

*Protecting Our Water Environment*



*Metropolitan Water Reclamation District of Greater Chicago*

***MONITORING AND RESEARCH  
DEPARTMENT***

*REPORT NO. 09-13*

*CALCULATION OF 2009 USER CHARGE RATES*

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**CALCULATION OF 2009  
USER CHARGE RATES**

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## TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES	ii
ACRONYMS	iii
CALCULATION OF 2009 USER CHARGE RATES	1
Determination of Total Operations, Maintenance and Replacement Costs	1
Determination of Total Revenue to be Generated by the User Charge System in 2009	5
Determination of 2009 User Charge Administrative Cost for Each User Charge Classification	5
Unit Costs of Treatment	5
Distribution of Equalized Assessed Valuations and Quantities by Source	9
Allocation of Infiltration / Inflow, Rain and Recycle	9
Analysis of Dry- and Wet-Weather Flows	13
Distribution of Infiltration / Inflow, Rain and Recycle Operations, Maintenance and Replacement Costs	15
Calculation of Rates for the Large Commercial-Industrial and Tax-Exempt Classifications	15
Administrative Cost Recovery	20

## LIST OF TABLES

<u>Table No.</u>		<u>Page</u>
1	Total Operations, Maintenance and Replacement Cost for 2007 and 2008	2
1A	Reserve Claim Fund	3
1B	Construction Fund Costs	4
1C	Determination of Total Operations, Maintenance and Replacement Cost Construction Fund Portion Adjusted for Revenues from Other Sources	6
1D	2008 Construction Fund Replacement Cost	
	➤ 2008 Budget Awards	7
	➤ Projects Under Construction	7
2	Determination of Total Operations, Maintenance and Replacement Cost for 2007 and 2008 Adjusted for Revenues from Other Sources and for Administrative Cost	8
3	Administrative Costs of User Charge and Sewage and Waste Control Ordinances to be Recovered Under the User Charge System	10
4	Unit Cost of Treatment	11
5	Distribution of Equalized Assessed Valuations and Quantities by Sources	12
6	Allocation of Infiltration / Inflow, Rain and Recycle	14
7	Seven Consecutive Days Dry-Weather Flow in Million Gallons per Day	16
8	Cost per Parameter and Total Cost Per User Classification for 2008	18

## ACRONYMS

ACR	Administrative Cost Recovery
BOD	Biochemical Oxygen Demand
EAV	Equalized Assessed Valuation
HVAC	Heating Ventilation and Air Conditioning
I/I	Infiltration / Inflow
Klbs	Thousand Pounds
M&O	Maintenance and Operations
M&R	Monitoring and Research
MG	Million Gallons
MGD	Million Gallons per Day
MPR	Minimum Pretreatment Requirements
NCE	Noncompliance Enforcement
NSA	North Side Service Area
OM&R	Operations, Maintenance and Replacement
OPEB	Other Post-Employment Benefits
R&SNC-I	Residential and Small Nonresidential Commercial-Industrial
SS	Suspended Solids
SSA	Stickney Service Area
SWCO	Sewage and Waste Control Ordinance
TARP	Tunnel and Reservoir Plan
UCO	User Charge Ordinance
UCS	User Charge System
UCV	User Charge Verification
USEPA	United States Environmental Protection Agency
WRP	Water Reclamation Plant

## CALCULATION OF 2009 USER CHARGE RATES

### Determination of Total Operations, Maintenance and Replacement Costs

The 2008 Metropolitan Water Reclamation District of Greater Chicago (District) Corporate Fund appropriates \$397,200,000 for the support of operations and maintenance to carry out wastewater treatment and other functions. After subtracting the appropriations of those items disallowed by the USEPA in 1979 and other items not related to OM&R, it was determined that \$367,635,340 of the 2008 budget is OM&R related. A breakdown of this total is shown in Table 1.

The segregation of costs associated with wastewater treatment from costs associated with other functions was based on discussions regarding the District's dedicated ad valorem tax revenues, which were held in September and October 1978 between District staff and USEPA staff. In these discussions, non-OM&R budgeted line items were identified and disallowed.

For example, the non-OM&R items disallowed include the following Programs:

- 4200 Waterways Control and Stormwater Retention Reservoirs
- 4700 Flood and Pollution Control Design
- 4800 Flood and Pollution Control Construction

These Programs relate to corporate expenditures for waterways operation and maintenance and flood control design and construction. The total of these disallowed Program 4000 expenditures is \$4,731,440. In addition to this amount, a prorated portion of Program 7000, General Support, was also disallowed because it is the overhead support of the items disallowed under Program 4000. The portion of Program 7000 thus disallowed was \$2,733,220. The total of the disallowed funds considered to be non-OM&R related was \$7,464,660. Three additional funds - portions of the Annuity and Benefit Fund, the Reserve Claim Fund, and the Construction and Working Cash Fund - were added to the OM&R costs raising the total OM&R cost from \$367,635,340 to \$404,568,566. These funds were added because they relate to OM&R costs. The Annuity and Benefit Fund provides for the District's pension program for retired employees and employee disability payments. The Reserve Claim Fund is used for the payment of worker's compensation, liability claims, and other associated costs. This fund is also used to pay for repair costs if a catastrophe were to strike the District's facilities.

Up until the 1960s, the Construction Fund had been used as a repair and replacement funding mechanism. The use of this fund was suspended because the District embarked on a major program to upgrade its infrastructure, consisting primarily of expansion and improvement of WRPs, construction of new WRPs and collection systems and implementation of TARP, the District's solution to combined sewer overflows. Funding for these major capital improvement projects in the Capital Improvements Bond Fund included issuance of long-term debt as authorized by the state of Illinois.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1

TOTAL OM&R COSTS FOR 2007 & 2008

Budgeted Corporate Fund Programs Directly Related to OM&R Costs		2007 Budget <sup>7</sup>	2008 Budget
1000	Collection	\$ 58,400,000	\$ 60,000,000 <sup>1</sup>
2000	Treatment	72,600,000	81,400,000 <sup>1</sup>
3000	Solids Processing	39,700,000	39,400,000 <sup>1</sup>
4000	Flood and Pollution Control	28,288,386	33,268,560 <sup>1, 2</sup>
5000	Solids Utilization	25,300,000	32,900,000 <sup>1</sup>
7000	General Support	<u>121,280,528</u>	<u>120,666,780</u> <sup>1, 3, 8</sup>
Sub-Total		\$351,800,924	\$367,635,340
Annuity and Benefit Fund		28,857,223	28,524,945 <sup>4</sup>
Reserve Claim Fund		19,954,500	8,408,281 <sup>5</sup>
Construction & Working Cash Fund		<u>424,169</u>	<u>0.00</u> <sup>6</sup>
Total OM&R Cost		\$401,036,816	\$404,568,566

<sup>1</sup>See Pages 49, 235, 322 and 323 of the District's 2008 Budget.

<sup>2</sup>Program total in Corporate Fund is \$38,000,000. USEPA disallowed costs (Programs 4200, 4700 and 4800) are \$4,731,440, leaving a net of \$33,268,560.

<sup>3</sup>Program total in Corporate Fund is \$145,400,000. USEPA disallowed costs are \$2,733,220, leaving a net of \$142,666,780. A prorated portion of Program 7000, General Support, was disallowed as it was determined in the 1979 User Charge Proposal that this was related to the overhead support of items disallowed from Program 4000. This prorated portion is the ratio of the disallowed amount (\$4,731,440) to the total for Programs 1000 through 5000 (\$251,700,000) in the 2008 Budget.

<sup>4</sup>The 2008 Budget allocates \$30,371,534 on Page 51 to the Annuity and Pension Fund. Approximately 6.11% of the District's employee salaries are not chargeable to OM&R costs leaving a net of \$28,524,945. The 6.11 percent number represents the ratio of the salaries budgeted under Programs 4200, 4210, 4300, 4700 and 4800 for the corporate, construction, bond and stormwater management funds against the total salaries budgeted under Programs 1000, 2000, 3000, 4000 and 5000.

<sup>5</sup>From Table 1A on Page 3.

<sup>6</sup>From Table 1C on Page 6.

<sup>7</sup>Based on 2007 Budget figures listed in 2008 Budget book and formulas applied in notes 1 through 6.

<sup>8</sup>The 2008 Budget allocates \$22,000,000 for the OPEB Trust. This amount was deemed inappropriate for inclusion in the OM&R costs for 2008 and was therefore excluded from the total for Program 7000.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1A

RESERVE CLAIM FUND

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2008 Budgeted Cost	\$55,500,000
Less 2007 Budgeted Cost	(56,705,500)
Plus 2007 Actual Claims	9,613,781
Total	<u>\$ 8,408,281</u>

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Note: Included for the UCS are actual expenditures in 2007 plus the amount added to the fund which is the difference in the budget appropriations for 2007 (Page 51 of 2007 Budget) and 2008 (Page 51 of 2008 Budget). The total represents the funding required to bring the fund up to the 2008 appropriated amount. The data for actual claims was provided by the Finance Department.



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1B

CONSTRUCTION FUND COSTS

Budgeted Programs Directly Related to OM&R Cost	2008 Budget
1000 Collection	\$ 4,091,805.00
2000 Treatment	18,148,689.00
3000 Solids Processing	1,089,174.00
4000 Flood and Pollution Control	4,043,283.00
5000 Solids Utilization	1,467,789.00
Sub-total of Programs 1000 through 5000	<u>\$28,840,740.00</u>
Less Ineligible portion of OM&R Cost applicable to Programs 4200, 4210, 4700 and 4800	(4,043,283.00)
Total Eligible OM&R Cost from Programs 1000 through 5000	<u>\$24,797,457.00</u>
Ratio of eligible to total program cost $\frac{\$24,797,457}{\$28,840,740} = 0.8598$	
7000 General Support (eligible portion) = 0.8598 x \$3,319,360.00	2,854,007.00
Total Eligible OM&R Cost	<u>\$27,651,464.00</u>

Sources: Information from District's Budget Preparation Tool Functional Area Summary Report for 2008 Budget.

Suspending use of the Construction Fund was appropriate at the time, since funding for capital improvement projects came through the issuance of long-term debt recovered under ad valorem taxes, and replacement costs were recovered by way of the designated fixed asset replacement set aside in the Corporate Fund. The designation for fixed asset replacement funding was negotiated with the USEPA in the original UCS as a mechanism for identifying and recovering infrastructure replacement costs, etc.

Beginning with 1997, it was determined that the eligible portions of the Construction Fund and the Financing Charges for related working cash funds would be included in the OM&R cost as shown in Table 1C. The eligible portion of the Construction Fund, etc., is now designated for “fixed asset replacement.”

The Engineering Department has determined that the eligible portion of the Construction Fund from the 2008 budget is \$0.00, as shown in Table 1D. There were no construction fund replacement costs in 2008 due to delayed project awards accounted for in the previous year’s calculation. The 2008 Budget did not allocate construction working cash funds. (See Page 81 of the 2008 Budget.) The Construction Fund did not have to be adjusted for the Construction Fund revenues and ineligible Program 4000 costs due to the delayed project awards. The eligible portion to be included in the OM&R costs was determined to be \$0.00, as shown in Table 1C.

#### Determination of Total Revenue to be Generated by UCS in 2009

As shown in Table 2, revenues contained in the 2008 budget derived from sources other than the UCS total \$155,768,061. The revenue derived from the sale or use of the District's assets and other sources is itemized in Table 2. Such revenues are used in the District's budget preparation process to offset the overall tax levy and the amount to be generated by the UCS.

#### Determination of 2009 User Charge Administrative Cost for Each User Charge Classification

Table 3 presents the costs for administration of the UCS, which will be recovered by direct charges to Large Commercial-Industrial Users and by inclusion in the User Charge rates for other classifications. The actual administrative cost to be recovered in 2009 is \$6,071,457. Subtracting the total of revenue to be generated from other sources and the ACR from the total OM&R cost of \$404,568,566 leaves a net OM&R cost of \$242,729,000, which must be collected by the UCS.

#### Unit Costs of Treatment

District operating records indicate that 486,726 MG of flow, 935,511 Klbs of BOD and 1,583,111 Klbs of SS were treated during 2007 (data from 2007 WRP operating records as compiled by the M&R Department). Operating cost accounting data were used to determine the allocation of OM&R costs by parameter, i.e., flow, BOD and SS. The result is that 28.48 percent of the cost was attributed to flow, 38.55 percent to BOD, and 32.97 percent to SS. This allocation was based on 2007 cost data and the M&O Department memorandum dated April 23, 2008. Using the foregoing data, the unit costs of treatment were derived, as shown in Table 4.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1C

DETERMINATION OF TOTAL OM&R COST CONSTRUCTION FUND PORTION  
ADJUSTED FOR REVENUES FROM OTHER SOURCES

Revenue/Cost Item	For 2009 from 2008 Budget
Net Assets Appropriable (Page 92, 2008 Budget)	\$29,960,100.00
Revenue from Personal Property Replacement Tax (Page 93, 2008 Budget)	0.00
Revenue from Money and Property Investment Income, etc. (Page 93, 2008 Budget)	1,700,000.00
Connection Impact Fees (Page 93, 2008 Budget)	200,000.00
Total Revenues Derived from Other Sources for Construction Fund	<u>\$31,860,100.00</u>
Total Costs (from <u>Table 1B</u> on Page 4)	\$27,651,464.00
Ratio of Construction Fund Revenue vs. Total Construction Fund Costs (\$31,860,100)/(\$27,651,464) = 1.15 <sup>1</sup>	
Eligible Construction Fund as Furnished by Engineering Dept. (From <u>Table 1D</u> ) <sup>2</sup>	\$ 0.00
Less Proportionate Share for Construction Fund Revenues (1.15 x 0) <sup>1</sup>	\$ (0.00)
Net Eligible Construction Fund	\$ 0.00
Plus Net Eligible Portion of Construction Working Cash Fund. <sup>3</sup>	<u>\$ 0.00</u>
OM&R Cost to be Recovered for Construction Fund Under the User Charge Ordinance	\$ 0.00

<sup>1</sup> 100% of the Construction Fund is funded by revenue from sources other than the User Charge System.

<sup>2</sup> Due to delayed project awards accounted for in the previous year's calculation, the total amount is zero.

<sup>3</sup> No appropriation has been made for Construction Working Cash Fund in the 2008 Budget.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1D

2008 CONSTRUCTION FUND REPLACEMENT COST

Project No.	Project Title/Description	Eligible Appropriation	% Eligible	In-House Cost
<u>2008 Budget Awards</u>				
02-110-2E	Electrical Distribution System and Conduit and Cable Replacement SSA	0	100	0
05-147-2M	HVAC Improvements Stickney WRP	0	100	0
07-162-2S	Westdale Gardens Pumping Station and Force Main, Northwest 8A	0	0	0
05-834-2D	Touhy Avenue Bridge Rehabilitation and Repairs of Other Bridges on the North Shore Channel, NSA	0	80	0
07-364-2M	Primary Odor Control Equipment Installation O'Hare TARP D5-5	0	0	0
	Total 2008 Awards*	\$0.00		\$0.00
<u>2008 Projects Under Construction</u>				
00-809-1E	Remote Unmanned Sites, Smoke Annunciation	0	50	0
00-473-1D	Replace Casework, Fume Hoods and Miscellaneous Work at the Egan WRP	0	74	0
	Total Projects Under Construction	<u>\$0.00</u>		<u>\$0.00</u>
	Grand Total	\$0.00		\$0.00

\* Due to delayed project awards accounted for in the previous year's calculation, the total amount is zero.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2

DETERMINATION OF TOTAL OM&R COST FOR 2007 AND 2008  
ADJUSTED FOR REVENUES FROM OTHER SOURCES  
AND FOR ADMINISTRATIVE COST

Revenue/Cost Item	For 2008 From 2007 Budget	For 2009 From 2008 Budget
Total OM&R Cost <sup>1</sup>	\$401,036,816	\$404,568,566
Less:		
Net Assets Appropriable <sup>2</sup>	(105,995,948)	(105,741,361)
Revenue from Investments, Land Rentals, Sewer Permit Fees, Service Agreements, and Electricity Generation	(17,459,000)	(22,175,500)
Revenue from Personal Property Replacement Tax <sup>2</sup>	(23,421,000)	(26,002,200)
Revenue from Miscellaneous Sources of Administrative Penalties but not including Village of Glenview Payment <sup>2</sup>	(1,624,000)	(1,624,000)
Village of Glenview Payment	(225,000)	(225,000)
Subtotals of Revenues from Other Sources	(148,724,948)	(155,768,061)
Administrative Costs to be Recovered through Charges Under the UCS <sup>3</sup>	(6,560,991)	(6,071,457)
Revenues from Other Sources and Administrative Costs	(155,285,939)	(161,839,518)
Adjusted Total OM&R Cost	\$245,750,877	\$242,729,048
Rounded Off Figure	\$245,751,000	\$242,729,000

<sup>1</sup>From Table 1 on page 2.

<sup>2</sup>From pages 85 and 86 of 2007 Budget and pages 85 and 86 of 2008 Budget.

<sup>3</sup>From Table 3 on page 11.

These unit costs of treatment will be used in the subsequent analysis for distributing costs by classification and in distributing the costs of treating I/I and stormwater. The basis of the District's UCS is its cost to treat each gallon of flow, each pound of BOD and each pound of SS.

#### Distribution of Equalized Assessed Valuations and Quantities by Source

The sources of loadings to the District and the assessed valuations for these sources are shown in Table 5.

The District utilized the 2006 total EAV for its service area of \$141,470,000,000 (see Page 42 of the 2008 Budget). This included railroad property. Through a review and evaluation of all tax credits claimed by Large Commercial-Industrial and Tax-Exempt Users in 2007, based on their 2006 real estate property taxes paid in 2007, it was established that the EAV of the Large Commercial-Industrial sources was \$12,543,661,620 (see Table 5). This is based on the most recently verified User data in the District's files and was for tax year 2006 payable in 2007. Some tax-exempt Users pay property taxes on their facilities which they utilize for commercial purposes. This EAV was \$374,000,000 (see Table 5). Subtracting the EAV of the Large Commercial-Industrial Users (\$12,543,661,620) and the EAV of the Tax-Exempt Users (\$374,000,000) on city property leaves a total EAV of \$128,552,338,380 for the R&SNC-I Users.

#### Allocation of I/I, Rain and Recycle

As stated earlier, the total quantities of flow, BOD and SS are determined from District operating records. The following is an explanation of how these quantities were allocated to the four sources of R&SNC-I, Large Commercial-Industrial, Tax-Exempt, and I/I, Rain and Recycle, as shown in Table 5.

The Recycle item was introduced in the 1987 User Charge rate calculations for BOD and SS because failure to include this item results in disproportionately high and improper assignment of BOD and SS concentrations and total loadings to the R&SNC-I class. This item was designated "Recycle" because currently, samples of plant loadings include substantial "loadings" due to recycle of in-plant wastestreams and thus do not adequately reflect User-generated loadings. In the 2009 calculations, the recycle flow volume was established as 15,474 MG for 2007, based on the May 21, 2008 memorandum from the M&O Department providing the 2007 recycle flow volume.

The initial BOD and SS loadings assigned to the R&SNC-I classifications in Table 5 prior to the allocation of I/I, Rain and Recycle in Table 6, were computed based on the volume for the R&SNC-I classifications listed in Table 5 (computed as in prior years), and the standard domestic concentrations of 119 mg/L for BOD and 168 mg/L for SS. I/I, Rain and Recycle flows were determined to be 185,343 MG for 2007 (see Table 6).

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 3

ADMINISTRATIVE COSTS  
OF USER CHARGE AND SEWAGE AND WASTE CONTROL ORDINANCES  
TO BE RECOVERED UNDER THE UCS

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Small Nonresidential Commercial-Industrial Users <sup>1</sup>	\$ 119,390
Tax-Exempt Users <sup>1</sup>	\$ 397,067
Large Commercial-Industrial Users <sup>2,3,4</sup>	<u>\$5,555,000</u>
Total Administrative Costs to be Recovered from Users	\$6,071,457

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<sup>1</sup>Based on information provided by the District's Finance Department for 2007 expenditures and the District's financial records.

<sup>2</sup>This Administrative Cost is the total estimated revenue for MPR Charges and UCV Charges that will be recovered under the UCS in 2009.

<sup>3</sup>The assessed ACR Charges for the Large Commercial-Industrial Users are in accordance with Appendix E to the District's User Charge Ordinance.

<sup>4</sup>This amount also includes non-compliance expenditures to be recovered under the District's Sewage and Waste Control Ordinance.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 4

UNIT COST OF TREATMENT

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Total District Loadings for 2007<sup>1</sup>

Volume	=	486,726 MG
BOD	=	935,511 Klbs
SS	=	1,583,111 Klbs

Total OM&R Cost = \$242,729,000

Allocation of Cost According to Parameters of Flow, BOD & SS<sup>2</sup>

Flow	=	28.48% x \$242,729,000 = \$69,129,219
BOD	=	38.55% x \$242,729,000 = \$93,572,030
SS	=	32.97% x \$242,729,000 = \$80,027,751

Unit Costs of Treatment

Volume	=	\$69,129,219 / 486,726 MG = \$142.03/MG
BOD	=	\$93,572,030 / 935,511 Klbs = \$100.02/Klbs
SS	=	\$80,027,751 / 1,583,111 Klbs = \$ 50.55/Klbs

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<sup>1</sup> The 2007 District loadings are used in the calculation of 2009 rates because this is the latest full year's operating data at the time the calculations were made. (Source: M&R Department WRP 2007 Operating Records)

<sup>2</sup> Percent distribution of cost-to-load parameters derived from the M&O Department memorandum dated April 23, 2008.



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 5

DISTRIBUTION OF EQUALIZED ASSESSED VALUATIONS AND QUANTITIES  
BY SOURCES

Source	EAV (\$)	Volume (MG)	BOD (Klbs)	SS (Klbs)
R&SNC-I	\$128,552,338,380 <sup>3</sup>	269,981	267,945	378,276
Large Commercial- Industrial <sup>1</sup>	\$ 12,543,661,620 <sup>2</sup>	20,328	117,659	40,041
Tax-Exempt <sup>1</sup> (and Gov- ernmental)	\$ 374,000,000 <sup>3</sup>	11,074	17,893	40,948
I/I, Rain and Recycle (See <u>Table 6</u> )		185,343	532,014	1,123,847
Total (Approximate Due to Roundoff)	\$141,470,000,000 <sup>4</sup>	486,726	935,511	1,583,111

<sup>1</sup>The quantities shown on these lines constitute the billable flows and loads for the classes indicated.

<sup>2</sup>EAV is based on actual tax credits reported by District Users. The tax credit data was taken from the 2007 annual statements filed by the Users. This data is verified by real estate property tax bills submitted with the 2007 annual statements. \$35,623,999 in 2006 real estate taxes were claimed by Large Commercial-Industrial Users in 2007, and the District's 2006 real estate property tax rate was 0.284 cents per \$100.00 of EAV. Therefore,  $(\$35,623,999/0.284) \times \$100 = \$12,543,661,620$ , the computed EAV of the Large Commercial-Industrial Class.

<sup>3</sup>Similarly, Users in the City of Chicago airports and a private college paid real estate taxes of \$1,062,160 for properties which were utilized for commercial usage. Based on this tax paid, the EAV of the tax-exempt class was  $(\$1,062,160/0.284) \times \$100 = \$374,000,000$ . The EAV of the R&SNC-I Class is computed by deducting all other figures from the total EAV.

<sup>4</sup>Total EAV is for the year 2006 as supplied by the Cook County Assessor. Multiplier for 2006 = 2.7076.

### Analysis of Dry- and Wet-Weather Flows

The method of determining dry- and wet-weather flows in the 2001 through 2004 rate-setting process was revised from the method used in the rate calculations for 2000 and previous years. For rate settings prior to 1982, rain-attributed loads were derived by extracting all loads received at a WRP on a day with 0.10 inches of precipitation or more, projecting the remaining loads over 365 days, and subtracting this value from total WRP flows. This method, however, does not account for rain loads received days after a storm due to the lag time required for flows to arrive from the perimeter of a collection area.

In the 1982 through 1989 rate calculations, rain-attributed flows were determined by an analysis of the daily plant operating records for a previous year. For the 1986 through 1989 rate calculations, the records for 1985 were used. Because the dry-weather flow is thought to be relatively stable, it was felt that a separate determination each year was not warranted. The month in 1985 exhibiting the lowest total precipitation was identified as January.

The month of January 1985 was chosen because it has these characteristics and, therefore, represented a baseline condition. The flow and pollutant loadings for each day during this month were calculated and totaled for the month. The monthly sums were then divided by the number of days in the month.

The difference between total dry-weather load and the total load was considered to be the wet-weather or rain load. For the 1990 through 1998 rate calculations, the Rain and I/I flows were determined by using 1988 plant operating data. The operating records from each WRP were screened to find the five lowest flow days. These days were averaged and used as dry-weather flow for each of the seven WRPs. The seven WRPs were tabulated to give a District-wide daily dry-weather flow quantity of 911 MGD. The tabulated daily dry-weather flow was converted into an annual volume.

However, for the 1999 and 2000 rate calculations, it was decided to update the dry-weather flow quantity and methodology, because the 1988 data was then ten years old and the method did not account for changes which may reasonably occur over time. Therefore, for 1999 and 2000, the User Charge rate calculation utilized the average of the five lowest flow days for each of the previous five years for which flow data was available to identify the average dry-weather flow. WRP flow data was available for 1994 through 1998 for the 2000 rate calculations. For each WRP the five lowest flow days for each year were averaged for each of the five available years.

Based on 1994 through 1998 WRP operating data, the average daily dry-weather flow was 923.34 MGD (rounded off to 923 MGD). The highest year was 1997 with an average dry weather flow of 939.90 MGD, while the lowest year was 1995 with 890.73 MGD.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 6

ALLOCATION OF I/I, RAIN AND RECYCLE

Class Loadings	Volume (MG)	%	BOD (Klb)	%	SS (Klb)	%
<u>Dry-Weather Loadings</u>						
R&SNC-I <sup>1</sup>	269,981	89.58	267,945	66.41	378,276	82.37
Large Commercial-Industrial <sup>2</sup>	20,328	6.75	117,659	29.16	40,041	8.72
Tax-Exempt (and Governmental) <sup>2</sup>	<u>11,074</u>	<u>3.67</u>	<u>17,893</u>	<u>4.43</u>	<u>40,948</u>	<u>8.92</u>
TOTAL	301,383	100.00	403,497	100.00	459,265	100.00
<u>Allocating I/I, Rain and Recycle</u>						
R&SNC-I	166,032		353,288		925,662	
Large Commercial-Industrial	12,501		155,134		97,983	
Tax-Exempt (and Governmental)	<u>6,810</u>		<u>23,592</u>		<u>100,202</u>	
TOTAL <sup>3</sup>	<u>185,343</u>		<u>532,014</u>		<u>1,123,847</u>	
GRAND TOTAL <sup>4</sup>	486,726		935,511		1,583,111	

<sup>1</sup>R&SNC-I flows are derived by subtracting I/I, Rain and Recycle figures as well as known Large Commercial-Industrial and Tax-Exempt loads from the grand totals. Standard domestic sewage concentrations of 119 mg/L for BOD and 168 mg/L for SS are used (as specified in Section 7g of the User Charge Ordinance) and have been applied to the volume so derived to establish the R&SNC-I BOD and SS loadings, respectively.

<sup>2</sup>These numbers were arrived at from the District's records of all 2007 User Charge Annual Certified Statements.

<sup>3</sup>Daily M&O Department records for the District's seven WRPs for the year 2007 show a total volume treated of 486,726 MG. The projected annual dry-weather volume is 868.1 x 365 days = 316,857 MG. I/I, Rain and Recycle flows are equal to Total Flow (486,726 MG) minus Dry-Weather Flow (316,857 MG), or 169,869 MG plus Recycle (15,474 MG) = 185,343 MG. See Page 10 for an explanation of the Recycle item as first introduced in the 1987 User Charge rate calculations.

<sup>4</sup>Grand totals come from 2007 operating records as explained on Page 5. Totals may not equal the sum of individual components due to rounding.

Beginning with the 2001 rate calculations, the District determined that it would utilize the total of the seven consecutive lowest flow days recorded in 1999 at each of the District's WRPs for identifying the average daily dry-weather flow. This method accounts for a complete normal workweek for each WRP along with weekends. Utilizing this method, the dry-weather flow for 1999 was 941 MGD.

However, in subsequent years there was a significant reduction in dry-weather flows. This reduction may be due to general reduction in Commercial-Industrial activities. Since significant variations in dry-weather flow from year-to-year have an impact on the User Charge rates, a moving average of the dry-weather flow from the most recent five years is now being used in the User Charge rate calculations. This insures a greater stability to the User Charge rates.

For the 2009 User Charge rate calculations, the average of the total dry-weather flow from 2003 through 2007 is utilized. The five year average is 868.1 MGD with a high of 906.9 MGD observed in 2006 and a low of 839.78 MGD seen in 2005. This information is shown in Table 7.

#### Distribution of I/I, Rain and Recycle OM&R Costs

As shown in Table 5, there are four sources of loadings to the District's WRPs. However, under the ad valorem tax system, there are three sources which contribute toward the payment of OM&R costs: the R&SNC-I User classifications, the Large Commercial-Industrial User classification and the Tax-Exempt User classification. The OM&R costs to treat flows and loads from the I/I, Rain and Recycle must be distributed to the R&SNC-I, Large Commercial-Industrial and Tax-Exempt classifications in proportion to the dry-weather loads and flows contributed by these three regulated classifications. The results of the distribution of loads and flows are shown in Table 6.

#### Calculation of Rates for the Large Commercial-Industrial and Tax-Exempt Classifications

After allocating the I/I, Rain and Recycle-attributed flows to the three classifications, a cost for each classification was calculated by multiplying each classification parameter quantity by the unit cost generated in Table 4. The results of these calculations are shown in Table 8. Please note that the totals shown include the administrative cost for the R&SNC-I classification and the Tax-Exempt classification. For the Tax-Exempt classification, the administrative costs have been distributed to volume, BOD and SS in proportion to the total treatment costs for each parameter. The administrative cost is not included for the Large Commercial-Industrial User classification. These costs, totaling \$243,242,274 must be recovered by the District through the ad valorem (real estate) tax system and User surcharges.

In summary, the total OM&R cost by classification is:

R&SNC-I	190,096,107
Large Commercial-Industrial	38,924,572
Tax-Exempt	<u>14,221,595</u>
TOTAL	\$243,242,274

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 7

SEVEN CONSECUTIVE DAYS  
 DRY-WEATHER FLOW IN MGD

WRP	2003	2004	2005	2006	2007
Calumet	165.00	159.00	146.00	177.00	161.00
Stickney	463.00	494.00	474.00	495.00	457.00
Northside	186.00	186.00	173.00	184.00	182.00
Lemont	1.49	1.44	1.42	1.63	1.60
Kirie	20.88	21.64	20.01	23.19	21.59
Egan	17.0	19.0	19.5	20.30	20.20
Hanover	5.71	4.44	5.85	5.78	5.86
Totals	859.08	885.52	839.78	906.90	849.25

Five year average is 868.1 MGD

The R&SNC-I classifications' OM&R costs are collected through the District's dedicated ad valorem tax system. Using the equalized assessed classification value of \$128,552,338,380 for the R&SNC-I classifications, as shown in Table 5, and the classification OM&R cost of \$190,096,107 for the R&SNC-I classifications, as shown in Table 8, the ad-valorem residential OM&R rate was determined as follows:

$$\$190,096,107 / \$128,552,338,380 = 0.148/\$100 \text{ EAV}$$

This constitutes the OM&R rate for all user classifications under the ad valorem tax system and represents a 9.2 percent decrease from the 2008 rate of 0.163/\$100 EAV.

In the collection of ad valorem tax revenues, the Cook County Treasurer has experienced a shortfall over the years due to delinquencies. The actual extent of this shortfall is unknown. To compensate for this shortfall, however, it is customary for taxing bodies to increase their tax levies by an amount which approximates the shortfall. The District's budget for 2008 included a 3.5 percent allowance for tax revenues uncollected in the year of levy.

The calculation of the ad valorem residential OM&R rate of 0.148/\$100 EAV is without the allowance for uncollectibles. This rate adjusted downward by 3.5 percent for uncollectibles would be 0.143/\$100 EAV. The adjusted ad valorem OM&R rate is 50.4 percent (0.143/0.284) of the District's total 2006 ad valorem tax rate.

The User Charge rates for the Large Commercial-Industrial class are equal to the total cost per parameter for this classification divided by the billable flow and loads, as shown in Table 5 and Table 8. Using this data, the following rates were established for the Large Commercial-Industrial User classification:

Volume:	\$ 4,662,703 / 20,328	MG	=	\$229.37/MG
BOD:	\$27,284,756 / 117,659	Klbs	=	\$231.90/Klbs
SS:	\$ 6,977,113 / 40,041	Klbs	=	\$174.25/Klbs

The Tax-Exempt classification OM&R costs must be fully collected by the UCS. Using the total cost per parameter for this classification divided by the billable flow as shown in Table 5 and Table 8 the following rates were established for the Tax-Exempt User classification:

Volume:	\$2,613,020 / 11,074	MG	=	\$235.96/MG
BOD:	\$4,268,507 / 17,893	Klbs	=	\$238.56/Klbs
SS:	\$7,340,068 / 40,948	Klbs	=	\$179.25/Klbs

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 8

COST PER PARAMETER AND TOTAL COST PER USER CLASSIFICATION  
FOR 2009 RATES

Classification	Volume (MG)	BOD (Klbs)	SS (Klbs)	Total
R&SNC-I	436,013	621,233	1,303,938	
Unit Cost	\$ 142.03	\$ 100.02	\$ 50.55	
Treatment Cost	\$61,926,926	\$62,135,725	\$65,914,066	\$189,976,717
+ Administration Cost				<u>\$ 119,390</u>
Classification Total				\$190,096,107
Large Commercial-Industrial	32,829	272,793	138,024	
Unit Cost	\$ 142.03	\$ 100.02	\$ 50.55	
Treatment Cost	<u>\$ 4,662,703</u>	<u>\$27,284,756</u>	<u>\$ 6,977,113</u>	<u>\$ 38,924,572</u>
Classification Total	\$ 4,662,703	\$27,284,756	\$ 6,977,113	\$ 38,924,572
Tax-Exempt (and Governmental)	17,884	41,485	141,150	
Unit Cost	\$ 142.03	\$ 100.02	\$ 50.55	
Treatment Cost	\$ 2,540,065	\$ 4,149,330	\$ 7,135,133	\$ 13,824,528
+ Administration Cost	<u>\$ 72,955</u>	<u>\$ 119,177</u>	<u>\$ 204,935</u>	<u>\$ 397,067</u>
Classification Total	\$ 2,613,020	\$ 4,268,507	\$ 7,340,068	\$ 14,221,595
Total Cost				\$243,242,274

The 2009 rates compare with current 2008 rates as follows:

<u>Classification Parameters</u>	<u>2009</u>	<u>2008</u>	<u>% Change</u>
Large Commercial-Industrial			
Volume \$/MG	\$229.37	\$223.72	+ 2.53
BOD \$/Klbs	\$231.90	\$229.23	+ 1.16
SS \$/Klbs	\$174.25	\$178.11	- 2.17
Tax-Exempt			
Volume \$/MG	\$235.96	\$230.29	+ 2.46
BOD \$/Klbs	\$238.56	\$235.98	+ 1.09
SS \$/Klbs	\$179.25	\$183.35	- 2.24
OM&R Factor	0.504	0.499	+ 1.0

The comparison above shows an approximately 2.50 percent increase in the rate for flow for both the Large Commercial-Industrial and Tax-Exempt User classifications. For both classifications, the rate for BOD increased by slightly greater than one percent and the rate for SS decreased by approximately two percent. The 2007 WRP loadings varied from 2006 as follows: the flow decreased by 0.77 percent, the BOD loading increased by 30.13 percent and the SS loading increased by 27.27 percent. The increase in the BOD and SS loadings and decrease in flow lowers the direct unit costs for treatment. The OM&R cost decreased from \$246 million to \$243 million.

The loadings for the Large Commercial-Industrial User classification for 2007 versus 2006 varied as follows: flow increased by 0.24 percent, BOD increased by 26.29 percent and SS increased by 30.03 percent. The reduced seven-day average dry-weather flows observed for 2003 through 2007 and the decrease in the total flow to our WRPs observed in 2007 resulted in an I/I, Rain and Recycle volume of 185,343 MGD for the 2009 rate calculations. This represents a 0.35 percent increase over the I/I, Rain and Recycle volume observed in 2006.

The increase in User Charge rates is attributable to the increased District OM&R cost and a decrease in dry-weather flow. This combined with an increase in volume and BOD loading for both Large Commercial-Industrial and Tax-Exempt Users caused the increase in rates for those parameters. The effect of the increased BOD loading was partially off-set by the decrease unit costs for treatment of BOD. Reductions in User loadings cause an increase in the rates since the allocated classification costs are divided by the loadings to determine the rates.



## Administrative Cost Recovery

The costs incurred by the District in 2007 to administer the SWCO and the UCO were considered in determining the 2009 User Charges for the R&SNC-I User classification, the Large Commercial-Industrial User classification and the Tax-Exempt User classification.

Prior to 2001, the Administrative Costs were included in determining the User Charge rates for flow, BOD and SS for the three classifications of Users listed above and/or were recovered from Users subject to federal categorical pretreatment standards. However, on December 7, 2000, the District's Board of Commissioners (Board) amended the UCO, which altered the method of recovery of the Administrative Costs. Under these amendments, the cost for administering the MPR and the cost for administering the NCE of the SWCO were segregated from the Administrative Costs. Similarly, the cost for administering the UCV requirements of the UCO was also segregated from the Administrative Costs.

Beginning in 2001, the MPR charges were recovered from the Significant Industrial Users in the Large Commercial-Industrial User classification. The NCE charges were recovered from Users who are found in noncompliance with the SWCO. The UCV charges are recovered from the Large Commercial-Industrial User classification.

A portion of the costs associated with MPR, NCE, and UCV were recovered under Section 10 and Appendix F to the UCO. On November 4, 2004 the Board amended the UCO to remove the recovery of the NCE charges from the UCO. Since the NCE charges are incurred by a User for violations of effluent limitations specified in the SWCO, it was determined that the collection of the NCE charges under the SWCO was more fair, efficient and equitable. The collection of the NCE charges under the SWCO was also approved by the Board on November 4, 2004. These changes became effective January 1, 2005. Appendix F to the UCO was redesignated as Appendix E and the MPR and UCV charges applicable to 2005 and subsequent years are now incorporated therein. The NCE charges for 2005 and subsequent years are now incorporated in Appendix F, Enforcement Response Procedure, Paragraph I of the SWCO.

The portion of the MPR and UCV costs that are recovered through the UCS are subject to change every year to reflect District expenses. As shown in Table 1 of this report, the total OM&R cost has been increased from \$401,036,816 in 2007 to \$404,568,566 in 2008, representing an increase of 0.88 percent. The 2009 MPR, UCV and NCE charges were not increased by 0.88 percent over the 2008 rates because the increase in OM&R rates was considered insignificant.