A G E N D A
JAMES CITY SERVICE AUTHORITY BOARD OF DIRECTORS
REGULAR MEETING
County Government Center Board Room
101 Mounts Bay Road, Williamsburg, VA 23185
October 9, 2018
5:00 PM

A. CALL TO ORDER

B. ROLL CALL

C. PUBLIC COMMENT

D. CONSENT CALENDAR

1. Minutes Adoption - September 2018 Meeting

E. PUBLIC HEARING(S)

F. BOARD CONSIDERATION(S)

1. Contract Award - Lift Station 1-7 Replacement - $920,000

G. BOARD REQUESTS AND DIRECTIVES

H. GENERAL MANAGER'S UPDATE

1. Report from General Manager

I. ADJOURNMENT

1. Adjourn until 5 p.m. on November 13, 2018 for the Regular Meeting

AGENDA ITEM NO. D.1.

ITEM SUMMARY

DATE: 10/9/2018

TO: The Board of Directors

FROM: Teresa J. Fellows, Deputy Secretary

SUBJECT: Minutes Adoption - September 2018 Meeting

ATTACHMENTS:

	Description	Type
🗋	September 11, 2018 BOD Minutes	Minutes

REVIEWERS:

Department	Reviewer	Action	Date
Board Secretary	Fellows, Teresa	Approved	9/27/2018 - 8:27 AM

M I N U T E S
JAMES CITY SERVICE AUTHORITY BOARD OF DIRECTORS
REGULAR MEETING
County Government Center Board Room
101 Mounts Bay Road, Williamsburg, VA 23185
September 11, 2018
5:00 PM

A. CALL TO ORDER

B. ROLL CALL

Michael J. Hipple, Vice Chairman, Powhatan District
John J. McGlennon, Roberts District
James O. Icenhour, Jr., Jamestown District
Ruth M. Larson, Berkeley District
P. Sue Sadler, Chairman, Stonehouse District

William C. Porter, Secretary to the Board
Adam R. Kinsman, County Attorney
M. Douglas Powell, General Manager, James City Service Authority

C. PUBLIC COMMENT

None

D. CONSENT CALENDAR

A motion to Approve was made by John McGlennon, the motion result was Passed.
AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0
Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

1. Minutes Adoption - August 14, 2018 Regular Meeting

2. Water Sampling Rebate Program

E. PUBLIC HEARING(S)

None

F. BOARD CONSIDERATION(S)

1. First Amendment to 2014 Hybrid Sewer Plan - Memorandum of Agreement

A motion to Approve was made by Michael Hipple, the motion result was Passed. AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0
Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

Mr. Powell addressed the Board noting that in 2007 the James City Service Authority (JCSA) had entered into a consent order with the Department of Environmental Quality, along with 13 other Hampton Roads jurisdictions, to

address issues with sewer system overflows. He further noted that in 2013, JCSA and those same localities, entered into an agreement with the Hampton Roads Sanitation District (HRSD). Mr. Powell stated the HRSD agreed to accept responsibility for sewer system overflows after multiple improvements were made to the regional system with the estimated date of 2043 determined for those improvements. He noted the SWIFT program had modified that timeline and so a resolution to move the date forward for HRSD's responsibility and liability was before the Board. Mr. Powell recommended the Board approve the resolution.

Mr. McGlennon asked about the availability of water to JCSA customers during a potential widespread power outage.

Mr. Powell noted JCSA had taken all necessary action to maintain water to customers from staffing to gas for vehicles and generators. He urged residents to help by preparing a 3-5 day personal supply of water. Mr. Powell noted that grinder pumps do not work without electricity and thus reduce wastewater flow to the absolute minimum. He addressed the potential of contaminated water and that the boil advisory would be in place should that be necessary. Mr. Powell noted that adverse conditions could determine the time frame for addressing and correcting problems.

Ms. Sadler asked how citizens would know of any problems if there was no electricity.

Mr. Powell explained the text message system for alerts and local radio stations. He noted if residents were leaving town for several days, it was a good idea to turn the water off.

Ms. Larson asked if Dominion Energy knew which neighborhoods were on grinder pumps.

Mr. Powell noted Dominion Energy may not be aware of that point, but JCSA could coordinate with Dominion Energy to highlight those neighborhoods.

G. BOARD REQUESTS AND DIRECTIVES

None

H. GENERAL MANAGER'S UPDATE

Mr. Powell readdressed the missing PowerPoint slides from the previous meeting which showed the hydrant and valve program as the Board had approved two positions for the program. Mr. Powell noted Mr. Hipple had requested a photo of the pole shed JCSA staff had built.

Ms. Sadler and Mr. Hipple thanked Mr. Powell for the missing pictures and the JCSA work.

I. ADJOURNMENT

1. Adjourn until 5 p.m. on October 9, 2018, for the Regular Meeting

   A motion to Adjourn was made by Ruth Larson, the motion result was Passed.
   AYES: 5 NAYS: 0 ABSTAIN: 0 ABSENT: 0
   Ayes: Hipple, Icenhour Jr, Larson, McGlennon, Sadler

   At approximately 7 p.m., Ms. Sadler adjourned the meeting.

AGENDA ITEM NO. F.1.

ITEM SUMMARY

DATE: 10/9/2018

TO: The Board of Directors

FROM: M. Douglas Powell, General Manager, James City Service Authority

SUBJECT: Contract Award - Lift Station 1-7 Replacement - $920,000

ATTACHMENTS:

	Description	Type
	Memo	Cover Memo
	Resolution	Cover Memo

REVIEWERS:

Department	Reviewer	Action	Date
James City Service Authority	Powell, Doug	Approved	9/18/2018 - 2:34 PM
Publication Management	Daniel, Martha	Approved	9/18/2018 - 2:41 PM
Legal Review	Kinsman, Adam	Approved	9/24/2018 - 8:27 AM
Board Secretary	Fellows, Teresa	Approved	9/24/2018 - 11:06 AM
Board Secretary	Purse, Jason	Approved	10/2/2018 - 1:57 PM
Board Secretary	Fellows, Teresa	Approved	10/2/2018 - 2:03 PM

M E M O R A N D U M

DATE: October 9, 2018

TO: The Board of Directors

FROM: M. Douglas Powell, General Manager, James City Service Authority

SUBJECT: Contract Award - Lift Station 1-7 Replacement - $920,000

Lift Station 1-7 at 7251 Pocahontas Trail is approaching the end of its useful life and requires replacement of the building and equipment to continue providing reliable service. The replacement project consists of the construction of a new lift station at 4200 Battery Boulevard, Williamsburg, Virginia, to replace the nearby existing lift station. The new construction is a sanitary sewer 25-foot x 25-foot x 17-foot pump station control building measuring 625 square feet with a 10-foot diameter wet well and installation of gravity/pressure piping. Temporary bypass pumping will be needed to construct two new manholes and transition from the old pump station to the new pump station. Upon completion of the new pump station, the old 18.2-foot x 12.9-foot pump station control building, wet well and dry well will be demolished.

Potential bidders were pre-qualified to ensure the successful contractor had adequate experience with projects of similar scope and size. A Request for Qualifications was publicly advertised and four firms submitted their qualifications. All four firms were determined to be qualified. Two pre-qualified firms submitted bids in response to the Invitation for Bids as listed below.

Firm	Amount
Shaw Construction	$ 920,000
Waco, Inc.	$1,016,240

Shaw Construction was determined to be the lowest responsive and responsible bidder and has completed satisfactory work for the Authority.

Staff recommends approval of the attached resolution awarding the contract for Lift Station 1-7 Replacement to Shaw Construction.

MDP/md
CA-LS1-7Replace-mem

Attachment

R E S O L U T I O N

CONTRACT AWARD - LIFT STATION 1-7 REPLACEMENT - $920,000

WHEREAS, an Invitation for Bids for the replacement of Lift Station 1-7 that has reached the end of its useful life was publicly advertised and two bids were received and considered for award; and

WHEREAS, Shaw Construction was determined to be the lowest responsive and responsible bidder with a bid price of $920,000.

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the James City Service Authority, James City County, Virginia, hereby awards the contract for the replacement of Lift Station 1-7 to Shaw Construction.

_____
P. Sue Sadler
Chairman, Board of Directors

ATTEST:

_____
Teresa J. Fellows
Deputy Secretary to the Board

	VOTES		
	AYE	NAY	ABSTAIN
MCGLENNON	____	____	____
ICENHOUR	____	____	____
HIPPLE	____	____	____
LARSON	____	____	____
SADLER	____	____	____

Adopted by the Board of Directors of the James City Service Authority, James City County, Virginia, this 9th day of October, 2018.

CA-LS1-7Replace-res

AGENDA ITEM NO. H.1.

ITEM SUMMARY

DATE: 10/9/2018

TO: The Board of Directors

FROM: M. Douglas Powell, General Manager

SUBJECT: Report from General Manager

ATTACHMENTS:

	Description	Type
🗋	Memorandum	Cover Memo
🗋	Article	Exhibit

REVIEWERS:

Department	Reviewer	Action	Date
Board Secretary	Fellows, Teresa	Approved	10/2/2018 - 2:23 PM

M E M O R A N D U M

DATE: October 9, 2018

TO: The Board of Directors

FROM: M. Douglas Powell, General Manager, James City Service Authority

SUBJECT: Director's Report - October 2018

- The membrane replacement project at the Five Forks Water Treatment Facility was recently recognized in two national publications, *Opflow* (published by the American Water Works Association) and the American Membrane Technology Association newsletter. A copy of the article as it appeared in *Opflow* is included in the Board Packet.

- James City Service Authority (JCSA) is working with Human Resources to develop a career ladder for Waterworks Operators.

- The replacement of the nine remaining couplings on the Route 199 bridge at College Creek was completed on September 24.

- JCSA is seeking a renewal of our discharge permit for the Five Forks Water Treatment Facility. The public comment period runs through October 22.

- A team of approximately 15 JCSA employees participated in the United Way Day of Caring.

- JCSA has submitted a request to Virginia Retirement System for an actuarial study to change the retirement qualifications to 30 years of service and 50 years of age.

MDP/md
GMRpt-Oct-mem

https://doi.org/10.1002/opfl.1067

Bruce A. Capps is utility operations superintendent with James City Service Authority (www.jamescitycountyva.gov), Williamsburg, Va. Ben B. Movahed is president of WATEK Engineering Corp. (www.watek.com), Gaithersburg, Md.

Preparation Is Key to Membrane Replacement

A Virginia water utility demonstrated how proper planning led to successful results during a recent reverse osmosis membrane replacement project.

BY BRUCE A. CAPPS AND BEN B. MOVAHED

JAMES CITY SERVICE AUTHORITY (JCSA), Williamsburg, Va., has successfully operated a 5-mgd brackish water reverse osmosis (RO) water treatment plant since April 2005. Although the utility's RO membranes were still meeting water quality requirements, budget was set aside to replace them because of their age. JCSA also wanted to reduce power consumption, take advantage of newer membrane technology, and have more flexibility in meeting future water quality needs with the better permeate quality typically seen with newer membranes.

Membranes in JCSA's four RO skids were replaced in a low water-demand period, starting in December 2016 and finishing by February 2017. In the process, the utility's staff took great care in procuring, preparing, and installing the new membranes as well as developing some unique methods and "homemade" devices for removing the old elements.

PROJECT BACKGROUND

In early 2000, JCSA's well system was approaching the Virginia Department of Health's permitted capacity, and the demand was expected to increase more than 100 percent by 2020. To address these significant challenges, the utility proceeded with the design and subsequent construction of a 5-mgd brackish groundwater membrane desalination plant. The design incorporated a cost-effective combination of two groundwater sources, the Lower Potomac (for RO feed) and Middle Potomac (for bypass and blend use) aquifers, to comply with withdrawal permits and minimize posttreatment needs as well as reduce silica fouling potential.

JCSA's Five Forks Water Treatment Facility was constructed in three phases: well development, facility construction, and off-site water and concentrate lines. The first two skids came online in April 2005, and two more were added a few months later. The four RO skids operate with cartridge filters and scale inhibitor as pretreatment. Posttreatment consists of pH adjustment, corrosion inhibitor, and disinfection.



JCSA sold the old membranes instead of disposing of them in landfills.

PHOTOGRAPHS: JAMES CITY SERVICE AUTHORITY (VA.)

PROJECT PLANNING

Although the plant was running well, JCSA decided to replace the original membranes to increase plant efficiency, reduce power consumption, and set up the plant for another 10–12 years of reliable service. To take advantage of the membrane industry's impressive improvements, the utility chose to evaluate options that would result in more

2018 © American Water Works Association



JCSA's staff took great care to thoroughly clean and sanitize the new pressure vessels before they were loaded. The process included a swabbing method that consisted of pulling a spherical sponge (inset) through each pressure vessel.

efficient membranes and take advantage of improved permeate water quality.

A request for proposal was prepared by an engineer and sent to a list of prequalified manufacturers to provide replacements for the 180 elements in each of the four RO skids, one spare element per skid, performance projections, performance standards, and a three-year performance warranty as well as start-up, performance evaluation, and technical support. JCSA staff provided the removal and installation labor.

The contract was awarded based on four criteria: qualifications, contractor capabilities, methodology, and price schedule. A vendor was selected that provided brackish water elements, shipment, and the requested technical services for approximately $280,000.

Normalized data showed the old membranes still provided good salt rejection, so JCSA advertised the old membranes for sale to four potential contractors instead of disposing them. The sale was awarded to a company that bid $11.70 per element, which amounted to $8,424 for all 720 elements. JCSA was also able to save approximately $1,500 in disposal costs, so net savings totaled about $10,000.

MEMBRANE REPLACEMENT

Timing was critical to ensure demand could still be met during the membrane replacement process. The process was closely coordinated with the project's bidding, procurement, and membrane delivery schedule. Other considerations included the following:

Ensuring Safety. As in any situation, safety comes first. JCSA staff read safety data sheets for all chemicals that were used; reviewed lockout and tag-out procedures; and developed a list of required personal protective equipment, including safety glasses, gloves, aprons, etc., to safeguard against hazards. Staff also designated a safety officer, who conducted daily safety briefings before staff started any membrane replacement procedure.

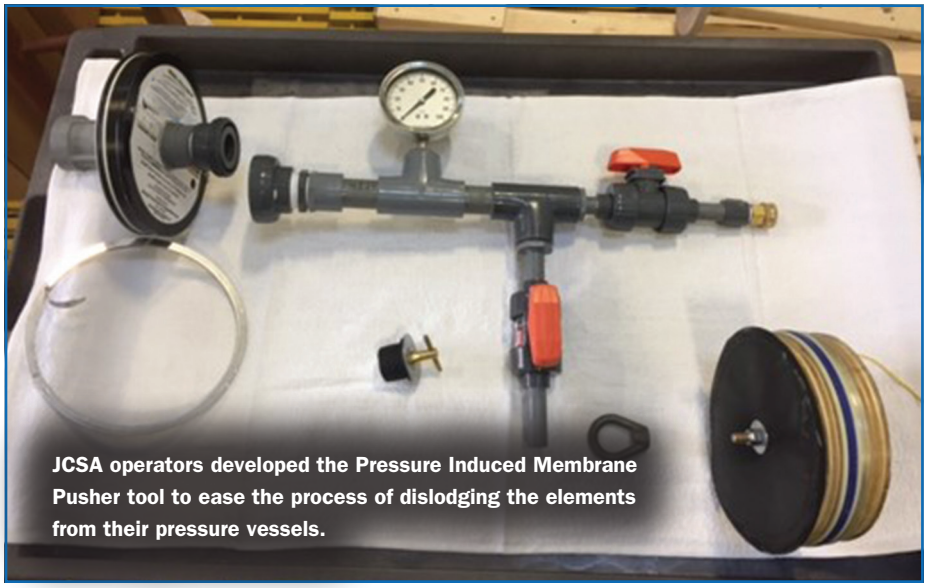
Procuring Spare Parts. Staff purchased additional spare parts and replacement components from the vessel manufacturer such as trust cones, end-cap seals, assorted O-rings, and spare end-cap assemblies.

Developing New Methods. The traditional method typically used to remove elements involves forcibly pushing each element out of its pressure vessel. This can be strenuous and timely, especially with larger skids. The method uses a series of push rods with a handmade round end plate attached at one end that was approximately the same diameter as the elements.

2018 © American Water Works Association



JCSA operators traditionally removed the elements by forcibly pushing each element out of its pressure vessel using a series of push rods with a handmade round end plate attached at one end (inset).



JCSA operators developed the Pressure Induced Membrane Pusher tool to ease the process of dislodging the elements from their pressure vessels.

JCSA developed a new hydraulic removal method using a Pressure Induced Membrane Pusher (PIMP). The PIMP tool eased the process of dislodging the elements from their pressure vessels. The method involved installing a pressure plate at one end of the vessel and applying adjustable hydraulic pressure to the plate. As water entered the end of the vessel, the elements were removed from the opposite end because of the water's displacement action.

Cleaning. The vessels were thoroughly cleaned and sanitized before they were loaded. Staff set up a workbench and cleaning station for this purpose. The interior of each pressure vessel was cleaned and sanitized using a swabbing method and inspected. The swabbing consisted of a towel wrapped around a spherical sponge with an attached rope. The rope was used to pull the sponge through each pressure vessel. This approach was found to clean the vessels more effectively than a "soccer ball," which is typically used.

Installing and Commissioning. Once the pressure vessels were prepped and cleaned, the new membranes were loaded. To minimize unwanted movement inside each pressure vessel, shims were placed between the lead end element and the end cap of each vessel before it was sealed. Then the new membranes were flushed to remove preservatives and profiled to ensure a complete seal. Shim thickness depends on the gap, so it's best to follow the manufacturer's recommendation for measuring the required shim thickness.

To optimize the RO treatment system, water quality, flow, and pressure data were collected and evaluated. After the membranes in all four skids were replaced and sufficient operational and water quality data had been analyzed, minor process changes were made to optimize RO production. As a result of the improved water quality, JCSA was able to increase its bypass blend, which increased plant capacity from 5 mgd to 5.3 mgd.

KEYS TO SUCCESS

A significant amount of planning and logistics goes into performing an in-house project of this magnitude while completing all the normal activities required to operate the water system. The project was supported by staff members throughout JCSA, and 10–12 staff members were often involved with each skid replacement. It's important to plan for every aspect of removal, cleaning, and installation. This includes planning for the timing of when materials and labor are needed, ordering adequate spares, and planning for and knowing how to deal with the unexpected. Once the replacement process begins, there's no turning back!

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AGENDA ITEM NO. I.1.

ITEM SUMMARY

DATE: 10/9/2018

TO: The Board of Directors

FROM: Teresa J. Fellows, Deputy Secretary

SUBJECT: Adjourn until 5 p.m. on November 13, 2018 for the Regular Meeting

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REVIEWERS:

Department	Reviewer	Action	Date
Board Secretary	Fellows, Teresa	Approved	9/27/2018 - 8:29 AM