

**PUBLIC HEARING ON  
PROPOSED WATER AND WASTEWATER RATES  
2008**

**WATER DEPARTMENT  
PHILADELPHIA, PENNSYLVANIA**

**SUPPLEMENTAL  
DIRECT TESTIMONY OF  
J. ROWE MCKINLEY  
AND  
EXHIBIT JRM-3**

**MARCH 2008**



**BLACK & VEATCH**  
building a **world** of difference™



PHILADELPHIA, PENNSYLVANIA

PUBLIC HEARING ON  
PROPOSED WATER AND WASTEWATER RATES  
2008

SUPPLEMENTAL DIRECT TESTIMONY OF J. ROWE MCKINLEY, VICE PRESIDENT

Q. PLEASE STATE YOUR NAME AND BUSINESS AFFILIATION.

A. My name is Jennings Rowe McKinley II. I am a registered professional engineer, and a Vice President in the firm of Black & Veatch Corporation, 11401 Lamar Avenue, Overland Park, Kansas.

Q. MR. MCKINLEY, TELL US THE PURPOSE OF YOUR SUPPLEMENTAL TESTIMONY IN THIS PUBLIC HEARING ON PROPOSED WATER AND WASTEWATER RATES FOR THE PERIOD OF FISCAL YEARS 2009 THROUGH 2012.

A. The purpose of this supplemental testimony and related exhibit is to provide for an alternative rate methodology for the recovery of stormwater related costs for non-residential accounts for the three year period of Fiscal Years 2010 through 2012.

Q. PLEASE DESCRIBE THE NATURE OF THIS ALTERNATIVE STORMWATER RATE METHODOLOGY AND THE REASON FOR PROPOSING IT AT THIS TIME.

A. As was discussed in my original testimony, the issue of the appropriate methodology for recovering the costs associated with stormwater management is one that recognizes a customer's parcel size and impervious characteristics. The citizens advisory group which was convened by the Water Department in the mid to late 1990s to review alternative stormwater cost recovery methodologies recommended

that stormwater management costs be recovered based on a combination of system gross area and system impervious area. The methodology recommended that 80 percent of the cost recovery be borne by the system's billable impervious area and 20 percent of the cost recovery be borne by the system's billable total gross area. As was also discussed in my original testimony, the Water Department was able to recognize and implement, in part, the recommendations of the citizens advisory group in the rate hearings which were held related to the proposed rates for Fiscal Years 2002 through 2004, and again in the rate hearing related to the proposed rates for Fiscal Years 2005 through 2008. Over the three year period of Fiscal Years 2002 through 2004, the stormwater costs allocable to small customers (including residential rows, twins, singles and other small non-residential customers with 5/8-inch meters) were phased-in and recovered through a fixed service charge based upon the weighted average gross and impervious area per customer for the residential customer base in the City. These service charges reflected the 80/20 impervious area/gross area relationship and the parcel basis cost recovery which had been advocated by the citizens advisory group. The balance of the stormwater costs not recovered from these smaller customers were allocated to and recovered from the larger customers of the system.

Thus, while a specific move to a more appropriate method for cost recovery of stormwater charges for residential accounts was established with the rates developed for Fiscal Years 2002 through 2004, it was necessary to continue to recover the balance of the total annual stormwater costs from larger customers based on the size of the customer's water meter, on an equivalent meter basis. The lack of necessary

technical tools and databases, including an adequate GIS system, to enable the determination of impervious area, and the lack of a billing system that was capable of phasing-in cost recovery from a meter size based methodology to a parcel based billing methodology, precluded moving towards a parcel based cost recovery system for the larger customers during the hearings for the rates for Fiscal Years 2002 through 2004.

Q. MR. MCKINLEY WAS THE PARCEL BASED SYSTEM FOR THE RECOVERY OF STORMWATER COSTS FOR LARGER CUSTOMERS IMPLEMENTED DURING THE RATE HEARING FOR THE PROPOSED RATES FOR FISCAL YEARS 2005 THROUGH 2008?

A. No. There was continued discussion of the need to implement a more equitable basis of cost recovery for stormwater costs allocable to individual customers within the large customer group. However, at the time the necessary support systems to enable a transition to parcel based stormwater recovery charges for non-residential (larger meter) customers were still not available to make that a viable solution. Accordingly, the stormwater cost recovery for larger customers continued to be based upon the equivalent meter basis as a result of the rate hearing for the period of Fiscal Years 2005 through 2008.

Q. MR. MCKINLEY, HAVE THE NECESSARY TOOLS, EQUIPMENT AND TECHNOLOGY BECOME AVAILABLE TO BE USED FOR IMPLEMENTING THE PARCEL BASED STORMWATER COST RECOVERY SYSTEM FOR ALL CUSTOMERS IN THIS RATE HEARING PROCESS?

- A. Yes, a new billing system that recently went live should be capable of handling the transition from the equivalent meter system of stormwater cost recovery for larger customers to a parcel based system of cost recovery of stormwater costs for all customers. In addition, changes and enhancements to the City's GIS technology, over the past few years, have enabled the Water Department to develop impervious and gross area layers for most of the City's parcels, and to develop a cross-reference between the parcels and associated utility accounts. Consequently, the Water Department has been able to develop a stormwater parcel database with parcel/utility account cross references and parcel gross and impervious area data that can effectively support a parcel based stormwater cost recovery and billing.

The Water Department's Office of Watershed staff has been working with the Board of Revision of Taxes (BRT) and various other departments within the City over the past year in establishing utility account/parcel cross references, and in analyzing and compiling gross area and impervious area for parcels, to accommodate the transition to the parcel based system for stormwater cost recovery in conjunction with the current rate hearing process. With promulgation of appropriate regulations, it is now possible to phase-out the equivalent meter basis of charge for stormwater service and concurrently phase-in a parcel based system of charges, during the three Fiscal Years 2010 through 2012. This would complete the total phase-out of the equivalent meter based system of charges for

stormwater cost recovery, which was initiated during the rate proceedings related to the proposed rates for Fiscal Year 2002 through 2004.

Q. MR. MCKINLEY, WILL THE STORMWATER CHARGES TO RESIDENTIAL CUSTOMERS BE IMPACTED BY THE PROPOSED CHANGE IN THE STORMWATER COST RECOVERY METHODOLOGY?

A. Since the rate hearing process related to the proposed rates for Fiscal Years 2002 through 2004, the stormwater charges to the vast majority of residential customers, as well as other smaller customers with 5/8-inch meters, have been based upon the parcel gross area/impervious area methodology that was phased in over the three year period of Fiscal Year 2002 through 2004. The cost recovery of stormwater collection and treatment related costs in the service charges for 5/8-inch meters as proposed in my original testimony in this hearing for Fiscal Years 2009 through 2012 continues to recognize the weighted average gross and impervious area associated with the residential parcels for the existing customer base, as well as the cost recovery based on 20 percent allocation of stormwater costs to gross area and 80 percent cost allocation to impervious area. The weighted average residential gross and impervious area used in developing the proposed service charges for the four year rate period of Fiscal Years 2009 through 2012 are determined from the stormwater parcel database developed by the Water Department for the proposed parcel based stormwater rate methodology. Accordingly, the proposed rates for the recovery of stormwater collection and treatment costs for the residential customers will remain at the same level as those previously proposed and included within the 5/8-inch wastewater service charge, and they will not be impacted by the proposed change in the

stormwater cost recovery methodology being recommended in this supplemental testimony. The proposed change in methodology is oriented towards achieving a more equitable recovery of stormwater related costs for individual customers within the large meter customer group served by the Water Department, as well as to include new stormwater only customers in the overall customer base.

Q. WILL ALL RESIDENTIAL CUSTOMERS PAY THE STORMWATER CHARGE DEVELOPED FOR THE 5/8-INCH METER SIZE BEGINNING FOR THE PERIOD OF FISCAL YEARS 2010 THROUGH 2012, REGARDLESS OF THEIR METER SIZE?

A. It is my understanding that it is the intent of the Water Department to apply the same stormwater charge to all residential parcels beginning in Fiscal Year 2010. The residential charge that has been currently proposed, is to be based on the weighted average gross and imperious area of the residential parcels, and is proposed to be recovered within the 5/8-inch wastewater service charges proposed in my original testimony. The Water Department's new utility billing system and the recently developed stormwater parcel database will have the capability to designate and maintain residential vs. non-residential parcel classifications, thus allowing all residential customers to be assessed the same stormwater charge. Under the parcel based charge methodology only one residential customer account per parcel will be assessed the stormwater charge.

Q. WHAT GROUNDWORK HAS BEEN PROVIDED BY WATER DEPARTMENT STAFF IN TERMS OF PROVIDING YOU WITH THE NECESSARY INFORMATION AND STATISTICAL DATA TO ENABLE YOU TO DELVEOP

THE APPROPRIATE RATES TO IMPLEMENT A PARCEL BASED SYSTEM FOR THE RECOVERY OF STORMWATER COSTS FOR THE EXISTING LARGER CUSTOMERS OF THE WATER DEPARTMENT AS WELL AS FOR NEW STORMWATER ONLY CUSTOMERS?

- A. The Water Department staff has developed a stormwater parcel geodatabase with gross area and impervious area layers delineated for most of the City's parcels. In addition, for those parcels that currently have water and/or sewer accounts, the staff has also established cross references between these utility accounts and associated parcels. The staff has also established a hierarchy of customer categories utilizing assessment information from the Board of Revision of Taxes assessment system and utility account information from the Water Department's utility billing system. All parcels have first been classified into residential and non-residential parcels. Within these two broad classes, parcels that currently have active water or sewer accounts have been designated as "billed parcels" and parcels that do not have any existing active utility accounts have been designated as "unbilled parcels." The billed and unbilled categories of residential have been further classified into relevant no discount and discount sub-categories (including eligible senior citizen and Housing Authority accounts). The billed non-residential parcels have been classified into sub-categories including condominium parcels; large parcels (airport, Sunoco); cemeteries, golf courses and parks; permit holders; discount; and, other non-residential sub-categories. The unbilled non-residential parcels have been classified into no discount and discount sub-categories as well. The parcels were classified into appropriate sub-categories to facilitate special analyses including collection rate,

gross area and impervious area credits, stormwater discounts, and stormwater charge exemptions.

In addition, the Water Department staff has developed a detailed set of policies related to apportioning gross and impervious areas to utility accounts, and various other billing issues associated with the transition to a parcel based system of billing and cost recovery for stormwater. For example, policies were defined to apportion gross area and impervious area to utility accounts for situations such as (i) one utility account serving many adjoining parcels, (ii) many utility accounts serving one parcel, (iii) many accounts located within a specific geographic area containing multiple undelineated parcels, and (iv) condominium complex unit parcels which are individually metered versus condominium complex unit parcels that are master metered.

Policies were also defined to address billing issues pertaining to the implementation of various other citizens advisory group recommendations associated with the transition to a parcel based billing methodology. These billing policies include providing stormwater charge discounts to existing discount customers, and providing stormwater charge exemptions to certain city owned properties.

Finally, a series of detailed policies and technical criteria guidelines were developed by Water Department staff related to establishing a stormwater credit program to provide stormwater charge credits to eligible parcels that have implemented onsite stormwater management systems and thereby reduce the burden on the City's stormwater system. Policies defined for the credit program include, (i) identification of various types of credits including gross area credits, impervious area credits,

stormwater best management practice credits, and permitted discharge credits, (ii) broad eligibility guidelines for each type of credit, (iii) potential amount of credits, and (iv) applicability of multiple types of credits for a parcel. Again, these policies recognize the recommendations and suggestions developed by the citizens advisory group as well as the practices of other stormwater cost recovery programs across the Country.

Q. MR. MCKINLEY, HOW DID YOU USE THE DATABASE AND POLICY DOCUMENTS PREPARED BY THE WATER DEPARTMENT IN DESIGNING THE COST OF SERVICE RATE SCHEDULES RELATED TO THE PHASE-IN OF THE PROPOSED PARCEL BASED STORMWATER RATES?

A. We used the parcel data compiled in the stormwater database to estimate the total *effective* billable stormwater *units of service*. The effective billable stormwater units of service are estimated in terms of gross parcel area and impervious area square footage, taking into account reduction in billable units of service due to exemptions, non-payment of stormwater charges, and potential stormwater credits.

To estimate reduction in billable units of service due to stormwater charge exemptions, we reviewed the parcel data compiled for the city owned parcels in the stormwater parcel database. Since, as per the citizens advisory group recommendations, and the stormwater policies that were defined, certain city owned parcels (distressed vacant properties) are to be exempted from stormwater charges, we excluded the gross parcel area and impervious area of these parcels from the effective billable units of service.

To further estimate the potential reduction in billable units of service due to non-payment, in conjunction with discussions with Water Department staff and other members of the stormwater transition team, we focused on the currently “unbilled” category of customers, both residential and non-residential, since these customers represented potential new stormwater only customers. We made an educated allowance as to the percentage of these parcels that were likely to become viable, paying customers, taking into consideration the number of these unbilled parcels that were identified in the stormwater billing database as currently being vacant properties. All unbilled parcels would be billed for stormwater service, but many potentially may not have the financial means for payment of the stormwater charges, and, accordingly, a large percentage were treated as non-revenue producing customers.

To estimate the reduction in billable units of service due to potential credits, we reviewed the stormwater parcel database in detail by the various categories identified previously (including large parcels, parcels with their own NPDES permits, parks and golf courses, cemeteries, etc.). Estimates were made as to the potential level of credits that these categories of parcels may apply for and be accepted under the credit policy developed by the Water Department. Such estimates were based on the stormwater credit policies that were defined and on the experience of the stormwater transition team in developing credit programs for other stormwater agencies around the Country.

The effective billable stormwater unit of services were projected as the total gross and impervious area of existing residential and non-residential parcels compiled in the

stormwater parcel database, plus the addition of estimated new stormwater only customers, *net of* estimated reduction in billable stormwater units due to potential stormwater exemptions, stormwater gross area and impervious area credits anticipated to be issued, and potential non-payment of stormwater charges. The effective billable square footage of gross area and impervious area thus projected serve as the stormwater units of service to which the new parcel based stormwater rates would be applied, and from which stormwater revenues would be anticipated to be received. The estimated total effective revenue producing gross and impervious area units of service served as the denominator in the overall calculation of the gross and impervious area system unit charges to be used in the calculation of the parcel based stormwater cost recovery system.

In determining the unit charges for gross area and impervious area, the total annual cost of service associated with stormwater costs, excluding billing and collection costs, were allocated 20 percent to gross area and 80 percent to impervious area, in accordance with the citizens advisory group's recommendations, and the resulting allocated costs were divided by the respective gross and impervious area units of service to obtain the applicable unit charges.

Q. MR. MCKINLEY, HOW IS IT PROPOSED THAT THE NEW PARCEL BASED RATES BE PHASED-IN DURING THE PERIOD OF FISCAL YEARS 2010 THROUGH 2012?

A. It is proposed that a process similar to that used for the phase-in of the parcel based rates for residential customers in the period of Fiscal Years 2002 through 2004 would be used. In keeping with the recommendation of the citizens advisory group, the new

parcel based rates for non-residential customers would be phased-in over a three year period, while at the same time, the existing equivalent meter based rates would be phased-out over that same three year period. Essentially, in Fiscal Year 2010, the stormwater rate applicable to existing non-residential customers would recognize 2/3 of the applicable equivalent meter charge and 1/3 of the new parcel based charge. In Fiscal Year 2011, the existing equivalent meter charge would be weighted at 1/3 and the new parcel based charge will be weighted at 2/3. Finally, in Fiscal Year 2012, the entire stormwater charge for the existing non-residential customers would be based on the parcel based charge.

For any new stormwater only parcel that becomes a customer during the phase-in period of Fiscal Years 2010 through 2012, the gross and impervious area charge assessed to the new customers would reflect the phase-in relationship of 1/3 of the full parcel based charge in Fiscal Year 2010, 2/3 of the full parcel based charge in Fiscal Year 2011, and the full parcel based charge would be applicable for Fiscal Year 2012.

Q. MR. MCKINLEY, HAVE YOU PREPARED EXHIBITS THAT WILL SUMMARIZE THIS PHASE-IN PROCESS ASSOCIATED WITH THE TRANSITION TO A PARCEL BASED STORMWATER COST RECOVERY SYSTEM?

A. Yes, Table B-1, Exhibit (JRM-3), shows the schedule of stormwater charges applicable to the recovery of the collection and treatment of stormwater for the equivalent meter basis of charge by meter size for each of the Fiscal Years 2010 through 2012. These are the same charges that were included in the wastewater

service charges proposed in my original testimony in this rate hearing process, which proposes a continuation of the equivalent meter cost recovery basis of stormwater related costs for large customers for Fiscal Years 2010 through 2012.

Also, shown in Table B-1 are the billing related charges associated with stormwater service for existing customers. These charges also vary by meter size, and are also the same as the billing related charges included in the proposed rates projected for Fiscal Years 2010 through 2012 and were included in the proposed wastewater service charges. The rates shown in Table B-1 are the full level of charges for both the charges related to the collection and treatment of stormwater and for the stormwater billing related costs. The proposed applicable rate regulation for stormwater service provides the appropriate weighting of the phase-out for these two sets of charges which vary with the customers meter size over the three year period of Fiscal Years 2010, 2011, and 2012.

Q. MR. MCKINLEY, WHAT ARE THE PARCEL BASED GROSS AREA AND IMPERVIOUS AREA CHARGES THAT WILL BE PHASED-IN OVER THIS SAME THREE YEAR PERIOD?

A. Table B-2 shows the proposed gross area and impervious area charges for each of the Fiscal Years 2010 through 2012. The standard units of service measure for the proposed parcel based system are in 500 square foot (sq. ft.) increments, and reflect the total annual costs of service associated with the collection and treatment of stormwater, allocated 20 percent to gross area and 80 percent to impervious area, divided by the respective effective gross area and impervious area units developed for the parcel based cost recovery system and discussed previously.

In addition to the gross and impervious area unit charges, a monthly billing cost per customer is also shown in Table B-2.

As discussed above with regards to the equivalent meter based stormwater charges, the rates shown in Table B-2 are the full level of the charge. The proposed applicable rate regulation for stormwater service provides the appropriate weighting of the phase-in for these two sets of charges over the three year period of Fiscal Years 2010, 2011, and 2012. For new stormwater only customers, the parcel based gross area and impervious area charges would be subject to the three year phase-in. In addition, the full monthly billing charges shown in Table B-2 would be applicable to such customers.

Q MR. MCKINLEY, IS THERE A MINIMUM CHARGE RECOGNIZED IN THE NEW PARCEL BASED STORMWATER CHARGE SYSTEM?

A. Yes. The minimum charge is established as the residential stormwater charge for the recovery of collection and treatment of stormwater in terms of both the applicable gross and impervious area units of service established for the average residential customer. The gross area charge for the residential customer is based on 2,090 sq. ft. of gross area and the impervious area charge for the residential customer is based on 1,060 sq. ft. of impervious area. The sum of the gross area charge and the impervious area charge is the total charge for a residential customer. Accordingly, the minimum billing units of service for all non-residential customers are set as the residential gross area (2,090 sq. ft.) and as the residential impervious area (1,060 sq. ft.), and the residential gross area charge and the residential impervious area charge are applied to these minimum billing units to establish the minimum charge for each of the two

components. The minimum monthly charges for gross and impervious area are shown in Table B-2. Any gross and/or impervious areas for the non-residential customers in excess of these minimum units are divided by 500 sq. ft. (which is the standard unit of measure) and the gross and impervious unit charges are applied to the applicable number of units of 500 sq. ft., or any portion thereof. This resulting charge is then added to the minimum charge to obtain the total charge related to the recovery of stormwater collection and treatment.

Q. MR. MCKINLEY, DO YOU PROPOSE THAT THE PARCEL BASED STORMWATER COST RECOVERY METHODOLOGY AND RATES BE PHASED IN OVER THE PERIOD OF FISCAL YEARS 2010 THROUGH 2012 RATHER THAN CONTINUING TO MAINTAIN THE EQUIVALENT METER BASIS OF COST RECOVERY FOR THIS PERIOD AS PROPOSED IN YOUR ORIGINAL TESTIMONY?

A. Yes, it does appear that all necessary technical resources, databases, and support systems are now in place to accommodate this change in stormwater cost recovery. With the promulgation of appropriate regulations, it is now possible to phase-out the equivalent meter basis of charge for stormwater service and concurrently phase-in a parcel based system of charges, during the three Fiscal Years 2010 through 2012.

Q. DOES THIS COMPLETE YOUR DIRECT TESTIMONY IN THIS MATTER?

A. Yes, it does.



**PUBLIC HEARING ON  
PROPOSED WATER AND WASTEWATER RATES  
2008**

**WATER DEPARTMENT  
PHILADELPHIA, PENNSYLVANIA**

**EXHIBIT JRM-3**

**MARCH 2008**



**BLACK & VEATCH**  
building a **world** of difference™



**TABLE B - 1**

**PROPOSED NON-RESIDENTIAL STORMWATER CHARGES  
EQUIVALENT METER METHODOLOGY**

		Collection and Treatment	Billing Costs
		\$/month	\$/month
FY 2009	5/8 Inch Meter:	10.20	2.42
	3/4 Inch Meter:	62.63	2.42
	1 Inch Meter:	104.39	2.66
	1-1/4 Inch Meter:	158.66	2.90
	1-1/2 Inch Meter:	208.77	2.90
	2 Inch Meter:	334.03	3.63
	3 Inch Meter:	626.30	4.84
	4 Inch Meter:	1,043.84	9.68
	6 Inch Meter:	2,087.67	16.95
	8 Inch Meter:	3,340.28	24.21
	10 Inch Meter:	4,801.65	36.31
	12 Inch Meter:	8,977.00	48.42
FY 2010	5/8 Inch Meter:	10.82	2.40
	3/4 Inch Meter:	67.64	2.40
	1 Inch Meter:	112.73	2.64
	1-1/4 Inch Meter:	171.34	2.89
	1-1/2 Inch Meter:	225.44	2.89
	2 Inch Meter:	360.70	3.61
	3 Inch Meter:	676.32	4.81
	4 Inch Meter:	1,127.20	9.62
	6 Inch Meter:	2,254.41	16.83
	8 Inch Meter:	3,607.06	24.04
	10 Inch Meter:	5,185.14	36.06
	12 Inch Meter:	9,693.96	48.09
FY 2011	5/8 Inch Meter:	11.13	2.51
	3/4 Inch Meter:	71.23	2.51
	1 Inch Meter:	118.72	2.76
	1-1/4 Inch Meter:	180.45	3.01
	1-1/2 Inch Meter:	237.43	3.01
	2 Inch Meter:	379.89	3.76
	3 Inch Meter:	712.29	5.01
	4 Inch Meter:	1,187.15	10.02
	6 Inch Meter:	2,374.30	17.55
	8 Inch Meter:	3,798.88	25.06
	10 Inch Meter:	5,460.89	37.59
	12 Inch Meter:	10,209.49	50.12
FY 2012	5/8 Inch Meter:	11.31	2.64
	3/4 Inch Meter:	73.89	2.64
	1 Inch Meter:	123.15	2.91
	1-1/4 Inch Meter:	187.18	3.17
	1-1/2 Inch Meter:	246.28	3.17
	2 Inch Meter:	394.05	3.97
	3 Inch Meter:	738.84	5.29
	4 Inch Meter:	1,231.40	10.58
	6 Inch Meter:	2,462.80	18.52
	8 Inch Meter:	3,940.49	26.46
	10 Inch Meter:	5,664.45	39.69
	12 Inch Meter:	10,590.05	52.92

**TABLE B - 2**

**PROPOSED NON-RESIDENTIAL STORMWATER CHARGES  
PARCEL BASED METHODOLOGY**

	Monthly Charges			Billing Costs
	Gross Area	Impervious Area	Total	
	\$/500 sf	\$/500 sf		\$
FY 2009	0.488	3.848		2.47
FY 2010	0.518	4.078		2.45
FY 2011	0.533	4.199		2.55
FY 2012	0.541	4.267		2.69
Minimum Charges	\$	\$	\$	
FY 2009	2.04	8.16	10.20	
FY 2010	2.17	8.65	10.82	
FY 2011	2.23	8.90	11.13	
FY 2012	2.26	9.05	11.31	

sf - square foot