, sediment ponds, grit chambers.
7. Accumulation of a fund for completing stormwater management plans and other planning activities.
8. Purchase of maintenance equipment.
9. Funding of educational projects. For example, North St. Paul uses some of its stormwater utility fees to jointly fund the Urban Ecology Center with the local watershed district.
10. Retirement of past debt accrued for completion of stormwater projects.
11. Implementation of local surface water management plans. This likely includes many of the projects and activities on this list.
12. Preparation and implementation of lake and stream feasibility and management plans.
13. Stormsewer / sanitary sewer separation.
14. Mitigation of localized drainage / flooding issues
15. Preparation of city-wide topographic maps.

## Conclusions

45 of 140 TCMA communities surveyed by Metropolitan Council staff have instituted stormwater utilities (SWUs). Five additional cities plan to institute SWUs in the next two years, while 13 more cities are considering the implementation of SWUs. Annual fees for single-family residential lots ranged from \$6.00 - \$60.00, and annual fees collected by TCMA cities ranged from \$8,310 to \$8,728,000. The average revenue generated by cities in the TCMA in 1997 was \$514,317, and the total of all fees collected from the 45 cities with SWUs was \$23,136,145.

SWU fees are used for a variety of water management projects and activities, ranging from implementation of local surface water management plans to purchase of maintenance equipment and development of detailed topographic maps. SWUs are a fair way of collecting revenue for operation of the stormwater system, since fees are commensurate with surface water discharge from each property parcel. Cities that have implemented SWUs have generally found that they provide a predictable and dependable source of annual revenue for stormwater activities. Of the steps necessary for implementation of SWUs, cities have found that public education and involvement is crucial to the overall success of the utility.

## Sources

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**Appendix A: Example Stormwater Utility Ordinances - City  
of Roseville and City of Bloomington**

# City of Roseville, Minnesota Stormwater Utility Ordinance

## CHAPTER 803

### STORM WATER DRAINAGE

#### SECTION:

803.01: Storm Water Drainage Utility

803.02: Connection to Storm Sewers

#### 803.01: STORM WATER DRAINAGE UTILITY:

**A. Establishment:** The Municipal storm sewer system shall be operated as a public utility pursuant to Minnesota Statute, section 444.075, from which revenues will be derived subject to the provisions of this Section and Minnesota statutes. The storm water drainage utility will be part of the Public Works Department and under the administration of the Public Works Director.

**B. Definition:** "Residential equivalent factor, (REF)" - One REF is defined as the ratio of the average volume of runoff generated by one acre of a given land use to the average volume of runoff generated by one acre of typical single-family residential land during a standard one year rainfall event.

**C. Fees:** Storm water drainage fees for parcels of land shall be determined by multiplying the REF for a parcel's land use by the parcel's acreage and then multiplying the REF for a parcel's land use by the parcel's acreage and then multiplying the resulting product by the storm water drainage rate. The REF values for various land uses are as follows: (See bottom of page) 1

For the purpose of calculating storm water drainage fees, all developed one-family and duplex parcels shall be considered to have an acreage of one-third (1/3) acre. The storm water drainage rate used to calculate the actual charge per property shall be established by City Council Resolution.

**D. Credits:** The City Council may adopt policies recommended by the Public Works Director, by resolution, for adjustment of the storm water drainage fee for parcels based upon hydrologic data to be supplied by property owners, which data demonstrates a hydrologic response substantially different from the standards. Such adjustments of storm water drainage fees shall not be made retroactively.

**E. Exemptions:** The following land uses are exempt from storm water drainage fees:

1. Public rights of way.
2. Vacant, unimproved land with ground cover.

**F. Payment of Fee:** Statements for storm water drainage fee shall be computed every three (3) months and invoiced by the Finance Officer for each account on or about the fifth day of the month following the quarter. Such statement shall be due on or before the last day of the month in which the statement is mailed. Any prepayment or overpayment of charges shall be retained by the City and applied against subsequent quarterly fees.

**G. Recalculation of Fee:** If a property owner or person responsible for paying the storm water drainage fee questions the correctness of an invoice for such charge, such person may have the determination of the charge recomputed by written request to the Public Works Director made within twelve (12) months of mailing of the invoice in question by the City.

**H. Penalty for Late Payment:** Each quarterly billing for storm water drainage fees not paid when due shall incur a penalty charge of ten percent (10%) of the amount past due.

**I. Certification of Past Due Fees on Taxes:** Any past due storm water drainage fees, in excess of ninety (90) days past due on October 1 of any year, may be certified to the County Auditor for collection with real estate taxes in the following year, pursuant to Minnesota Statute, section 444.075, subdivision 3. In addition, the City shall also have the right to bring a civil action or to take other legal remedies to collect unpaid fees. (Ord. 937, 1-9-84; amd. 1995 Code)

#### 803.02: CONNECTION TO STORM SEWERS:

**A. Permit Required:** No person shall connect any drain to a storm sewer of the City without first obtaining a permit to do so.

**B. Granting of Permits:** The Public Works Director shall grant permits only to applicants who are licensed by the City.

**C. Hook Up Permit Fee:** The fee for a permit to hook up to a City storm sewer shall be set by City Council resolution. (Ord. 377, 9-10-62; amd. 1995 Code)

**D. Additional Fees:** Before any hook up permit shall be issued, the following conditions shall be complied with:

1. No permit shall be issued to connect with any storm sewer system to the City directly or indirectly from any lot or tract of land unless the Public Works Director shall have certified:

a. That such lot or tract of land has been assessed for the cost of construction or the storm sewer main or line with which the connection is made, or

b. If no assessment has been levied for such construction cost, the proceedings for levying such assessment have been or will be completed in due course, or

c. If no assessment has been levied and no assessment proceedings will be completed in due course, that a sum equal to the portion of cost of constructing said storm sewer main which would be assessable against said lot or tract has been paid to the City, or

2. If no such certificate can be issued by the Public Works Director no permit to connect to any storm sewer main shall be issued unless the applicant shall pay an additional connection fee which shall be equal to the portion of the cost of construction of the said storm sewer main which would be assessable against said lot or tract to be served by such connection. Said assessable cost is to be determined by the Public Works Director upon the same basis as any assessment previously levied against other property for the said main, including interest at a rate equal to the interest rate of the original assessment from the date of the original assessment and continuing for a period of twenty (20) years or the amount of years the assessment was payable, whichever is less. Interest may be waived or decreased, when it is determined by the Public Works Director that the improvement was not subject to utilization until a later date. If no such assessment has been levied, the assessable cost will be determined upon the basis of the uniform charge which may have been or which shall be

charged for similar storm sewer improvements, determined on the basis of the total assessable cost of said main or line, allocated on a frontage basis, acreage basis, or both.

3.No building permit shall be issued for any building where the affected lot or parcel of land has been benefited by an assessed storm sewer improvement unless the provisions of this subsection have been complied with. (Ord. 745, 12-30-74; amd. 1995 Code)

CLASSIFICATION	LAND USES	REF
1	Cemeteries, golf courses	0.25
2	Parks with parking facilities	0.75
3	Single-family and duplex residential	1.00
4	Public and private schools, community center	1.25
5	Multiple-family residential, churches and governmental buildings	2.50
6	Commercial, industrial, warehouse	5.00
7	Improved vacant	As Assigned

# City of Bloomington, Minnesota Stormwater Utility Ordinance

Chapter 11 WATER, WASTEWATER, STORM WATER AND RECYCLING

## ARTICLE IV. STORM WATER

Added by Ord. No. 88-41, 5-23-88

Amended by Ord. No. 96-5, 4-1-96

### Section 11.42. ESTABLISHMENT OF STORMWATER DRAINAGE UTILITY.

Pursuant to Minnesota Statutes, Section 444.075, the City establishes a storm water drainage utility and authorizes the imposition of just and reasonable charges for the use and availability of storm sewer facilities.

(Added by Ord. No. 88-41, 5-23-88)

### Section 11.43. DEFINITIONS.

#### **Pollutant loading -**

the amount of total suspended solids delivered to the storm water drainage system, measured in pounds per acre per year, that is generated from a given land use.

#### **Total suspended solids (TSS) -**

the sum of all suspended matter, described by the dry weight of the suspended matter found in a specific volume of water (milligrams per liter, for example).

(Added by Ord. No. 96-5, 4-1-96)

### Section 11.44. FINDINGS AND DETERMINATIONS.

(a) In the exercise of its governmental authority and in order to promote the public health, safety, convenience and general welfare, the City has constructed, operated and maintained a storm sewer system ("the system"). This Article is adopted in the further exercise of such authority and for the same purposes.

(b) The system, as constructed, heretofore has been financed and paid for through the imposition of special assessments and ad valorem taxes. It is now necessary and desirable to provide an alternative method of recovering some or all of the future costs of improving, maintaining and operating the system through the imposition of charges as provided in this Article.

(c) In imposing charges, it is necessary to establish a methodology that undertakes to make them just and equitable. Taking into account the status of completion of the system, past methods of recovering system cost, the topography of the City and other relevant factors, it is determined that it would be just and equitable to assign responsibility for some or all of the future costs of operating, maintaining and improving the system on the basis of the expected volume of storm water runoff from the various parcels of land within the City during a standard rainfall event. For the purposes of this Article, a standard rainfall event is defined as the one-year storm of one-day

duration. In addition, it is determined that it would be just and equitable to assign responsibility for some or all of the future costs of operating, maintaining and improving the system on the basis of the expected pollutant loading from the various parcels of land within the City.

(d) Assigning costs and making charges based upon expected typical storm water runoff volume and pollutant loading cannot be done with mathematical precision but can only be accomplished within reasonable and practical limits. The provisions of this Article undertake to establish a reasonable and practical methodology for making such charges.

(Added by Ord. No. 88-41, 5-23-88; Renumbered and amended by Ord. No. 96-5, 4-1-96)

#### **Section 11.45. RATES AND CHARGES.**

(a) Residential equivalent factor. Rates and charges for the use and availability of the system shall be determined through the use of a "Residential Equivalent Factor" ("REF"). A REF has been developed for the storm water runoff volume (Volume REF), the storm water runoff pollutant loading (Quality REF) and a composite that is used for the final utility fee calculation (Utility REF). For the purposes of this Article, the Volume REF is defined as the ratio of the average volume of surface water runoff coming from one acre of land subjected to a particular use, to the average volume of runoff coming from one acre of land subjected to typical single-family residential use within the City during a standard rainfall event. The Quality REF is defined as the ratio of the pollutant loading (measured as total suspended solids) coming from land subjected to a particular use, to the pollutant loading coming from land subjected to typical single-family residential use within the City. The Utility REF is defined as the ratio of the sum of the volume and quality portions of the total annual storm water drainage utility fee for a given land use classification (as computed using the Volume REF and the Quality REF for that land use classification), to the sum of the volume and quality portions of the total annual storm water drainage utility fee for the single-family residential land use classification (as computed using the Volume REF and the Quality REF for the single family residential land use classification).

The Utility REF for each of the land use classifications will be revised at such time in the future when there is a shift in the percentage of utility expenditures related to storm water runoff volume and storm water runoff quality treatment. The revision shall be determined by the Director of Public Works, who shall notify the City Council of the action.

(b) Storm water drainage charges. In determining charges the City Council shall by resolution establish a basic system rate to be charged against one acre of land having a Utility REF of one. The charge to be made against each parcel of land shall then be determined by multiplying the Utility REF for the parcel's land use classification times the parcel's acreage times the basic system rate. The Volume, Quality and Utility REF's for the following land uses within the City and the billing classifications for such land uses are as follows:

CLASSIFI- CATION	LAND USES	Volume REF	Quality REF	Utility REF
1	Cemeteries, Parks, Golf Courses	0.41	0.50	0.43
2	Single-family and Duplex Residential	1.00	1.00	1.00
3	Public and Private Schools and Institutional Uses	1.36	3.05	1.67
4	Multiple-family Residential and Churches	2.18	3.21	2.37
5	Commercial and Industrial	3.79	6.10	4.22

For the purposes of calculating storm water drainage charges, all developed single-family and duplex parcels shall be considered to have an acreage of one-third (1/3) acre per unit. Double bungalows or duplexes shall be considered to be two units. The change in rates shall take effect on July 1, 1996.

(Added by Ord. No. 88-41, 5-23-88; Renumbered and amended by Ord. No. 96-5, 4-1-96)

## **Appendix B: Summary of Data of Surveyed TCMA Cities with Stormwater Utilities**

**Table B.1: Summary of Data for Surveyed Cities with Stormwater Utilities**

City	Year of Adoption	SFR (Single family residential) Quarterly Charge (\$)	SFR Annual Charge (\$)	1997 SWU Total Annual Revenue (\$)	1997 SWU Total Annual Revenue per Acre (\$/ac)
Apple Valley	1988	\$11.94	\$47.76	\$800,000	72
Arden Hills	1993	\$3.98	\$15.92	\$179,406	29
Bloomington	1988	\$8.93	\$35.70	\$1,973,000	80
Brooklyn Center	1991	\$9.00	\$36.00	\$856,920	160
Burnsville	1992	\$7.33	\$29.32	\$1,475,466	85
Centerville	1997	\$2.00	\$8.00	\$24,305	16
Chanhassen	1994	\$3.22	\$12.88	\$250,000	17
Crystal	1991	\$4.33	\$17.32	\$301,968	81
Deephaven	1994	\$1.50	\$6.00	\$8,310	3
Eagan	1990	\$5.73	\$22.92	\$745,770	35
Eden Prairie	1994	\$3.00	\$12.00	\$500,000	22
Edina	1985	\$5.00	\$20.00	\$570,000	56
Falcon Heights	1986	\$3.25	\$13.00	\$24,238	17
Farmington	1989	\$6.50	\$26.00	\$126,000	16
Fridley	1985	\$2.80	\$11.20	\$302,974	44
Golden Valley	1984	\$2.50	\$10.00	\$299,229	44
Hopkins	1989	\$9.00	\$36.00	\$470,000	180
Jordan	1995	\$3.15	\$12.60	\$24,120	14
Lakeville	1994	\$4.75	\$19.00	\$285,545	12
Lauderdale	1994	\$6.50	\$26.00	\$41,470	155
Mendota Heights	1993	\$3.50	\$14.00	\$141,837	22
Minnetrista	1992	\$3.00	\$12.00	\$8,597	<1
Mounds View	1993	\$3.99	\$15.96	\$101,000	39
New Brighton	1994	\$3.10	\$12.40	\$171,356	38
New Hope	1991	\$4.80	\$19.20	\$229,248	70
New Prague	1992	\$3.96	\$15.84	\$65,000	61
North St. Paul	1990	\$15.00	\$60.00	\$137,000	71

<b>City</b>	<b>Year of Adoption</b>	<b>SFR (Single family residential) Quarterly Charge (\$)</b>	<b>SFR Annual Charge (\$)</b>	<b>1997 SWU Total Annual Revenue (\$)</b>	<b>1997 SWU Total Annual Revenue per Acre (\$/ac)</b>
Northfield	1986	\$13.50	\$54.00	\$284,737	69
Prior Lake	1993	\$5.63	\$22.52	\$137,000	4
Richfield	1985	\$8.55	\$34.20	\$457,693	100
Robbinsdale	1985	\$3.27	\$13.08	\$143,708	76
Rosemount	1992	\$8.15	\$32.60	\$361,634	16
Roseville	1984	\$4.35	\$17.40	\$525,000	59
Savage	1994	\$12.00	\$48.00	\$252,000	24
Shakopee	1985	\$6.86	\$27.44	\$565,000	31
Shoreview	1991	\$6.50	\$26.00	\$336,166	42
Shorewood	1993	\$3.50	\$14.00	\$44,900	9
St. Anthony	1992	\$13.00	\$52.00	\$171,148	114
St. Paul	1986	\$13.00	\$52.00	\$8,728,000	244
Stillwater	1996	\$4.50	\$18.00	\$174,000	38
Tonka Bay	1993	\$3.00	\$12.00	\$13,774	10
Vadnais Heights	1992	\$4.50	\$18.00	\$107,400	20
Waconia	1992	\$4.95	\$19.80	\$75,226	41
Wayzata	1991	\$7.86	\$31.44	\$126,000	42
Woodbury	1992	\$9.00	\$36.00	\$520,000	23