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To: All Oakland County Communities

The purpose of the study was to develop an understanding of the differences between the water and sewer rates communities' charge to consumers throughout Oakland County. Surveys were completed by each of you and a database was compiled. It should be noted that the information obtained related to the rates that were in effect during the spring of 2003 and the associated budget for that timeframe. Based on an analysis of each of the systems broken down into their basic components (capital costs, production, distribution, etc.) a true, or effective, cost was determined for each of these components. These effective rates were calculated using budgeted revenues and expenses and considering budgeted units to be sold to consumers. These rates were then reconciled to the user fees charged to consumers within each of the systems. The final report related to the formulation of this database is enclosed.

The calculation of this "effective rate" both overall and by system components allows for the comparison of communities on a "common currency" basis. Upon analysis, characteristics unique to individual and groups of communities can be identified. The average costs yielded by the analysis can be compared between communities to identify trends, efficiencies, and potential areas of concern.

Very truly yours,

A handwritten signature in black ink that reads "JP McCulloch". The signature is written in a cursive, flowing style.

John P. McCulloch

**OAKLAND COUNTY DRAIN COMMISSIONER
WATER AND SEWER RATE ANALYSIS**

SPRING 2003

TABLE OF CONTENTS

Project Overview	1
Methodology	1
Effective Rate versus User Rate	4
Findings	5
Exhibits	A through G

PROJECT OVERVIEW

The purpose of this project was to aid the Oakland County Drain Commissioner in developing an understanding of the differences between the water and sewer rates its communities charge their customers. To facilitate the gathering of information, a survey was sent to each of the 61 communities within the County. The completed surveys were compiled, and the information was input into a database. The database was reviewed to determine characteristics unique to either individual communities or groups of communities. Once significant factors were identified, they were taken into consideration in an effort to determine the true, or effective, cost of each component of a given system. These effective rates were then reconciled to the user fees that are charged to customers. The development of an effective rate allowed for comparisons between communities on a “common currency” basis. This analysis yielded average costs for each major component of both the water and sewer systems within each Oakland County community.

METHODOLOGY

The project’s methodology addressed several key issues. First, financial and system data for each system had to be obtained. To accomplish this, a survey was designed and sent to each community. Once the data was reviewed and verified, it was entered into the rate database.

Second, the data had to be stratified in a consistent and meaningful manner to allow it to be effectively analyzed. Once in the database, each community’s information was analyzed by components of both expenses and revenue. Recurring common factors between communities were identified and used to stratify the data. (For example, communities who charge flat fees on a quarterly basis and those who charge fees based strictly on consumption.)

Third, systems had to be compared using a common standard. Analysis of the expense components, the revenue components, and the income or loss of a system helped to establish a common comparable gauge, the effective rate.

Lastly, each effective rate had to be reconciled back to the user rate charged to customers.

Survey

The survey, provided to each community in November of 2002, is attached as Exhibits A & B. The information requested related to the community’s current user rate. Because rates are determined on a forward-looking basis, the components of the revenue and expenses of the system were based on budgeted amounts. Upon receiving each completed survey, they were reviewed for obvious errors or incomplete data. Once the data was verified, it was entered into a rate database. Note that the following communities either did not supply answers to the survey or provided incomplete information and as a result have been excluded from the database: Village of Oxford, City of Pontiac, City of Rochester, City of South Lyon and the City of Southfield.

Components of Water Expenses

The expense components of the water systems surveyed include: cost of water purchase and production; water loss; billing, administrative & transmission; and budgeted capital costs to be recaptured in rates.

The cost of water could represent:

- the purchase of water from the Detroit Water and Sewer System (DWSD), or
- the cost of pumping (and possibly treating) from a local waterway or aquifer (e.g., salaries, chemicals and power costs).

This survey certainly does not consider the quality of water differential, if any, between the various water sources. The cost of water will vary significantly between communities that purchase water from the DWSD, as a result of the DWSD rate methodology (for example, DWSD charged West Bloomfield Township \$17.97/mcf for the 2002-03 year, but charged Ferndale only \$5.28). The cost of water between those communities that pump from a waterway or common well will vary significantly depending on the level of treatment required and other operational differences. As a result, this study shows a wide variation in the cost of water between communities. Because this study states all costs in terms of the cost per unit billed to the customer, the rates shown are generally higher than the nominal rates quoted by DWSD.

Water loss is another component to be considered. The volume of water billed to customers will always be lower than the volume of water purchased from DWSD or pumped from a waterway/aquifer (because of unmetered water used in fire hydrants, flushing, slow meters, etc.). The water “lost” to these events is listed as a separate cost component when available. Many communities do not budget separately for water loss. As a result, the cost of water loss is not separately stated for all communities.

Billing, administrative and transmission costs relate to the water systems’ internal costs to operate the department. This includes reading the meters, billing customers, collecting on the billings, responding to all operating issues such as line breakage, faulty meters, line flushing, and any other work orders, and all administrative costs such as accounting, legal, etc. In addition, many communities allocate a portion of their general administrative operations to the water department to cover common expenses.

Capital costs include some combination of capital outlay, depreciation, and debt service (principal and interest). The combination of those components used by any individual community varies depending on the rate philosophy of its governing body. The “utility method” (used by DWSD, for instance, to charge its suburban customers) uses depreciation and the interest portion of debt service. The “cash method” (used by DWSD for its own customers) uses capital outlay and debt service principal and interest. This study shows both methods being used, as well as some combinations of these methods.

Components of Water Revenue

The revenue components of the water systems surveyed include: Water and related sales, water-restricted property taxes, other revenue, unrestricted interest earnings, and contributions from other funds.

The sale of water to customers is of course the major source of revenue within a water system. The most common method of charging customers is a single usage rate (stated as a dollar amount per thousand cubic feet, hundred cubic feet, or thousand gallons); several communities also have either a minimum bill or a fixed fee.

Property taxes levied to support system maintenance, replacement, or expansion are a source of revenue in some communities.

Other revenue would usually include meter charges, late charges, and other miscellaneous items.

All systems earn interest on invested monies. However, these monies are often restricted to specific uses such as satisfying bond covenants, etc. Thus, only unrestricted interest earnings that could be used to finance operations were considered in the survey.

Lastly, contributions from other funds of the local government unit are frequently a source of revenue within water systems. Whether this money is transferred on a subsidy basis to cover operations or for a specific purpose or project, revenue is recognized upon the transfer of these funds to the water system.

Components of Sewer Expenses

The expense components of the sewer systems surveyed include: cost of treatment; billing, administrative & transmission; and budgeted capital costs to be recaptured in rates.

The cost of sewer treatment could represent:

- a charge from Oakland County to flow sewage through the county interceptor to the DWSD sewage treatment plant,
- the cost to operate the community's own sewage treatment plant, or
- the cost to operate common septic systems.

As with water, DWSD charges each sewage district a different rate. Oakland County communities participate in the following sewage systems: Clinton-Oakland, Evergreen-Farmington, Farmington, Rouge Valley and S.E. Oakland County. Each of these has a different rate from DWSD.

Billing, administrative and transmission costs relate to the internal costs to operate each of the sewer systems. This includes billing customers, collecting on the billings, responding to all operating issues such as sewer line inflow and infiltration and any other necessary work orders,

and all administrative costs such as accounting, legal, etc. In addition, many communities allocate a portion of their general administrative operations to the sewer department to cover common expenses.

As is the case with water rates, capital costs to be recaptured in rates is a combination of capital outlay, depreciation, and debt service (principal and interest), depending on the philosophy of the local unit's governing body.

Components of Sewer Revenue

The revenue components of the sewer systems surveyed include: sewer sales, property taxes, other revenue, unrestricted interest earnings, and contributions from other funds.

The sale of sewer service to the customers is based on either a usage rate or a fixed fee, or in some instances both, and is the major source of revenue within a sewer system. Where user rates are applied, the volume used is based on the water meter, since sewage metering is prohibitively expensive. For this reason, systems need to use fixed rates in instances where water is not sold to a customer. For the most part, these fixed rates are adjusted for commercial or industrial customer through the use of "residential equivalent units" or REUs. A few communities that use water meters also allow customers to utilize an "outside meter" to measure water leaving the home (and therefore not entering the sanitary sewage system); these systems charge the sewer rate on the net water volume staying in the home.

Property taxes levied to support system maintenance, replacement, or expansion are a source of revenue in some communities.

Other revenue would usually include late charges and other miscellaneous items.

All systems earn interest on invested monies. However, these monies are often restricted to specific uses such as satisfying bond covenants, etc. Thus, only unrestricted interest earnings were considered in the survey.

Lastly, contributions from other funds of the local government unit are frequently a source of revenue to sewer systems. Whether this money is transferred in on a subsidy basis to cover operations or for a specific purpose or project, revenue is recognized upon the transfer of these funds to the sewer system.

EFFECTIVE RATE VERSUS USER RATE

Upon analysis of the information obtained through the surveys, it was evident that communities are using a wide array of philosophies for setting rates. In addition, there are many factors that make it difficult to directly compare rates between communities based solely on the user rates charged to customers. As a result, the Drain Commissioner chose to not only compare actual user fee rates, but also compare effective rates. Effective rates were developed for both water and sewer. In addition, effective rates were developed for each of the components within both the water and sewer systems of each community. The concept of an effective rate is an attempt

to consider the differentiating factors between communities and get to an apple-to-apple comparison.

To simply compare stated user rates between communities would not yield the true picture of any of the systems' financial situations or philosophies. Factors including fixed quarterly billings, minimum billings, transfers from other funds and property tax levies are not necessarily included in the rate-setting models. However, all of these factors do have an effect on the true cost of a system to the end users.

FINDINGS

As a result of the survey process, a comprehensive database has been developed. A matrix that includes each of the 61 communities and details the main factors of both their water and sewer systems has been included as Exhibit G.

The summary table of the user rate and effective rate for water has been included as Exhibits C (Water) and E (Sewer). The table is intended to illustrate the factors that contribute to the user rate being different from the combined effective rate. Items such as a minimum bill would cause the effective rate to be higher than the user rate given that someone using an amount less than the minimum level of water is actually paying more per unit. If a minimum bill, flat fee, or the "Other" column is not detailed, any major unreconciled difference between the two rates most likely relates to reserves (the use of or building of reserves). In addition, it can be noted on Exhibit E that communities charging a significant flat fee per quarter (greater than \$10 per quarter for the purposes of this study) and those charging a combination of a flat fee and a usage fee have been segregated from those that do not. Without having access to any measurement of quantity of sewer treatment billed, we were not able to develop a "common currency" with which to measure these communities.

Breakdowns of the components of the combined effective rates for the water and sewer systems are detailed in Exhibits D (Water) and F (Sewer). Items that contribute to reducing the effective rate (in other words, offset the net expenses of the system), such as other revenue sources and decreases in reserves, are shown as negative numbers per unit. In all Exhibits, the combined effective rate and user rate are given in both thousands of gallons as well as thousands of cubic feet.

Averages (in total and by components) have been computed on the four summary tables to facilitate the comparison of any of the communities to the "average" of all other communities.

Comparisons can be made between communities from the information contained in Exhibits C through F. In addition, more advanced analysis of the differentiating factors can begin to be examined. When comparing the variations in the cost factors, the following considerations should be kept in mind:

- the cost of water purchased or produced does not take the quality of water into consideration; in addition, the same quality water (i.e., assuming all DWSD water would have the same quality) comes at a widely varying cost.

- The billing/ administrative/ transmission costs may include some costs that should be included in water production due to nuances in the cost accounting system.
- The capital costs vary depending on the age of the system (older systems need major repairs or replacement) and the billing philosophy of the governing body.
- Some newer systems have significant “other revenue” derived from significant numbers of new installation related fees, etc.
- Because all communities need a certain level of working capital to operate their systems, there can be some significant needs to add to or scale down the reserves.

Oakland County Drain Commission Water Rate Survey

Exhibit A

Name of Local Unit: _____

Note: If you have more than one rate system, please complete a separate sheet for each system

Budgeted Revenues:

Water customer billings	\$ _____
Interest earnings	_____
Penalty & interest charges	_____
Other (please describe):	_____

subtotal	_____

Budgeted Costs:

Cost of water purchased/ pumped	_____	
Operational costs (maint, billg, admin)	_____	
Capital costs, by type:		
Depreciation	_____	
Debt service	_____	(circle one: includes princ, interest, both)
Capital outlay	_____	
subtotal	_____	
Planned increase (reduction) in reserves	_____	

The following is our current rate structure that will achieve the above Water customer billings: Rate structure will be in effect from _____ to _____:	
1.	Usage rate: \$ _____ per (thousand gallons, MCF, CCF, REU) X Expected usage: X _____ units (thousand gallons, MCF, CCF, REU) = Usage billings of: \$ _____
2.	Minimum bill (if any) covers the first _____ units (thousand gallons, MCF, CCF, REU) Minimum bill (if any) of: \$ _____ each (quarter, month, 2 month period) X Number of minimum bills: X _____ Less amount already counted in item #1, actual usage of the minimum times billing rate: _____ (i.e., reduce this by the overlap with item #1 above) = Additional rev. from min. billings of: \$ _____
3.	Additional recurring charges (if any - meter charge, debt charge, base bill, etc.): Describe basis of recurring charge: _____ Amount of recurring charge: \$ _____ each (quarter, month, 2 month period) X customers per year: X _____ = Additional rev. from other charges of: \$ _____
(should agree with above water customer billing)	
Total usage, minimum & other charges \$ _____	

Name of Local Unit: _____

Note: If you have more than one rate system, please complete a separate sheet for each system

Budgeted Revenues:

Sewer customer billings	\$ _____
Interest earnings	_____
Penalty & interest charges	_____
Other (please describe):	_____
subtotal	_____

Budgeted Costs:

Cost of sewer treatment	_____
Operational costs (maint, billg, admin)	_____
Capital costs, by type:	
Depreciation	_____
Debt service	_____ (circle one: includes princ, interest, both)
Capital outlay	_____
subtotal	_____
Planned increase (reduction) in reserves	_____

The following is our current rate structure that will achieve the above Sewer customer billings: Rate structure will be in effect from _____ to _____:	
1.	Usage rate: \$ _____ per (thousand gallons, MCF, CCF, REU) X Expected usage: X _____ units (thousand gallons, MCF, CCF, REU) * = Usage billings of: \$ _____
2.	Minimum bill (if any) covers the first _____ units (thousand gallons, MCF, CCF, REU) Minimum bill (if any) of: \$ _____ each (quarter, month, 2 month period) X Number of minimum bills: X _____ Less amount already counted in item #1, actual usage of the minimum times billing rate: _____ (i.e., reduce this by the overlap with item #1 above) = Additional rev. from min. billings of: \$ _____
3.	Additional recurring charges (if any - meter charge, debt charge, base bill, etc.): Describe basis of recurring charge: _____ Amount of recurring charge: \$ _____ each (quarter, month, 2 month period) X customers per year: X _____ = Additional rev. from other charges of: \$ _____
(should agree with above sewer customer billing)	
Total usage, minimum & other charges \$ _____	

* - Do you adjust sewer usage for water used outside the house (e.g. by use of an outside meter?) _____

**Analysis of Water Rates in Oakland County Communities
Customer Rate Schedule**

Exhibit C

Communities who purchase water

	User Rate (per MCF)	User Rate (per 1000 gal)	Significant Reconciling Items			Combined Effective Rate (per 1000 gal)	Combined Effective Rate (per MCF)	Notes
			Minimum per Qtr	Quarterly Fee	Other			
Auburn Hills	16.880	2.257	-	-	-	2.257	16.880	
Berkley	8.800	1.176	-	11.12	-	1.819	13.604	
Beverly Hills	14.250	1.905	-	6.00	-	1.903	14.239	
Bingham Farms	10.480	1.401	20.960	-	-	1.401	10.480	
Birmingham	17.504	2.340	-	6.33	Prop. taxes	3.620	27.076	
Bloomfield Hills	13.620	1.821	27.240	-	-	1.821	13.620	
Bloomfield Twp	17.579	2.350	-	-	-	2.351	17.590	
Clawson	18.940	2.532	-	-	-	2.532	18.940	
Commerce Township	19.260	2.575	38.520	-	-	2.575	19.260	
Farmington	18.926	2.530	-	-	-	2.530	18.926	
Farmington Hills	17.950	2.400	28.720	-	-	2.400	17.950	
Ferndale	23.564	3.150	-	-	-	3.150	23.564	
Hazel Park	19.000	2.540	-	-	-	2.711	20.277	
Huntington Woods	18.550	2.480	-	4.55	-	2.688	20.108	
Keego Harbor	17.230	2.303	27.570	-	-	2.303	17.230	
Lake Orion Village	28.500	3.810	28.25	-	-	4.994	37.355	
Lathrup Village	13.510	1.806	-	-	-	1.856	13.887	
Madison Heights	14.700	1.965	-	-	-	1.747	13.070	
Northville	31.343	4.190	-	2.46	-	4.757	35.582	C
Novi	18.552	2.480	27.00	-	-	2.894	21.648	
Oak Park	17.300	2.313	-	-	-	2.085	15.595	
Orchard Lake Village	22.950	3.068	-	-	-	3.068	22.950	
Orion Township	19.400	2.593	-	-	-	2.631	19.682	
Pleasant Ridge	10.280	1.374	-	2.40	-	1.478	11.053	
Rochester Hills	19.000	2.540	-	2.04	-	2.718	20.331	
Royal Oak	13.500	1.805	-	-	-	1.804	13.496	
Royal Oak Twp North	26.600	3.556	53.200	-	-	3.556	26.600	C
Royal Oak Twp South	11.760	1.572	23.520	-	-	1.572	11.760	C
Sylvan Lake	17.953	2.400	-	27.00	-	3.749	28.041	
Troy	14.680	1.962	-	-	-	1.962	14.680	
Walled Lake	20.197	2.700	-	10.50	-	2.800	20.945	
West Bloomfield Twp	25.250	3.375	-	-	-	3.399	25.430	
Wixom	17.560	2.347	-	-	Prop. taxes	4.842	36.217	
AVERAGE	18.048	2.413				2.666	19.941	

Communities who produce their own water

				Fee per Qtr				
Highland Township	9.500	1.270	40.00	-	-	1.915	14.324	
Holly Village	12.418	1.660	-	12.500	-	2.576	19.266	
Independence Twp	10.200	1.364	-	-	-	1.364	10.200	
Milford Village	16.233	2.170	-	12.000	-	2.708	20.258	
Oakland Township	9.000	1.203	23.50	-	-	1.375	10.285	
Oxford Township	9.000	1.203	29.50	-	-	1.707	12.769	
Waterford Township	6.000	0.802	-	-	-	1.063	7.950	
AVERAGE	10.336	1.382		12.000		1.815	13.579	

C - Community is serviced by multiple water systems

Analysis of Water Rates in Oakland County Communities
Cost of Providing Water by Components per thousand gallons (and MCF in total)

Exhibit D

Communities who purchase water

	Water purch, trans & production	Water Loss	Bill, Admin & Distribution	Debt and/or Capital Costs	Other revenue sources	Increase (Decrease) in reserves	Combined Effective Rate per 1000 gal	Combined Effective Rate per MCF
Auburn Hills	1.655	0.087	1.695	0.293	(0.322)	(1.152)	2.257	16.880
Berkley	1.178	D	1.076	0.503	(0.832)	(0.107)	1.819	13.604
Beverly Hills	1.095	0.067	0.763	1.426	(0.670)	(0.777)	1.903	14.239
Bingham Farms	1.064	0.068	0.356	-	(0.087)	0.000	1.401	10.480
Birmingham	1.130	0.043	1.394	1.684	(0.743)	0.111	3.620	27.076
Bloomfield Hills	1.260	0.069	0.544	-	(0.052)	0.000	1.821	13.620
Bloomfield Twp	2.018	D	0.456	0.043	(0.054)	(0.111)	2.351	17.590
Clawson	1.064	D	0.698	0.107	(0.088)	0.750	2.532	18.940
Commerce Township	1.906	0.100	0.659	-	(0.090)	(0.001)	2.575	19.260
Farmington	1.223	0.233	1.011	-	(0.194)	0.257	2.530	18.926
Farmington Hills	1.755	0.112	0.626	-	(0.094)	0.001	2.400	17.950
Ferndale	0.706	D	0.894	2.213	(0.119)	(0.545)	3.150	23.564
Hazel Park	0.593	0.113	1.361	0.851	(0.270)	0.062	2.711	20.277
Huntington Woods	1.173	D	1.552	0.017	(0.054)	-	2.688	20.108
Keego Harbor	1.358	0.136	0.930	-	(0.124)	0.003	2.303	17.230
Lake Orion Village	3.329	D	0.474	3.050	(1.432)	(0.428)	4.994	37.355
Lathrup Village	1.076	0.133	1.030	-	(0.183)	(0.200)	1.856	13.887
Madison Heights	0.695	0.106	0.686	0.672	(0.166)	(0.245)	1.747	13.070
Northville	1.880	D	2.034	0.932	(0.435)	0.345	4.757	35.582
Novi	2.077	0.181	0.137	0.606	(0.215)	0.109	2.894	21.648
Oak Park	0.655	0.070	0.661	0.885	(0.274)	0.088	2.085	15.595
Orchard Lake Village	2.198	0.205	0.806	-	(0.140)	0.000	3.068	22.950
Orion Township	1.993	0.234	0.688	0.253	(1.164)	0.627	2.631	19.682
Pleasant Ridge	1.294	D	0.215	0.293	(0.088)	(0.236)	1.478	11.053
Rochester Hills	1.950	0.014	1.147	0.512	(0.328)	(0.577)	2.718	20.331
Royal Oak	1.064	D	0.842	-	(0.102)	-	1.804	13.496
Royal Oak Twp North	2.854	0.098	0.628	-	(0.025)	0.000	3.556	26.600
Royal Oak Twp South	0.884	0.098	0.619	-	(0.025)	(0.004)	1.572	11.760
Sylvan Lake	2.134	D	1.873	0.299	(0.598)	0.040	3.749	28.041
Troy	1.216	D	0.588	0.423	(0.282)	0.017	1.962	14.680
Walled Lake	1.918	0.101	1.912	1.500	(1.675)	(0.956)	2.800	20.945
West Bloomfield Twp	2.402	D	0.923	0.012	(0.229)	0.291	3.399	25.430
Wixom	1.518	D	0.763	1.946	(0.092)	0.707	4.842	36.217
AVERAGE	1.525	0.113	0.910	0.842	(0.341)	(0.058)	2.666	19.941

Communities who produce their own water

	Water purch/ production	Water Loss	Bill/Admin/ Trans	Capital Costs	Other revenue sources	Increase (Decrease) in reserves	Combined Effective Rate per 1000 gal	Combined Effective Rate per MCF
Highland Township	1.214	D	0.722	-	(0.034)	0.012	1.915	14.324
Holly Village	1.423	D	0.474	0.754	(0.252)	0.177	2.576	19.266
Independence Township	-	D	1.005	0.237	(0.114)	0.236	1.364	10.200
Milford Village	0.792	D	1.009	9.279	(8.460)	0.088	2.708	20.258
Oakland Township	0.600	D	0.817	-	(0.084)	0.042	1.375	10.285
Oxford Township	0.881	D	0.918	-	(0.098)	0.006	1.707	12.769
Waterford Township	0.910	D	0.799	0.204	(0.398)	(0.452)	1.063	7.950
AVERAGE	0.970	-	0.821	2.095	(1.349)	0.015	1.815	13.579

D - Community does not budget specifically for water loss, and future water loss is not projected.

**Analysis of Sewer Rates in Oakland County Communities
Customer Rate Schedule**

Exhibit E

Communities who charge for usage only

	User Rate (per MCF)	User Rate (per 1000 gal)	Significant Reconciling Items			Combined Effective Rate (per 1000 gal)	Combined Effective Rate (per MCF)	Notes
			Minimum per Qtr	Quarterly Fee	Other			
Auburn Hills	16.620	2.222	-	-	-	2.222	16.620	
Beverly Hills	29.880	3.994	-	2.640	-	3.996	29.891	
Bingham Farms	14.320	1.914	28.640	-	-	1.861	13.923	
Birmingham	32.465	4.340	-	-	Prop. taxes	4.549	34.027	
Bloomfield Hills	17.130	2.290	29.680	-	-	1.984	14.840	
Bloomfield Twp	15.260	2.040	-	5.000	-	2.197	16.434	
Clawson	31.060	4.152	-	-	-	4.152	31.060	
Farmington	23.713	3.170	-	-	-	3.170	23.713	E
Farmington Hills	16.930	2.263	27.080	-	-	2.263	16.930	
Ferndale	26.636	3.561	-	-	-	3.561	26.636	
Franklin Village	27.010	3.611	-	-	-	3.610	27.007	
Hazel Park	23.700	3.168	-	-	-	2.540	18.999	
Huntington Woods	28.970	3.873	-	7.100	-	4.198	31.405	
Keego Harbor	18.620	2.489	29.790	-	-	2.489	18.620	
Lake Orion Village	15.700	2.099	51.860	-	-	2.918	21.825	
Lathrup Village	17.980	2.404	-	-	-	2.583	19.322	
Madison Heights	16.532	2.210	-	-	-	2.210	16.532	
Milford Village	35.757	4.780	-	4.330	-	4.894	36.607	E, F
Northville	28.276	3.780	-	2.460	-	3.906	29.222	
Oak Park	29.000	3.877	-	-	-	3.443	25.754	
Orchard Lake	20.730	2.771	-	-	-	2.771	20.730	
Oxford Township	17.380	2.323	-	-	-	2.323	17.380	
Pleasant Ridge	33.580	4.489	-	-	-	4.549	34.027	
Rochester Hills	16.700	2.232	-	2.650	-	2.490	18.627	E
Royal Oak	29.150	3.897	-	-	-	3.898	29.158	
Royal Oak Township	17.890	2.392	35.780	-	-	2.412	18.045	
Troy	12.320	1.647	-	-	-	1.647	12.320	
West Bloomfield Township	17.750	2.373	-	-	-	2.455	18.364	
Wixom	4.850	0.648	-	-	-	0.540	4.042	F
AVERAGE	21.928	2.931				2.986	22.337	

Communities who charge a flat rate AND bill for usage

	User Rate (per MCF)	User Rate (per 1000 gal)	Minimum per Qtr	Quarterly Fee	Other	Effective Rate (per 1000 gal)	Effective Rate (per MCF)	
Berkley	9.700	1.297	-	46.210	-	4.342	32.481	
Holly Village	19.300	2.580	-	59.000	-	7.061	52.819	E, F
Sylvan Lake	38.525	5.150	-	64.000	-	9.751	72.941	
Walled Lake	10.473	1.400	-	15.000	-	1.491	11.153	E
Waterford Township	6.500	0.869	-	42.900	-	2.542	19.018	
AVERAGE	16.899	2.259		45.422	-	5.037	37.682	

Communities who charge a flat rate only

	Quarterly Fee	Rate per REU	
Commerce/ White Lake Twps	-	62.520	F, G
Independence Township	-	52.000	
Oakland Township	-	52.310	
Orion Township	-	45.160	
AVERAGE	-	52.998	

E - Community allows residents to utilize dual meters for outside watering.

F - Community has its own plant.

G - White Lake Twp adds \$5 to its flat rate above Commerce charges.

Analysis of Sewer Rates in Oakland County Communities
Cost of Providing Sewage Services by Component per thousand gallons (and MCF in total)

Exhibit F

Communities who charge for usage only

	DWSD cost or Treatment	Bill, Admin, Collection System	Debt and/or Capital Costs	Other revenue sources	Increase (Decrease) in reserves	Combined Effective Rate per 1000 gal	Combined Effective Rate per MCF	Notes
Auburn Hills	1.966	0.769	0.176	(0.387)	(0.302)	2.222	16.620	
Beverly Hills	1.921	1.106	0.889	(0.122)	0.202	3.996	29.891	
Bingham Farms	1.681	0.216	-	(0.036)	0.000	1.861	13.923	
Birmingham	2.733	1.160	1.040	(0.332)	(0.053)	4.549	34.027	
Bloomfield Hills	1.762	0.238	-	(0.014)	(0.002)	1.984	14.840	
Bloomfield Twp	1.542	0.524	0.416	(0.108)	(0.177)	2.197	16.434	
Clawson	2.686	0.698	0.733	(0.088)	0.123	4.152	31.060	
Farmington	1.987	1.251	-	(0.240)	0.171	3.170	23.713	
Farmington Hills	1.748	0.394	0.160	(0.044)	0.005	2.263	16.930	
Ferndale	2.717	0.894	0.790	(0.212)	(0.628)	3.561	26.636	
Franklin Village	1.643	1.768	-	(0.135)	0.334	3.610	27.007	
Hazel Park	1.634	1.027	-	(0.327)	0.205	2.540	18.999	
Huntington Woods	2.684	1.552	0.017	(0.054)	-	4.198	31.405	
Keego Harbor	1.748	0.814	-	(0.107)	0.034	2.489	18.620	
Lake Orion Village	2.501	0.475	0.807	(0.450)	(0.415)	2.918	21.825	
Lathrup Village	2.083	0.616	-	(0.116)	-	2.583	19.322	
Madison Heights	1.572	0.599	0.434	(0.146)	(0.250)	2.210	16.532	
Milford Village	2.263	1.613	2.593	(1.575)	-	4.894	36.607	
Northville	2.235	1.201	1.213	(0.395)	(0.347)	3.906	29.222	
Novi	2.034	0.142	0.632	(0.224)	(0.376)	2.208	16.517	F
Oak Park	2.164	0.661	1.237	(0.064)	(0.555)	3.443	25.754	
Orchard Lake	1.711	0.976	-	(0.063)	0.147	2.771	20.730	
Oxford Township	1.119	1.423	-	(0.218)	-	2.323	17.380	
Pleasant Ridge	2.757	0.668	0.764	(0.056)	0.414	4.549	34.027	
Rochester Hills	1.574	1.072	2.325	(0.451)	(2.030)	2.490	18.627	
Royal Oak	2.491	0.842	0.729	(0.163)	-	3.898	29.158	
Royal Oak Township	2.166	0.282	-	(0.035)	(0.001)	2.412	18.045	
Troy	1.292	0.400	0.202	(0.111)	(0.135)	1.647	12.320	
West Bloomfield Township	2.073	0.345	0.126	(0.026)	(0.063)	2.455	18.364	
Wixom	1.426	0.525	1.605	(1.865)	(1.152)	0.540	4.042	
AVERAGE	1.997	0.808	0.844	(0.272)	(0.194)	2.935	21.953	

Communities who charge a flat rate AND bill for usage

Berkley	2.746	1.076	1.418	(0.891)	(0.007)	4.342	32.481	
Holly Village	3.089	0.331	3.093	(0.625)	1.173	7.061	52.819	
Sylvan Lake	7.788	2.230	0.239	(0.725)	0.219	9.751	72.941	
Walled Lake	2.576	0.870	2.084	(2.411)	(1.628)	1.491	11.153	
Waterford Township	1.301	0.907	0.477	(0.634)	0.491	2.542	19.018	
AVERAGE	3.500	1.083	1.462	(1.057)	0.050	5.037	37.682	

Communities who charge a flat rate only (measured in residential equivalent units)

	Treatment	Bill/Admin/ Collection System	Capital Costs	Other revenue sources	Increase (Decrease) in reserves	Combined Effective Rate per REU
Commerce/White Lk Twps	41.180	24.661	-	(3.325)	-	62.516
Independence Township	34.375	24.781	33.406	(13.438)	(26.000)	53.125
Oakland Township	34.559	18.712	-	(0.966)	0.003	52.308
Orion Township	37.635	19.445	7.527	(25.843)	6.398	45.163
AVERAGE	36.937	21.900	20.467	(10.893)	(6.533)	53.278

F - Novi is currently served by the Huron-Rouge and Novi-Walled Lake sewer systems. The city is currently unable to allocate revenues and expenses between the systems due to software limitations. As a result, total sewer revenues and expenses are included on this exhibit but excluded from Exhibit E as separate effective rates for each system cannot be determined.

**Oakland County Drain Project
Rate Factor Matrix**

Exhibit G

WATER

	Auburn Hills	Berkley	Beverly Hills	Bingham Farms	Birmingham	Bloomfield Hills	Bloomfield Township	City of Clarkston	Clawson	Commerce Township	Farmington	Farmington Hills
Does the Community:												
1. Have a Water system?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Include Capital Costs in Rate?												
Debt service	No	No	No	No	Yes	No	No	N/A	No	No	No	No
Depreciation	Yes	No	Yes	No	Yes	No	No	N/A	Yes	No	No	No
Capital Outlay	Yes	Yes	Yes	No	Yes	No	No	N/A	No	No	Yes	No
3. Use multiple systems?	No	No	No	No	No		No					

SEWER

	Auburn Hills	Berkley	Beverly Hills	Bingham Farms	Birmingham	Bloomfield Hills	Bloomfield Township	City of Clarkston	Clawson	Commerce/White Lake Townships	Farmington	Farmington Hills
Does the Community:												
1. Have a Sewer system?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Include Capital Costs in Rate?												
Debt service	Yes	Yes	Yes	No	Yes	No	No	N/A	Yes	No	No	Yes
Depreciation	Yes	No	Yes	No	Yes	No	No	N/A	Yes	No	No	No
Capital Outlay	No	Yes	No	No	Yes	No	No	N/A	No	No	No	No
3. Use multiple systems:			No		No	No	No			A	No	No
4. Allow the use of dual meters?			No		No		No					Yes

A - Commerce and White Lake townships are served by the same county sewer system. They are combined in this database. Commerce purchases approx. 82% of the sewer units from the County (about 3.9 MCF/unit)

**Oakland County Drain Project
Rate Factor Matrix**

Exhibit G

WATER

									Lake				
	Ferndale	Franklin Village	Hazel Park	Highland Township	Holly Village	Huntington Woods	Independence Township	Keego Harbor	Orion Village	Lathrup Village	Lyon Township	Madison Heights	Milford Village
Does the Community:													
1. Have a Water system?	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
2. Include Capital Costs in Rate?													
Debt service	No	N/A	Yes	No	Yes	No	No	No	Yes	No	N/A	Yes	Yes
Depreciation	Yes	N/A	Yes	No	No	No	Yes	No	Yes	No	N/A	Yes	No
Capital Outlay	Yes	N/A	Yes	No	No	Yes	Yes	No	Yes	No	N/A	Yes	Yes
3. Use multiple systems?				No									

SEWER

									Lake				
	Ferndale	Franklin Village	Hazel Park	Highland Township	Holly Village	Huntington Woods	Independence Township	Keego Harbor	Orion Village	Lathrup Village	Lyon Township	Madison Heights	Milford Village
Does the Community:													
1. Have a Sewer system?	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Include Capital Costs in Rate?													
Debt service	Yes	No	No	N/A	Yes	No	No	No	No	No	No	Yes	Yes
Depreciation	Yes	No	No	N/A	No	No	Yes	No	Yes	No	No	Yes	No
Capital Outlay	Yes	No	No	N/A	No	Yes	Yes	No	No	No	No	Yes	No
3. Use multiple systems:													
4. Allow the use of dual meters?					Yes		No						Yes

**Oakland County Drain Project
Rate Factor Matrix**

Exhibit G

WATER

	City of Northville	Novi	Oak Park	Oakland Township	Orchard Lake Village	Orion Township	Oxford Township	Oxford Village	City of Pleasant Ridge	Pontiac	Rochester	Rochester Hills
Does the Community:												
1. Have a Water system?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Include Capital Costs in Rate?												
Debt service	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	N/A	No
Depreciation	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	N/A	Yes
Capital Outlay	Yes	No	Yes	No	No	Yes	No	Yes	No	Yes	N/A	Yes
3. Use multiple systems?	No								No			

SEWER

	City of Northville	Novi	Oak Park	Oakland Township	Orchard Lake Village	Orion Township	Oxford Township	Oxford Village	City of Pleasant Ridge	Pontiac	Rochester	Rochester Hills
Does the Community:												
1. Have a Sewer system?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Include Capital Costs in Rate?												
Debt service	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	N/A	Yes
Depreciation	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	N/A	Yes
Capital Outlay	Yes	No	Yes	No	No	Yes	No	Yes	No	Yes	N/A	Yes
3. Use multiple systems:	No		No	No								
4. Allow the use of dual meters?	No		No						No			Yes

**Oakland County Drain Project
Rate Factor Matrix**

Exhibit G

WATER

	Royal Oak Township	Royal Oak	South Lyon	Southfield Township	City of Southfield	Springfield Twp	Sylvan Lake	Troy	Walled Lake	Waterford Township	West Bloomfield Twp	White Lake Twp
Does the Community:												
1. Have a Water system?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Include Capital Costs in Rate?												
Debt service	No	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	N/A
Depreciation	No	No	No	Yes	Yes	No	Yes	Yes	No	No	No	N/A
Capital Outlay	No	No	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	N/A
3. Use multiple systems?	Yes	No										

SEWER

	Royal Oak Township	Royal Oak	South Lyon	Southfield Township	City of Southfield	Springfield Twp	Sylvan Lake	Troy	Walled Lake	Waterford Township	West Bloomfield Twp	White Lake Twp
Does the Community:												
1. Have a Sewer system?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Include Capital Costs in Rate?												
Debt service	No	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No	N/A
Depreciation	No	No	No	Yes	Yes	No	Yes	Yes	No	No	No	N/A
Capital Outlay	No	No	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	N/A
3. Use multiple systems:	No										Yes	A
4. Allow the use of dual meters?		No		No					Yes			

