BACKGROUND: The Engineering Department has prepared the proposed FY 2017 Capital Improvement Program Budget consisting of 20 projects, two of which are non-utility projects. The water projects primarily address infrastructure replacement and upgrades, but also address water quality issues and create redundancy in our system. The sewer projects primarily address infrastructure rehabilitation and replacement. The two non-utility projects address operational improvements with upgrades to the radio broadcasting system and pavement repair at the Operations Center.

DISCUSSION:
- Projects that are anticipated to span fiscal years show previous fiscal year budget amounts in parentheses to reflect the project budget to date, not just the contribution to the FY 2017 Rate Model.
- The Crozet Phase 3 Water Main Replacement Project includes the design budget amount already incorporated into the Rate Model in FY 2016 and with construction anticipated in FY 2018, it doesn’t contribute to the FY 2017 Rate Model.
- The Oak Forest Pump Station Abandonment Project shows the design budget amount already incorporated into the Rate Model in FY 2016 and with construction planned for FY 2018, it doesn’t contribute to the FY 2017 Rate Model.
- Water projects (81%); Sewer projects (19%).
- Water main replacement (65%) of water expenditures; sewer rehabilitation (61%) of sewer expenditures.
- Existing projects (73%); New projects (27%).
- Questions about proposed CIP Projects.

BUDGET IMPACT: The FY 2017 CIP Budget will be used to establish user rates and connection fees.

RECOMMENDATIONS: Authorize ACSA staff to proceed with a public hearing on the FY 2017 CIP Budget.

BOARD ACTION REQUESTED: Authorize the advertisement for a public hearing to address the FY 2017 CIP at the April Board meeting on April 21, 2016.
ATTACHMENTS:
- Detailed memo summarizing the proposed FY 2017 CIP Projects and their anticipated required funding.
- Proposed FY 2017 CIP Project maps.
MEMORANDUM

To: Board of Directors  
From: Peter C. Gorham, P.E., Director of Engineering  
Date: March 17, 2016  
Re: FY 2017 Capital Improvement Program (CIP)  
cc: James M. Bowling, IV

Projects included in the 5-year Capital Improvement Program (CIP) from FY 2017 to FY 2021 will appear in the Proposed FY 2017 Budget document. The estimates developed for these projects have been entered into Schedule 6: Capital Improvement Projects of the Rate Model. The following is a summary of the estimated project costs to be undertaken in FY 2017:

<table>
<thead>
<tr>
<th></th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Projects</td>
<td>$5,466,300</td>
</tr>
<tr>
<td>Wastewater Projects</td>
<td>$1,315,590</td>
</tr>
<tr>
<td>Total</td>
<td>$6,781,890</td>
</tr>
</tbody>
</table>

In this budget approximately 65% of the funds to be expended for water projects will be used to replace aging and undersized pipelines. Approximately 61% of the funds to be expended for sewer projects will address rehabilitation of existing systems to reduce infiltration and inflow (I/I). Of the total $6,781,890 budgeted, existing projects account for $4,952,000, while new projects are estimated at $1,829,890.

The new projects include, the replacement of existing water mains, creating redundancy in the water system, increasing capacity of water pump stations, the replacement of existing sewer mains, identifying I/I in our sanitary sewer system, upgrading an existing sewer pump station, and improvements to the ACSA administration and maintenance complex. The Maintenance Department will continue to construct some of the CIP Projects. A summary of the proposed CIP projects with their anticipated required funding in FY 2017 follows:

**Radio Upgrades (New):** The County of Albemarle is upgrading their aging radio broadcasting system that is utilized by several community partners such as law enforcement agencies of the County and the City, fire/rescue agencies, City public works, Emergency Operations Center, RWSA and ACSA. The County project will include new antennas to increase coverage and upgrades to other equipment. Each user of the system is assessed a share of the upgrade based upon
the number of radio units supported. The amount budgeted is the ACSA’s share of the radio system upgrades. **FY Budget - $376,000**

**ACSA Facility Improvements – Paving (New):** After 20 years of the ACSA Operations Center occupying its current site the asphalt pavement throughout the property has begun to deteriorate. Several recent projects improving the facilities that make up the Operations Center required the removal of pavement. Now that these projects are coming to completion, it is time to address pavement repair. The amount budgeted is an estimate of the cost to repave all existing asphalt on the property. **FY 2017 Budget - $121,000**

**Westmoreland Water Main Replacement:** This project addresses the goal in our Strategic Plan for the eventual replacement of all asbestos-cement water mains in our system. The existing water mains are approximately 49 years old and have recently experienced multiple leaks. The Westmoreland Subdivision is between the Carrsbrook and Northfields Subdivisions that are also scheduled to have their water mains upgraded and this project will provide for a possible phasing of these two future CIP projects. The design phase of the project is nearing completion. The amount budgeted is for construction to begin in FY 2017 and carry over into FY 2018. **FY 2017 Budget - $791,900**

**Camelot Water Main Replacement (New):** This project will replace the asbestos-cement and PVC water mains that have been in service approximately 47 years, some of which are also undersized. Recent repairs in this area have revealed the asbestos-cement water main is deteriorating and becoming unreliable. This project addresses the goal in our Strategic Plan for the eventual replacement of all asbestos-cement water mains in our system. The amount budgeted is for the design phase with construction anticipated in FY 2018. **FY 2017 Budget - $218,900**

**Scottsville Phase 3 Water Main Replacement (New):** A recent evaluation of a portion of water main along East Main Street to investigate reduced fire flow revealed significant tuberculation in the water main. The design of the replacement of aging and undersized cast iron and asbestos-cement pipe throughout the Scottsville Water System is proposed to begin in FY 2016. The design will be completed in FY 2017 with emphasis on the replacement of the deteriorated water main along East Main Street. The amount budgeted is for the construction of the new water main along East Main Street in FY 2017, with the remainder of the water mains anticipated to be replaced in FY 2018. **FY 2017 Budget - $350,000**

**Berkeley Water Main Replacement:** In recent years the water mains in the Berkeley Subdivision have been experiencing increasing numbers of failures and leaks. The existing water mains are approximately 56 years old and consist of cast iron pipe. This project continues our systematic program to replace aging and deteriorating water mains throughout our system. Construction will begin in FY 2016 with funds previously budgeted, plus the additional funds to complete construction in FY 2017. **FY 2017 Budget - $848,000 (FY 2016 Budget - $1,400,000)**
Crozet Phase 3 Water Main Replacement: This project continues our systematic program to replace the aging and undersized asbestos-cement water mains in the Crozet Water System. Our Strategic Plan calls for the eventual replacement of all asbestos-cement water mains in our system, as they are older and made of a weaker material than the current industry norm. Multiple phases have been defined to carry out these improvements. The project is currently in the design phase, which will be completed in FY 2017 with funds previously budgeted. Construction is anticipated to take place in FY 2018. FY 2017 Budget - $0 (FY 2016 Budget - $197,400)

Glenmore Tank: The Glenmore Subdivision is served by a single water main that extends approximately four and a half miles to the easternmost terminus of our water system. The ACSA has had a long standing policy of creating redundancy in the water system to better deal with emergency or planned disruptions of service. This project provides a water storage tank at a high point in the Glenmore Subdivision to provide at least a full day of domestic water supply in the event of a major failure of the water main that extends to this area. The amount budgeted, plus funds previously budgeted, are for construction in FY 2017. FY 2017 Budget - $975,000 (FY 2015 and FY 2016 Budgets - $1,150,000)

Orchard Acres Water Main Replacement: This project continues our systematic program to replace the aging and undersized cast iron and asbestos-cement water mains in the Crozet Water System. It also addresses the goal in our Strategic Plan for the eventual replacement of all asbestos-cement water mains in our system. These water mains have been in service for approximately 59 years and have reached the end of their useful life. The design phase is nearing completion. The amount budgeted, plus funds previously budgeted, is to begin construction in FY 2017 and complete it in FY 2018. FY 2017 Budget - $1,061,600 (FY 2016 Budget - $450,000)

Barterbrook Phase 2 Water Main Replacement (New): In recent years the water main along Solomon Road has experienced multiple breaks in a relatively short segment of pipe. This water main has been in service for approximately 55 years, as have the water mains in the same area, along North Berkshire Road and Inglewood Drive. This project addresses our Strategic Plan goal to replace aging and undersized water mains throughout our system. The amount budgeted is for the design phase to be completed in FY 2017 with construction anticipated in FY 2019. FY 2017 Budget - $147,000

Greenbrier Drive Sewer Replacement (New): While reviewing the design of the City’s Hillsdale Drive Extension Project for conflicts with our utility system, the ACSA staff identified an opportunity to potentially construct the Greenbrier Drive Sewer Replacement Project. This project was originally scheduled for FY 2018 in the CIP Rate Model. By incorporating this sewer main replacement into the City’s road extension project, which will disturb several existing roadways, ACSA will realize significant cost savings. The design is nearing completion and the amount budgeted is for the construction of these sewer mains in FY 2017. FY 2017 Budget - $152,290
**Camelot Drainage Basin Rehabilitation:** ACSA staff has identified other large drainage basins to be evaluated for infiltration and inflow (I/I) to continue our efforts to maintain the integrity of our wastewater collection system. The study area included the oldest portions of the Camelot and Briarwood Subdivisions, as well as, the offsite portion of the sewer main that serves the Rivanna Station facilities where the National Ground Intelligence Center and Joint Use Intelligence Analysis Facility are located. The field work for the SSES has been finished. The amount budgeted is to complete the rehabilitation work identified in the SSES. **FY 2017 Budget - $154,100**

**Pantops Drainage Basin SSES (New):** The recent wastewater flow metering for the update of the RWSA sewer interceptor model has shown the Pantops Area is experiencing peak wet weather flows due to infiltration and inflow (I/I). This project will continue our efforts to maintain the integrity of our wastewater collection system by reducing I/I. The sanitary sewer evaluation survey (SSES) will include the ACSA collection system east of the South Fork Rivanna River and north of I-64, including the Peter Jefferson Place Pump Station. The amount budgeted is to complete the SSSES in FY 2017. **FY 2017 Budget - $250,700**

**Miscellaneous Sewer Rehabilitation:** This project continues our “find and fix” program of sanitary sewer rehabilitation to reduce I&I in our system during the fiscal year. This work will utilize the ACSA piggyback of the City rehabilitation contract that was awarded last year after competitive bidding. It will be used to make repairs and rehabilitate problems in our system found with systematic CCTV inspection by ACSA crews and the subcontractor. **FY 2017 Budget - $400,000**

**Oak Forest Pump Station Abandonment:** This wastewater pump station was constructed 35 years ago by private development and the original equipment is wearing down. The building and wet well are also undersized and deteriorating. With the development of the Stonefield Area between Route 29 and Commonwealth Drive ACSA staff has identified a sewer main extension project that could eliminate this aging pump station and avoid an expensive upgrade. This project is entering the design phase, which will be completed in FY 2017 with funds previously budgeted. Construction is anticipated in FY 2018. **FY 2017 Budget - $0 (FY 2016 Budget - $105,000)**

**Madison Park Pump Station Upgrade (New):** This wastewater pump station was constructed 33 years ago by private development and the original equipment is wearing down. In addition the building is undersized creating difficulty in performing routine maintenance and making it impossible to install the control panels necessary to include this pump station in our new SCADA System. A study is currently underway to evaluate the best option for upgrading this pump station. The amount budgeted is for the design of the selected option in FY 2017 with construction anticipated in FY 2018. **FY 2017 Budget - $60,000**

**Fontana Loop Water Connections (New):** With the development of Fontana Phase 4B a few years ago a master pressure reducing valve vault was installed
to improve service to a portion of the Fontana Subdivision previously constructed. This eliminated some redundancy in the water system, which this project will restore. Two separate water main segments will be installed on Verona Drive and Olympia Drive to create two loops that can provide secondary water feeds to the Fontana Subdivision. The amount budgeted is for construction by the ACSA Maintenance Department in FY 2017. **FY 2017 Budget - $62,300**

**West Woods Water Main Replacement (New):** The West Woods Subdivision was originally a private well system that was connected to the ACSA public water system in 1982 when the well failed. Asbestos-cement water mains along most of the roads in West Woods were replaced at that time and fire hydrants were installed in the subdivision. In 2005 the 2-inch diameter galvanized water mains on the side streets were also replaced. This project completes the replacement of the final asbestos-cement water main along West Pines Drive, in keeping with our Strategic Plan goal to eliminate all of these water mains in our system. The amount budgeted is for construction by the ACSA Maintenance Department in FY 2017. **FY 2017 Budget - $155,700**

**SCADA System:** The ACSA Utility System has over 40 critical assets that include water and wastewater pump stations, water storage tanks and master PRV stations. This project will create a Supervisory Control and Data Acquisition (SCADA) System that will allow ACSA employees to remotely monitor the operations of these critical assets from the main office building. Using alarms we will be able to more quickly evaluate problems and prevent some failures before they happen. The first phase is complete and in operation. The design of the second phase is complete with construction to begin in FY 2016. The design of Phase 3 is underway and the amount budgeted is for construction in FY 2017. **FY 2017 Budget - $245,400**

**Ashcroft Pump Stations #2 & #3 Capacity Improvement (New):** In order to meet current domestic demand, fire flow requirements and future development in Ashcroft, the pumps in stations #2 and #3 will need to be upgraded. This will allow the Ashcroft Water Tank to be cycled more frequently, reducing water age and improving water quality. A Preliminary Engineering Report was completed to determine the best alternative for increasing the pumping capacity within the limited space of the existing buildings, and the available electrical service. The project is currently in the design phase and the amount budgeted is for construction in FY 2017. **FY 2017 Budget - $312,000**

**Developer Participation:** Each year funds are set aside to participate in oversizing utilities constructed to serve new development. The Rate Model includes $100,000 divided equally between water and wastewater projects as a contingency to insure the new pipes are sized to meet the ACSA’s long-range needs. **FY 2017 Budget - $100,000**

We propose to schedule a Public Hearing to present the FY 2017 CIP at the April meeting of the ACSA Board of Directors.
Board Action

We request that the Board of Directors authorize the advertisement for a Public Hearing to address the FY 2017 CIP at 9:00 a.m. on Thursday, April 21, 2016.

PCG/dmg
060806FY2017CIPMemo031716
Replace asbestos cement water mains (highlighted in magenta) with D.I.P. water mains ranging in size from 4" to 8".

Approximate Length = 7,950 ft.
Replace existing PVC and asbestos cement water mains (highlighted in magenta) with D.I.P. water mains ranging in size from 4" to 8".
Approximate length: 7,620 ft.
Replace undersized cast iron and asbestos cement water mains (highlighted in magenta) with new 8-inch 6-inch and 4-inch D.I.P. and fire hydrants.

Approximate length: 2,325'
Replace existing 6" cast iron water mains with 8" D.I.P. water mains and create additional connections to Four Seasons and Berkmar Crossing (highlighted in magenta). Approximate length: 11,640 LF.
Replace existing asbestos cement water mains with 8" D.I.P. water main (highlighted in magenta)  
Approximate length: 4,350 ft.
Construct Glenmore Water Tank, Pump Station and 16-inch diameter water main.
Approximate length = 2,250 ft.

Proposed 600,000 gal. Water Tank and Pump Station
Replace existing cast iron water mains (highlighted in magenta) with 8" D.I.P. Approximate length: 7,420 ft
Replace cross street transite water mains (highlighted in yellow) with 4" D.I.P. Approximate length: 1,450 ft

Additional hydrants and valves will be installed.
Replace existing cast iron water mains (highlighted in magenta) with 8-inch diameter D.I.P. water mains.

Approximate length: 3,075 ft.
Upgrade existing sewer main from 8" dia. to 10" dia. (highlighted in magenta)
Approximate length: 800 ft
Cameolot SSES Rehabilitation will include manhole rehabilitation, pipe re-lining and point repairs.
Conduct Sewer System Evaluation Survey (SSES) of the Pantops Drainage Basin. Evaluate 82,720 linear feet of sanitary sewer mains and 512 manholes.
Install 8" PVC and DIP sewer line (highlighted in magenta). Approximate length: 975 ft
Install 8 sewer manholes (highlighted in magenta).

Abandon the Oak Forest Pump Station and force main.

Connection to Stonefield Sanitary Sewer
Upgrade existing sanitary sewer pump station. May require new pump station or expansion of existing pump station.
Extend a water main along Olympia Drive (highlighted in magenta) with 8-inch D.I.P. to provide redundancy.

Approximate length: 630 ft.

Extend a water main along Verona Drive (highlighted in magenta) with 8-inch D.I.P. to provide redundancy.

Approximate length: 210 ft.
Replace existing asbestos cement water mains (highlighted in magenta) with 8-inch diameter D.I.P. water mains.

Approximate length: 1,600 ft.
Replace existing water pumps to meet future potable water demand and improve water age and fire flow availability. Add standby generators to each station.