ORDINANCE NO. 121.10

CITY OF BIWABIK, MINNESOTA

AN ORDINANCE ESTABLISHING A SEWER SERVICE CHARGE
SYSTEM FOR THE CITY OF BIWABIK, MINNESOTA

An Ordinance providing for Sewer Service Charges to recover costs associated with:

1) Operation, maintenance, and replacement to ensure effective functioning of the City's Wastewater Treatment System.

2) Local capital costs incurred in the construction of the City's Wastewater Treatment System.

ARTICLE I
Definitions

Unless the context specifically indicates otherwise, the meaning of the terms used in this ordinance shall be as hereafter designated:

Sec. 1 "Administration" - Those fixed costs attributable to administration of the wastewater treatment works (i.e., billing and associated bookkeeping and accounting costs).

Sec. 2 "Biochemical Oxygen Demand or BOD_5" - The quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure in five (5) days at 20° C, expressed in milligrams per liter.

Sec. 3 "City" - The area within the corporate boundaries of the City of Biwabik, as presently established or as amended by Ordinance or other legal actions at a future time. When used herein the term City may also refer to the City Council or its authorized representative.

Sec. 4 "Commercial User" - Any place of business which discharges sanitary waste as distinct from industrial wastewater.

Sec. 5 "Commercial Wastewaters" - Domestic wastewater emanating from a place of business as distinct from industrial wastewater.

Sec. 6 "Debt Service Charge" - A charge levied on users of wastewater treatment facilities for the cost of repaying money bonded to construct said facilities.

Sec. 7 "Normal Domestic Strength Wastewater" - that is primarily produced by residential users, with BOD_5 concentrations not greater than 240 mg/l and suspended solids concentrations not greater than 230 mg/l.

Sec. 8 "Equivalent Residential Unit (ERU)" - A unit of wastewater volume of 283 gallons per day at a strentth not gre-ter then 240 mg/l of BOD_5 and 230 mg/l of Total Suspended Solids.

Sec. 9 "Extra Strength Waste" - Wastewater having a BOD and/or TSS greater than domestic waste as defined in Article I, Section 7 above and not otherwise classified as an incompatible waste.

Sec. 10 "Governmental User" - Users which are units, agencies or instrumentalities of federal, state, or local government discharging Normal Domestic Strength wastewater.

Sec. 11 "Incompatible Waste" - Waste that either singly or by interaction with other wastes interferes with any waste treatment process, constitutes a hazard to humans or animals, creates a public nuisance or creates any hazard in the receiving waters of the wastewater treatment works.

Sec. 12 Industrial Users or "Industries" are:

a. Entities that discharge into a publicly owned wastewater treatment works, liquid wastes resulting from the processes employed in industrial or manufacturing processes, or from the development of any natural resources. These are identified in the Standard Industrial Classification Manual, 1972, Office of Management and Budget, as amended and supplemented under one of the following divisions:

Division A.	Agriculture, Forestry and Fishing
Division B.	Mining
Division D.	Manufacturing
Division E.	Transportation, Communications, Electric, Gas, and Sanitary Sewers
Division I.	Services

For the purpose of this definition, domestic waste shall be considered to have the following characteristics:

BOD_5	less than 240 mg/l
Suspended Solids	less than 230 mg/l

b. Any nongovernmental user of a publicly owned treatment works which discharges wastewater to the treatment works which contains toxic pollutants or poisonous solids, liquids, or gases in sufficient quantity either singly or by interaction with other wastes, to contaminate the sludge of any municipal systems, or to injure or to interfere with any sewage treatment process, or which constitutes a hazard to humans or animals, creates a public nuisance, or creates any hazard in or has an adverse effect on the waters receiving any discharge from the treatment works.

Sec. 13 "Industrial Wastewater" - The liquid processing wastes from an industrial manufacturing process, trade, or business including but not limited to all Standard Industrial Classification Manual Divisions A, B, D, E and I manufacturers as distinct from domestic wastewater.

Sec. 14 "Institutional User" - Users other than commercial, governmental, industrial or residential users, discharging primarily Normal Domestic Strength wastewater (e.g. Non-profit organizations).

Sec. 15 "Operation and Maintenance" - Activities required to provide for the dependable and economical functioning of the treatment works, throughout the design or useful life, which ever is longer of the treatment works, and at the level of performance for which the treatment works were constructed. Operation and Maintenance includes replacement.

Sec. 16 "Operation and Maintenance Costs" - Expenditures for operation and maintenance, including replacement.

Sec. 17 "Public Wastewater Collection System" - A system of sanitary sewers owned, maintained, operated and controlled by the City.

Sec. 18 "Replacement" - Obtaining and installing of equipment, accessories, or appurtenances which are necessary during the design life or useful life, whichever is longer, of the treatment works to maintain the capacity and performance for which such works were designed and constructed.

Sec. 19 "Replacement Costs" - Expenditures for replacement.

Sec. 20 "Residential User" - A user of the treatment facilities whose premises or building is used primarily as a residence for one or more persons, including dwelling units such as detached and semi-detached housing, apartments, and mobile homes; and which discharges primarily normal domestic strength sanitary wastes.

Sec. 21 "Sanitary Sewer" - A sewer intended to carry only liquid and water carried wastes from residences, commercial buildings, industrial plants, and institutions, together with minor quantities of ground, storm, and surface waters which are not admitted intentionally.

Sec. 22 "Sewer Service Charge" - The aggregate of all charges, including charges for operation, maintenance, replacement, debt service, and other sewer related charges that are billed periodically to users of the City's wastewater treatment facilities.

Sec. 23 "Sewer Service Fund" - A fund into which income from Sewer Service Charges is deposited along with other income, including taxes intended to retire debt incurred through capital expenditure for wastewater treatment. Expenditure of the Sewer Service Fund will be for operation, maintenance and replacement costs; and to retire debt incurred through capital expenditure for wastewater treatment.

Sec. 24 "Shall" is mandatory; "May" is permissive.

Sec. 25 "Slug" - Any discharge of water or wastewater which in concentration of any given ~~constituent~~ or in quantity of flow exceeds for any period of duration longer than 15 minutes more than five times the average 24 hour concentration or flows during normal operation and shall adversely affect the collection system and/or performance of the wastewater treatment works.

Sec. 26 "Standard Industrial Classification Manual" - Office of Management and Budget, 1972.

Sec. 27 "Suspended Solids (SS) or Total Suspended Solids (TSS)" - The total suspended matter that either floats on the surface or is in suspension in water, wastewater or other liquids, and is removable by laboratory filtering as prescribed in "Standard Methods for the Examination of Water and Wastewater", latest edition, and referred to as non-filterable residue.

Sec. 28 "Toxic Pollutant" - The concentration of any pollutant or combination of pollutants as defined in standards issued pursuant to Section 307(a) of the Act, which upon exposure to or assimilation into any organism will cause adverse effects.

Sec. 29 "User Charge" - A charge levied on users of a treatment works for the user's proportionate share of the cost of operation and maintenance, including replacement.

Sec. 30 "Users" - Those residential, commercial, governmental, institutional and industrial establishments which are connected to the public sewer collection system.

Sec. 31 "Wastewater" - The spent water of a community, also referred to as sewage. From the standpoint of source it may be a combination of the liquid and water-carried wastes from residences, commercial buildings, industrial plants, and institutions together with any ground water, surface water and storm water that may be present.

Sec. 32 "Wastewater Treatment Works or Treatment Works" - An arrangement of any devices, facilities, structures, equipment, or processes owned or used by the City for the purpose of the transmission, storage, treatment, recycling, and reclamation of municipal sewage, domestic sewage or industrial wastewater, or structures necessary to recycle or reuse water including interceptor sewers, outfall sewers, collection sewers, pumping, power, and other equipment and their appurtenances; extensions, improvements, remodeling, additions, and alterations thereof; elements essential to provide a reliable recycled water supply such as standby treatment units and clear well facilities; and any works including land which is an integral part of the treatment process or is used for ultimate disposal of residues resulting from such treatment.

ARTICLE II

ESTABLISHMENT OF A SEWER SERVICE CHARGE SYSTEM

Sec. 1 The City of Biwabik hereby establishes a Sewer Service Charge System whereby all revenue collected from users of the wastewater treatment facilities will be used to affect all expenditures incurred for annual operation, maintenance, and replacement and for debt service on capital expenditure incurred in constructing the wastewater treatment works.

Sec. 2 Each user shall pay its proportionate share of operation maintenance and replacement costs of the treatment works, based on the users proportionate contribution to the total wastewater loading from all users.

Sec. 3 No user shall be charged for OM&R at a rate less than that established for Normal Domestic Strength Wastewater.

Sec. 3 Each user shall pay debt service charges to retire local capital costs as determined by the City Council.

Sec. 4 Sewer Service rates and charges to users of the wastewater treatment facility shall be determined and fixed in a "Sewer Service Charge System" developed according to the provisions of this Ordinance. The Sewer Service Charge System developed with the assistance of John Baker Engineering, Inc. shall be adopted by resolution upon enactment of this Ordinance, shall be published in the local newspaper, and shall be effective upon publication. Subsequent changes in Sewer Service rates and charges shall be adopted by Biwabik Public Utilities and shall be published in the local newspaper.

Sec. 5 Revenues collected for Sewer Service shall be deposited in a separate fund known as "The Sewer Service Fund". Income from revenues collected will be expended to offset the cost of Operation, Maintenance and equipment replacement for the facility and to retire the debt for capital expenditure.

Sec. 6 Sewer Service Charges and the Sewer Service Fund will be administrated in accordance with the provisions of Article V of this Ordinance.

ARTICLE III

Determination of Sewer Service Charges

Sec. 1 Users of the City of Biwabik wastewater treatment works shall be identified as belonging to one of the following user classes:

1) Residential
2) Commercial
3) Industrial
4) Institutional
5) Governmental

The allocation of users to these categories for the purpose of assessing User Charges and Debt Service Charges shall be the responsibility of the City Administrator. Allocation of users to user classes shall be based on the substantive intent of the definitions of these classes contained herein.

ARTICLE III-A METERED USERS

Sec. 2 A The user shall pay Operation, Maintenance, and Replacement costs in proportion to the user's proportionate contribution of wastewater flows and loadings to the treatment plant, with the minimum rate for loadings of BOD and of TSS being the rate established for concentrations of 240 mg/l BOD and 230 TSS (i.e. Normal Domestic Strength Wastewater).

Sec. 3 A UNIT COSTS FOR TREATMENT OF FLOW, BOD, AND TSS.

Unit costs for treatment of Flow, BOD and TSS shall be determined and fixed annually in the Sewer Service Charge System according to the following procedure:

A. Determine the Annual OM&R budget.

B. Allocate total Annual OM&R costs to Flow, BOD and TSS proportionately; according to the costs of collection, and of the specific treatment processes required to affect or reduce Flow, BOD and TSS.

C. Divide the OM&R costs attributable to Flow, BOD and TSS respectively, by the total annual billable volume and loadings of Flow, BOD and TSS, to arrive at unit costs.

For purposes of determining user charges, the following definitions of unit costs shall apply:

U_F = Unit cost for treatment of Flow in \$/Kgal.
U_{BOD} = Unit cost for treatment of BOD in \$/lb.
U_{TSS} = Unit cost for treatment of TSS in \$/lb.

Unit costs are provided in Table ____ of the Sewer Service Charge System developed with the assistance of JOHN BAKER ENGINEERING, INC. Subsequent calculations of unit costs shall be according to the substantive intent of this SSCS.

Sec. 4A USER CHARGES FOR NORMAL DOMESTIC STRENGTH USERS

A. Calculating Billable Flows and Loadings

The billable amount of flow will be calculated from the volume of metered water usage. For residential users, the per quarter billable flow shall be equal to quarterly metered water usage as averaged between the first and last quarters of the calendar year. For non-residential users discharging NDSW, billable flow shall be equal to quarterly water usage measured throughout the year.

Determination of Loadings from Metered Water Usage:

The billable amounts of BOD and TSS will be calculated from the volume of metered water usage, as determined above, where the billable quantities will be those attributable to a wastewater concentration of 240 mg/l BOD and 230 mg/l TSS (i.e. "Normal Domestic Strength Wastewater").

B. Calculating User Charges

$$U_{C(NDS)} = (U_F \times F) + (U_{BOD} \times K_{BOD} \times F) + (U_{TSS} \times K_{TSS} \times F)$$

Where: $U_{C(NDS)}$ = User charge for treatment of Normal Domestic Strength Wastewater
U_F = Unit Cost for treatment of flow in \$/Kgal
F = Billable flow in Kgal

U_{BOD} = Unit cost for treatment of BOD in \$/lb.
K_{BOD} = Constant used to calculate the quantity of BOD in lbs./Kgal of NDS waste (240 mg/l BOD) as follows:

K_{BOD} = .00834 x 240 mg/l (BOD concentration of NDS waste)

U_{TSS} = Unit cost for treatment of TSS in \$/lb.
K_{TSS} = Constant used to calculate the quantity of TSS in lbs/Kgal of NDS waste (230 mg/l TSS) as follows:

K_{TSS} = .00834 x 230 mg/l (TSS concentration of NDS waste)

Sec. 5A USER CHARGES FOR USERS CONTRIBUTING WASTES GREATER THAN NORMAL DOMESTIC STRENGTH

A. Calculating Billable Flows and Loadings

The billable amount of flow will be calculated from the volume of metered water usage, or at the discretion of the City, from the measurement of effluent flow at user's point of discharge. Measurements shall be according to a regular program prescribed by the City.

The billable amounts of BOD and TSS will be calculated by the measurement of these wastes according to a program prescribed by the City in keeping with the latest edition of Standard Methods for the Examination of Water and Wastewater and in accordance with Ordinance No. 121.00 "An Ordinance Establishing Sewer Use Regulations."

B. Calculating User Charges

$$U_{C(GNDS)} = (U_F \times F) + (U_{BOD} \times Q_{BOD}) + (U_{TSS} \times Q_{TSS})$$

Where: $U_{C(GNDS)}$ = User charge for treatment of wastewater that is greater than Normal Domestic Strength
U_F = Unit cost for treatment of flow in $/Kgal
F = Billable flow in Kgal
U_{BOD} = Unit cost for treatment of BOD in $/lb.
Q_{BOD} = Quantity of BOD in lbs.
U_{TSS} = Unit cost for treatment of TSS in $/lb.
Q_{TSS} = Quantity of TSS in lbs.

Sec. 6A The City may, at its discretion require non-residential users to install wastewater flow meters or such additional water meters as may be necessary to determine wastewater volume. The City may require residential connections to install water meters for the purpose of determining wastewater volume. When so required, such meters shall be of a type approved by the City equipped with remote registering recorders, and located at an accessible site on the owner's property.

ARTICLE III-B NON METERED USERS

Sec. 2B The charges assessed users will be determined on the basis of Equivalent Residential Units (ERU).

A) ASSIGNMENT OF ERU's: NORMAL DOMESTIC STRENGTH USERS
Residential Users, and those users of other classes who discharge "Normal Domestic Strength Wastewater" shall be assigned ERU's in accordance with Tables I and II of Appendix A.

Those "industrial users" who discharge segregated "Normal Domestic Strength Wastewater" only can be classified as "Commercial users" for the purpose of rate determination.

Determination of the number of ERU's assigned to a particular connection shall be the responsibility of the City Council or its authorized representative.

ARTICLE VII
Severability and Validity

Sec. 1 If any section or ~~subdivi~~sion of this ordinance shall be held invalid, the invalidity thereof shall not affect the validity of the other provisions of this Ordinance, which shall continue in full force and effect.

Sec. 2 The sewer service charge system shall take precedence over any terms or conditions of agreements or contracts which are inconsistent with the requirements of section 204(b)(1)(A) of the Act and Federal regulation 40 CFR (Code of Federal Regulations) 35.2140 of the Environmental Protection Agency's grant regulations.

Sec. 3 This Ordinance shall be in full force and take effect from and after its passage and approval and publication as provided by law.

Sec. 4 Passed by the City Council of the City of Biwabik, Minnesota on the 4th day of April, 1988.

Robert G. Wobig
Mayor

Attest:

Sharon L. Hatt
City Administrator

Published in the Biwabik Times on the 14th day of April 1988

ARTICLE VI
Penalties

Sec. 1 Each and every sewer service charge levied by and pursuant to this Ordinance is hereby made a lien upon the lot or premises served, and all such charges which are on January 1 of each year past due and delinquent, shall be certified to the County Auditor as taxes or assessments on the real estate. Nothing in this Ordinance shall be held or construed as in any way stopping or interfering with the right of the City to levy as taxes or assessments against any premises affected any delinquent or past due sewer service charges.

Sec. 2 As an alternative to levying a lien, the City may, at its discretion, file suit in a civil action to collect such amounts as are delinquent and due against the occupant, owner, or user of the real estate, and shall collect as well all attorney's fees incurred by the City in filing the civil action. Such attorney's fees shall be fixed by order of the court.

Sec. 3 In addition to all penalties and costs attributable and chargeable to recording notices of the lien or filing a civil action, the owner or user of the real estate being serviced by the treatment works shall be liable for interest upon all unpaid balances at the rate of 8 % per annum.

Sec. 3B The Sewer Service Charge shall consist of a User Charge for Operation, Maintenance and Replacement and a charge for debt service. These charges will be determined as follows:

A) User Charge

User Charge Rate per Equivalent Residential Unit:

$$\frac{Uc}{ERU} = \frac{Comr}{\text{Total ERU's}}$$

Where: Uc = Annual User Charge
Comr = Total Annual OM&R Costs
ERU = Equivalent Residential Unit
Total ERU's = The total number of ERU's connected to the treatment facility.

Sec. 4B User's may appeal the number of ERU's assigned to a particular connection by installing and maintaining, at their own expense, water meters of a type approved by the City Council. Such meters shall be equipped with remote registering recorders located at an accessible site on the Owner's property.

Sec. 5B The City of Biwabikmay, at its discretion require non-residential users to install water meters for the purpose of determining wastewater volume. The City may require residential connections to install water meters as part of a comprehensive program to install meters throughout the City's water system. When so required, such meters shall be of a type approved by the City, equipped with remove registering recorders, and located at an accessible site on the owner's property.

Sec. 6B Determination of User Charge to a Connection

Annual User Charge to a connection = $\frac{UC}{ERU}$ x #ERU's

Where: UC = User Charge
#ERU's = Number of ERU's assigned that connection
ERU = Equivalent Residential Unit

Sec. 7B Recovery of Local Construction Costs

Local construction costs for the wastewater treatment facility will be recovered through ad valorem taxes as described in Sec. III of the Sewer Service Charge System.

Sec. 8B The Sewer Service charges established in this Ordinance shall not prevent contractual agreements with users who discharge wastes with concentrations greater than Normal Domestic Strength or wastes of unusual character as long as user pays Operation, Maintenance, and Replacement costs in proportion to the user's proportionate contribution of wastewater flows and loadings to the treatment plant, and no user is charged at a rate less than that of "Normal Domestic Strength Wastewater" in keeping with Article II; 3 and Article III; Section 2A and Section 2B.

ARTICLE IV

SEWER SERVICE FUND

Sec. 1 The City of Biwabik hereby agrees that the City will establish a "Sewer Service Fund" as an income fund to receive all revenues generated by the Sewer Service Charge System, and all other income dedicated to the operation, maintenance, replacement and construction of the wastewater treatment works, including taxes, special charges, fees, and assessments intended to retire construction debt.

The City also agrees that the City will establish the following accounts as income and expenditure accounts within the Sewer Service Fund:

1. Operation and Maintenance Account
2. Equipment Replacement Account
3. Debt-Retirement Account
4. Appropriate equivalent accounts as mandated by the State Auditor's Office.

Sec. 2 All revenue generated by the Sewer Service Charge System, and all other income pertinent to the treatment system, including taxes and special assessments dedicated to retire construction debt, shall be held by the City separate and apart from all other funds of the City. Funds received by the Sewer Service Fund shall be transferred to the "Operation and Maintenance Account," the Equipment Replacement Account," and the "Debt Retirement Fund, in accordance with State and Federal regulations and the provisions of this ordinance.

Sec. 3 Revenue generated by the Sewer Service Charge System sufficient to insure adequate replacement throughout the design of useful life, which ever is longer, of the wastewater facility shall be held separate and apart in the "Equipment Replacement Account" and dedicated to affecting replacement costs. Interest income generated by the "Equipment Replacement Account" shall remain in the "Equipment Replacement Account".

Sec. 4 Revenue generated by the Sewer Service Charge System sufficient for operation and maintenance shall be held separate and apart in the "Operation and Maintenance Account."

ARTICLE V
Administration

The Sewer Service Charge System and Sewer Service Fund shall be administrated according to the following provisions:

Sec. 1 The City Admin. shall maintain a proper system of accounts suitable for determining the operation and maintenance, equipment replacement and debt retirement costs of the treatment works, and shall furnish the City Council with a report of such costs annually.

The City shall annually determine whether or not sufficient revenue is being generated for the effective operation, maintenance, replacement and management of the treatment works, and whether sufficient revenue is being generated for debt retirement. The City will also determine whether the user charges are distributed proportionately to each user in accordance with Article II, Section 2 of this Ordinance and Section 204(b)(2)(A) of the Federal Water Pollution Control Act, as amended.

The City shall thereafter, but not later than the end of the year, reassess, and as necessary revise the Sewer Service Charge System then in use to insure the proportionality of the user charges and to insure the sufficiency of funds to maintain the capacity and performance to which the facilities were constructed, and to retire the construction debt.

Sec. 2 In accordance with Federal and State requirements each user will be notified annually in conjunction with a regular billing of that portion of the Sewer Service Charge attributable to operation, maintenance and replacement.

Sec. 3 In accordance with Federal and State requirements, the City Administrator shall be responsible for maintaining all records necessary to document compliance with the Sewer Service Charge System adopted.

Sec. 4 Bills for Sewer Service Charges shall be rendered on a monthly basis according to Utility Charge Payment Ordinance No. 130:10. A copy of Ordinance No. 130:10 is attached as Appendix B.

Sec. 5 The owner of the premises, shall be liable to pay for the service to such premises, and the service is furnished to the premises by the City only upon the condition that the owner of the premises is liable therefore to the City.

Sec. 6 Any additional costs caused by discharges to the treatment works of toxics or other incompatible wastes, including the cost of restoring wastewater treatment services, clean up and restoration of the receiving waters and environs, and sludge disposal, shall be borne by the discharger(s) of said wastes, at no expense to the City.

SEWER SERVICE CHARGE SYSTEM
CITY OF BIWABIK, MINNESOTA

A. Background

The City of Biwabik will be constructing Additions to the Sewer Treatment System with the assistance of the Federal and/or State Construction Grants Programs.

The present population of Biwabik is 1,400. The projected design year population (20 years after completion) is 1500.

Design Data for the treatment facility are as follows:

	Flow MGD	BOD #/D	TSS #/D
First Year of Operation	0.256	220	210
Design Year	0.270	232	221

The existing demographic distribution in Biwabik is 2.83 people per household. At 100 gallons per capita day, this suggests an average hydraulic load of 283 gallons per day per connection, hence 283 gallons per day has been fixed as the volume of an Equivalent Residential Connection (ERU) throughout the "Ordinance Establishing Sewer Service Charges" and this "Sewer Service Charge System."

B. Development of a Sewer Service Charge System

The Sewer Service Charge System for the City of Biwabik is to be developed in accordance with the provisions of the City's "Ordinance Establishing a Sewer Service Charge System" to insure the following:

1. Pollution Abatement in accordance with the City's NPDES Permit.

2. Allocation of OM&R costs of wastewater treatment to users in proportion to their total contribution of wastewater flows and loadings.

3. Sufficient generation of revenue to insure effective Operation, Maintenance and Replacement of the treatment works throughout its useful or design life, whichever is longer.

4. A description of how the City intends to recover its capital costs for the Treatment Works and a rate determination for that portion of such costs to be recovered as a part of the Sewer Service Charge.

C. Adoption of the Sewer Service Charge System

The Sewer Service Charge System will be revised and adopted by resolution in accordance with Article V of the "Ordinance Establishing a Sewer Service Charge System".

D. User Classes

The number of existing connections within the five user classes defined in the "Ordinance Establishi~~ng a~~ Sewer Service Charge System" are exhibited in Table No. 1. This table also exhibits the total flow and loadings of BOD_5 and TSS attributable to each User Class.

Table No. 1

User Classes	Number of Connections	Wastewater Characteristics		
		Flow (1,000 gal/day)	BOD (lb/day)	TSS (lb/day)
1) Residential	494	133.61	185.20	176.79
2) Commercial	17	15.66	21.71	20.72
3) Industrial				
4) Institutional	3	0.18	0.25	0.24
5) Governmental	3	9.26	12.84	12.25
BILLABLE TOTAL	517	158.71	220	210

Infiltration/Inflow = 97.29

E. Operation, Maintenance and Replacement Costs

Projections of Operation, Maintenance and Replacement (OM&R) Costs for the first year of operation are presented in Tables 2, 3, 4, 5, and 6. Table #2 presents the determination of utility (electrical power) costs, Table #3 presents the determination of Replacement Costs, Table #4 presents Labor costs, Table #5 is an itemization of total OM&R Costs, and Table #6 is the allocation of total OM&R Costs by Unit Process.

Table No. 2 - Annual Utility Costs for Biwabik

Component	Equiv. H.P.	Avg. Daily Utilization Hours	No. of Components	Daily Kilowatt Hours f=.7457
Existing Lift Station No. 1	3	3	2	13.42
Automatic Bar Screen	2	2	1	2.98
Main Lift Station	25	2	3	111.86
Effluent Lift Station	15	3	2	67.11
		Total Daily KWH		195.37
		Average Monthly KWH =		5,942.50

Utility Rates: First 550 KWH @ .095
Second 550 KWH @ .085
Remaining KWH @ .078

Average Monthly Charge = $ 476.72

Total Yearly Charge = $5,720.58

Table No. 3 - Projected Replacement Costs for Biwabik

Item	Cost/ Unit	Avg. Useable Life-Years	No. of Units	Annual Repl. Per Unit	Annual Repl. Fund Investment
Automatic Bar Screen	45,000	15	1	3,000	3,000
Existing Lift Station	3,000	15	2	200	400
Main Lift Station	9,000	15	3	600	1,800
Generator	20,000	20	1	1,000	1,000
Effluent Lift Station	6,000	15	2	400	800
		Total			7,000

Straight-line depreciation is being used to insure adequate replacement funds. It is assumed that interest accrued in the Replacement Fund will offset increased replacement costs due to inflation.

Table No. 4 - Projected Labor Costs - Biwabik

Activity	No. of Weeks	Hrs/Week	Total Annual Hrs. $11/hr.	$8 hr.
Inspection and Records	52	4	208	
Scheduled Maintenance	52	7	208	156
Grounds and Housekeeping	52	7		364
Emergency Maintenance	12	3	36	
Training - Schooling	2	12	24	
Sampling - Testing	52	3	156	
	Total		632	520

Total Direct Labor Cost = 632 x 11 + 520 x 8 = $11.112

Table No. 5 - Total Annual Operation, Maintenance & Replacement Costs

1. Direct Labor Cost	$11.112.00
2. Employee Benefits	2,492.00
3. Training Expense-Including Travel	200.00
4. Administration	
Supplies	30.00
Postage	685.00
5. Utilities	
Electricity	5,720.58
Natural Gas	1,400.00
6. Transportation	
Fuel	150.00
Parts	40.00
7. Building-Grounds Maintenance	
Fuel	50.00
Tools	25.00
Parts	60.00
8. Contractural Services	3,600.00
9. Equipment Maintenance	
Tools	20.00
Parts	70.00
Meters	100.00
10. Contingency	764.42
11. Replacement Fund	7,000.00
Totals	$33,519.00

Total Yearly Flow = 93.44 M.G.

Cost/1,000 gallons = $\frac{33,519}{93,440}$ = 0.3587

Total Yearly Flow from Metered Users = 9.125 gallons
= 9.77% of total

Total Yearly Flow from Non-Metered Users = 90.73% of Total

Yearly Cost - Metered Users = 33,519 x .0977 = $3,275

Yearly Cost - Non-Metered Users = 33,519 x .9023 = 30,244

Table No. 6 - Total Annual Costs by Unit Process

Process	Total Annual Cost	Flow %	Flow Amount	BOD %	BOD Amount	TSS %	TSS Amount
Collection System	2,000	100	2,000				
Screening	4,000	100	4,000				
Influent Pump	6,000	100	6,000				
Pond Treatment	10,000	20	2,000	40	4,000	40	4,000
Effluent Pumping	3,519	100	3,519				
Sampling	6,000	40	2,400	40	2,400	20	1,200
Administration	2,000	40	800	30	600	30	600
TOTAL OM&R COSTS	33,519	61.8	20,719	20.9	7,000	17.3	5,800

F. Determination of Unit Costs - Metered Users

I. Metered Users - Normal Domestic Strength

For metered users the unit costs for treatment shall be determined and fixed annually in the Sewer System Charge System according to the following procedure.

a. Determine the Annual OM&R Budget (i.e. Table 5).
b. Divide the OM&R costs by the total annual billable volume to arrive at the unit cost.

II. Metered Users-Greater Than Normal Domestic Strength

Unit costs for treatment of flow, BOD, and TSS shall be determined and fixed annually in the Sewer Service Charge System according to the following procedure:

a. Determine the Annual OM&R budget. (i.e. Table #5).
b. Allocate total Annual OM&R costs to Flow, BOD and TSS proportionately; according to the costs of collections, and of the specific treatment processes required to affect or reduce flow, BOD and TSS. (i.e. Table #6).
c. Divide the OM&R costs attributable to flow, BOD and TSS respectively, by the total annual billable volume and loadings of flow, BOD and TSS, to arrive at unit costs. (i.e. Table #1).

For purposes of determining user charges, the following definitions of unit costs shall apply:

U_F = Unit cost for treatment of Flow in \$/Kgal.

U_{BOD} = Unit cost for treatment of BOD in \$/lb.

U_{TSS} = Unit cost for treatment of TSS in \$/lb.

Table No. 7 - Determination of Unit Costs

$$U_F = \frac{\text{[Total annual OM\&R costs attributable to Flow (from Table \#6)]}}{\text{[Total annual billable flow in Kgal (from Table \#1; column 11)]}} = \frac{20,719}{57,929} = 0.358$$

$$U_{BOD} = \frac{\text{[Total annual OM\&R costs attributable to BOD (from Table \#6)]}}{\text{[Total annual billable BOD in lbs (from Table 1; column 2)]}} = \frac{7,000}{80,300} = 0.087$$

$$U_{TSS} = \frac{\text{[Total annual OM\&R costs attributable to TSS (from Table \#6)]}}{\text{[Total annual billable TSS in lbs (from Table 1; column 3)]}} = \frac{5,800}{76,650} = 0.076$$

G. Distribution of Costs - Metered Users

I. For Normal Domestic Strength Metered Users
The billable amount of flow will be calculated from the volume of metered water usage. For residential users, the per quarter billable flow shall be equal to quarterly metered water usage as averaged between the first and last quarters of the calendar year. For non-residential users discharging Normal Domestic Strength Wastewater, the billable flow shall be equal to quarterly water usage measured throughout the year.

The billable amounts of BOD and TSS will be calculated from the volume of metered water usage as determined above, where the billable quantities will be those attributable to a wastewater concentration of 240 mg/l BOD and 230 mg/l TSS (i.e. "Normal Domestic Strength Wastewater").

II. For Metered Users Contributing Wastes Greater Than Normal Domestic Strength
The billable amount of flow will be calculated from the volume of metered water usage, or at the discretion of the City, from the measurement of effluent flow at the user's point of discharge. Measurements shall be according to a regular program prescribed by the City.

The billable amounts of BOD and TSS will be calculated by the measurement of these wastes according to a program prescribed by the City in keeping with the lastest edition of Standard Methods for the Examination of Water and Wastewater and in accordance with Ordinance No. ________, "An Ordinance Establishing Sewer Use Regulations".

H. Non-Metered Users - Assignment of ERU's

I. Assignment - Normal Domestic Strength Users
Non-metered residential users, and those users of other classes who discharge "Normal Domestic Strength Wastewater" shall be assigned ERU's in accordance with Tables I and II of Appendix A of the "Ordinance Establishing Sewer Service Charges."

Those "industrial users" who discharge segretated "Normal Domestic Strength Wastewater" only can be classified as "commercial users" for the purpose of rate ~~determination~~.

Determination of the number of ERU's assigned to a particular connection shall be the responsibility of the City or its authorized representative.

I. Determination of User Charges - Metered User

I. Metered Users - Normal Domestic Strength

$UC(NDS) = OMR \times F$

Where: $UC(UNDS)$ = User Charge for treatment of Normal Domestic Strength Wastewater.

OMR = Cost per 1,000 gallons for treatment from Table 5.

F = Billable Flow in Kgal.

II. For Users Contributing Wastes Greater Than Normal Domestic Strength

$$U_{C(GNDS)} = (U_F \times F) + (U_{BOD} \times Q_{BOD}) + (U_{TSS} \times Q_{TSS})$$

$$U_{C(GNDS)} = (0.358 \times F) + (0.087 \times QBOD) + (0.076 \times QTSS)$$

Where: $U_{C(GNDS)}$ = User charge for treatment of wastewater that is greater than Normal Domestic Strength.

U_F = Unit Cost for Treatment of Flow in \$/Kgal.
F = Billable Flow in Kgal.
U_{BOD} = Unit cost for treatment of BOD in \$/lb.
Q_{BOD} = Quantity of BOD in lbs.
U_{TSS} = Unit cost for treatment of TSS in \$/lb.
Q_{TSS} = Quantity of TSS in lbs.

The proportionate allocation of annual User Charges to User Classes is presented in Table #7.

J. Determination of Charges - Non-Metered Users

I. User Charge
The typical household in Biwabik has 2.83 persons discharging 100 gallons per day of Normal Domestic Strength Wastewater. Consequently, each household discharges one Equivalent Residential Unit (ERU). ERU's have been assigned to households and all other non-metered connections in accordance with Table I and II of Appendix A of the "Ordinance Establishing Sewer Service Charges" and with Section F of the SSCS as follows.

Table No. 7 - Table of Equivalent Residential Units

Facility Description	Design Parameter	Actual Parameter	No. of Facilities	Total No. of ERU
1-Family Homes	1.0/unit	1.0/unit	462	462.00
Apartment Units	0.8/unit	0.8/unit	10	8.00
Catholic Church	1.0/250 Seats	50 Seats	1	0.20
Evangelic Church	1.0/250 Seats	50 Seats	1	0.20
Unit. Church of Christ	1.0/250 Seats	50 Seats	1	0.20
City Hall	1.0/4,000 s.f.	6,000 s.f.	1	1.50
City Garage	1.0/15 employees	10 employees	1	0.67
		Total ERU for Non-Metered Users		472.77

For Non-Metered Users, the User Charge Rate per Equivalent Residential Unit per year will be as follows:

$$\frac{Uc}{ERU} = \frac{Comr}{\text{Total ERU's}}$$

Where: UC = User Charge
Comr = Operation, Maintenance and Replacement costs attributable to non-Metered Users
ERU = Equivalent Residential Unit
Total ERU's = The total number of ERU's connected to the treatment facility.

Cost per E.R.U. per month = $63.97 ÷ 12 ....$5.33

Adjustment for contingencies and to insure adequate coverage of costs...+0.17

TOTAL MONTHLY CHARGE PER E.R.U. $5.50

The proportionate allocation of annual User Charges to User Classes is presented in Table No. 7.

Table No. 8

User Class	% of Flow	% of BOD	% of TSS	% of Revenues Generated	Annual Revenues Generated
Residential	90.0	90.0	90.0	90.0	31,020
Commercial	9.5	9.5	9.5	9.5	3.275
Indistrial (total)	___	___	___	___	___
Institutional	0.1	0.1	0.1	0.1	40
Governmental	0.4	0.4	0.4	0.4	143
				100	34,478

III. Debt Service Charge

The debt service rate per connection for local capital costs being recovered through the Sewer Service Charge will be:

No Debt Service Charge is anticipated. If, due to unforseen circumstances, local capital costs are incurred, they will be recovered through Ad Valorem taxes over a period of 20 years.

SEWER SERVICE CHARGES ORDINANCE NO. 121.10

AN ORDINANCE PROVIDING FOR SEWER SERVICE CHARGES TO RECOVER COSTS ASSOCIATED WITH:

1) Operation, Maintenance, and replacement to ensure effective functioning of the City's Wastewater Treatment System.

2) Local capital costs incurred in the construction of the City's Wastewater Treatment System.

Summary of Ordinance

The ordinance provides for the following items:

1. Establishes a Sewer Service Charge System whereby all users pay their proportionate share of the operation, maintenance, and replacement costs associated with the sanitary sewage treatment system.

2. Provides that all revenue collected through the Sewer Service Charge System be used to pay for the costs of operation, maintenance, and replacement of the sanitary sewage treatment system.

3. Provides for the method of determining the sewer service charges.

4. Provides for the establishment of a Sewer Service Fund to receive all revenues generated by the Service Charge System.

5. Provides for the administration of the Sewer Service Fund.

6. Provides for penalties for non-payment of sewer service charges.

Sec. 3. **Passed by the City Council of the** City of Biwabik, Minnesota, Ay **on the** 4th **day of** April, 1988.

Robert G. Wood
Mayor

Attest:
Lawson L. Holt
City Administrator

Published in the Biwabik Times on the 14th day of April, 1988.

SEWER SERVICE CHARGE SYSTEM
CITY OF BIWABIK, MINNESOTA

A. Background

The City of Biwabik will be constructing Additions to the Sewer Treatment System with the assistance of the Federal and/or State Construction Grants Programs.

The present population of Biwabik is 1,400. The projected design year population (20 years after completion) is 1500.

Design Data for the treatment facility are as follows:

	Flow MGD	BOD #/D	TSS #/D
First Year of Operation	0.256	220	210
Design Year	0.270	232	221

The existing demographic distribution in Biwabik is 2.83 people per household. At 100 gallons per capita day, this suggests an average hydraulic load of 283 gallons per day per connection, hence 283 gallons per day has been fixed as the volume of an Equivalent Residential Connection (ERU) throughout the "Ordinance Establishing Sewer Service Charges" and this "Sewer Service Charge System."

B. Development of a Sewer Service Charge System

The Sewer Service Charge System for the City of Biwabik is to be developed in accordance with the provisions of the City's "Ordinance Establishing a Sewer Service Charge System" to insure the following:

1. Pollution Abatement in accordance with the City's NPDES Permit.

2. Allocation of OM&R costs of wastewater treatment to users in proportion to their total contribution of wastewater flows and loadings.

3. Sufficient generation of revenue to insure effective Operation, Maintenance and Replacement of the treatment works throughout its useful or design life, whichever is longer.

4. A description of how the City intends to recover its capital costs for the Treatment Works and a rate determination for that portion of such costs to be recovered as a part of the Sewer Service Charge.

C. Adoption of the Sewer Service Charge System

The Sewer Service Charge System will be revised and adopted by resolution in accordance with Article V of the "Ordinance Establishing a Sewer Service Charge System".

Appendix A

The following tables ~~shall be~~ used as a guide for determining the number of ERU's for various user classes.

TABLE I: Equivalent Residential Units (ERU's) for Various Residential Dwellings

Single family homes, townhouses, and duplex units	1.0 Unit
Condominiums and apartment units	0.8 Unit
Mobile Homes	1.0 Unit

TABLE II: Equivalent Residential Units (ERU's) for Various Commercial, Public and Institutional Facilities

Facility Description	Parameter	Units
Automobile Service	2 Service Bays	1.0 Unit
Banquet Room	1,000 Square Feet	1.0 Unit
Barber Ship	Each	1.0 Unit
Bowling Alley	3 Alleys	1.0 Unit
Car Wash - Self Service	1 Stall	3.0 Unit
Car Wash - Service Station	Each	4.0 Unit
Churches	250 Seats	1.0 Unit
Fast Service Restaurant	600 Square Feet	1.0 Unit
General Office Building	4,000 Square Feet	1.0 Unit
Hospitals	1 Bed	1.0 Unit
Laundromats	4 Washing Machines	1.0 Unit
Motels & Hotels	2 Rooms	1.0 Unit
Nursing Home	3 Beds	1.0 Unit
Restaurant, Drive-In	10 Parking Spaces	1.0 Unit
Restaurant	600 Square Feet	1.0 Unit
Retail Store	3,000 Square Feet	1.0 Unit
Rooming House	7 Beds	1.0 Unit
Schools (Elementary)	20 Students	1.0 Unit
Schools (Secondary)	15 Students	1.0 Unit
Service Station (Gas pumping only)	Each	1.0 Unit
Service Station with Service Center	Each	2.0 Unit
Service Station with Service Center & Car Wash	Each	8.0 Unit
Swimming Pool	Each	1.0 Unit
Theatre	50 Seats	1.0 Unit
Theatre, Drive-In	50 Parking Spaces	1.0 Unit
Warehouse	15 Employees	1.0 Unit

The areas listed in the parameters include all interior areas utilized by the public and the employees for the conduct of the facility.