

MEMORANDUM

To: Board of Directors
From: Peter C. Gorham, P.E., Director of Engineering
Date: March 11, 2010
Re: FY 2010 CIP Authorizations
cc: James M. Bowling, IV

The following projects require Board authorization:

- A. St. George Avenue-Buck Road Water Main Replacement Project:** Prior to the kick-off meeting with our Term Consultant, O'Brien & Gere, ACSA staff recognized an opportunity to eliminate the final section of transite water main on Crozet Avenue and complete the loop of 8-inch diameter water main. There was also a 2-inch diameter main that could be eliminated on St. George Road while creating a connection between Railroad Avenue and St. George Avenue. By increasing the original scope to include these two areas, the ACSA can realize cost savings in design and construction by including them in the current project. Attached is a letter and proposal, dated March 10, 2010, from O'Brien & Gere detailing the costs for additional surveying and design. The ACSA staff has reviewed this proposal and finds it satisfactory. The cost for the additional services is \$34,720.00.

Board Action

We request the Board of Directors appropriate \$34,720.00 from the FY 2010 3R Fund for the additional surveying and design for the St. George Avenue-Buck Road Water Main Replacement Project.

- B. Boundary Valve Insertion Project:** The ACSA and City of Charlottesville (City) staff have been working together over the past year to identify interconnections between our water and sewer systems, in order to establish ownership and maintenance responsibilities. Six 12-inch diameter water mains that serve as major transmission mains between our systems, without in-line valves near the

County/City boundary, have been identified. The lack of valves in these major water mains can result in significant numbers of both organization's customers losing water service when breaks occur in either system. The insertion of valves in these areas will allow ACSA and the City maintenance crews to limit water service disruptions to their own customers while repairing breaks. The valves will also service as definitive points of ownership demarcation.

Bidding documents have been developed by ACSA staff and are ready for advertisement. Attached is our staff engineer's estimate, based upon a previous quote for valve insertions and estimates by the ACSA Maintenance Department for providing excavation services. The estimated construction cost for the project is \$79,300.

ACSA and the City crews will share in the excavation services for the valve insertion contractor. We also have a commitment from the City to share in the cost for the valve insertions.

Board Action

We request the Board of Directors authorize the advertising for Construction Bids for the Boundary Valve Insertion Project.

- C. **Canterbury Hills Water Main Replacement Project:** Our Term Consultant, Michael Baker, Jr., Inc. (Baker) is completing the design of the Canterbury Hills Water Main Replacement Project. With the completion of the design, the ACSA staff is requesting the Board authorize the advertising for Construction Bids for the project. The estimated construction cost, copy attached, for the project is \$690,000.

In addition, the ACSA staff developed a Scope of Services for Bid & Construction Phase Services. Attached is a letter, dated March 11, 2010, from Baker with their proposal for providing those services. The ACSA staff has reviewed the proposed fee and finds it satisfactory. The estimated cost for Bid & Construction Phase Services is \$11,425.

Board Action

We request that the Board of Directors appropriate \$11,425 from the FY 2010 3R Fund for the Bid & Construction Phase Services for the Canterbury Hills Water Main Replacement Project. In addition, we request the Board of Directors authorize the advertising for Construction Bids for the project.

- D. **Camp Holiday Trails Water Quality Project:** During discussions among ACSA staff and Board members Mr. Colbaugh and Mr. Roberts, it was determined the preferred course of action for reducing the pH of the water delivered to Camp

Holiday Trails (CHT) would be through a small package pH reduction station downstream of the water meter. A major factor in deciding this course of action was an AWWA study cited in the PER. This study found that over the course of a few years the pores where calcium leaching occurs could be “cured” or “healed,” thus gradually abating the effect of the cement mortar lining on the water pH. It was decided a package pH reduction station, at a greatly reduced cost compared to relining the pipe, would allow time for the calcium leaching of the water main lining to possibly subside. The ACSA staff has met with the Board of Directors of CHT to present this course of action to reduce the pH of the water delivered to the camp. Neither the Board of CHT nor the medical staff of the camp had any concerns over this proposed solution to the problem.

Our Term Consultant, Baker, has prepared a Scope of Services and a proposal to recommend and design a pH reduction station, a copy of which is attached. The ACSA staff has reviewed the scope and proposal and finds them satisfactory. The cost for the design services is \$16,440.

In addition, Baker has provided an estimate of probable construction costs via email, copy attached, in the amount of \$40,000. The construction of the building to house the pH reduction equipment, along with all associated piping and electrical work, will be done with ACSA forces. To facilitate the construction of the pH reduction station before the camp is in full operation by Memorial Day, the ACSA staff is requesting the Board to appropriate funds for the construction of the improvements.

Board Action

We request that the Board of Directors appropriate \$56,440 from the FY 2010 3R Fund for the design and construction of the Camp Holiday Trails Water Quality Project.

- E. Scottsville Drainage Basin SSES Project:** During the unusual wet-weather events for the months of November 2009, December 2009 and January 2010, influent flow at the Scottsville Wastewater Treatment Plant (WWTP) increased dramatically over the typical average daily flows in previous years for the same months. By permit requirements, the RWSA was required to report the three consecutive month increase to the Department of Environmental Quality (DEQ) since the flows reached 95% of the design capacity of the plant. Although the 95% threshold was reached, the Scottsville WWTP handled and provided effective treatment of all flow.

The ACSA staff decided to initiate steps to begin a Scottsville Drainage Basin SSES Project in the current fiscal year. The ACSA has developed a Scope of Services for the SSES. Our Term Consultant, O'Brien & Gere (OBG), has prepared a fee proposal and schedule for the project. Attached is a letter, dated

March 11, 2010, along with the fee proposal and schedule. The ACSA staff has reviewed these documents and finds them satisfactory. The cost of the Scottsville Drainage Basin SSES is \$124,490.

Board Action

We request the Board of Directors appropriate \$124,490 from the FY 2010 3R Fund for the Scottsville Drainage Basin SSES Project.

GWF/dmg/anw

010101CIPAuthorizations031110



March 10, 2010

Thomas A. Garrison, PE
Senior Civil Engineer
Albemarle County Service Authority
168 Spotnap Road
Charlottesville, VA 22911

RE: St. George Ave - Buck Rd Water Main Extension Expanded Scope
FILE: 6643/45773

Dear Tom,

Pursuant to our discussions during the project kick-off meeting, we have prepared the following fee estimate to address the expanded scope to incorporate the design of approximately 2,420 lf of additional water main. This estimate was developed upon the previously approved Scope of Services as approved by the Authority in the letter dated January 22, 2010 as well as our previous experience with the Authority.

Our fee increase for the additional design, survey, and geotechnical services is \$34,720. We propose to perform this work under the terms and conditions of our annual services contract. The cost for these additional services shall increase the project lump sum fee to \$159,020 from the initial lump sum of \$124,300 as detailed in the attached fee estimate, and shall be invoiced monthly on the basis of percent of services completed.

Upon your review, please contact me at your convenience with any questions or comments. We look forward to continuing on this project and working with your staff.

Very truly yours,

O'Brien & Gere Engineers, Inc.

A handwritten signature in blue ink, appearing to read 'S. W. Miller', is positioned above the typed name of the signatory.

Steven W. Miller, PE, PP, BCEE
Managing Engineer

St. George Avenue-Buck Road Water Main Replacement
 Albemarle County Service Authority
 INITIAL SCOPE

LABOR CLASSIFICATIONS	Project Officer	Managing Engr.	Sr. Proj. Engr.	Design Engr.	Sr. Design Drafter	Div. Secretary	TOTAL	DIRECT EXPENSES	COST / TASK
TASK / LABOR RATE (\$/HR)	\$215	\$160	\$125	\$85	\$80	\$60	(HRS)	(\$)	(\$)
PRELIMINARY ENGINEERING & SURVEY									
Project Kick-Off Meeting	0	4	6	0	0	2	12	-	\$1,510
Existing Data Collection and Assimilation	0	0	4	16	4	0	24	-	\$2,180
Right-of-Way Investigation for Alternative Routes	2	1	8	16	8	0	35	-	\$3,590
Criteria Collection, Analysis, and Reconciliation	0	0	4	16	0	0	20	-	\$1,860
Corridor Reconnaissance	0	0	8	8	0	0	16	-	\$1,680
Survey & Mapping	1	0	2	4	8	1	16	-	\$1,505
SUB-TOTAL	3	5	32	60	20	3	123	\$ 31,570	\$43,895
50% DESIGN DOCUMENT DEVELOPMENT									
Alignment Adjustment	0	1	4	16	24	0	45	-	\$3,940
Alignment Coordination	0	1	8	8	0	0	17	-	\$1,840
Geotechnical Investigation	0	0	2	4	4	2	12	-	\$1,030
50% Preliminary Design Documents	2	8	40	80	72	12	214	-	\$19,990
Public Outreach	0	4	8	2	2	4	20	-	\$2,210
50% Responsiveness Summary	1	4	2	2	0	2	11	-	\$1,395
SUB-TOTAL	3	18	64	112	102	20	319	\$ 12,357	\$42,762
90% DESIGN DOCUMENT DEVELOPMENT									
Plats	0	0	2	4	4	0	10	-	\$910
Test Holes	0	0	4	4	4	0	12	-	\$1,160
90% Preliminary Design Documents	2	8	40	40	60	8	158	-	\$15,390
Utility and Agency Submittal	0	0	8	24	4	8	44	-	\$3,840
90% Responsiveness Summary	1	4	1	2	0	2	10	-	\$1,270
SUB-TOTAL	3	12	55	74	72	18	234	\$ 1,503	\$24,073
FINAL DESIGN DOCUMENT DEVELOPMENT									
100% Final Design Documents	2	8	24	24	48	4	110	-	\$10,830
Provide Remaining Permit Applications	0	2	4	16	4	4	30	-	\$2,740
SUB-TOTAL	2	10	28	40	52	8	140	\$ -	\$13,570
TOTALS	11	45	179	286	246	49	816	\$45,430	\$124,300

St. George Avenue-Buck Road Water Main Replacement
 Albemarle County Service Authority
 EXPANDED SCOPE
 10-Mar-10

LABOR CLASSIFICATIONS	Project Officer	Managing Engr.	Sr. Proj. Engr.	Design Engr.	Sr. Design Drafter	Div. Secretary	TOTAL	DIRECT EXPENSES	COST / TASK
TASK / LABOR RATE (\$/HR)	\$215	\$160	\$125	\$85	\$80	\$60	(HRS)	(\$)	(\$)
PRELIMINARY ENGINEERING & SURVEY									
Project Kick-Off Meeting	0	4	6	0	0	2	12	-	\$1,510
Existing Data Collection and Assimilation	0	0	8	24	8	0	40	-	\$3,680
Right-of-Way Investigation for Alternative Routes	2	2	12	24	16	0	56	-	\$5,570
Criteria Collection, Analysis, and Reconciliation	0	2	12	24	0	0	38	-	\$3,860
Corridor Reconnaissance	0	0	16	12	0	0	28	-	\$3,020
Survey & Mapping	1	0	4	8	16	2	31	-	\$2,795
SUB-TOTAL	3	8	58	92	40	4	205	\$ 36,480	\$56,915
50% DESIGN DOCUMENT DEVELOPMENT									
Alignment Adjustment	0	2	12	20	32	0	66	-	\$6,080
Alignment Coordination	0	2	16	12	8	0	38	-	\$3,980
Geotechnical Investigation	0	0	4	4	4	2	14	-	\$1,280
50% Preliminary Design Documents	3	8	48	88	88	16	251	-	\$23,405
Public Outreach	0	4	8	2	2	4	20	-	\$2,210
50% Responsiveness Summary	1	4	2	2	0	2	11	-	\$1,395
SUB-TOTAL	4	20	90	128	134	24	400	\$ 14,555	\$52,905
90% DESIGN DOCUMENT DEVELOPMENT									
Plats	0	0	4	8	8	0	20	-	\$1,820
Test Holes	0	0	4	4	4	0	12	-	\$1,160
90% Preliminary Design Documents	3	8	56	56	80	8	211	-	\$20,565
Utility and Agency Submittal	0	4	12	32	8	8	64	-	\$5,980
90% Responsiveness Summary	1	4	2	4	0	4	15	-	\$1,685
SUB-TOTAL	4	16	78	104	100	20	322	\$ 2,030	\$33,240
FINAL DESIGN DOCUMENT DEVELOPMENT									
100% Final Design Documents	4	8	24	32	48	4	120	-	\$11,940
Provide Remaining Permit Applications	0	2	4	16	4	4	30	-	\$2,740
SUB-TOTAL	4	10	28	48	52	8	150	\$ 1,280	\$15,960
TOTALS	15	54	254	372	326	56	1077	\$54,345	\$159,020

St. George Avenue-Buck Road Water Main Replacement
 Albemarle County Service Authority
 EXPANDED SCOPE (DIFFERENTIAL)
 10-Mar-10

LABOR CLASSIFICATIONS	Project Officer	Managing Engr.	Sr. Proj. Engr.	Design Engr.	Sr. Design Drafter	Div. Secretary	TOTAL	DIRECT EXPENSES	COST / TASK
TASK / LABOR RATE (\$/HR)	\$215	\$160	\$125	\$85	\$80	\$60	(HRS)	(\$)	(\$)
PRELIMINARY ENGINEERING & SURVEY									
Project Kick-Off Meeting	0	0	0	0	0	0	0	-	\$ -
Existing Data Collection and Assimilation	0	0	4	8	4	0	16	-	\$ 1,500
Right-of-Way Investigation for Alternative Routes	0	1	4	8	8	0	21	-	\$ 1,980
Criteria Collection, Analysis, and Reconciliation	0	2	8	8	0	0	18	-	\$ 2,000
Corridor Reconnaissance	0	0	8	4	0	0	12	-	\$ 1,340
Survey & Mapping	0	0	2	4	8	1	15	-	\$ 1,290
SUB-TOTAL	0	3	26	32	20	1	82	\$ 4,910	\$ 13,020
50% DESIGN DOCUMENT DEVELOPMENT									
Alignment Adjustment	0	1	8	4	8	0	21	-	\$ 2,140
Alignment Coordination	0	1	8	4	8	0	21	-	\$ 2,140
Geotechnical Investigation	0	0	2	0	0	0	2	-	\$ 250
50% Preliminary Design Documents	1	0	8	8	16	4	37	-	\$ 3,415
Public Outreach	0	0	0	0	0	0	0	-	\$ -
50% Responsiveness Summary	0	0	0	0	0	0	0	-	\$ -
SUB-TOTAL	1	2	26	16	32	4	81	\$ 2,198	\$ 10,143
90% DESIGN DOCUMENT DEVELOPMENT									
Plats	0	0	2	4	4	0	10	-	\$ 910
Test Holes	0	0	0	0	0	0	0	-	\$ -
90% Preliminary Design Documents	1	0	16	16	20	0	53	-	\$ 5,175
Utility and Agency Submittal	0	4	4	8	4	0	20	-	\$ 2,140
90% Responsiveness Summary	0	0	1	2	0	2	5	-	\$ 415
SUB-TOTAL	1	4	23	30	28	2	88	\$ 527	\$ 9,167
FINAL DESIGN DOCUMENT DEVELOPMENT									
100% Final Design Documents	2	0	0	8	0	0	10	-	\$ 1,110
Provide Remaining Permit Applications	0	0	0	0	0	0	0	-	\$ -
SUB-TOTAL	2	0	0	8	0	0	10	\$ 93	\$ 1,203
TOTALS	4	9	75	86	80	7	261	\$7,728	\$ 33,533
Correction from Original Estimate for Direct Costs not Included									\$ 1,187
Total Additional Fee Request									\$ 34,720

**St. George Avenue-Buck Road Water Main Replacement
Albemarle County Service Authority
INITIAL SCOPE**

Item	Task 1	Task 2	Task 3	Task 4
Telephone/Postage/Photography	\$ 25	\$ 25	\$ 25	\$ 25
Reproduction	\$ 50	\$ 100	\$ 200	\$ 250
CADD	\$ 180	\$ 1,530	\$ 1,080	\$ 780
Mileage	\$ 198	\$ 264	\$ 198	\$ 132
Subcontract Survey	\$ 31,117	\$ -	\$ -	\$ -
Subcontract Geotechnical	\$ -	\$ 10,438	\$ -	\$ -
Totals	\$ 31,570	\$ 12,357	\$ 1,503	\$ -
			Total	\$ 45,430

ERROR - total direct costs for task 4 not included in total \$ 1,187
Total Cost should have been \$ 46,617

**St. George Avenue-Buck Road Water Main Replacement
Albemarle County Service Authority
EXPANDED SCOPE
10-Mar-10**

Item	Task 1	Task 2	Task 3	Task 4
Telephone/Postage/Photography	\$ 35	\$ 35	\$ 35	\$ 35
Reproduction	\$ 75	\$ 150	\$ 250	\$ 300
CADD	\$ 300	\$ 2,010	\$ 1,500	\$ 780
Mileage	\$ 245	\$ 300	\$ 245	\$ 165
Subcontract Survey	\$ 35,825	\$ -	\$ -	\$ -
Subcontract Geotechnical	\$ -	\$ 12,060	\$ -	\$ -
Totals	\$ 36,480	\$ 14,555	\$ 2,030	\$ 1,280
			Total	\$ 53,065

**St. George Avenue-Buck Road Water Main Replacement
Albemarle County Service Authority
EXPANDED SCOPE (DIFFERENTIAL)
10-Mar-10**

Item	Task 1	Task 2	Task 3	Task 4
Telephone/Postage/Photography	\$ 10	\$ 10	\$ 10	\$ 10
Reproduction	\$ 25	\$ 50	\$ 50	\$ 50
CADD	\$ 120	\$ 480	\$ 420	\$ -
Mileage	\$ 47	\$ 36	\$ 47	\$ 33
Subcontract Survey	\$ 4,708	\$ -	\$ -	\$ -
Subcontract Geotechnical	\$ -	\$ 1,622	\$ -	\$ -
Totals	\$ 4,910	\$ 2,198	\$ 527	\$ 93
			Total	\$ 7,728
			Error from Initial estimate	\$ 1,187
			Revised Total	\$ 8,915



Seving & Conserving

COST SUMMARY

Actual _____
 Estimate Water
 Damage Repair _____

Date: 2/9/09

Service Address: Ivy Road Mailing Address: _____

City/County Interconnect

Labor:

Man for 16 hours @ \$20.92 per hour = \$334.72 Man for _____ hours @ \$ _____ per hour = \$ _____
 Man for 16 hours @ \$17.48 per hour = \$279.68 Man for _____ hours @ \$ _____ per hour = \$ _____
 Man for 16 hours @ \$14.85 per hour = \$237.60 Man for _____ hours @ \$ _____ per hour = \$ _____
 Man for 16 hours @ \$14.85 per hour = \$237.60

TOTAL LABOR: \$ 1,089.60

Equipment:

Maintenance Truck for 16 hours @ \$ 9.00 per hour = \$ 144.00
Small Dump for 16 hours @ \$ 9.00 per hour = \$ 144.00
Large Dump for 16 hours @ \$ 15.00 per hour = \$ 240.00
Backhoe for 16 hours @ \$ 26.00 per hour = \$ 416.00
Air Compressor for 8 hours @ \$ 8.00 per hour = \$ 64.00
Asphalt Roller for 8 hours @ \$ 14.00 per hour = \$ 112.00
Arrow Board for 2 ^{days} hours @ \$ 51.00 per ^{day} hour = \$ 102.00

TOTAL EQUIPMENT: \$ 1,222.00

Materials:

Items	Quantity	Unit Price	Total Cost
<u>21A Gravel</u>	<u>10</u>	\$ <u>16.00</u>	\$ <u>160.00</u>
<u>Top Soil</u>	<u>5</u>	\$ <u>30.00</u>	\$ <u>150.00</u>
<u>Asphalt</u>	<u>2</u>	\$ <u>68.25</u>	\$ <u>136.50</u>
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____

TOTAL MATERIALS: \$ 446.50

Highway Permit: \$ 40.00
 Total Direct Costs: \$ 2,798.10

Plus 25% Indirect Costs (Labor & Materials Only): \$ 384.03

TOTAL: \$ 3,182.13



COST SUMMARY

Actual _____

Estimate Water

Damage Repair _____

Date: 2/9/09

Service Address: Harris Road & Lema Lane Mailing Address: _____

City / County Interconnect

Labor:

Man for 16 hours @ \$20.92 per hour = \$334.72

Man for 16 hours @ \$14.85 per hour = \$237.60

Man for 16 hours @ \$17.48 per hour = \$279.68

Man for _____ hours @ \$ _____ per hour = \$ _____

Man for 16 hours @ \$14.85 per hour = \$237.60

Man for _____ hours @ \$ _____ per hour = \$ _____

Man for 16 hours @ \$14.85 per hour = \$237.60

TOTAL LABOR: \$ 1,327.20

Equipment:

Maintenance Truck for 16 hours @ \$ 9.00 per hour = \$ 144.00

Small Dump for 16 hours @ \$ 9.00 per hour = \$ 144.00

Large Dump for 16 hours @ \$ 15.00 per hour = \$ 240.00

Backhoe for 16 hours @ \$ 26.00 per hour = \$ 416.00

Air Compressor for 8 hours @ \$ 8.00 per hour = \$ 64.00

Asphalt Paver for 8 hours @ \$ 14.00 per hour = \$ 112.00

_____ for _____ hours @ \$ _____ per hour = \$ _____

TOTAL EQUIPMENT: \$ 1,120.00

Materials:

<u>Items</u>	<u>Quantity</u>	<u>Unit Price</u>	<u>Total Cost</u>
<u>21 A Gravel</u>	<u>15</u>	<u>\$ 16.00</u>	<u>\$ 240.00</u>
<u>Asphalt</u>	<u>3</u>	<u>\$ 68.25</u>	<u>\$ 204.75</u>
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____

TOTAL MATERIALS: \$ 444.75

Highway Permit: \$ 40.00

Total Direct Costs: \$ 2,931.95

Plus 25% Indirect Costs (Labor & Materials Only): \$ 442.99

TOTAL: \$ 3,374.94



COST SUMMARY

Actual _____
 Estimate Water
 Damage Repair _____

Date: 2/6/09

Service Address: Aven Street

Mailing Address: _____

City/County Interconnect

Labor:

Man for 16 hours @ \$ 20.92 per hour = \$ 334.72
 Man for 16 hours @ \$ 17.48 per hour = \$ 279.68
 Man for 16 hours @ \$ 14.85 per hour = \$ 237.60
 Man for 16 hours @ \$ 14.85 per hour = \$ 237.60

Man for 16 hours @ \$ 237.60 per hour = \$ _____
 Man for _____ hours @ \$ _____ per hour = \$ _____
 Man for _____ hours @ \$ _____ per hour = \$ _____

TOTAL LABOR: \$ 1327.20

Equipment:

Maintenance Truck for 16 hours @ \$ 9.00 per hour = \$ 144.00
Small Dump for 16 hours @ \$ 9.00 per hour = \$ 144.00
Large Dump for 16 hours @ \$ 15.00 per hour = \$ 240.00
Backhoe for 16 hours @ \$ 26.00 per hour = \$ 416.00
Air Compressor for 8 hours @ \$ 8.00 per hour = \$ 64.00
 _____ for _____ hours @ \$ _____ per hour = \$ _____
 _____ for _____ hours @ \$ _____ per hour = \$ _____

TOTAL EQUIPMENT: \$ 1,008.00

Materials:

Items	Quantity	Unit Price	Total Cost
<u>21A Gravel</u>	<u>15 Ton</u>	<u>\$ 16.00</u>	<u>\$ 240.00</u>
<u>Asphalt</u>	<u>1 Ton</u>	<u>\$ 68.25</u>	<u>\$ 68.25</u>
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____

TOTAL MATERIALS: \$ 308.25

Highway Permit: \$ _____
 Total Direct Costs: \$ 2643.75

Plus 25% Indirect Costs (Labor & Materials Only): \$ 408.86

TOTAL: \$ 3052.31



COST SUMMARY

Actual _____
 Estimate Water
 Damage Repair _____

Date: 2/9/09

Service Address: Barracks Road Mailing Address: _____

City / County Interconnect

Labor:

Man for 20 hours @ \$ 20.92 per hour = \$ 418.40 Man for _____ hours @ \$ _____ per hour = \$ _____
 Man for 20 hours @ \$ 17.48 per hour = \$ 349.60 Man for _____ hours @ \$ _____ per hour = \$ _____
 Man for 20 hours @ \$ 14.85 per hour = \$ 297.00 Man for _____ hours @ \$ _____ per hour = \$ _____
 Man for 20 hours @ \$ 14.85 per hour = \$ 297.00

TOTAL LABOR: \$ 1,362.00

Equipment:

Maintenance Truck for 20 hours @ \$ 9.00 per hour = \$ 180.00
Small Dump for 20 hours @ \$ 9.00 per hour = \$ 180.00
Large Dump for 20 hours @ \$ 15.00 per hour = \$ 300.00
Backhoe for 20 hours @ \$ 26.00 per hour = \$ 520.00
Air Compressor for 8 hours @ \$ 8.00 per hour = \$ 64.00
Arrow Board for 2 ^{days} hours @ \$ 51.00 per ^{days} hour = \$ 102.00
Crash Cushion for 2 ^{days} hours @ \$ 250.00 per ^{days} hour = \$ 500.00
Asphalt Roller 8 14.00 112.00

TOTAL EQUIPMENT: \$ 1,958.00

Materials:

<u>Items</u>	<u>Quantity</u>	<u>Unit Price</u>	<u>Total Cost</u>
<u>21A Gravel</u>	<u>15</u>	<u>\$16.00</u>	<u>\$240.00</u>
<u>Asphalt</u>	<u>5</u>	<u>\$68.25</u>	<u>\$341.25</u>
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____

TOTAL MATERIALS: \$ 581.25

Highway Permit: \$ 40.00
 Total Direct Costs: \$ 3,941.25
 Plus 25% Indirect Costs (Labor & Materials Only): \$ 485.81

TOTAL: \$ 4,427.06



COST SUMMARY

Actual _____
 Estimate Water
 Damage Repair _____

Date: 2/9/09

Service Address: 5th Street Extended Mailing Address: _____

city / county Interconnect

Labor:

Man for 12 hours @ \$ 20.92 per hour = \$ 251.04 Man for _____ hours @ \$ _____ per hour = \$ _____
 Man for 12 hours @ \$ 17.48 per hour = \$ 209.76 Man for _____ hours @ \$ _____ per hour = \$ _____
 Man for 12 hours @ \$ 14.85 per hour = \$ 178.20 Man for _____ hours @ \$ _____ per hour = \$ _____
 Man for 12 hours @ \$ 14.85 per hour = \$ 178.20

TOTAL LABOR: \$ 817.20

Equipment:

Maintenance Truck for 12 hours @ \$ 9.00 per hour = \$ 108.00
Small Pump for 12 hours @ \$ 9.00 per hour = \$ 108.00
Large Dump for 12 hours @ \$ 15.00 per hour = \$ 180.00
Backhoe for 12 hours @ \$ 26.00 per hour = \$ 312.00
Air Compressor for 8 hours @ \$ 8.00 per hour = \$ 64.00
 _____ for _____ hours @ \$ _____ per hour = \$ _____
 _____ for _____ hours @ \$ _____ per hour = \$ _____

TOTAL EQUIPMENT: \$ 772.00

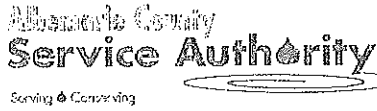
Materials:

Items	Quantity	Unit Price	Total Cost
<u>21 A Gravel</u>	<u>15</u>	<u>\$ 16.00</u>	<u>\$ 240.00</u>
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____

TOTAL MATERIALS: \$ 240.00

Highway Permit: \$ _____
 Total Direct Costs: \$ 1,829.20
 Plus 25% Indirect Costs (Labor & Materials Only): \$ 264.30

TOTAL: \$ 2,093.50



COST SUMMARY

Actual _____

Estimate water

Damage Repair _____

Date: 2/9/09

Service Address: Old Lynchburg Road

Mailing Address: _____

City/county Interconnect

Labor:

Man for 12 hours @ \$20.92 per hour = \$251.04

Man for _____ hours @ \$ _____ per hour = \$ _____

Man for 12 hours @ \$17.48 per hour = \$209.76

Man for _____ hours @ \$ _____ per hour = \$ _____

Man for 12 hours @ \$14.85 per hour = \$178.20

Man for _____ hours @ \$ _____ per hour = \$ _____

Man for _____ hours @ \$ _____ per hour = \$ _____

TOTAL LABOR: \$ 639.00

Equipment:

Maintenance Truck for 12 hours @ \$ 9.00 per hour = \$ 108.00

Large Dump for 12 hours @ \$ 15.00 per hour = \$ 180.00

Backhoe for 12 hours @ \$ 26.00 per hour = \$ 312.00

Air Compressor for 8 hours @ \$ 8.00 per hour = \$ 64.00

_____ for _____ hours @ \$ _____ per hour = \$ _____

_____ for _____ hours @ \$ _____ per hour = \$ _____

_____ for _____ hours @ \$ _____ per hour = \$ _____

TOTAL EQUIPMENT: \$ 664.00

Materials:

<u>Items</u>	<u>Quantity</u>	<u>Unit Price</u>	<u>Total Cost</u>
<u>21 A Gravel</u>	<u>15</u>	<u>\$ 16.00</u>	<u>\$ 240.00</u>
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____

TOTAL MATERIALS: \$ 240.00

Highway Permit: \$ _____

Total Direct Costs: \$ 1543.00

Plus 25% Indirect Costs (Labor & Materials Only): \$ 219.75

TOTAL: \$ 1,762.75

Preliminary Cost Estimate (90% Submittal)

Contract Item No.	Item	Units	Quantity	Unit Cost	Total Cost
1	Mobilization	1	LS	\$ 50,000.00	\$ 50,000.00
2	8-Inch Ductile Iron Water Main Installation	40	LF	\$ 75.00	\$ 3,000.00
3	6-Inch Ductile Iron Water Main Installation (shall include all piping lengths associated with Fire Hydrant Installations)	633	LF	\$ 60.00	\$ 37,980.00
4	4-Inch Ductile Iron Water Main Installation	2,660	LF	\$ 55.00	\$ 146,300.00
5	10-Inch x 4-Inch Tapping Sleeve and Valve	1	EA	\$ 7,250.00	\$ 7,250.00
6	8-Inch x 6-Inch Tapping Sleeve and Valve	1	EA	\$ 6,500.00	\$ 6,500.00
7	8-Inch x 4-Inch Tapping Sleeve and Valve	3	EA	\$ 6,000.00	\$ 18,000.00
8	6-Inch x 6-Inch Tapping Sleeve and Valve	3	EA	\$ 5,000.00	\$ 15,000.00
9	6-Inch x 4-Inch Tapping Sleeve and Valve	4	EA	\$ 4,750.00	\$ 19,000.00
10	8-Inch Gate Valve Installation	2	EA	\$ 1,000.00	\$ 2,000.00
11	6-Inch Gate Valve Installation (shall include all gate valves associated with Fire Hydrant Installations)	6	EA	\$ 850.00	\$ 5,100.00
12	4-Inch Gate Valve Installation	14	EA	\$ 750.00	\$ 10,500.00
13	Fire Hydrant Installation	5	EA	\$ 3,000.00	\$ 15,000.00
14	1-Inch service Connection	63	EA	\$ 300.00	\$ 18,900.00
15	1-Inch Copper Pipe	2,110	LF	\$ 25.00	\$ 52,750.00
16	Water Meter Installation (Bingham and Taylor, cast iron) {Contractor: Please provide unit price in the event meter(s) must be placed in pavement areas.}	0	EA	\$ 600.00	\$ -
17	Water Meter Installation (Brooks, plastic)	63	EA	\$ 450.00	\$ 28,350.00
18	2-Inch Blow-off Assembly	11	EA	\$ 1,500.00	\$ 16,500.00
19	48-Inch I.D. Sanitary Manhole Installation	17	LF (Vertical)	\$ 450.00	\$ 7,650.00
20	Standard Manhole Frame and Cover Installation	2	EA	\$ 450.00	\$ 900.00
21	8-Inch Polyvinyl Chloride (PVC) Sanitary Sewer Main Installation	290	LF	\$ 90.00	\$ 26,100.00
22	4-Inch Polyvinyl Chloride (PVC) Sanitary Lateral Stubout Installation	140	LF	\$ 60.00	\$ 8,400.00
23	Asphalt Concrete Course Pavement Removal and Replacement (VDOT)	1,500	SY	\$ 55.00	\$ 82,500.00
24	Slurry Seal Coat (VDOT)	18,000	SY	\$ 5.00	\$ 90,000.00
25	Brick Gutter/Swale Replacement	10	SY	\$ 250.00	\$ 2,500.00
26	Additional Earth Excavation	50	CY	\$ 25.00	\$ 1,250.00
27	Additional Class "D" Concrete	25	CY	\$ 200.00	\$ 5,000.00
28	Additional Select Fill Type B	50	CY	\$ 35.00	\$ 1,750.00
29	Concrete Driveway Apron/Valley Gutter Replacement	15	SY	\$ 100.00	\$ 1,500.00
30	Concrete Curb and Gutter Replacement	200	LF	\$ 50.00	\$ 10,000.00
TOTAL (excluding easement acquisition) \$					689,680.00

Baker

Michael Baker Jr., Inc.

A Unit of Michael Baker Corporation

272 Bendix Road, Suite 400
Virginia Beach, Virginia 23452

(757) 463-8770

FAX (757) 463-0503

March 11, 2010

Mr. Jeremy M. Lynn, P.E.
Albemarle County Service Authority
168 Spotnap Road
Charlottesville, VA 22911

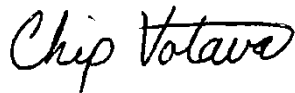
RE: Canterbury Hills Water Main Replacement Project
Professional Engineering Services Term Contracts

Dear Mr. Lynn:

Pursuant to your request of February 16, 2010, we are pleased to provide you with the Hourly and Cost Breakdown spreadsheet and the Scope of Services provided by the Albemarle County Service Authority, for Bid and Construction Phase services relative to this project.

Upon execution, please issue to us a formal Notice to Proceed. If you have any questions or need additional information, please do not hesitate to contact us. As always, we thank you for this opportunity to provide engineering services to the Albemarle County Service Authority.

Sincerely,
MICHAEL BAKER JR., INC.



Chip Votava
Program Manager

Enclosures

cc: Project File 117546.03

**ALBEMARLE COUNTY SERVICE AUTHORITY
CANTERBURY HILLS WATER MAIN REPLACEMENTS PROJECT
BID AND CONSTRUCTION PHASE SERVICES**

SCOPE OF SERVICES

I. GENERAL

The scope of services prepared by the Albemarle County Service Authority (ACSA) generally consists of Bid Phase and Construction Phase services for the Canterbury Hills Water Main Replacements Project. Michael Baker Jr., Inc. (Baker) will provide the following services:

II. BID PHASE SERVICES

The Bid Phase services shall include the following:

1. Attend one (1) pre-bid meeting.
2. Provide clarifications to technical questions.
3. Prepare drawing and specification addenda as required.
4. Provide 20 sets of final construction documents to ACSA and selected plan rooms. Additional sets will be provided on a per set cost basis to be included on the fee estimate.
5. Evaluate the bids and make recommendation to ACSA.

III. CONSTRUCTION PHASE SERVICES

The Construction Phase services shall include the following:

1. Provide as needed services to answer questions, provide interpretation and attend meetings.
2. Provide CADD services to prepare mylar record drawings based on legible copies of the contractor's and ACSA inspector's field mark-up drawings. One (1) copy of a Record drawing set of paper and mylars for the project will be provided to the ACSA. The record drawing set shall represent the contractor's and ACSA's comments and project conditions as constructed. Baker will also provide ACSA with a record drawing set on CD digital media.

Canterbury Hills Water Main Replacement
 Albemarle County Service Authority

Bid and Construction Phase Services
 March 11, 2010

TASK	LABOR CLASSIFICATIONS				TOTAL (HRS)	DIRECT EXPENSES (\$)	COST PER TASK (\$)
	Project Manager (HRS) \$160.00 per hour	Senior Designer (HRS) \$110.00 per hour	CADD Technician (HRS) \$70.00 per hour	Clerical (HRS) \$60.00 per hour			
BID PHASE SERVICES							
Attend Pre-Bid Meeting	6.00	6.00	0.00	1.00	13.00	\$200.00	\$1,880.00
Prepare Addenda	4.00	10.00	4.00	2.00	20.00	\$0.00	\$2,140.00
Provide 20 sets of Final Documents (See Note 1)			2.00		2.00	\$800.00	\$940.00
Evaluate Bids and Make Recommendation	1.00	6.00	0.00	2.00	9.00	\$0.00	\$940.00
SUB-TOTAL (HRS)	11.00	22.00	6.00	5.00	44.00		
SUB-TOTAL (\$)	\$1,760.00	\$2,420.00	\$420.00	\$300.00		\$1,000.00	\$5,900.00
CONSTRUCTION PHASE SERVICES							
Provide Interpretation	2.00	16.00	4.00	0.00	22.00	\$0.00	\$2,360.00
Prepare Record Drawings	2.00	8.00	24.00	1.00	35.00	\$225.00	\$3,165.00
SUB-TOTAL (HRS)	4.00	24.00	28.00	1.00	57.00		
SUB-TOTAL (\$)	\$640.00	\$2,640.00	\$1,960.00	\$60.00		\$225.00	\$5,525.00
TOTALS					101.00	\$1,225.00	\$11,425.00

Note 1: Costs for additional sets of Final Documents will be billed at the rate of \$40.00 per set.

Jeremy,

Attached is the revised scope and fee. If you need the word/excel version, let me know. At this time we are looking at around \$40,000 for the improvements. As you know this is a very rough number. Since ACSA will be completing the work, labor, overhead, and profit is not incorporated and the overall construction cost will be minimized. Our construction cost estimate breaks down as follows:

Dosing Equipment and Controls: \$15k

Pipework, foundation, structure, and heater if necessary: \$15k

Power supply and backup: \$5,000

Site work: \$5,000

Thanks,

Chip

**ALBEMARLE COUNTY SERVICE AUTHORITY
CAMP HOLIDAY TRAILS WATER pH ADJUSTMENT**

**SCOPE OF SERVICES
MARCH 11, 2010**

I. GENERAL

The scope of this project consists of providing recommendations for a preferred water pH adjustment and monitoring system for Camp Holiday Trails, generating a site layout, and providing implementation support to Albemarle County Service Authority (ACSA). It is anticipated that the system will be constructed on the property of Camp Holiday Trails by ACSA staff. Therefore, a detailed site plan will not be required.

II. ENGINEERING

A. DATA COLLECTION AND ASSIMILATION

Baker will compile manufacturer's technical specifications for different alternatives under consideration. Based on preliminary research, two pH adjustment systems (liquid and gas injection systems) would meet the intent of the project. In addition, Baker will provide research on specific chemicals to be used for pH adjustment, including citric acid and carbon dioxide. Other information, such as GIS mapping (for general location layout purposes), will be assembled for incorporation into the project.

B. SYSTEM EVALUATION

Baker will consolidate requirements, highlight specific options, and identify the benefits and drawbacks of each system for ACSA's consideration. System components, site improvements, and approximate equipment cost information for the alternative systems will be summarized and presented. Baker will meet with ACSA to discuss the different systems and options required to meet with ACSA's operation and maintenance goals and develop a recommended solution.

C. PROPOSED SYSTEM DESIGN

1. Baker will develop a general site plan for the recommended solution. It should be noted that since no topographic survey is available, the site layout will be shown as approximate. All necessary site improvements will be drawn to scale and equipment specifications will be assembled. Baker will provide the contact information of three manufacturers or distributors to ACSA for pricing of key project components (Baker anticipates that key components will include chemical dosing pumps/controllers, pH sensors, and pH chart recorders). Baker will notify ACSA if three manufacturers/distributors cannot be identified.
2. In addition to the chemical dosing equipment, pH sensors, and pH chart recorders, Baker will summarize the necessary modifications to the water service line including fittings, valves, and piping. If necessary, heating elements will be proposed for any above-ground piping and appurtenances subject to freezing.
3. Emergency power alternatives (such as generator or battery backup if appropriate) will be presented for ACSA's consideration. If an emergency generator is required, Baker will provide size requirements.
4. Baker will provide dimensions (approximate length, width, and height) necessary for a structure to house the pH adjustment system and support equipment. Baker

anticipates a prefabricated structure with a concrete slab on grade. Baker will provide rebar size/spacing for the slab based on assumed soil bearing capacities.

5. Baker will contact the power company to assist ACSA in coordinating power supply to the facility. Baker will provide a summary of load requirements based on the proposed equipment.
6. Baker will propose a construction sequence.

D. FINAL SYSTEM DESIGN

1. Baker will incorporate comments from ACSA and submit a final system design.

E. IMPLEMENTATION SUPPORT

1. Baker will attend a meeting with ACSA staff to discuss the implementation requirements and procedure. If necessary, Baker will attend a meeting with Camp Holiday Trails staff to discuss the proposed improvements.
2. Baker will be available for up to 8 hours for questions regarding construction of the facilities and during startup.

II. EXCLUSIONS

A. The following items are excluded from this scope of work

1. Surveying
2. Easement plats
3. Submission of proposed improvements to the County or other regulatory agencies
4. Structure design
5. Component system integration (it is assumed all components are compatible, otherwise integration will be performed by ACSA)

III. SCHEDULE

Baker will meet the following schedule:

Milestone	Schedule
Summary of Alternatives	2 weeks after receiving written approval from ACSA.
Proposed System Design (Draft)	3 Week after approval of alternatives
Final System Design	1 Week after receipt of comments
Implementation Support	As needed by ACSA

IV. COMPENSATION

The scope of services for the project will be performed by Michael Baker Jr., Inc., on a time and materials basis for a not-to-exceed amount of \$16,440.00.

Camp Holiday Trail Water pH Adjustment
 Albemarle County Service Authority

TASK	LABOR CLASSIFICATIONS				TOTAL (HRS)	DIRECT EXPENSES (\$)	COST PER TASK (\$)
	Project Manager (HRS) \$160.00	Staff Engineer (HRS) \$95.00	CADD Technician (HRS) \$70.00	Clerical (HRS) \$60.00			
ENGINEERING							
Data Collection and Assimilation	2.00	6.00	2.00	2.00	12.00	50.00	\$1,200.00
System Evaluation	4.00	16.00			20.00	200.00	\$2,360.00
Proposed System Design (Draft)	16.00	56.00	8.00	4.00	84.00	20.00	\$8,700.00
Final System Design	4.00	8.00	2.00		14.00	20.00	\$1,560.00
Implementation Support	8.00	12.00			20.00	200.00	\$2,620.00
SUB-TOTAL	34.00	98.00	12.00	6.00	150.00	490.00	\$16,440.00
TOTALS					150.00	490.00	\$16,440.00



March 11, 2010

Mr. Jeremy M. Lynn, PE

Senior Civil Engineer

Albemarle County Service Authority

168 Spotnap Road

Charlottesville, VA 22911

RE: Response to RFP for the Scottsville Drainage Basin Comprehensive Sewer Study

FILE: 6643/BD/Scottsville SSES

Dear Jeremy:

As requested, please find attached O'Brien & Gere's proposed fee estimate and schedule for the subject project. These documents were developed based upon the Scope of Services provided as well as subsequent discussions with ACSA personnel and a review of the ACSA GIS. The following clarifications and assumptions were made in development of this fee:

SCOPE – CLARIFICATIONS AND ASSUMPTIONS

GENERAL

- The labor effort has been based upon information provided by ACSA. The total study area is estimated to contain approximately 27,000 linear feet of gravity sewer and approximately 170 manholes. The study area to be monitored discharges to the Scottsville Wastewater Pump Station, which transfers the flow to the Scottsville Wastewater Treatment Plant; the pump station and treatment plant are both owned by the Rivanna Water and Sewer Authority (RWSA).
- In general, there are 3 separate trunk sewers that discharge to the Scottsville Wastewater Pump Station, including one from the North (via Scotsvle-2-1), one from the East (via Scotsvle-1-3) and one from the West (via Scotsvle-4-1). The pipelines from the North (upstream collection system is approximately 8,680 LF) and East (upstream collection system is approximately 15,180 LF) discharge to a common manhole prior to discharging to the pump station while the pipeline from the West (upstream collection system is approximately 2,550 LF) discharges directly to the pump station.
- It is recognized that the development of a project schedule is identified as a separate task, however for the purpose of this proposal we have provided a preliminary project schedule with an assumed start date of March 22, 2010.
- Based upon a review of system mapping, it appears that portions of the system are located within easements. For the purpose of this proposal, it is assumed that O'Brien & Gere will have access to these portions of the system and for pipelines located solely within easements (i.e. the trunk sewer that originates near MH Scotsvle-19-4 and terminates near MH Scotsvle-1-9) the easements are able to be driven. If access to the easements is limited and productivity is slowed, additional funding may be required to complete the field tasks described herein.

QUANTIFICATION OF EXISTING FLOWS

Based on the quantities of gravity sewer and the system configuration, it is assumed that this task will be accomplished by the following:

- Installing 2 flow meters within the collection system (upstream of the pump station). It is expected that the meters will be installed on the sanitary sewer pipelines entering the pump station from the North (1 meter, approximately 8,680 LF) and the East (1 meter, approximately 15,180 LF). We have assumed a two month metering duration, with meter maintenance being performed 1 time per week, in an effort to capture a significant rain event. It is also assumed that 1 rain gauge will be utilized.
- Downloading data 1 flow meter installed and maintained by ACSA. It is expected that this meter will be installed on the sanitary sewer pipeline entering the pump station from West (approximately 2,550 LF). O'Brien & Gere will not be responsible for installing or maintaining this meter.
- Performing Night Flow Isolation and Measurement (1 night – 8 hours) to quantify infiltration in the section of the collection system that discharges directly to the pump station. It is expected that Night Flow Isolation and Measurement will be performed on the sanitary sewer pipelines entering the pump station from the West (approximately 2,550 LF).

SOURCE DETECTION

Manhole Inspections:

Manhole inspections will be performed on all 170 manholes within the subject area. Manhole inspections will consist of a surface inspection in MACP format. Photographs will be taken of all pertinent defects. The quickview inspection camera will only be utilized to inspect and record the line lamping of influent and effluent sewer mains.

Smoke Testing:

Smoke testing will be performed on 100% of the system (27,000 linear feet).

Night Flow Isolation and Measurement:

It is estimated that approximately 50% of the service area will require night flow isolation and measurement (approximately 14,000 linear feet). The location of subareas requiring night flow isolation and measurement will be determined by the results of flow monitoring. This effort is in addition to the Night Flow Isolation and Measurement to be performed during QUANTIFICATION OF EXISTING FLOWS.

CCTV Inspection:

It is estimated that approximately 25% of the service area (6,750 linear feet) will require CCTV Inspection. The location of subareas requiring CCTV Inspection will be determined by the results of night flow isolation and measurement. Given that the length and diameter of sewers to be inspected is unknown at this time, we have assumed a daily crew rate of \$3,600/day for subcontracted CCTV inspection and cleaning, and a productivity of 1,500 lf/day. If CCTV inspection is required within easements and productivity is reduced, additional funding may be required to complete this task.

Dyed Water Flooding:

It is estimated that dye testing will be required once for every 10,000 linear feet of sewers smoke tested (3 total dye tests). The locations of pipelines requiring dye testing will be determined by the results of smoke testing. We have assumed a rate of \$3650 per dye test as subcontracted services.

FEE

We propose to perform this work under the terms and conditions of our Annual Services Contract. The fee for services as set forth and described above shall be calculated on the basis of Engineers hourly billing rates for employees by job category as set forth in the contract fee schedule, plus reimbursable expenses at cost. The estimated not to exceed budget is \$124,490. Project costs will be tracked and invoiced monthly on a time-and-materials basis.

Upon your review, please contact me at your convenience with any questions or comments. We look forward to continuing our successful working relationship with you on this project.

Very truly yours,
O'BRIEN & GERE ENGINEERS, INC.



Robert E. Bell, Jr., PE
Vice President

Attachments

cc: Maggie Hopkins, OBG

Scottsville Drainage Basin SSES
 Albemarle County Service Authority

TASK	Sr. Managing Engr. \$175 (HRS)	Project Associate \$140 (HRS)	Design Engineer \$85 (HRS)	Designer \$85 (HRS)	Field Technician \$70 (HRS)	Div. Secretary \$60 (HRS)	TOTAL (HRS)	DIRECT EXPENSES (\$)	COST PER TASK (\$)
PROJECT INITIATION									
Project Kick-Off Meeting	4	8	4	2	4	2	24.00		\$2,730.00
Existing Data Collection and Assimilation	2	4	12	2	0	2	22.00		\$2,220.00
Establish Project Schedule	1	2	0	0	0	0	3.00		\$455.00
SUB-TOTAL	7	14	16	4	4	4	49.00	\$135.00	\$5,540.00
QUANTIFICATION OF EXISTING FLOWS									
Select Evaluation Meter and Rain Gauge Locations	2	4	4	2	10	0	22.00		\$2,120.00
Conduct Wastewater Flow Monitoring	0	4	12	0	120	0	136.00		\$9,980.00
Develop Flow Components and Rates	2	4	8	0	0	2	16.00		\$1,710.00
Identify sub-basins for I/I Source Detection Work	2	4	8	4	0	2	20.00		\$2,050.00
SUB-TOTAL	6	16	32	6	130	4	194.00	\$4,390.00	\$20,250.00
SOURCE DETECTION									
Conduct Manhole Inspections	2	6	10	8	240	4	270.00		\$19,760.00
Perform Smoke Teseting	2	8	12	8	120	4	154.00		\$11,810.00
Conduct I&M Work	2	4	4	4	72	4	90.00		\$6,870.00
Conduct CCTV Inspections	2	8	12	4	16	2	44.00		\$4,070.00
Perform Dyed Water Flooding	2	2	6	0	10	2	22.00		\$1,960.00
SUB-TOTAL	10	28	44	24	458	16	580.00	\$33,160.00	\$77,630.00
DATA ANALYSIS									
Determine sub-basin I/I	1	4	8	0	0	0	13.00		\$1,415.00
Identify sewer lines with grease, roots, etc.	1	4	8	0	0	0	13.00		\$1,415.00
Develop Rehab. Recommendations and Cost Estimates	2	4	8	4	4	0	22.00		\$2,210.00
SUB-TOTAL	4	12	24	4	4	0	48.00	\$210.00	\$5,250.00
GEOGRAPHICAL INFORMATION SYSTEM									
Review ACSA provided GIS data	0	2	4	8	0	0	14.00		\$1,300.00
Correct ACSA GIS data for identified errors	1	4	4	12	0	0	21.00		\$2,095.00
Create layer on GIS showing inspection efforts	1	2	4	12	0	0	19.00		\$1,815.00
SUB-TOTAL	2	8	12	32	0	0	54.00	\$580.00	\$5,790.00
SUMMARY REPORT									
Prepare Draft Summary Report	2	16	8	8	0	8	42.00		\$4,430.00
Develop Rehab. Recommendations and Cost Estimates	1	4	4	0	0	0	9.00		\$1,075.00
Establish Base Dry Weather Flow	1	4	4	0	0	0	9.00		\$1,075.00
Prepare Final Summary Report	2	8	8	4	0	8	30.00		\$2,970.00
SUB-TOTAL	6	32	24	12	0	16	90.00	\$480.00	\$10,030.00

TOTALS

1,015.00	\$38,955.00	\$124,490.00
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Albemarle County Service Authority
 Scottsville Drainage Basin Comprehensive Sewer Study

Preliminary Project Schedule

ID	Task Name	Duration	Start	Finish	Mar	Apr	May	Jun	Jul	Aug	Sep
					1	Project Initiation Meeting	0 days	Mon 3/22/10	Mon 3/22/10		
2	Review Existing Data	10 days	Mon 3/22/10	Fri 4/2/10							
3	Quantification of Existing Flows	45 days	Mon 4/5/10	Fri 6/4/10							
4	Source Detection	70 days	Mon 4/5/10	Fri 7/9/10							
5	Manhole Inspections	20 days	Mon 4/5/10	Fri 4/30/10							
6	Smoke Testing	15 days	Mon 5/3/10	Fri 5/21/10							
7	Isolation and Measurement	10 days	Mon 6/7/10	Fri 6/18/10							
8	CCTV Inspection	10 days	Mon 6/21/10	Fri 7/2/10							
9	Dyed Water Flooding	5 days	Mon 7/5/10	Fri 7/9/10							
10	Data Analysis	20 days	Mon 7/12/10	Fri 8/6/10							
11	GIS data entry and formatting	15 days	Mon 7/12/10	Fri 7/30/10							
12	Summary Report	20 days	Mon 8/9/10	Fri 9/3/10							

Project: Scottsville SSES
 Date: March 2010

Task		Summary		Rolled Up Progress	
Split		Rolled Up Task		External Tasks	
Progress		Rolled Up Split		Project Summary	
Milestone		Rolled Up Milestone			

**ALBEMARLE COUNTY SERVICE AUTHORITY
SCOTTSVILLE DRAINAGE BASIN SEWER STUDY
SCOPE OF SERVICES**

I. GENERAL

The scope of services prepared by the Albemarle County Service Authority (ACSA) generally consists of a comprehensive study of the Scottsville Drainage Basin. This study includes the combination of Infiltration/Inflow Analysis (I/I Analysis), Sewer System Evaluation Survey (SSES), and an inventory, prioritization, and plan for addressing sewers in the Scottsville area.

This drainage basin consists of approximately 27,000 linear feet of sanitary sewers ranging in size from 6 to 12 inches in diameter and 170 manholes. Wastewater flow from Scottsville is pumped from the Scottsville Wastewater Pump Station by force main to the Scottsville Wastewater Treatment Plant. Both the pump station and the treatment plant are owned and operated by the Rivanna Water and Sewer Authority (RWSA).

Specifically, O'Brien and Gere Engineers, Inc. (OBG) will provide the following services:

II. PROJECT MANAGEMENT

1. Cost Control.

OBG shall maintain a table that provides up to date labor distribution for each task. The table should be formatted in such a way that it is not difficult to compare number of hours that have been spent per task to what was originally projected during contract negotiations. Recognizing that the ACSA will not issue after the fact a change order to add additional funds for completed work that was not anticipated, OBG shall immediately notify the ACSA of any event or circumstances which may cause the contract limit to be exceeded.

2. Monthly Status Report.

Include current cost summary; amount of invoice to date. In the comment section of the status report, provide a detailed description of work completed for the period and work planned for next period. If there are any deviations from the original schedule and cost control plan, provide explanations and planned corrective measures.

III. PROJECT INITIATION

- A. Project kick-off meeting.
- B. Collect and review existing data.
- C. Establish project schedule.

IV. QUANTIFICATION OF EXISTING FLOWS

- A. Select meter locations and rain gauge locations.
- B. Measure wastewater flows.
 - 1. Establish wastewater flow components in conjunction with early morning flows and verify with water billing Daily Average Consumption for all sub-basins needed.
 - 2. Develop base flow diurnal flow curves, scattergraphs, and base flow peaking factors for all sub-basins metered.
 - 3. Develop groundwater infiltration (GWI) rates for all sub-basins metered.
 - 4. Develop peak inflow rates for unit storm for all sub-basins metered.
 - 5. Develop wastewater flow components for each sub-basin metered, including: Average Sanitary Flow, Average Base Flow, Daily Average Consumption, Peak flow, statistical analysis and balance of flows for all subbasins metered.
 - 6. Review all calibration methods with ACSA staff.
- C. Identify sub-basins for I/I source detection work.

V. SOURCE DETECTION

- A. ACSA shall review and approve of all field forms.
- B. Conduct Manhole Inspection.
 - 1. Find and inspect each manhole within the confines of the three drainage areas.
 - 2. An inspection report will be conducted for each manhole which will include the physical condition and possible sources of I/I to the sewer system.
 - 3. The entire manhole and each pipe entering and leaving the manhole will be inspected utilizing a pole camera connected directly into a pen based computer. The photographs shall be linked directly to the manhole and made available through the GIS environment for viewing and reporting purposes. OBG will capture a picture above ground showing the general location, looking straight down the manhole and then any other notable pictures of pipe or manhole defects. The following data shall be recorded directly into the computer program:
 - a. Identify each manhole number.
 - b. Record type of manhole cover and the number/size of any vent/pick holes.
 - c. Indicate construction materials/condition of cover, rings, walls, steps, aprons and trough.
 - d. Identify/quantify visible sources of extraneous flow and its location.
 - e. Record special problems and conditions such as overflows and bypasses.
 - f. Identify the type and extent of debris in the manhole.

- g. Ground water level at or near the manhole indicated by staining or hanging debris.
Incoming and outgoing sewer lines connected to the manhole will be inspected using the Quickview camera and the following information will be recorded on video and hard copy:
 - a. Record the size, type and depth of pipe.
 - b. Identify creek crossing and condition.
 - c. Record deposition or root growth in the pipe and recommended cleaning.
 - d. Identify and quantify visible I/I sources.
 - e. Indicate the structural conditions or special problems in the pipe.
- C. Perform smoke testing.
 - 1. Identify areas to be smoke tested.
 - 2. Distribute notices, contact agencies, and perform smoke testing (smoke bombs/candles not permitted).
 - 3. Documentation will be by digital video camera, digital camera and record sketch. The location of the defect shall be captured using a Global Positioning System (GPS) unit in State Plane Coordinates.
 - 4. Smoke Testing work shall be loaded into ACSA database.
 - 5. Develop dyed water flooding recommendations.
- D. Conduct Isolation and Measurement (I&M) in subbasins with excessive infiltration.
 - 1. Identify areas to be flow isolated.
 - 2. Distribute notices, contact agencies, and conduct I&M.
 - 3. I&M work shall be loaded into ACSA database.
- E. Conduct internal TV Inspection in sewer lines with high I&M results in terms of gallons per day, per inch diameter mile (gpdidm) values.
 - 1. Identify sewer lines to be televised.
 - 2. Distribute notices and conduct TV inspections.
 - 3. Conduct internal TV inspection using color pan and tilt camera capabilities.
 - 4. Defects shall be identified and quantified according to NASSCO PACP standards.
 - 5. Laterals with visible defects and leakage shall be inspected.
 - 6. Capture, record, and report line capacity reducing problems such as grease, debris, sags, roots along with I/I and structural defects.
 - 7. Review videos in accordance with ACSA direction.
 - 8. Develop a video index/catalog able to easily locate an inspection location.
 - 9. Inspection reports to be recorded in a PACP certified software by PACP certified operators. Provide a copy of the collected data and corresponding video. Inspection data shall be loaded into ACSA database.
- F. Dyed Water Flooding.
 - 1. Conduct dyed water flooding in locations determined by smoke testing.

2. Dyed water testing results shall be photographed, GPS located, and documented in the final report.

VI. DATA ANALYSIS

- A. Determine total sub-basin infiltration and inflow based on flow monitoring.
- B. Identify manholes with defects and sources of I/I.
- C. Identify inflow sources based on smoke testing results and develop recommendations.
- D. Identify sewers with high gpdidm values for TV inspection.
- E. Identify sewers with grease, roots, and debris collection from CCTV Inspection.
- F. Identify and summarize pipeline defects based on TV inspection results.
- G. Balance manhole and sewer leakage with I&M quantities.
- H. Develop rehabilitation recommendations and corresponding cost estimates for all defects (see Summary Report).
- I. Perform cost-effectiveness analysis (in accordance with existing methods) using basin specific transport and treatment cost.

VII. GEOGRAPHICAL INFORMATION SYSTEM

- A. Review ACSA provided GIS data.
- B. Correct ACSA GIS data for identified errors.
- C. Create a layer on ACSA GIS showing inspection efforts and findings.
- D. Submit GIS data back in the same format as given by the ACSA.

VIII. SUMMARY REPORT

OBG will develop a summary report that documents the results of the field investigations performed, identifies areas of concern, and prioritizes recommendations for repairs, rehabilitation and replacement needed to restore integrity of and renew the service life of the system. Based on the repairs, rehabilitation and replacement recommended, a budget level construction cost estimate will be prepared. OBG will establish the base dry weather flow of the system and estimate rainfall induced I/I within the area. The final report will be reviewed and approved by the ACSA prior to acceptance.