

Agenda

**Meeting of the Commissioners of Public Works
of the City of Charleston, South Carolina
(Charleston Water System)**

December 20, 2011, 9:00 a.m.

Our Mission is to protect public health and enhance the environment of our service community by providing clean water services of exceptional quality and value.

Our Vision is to become, by 2012, an organization worthy of a SC Governor's Quality Award achieved through teamwork, customer focus, and performance excellence.

Our Core Values Teamwork • Ethical Behavior & Integrity • Accountability • Customer Service Focus • Open & Honest Communication • Innovation

**Meeting of the Commissioners of Public Works
of the City of Charleston, South Carolina
(Charleston Water System)**

Mr. Thomas B. Pritchard, Chairman

December 20, 2011

- I. Call to Order**
- II. Compliance With Public Notice – Mr. Pritchard**
- III. Invocation – Mr. Pritchard**
- IV. Pledge of Allegiance – All present**
- V. Adjourn to Committee Meetings, followed by Commissioners Meeting**

**Meeting of the Commissioners of Public Works
of the City of Charleston, South Carolina
(Charleston Water System)**

Public Contract and Finance Committee
Mr. Thomas B. Pritchard, Committee Chairman

December 20, 2011

I. Call to Order

II. Approval of Minutes of Committee Meeting of November 29, 2011

III. Annual Internal Audit Report 2011 – Mr. Glenn Robinson

Mr. Robinson will inform the Commissioners of the status of the Company's internal auditing goals and accomplishments in 2011. (For Information Only)

IV. East Cooper Purchased Capacity Customers 2012 Proposed Rates – Mr. Ropp / Mr. Hill - Exhibit A

Mr. Ropp and Mr. Hill will inform the Commissioners about the revised East Cooper purchased capacity rates for 2012 as prepared by Black & Veatch Engineers, Inc., our rates consultants. (Motion Requested)

V. Review of Impact Fees – Mr. Ropp / Mr. Hill – Exhibit B

Mr. Ropp and Mr. Hill will discuss with the Commissioners the recent water and wastewater impact fee study as prepared by Black & Veatch. A motion to approve the study conclusions effective on 12/1/2012 will be requested. (Motion Requested)

VI. Adjournment



BLACK & VEATCH CORPORATION
 11401 LAMAR AVENUE, OVERLAND PARK, KS 66211
 +1 913-458-3025 | whiteam@bv.com

December 7, 2011

Mr. Kin Hill, P.E.
 Chief Executive Officer
 Charleston Water System
 103 St. Philip Street
 Charleston, South Carolina 29403

Dear Mr. Hill:

As requested, we have developed updated Volumetric Rates applicable to East Cooper Purchased Capacity wholesale water service customers, recognizing contract capacity amounts, projected service requirements and costs for the year 2012. This letter presents the results of our derivation of the new rate applicable to **Mount Pleasant**. This rate is calculated utilizing the same derivation procedures provided for in Article 9 and Exhibits C, D, and E of the Charleston Water System's agreement with Mount Pleasant. Under the terms of that agreement, we understand this rate would become effective on July 1 of 2012 with appropriate advance notification. Copies of the detailed calculation sheets are enclosed.

The following tabulation summarizes the total rate derived and proposed for Mount Pleasant, including the component elements of Operation and Maintenance Expense, Depreciation on General Plant, and Return on General Plant. Although rates are derived and expressed in terms of a unit cost per 1,000 gallons, the equivalent of these rates expressed as a unit cost per 100 cubic feet is also shown. For purposes of comparison, the existing Volumetric Rate is indicated on the last line of the tabulation.

	<u>\$/Mgal.</u>	<u>\$/Ccf</u>
Proposed Rate:		
Operation & Maintenance	0.63	0.47
Depreciation (General Plant)	0.06	0.04
Return (General Plant)	<u>0.01</u>	<u>0.01</u>
Total	0.70	0.52
 Existing Rate	 0.65	 0.49

Please note that, under the newly derived rates, those customers with the lowest projected demand factors will continue to benefit from the lowest unit rate of charge, while those with greater demand factors will continue to be subject to higher unit rates. Simply stated, the principal reason for this is that significant portions of the total cost of service vary with the amount of capacity purchased, but they are recovered based on the amount of capacity (i.e., volume of water) actually used. Therefore, unit costs of service and rates increase as the percentage of a customer's total purchased capacity used decreases.

As provided, the updated rates derived and presented herein continue to be based on estimates of future costs and consumption. Although the estimates recognized for these calculations are believed to be reasonable, since they recognize historical cost and consumption data, ongoing trends, and current budgets, actual future costs and consumption volumes may, of course, vary

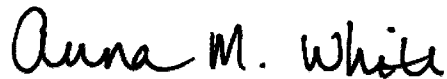
from these projections. It is for this reason that existing agreements provide for a post-period adjustment, in which rates and charges for the period are to be recalculated using actual cost and consumption data, and settle-up payments are to be made to compensate for any over-recovery or under-recovery of costs.

Should you have questions regarding any of the material presented herein, we shall be pleased to respond to them as necessary. Also, please let me know if any additional supporting data is needed.

We appreciate this opportunity to be of service to the Charleston Water System.

Very truly yours,

BLACK & VEATCH CORPORATION

A handwritten signature in black ink that reads "Anna M. White". The signature is written in a cursive, flowing style.

Anna M. White
Manager

AMW
Enclosures

cc (w/enclosures):
Mr. Wesley Ropp

MT. PLEASANT

EXHIBIT C - Page One

WHOLESALE WATER SERVICE CONTRACT BETWEEN CPW AND EAST COOPER PURCHASED CAPACITY CONTRACT CUSTOMERS DEVELOPMENT OF O&M VOLUMETRIC RATE

Input Data from System-Wide Cost of Service Study

Operating Expense Cost Function	Municipalities Class Units of Service (a)	Units	Reference	Test Year	Units	Reference	Proportional Breakdown of Test Year 2012 Unit Costs			Reference
				2012 Operating Expense Unit Cost			Treatment	Transmission	Other (b)	
Base (d) Common to All Treated Water Service										
Maximum Day Extra Capacity (e)	2,765,206 Mgal		H-5	0.57955 \$/Mgal	H-28	0.94632	0.05368	0.00000	1.00000	H-24
Common to All Treated Water Service	6,818 Mgal/day		H-5	69.90709 \$/Mgal/day	H-28	0.89449	0.10551	0.00000	1.00000	H-24
Maximum Hour Extra Capacity (f)	3,788 Mgal/day		H-5	14.16564 \$/Mgal/day	H-28	0.52681	0.47319	0.00000	1.00000	H-24
Common to All Treated Water Service										

Derivation of Municipalities Unit Volume Change

	Treatment	Transmission
Base	$\$0.57955/\text{Mgal} \times 2,765,206 \text{ Mgal} \times 0.94632 =$	$\$0.57955/\text{Mgal} \times 2,765,206 \text{ Mgal} \times 0.05368 =$
	\$1,516,532	\$86,031
Maximum Day (MD)	$\$69.90709/\text{Mgal} \times 6,818 \text{ Mgal} \times 0.89449 =$	$\$69.90709/\text{Mgal} \times 6,818 \text{ Mgal} \times 0.10551 =$
	\$426,341	\$50,287
Maximum Hour (MH)	$\$14.16564/\text{Mgal} \times 3,788 \text{ Mgal} \times 0.52681 =$	$\$14.16564/\text{Mgal} \times 3,788 \text{ Mgal} \times 0.47319 =$
	\$28,267	\$25,390

Unit Cost Development	Base	Max Day	Max Hour	Total
Volume (Mgal)	2,571,642 (c)	2,571,642	2,571,642	2,571,642
Treatment Cost (\$)	1,516,532	426,341	28,267	1,971,140
Transmission Costs (\$)	86,031	50,287	25,390	161,708
Unit Volume Change				
Treatment (\$/Mgal)	0.58971	0.16579	0.01099	0.76649
Transmission (\$/Mgal)	0.03345	0.01955	0.00987	0.06288
Total (\$/Mgal)	0.62317	0.18534	0.02087	0.82937

- (a) Hundred cubic feet volume units from cost of service study update are expressed in 1,000 gallon (Mgal) units in this exhibit.
- (b) Represents operation expense for distribution reservoirs.
- (c) $2,765,206 \text{ Mgal} \times 0.93$ (wholesale class loss factor from H-4) = 2,571,642 Mgal.
- (d) Base costs are those associated with service customers to the extent required for a constant or average rate of use.
- (e) Maximum Day Extra Capacity costs are those associated with serving customers' maximum day service requirements in excess of the average annual rate of use.
- (f) Maximum Hour Extra Capacity costs are those associated with serving customers' maximum hour service requirements in excess of maximum day rate of use.

MT. PLEASANT
EXHIBIT C - Page Two
WHOLESALE WATER SERVICE CONTRACT BETWEEN CPW AND MT. PLEASANT
DEVELOPMENT OF O&M VOLUMETRIC RATE

Derivation of O&M Volumetric Rate Charge Recognizing Usage and Demand Factors

Assume: Municipalities Class MD Demand/Average Day Flow = 1,900 (Reference: H-5)
 Assume: Municipalities Class MH Demand/Average Day Flow = 2,400 (Reference: H-5)
 Resulting Municipalities Class MH Demand/MD Demand = 2,400/1,900 = 1.2632

To Adjust O&M Rate for Variation in Demand Factor (DF) and Defining DF as the Ratio of
 Mt. Pleasant Contract Capacity to Mt. Pleasant Average Day Flow, Then:

$$\begin{aligned} \text{MD Adjustment Factor} &= (\text{DF} - 1) / (1,900 - 1) & \text{and} & \text{MH Adjustment Factor} = (1.26316\text{DF} - \text{DF}) / (2,400 - 1,900) \\ &= (1.1111) * (\text{DF} - 1) & & = (0.52632) * \text{DF} \end{aligned}$$

Treatment O&M Expense Unit Cost:

$$\begin{array}{l} \text{Base} & \text{MD} & \text{MH} \\ 0.58971 + & 0.16579 * [1.1111(\text{DF} - 1)] + & 0.01099 * (0.52632 * \text{DF}) = & 0.40551 + 0.18999 * \text{DF} \end{array}$$

Transmission O&M Expense Unit Cost:

$$\begin{array}{l} \text{Base} & \text{MD} & \text{MH} \\ 0.03345 + & 0.01955 * [1.1111(\text{DF} - 1)] + & 0.00987 * (0.52632 * \text{DF}) = & 0.01173 + 0.02692 * \text{DF} \end{array}$$

Derivation of Mt. Pleasant O&M Volume Rate of Charge

Mt. Pleasant Contract Capacity = 5.50 mgd

Mt. Pleasant 2012 Projected Average Day Flow = 2,683,824 Ccf = 5.500 mgd (Reference: H-4)

Assume: Mt. Pleasant Demand Factor (DF) = 5.50 / 5,500 = 1.00000, Then the Treatment and Transmission O&M Volumetric Rate Is:

$$\begin{aligned} \text{Treatment O\&M Expense Volumetric Rate:} & \\ &= 0.40551 + 0.18999 * 1.00000 = & 0.59550 \end{aligned}$$

$$\begin{aligned} \text{Transmission O\&M Expense Volumetric Rate:} & \\ &= 0.01173 + 0.02692 * 1.00000 = & 0.03865 \end{aligned}$$

$$\begin{aligned} \text{Total O\&M Volumetric Rate:} & \\ &= 0.59550 + 0.03865 = & 0.63415 \text{ \$/Mgal} \end{aligned}$$

**MT. PLEASANT
EXHIBIT D
WHOLESALE WATER SERVICE CONTRACT BETWEEN CPW AND MT. PLEASANT
GENERAL PLANT DEPRECIATION COMPONENT OF VOLUMETRIC RATE**

General Plant Depreciation Related to Treatment Plant, Test Year 2012
Mt. Pleasant Contract Share of Treatment Plant Depreciation Expense: \$169,819 (Reference: H-9)
General Plant Portion of Depreciation: 63.2% (Reference: H-17)
General Plant Depreciation for Treatment Plant Depreciation Expense:
 $\$169,819 \times 0.632 = \$107,326$

General Plant Depreciation Related to Transmission System, Test Year 2012
Mt. Pleasant Contract Share of Transmission Value (Current OC): \$3,062,972 (Reference: H-10)
General Plant Portion of Depreciation: 63.2% (Reference: H-17)
Annual Depreciation Percentage: 1.03% (Reference: H-16)
General Plant Depreciation Per Value of Transmission System OC Value:
 $\$3,062,972 \times 63.2 \times 0.0103 = \$19,936$

Depreciation Rate Per 1,000 Gals.

Assume Contract Capacity of 5.50 mgd and an Average Day Flow of 5,500 mgd

Volumetric Depreciation Equation Related to Treatment Plant:
 $\$107,326 / (5,500 \text{ mgd} \times 365 \text{ days/year} \times 1,000) = \0.05346

Volumetric Depreciation Equation Related to Transmission Plant:
 $\$19,936 / (5,500 \text{ mgd} \times 365 \text{ days/year} \times 1,000) = \0.00993

Total General Plant Depreciation Rate:
 $\$0.05346/\text{Mgal} + \$0.00993/\text{Mgal} = \$0.06339$

**MT. PLEASANT
EXHIBIT E
WHOLESALE WATER SERVICE CONTRACT BETWEEN CPW AND MT. PLEASANT
GENERAL PLANT RETURN COMPONENT OF VOLUMETRIC RATE**

General Plant Return Related to Treatment Plant, Test Year 2012
Mt. Pleasant Contract Share of Treatment Plant Value (Current RCLD): \$ 12,325,174 = \$2,240,941/mgd x 6 mgd
General Plant Value as Share of Total Value: 3.1% (Reference: H-17)
Rate of Return on RCLD Plant Value: 3.45%
General Plant Return Per Value of Treatment Plant RCLD Value:
\$12,325,174 x 0.031 x 0.035 = \$13,182

General Plant Return Related to Transmission System, Test Year 2012
Mt. Pleasant Contract Share of Transmission System Value (Current RCLD): \$6,178,145 (Reference: H-10)
General Plant Value as Share of Total Value: 3.1% (Reference: H-17)
Rate of Return on RCLD Plant Value: 3.45%
General Plant Return Per Value of Transmission System RCLD Value:
\$6,178,145 x 0.031 x 0.035 = \$6,608

Return Volumetric Rate Per 1,000 Gals.

Assume Contract Capacity of 5.50 mgd and an Average Day Flow of 5.500 mgd

Volumetric Return Equation Related to Treatment Plant:
 $\$13,182 / (5.500 \text{ mgd} \times 365 \text{ days/year} \times 1,000) = \$0.00657 / \text{Mgal}$

Volumetric Return Equation Related to Transmission Plant:
 $\$6,608 / (5.500 \text{ mgd} \times 365 \text{ days/year} \times 1,000) = \$0.00329 / \text{Mgal}$

Total General Plant Return Rate:
 $\$0.00657 / \text{Mgal} + \$0.00329 / \text{Mgal} = \$0.00986 / \text{Mgal}$



December 7, 2011

Mr. Kin Hill, P.E.
Chief Executive Officer
Charleston Water System
103 St. Philip Street
Charleston, South Carolina 29403

Dear Mr. Hill:

As requested, we have developed updated Volumetric Rates applicable to East Cooper Purchased Capacity wholesale water service customers, recognizing contract capacity amounts, projected service requirements and costs for the year 2012. This letter presents the results of our derivation of the new rate applicable to the **Isle of Palms**. This rate is calculated utilizing the same derivation procedures provided for in Article 9 and Exhibits C, D, and E of the Charleston Water System's agreement with the Isle of Palms. Under the terms of that agreement, we understand this rate would become effective on July 1 of 2012 with appropriate advance notification. Copies of the detailed calculation sheets are enclosed.

The following tabulation summarizes the total rate derived and proposed for the Isle of Palms, including the component elements of Operation and Maintenance Expense, Depreciation on General Plant, and Return on General Plant. Although rates are derived and expressed in terms of a unit cost per 1,000 gallons, the equivalent of these rates expressed as a unit cost per 100 cubic feet is also shown. For purposes of comparison, the existing Volumetric Rate is indicated on the last line of the tabulation.

	<u>\$/Mgal.</u>	<u>\$/Ccf</u>
Proposed Rate:		
Operation & Maintenance	0.74	0.55
Depreciation (General Plant)	0.12	0.09
Return (General Plant)	<u>0.02</u>	<u>0.01</u>
Proposed Total Rate	0.88	0.65
 Existing Rate	 0.84	 0.63

Please note that, under the newly derived rates, those customers with the lowest projected demand factors will continue to benefit from the lowest unit rate of charge, while those with greater demand factors will continue to be subject to higher unit rates. Simply stated, the principal reason for this result is that significant portions of the total cost of service vary with the amount of capacity purchased, but they are recovered based on the amount of capacity (i.e., volume of water) actually used. Therefore, unit costs of service and rates decrease as the percentage of a customer's total purchased capacity used increases.

As provided, the updated rates derived and presented herein continue to be based on estimates of future costs and consumption. Although the estimates recognized for these calculations are believed to be reasonable, since they recognize historical cost and consumption data, ongoing trends, and current budgets, actual future costs and consumption volumes may, of course, vary


from these projections. It is for this reason that existing agreements provide for a post-period adjustment, in which rates and charges for the period are to be recalculated using actual cost and consumption data, and settle-up payments are to be made to compensate for any over-recovery or under-recovery of costs.

Should you have questions regarding any of the material presented herein, we shall be pleased to respond to them as necessary. Also, please let me know if any additional supporting data is needed.

We appreciate this opportunity to be of service to the Charleston Water System.

Very truly yours,

BLACK & VEATCH CORPORATION

A handwritten signature in black ink that reads "Anna M. White". The signature is written in a cursive, flowing style.

Anna M. White
Manager

AMW
Enclosures

cc (w/enclosures):
Mr. Wesley Ropp

ISLE OF PALMS
EXHIBIT C - Page One
 WHOLESAL WATER SERVICE CONTRACT BETWEEN CPW AND EAST COOPER PURCHASED CAPACITY CONTRACT CUSTOMERS
 DEVELOPMENT OF O&M VOLUMETRIC RATE

Input Data from System-Wide Cost of Service Study

Operating Expense Cost Function	Municipalities Class Units of Service (a)	Units	Reference	Test Year	Units	Reference	Proportional Breakdown of Test Year 2012 Unit Costs							
				2012			Operating Expense Unit Cost	Treatment	Transmission	Other (b)	Total	Reference		
Base (d)														
Common to All Treated Water Service		2,765,206 Mgal	H-5	0.57955 \$/Mgal	H-28	0.94632	0.05368	0.00000	1.00000	H-24				
Maximum Day Extra Capacity (e)		6,818 Mgal/day	H-5	69.90709 \$/Mgal/day	H-28	0.89449	0.10551	0.00000	1.00000	H-24				
Common to All Treated Water Service		3,788 Mgal/day	H-5	14.16564 \$/Mgal/day	H-28	0.52681	0.47319	0.00000	1.00000	H-24				

Derivation of Municipalities Unit Volume Charge

	Treatment	Transmission	
Base	$\$0.57955/\text{Mgal} \times 2,765,206 \text{ Mgal} \times 0.94632 =$	$\$0.57955/\text{Mgal} \times 2,765,206 \text{ Mgal} \times 0.05368 =$	\$86,031
Maximum Day (MD)	$\$69.90709/\text{Mgal} \times 6,818 \text{ Mgal} \times 0.89449 =$	$\$69.90709/\text{Mgal} \times 6,818 \text{ Mgal} \times 0.10551 =$	\$50,287
Maximum Hour (MH)	$\$14.16564/\text{Mgal} \times 3,788 \text{ Mgal} \times 0.52681 =$	$\$14.16564/\text{Mgal} \times 3,788 \text{ Mgal} \times 0.47319 =$	\$25,390

Unit Cost Development	Base	Max Day	Max Hour	Total
Volume (Mgal)	2,571,642 (c)	2,571,642	2,571,642	2,571,642
Treatment Cost (\$)	1,516,532	426,341	28,267	1,971,140
Transmission Costs (\$)	86,031	50,287	25,390	161,708
Unit Volume Charge				
Treatment (\$/Mgal)	0.58971	0.16579	0.01099	0.76649
Transmission (\$/Mgal)	0.03345	0.01955	0.00987	0.06288
Total (\$/Mgal)	0.62317	0.18534	0.02087	0.82937

- (a) Hundred cubic feet volume units from cost of service study update are expressed in 1,000 gallon (Mgal) units in this exhibit.
- (b) Represents operation expense for distribution reservoirs.
- (c) $2,765,206 \text{ Mgal} \times 0.93$ (Wholesale class loss factor from H-4) = 2,571,642 Mgal.
- (d) Base costs are those associated with service customers to the extent required for a constant or average rate of use.
- (e) Maximum Day Extra Capacity costs are those associated with serving customers' maximum day service requirements in excess of the average annual rate of use.
- (f) Maximum Hour Extra Capacity costs are those associated with serving customers' maximum hour service requirements in excess of maximum day rate of use.

ISLE OF PALMS
EXHIBIT C - Page Two
WHOLESALE WATER SERVICE CONTRACT BETWEEN CPW AND ISLE OF PALMS
DEVELOPMENT OF O&M VOLUMETRIC RATE

Derivation of O&M Volumetric Rate Charge Recognizing Usage and Demand Factors

Assume: Municipalities Class MD Demand/Average Day Flow = 1,900 (Reference: H-5)
 Assume: Municipalities Class MH Demand/Average Day Flow = 2,400 (Reference: H-5)
 Resulting Municipalities Class MH Demand/MD Demand = 2,400/1,900 = 1.2632

To Adjust O&M Rate for Variation in Demand Factor (DF) and Defining DF as the Ratio of
 Isle of Palms' Contract Capacity to Isle of Palms' Average Day Flow, Then:

$$\begin{aligned} \text{MD Adjustment Factor} &= (DF - 1)/(1,900 - 1) & \text{and} & \text{MH Adjustment Factor} &= (1.2632DF - DF)/(2,400 - 1,900) \\ &= (1.11111) * (DF - 1) & & &= (0.52632) * DF \end{aligned}$$

Treatment O&M Expense Unit Cost:

$$\begin{array}{l} \text{Base} \quad \text{MD} \quad \text{MH} \\ 0.58971 + \quad 0.16579 * [1.11111(DF - 1)] + \quad 0.01099 * (0.52632 * DF) = \quad 0.40551 + 0.18999 * DF \end{array}$$

Transmission O&M Expense Unit Cost:

$$\begin{array}{l} \text{Base} \quad \text{MD} \quad \text{MH} \\ 0.03345 + \quad 0.01995 * [1.11111(DF - 1)] + \quad 0.00987 * (0.52632 * DF) = \quad 0.01173 + 0.02692 * DF \end{array}$$

Derivation of Isle of Palms' O&M Volume Rate of Charge

Isles of Palms Contract Capacity = 1.50 mgd

Isles of Palms 2012 Projected Average Day Flow = 487,590 Ccf = 0.999 mgd (Reference: H-4)

Assume: Isle of Palms' Demand Factor (DF) = 1.50 / 0.999 = 1.50116, Then the Treatment and Transmission O&M Volumetric Rate is:

$$\begin{aligned} \text{Treatment O\&M Expense Volumetric Rate:} & \\ &= 0.40551 + 0.18999 * 1.50116 = \quad 0.69072 \end{aligned}$$

$$\begin{aligned} \text{Transmission O\&M Expense Volumetric Rate:} & \\ &= 0.01173 + 0.02692 * 1.50116 = \quad 0.05214 \end{aligned}$$

$$\text{Total O\&M Volumetric Rate:} \quad \frac{0.05214}{0.74286} \text{ \$/Mgal}$$

ISLE OF PALMS
EXHIBIT D
WHOLESALE WATER SERVICE CONTRACT BETWEEN CPW AND ISLE OF PALMS
GENERAL PLANT DEPRECIATION COMPONENT OF VOLUMETRIC RATE

General Plant Depreciation Related to Treatment Plant, Test Year 2012
Isle of Palms Contract Share of Treatment Plant Depreciation Expense: \$46,314 (Reference: H-9)
General Plant Portion of Depreciation: 63.2% (Reference: H-17)
General Plant Depreciation for Treatment Plant Depreciation Expense:
 $\$46,314 \times 0.632 = \$29,271$

General Plant Depreciation Related to Transmission System, Test Year 2012
Isle of Palms Contract Share of Transmission Value (Current OC): \$2,479,173 (Reference: H-10)
General Plant Portion of Depreciation: 63.2% (Reference: H-17)
Annual Depreciation Percentage: 1.03% (Reference: H-16)
General Plant Depreciation Per Value of Transmission System OC Value:
 $\$2,479,173 \times 63.2 \times 0.0103 = \$16,136$

Depreciation Rate Per 1,000 Gals.

Assume Contract Capacity of 1.50 mgd and an Average Day Flow of 0.999 mgd

Volumetric Depreciation Equation Related to Treatment Plant:
 $\$29,271 / (0.999 \text{ mgd} \times 365 \text{ days/year} \times 1,000) = \0.08026

Volumetric Depreciation Equation Related to Transmission Plant:
 $\$16,136 / (0.999 \text{ mgd} \times 365 \text{ days/year} \times 1,000) = \0.04424

Total General Plant Depreciation Rate:
 $\$0.08026/\text{Mgal} + \$0.04424/\text{Mgal} = \$0.12450$

ISLE OF PALMS
EXHIBIT E
WHOLESALE WATER SERVICE CONTRACT BETWEEN CPW AND ISLE OF PALMS
GENERAL PLANT RETURN COMPONENT OF VOLUMETRIC RATE

General Plant Return Related to Treatment Plant, Test Year 2012
Isle of Palms Contract Share of Treatment Plant Value (Current RCLD): \$ 3,361,411 = \$2,240,941/mgd x 1.50 mgd
General Plant Value as Share of Total Value: 3.1% (Reference: H-17)
Rate of Return on RCLD Plant Value: 3.45%
General Plant Return Per Value of Treatment Plant RCLD Value: \$3,361,411 x 0.031 x 0.035 = \$3,595

General Plant Return Related to Transmission System, Test Year 2012
Rate of Return on RCLD Plant Value:
General Plant Return Per Value of Transmission System RCLD Value:
Rate of Return on RCLD Plant Value: 3.45%
General Plant Return Per Value of Transmission System RCLD Value:
\$4,617,892 x 0.031 x 0.035 = 493883.52%

Return Volumetric Rate Per 1,000 Gals.

Assume Contract Capacity of 1.50 mgd and an Average Day Flow of 0.999 mgd

Volumetric Return Equation Related to Treatment Plant:
 $\$3,595 / (0.999 \text{ mgd} \times 365 \text{ days/year} \times 1,000) = \$0.00986 / \text{Mgal}$

Volumetric Return Equation Related to Transmission Plant:
 $\$4,939 / (0.999 \text{ mgd} \times 365 \text{ days/year} \times 1,000) = \$0.01354 / \text{Mgal}$

Total General Plant Return Rate:
 $\$0.00986/\text{Mgal} + \$0.01354/\text{Mgal} = \$0.02340 / \text{Mgal}$

December 7, 2011

Mr. Kin Hill, P.E.
Chief Executive Officer
Charleston Water System
103 St. Philip Street
Charleston, South Carolina 29403

Dear Mr. Hill:

As requested, we have developed updated Volumetric Rates applicable to East Cooper Purchased Capacity wholesale water service customers, recognizing contract capacity amounts, projected service requirements and costs for the year 2012. This letter presents the results of our derivation of the new rate applicable to **Sullivan's Island**. This rate is calculated utilizing the same derivation procedures provided for in Article 9 and Exhibits C, D, and E, respectively, of the Charleston Water System's agreement with Sullivan's Island. Under the terms of that agreement, we understand this rate would become effective on July 1 of 2012 with appropriate advance notification. Copies of the detailed calculation sheets are enclosed.

The following tabulation summarizes the total rate derived and proposed for Sullivan's Island, including the component elements of Operation and Maintenance Expense, Depreciation on General Plant, and Return on General Plant. Although rates are derived and expressed in terms of a unit cost per 1,000 gallons, the equivalent of these rates expressed as a unit cost per 100 cubic feet is also shown. For purposes of comparison, the existing Volumetric Rate is indicated on the last line of the tabulation.

	<u>\$/Mgal.</u>	<u>\$/Ccf</u>
Proposed Rate:		
Operation & Maintenance	1.02	0.76
Depreciation (General Plant)	0.23	0.17
Return (General Plant)	<u>0.04</u>	<u>0.03</u>
Proposed Total Rate	1.29	0.96
Existing Rate	1.30	0.97

Please note that, under the newly derived rates, those customers with the lowest projected demand factors will continue to benefit from the lowest unit rate of charge, while those with greater demand factors will continue to be subject to higher unit rates. Simply stated, the principal reason for this result is that significant portions of the total cost of service vary with the amount of capacity purchased, but they are recovered based on the amount of capacity (i.e., volume of water) actually used. Therefore, unit costs of service and rates increase as the percentage of a customer's total purchased capacity used decreases.

As provided, the updated rates derived and presented herein continue to be based on estimates of future costs and consumption. Although the estimates recognized for these calculations are believed to be reasonable, since they recognize historical cost and consumption data, ongoing trends, and current budgets, actual future costs and consumption volumes may, of course, vary

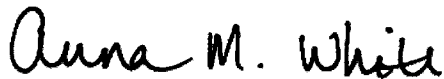
from these projections. It is for this reason that existing agreements provide for a post-period adjustment, in which rates and charges for the period are to be recalculated using actual cost and consumption data, and settle-up payments are to be made to compensate for any over-recovery or under-recovery of costs.

Should you have questions regarding any of the material presented herein, we shall be pleased to respond to them as necessary. Also, please let me know if any additional supporting data is needed.

We appreciate this opportunity to be of service to the Charleston Water System.

Very truly yours,

BLACK & VEATCH CORPORATION

A handwritten signature in black ink that reads "Anna M. White". The signature is written in a cursive, flowing style.

Anna M. White
Manager

AMW
Enclosures

cc (w/enclosures):
Mr. Wesley Ropp

SULLIVAN'S ISLAND
EXHIBIT C - Page One

WHOLESALE WATER SERVICE CONTRACT BETWEEN CPW AND EAST COOPER PURCHASED CAPACITY CONTRACT CUSTOMERS
DEVELOPMENT OF O&M VOLUMETRIC RATE

Input Data from System-Wide Cost of Service Study

Operating Expense Cost Function	Municipalities Class Units of Service (a)	Units	Reference	Test Year	Units	Reference	Proportional Breakdown of Test Year 2012 Unit Costs				
				2012			Treatment	Transmission	Other (b)	Total	Reference
Base (d)											
Common to All Treated Water Service											
Maximum Day Extra Capacity (e)	2,765,206 Mgal		H-5	0.57955 \$/Mgal	H-28	0.94632	0.05368	0.00000	1.00000	H-24	
Common to All Treated Water Service											
Maximum Hour Extra Capacity (f)	6,818 Mgal/day		H-5	69.90709 \$/Mgal/day	H-28	0.89449	0.10551	0.00000	1.00000	H-24	
Common to All Treated Water Service											
	3,788 Mgal/day		H-5	14.16564 \$/Mgal/day	H-28	0.52681	0.47319	0.00000	1.00000	H-24	

Derivation of Municipalities Unit Volume Charge

	Treatment	Transmission
Base	$\$0.57955/\text{Mgal} \times 2,765,206 \text{ Mgal} \times 0.94632 =$	$\$0.57955/\text{Mgal} \times 2,765,206 \text{ Mgal} \times 0.05368 =$
	$\$426,341$	$\$50,287$
	$\$14.16564/\text{Mgal} \times 3,788 \text{ Mgal} \times 0.52681 =$	$\$25,390$
	$\$28,267$	
		$\$86,031$

Unit Cost Development	Base	Max Day	Max Hour	Total
Volume (Mgal)	2,571,642 (c)	2,571,642	2,571,642	2,571,642
Treatment Cost (\$)	1,516,532	426,341	28,267	1,971,140
Transmission Costs (\$)	86,031	50,287	25,390	161,708
Unit Volume Charge				
Treatment (\$/Mgal)	0.58971	0.16579	0.01099	0.76649
Transmission (\$/Mgal)	0.03345	0.01955	0.00987	0.06288
Total (\$/Mgal)	0.62317	0.18534	0.02087	0.82937

- (a) Hundred cubic feet volume units from cost of service study update are expressed in 1,000 gallon (Mgal) units in this exhibit.
- (b) Represents operation expense for distribution reservoirs.
- (c) 2,765,206 Mgal x 0.93 (Wholesale class loss factor from H-4) = 2,571,642 Mgal.
- (d) Base costs are those associated with service customers to the extent required for a constant or average rate of use.
- (e) Maximum Day Extra Capacity costs are those associated with serving customers' maximum day service requirements in excess of the average annual rate of use.
- (f) Maximum Hour Extra Capacity costs are those associated with serving customers' maximum hour service requirements in excess of maximum day rate of use.

SULLIVAN'S ISLAND
EXHIBIT C - Page Two
WHOLESALE WATER SERVICE CONTRACT BETWEEN CPW AND SULLIVAN'S ISLAND
DEVELOPMENT OF O&M VOLUMETRIC RATE

Derivation of O&M Volumetric Rate Charge Recognizing Usage and Demand Factors

Assume: Municipalities Class MD Demand/Average Day Flow = 1,900 (Reference: H-5)
 Assume: Municipalities Class MH Demand/Average Day Flow = 2,400 (Reference: H-5)
 Resulting Municipalities Class MH Demand/MD Demand = 2,400/1,900 = 1.2632

To Adjust O&M Rate for Variation in Demand Factor (DF) and Defining DF as the Ratio of Sullivan's Island Contract Capacity to Sullivan's Island Average Day Flow, Then:

$$\begin{aligned} \text{MD Adjustment Factor} &= (DF - 1)/(1,900 - 1) & \text{and} & \text{MH Adjustment Factor} = (1.26316DF - DF)/(2,400 - 1,900) \\ &= (1.1111) * (DF - 1) & & = (0.52632) * DF \end{aligned}$$

Treatment O&M Expense Unit Cost:

$$\begin{array}{l} \text{Base} & \text{MD} & \text{MH} \\ 0.58971 + & 0.16579 * [1.1111(DF - 1)] + & 0.01099 * (0.52632 * DF) = & 0.40551 + 0.18999 * DF \end{array}$$

Transmission O&M Expense Unit Cost:

$$\begin{array}{l} \text{Base} & \text{MD} & \text{MH} \\ 0.03345 + & 0.01955 * [1.1111(DF - 1)] + & 0.00987 * (0.52632 * DF) = & 0.01173 + 0.02692 * DF \end{array}$$

Derivation of Sullivan's Island O&M Volume Rate of Charge

Sullivan's Island Contract Capacity = 0.75 mgd
 Sullivan's Island 2012 Projected Average Day Flow = 130,983 Ccf = 0.268 mgd (Reference: H-4)

Assume: Sullivan's Island Demand Factor (DF) = 0.75 / 0.268 = 2.79407, Then the Treatment and Transmission O&M Volumetric Rate is:

Treatment O&M Expense Volumetric Rate:

$$= 0.40551 + 0.18999 * 2.79407 = 0.93636$$

Transmission O&M Expense Volumetric Rate:

$$= 0.01173 + 0.02692 * 2.79407 = 0.08695$$

Total O&M Volumetric Rate:

$$\frac{0.08695}{1.02331} \text{ \$/Mgal}$$

SULLIVAN'S ISLAND
EXHIBIT D
WHOLESALE WATER SERVICE CONTRACT BETWEEN CPW AND SULLIVAN'S ISLAND
GENERAL PLANT DEPRECIATION COMPONENT OF VOLUMETRIC RATE

General Plant Depreciation Related to Treatment Plant, Test Year 2012
Sullivan's Island Contract Share of Treatment Plant Depreciation Expense: \$23,157 (Reference: H-9)
General Plant Portion of Depreciation: 63.2% (Reference: H-17)
General Plant Depreciation for Treatment Plant Depreciation Expense:
 $\$23,157 \times 0.632 = \$14,635$

General Plant Depreciation Related to Transmission System, Test Year 2012
Sullivan's Island Contract Share of Transmission Value (Current OC): \$1,239,587 (Reference: H-10)
General Plant Portion of Depreciation: 63.2% (Reference: H-17)
Annual Depreciation Percentage: 1.03% (Reference: H-16)
General Plant Depreciation Per Value of Transmission System OC Value:
 $\$1,239,587 \times 63.2 \times 0.0103 = \$8,068$

Depreciation Rate Per 1,000 Gals.

Assume Contract Capacity of 0.75 mgd and an Average Day Flow of 0.268 mgd

Volumetric Depreciation Equation Related to Treatment Plant:
 $\$14,635 / (0.268 \text{ mgd} \times 365 \text{ days/year} \times 1,000) = \0.14938

Volumetric Depreciation Equation Related to Transmission Plant:
 $\$8,068 / (0.268 \text{ mgd} \times 365 \text{ days/year} \times 1,000) = \0.08235

Total General Plant Depreciation Rate:
 $\$0.14938/\text{Mgal} + \$0.08235/\text{Mgal} = \$0.23173$

SULLIVAN'S ISLAND
EXHIBIT E
WHOLESALE WATER SERVICE CONTRACT BETWEEN CPW AND SULLIVAN'S ISLAND
GENERAL PLANT RETURN COMPONENT OF VOLUMETRIC RATE

General Plant Return Related to Treatment Plant, Test Year 2012
Sullivan's Island Contract Share of Treatment Plant Value (Current RCLD): \$ 1,680,706 = \$2,240,941/mgd x 0.75 mgd
General Plant Value as Share of Total Value: 3.1% (Reference: H-17)
Rate of Return on RCLD Plant Value: 3.45%
General Plant Return Per Value of Treatment Plant RCLD Value:
\$1,680,706 x 0.031 x 0.035 = \$1,798

General Plant Return Related to Transmission System, Test Year 2012
Sullivan's Island Contract Share of Transmission System Value (Current RCLD): \$2,308,946 (Reference: H-10)
General Plant Value as Share of Total Value: 3.1% (Reference: H-17)
Rate of Return on RCLD Plant Value: 3.45%
General Plant Return Per Value of Transmission System RCLD Value:
\$2,308,946 x 0.031 x 0.035 = \$2,469

Return Volumetric Rate Per 1,000 Gals.

Assume Contract Capacity of 0.75 mgd and an Average Day Flow of 0.268 mgd

Volumetric Return Equation Related to Treatment Plant:
 $\$1,798 / (0.268 \text{ mgd} \times 365 \text{ days/year} \times 1,000) = \0.01835 /Mgal

Volumetric Return Equation Related to Transmission Plant:
 $\$2,469 / (0.268 \text{ mgd} \times 365 \text{ days/year} \times 1,000) = \0.02520 /Mgal

Total General Plant Return Rate:
 $\$0.01835/\text{Mgal} + \$0.02520/\text{Mgal} = \$0.04355 \text{ /Mgal}$



BLACK & VEATCH CORPORATION
11401 LAMAR AVENUE, OVERLAND PARK, KS 66211
+1 913-458-3025 | whiteam@bv.com

December 16, 2011

Mr. Kin Hill, P.E.
Chief Executive Officer
Charleston Water System
103 St. Philip Street
Charleston, South Carolina 29402

Dear Mr. Hill:

We are pleased to present the results of our water and wastewater utility impact fee update study. The purpose of this update is to recognize five areas of potential change since the last update: (1) inflation of applicable system value, (2) changes in applicable outstanding debt, (3) changes in applicable plant investment, (3) changes in applicable plant capacities, and (4) changes in customer capacity requirements.

The methodology used in developing the updated impact fees is consistent with that used in our most recent study, performed in 2005. Rates continue to be based on sound engineering economic principles that provide a basis by which "growth pays for growth". As in the past, the derivation of an updated reproduction cost less accumulated depreciation (RCLD) of backbone facilities for each utility was accomplished through the use of trend factors and condition percent curves. The specific data used in this study was taken from our recent 2010 retail cost of service study, other requested information of record, and conversations with utility representatives.

The enclosed Table 1 summarizes the results of our study and indicates the derivation of impact fees for the water and wastewater utilities. Resulting estimated water and wastewater utility RCLD values are shown on Line 1. Projected capital expenditures from currently outstanding bonds and available reserves are shown on Line 2. The total backbone system value indicated on Line 3 represents the sum of plant estimated to be in service as of December 31, 2011, plus these projected capital investments.

Value of Backbone Facilities

The \$680,559,000 total value of backbone water facilities shown in Table 1 represents a 48 percent increase in the value of \$458,467,000 established in our 2005 studies. Similarly, the \$505,259,000 total value of backbone wastewater facilities shown in this table represents a 67 percent increase in the \$303,448,000 value derived in the 2005 studies. These changes in value are attributable to recognition of the effects of inflation and depreciation of facilities, retirements, the substitution of actual cost experience for previously estimated costs, and investments in new facilities.

System Capacities

Water treatment facilities are understood to have a capacity of 118 million gallons per day (MGD), or 15,775,000 cubic feet per day. This capacity, which is unchanged from our 2005 studies, represents the system's ability to treat water during system peak day load conditions. Similarly, it is understood that the wastewater treatment facilities, including the Plum Island and Daniels Island treatment plants, are capable of treating a total of 36.5 mgd of wastewater, or 4,880,000 cubic feet per day, which represents the system's ability to treat average day wastewater loadings and is unchanged from our 2005 studies.

Unadjusted Unit Value of Backbone Facilities

The indicated total value of respective water and wastewater backbone investment, expressed in dollars per unit of system capacity, is shown on Line 5 of Table 1. The updated total unit value for the water utility is \$44.739 per cubic foot per day of capacity. The corresponding total unit value for the wastewater utility is \$115.012 per cubic foot per day of capacity.

Adjustment of Unit Value to Credit Applicable Backbone System Debt

In order to establish the portion of the above water and wastewater total plant unit values appropriate for recovery as impact fees, the share of outstanding revenue bond debt associated with non-growth related backbone facility additions (e.g., replacements and upgrades), which are recovered through user charges, is deducted. This is necessary to ensure that new connectors do not *double-pay* for such additions (i.e., through both the impact fee and user fees). By deducting from total system value only that portion of debt related to non-growth related facilities, only growth related investment is represented in the system value recognized in the impact fee derivation. This also allows the complete recovery of growth related capital costs.

Specifically, this is accomplished by establishing the amounts of existing debt associated with non-growth related capital facilities, as shown on Line 6. The amounts shown are divided by the associated (i.e., currently utilized) treatment plant capacity shown on Line 7, in order to establish system value per unit of capacity indicated on Line 8. The net system value per unit of capacity used to establish impact fees is derived by deducting the debt amounts on Line 8 from the system value amounts previously indicated on Line 5. The net plant unit values that result from this derivation are shown on Line 9.

Customer Capacity Requirements

A typical water customer with a ¾-inch water service tap requires 63 cubic feet per day of maximum day capacity from the water system, as indicated on Line 10. Wastewater customer capacity requirements for impact fee administration purposes are based on a schedule of unit contributory loading guidelines expressed in terms of Equivalent Residential Units (ERU's). The average day wastewater system capacity currently associated with one ERU is reported to be 400 gallons per day, or 53.5 cubic feet/day, as shown on Line 11.

Impact Fees

Customer capacity requirements, when applied to the net system values per unit of capacity previously shown on Line 9, yield the impact fee amounts applicable to new water and wastewater system connectors. As presented on Lines 12 and 13, respectively, the water utility fee for a ¾-Inch water tap would be \$2,085 and the wastewater utility fee for one ERU of capacity would be \$2,439. These amounts are exclusive of staff engineering/inspection overhead fees that are applicable, which have been calculated by Charleston Water System staff to be \$500 for each utility as shown on Line 14. The totals of the impact and engineering services fees are shown on Line 15.

Water utility impact fees applicable to new connectors served by larger service connections are presented in Table 2. These fees are based on the flow capacity relationship for a specified larger size water tap relative to that for a ¾-inch tap, except as described below.

Because water use characteristics for water tap sizes greater than 4-inch can vary significantly among individual customers, the use of average customer characteristics as a basis for deriving water impact fees for such customers may not be appropriate. Water utility impact fees for these larger customers

can be individually derived based on the annual water use and peak day demand characteristics applicable to each. However, this would require significant time and cost and the validity of the results would be limited by the ability to accurately forecast the particular demand characteristics of each new connector to the system. In recognition of these limitations, when the impact fee rates were adopted in 1991, the Commissioners chose to adopt a common schedule of rates for 6, 8, 10, and 12-inch taps that are discounted in recognition that the demand characteristics of this group may be better than average. Continuation of this practice is reflected in the impact fees proposed in Table 2, which have been discounted in a manner similar to existing rates. As a result of these adjustments, the base water impact fees (exclusive of Engineering Service Fees) proposed in Table 2 reflect approximately a 23 percent increase over the existing fees implemented in 2005 for all size taps.

Wastewater utility impact fees will be established recognizing the total impact fee rate per ERU indicated herein, applied to applicable unit contributory loading requirements expressed in terms of Equivalent Residential Units (ERU's). The proposed wastewater impact fee rate of \$2,440/ERU (exclusive of Engineering Service Fees) represents an increase of about 14 percent over the current impact fee rate of \$2,150/ERU.

We are available to discuss the findings presented herein at your convenience. Please call me if you have any questions. As always, we appreciate this opportunity to serve the Charleston Water System.

Very truly yours,

BLACK & VEATCH CORPORATION



Anna M. White
Manager

AMW
Enclosures

Cc: Mr. Wesley Ropp, CFO

TABLE 1

**SUMMARY OF WATER & WASTEWATER
UTILITY IMPACT FEE DERIVATION**

<u>No.</u>	<u>Description</u>	<u>Water Utility</u> \$	<u>Wastewater Utility</u> \$
APPLICABLE BACKBONE SYSTEM VALUE (RCLD):			
1	Investment as of 12/31/11	680,559,000	505,259,000
2	Estimated Additional Capital Expenditures from Currently Outstanding Bonds and Available Reserves	25,200,000	56,000,000
3	Total System Value	705,759,000	561,259,000
4	Treatment Plant Capacity (cf/day)	15,775,000	4,880,000
5	Total System Value per Unit of Capacity (cf/day)	44.739	115.012
APPLICABLE BACKBONE SYSTEM DEBT:			
6	Existing Non-Growth Facilities Related Debt	116,746,000	200,078,000
7	Associated Treatment Plant Capacity Utilized (cf/day)	10,027,000	2,882,000
8	Applicable Debt per Unit of Capacity (cf/day)	11.643	69.423
9	NET SYSTEM VALUE PER UNIT OF CAPACITY (Line 5 - Line 8) (cf/day)	33.096	45.589
10	ESTIMATED CAPACITY REQUIREMENT FOR WATER CUSTOMER WITH 3/4-INCH TAP (cf/day)	63.0	
11	ESTIMATED CAPACITY REQUIREMENT FOR WASTEWATER CUSTOMER PER ERU (cf/day)		53.5
12	WATER IMPACT FEE FOR 3/4 INCH TAP	2,085	
13	WASTEWATER IMPACT FEE PER ERU		2,439
14	ENGINEERING SERVICE FEE	500	500
15	TOTAL IMPACT FEE (rounded)	2,590	2,940

TABLE 2
SCHEDULE OF WATER UTILITY
IMPACT FEES

<u>Water</u> <u>Tap Size</u> inches	<u>Impact</u> <u>Fee</u> \$	<u>Engineering</u> <u>Service Fee</u> \$	<u>Total</u> <u>(rounded)</u> \$
3/4	2,090	500	2,590
1	3,550	500	4,050
1-1/2	6,880	500	7,380
2	11,100	500	11,600
3	20,900	500	21,400
4	34,800	500	35,300
6	44,300	500	44,800
8	69,400	500	69,900
10	82,700	500	83,200
12	101,100	500	101,600

**Meeting of the Commissioners of Public Works
of the City of Charleston, South Carolina
(Charleston Water System)**

Administrative, Personnel, and Public Relations Committee
Mr. William E. Koopman, Jr., Committee Chairman
December 20, 2011

I. Call to Order

II. Approval of Minutes of Committee Meeting of November 29, 2011

III. Bill Inserts - Ms. Craft – Exhibit C

February 2012

- Water Missions International – 2012 Walk For Water
- North Charleston Sewer District - Fat-Free Sewers (*NCSD Customers Only*)

(Motion Requested)

IV. Electronic Billing Update – Ms. Ferguson

**V. Minor Amendments to Water Rules & Regulations for Property Manager Type Accounts –
Ms. Ferguson / Mr. Hill - Exhibit D**

Ms. Ferguson and Mr. Hill will discuss with the Commissioners the need for a minor amendment to the CWS Water Rules & Regulations regarding the Property Manager account status, which will allow CWS to charge the appropriate water and wastewater origination fees for qualifying accounts. (Motion Requested)

VI. Special Presentation – Mr. Hill

VII. Adjournment



Clean Water for Life

"EXHIBIT C"

INTEROFFICE COMMUNICATION

December 15, 2011

To: Commissioners and Officers
From: Jenny Craft, Public Relations Manager
Re: Bill Inserts

In accordance with Charleston Water System's approval process for bill inserts, the following bill inserts are submitted for your approval:

February 2012

- **Water Missions International – 2012 Walk For Water**
- **North Charleston Sewer District - Fat-Free Sewers (*NCSO Customers Only*)**

Should you have any questions or concerns, please feel free to contact me prior to or during our Board meeting.

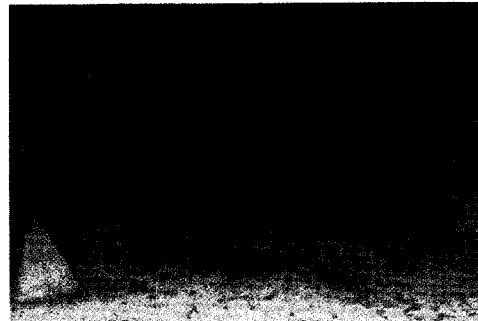
Attachments

Some Things Just Don't Belong in the Toilet...

Toilets are only meant for one activity, and you know what we're talking about! When the wrong thing is flushed, results can include costly backups on your own property or problems at your local wastewater treatment plant. That's why it's so important to treat toilets properly and flush only your personal contributions to the local wastewater treatment plant.

Don't rush to flush any items like:

- Baby wipes and diapers
- Rags and towels
- Cotton swabs
- Syringes
- Candy and other food wrappers
- Clothing labels
- Cleaning sponges
- Toys
- Plastic items of any description
- Aquarium gravel or kitty litter
- Rubber items such as latex gloves
- Cigarette butts
- Sanitary napkins
- Hair
- Underwear
- Disposable toilet brushes



Sewer Overflows Are a Mess— Disposable Does Not Mean Flushable!

It will take a lot more than the paper towels that caused this mess to clean it up. Flushing paper towels and other garbage down the toilet wastes water and can create sewer backups and overflows. This can also cause time-consuming backups in the public sewer pipes and at the local wastewater treatment plant, and related costs can be passed on to ratepayers. Even if its label reads "flushable," you are still safer and more environmentally correct to place the item in a trashcan. And because homeowners are responsible for their property's sewer pipes, improper flushing can cost you money. **You plug it, you pay for it!**

And There's More...

Whatever ends up in your toilet can potentially impact the water environment, so it's really important to keep household wastes such as window cleaners, unused or expired pharmaceutical products, paint thinners, fats, and fruit labels out of toilets and drains and dispose of them properly. For more information, visit <http://www.wef.org/HouseholdWaste>.

It's a Toilet, Not a Trashcan!



601 Wythe Street
Alexandria, Virginia
22314-1994 USA
Tel. 1-800-666-0206
Fax. 1-703-684-2492
www.wef.org

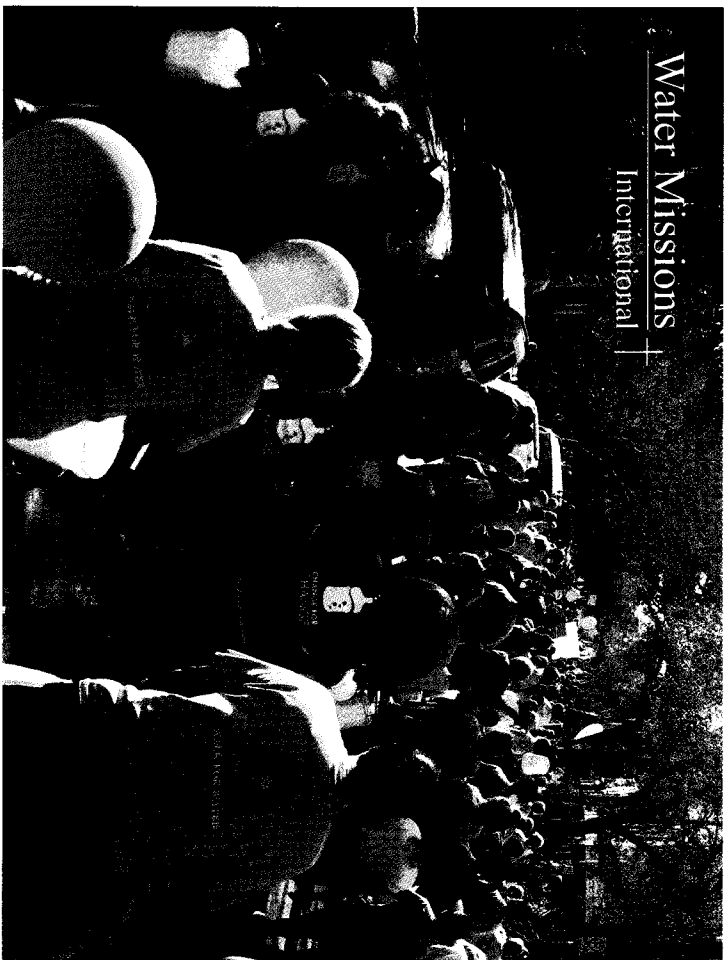


Recycled

Supporting responsible use
of forest resources
www.fsc.org Cert no. SW-COC-00050
© 1996 Forest Stewardship Council



Printed using vegetable-based inks and 100% wind power. ♻️



Water Missions
International

Save a Life Walk For Water

Saturday, March 24, 2012
Gannon Park, Downtown Charleston
\$15 to register, includes a T-shirt

Join us for a 3.5-mile walk to symbolize the trek that many women and children make each day to collect water in developing countries.

www.watermissions.org/walk

Save a child's life.

See the back of your water bill to sign up for Operation Round Up.

When you sign up, Charleston Water System will round up your bill to the next dollar and donate that round up amount to Charleston-based Water Missions International.

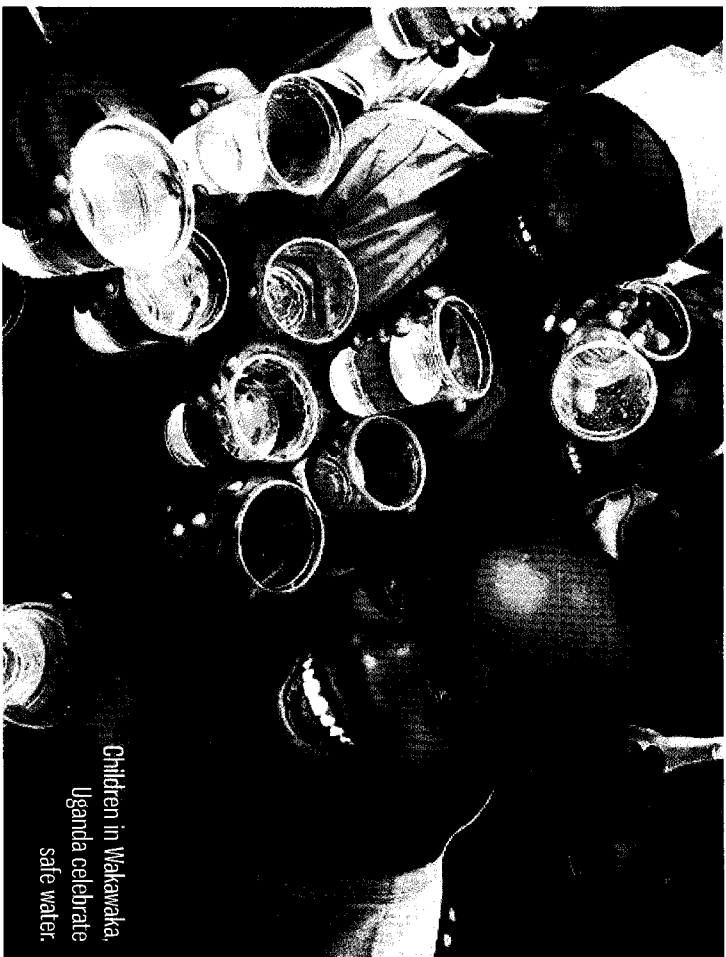
For example:

Water bill total: \$25.75

With round up: \$26.00

\$0.25 donated to Water Missions International!

Water Missions +
International
www.watermissions.org



Children in Wakawaka,
Uganda celebrate
safe water.

45. ***Property Manager Program.*** A special program where Owners-owners or property managers may apply for water and/or wastewater service at a service location for the purpose of cleaning up the property. The-This service-special billing program is available for 28 consecutive calendar days, maximum. A feeThe appropriate water and wastewater origination only fees is-are assessed for the plan during the 28-day period, and the account is not billed for actual consumption unless it exceeds 3 Ccfs as long as it is less than 4 Ccf, at which time they-the customer would also be billed water and sewer, if applicable based on volumetric consumption at applicable water and wastewater rates as appropriate. (See Exhibit "E", Property Manager Fee.)

EXHIBIT "E"

SERVICE CHARGES

Origination Fee (Approved: 11/20/80 / Revised: 12/1/08)	\$ 30.00
Non-Pay Process Fee (Effective: 08/06/04 / Revised: 12/1/08)	\$ 50.00
Return Visit Fee (Open Fixture) (Effective: 02/01/96 / Revised: 12/1/08).	\$ 30.00
After-Hours Charge	\$ 50.00
Off-Temporary-Turn-On	N/A
Returned Check Charge (NSF) (Effective: 08/06/04)	\$ 35.00
Meter Replacement and Test Fee	\$ 50.00
CPW/MASC Processing Fee (Effective 10/01/95)	\$ 25.00
Property Manager Fee <u>(same as Origination Fee)</u> -(for up to 28 days) (less than 4 Ccf).....	\$ 30.00
Flow Search Investigation Fee.....	\$ 50.00
Annual Backflow Administrative Fee (Effective: 02/01/96) *	\$ 25.00
Hydrant Flow Test Fee — (Per Test, Effective 07/01/00) (See Section R, Item 5).....	\$200.00
Cross-Connection Testers Recertification Fee	\$ 80.00
(\$50.00 DHEC Recertification Fee + \$30.00 Internal CWS Administrative Fee)	
Engineering Service Fee (Per Water Service)	\$500.00
Warranty Inspection Fee(per liner foot of water main)	\$ 0.50
* Effective 2/1/2000	Single-family residential irrigation accounts are exempt from this annual fee. All other backflow assembly accounts are subject to this fee.

**Meeting of the Commissioners of Public Works
of the City of Charleston, South Carolina
(Charleston Water System)**

**Regulatory and Property Committee
Mr. David E. Rivers, Committee Chairman**

December 20, 2011

- I. **Call to Order**

- II. **Approval of Minutes of Committee Meeting of November 29, 2011**

- III. **Update on Property Closings for First Citizens Bank and Proposed City of Hanahan's Library Site – Mr. Hill**

- IV. **Adjournment**

**Meeting of the Commissioners of Public Works
of the City of Charleston, South Carolina
(Charleston Water System)**

Mr. Thomas B. Pritchard, Chairman

December 20, 2011

- I. Reconvene Commissioners' Meeting after conclusion of Committee Meetings**
- II. Approval of Minutes of Meeting of November 29, 2011**
- III. Citizens Participation/Public Comment**
- IV. Monthly Customer Service Activity and Financial Report – Ms. Ferguson / Mr. Ropp**
- V. Special Recognition by the Commissioners – Mr. Pritchard – Exhibit E**

(Motion Requested)
- VI. CEOs / Staff Report**
 - A. Strategic Plan Team Presentation #2; Operational Enhancement - Baker Mordecai, PE, Director of Wastewater Collection Department
 - B. Update on Church, Tradd, Queen and Legare Street Water Main Replacement Project – Chad Hendrix, PE
- VII. Reports of Standing Committees – Ms. Harrison**
 - A. Public Contract and Finance Committee Meeting of December 20, 2011
 - B. Administrative, Personnel and Public Relations Committee Meeting of December 20, 2011
 - C. Regulatory and Property Committee Meeting of December 20, 2011

**Meeting of the Commissioners of Public Works
of the City of Charleston, South Carolina
(Charleston Water System)**

Mr. Thomas B. Pritchard, Chairman

December 20, 2011

VIII. Major Capital Project Requests - Mr. Cline

- Plum Island West Ashley Pump Station Force Main Project Engineering Services Contract Amendment – Exhibit F
- West Ashley Tunnel Replacement Phase 5 Engineering Services Contract Amendment – Exhibit G

IX. Citizens Participation/Public Comment

X. Executive Session

Mr. Hill may request that the Commissioners move to enter into Executive Session to discuss legal and/or contractual matters.

XI. Adjournment



RESOLUTION

RECOGNITION OF THE DISTINGUISHED SERVICE OF LOUIS L. WARING, JR.

WHEREAS, Mr. Louis L. Waring, Jr., has dutifully served the Greater Charleston Community as Charleston City Council's representative on the Charleston Water System Board of Commissioners since January 16, 1996; and

WHEREAS, Mr. Waring's term of service on the Board of Commissioners will conclude on December 31, 2011; and

WHEREAS, Mr. Waring has served with tremendous integrity, a genuine desire to serve the best interests of this community, and an unwavering commitment to the protection of public health and the environment; and

WHEREAS, Mr. Waring, as Chairman of the Charleston City Council's Ways and Means Committee, helped Charleston Water System secure the necessary Council approvals for the issuance of municipal bonds to fund critical water and wastewater capital improvement projects for the continued protection of public health and the environment; and

WHEREAS, the staff and Board of Charleston Water System and the citizens of Charleston owe a huge debt of gratitude for Mr. Waring's determined and dedicated public service;

NOW, THEREFORE, BE IT RESOLVED that the Charleston Water System Board of Commissioners hereby recognizes the exemplary service of Mr. Louis L. Waring, Jr. and wishes to record for posterity our sincerest gratitude for his important and insightful contributions as a 16-year member of this Board of Commissioners.

Mr. Waring's stewardship of this community's water and wastewater infrastructure will forever leave a legacy of enhanced quality of life, public health protection, and environmental preservation for future generations.

Adopted this twentieth day of December 2011.

Thomas B. Pritchard, Chairman

David E. Rivers, Vice-Chairman

William E. Koopman, Jr., Commissioner

Honorable Joseph P. Riley, Jr., Mayor



TO: Mark Cline, P.E.
Capital Projects Officer

FROM: Russell Huggins, P.E. *ZH*
Director of Engineering

DATE: December 12, 2011

RE: West Ashley Sewer Tunnel Replacement Project
Influent Pump Station Force Main Division
Engineering Services Contract Amendment

At the July 2010 Commissioner's Meeting, the engineering firm Hazen and Sawyer (H&S) was awarded an engineering services contract to provide design and construction administration services for the Influent Pump Station Force Main Division of the West Ashley Sewer Tunnel Replacement Project. The proposed 48-inch diameter force main will transport flow from the new influent pump station at the terminus of the proposed West Ashley Tunnel to the existing Plum Island Wastewater Treatment Plant (PIWWTP) headworks. Included in the scope are evaluation of force main routing options to avoid conflicting with future structures identified in the PIWWTP Master Plan, connection to the future PIWWTP headworks and tunnel flushing storage tank, force main sizing to accommodate future flow and tunnel flushing, evaluation of piping material and construction methodology, and design coordination with Black & Veatch for the force main connection to the new influent pump station and influent flow hydraulics.

During the routing evaluation and design phase, project complexities associated with the planning and constructability of a large diameter pipeline resulted in additional work outside of the original scope of services. Inclusive in the additional work is influent pump station flow metering, relocation of overhead power lines, incorporation of pile support design for the Pump Station 56 force main, and Charleston Water System requested design changes to reduce estimated construction costs and to improve overall constructability. Additionally, work outside of the original scope was performed to document justification of the force main routing in response to a legal challenge to the issuance of an Ocean and Coastal Resource Management (OCRM) permit.

Attached for your review is a contract amendment proposal from H&S that outlines the additional work through November 2011 and the associated fees. The total cost of this contract amendment is \$120,003. Note this figure does not include costs associated with expert testimony for defense of the appealed OCRM permit. If approved, the contract amendment will be incorporated into our standard engineering services agreement. It is our recommendation that the Commissioners approve an engineering services contract amendment for H&S in the amount of \$120,003 for the West Ashley Sewer Tunnel Replacement Project - Influent Pump Station Force Main Division. The original contract amount was \$389,222.50. The new contract amount will be \$509,225.50. Funding for this amendment is available from the Wastewater Major Capital Improvement Program.

Attachment

cc: Kin Hill, P.E., Andy Fairey, Baker Mordecai, P.E., Linda Hans, Don Benjamin, P.E.

HAZEN AND SAWYER
Environmental Engineers & Scientists

Hazen and Sawyer, P.C.
1 Poston Road
Suite 240
Charleston, SC 29407
(843) 744-6467
(843) 744-6469 (Fax)

December 8, 2011

Mr. Donald E. Benjamin, Jr., P.E.
Project Manager
Charleston Water System
P.O. Box B
103 St. Philip Street
Charleston, SC 29402

RE: West Ashley Sewer Tunnel and
Influent Pump Station Project
48" Influent Pump Station Force Main
Additional Design Services Scope and Fee

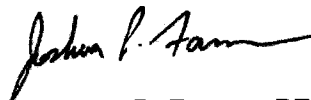
Dear Mr. Benjamin,

Hazen and Sawyer is pleased to submit our attached additional design scope of services and engineering fee for the West Ashley Sewer Tunnel and Influent Pump Station Project 48" Influent Pump Station Force Main Project. As a firm, Hazen and Sawyer truly appreciates the opportunity to continue serving Charleston Water System with any need that may arise.

Please do not hesitate to contact us should you have any questions.

Very Truly Yours,

HAZEN AND SAWYER, P.C.



Joshua P. Farmer, PE
Senior Principal Engineer

**Additional Design Services
Wastewater Tunnel Replacement Project – Phase V
West Ashley Influent Pump Station Force Main
Through November 2011**

1. Relocation of SCE&G Power Lines

Additional work was required related to relocation of SCE&G power lines. H&S reviewed new routing for SCE&G power lines outside of future planned expansion. Additional work included discussions with SCE&G on site (4 meetings) to develop routing alternatives, figures, and cost estimates. Additional work included development of new power line routing, constructability, individual route cost estimates, constructability/feasibility, additional permitting documents to include SCE&G work and verbal agreement to complete selected option.

80 Hours – \$7,858

2. Design of 10" Force Main

The new 10" Force Main was added to H&S's scope to provide a common pile support system for the new 10" Force Main and the proposed 48" West Ashley Influent Pump Station Force Main.

66 Hours - \$7,786

3. Preparation of Renderings and Documents, and Public Meeting.

Hazen and Sawyer prepared renderings, updated and revised the 1"=60' Master Plan (Color) Plant Layout Exhibit, Island Fill/Expansion Drawing (color), and attended a public meeting.

125 Hours - \$13,590

4. Preparation of an Additional Technical Memorandum

An additional technical memorandum was prepared summarizing alternatives, proposed facilities, and cost estimates.

184 Hours - \$23,510

5. Changes to Reduce Estimated Construction Cost

Additional work was done in evaluating and designing alternatives to reduce the estimated \$4.5 million construction cost at 30% design completion. H&S analyzed alternative routes and evaluated costs that resulted in revised routing for the force main and a revised construction cost estimate of \$3.7 million.

110 Hours - \$13,487

6. Added Flow Meter

A magnetic flow meter to measure IPS flow was added to the project. Additional work included sizing the meter, locating a vault for the meter and for a future meter, sump pump specifications, calculations, and coordination with B&V for power, control, and instrument wiring.

92 Hours - \$10,910

7. Additional Master Plan Figures separated by Phase of Construction

Master Planning figure broken into individual future phases of construction (6 drawings).

23 Hours - \$2,157

8. Change of Peak Flow From 135 MGD to 150 MGD

The design peak flow for tunnel flushing was changed from 135 MGD to 150 MGD in August 2010. Tunnel flushing flows as high as 175 MGD were reviewed. Additional work included a revised layout to locate Tees on the proposed force main. Additional hydraulic evaluations were required including a revised pump surge analysis and a revised analysis of connections to the Tunnel Flushing Storage Tank from the proposed force main and from downstream of the future PTF.

217 Hours - \$23,603

9. Decision Path Summary Document

Document prepared to summarize completed Master Planning, Feasibility, and Site Evaluations conducted over the past 6 years at Plum Island WPCP to support current design decisions.

17 Hours - \$2,102

10. SCE&G Construction Contract Coordination

Hazen and Sawyer (H&S) will serve as Charleston Water System's (CWS) professional engineering representative to coordinate the development of a construction contract between Charleston Water System (CWS) and South Carolina Electric & Gas (SCE&G) for a new power line alignment as proposed in the *West Ashley Sewer Tunnel and Influent Pump Station Division IV Influent Pump Station Force Main "For CWS Final Review"* Contract Documents to provide room for construction of the Influent Pump Station Force Main (IPFSM) while maintaining power service to the Plum Island Water Pollution Control Plant (PIWPCP). H&S will coordinate and provide guidance for the following:

- A construction contract between CWS and SCE&G for primary power distribution system relocation developed by SCE&G.
- A power line alignment construction/location drawing developed by SCE&G using the proposed alignment shown in the WAST construction drawings.
- Maintenance of plant operations planning during primary power distribution system realignment will be developed by H&S and coordinated with SCE&G staff to be included in both SCE&G and WAST construction contracts.

The scope of the contract and construction by SCE&G is as follows:

SCE&G to provide relocation of and temporary power supply of its primary distribution system to PIWPCP to allow for construction activities as shown in the *West Ashley Sewer Tunnel and Influent Pump Station Division IV Influent Pump Station Force Main "For CWS Final Review"* Contract Document. Power will be maintained throughout this scope of work by temporary power feeder as needed. The scope of work shall take place in two phases, phase 1 occurring prior to the start of construction activities for the West Ashley Sewer Tunnel and Influent Pump Station project (WAST) and phase 2 following the completion of IPFSM portion of the WAST project.

Phase 1

1. SCE&G to relocate the existing 23.9 KV overhead primary distribution system along the South perimeter of the PIWPCP to the southeast corner, then along the East perimeter to connect back with the northeast corner as proposed in the contract documents referenced above. This work will be accessed in part by areas inside the critical line defined by the OCRM Critical Area permit approved May 3, 2011 (OCRM-10-169-D), and does not require any additional permitting to coordinate.
2. SCE&G to provide temporary 23.9 KV overhead primary distribution lines to electrical transformer (zone 1) located at the existing generator building to

supply power until such time that notice to proceed for Phase 2 can be given.

3. Following establishment of alternate temporary power (phase 1, paragraph 2) SCE&G to disconnect the existing underground electrical power feeder from the existing 23.9 KV primary distribution power pole located in southeast corner of the PIWPCP which supplies the existing electrical transformer (zone 1) adjacent to the generator building.

Phase 2

1. Following completion of the IPSFM, a notice to proceed for phase 2 will be provided by CWS to SCE&G.
2. The trenchless installation of an underground electrical power feeder cable by SCE&G from the newly located 23.9 KV primary distribution power pole in the southeast corner of PIWPCP to the electrical transformer (zone 1) located adjacent to the generator building will be performed to complete SCE&G's scope of work.

125 Hours - \$15,000

Total – 1,039 Hours - \$120,003



INTEROFFICE COMMUNICATION

TO: Mark Cline, P.E.
Capital Projects Officer

FROM: Russell Huggins, P.E. *RH*
Director of Engineering

DATE: December 13, 2011

RE: West Ashley Sewer Tunnel Replacement Project
Engineering Services Contract Amendment

The existing West Ashley Sewer Tunnel conveys wastewater from the West Ashley service area to the Plum Island Wastewater Treatment Plant. Wastewater enters the tunnel through the Croghan Shaft located near Albemarle Road where it is then conveyed via a 30-inch carrier pipe under the Ashley River to the Plum Island Wastewater Treatment. Hydraulic modeling performed as part of the West Ashley Wastewater Master Plan identified peak dry weather flows nearing the tunnel's carrying capacity and peak wet weather flows exceeding the tunnel's carrying capacity. Additionally, it has been documented that the West Ashley Tunnel is experiencing similar corrosive deterioration observed in the Peninsular City tunnel system. Thus, the West Ashley Wastewater Master Plan recommended replacement of the existing tunnel. At the October 2008 Commissioners Meeting, the engineering firm Black and Veatch (B&V) was awarded an engineering services contract to provide preliminary engineering services to study alternatives for replacement of the West Ashley Tunnel that included new tunnel routing, shaft siting evaluations, tunnel and pumping station interconnections at Plum Island, a new influent pumping station, and tunnel flushing and flow equalization. Following the preliminary engineering phase, the Commissioners approved amendment of the B&V engineering services contract in October 2009 expanding the scope to provide design phase services for the West Ashley Sewer Tunnel Replacement Project. Inclusive in the scope was coordination with Hazen and Sawyer for interfacing the design of the new force main connection and plant hydraulics with the new influent pump station.

Project complexities associated with the design of large diameter, deep sewer tunnels and a new influent pump station resulted in additional work outside of the original scope of services. Inclusive in this additional work is evaluation of carrier pipe material alternatives, tunnel and tunnel access shaft inspections to document existing conditions, the addition of odor control at the new influent pump station, evaluation of odor control equipment alternatives to meet City codes, hydraulic analysis of Country Club gravity sewer collection system, additional permitting and easement acquisition, and administrative costs associated with an extended design phase schedule mostly attributable to the delays in bidding the project due to the legal challenge to the issuance of an Ocean and Coastal Resource Management (OCRM) permit.

Attached for your review is a contract amendment proposal from B&V that outlines the additional work through November 2011 and the associated fees. The total cost of this contract amendment is \$297,500. Note this figure does not include costs associated with expert testimony for defense of the appealed OCRM permit. If approved, the contract amendment will be incorporated into our standard engineering services agreement.

It is our recommendation that the Commissioners approve an engineering services contract amendment for B&V in the amount of \$297,500 for the West Ashley Sewer Tunnel Replacement Project. Inclusive of previous Board approved contract amendment amounts and two staff approved amendments totaling \$79,500 for safety consulting and federal funding assistance, the current contract amount is \$3,302,000. Approval of this amendment will result in a new contract amount of \$3,599,500. Funding for this amendment is available from the Wastewater Major Capital Improvement Program.

Attachment

cc: Kin Hill, P.E., Andy Fairey, Baker Mordecai, P.E.,



BLACK & VEATCH CORPORATION
418 KING STREET, SUITE 301, CHARLESTON SC 29403
+1-803-960-8145 P | +1-864-234-0784 F | WWW.BV.COM

Charleston Water System
West Ashley Wastewater Tunnel Replacement
Design Services Amendment Request

B&V Project 166437
B&V Contract File and 11.1200
December 13, 2011

Mr. Donald Benjamin
Charleston Water System
P. O. Box B
Charleston, South Carolina 29402

Dear Mr. Benjamin:

As discussed, enclosed is a summary of the requested design services amendment for the above referenced project for your consideration.

Again, we appreciate the opportunity to continue our work with the Charleston Water System on this important project.

Very truly yours,
BLACK & VEATCH CORPORATION

Clint E. Shealy, P.E.
Project Manager

jb
Enclosure[s]

Trend Report - Through November 2011

Additions to Scope of Work - Design Modifications

No.	Item	Scope Change	Design Cost
1	IPS Pump Manufacturer Evaluation	Requested scope addition includes coordination and attendance at meetings at PIWWTP with ABS and Flygt representatives. These meetings are above and beyond the anticipated level of effort for normal design.	\$2,500
2	Base Plate Investigation	Scope addition includes Owner requested investigation of alternate pump base plate mounting options in lieu of manufacturer's recommendations and standard B&V design practice.	\$2,500
3	Carrier Pipe Evaluation	Scope addition includes development of Technical Memorandum documenting recommendations for carrier pipe. Meeting with Frank Crawford and modifications of Technical Memorandum. Follow-up meeting with CWS staff to discuss recommendations. Meetings with Flowtite and Ameron including updates to specification.	\$13,500
4	Tunnel Inspection	Development of scope of services for Salmon's Dredging. Inspection of shaft and tunnel condition. Modification of design to reflect the findings of the inspection. Two meetings to present findings of inspection and design modifications. Additional language and figures were incorporated in the GBR and Project Requirements to reflect the deteriorated state of the shafts and tunnels in this area. The severity of the deterioration (multiple cave-ins) and as-built condition were not anticipated and required further explanation and detail to convey this information to the contractors. Deterioration also required accommodations to be added in the contract documents to address the long term stability of the PI#1 and PI#2 shafts due to the voids uncovered in the shaft walls.	\$18,000
5	Control Building Modifications	Reduction in size of IPS Control Building during Level 2 review. Building size was presented in Level 1 documents but not revised until after Level 2 design was complete. Required significant structural, architectural, and mechanical redesign. Changes made structure smaller and more efficient, but required redesign effort.	\$17,500
6	Pump Operation Control Strategies	I&C functional descriptions for modifying operational strategy for PCPS to integrate with operation of IPS. I&C Designer incorporated the PCPS in the I/O list, wrote language for the integration of a new PCPS PLC, added the James Island billing meter pit radio transducer into IPS PLC, and updated the instrument device schedule.	\$4,000
7	Croghan Shaft Odor Control Design	Change from initial direction of sole source equipment at Level II to inclusion of multiple manufacturers. Additional bioxide monitoring and data analysis incorporated into design. Included updated specifications.	\$12,000
8	City of Charleston Variance Requests and Hearings	Flood zone variance request preparation and hearing, height variance preparation and hearing. Prepared variance request following guidance and direction from Tom Scholtens in an effort to exclude the PI odor control as a permanent structure. In addition, had several discussions with Tom trying to resolve conflicting code requirements regarding the Porter Gaud Screen Wall (i.e. had to be seismically designed while at the same time it had to be considered a break away wall to meet VE requirements).	\$10,000
9	HGBD Gravity Sewer	Additional surveying and design services for gravity sewer improvements on Harborview Road. During development of the SOW, it was unknown how taxed the downstream sewers already were.	\$58,500
10	Easement Revisions to include Existing Infrastructure	Revisions to plats and additional coordination to include existing infrastructure at Country Club where easements did not previously exist. This item also includes approximately \$3000 to locate the force main along the fairway using radar.	\$6,000

11	Odor Control at PIWWTP	Addition of Odor Control at the PIWWTP. Not included in original design contract or fee. Includes raised units to comply with VE Zone and specification of units to fall below height variance requirement. Additional correspondence and follow-up with each vendor was required to determine if a single odor control unit could be provided that would meet the height restrictions or if two units would be required. Work also included several discussions and informal meetings with CWS to review equipment layout, access requirements, and operational considerations. Elevated platform required updates to structural piling design, review of code classifications, review of access requirements, seismic analysis of pipe supports for the ductwork, modifications to electrical/mechanical/plumbing design, etc. Elevated platform also reduced access around the control building and pump station and required additional adjustments to Civil Site Drawings (PI-C01 & PI-C04) to accommodate structure.	\$56,000
12	Additional SCE&G Coordination	Three on-site meetings with SCE&G, coordination, and correspondence. Additional coordination to locate underground electrical line at Porter Gaud. We had the utility locate service mark the line twice and then had SCE&G perform an additional locate as the exact location was still unknown. Once SCE&G located the final location it was picked by HGBD's surveyors and added to the base survey file. Additional time required coordinate outstanding issues when John Erwin left SCE&G.	\$4,500
13	IPS Header Configuration Modifications	Addition of isolation valve, electric actuator and tee for force main draining. Last minute addition that required modification to completed drawings (M3, M7, M10, S19A, E02, E11) for mechanical changes, structural design for slab and piles, electrical and duct bank routing for actuator, etc.	\$13,500
14	Complete redesign of Croghan Shaft Lid & modifications to approach channel lid and structure for screening access	Request to completely redesign the lid for the Croghan Shaft at the Final Design Review Meeting and additional modifications to approach channel lid and structure. Required structural and mechanical design changes.	\$15,500
15	Porter Gaud Shaft Site Plat and Survey	Additional surveying and plat development for Porter Gaud Shaft Site to incorporate existing infrastructure where easements did not previously exist. Includes redesign of surface sewers following confirmation of how headmaster's flow tied into the system. Redesign resulted in new trenchless segment and changes to TS-C22 and TS-C23. Also includes time for coordination with the City of Charleston to determine if a fee simple purchase of the shaft location was possible without a public hearing. Additional time for pending plat development and coordination with Donald Williams is also included.	\$13,500
16	Force Main Tunnel Option	Review of H&S's Force Main Alternatives TM and development of tunnel alternatives, costing and supporting text.	\$6,000
17	Bidding Delay	Additional Progress Meetings beyond original schedule, questions from bidders about delay, start and stop of design effort, general administration of project, etc. The four additional meetings included preparation time, coordination, meeting attendance and follow-up tasks along with several informal ad-hoc meetings. Project starts and stops had to be managed and inquiries from contractors, vendors and suppliers were addressed. Administratively project files had to be maintained, subs had to be managed and financial reporting had to be completed each month to keep project open. Design originally scheduled for completion in December of 2010. Services through November 2011.	\$44,000
Total Design Amendment Request			\$297,500