ORANGE WATER AND SEWER AUTHORITY

A public, non-profit agency providing water, sewer and reclaimed water services to the Carrboro-Chapel Hill community.

Agenda
Work Session of the OWASA Board of Directors
Thursday, July 12, 2018, 6:00 P.M.
OWASA Community Room

The Board of Directors appreciates and invites the public to attend and observe its meetings. For the Board's Work Session, public comments are invited on only items appearing on this agenda. Speakers are invited to submit more detailed comments via written materials, ideally submitted at least three days in advance of the meeting to the Clerk to the Board via email or US Postal Service (aorbich@owasa.org/400 Jones Ferry Road, Carrboro, NC 27510).

For items on the agenda, public speakers are encouraged to organize their remarks for delivery within a four-minute time frame allowed each speaker, unless otherwise determined by the Board of Directors.

The Board may take action on any item on the agenda.

Announcements

a. Announcements by the Chair
   - Any Board Member who knows of a conflict of interest or potential conflict of interest with respect to any item on the agenda tonight is asked to disclose the same at this time.
   - Welcome new Board Members Jody Eimers (Orange County Appointee) and Bruce Boehm (Chapel Hill Appointee)
   - Standing Committees of the Board of Directors
   - Update on the June 25, 2018 Human Resources Committee Meeting

b. Announcements by Board Members

c. Announcements by Staff

d. Additional Comments, Suggestions, and Information Items by Board Members (Yinka Ayankoya)

Consent Agenda

Information and Reports

1. Quarterly Report on Attendance at Board and Committee Meetings (Andrea Orbich)

Action

2. Resolution Awarding a Construction Contract for the Mason Farm Wastewater Treatment Plant Intermediate Pump Stations Rehabilitation Project (Vishnu Gangadharan)
3. Resolution Awarding a Construction Contract for the Pritchard Avenue Water Main Replacement Project (Vishnu Gangadharan)
4. Approve North Carolina Department of Transportation Right of Way Acquisition for Roadway Improvements at the Intersection of Highway 54 and Orange Grove Road (Todd Spencer)
5. Minutes of the June 14, 2018 Work Session of the Board of Directors (Andrea Orbich)

Regular Agenda

Discussion

6. Discuss Draft Water Treatment Plant and Wastewater Treatment Plant Reliability and Risk Assessment Evaluation (Adam Haggerty)

7. Status of Action Items on Communications During OWASA-Related Emergencies (Linda Low)
8. Review Draft of Weights Assigned to Decision-Criteria of a Request for Proposals for Banking Services (Stephen Winters)
9. Review Board Work Schedule (Yinka Ayankoya/Ed Kerwin)
    a. Request(s) by Board Committees, Board Members and Staff
    b. August 23, 2018 Board Meeting
    c. September 13, 2018 Work Session
    d. 12 Month Board Meeting Schedule
    e. Pending Key Staff Action Items

Summary of Work Session Items

10. Executive Director will summarize the key staff action items from the Work Session

Agenda Item 1

ORANGE WATER AND SEWER AUTHORITY - QUARTERLY REPORT

ATTENDANCE AT BOARD AND COMMITTEE MEETINGS

BOARD OF DIRECTORS	APRIL 2018	MAY 2018	JUNE 2018
ROBERT MORGAN, CHAIR	April 4 D&I (Meeting) April 12 WS (Meeting) April 18 FC (Meeting) April 26 Board (Absent)	May 8 NRTS (Meeting) May 9 HR (Meeting) May 10 WS (Meeting) May 24 Board (Meeting) May 30 D&I (Meeting)	June 14 WS (Absent) June 25 HR (Meeting) June 28 Board (Canceled)
HEATHER PAYNE, VICE CHAIR	April 4 D&I (Meeting) April 12 WS (Meeting) April 18 FC (Meeting) April 26 Board (Meeting)	May 8 NRTS (Meeting) May 9 HR (Meeting) May 10 WS (Meeting) May 24 Board (Meeting) May 30 D&I (Meeting)	June 14 WS (Meeting) June 25 HR (Meeting) June 28 Board (Canceled)
YINKA AYANKOYA, SECRETARY	April 4 D&I (Meeting) April 12 WS (Meeting) April 18 FC (Meeting) April 26 Board (Meeting)	May 8 NRTS (Meeting) May 9 HR (Meeting) May 10 WS (Meeting) May 24 Board (Meeting) May 30 D&I (Meeting)	June 14 WS (Meeting) June 25 HR (Meeting) June 28 Board (Canceled)
JEFF DANNER	April 4 D&I (Meeting) April 12 WS (Meeting) April 18 FC (Absent) April 26 Board (Absent)	May 9 HR (Absent) May 10 WS (Absent) May 24 Board (Meeting) May 30 D&I (Absent)	June 14 WS (Meeting) June 25 HR (Absent) June 28 Board (Canceled)
RAY DUBOSE	April 4 D&I (Meeting) April 12 WS (Meeting) April 18 FC (Meeting) April 26 Board (Meeting)	May 10 WS (Meeting) May 24 Board (Meeting) May 30 D&I (Meeting)	June 14 WS (Absent) June 25 HR (Meeting) June 28 Board (Canceled)
BARBARA M. FOUSHEE	April 4 D&I (Meeting) April 12 WS (Meeting) April 26 Board (Meeting)	May 9 HR (Meeting) May 10 WS (Meeting) May 24 Board (Meeting) May 30 D&I (Meeting)	June 14 WS (Meeting) June 25 HR (Meeting) June 28 Board (Canceled)
JOHN N. MORRIS	April 4 D&I (Meeting) April 12 WS (Meeting) April 18 FC (Meeting) April 26 Board (Meeting)	May 8 NRTS (Meeting) May 10 WS (Meeting) May 24 Board (Meeting) May 30 D&I (Meeting)	June 14 WS (Meeting) June 28 Board (Canceled)
RUCHIR VORA	April 4 D&I (Meeting) April 12 WS (Absent) April 18 FC (Meeting) April 26 Board (Meeting)	May 8 NRTS (Absent) May 10 WS (Meeting) May 24 Board (Meeting) May 30 D&I (Meeting)	June 14 WS (Absent) June 28 Board (Canceled)

JULY 12, 2018

BOARD OF DIRECTORS	APRIL 2018	MAY 2018	JUNE 2018
JOHN A. YOUNG	April 4 D&I (Meeting) April 12 WS (Meeting) April 18 FC (Meeting) April 26 Board (Meeting)	May 8 NRTS (Meeting) May 9 HR (Meeting) May 10 WS (Meeting) May 24 Board (Absent) May 30 D&I (Meeting)	June 14 WS (Meeting) June 25 HR (Meeting) June 28 Board (Canceled)
TOTAL MEETINGS HELD:	**4**	**5**	**2**

Board – Board of Directors
D&I – Diversity and Inclusion
FC – Finance Committee
HR – Human Resources Committee
NRTS – Natural Resources and Technical Services Committee
WS – Work Session

Agenda Item 2:

Resolution Awarding a Construction Contract for the Mason Farm Wastewater Treatment Plant Intermediate Pump Stations Rehabilitation Project

Purpose:

This memorandum recommends that the OWASA Board of Directors award a construction contract to Turner Murphy Company, Inc. ("Turner Murphy") for the construction of the Mason Farm Wastewater Treatment Plant (WWTP) Intermediate Pump Stations Electrical and Heating, Ventilation and Air Conditioning (HVAC) Rehabilitation Project.

Background:

The Intermediate Pump Stations (IPS) at the WWTP consists of two separate buildings, IPS #1 and IPS #2, and three backup diesel operated pumps for emergency purposes. IPS #1 and IPS #2 were built in 1976 and 1984 respectively. Several significant renovations have occurred since that time to replace pumps and controls. However, much of the electrical equipment is from the original construction. The pump stations provide a critical function within the WWTP by lifting flow coming from primary clarification to a higher elevation at the start of the secondary treatment process.

CH2M Hill completed a condition assessment in 2012 which identified several electrical issues related to aging equipment and insufficient ventilation. A planning study completed by Black and Veatch in June 2016 defined the scope and budget for a subsequent Capital Improvements Program (CIP) project to address these electrical issues, along with other pump-related deficiencies, in the context of future planning assumptions. The study reviewed replacement and rehabilitation options for the stations and determined the following:

- Both IPS #1 and IPS#2 are structurally sound.
- Ventilation improvements are required at both IPS #1 and IPS #2 to meet current building code.
- Electrical improvements are required at both IPS #1 and IPS #2.
- Hydraulic improvements/repairs are required at both IPS #1 and IPS #2 to meet future flow requirements.

The study found that a large CIP project (greater than $5 million) would be required to meet future flow requirements, and that more than 10 years of additional useful life could be added by performing a smaller project consisting of basic electrical and HVAC improvements. Furthermore, the existing pump stations and the diesel pumps combined have a firm capacity sufficient to pump all incoming plant flows until such time that either the Morgan Creek Pump Station or the Rogerson Drive Pump Station (which pumps all of the wastewater to the WWTP) are significantly increased in size. Because of the large investment required to address future hydraulic requirements and the uncertainty of related future expansions, the planning study recommended a near-term project to address limited rehabilitation of the station.

Apogee Consulting was selected to provide engineering services to design, bid and perform construction related services to repair identified deficiencies in the electrical and HVAC systems at the Intermediate Pump Stations. For efficiency, OWASA included repair of architectural issues with the buildings and lighting improvements. OWASA's energy management plan identified both lighting and HVAC improvements for the building as potential energy savings opportunities and OWASA selected best efficiency equipment wherever feasible for the project. This included LED lights, high efficiency HVAC units and updated electrical equipment that should reduce electrical losses.

The project qualified for a State Revolving Fund low interest loan and the State approved the bid documents on April 24, 2018. The Board's award of the contract is required to receive the funds for the project.

Advertising and Bidding:

Apogee Consulting completed the design drawings and specifications for the improvements. Prospective bidders were screened through our standard prequalification process, which involved having interested contractors submit a package outlining their qualifications, including past performance on similar projects, credentials of their management team, safety record, etc. Only those firms that clearly demonstrated the capability to adequately perform the project work were invited to submit bids.

The Request for Qualifications (RFQ) was posted in December 2016 as part of a prequalification process for a group of projects bid throughout 2016, 2017 and 2018. After review, eleven contractors were prequalified to bid on the projects. One contractor was subsequently disqualified in 2017, leaving ten contractors qualified to bid for the project. This is the final project to be bid under the 2016 prequalification.

The invitation for bids was issued to the prequalified contractors and the project was publicly advertised on May 2, 2018. Two bids were received by the initial June 5, 2018 deadline, and, being fewer than the minimum of three required for bid opening on a formal contract, were returned unopened to the bidders. Per North Carolina General Statute 143-132, the contract was re-advertised, and on June 12, 2018, two bids were received and opened publicly. Turner Murphy was the low, responsive and responsible bidder for the project with a bid of $639,269.00. A copy of the certified bid tabulation is attached with the Engineer's recommendation to award (Attachment 1), and the results are summarized below:

Turner Murphy Company, Inc.	$639,269.00
Carolina Civilworks, Inc.	$645,280.00
Engineer's Estimate	*$441,396.00*

Minority and Women Business Enterprise (MWBE) Participation:

OWASA's Minority Business Participation Outreach Plan and Guidelines include all of the statutory requirements from the State of North Carolina, and specify a 10% goal for participation by minority businesses. In keeping with standard practice, OWASA staff took several actions to solicit minority participation in this contract, including advertising the Request for Qualifications in the Greater Diversity News, the North Carolina Institute of Minority Economic Development, OWASA's website, and plan rooms, and requiring bidders to follow "good faith" efforts to solicit participation by minority subcontractors. The apparent low bidder (Turner Murphy) identified MWBE participation of $202,300.00 (31.6% of the total bid amount).

Bid Analysis and Recommendation:

Although only two bids were received for the project, staff is satisfied that the proposed contract amount represents a competitive price for this work. The low number of bids for this project appears to reflect the general bidding climate at this time, with an increasing number of private and public projects competing for a limited set of qualified utility contractors. Rejecting the bids and rebidding the contract would not necessarily result in more bidders, and there is no guarantee that we would receive better (or even similar) pricing for the work.

Turner Murphy's ability to complete this project successfully was evaluated thoroughly during the prequalification process, and they have demonstrated sufficient qualifications in past project performance (including the Rogerson Drive Pump Station Phase 1 project), personnel qualifications/experience, reference checks, and all other rated categories.

Apogee's recommendation that the construction contract for this project be awarded to Turner Murphy is attached along with the certified bid tabulation (Attachment 1). OWASA staff concurs with this recommendation and requests the Board's adoption of the attached resolution (Attachment 2) awarding the construction contract to Turner Murphy.

Information:

- Attachment 1 – Engineer's Recommendation for Award and Certified Bid Tabulation
- Attachment 2 – Resolution

APOGEE
Consulting Group
Engineers | Architects

15 June 2018

Simon Lobdell, PE
Orange Water & Sewer Authority
400 Jones Ferry Road
Carrboro NC 27510-2001
slobdell@owasanc.onmicrosoft.com

Re: Evaluation for Low Responsive and Responsible Bid Proposal - Mason Farm WWTP Intermediate Pump Station Electrical & HVAC Rehabilitation, located in Chapel Hill, North Carolina (16-237)

Dear Simon,

In accordance with the Orange Water and Sewer Authority's request, we have reviewed the proposal from Turner Murphy Company, Inc. for completeness and have determined it to be responsive with no apparent shortcomings nor omissions. Based on the information in the proposal and the Certified Bid Tabulation, it appears that Turner Murphy Company Inc. is currently the low responsive and responsible bidder for this project with a Bid Amount of $639,269.00.

This letter is based solely on the information provided in the proposal and is not a recommendation or a guarantee of their performance on this project.

If you have any questions or need additional information, please feel free to contact me at 919-535-3632.

Sincerely,

Joseph A. Angell II, PE
Senior Project Manager

Attachment: Certified Bid Tabulation – Apogee Project No: 16-237

15-Jun-18	Certified Bid Tabulation		Apogee Project No:	16-237			
	BID Opening of CIP 278-54 - Mason Farm WWTP Intermediate Pump Station Electrical and HVAC Rehabilitation						
	OWASA Administrative Offices	400 Jones Ferry Rd, Carrboro, NC					
				Carolina Civil Works		Turner Murphy Company Inc.	
Pay Item	Item Description	Unit	Est Qty	Unit Price Bid	Extended Total	Unit Price Bid	Extended Total
1	IPS-1 & IPS-2 Electrical and HVAC Renovation	LS	1	$ 575,280.00	$ 575,280.00	$ 569,269.00	$ 569,269.00
2	IPS-2 SCADA Allowance	--	NA	$ 35,000.00	$ 35,000.00	$ 35,000.00	$ 35,000.00
3	Contingency Allowance	--	NA	$ 35,000.00	$ 35,000.00	$ 35,000.00	$ 35,000.00
				Total:	$ 645,280.00	Total:	$ 639,269.00

Certification:
The bids tabulated herein were opened and read aloud at 10:00 AM, local time on June 12, 2018 at 400 Jones Ferry Road, Carrboro, NC.
The bid tabulation is correct in that it contains the prices as represented on the original bid proposal of each bidder.

Respectfully,

Joseph A. Angell II, PE
Senior Project Manager

Apogee Consulting Group, PA
A Service-Disabled Veteran-Owned Small Business
1151 Kildaire Farm Road, Suite 120, Cary, NC
919.535.3632 tel
919.622.7341 cell
www.acg-pa.com

RESOLUTION AWARDING A CONSTRUCTION CONTRACT FOR THE MASON FARM WASTEWATER TREATMENT PLANT INTERMEDIATE PUMP STATIONS ELECTRICAL AND HVAC REHABILITATION PROJECT

WHEREAS, there is a need to rehabilitate the electrical and heating, ventilation and air conditioning (HVAC) equipment at the Mason Farm Wastewater Plant (WWTP) Intermediate Pump Stations; and

WHEREAS, plans and specifications for the construction of this project have been prepared by Apogee Consulting; and

WHEREAS, advertisement for contractor qualifications was published on the websites of the North Carolina Institute of Minority Economic Development, North Carolina Department of Administration, and OWASA on December 8, 2016, and ten contractors were qualified to bid at the time of the bid; and

WHEREAS, on May 2, 2018, the prequalified contractors were formally invited to submit construction bids for the project, and after receiving only two bids on the first bid opening date of June 5, 2018 the project was re-bid:

WHEREAS two bids were subsequently received on June 12, 2018; and

WHEREAS, Turner Murphy Company, Inc. of Rock Hill, South Carolina has been determined to be the low responsive, responsible bidder for the project; and

WHEREAS, on February 22, 2018 the Board approved a resolution authorizing funds for this project as part of the State Reserve Program loan;

NOW, THEREFORE, BE IT RESOLVED:

1. That the Orange Water and Sewer Authority Board of Directors awards the construction contract to Turner Murphy Company, Inc., the low responsive, responsible bidder for the Mason Farm WWTP Intermediate Pump Station Electrical and HVAC Rehabilitation Project, in accordance with the approved plans and specifications, in the amount of $639,268.00, subject to such change orders as may apply.

2. That the Executive Director be, and hereby is, authorized to execute said contract, subject to prior approval of legal counsel, and to approve and execute change orders and such documents as may be required in connection with the construction contract.

3. That the tentative award is contingent upon the approval of the North Carolina Department of Environmental Quality.

Adopted this 12th day of July 2018.

_____
Yinka Ayankoya, Chair

ATTEST:

_____
Raymond E. DuBose, Secretary

Agenda Item 3:

Resolution Awarding a Construction Contract for the Pritchard Avenue Water Main Replacement Project

Purpose:

This memorandum recommends that the OWASA Board award a construction contract to Moffat Pipe, Inc. ("Moffat") for the construction of the Pritchard Avenue Water Main Replacement Project ("Project").

Background:

The Project is part of OWASA's High Priority Water Main Replacement Program and overall goal to replace or abandon aging water mains to ensure a safe and reliable supply of drinking water for our customers. The existing mains within this project were identified as a high priority for replacement by our Water Main Prioritization Model and staff input.

Attachment 1 shows the extent (in red) of water line replacement. This project replaces 1800 feet of asbestos concrete pipe with new ductile iron pipe. The project area extends along Pritchard Avenue from its intersection with Rosemary Street, then to and along Noble Street to its intersection with Columbia Street.

As part of preliminary design for the project, hydraulic modeling established that a new 8-inch pipe would meet the service criteria for the distribution system in this area. Preliminary design also considered the option of installing cured-in-place pipe (CIPP) lining as opposed to traditional open cut excavation; CIPP was found to be unsuitable for this project due to the high number of water service connections.

A community meeting was held on May 7, 2018 in order to communicate the schedule and expected impacts during construction, and to answer questions from the community. This community meeting is part of the overall Community Engagement Plan for this project, which includes periodic project updates and direct customer interaction.

Advertising and Bidding:

OWASA staff and its consultant CJS Conveyance, PLLC ("Engineer") developed complete design and specifications for the improvements during Fiscal Year 2018. Prospective bidders were screened through our standard prequalification process, which involved having interested contractors submit a package outlining their qualifications, including past performance on similar projects, credentials of their management team, safety record, etc. Only those firms that clearly demonstrated the capability to adequately perform the work were invited to submit bids.

The Request for Qualifications (RFQ) was posted March 23, 2018. After review, seven contractors were prequalified to bid on the project. The invitation for bids was issued to

the prequalified contractors on May 18, 2018. A total of three bids were received on June 26, 2018 and opened publicly. Moffat was the low, responsive and responsible bidder for the project with a bid of $884,670.00. A copy of the certified bid tabulation is attached with the Engineer's recommendation for award (Attachment 2), and the results are summarized below:

Moffat Pipe, Inc.	$884,670.00
Park Construction	$974,477.00
Pipeline Utilities, Inc.	$1,299,000.00
Engineer's Final Estimate	*$930,000.00*

Minority and Women Business Enterprise (MWBE) Participation:

OWASA's Minority Business Participation Outreach Plan and Guidelines include all of the statutory requirements from the State of North Carolina, and specifies a 10% goal for participation by minority businesses. In keeping with standard practice, OWASA staff took several actions to solicit minority participation in this contract, including advertising the RFQ in the Greater Diversity News, North Carolina Institute of Minority Economic Development, North Carolina Department of Administration Historically Underutilized Businesses, OWASA's website, and plan rooms. OWASA also requires bidders to complete "good faith" efforts to solicit participation by minority subcontractors. OWASA staff publicly advertised the formal bid as an additional effort to encourage participation by subcontractors where it was feasible.

The apparent low bidder (Moffat) is a Women Owned Business Enterprise (WBE) and they anticipate self-performing at least $400,000.00 of the work. While Moffat provided documentation of good faith efforts to employ MWBE subcontractors, none of their subcontractors qualify as Minority and Women owned Business Enterprise (MWBE) contractors. The total percentage of work going to an MWBE in this contract is approximately 45%.

Bid Analysis and Recommendation:

The three bids received were in the anticipated range with favorable pricing for the low bid (the high bid was 46% higher than the low bid). The low bid was 5% lower than the Engineer's estimate and staff is confident it reflects a competitive and fair cost for the job.

Moffat's ability to complete this project was evaluated thoroughly during the prequalification process, and they demonstrated sufficient qualifications in past project performance, personnel qualifications/experience, reference checks, and all other rated categories. Moffat is the contractor who performed the Rosemary Street Water Main Replacement Project, the recent Hillsborough Street Water Main Replacement Project, and numerous other successful water main replacements for OWASA over the past several years. OWASA staff also determined that Moffat's safety performance, relevant project

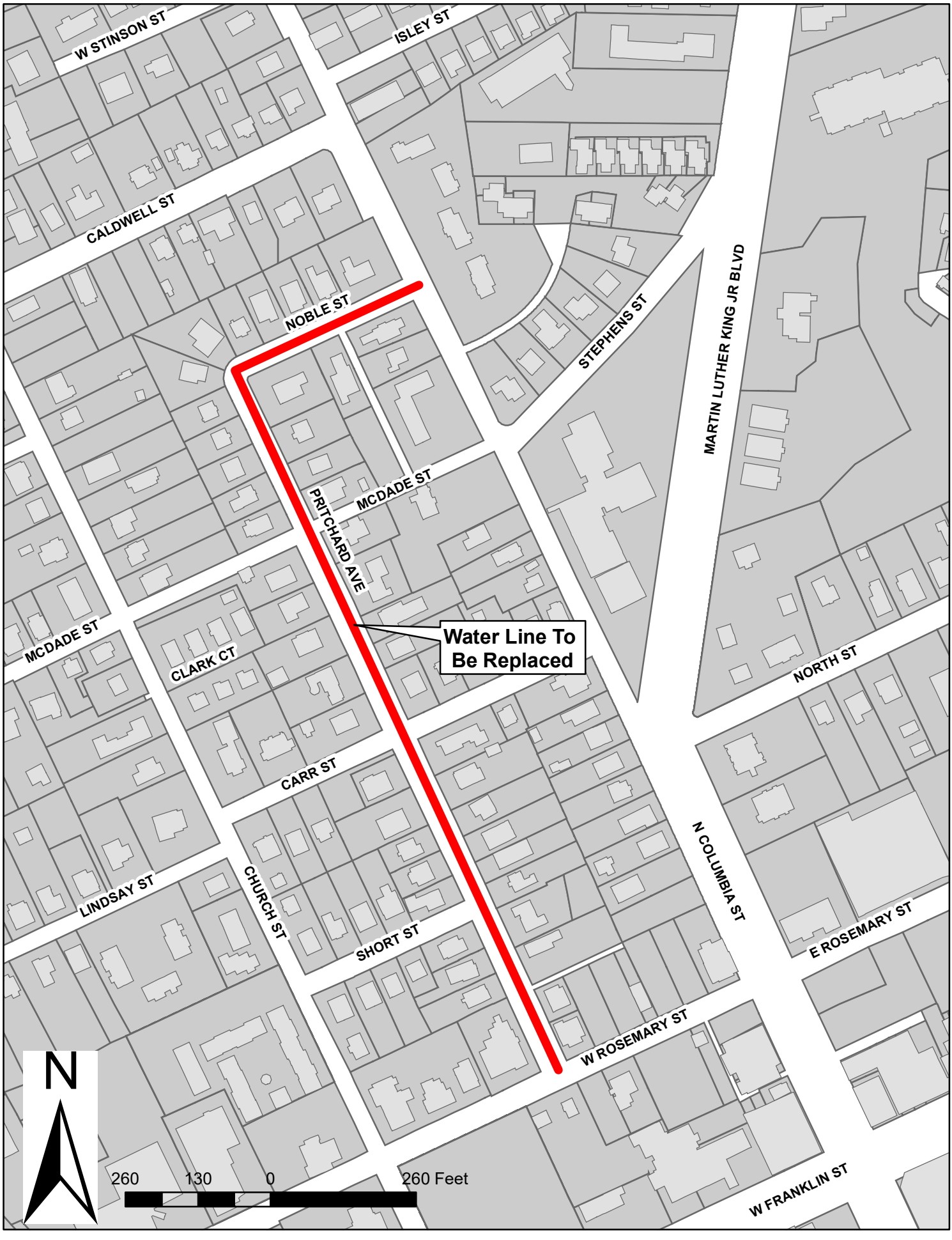
experience, bonding capacity, and other non-rated categories met our requirements.

Project Engineer CJS Conveyance, PLLC's recommendation that the construction contract for this project be awarded to Moffat is attached along with the certified bid tabulation (Attachment 2). OWASA staff concurs with this recommendation. In order to proceed, we request the Board's adoption of the attached resolution (Attachment 3) awarding the construction contract to Moffat.

Information:

- Project Location Map (Attachment 1)
- Engineer's Recommendation for Award and Certified Bid Tabulation (Attachment 2)
- Resolution (Attachment 3)

Project Location Map



320 S. Academy Street
Cary, NC 27511

919-890-3877 (direct)
919-818-8322 (mobile)

www.cjsconveyance.com

June 27, 2018

Allison Reinert, P.E.
Utilities Engineer
Orange Water and Sewer Authority
400 Jones Ferry Road
Carrboro, North Carolina 27510

Re: High Priority Water Mains Project – Pritchard Avenue Water Main Replacement
Recommendation of Award

Dear Ms. Reinert:

Please find enclosed the certified bid tabulation for the Pritchard Avenue Water Main Replacement Project. Submitted bids were opened and read aloud on June 26, 2018 at 2:00 pm in the offices of Orange Water and Sewer Authority on Jones Ferry Road.

A total of three (3) bids were submitted for the project. All bidders were approved bidders as determined during the pre-qualification for this project and as listed in the bidding documents. Based on the bids submitted the apparent low bidder is Moffat Pipe, Inc. of Wake Forest, North Carolina. Moffat Pipe submitted a bid price of **$884,670.00.** Their bid has been reviewed and is deemed complete. After a review of the provided bid proposal versus the requirements in the bidding documents Moffat Pipe, Inc. is deemed to possess satisfactory qualifications to perform the work required for this project. Furthermore, we recommend the award of the project to Moffat Pipe Inc.

Please feel free to contact me at 919-890-3877 or sleitch@cjsconveyance.com if you have any questions or would like to discuss further.

Sincerely,

Stephen D. Leitch, PE

Project Manager

Enc: Certified Bid Tabulation

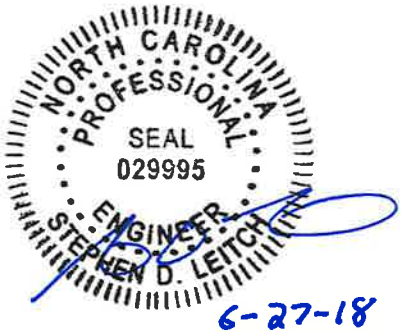
cc: file

Certified Bid Tabulation

Pritchard Avenue Water Main Replacement Project

Orange Water and Sewer Authority
Carrboro, NC

Item No.	Description	Unit	Estimated Quantity	Moffat Pipe, Inc.		Park Construction of NC, Inc.		Pipeline Utilities, Inc.	
				Unit Price	Extended Total	Unit Price	Extended Total	Unit Price	Extended Total
1a	12" Ductile Iron Water Main, PC 350 Restrained Joint	LF	20	$200.00	$4,000.00	$124.95	$2,499.00	$700.00	$14,000.00
1b	8" Ductile Iron Water Main, PC 350 Restrained Joint	LF	1,865	$125.00	$233,125.00	$107.95	$201,326.75	$197.00	$367,405.00
1c	6" Ductile Iron Water Main, PC 350 Restrained Joint	LF	15	$200.00	$3,000.00	$134.55	$2,018.25	$97.00	$1,455.00
1d	4" Ductile Iron Water Main, PC 350 Restrained Joint	LF	10	$200.00	$2,000.00	$131.50	$1,315.00	$71.00	$710.00
2	Sanitary Sewer Replacement at Water Main Crossings	EA	2	$5,000.00	$10,000.00	$3,063.00	$6,126.00	$12,800.00	$25,600.00
3	Ductile Iron Bends and Fittings	LBS	4,400	$8.00	$35,200.00	$3.85	$16,940.00	$6.00	$26,400.00
4a	12" Transition Coupling	EA	1	$2,000.00	$2,000.00	$341.50	$341.50	$1,500.00	$1,500.00
4b	8" Transition Coupling	EA	4	$1,800.00	$7,200.00	$230.00	$920.00	$1,400.00	$5,600.00
5a	12" Gate Valve Assembly	EA	1	$4,500.00	$4,500.00	$3,009.00	$3,009.00	$2,800.00	$2,800.00
5b	8" Gate Valve Assembly	EA	14	$3,500.00	$49,000.00	$1,811.00	$25,354.00	$2,400.00	$33,600.00
5c	6" Gate Valve Assembly	EA	1	$3,000.00	$3,000.00	$1,365.00	$1,365.00	$2,000.00	$2,000.00
5d	4" Gate Valve Assembly	EA	1	$2,800.00	$2,800.00	$1,183.00	$1,183.00	$1,900.00	$1,900.00
6	Fire Hydrant Assembly	EA	3	$6,500.00	$19,500.00	$5,404.00	$16,212.00	$6,000.00	$18,000.00
7	Air Release Valve Assembly	EA	1	$6,500.00	$6,500.00	$5,779.00	$5,779.00	$9,000.00	$9,000.00
8a	Connect to Exist. 12" Water Main	EA	1	$5,000.00	$5,000.00	$14,800.00	$14,800.00	$2,500.00	$2,500.00
8b	Connect to Exist. 8" Water Main	EA	3	$5,000.00	$15,000.00	$7,496.00	$22,488.00	$2,500.00	$7,500.00
8c	Connect to Exist. 6" Water Main	EA	1	$2,500.00	$2,500.00	$7,449.00	$7,449.00	$2,500.00	$2,500.00
8d	Connect to Exist. 4" Water Main	EA	1	$2,500.00	$2,500.00	$7,364.00	$7,364.00	$2,500.00	$2,500.00
9	Temporary Blow-Off Assembly	EA	4	$3,500.00	$14,000.00	$5,399.00	$21,596.00	$3,000.00	$12,000.00
10a	Single 3/4" Water Service	EA	42	$2,000.00	$84,000.00	$4,333.00	$181,986.00	$5,700.00	$239,400.00
10b	Dual 3/4" Water Service	EA	5	$3,000.00	$15,000.00	$5,023.00	$25,115.00	$6,000.00	$30,000.00
11	Abandon Existing Water Mains in Place	LF	1,865	$8.00	$14,920.00	$3.30	$6,154.50	$20.00	$37,300.00
12a	Milling of Asphalt	SY	545	$25.00	$13,625.00	$23.50	$12,807.50	$23.00	$12,535.00
12b	Surface Course (SF9.5B)	TN	110	$365.00	$40,150.00	$202.50	$22,275.00	$247.00	$27,170.00
12c	Base Course (B25.0B)	TN	390	$175.00	$68,250.00	$270.00	$105,300.00	$162.00	$63,180.00
12d	Aggregate Base Course	TN	375	$38.00	$14,250.00	$80.50	$30,187.50	$41.00	$15,375.00
13	Miscellaneous Surface Restoration	LS	1	$40,000.00	$40,000.00	$12,162.00	$12,162.00	$5,000.00	$5,000.00
14	Miscellaneous Concrete	CY	10	$150.00	$1,500.00	$831.00	$8,310.00	$800.00	$8,000.00
15	Offsite Fill Material	CY	70	$35.00	$2,450.00	$38.00	$2,660.00	$75.00	$5,250.00
16	Undercut and Replace with #57 Stone	CY	70	$35.00	$2,450.00	$72.15	$5,050.50	$75.00	$5,250.00
17	Trench Rock Removal by Mechanical Means	CY	120	$150.00	$18,000.00	$355.00	$42,600.00	$150.00	$18,000.00
18	Remove and Replace Curb and Gutter	LF	50	$65.00	$3,250.00	$218.25	$10,912.50	$99.00	$4,950.00
19	Traffic Control	LS	1	$40,000.00	$40,000.00	$37,171.00	$37,171.00	$161,620.00	$161,620.00
20	Town of Chapel Hill Street Cut Allowance	-	-	-	$55,000.00	-	$55,000.00	-	$55,000.00
21	Contingency Allowance	-	-	-	$10,000.00	-	$10,000.00	-	$10,000.00
22	Mobilization (Less than 5% of Bid)	LS	1	$41,000.00	$41,000.00	$48,700.00	$48,700.00	$64,000.00	$64,000.00
			Total Bid Amount		**$884,670.00**		**$974,477.00**		**$1,299,000.00**



CERTIFICATION

The bids shown herein were opened and read aloud at the Orange Water and Sewer Authority office located 400 Jones Ferry Road in Carrboro, North Carolina 27510 on June 26, 2018, at 2:00 p.m. The bids shown represent the total bid amount provided on the original Bid Form of each Bidder's proposal.

Stephen D. Leitch, P.E.
CJS Conveyance, PLLC

RESOLUTION AWARDING A CONSTRUCTION CONTRACT FOR THE PRITCHARD AVENUE WATER MAIN REPLACEMENT PROJECT

WHEREAS, there is a need to replace the 8-inch asbestos concrete water main along Pritchard Avenue; and

WHEREAS, plans and specifications for the construction of this project have been prepared by CJS Conveyance, PLLC; and

WHEREAS, advertisement for contractor qualifications was published on the websites of the North Carolina Institute of Minority Economic Development, North Carolina Department of Administration, and OWASA on March 23, 2018, and seven contractors were qualified to bid; and

WHEREAS, on May 18, 2018, the prequalified contractors were formally invited to submit construction bids for the project, and three bids were received on June 26, 2018; and

WHEREAS, Moffat Pipe, Inc. of Wake Forest, North Carolina has been determined to be the low responsive, responsible bidder for the project; and

WHEREAS, on June 14, 2018 the Board approved a resolution authorizing funds for Capital Improvements Projects, including funds for this project as part of the High Priority Water Main Replacement Program;

NOW, THEREFORE, BE IT RESOLVED:

1. That the Orange Water and Sewer Authority Board of Directors awards the construction contract to Moffat Pipe, Inc., the low responsive, responsible bidder for the Pritchard Avenue Water Main Replacement Project, in accordance with the approved plans and specifications, in the amount of $884,670.00, subject to such change orders as may apply.

2. That the Executive Director be, and hereby is, authorized to execute said contract, subject to prior approval of legal counsel, and to approve and execute change orders and such documents as may be required in connection with the construction contract.

Adopted this 12th day of July, 2018.

_____
Yinka Ayankoya, Chair

ATTEST:

_____
Raymond E. DuBose, Secretary

Agenda Item 4:

Approve North Carolina Department of Transportation (NCDOT) Right of Way Acquisition for Roadway Improvements at the Intersection of Highway 54 and Orange Grove Road

Background:

The NCDOT proposes certain roadway improvements at the intersection of N.C. Highway 54 and Orange Grove Road (NCSR 1006). These improvements will slightly shift the roadway alignment and install drainage ditches on either side of Orange Grove Road near its intersection with N.C. Highway 54.

The improvements will require that NCDOT procure additional public right of way from adjacent property owners. OWASA owns properties on both sides of Orange Grove Road at its intersection with N.C. Highway 54 for land application of biosolids. An area of 0.17 acre will be required along the east side of the road and an area of 0.33 acre will be needed along the west side. (Exhibit 1).

The NCDOT has offered compensation in the amount of $5,000 for this half acre of land area (Exhibit 2). The tax value of the land based on GIS tax information is $2,902. The area to be acquired is generally wooded with a mix of various sized trees and vegetation. OWASA's biosolids application fields on the properties will not be affected by the NCDOT work as they are located some 320 feet away. The improvements at the intersection would have an ancillary benefit of improving sight distances and turn radii for OWASA biosolids staff that use Orange Grove Road to access the fields. Staff and General Counsel recommends approval.

Action Requested:

Approve the Resolution authorizing the Executive Director to execute the Deed for Right of Way.

Information:

- NCDOT Roadway Improvement Work Area with Proposed R/W (Exhibit 1)
- Summary Statement/Contingent Offer to Purchase Real Property Due to the Acquisition of Right of Way and Damages (Exhibit 2)
- Deed for Highway Right of Way (Exhibit 3)
- Resolution approving the North Carolina Department of Transportation right of way acquisition for road improvements at the intersection of Highway 54 and Orange Grove Road (Exhibit 4)

Exhibit 1

Orange Grove Road Right of Way (ROW) Acquisition

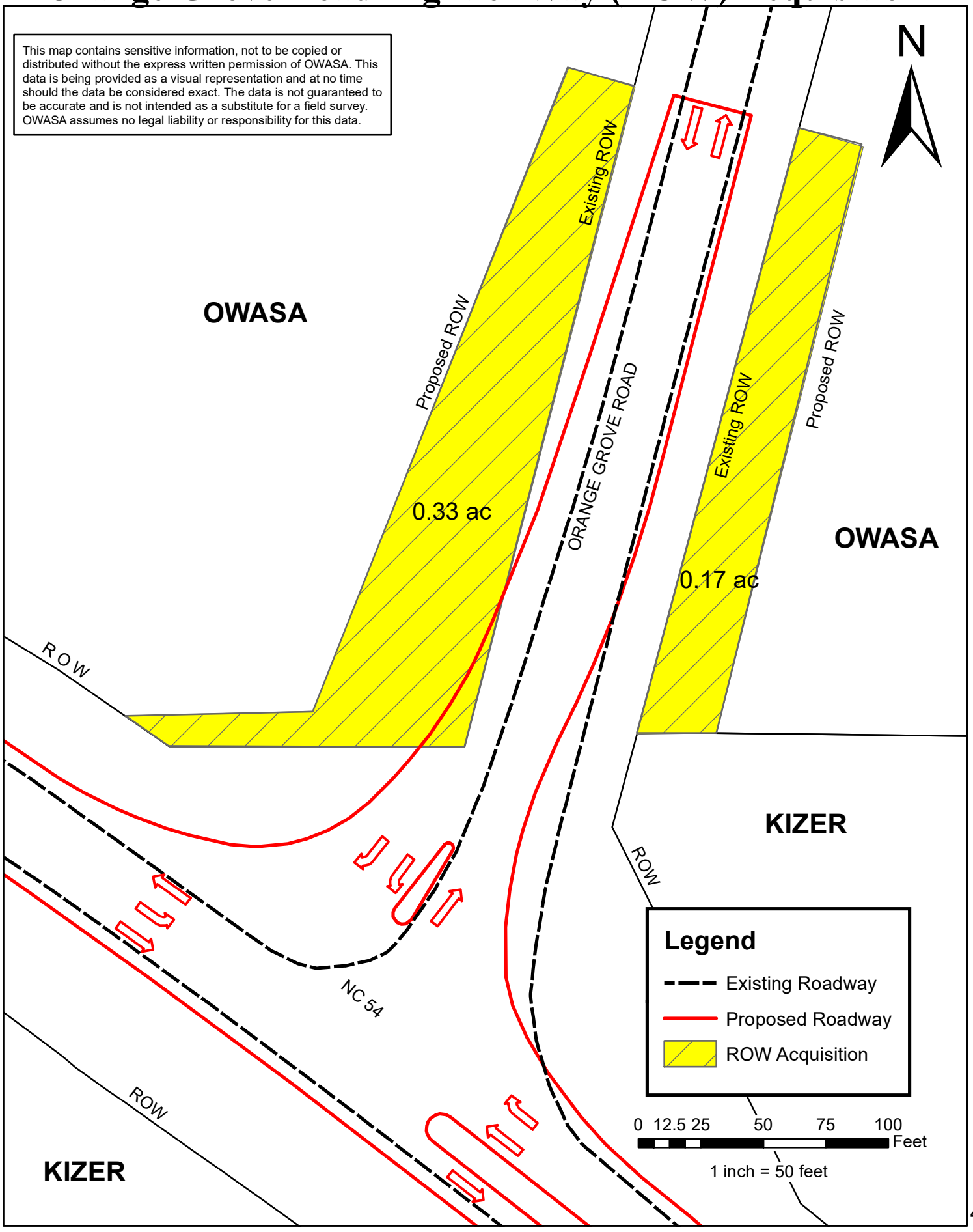


Exhibit 2

SUMMARY STATEMENT/CONTINGENT OFFER TO PURCHASE REAL PROPERTY DUE TO THE ACQUISITION OF RIGHT OF WAY AND DAMAGES

TO: Orange Water and Sewer Authority
400 Jones Ferry Road
Carrboro, NC 27510

DATE: 4/16/2018
TO: Lessee, if Applicable

TIP/PARCEL NO.: R-5821B 001
COUNTY Orange
WBS ELEMENT: 47093.2.3
DESCRIPTION: NC-54 At SR 1006 (Orange Grove Road) Intersection Improvements

Dear Property Owner:

The following contingent offer of just compensation is based on the fair market value of the property and is not less than the approved appraised value for the appropriate legal compensable interest or interests. The approved value disregards any increase or decrease in the fair market value of the property acquired due to influence caused by public knowledge of this project. The contingent offer of just compensation is based on an analysis of market data, comparable land sales, and, if applicable, building costs in the area of your property. **Please retain this form as it contains pertinent income tax information.**

Value of Right of Way to be Acquired		$ 5,000.00
Value of Permanent Easements to be Acquired		$ 0.00
Value of Temporary Easement (Rental of Land) to be Acquired		$ 0.00
Value of Improvements to be Acquired		$ 0.00
Damages, if any, to Remainder		$ 0.00
Benefits, if any, to Remainder	minus	$ 0.00
TOTAL CONTINGENT OFFER		**$ 5,000.00**

The total contingent offer includes all interests other than leases involving Federal Agencies and Tenant owned improvements.

(A) Description of the land and effects of the acquisition

Subject property described in Deed Book 1063, page 349, Orange County Registry, contains approximately 141.400 acres of which 0.50 acres is being acquired as right of way, leaving 84.253 acres remaining on the right with access to Orange Grove Road and NC HWY 54, also leaving 56.647 acres remaining on the /left with access to Orange Road.

(B) The TOTAL CONTINGENT OFFER includes payment for the improvements and appurtenances described below:
N/A

Provided there is sufficient time remaining in the project schedule, you may repurchase these improvements for a retention value, with the stipulation that you remove them from the acquisition area at no expense to the Department.

(C) Should you desire to sell the Department the portion of your property considered to be an uneconomic remnant or buildable lot, as explained to you by the Right of Way Agent, the total contingent offer would be: $ N/A . Please note that any contingent offer to purchase a remnant/buildable lot is conditioned upon the remnant/buildable lot being environmentally clean prior to the conveyance to the Department. You may be required to provide the Department with a release from the appropriate environmental agency stating that all contaminants have been remediated and/or removed to their standards.

The original of this form was handed/mailed, if out of state owner, to Orange Water and Sewer Authority on April 16 20 18 . Owner was furnished a copy of the Right of Way Brochure/Owner's Letter.

I will be available at your convenience to discuss this matter further with you. My telephone number is 336-334-3515

Please be advised that the agent signing this form is only authorized to recommend settlement to the North Carolina Department of Transportation, and any recommended settlement is not a binding contract unless and until accepted by the North Carolina Department of Transportation by its formal execution of documents for conveyance of Right of Way, Easements, and/or other interests.

(Signed) Marianna Pio
Marianna Pio - Right of Way Agent

FRM10-B
Revised 2/17/15

Exhibit 3

Revenue Stamps $ _____

DEED FOR HIGHWAY RIGHT OF WAY

THIS INSTRUMENT DRAWN BY Marianna Pio CHECKED BY Sandra Taylor

The hereinafter described property ☐ Does ☒ Does not include the primary residence of the Grantor

RETURN TO: Division R/W Agent, NCDOT
PO BOX 14996
Greensboro, NC 27415-4996

NORTH CAROLINA
COUNTY OF Orange
TAX PARCEL 9739957200
9749140360

TIP/PARCEL NUMBER: R-5821B
WBS ELEMENT: 47093.2.3
ROUTE: NC-54 AT SR 1006 (Orange Grove Road) Intersection Improvements

THIS FEE SIMPLE DEED, made and entered into this the _____ day of _____ 20 18 by and between Orange Water and Sewer Authority
400 Jones Ferry Road
Carrboro, NC 27510

hereinafter referred to as GRANTORS, and the Department of Transportation, an agency of the State of North Carolina, 1546 Mail Service Center, Raleigh, NC 27611, hereinafter referred to as the Department;

WITNESSETH

That the GRANTORS, for themselves, their heirs, successors, and assigns, for and in consideration of the sum of $ _____ agreed to be paid by the DEPARTMENT to the GRANTORS, do hereby give, grant and convey unto the DEPARTMENT, its successors and assigns, in FEE SIMPLE that certain property located in Bingham Township, Orange County, North Carolina, which is particularly described as follows:

Area One:
Point of beginning being N 2^46'13.2" W, 76.270 feet from -L- Sta 30+00 thence along a curve 25.086 feet and having a radius of 3879.718 feet. The chord of said curve being on a bearing of S 54^48'54.5" E, a distance of 25.086 feet thence to a point on a bearing of N 88^37'22.0" E 113.280 feet thence to a point on a bearing of N 14^30'3.5" E 272.333 feet thence to a point on a bearing of N 75^29'56.5" W 30.000 feet thence to a point on a bearing of S 21^37'3.1" W 277.236 feet thence to a point on a bearing of S 88^37'22.0" W 70.781 feet returning to the point and place of beginning. Having an area of approximately 0.327 acres.

Area Two:
Point of beginning being N 73^22'18.6" E, 233.389 feet from -L- Sta 30+00 thence to a point on a bearing of N 14^30'3.5" E 246.641 feet thence to a point on a bearing of N 75^29'56.5" W 30.000 feet thence to a point on a bearing of S 14^30'3.5" W 255.161 feet thence to a point on a bearing of N 88^38'46.1" E 31.186 feet returning to the point and place of beginning. Having an area of approximately 0.173 acres.

IN ADDITION, and for the aforestated consideration, the GRANTORS further hereby convey to the DEPARTMENT, its successors and assigns the following described areas and interests:

NONE

SPECIAL PROVISIONS. This deed is subject to the following provisions only:

NONE

COUNTY: ORANGE **WBS ELEMENT:** 47093.2.3 **TIP/PARCEL NO.:** R-5821B 001

The property hereinabove described was acquired by the GRANTORS by instrument(s) recorded in the Orange County Registry in Deed Book 1063 Page 349 .

The final right of way plans showing the above described right of way are to be certified and recorded in the Office of the Register of Deeds for said County pursuant to N.C.G.S. 136-19.4, reference to which plans is hereby made for purposes of further description and for greater certainty.

The Grantors acknowledge that the project plans for Project # 47093.2.3 have been made available to them. The Grantors further acknowledge that the consideration stated herein is full and just compensation pursuant to Article 9, Chapter 136 of the North Carolina General Statutes for the acquisition of the said interests and areas by the Department of Transportation and for any and all damages to the value of their remaining property; for any and all claims for interest and costs; for any and all damages caused by the acquisition for the construction of Department of Transportation Project # 47093.2.3 , Orange County, and for the past and future use of said areas by the Department of Transportation, its successors and assigns for all purposes for which the said Department is authorized by law to subject the same.

TO HAVE AND TO HOLD the aforesaid premises and all privileges and appurtenances thereunto belonging to the DEPARTMENT, its successors and assigns in FEE SIMPLE, or by easement as indicated, for the past, present and future use thereof and for all purposes which the said Department is authorized by law to subject the same.

And the GRANTORS covenant with the DEPARTMENT, that the GRANTORS are seized of the premises in fee simple, have the right to convey the same in fee simple, or by easement as indicated, that the title thereto is marketable and free and clear of all encumbrances, and that the GRANTORS will warrant and defend the title against the lawful claims of all persons whomsoever except for the exceptions hereinafter stated. Title to the property hereinabove described is hereby conveyed subject to the following exceptions:

IN WITNESS WHEREOF, the GRANTORS have hereunto set their hands and seals (or if corporate, has caused the instrument to be signed in its corporate name by its duly authorized officers and its seal to be hereunto affixed by authority of its Board of Directors) the day and year first above written.

This instrument does not transfer the herein described interests unless and until this document is accepted by an authorized agent of the Department of Transportation.

ORANGE WATER AND SEWER AUTHORITY

By: _____

Name: _____

Title: Executive Director

ACCEPTED FOR THE DEPARTMENT OF TRANSPORTATION BY: _____

(Official Seal)	North Carolina, _____ County I, _____ , a Notary Public for _____ County, North Carolina, do hereby certify that _____ personally came before me this day and executed the foregoing on behalf of **Orange Water and Sewer Authority** Witness my hand and official seal this the _____ day of _____ , _____ . My commission expires _____ _____ Notary Public

Exhibit 4

RESOLUTION APPROVING THE NC DEPARTMENT OF TRANSPORTATION RIGHT OF WAY ACQUISITION FOR ROAD IMPROVEMENTS AT THE INTERSECTION OF HIGHWAY 54 AND ORANGE GROVE ROAD

WHEREAS, OWASA owns property located adjacent on both sides of Orange Grove Road at its intersection with Highway 54; and

WHEREAS, the North Carolina Department of Transportation has plans to widen and otherwise improve that intersection, and needs to acquire narrow strips of OWASA's land at that intersection for that purpose, and has offered $5,000.00 as just compensation for that acquisition; and

WHEREAS, the North Carolina Department of Transportation offer represents fair compensation for the OWASA interests being acquired;

NOW, THEREFORE, BE IT RESOLVED:

1. That the Orange Water and Sewer Authority Board of Directors approves the offer of compensation to be paid for the OWASA land being acquired at the intersection of Orange Grove Road and Highway 54 and that offer is hereby approved and accepted, and upon receipt of that compensation by OWASA, the Executive Director is authorized on behalf of Orange Water and Sewer Authority to execute and deliver to the North Carolina Department of Transportation an appropriate deed conveying the interest being purchased and sold to the North Carolina Department of Transportation.

This the 12th day of July, 2018.

_____
Yinka Ayankoya, Chair

ATTEST:

_____
Raymond E. DuBose, Secretary

Agenda Item 5

Orange Water and Sewer Authority

Meeting of the Board of Directors

June 14, 2018

The Board of Directors of the Orange Water and Sewer Authority (OWASA) met in a work session on Thursday, June 14, 2018, at 6:00 p.m. in OWASA's Community Room, 400 Jones Ferry Road, Carrboro.

Board Members present: Heather Payne (Vice Chair), Yinka Ayankoya (Secretary), Jeff Danner, Barbara Foushee, John N. Morris and John A. Young. Board Member absent: Robert Morgan (Chair), Ray DuBose and Ruchir Vora.

OWASA staff present: Mary Darr, Robert Epting, Esq., (Epting and Hackney), Vishnu Gangadharan, Stephanie Glasgow, Ed Kerwin, Kenneth Loflin, Linda Low, Addison McDonough, Andrea Orbich, Ruth Rouse, Kelly Satterfield, Todd Taylor and Stephen Winters.

Others present: Margaret Holton (University of North Carolina Water Resources Manager) and Bruce Boehm.

Motions

1. BE IT RESOLVED THAT the Board of Directors of the Orange Water and Sewer Authority adopts the Resolution Approving OWASA's 2017 Local Water Supply Plan and (Revised) Water Shortage Response Plan as Approved by the NC Department of Environmental Quality, Division of Water Resources. (Motion by Yinka Ayankoya, second by Barbara Foushee and unanimously approved.)

2. BE IT RESOLVED THAT the Board of Directors of the Orange Water and Sewer Authority adopts the Resolution Approving Sole Source Procurement of a Gas Chromatograph/Mass Spectrometer for the Analysis of Malodorous Compounds. (Motion by Yinka Ayankoya, second by Barbara Foushee and unanimously approved.)

3. BE IT RESOLVED THAT the Board of Directors of the Orange Water and Sewer Authority adopts the Resolution Honoring the Service of Kelly Thompson to the Orange Water and Sewer Authority and the Carrboro-Chapel Hill-Orange County Community. (Motion by Yinka Ayankoya, second by Barbara Foushee and unanimously approved.)

4. Yinka Ayankoya made a motion to approve the Minutes of the May 10, 2018 Work Session of the Board of Directors; second by Barbara Foushee and unanimously approved.

5. Yinka Ayankoya made a motion to approve the Minutes of the May 24, 2018 Public Hearings and Meeting of the Board of Directors; second by Barbara Foushee and unanimously approved.

6. BE IT RESOLVED THAT the Board of Directors of the Orange Water and Sewer Authority adopts the Resolution Adopting the Schedule of Rates, Fees and Charges Effective on or after

July 1, 2018 for System Development Fees and on or after October 1, 2018 for all other Rates, Fees and Charges. (Motion by Jeff Danner, second by Barbara Foushee and unanimously approved.)

7. BE IT RESOLVED THAT the Board of Directors of Orange Water and Sewer Authority adopts the Resolution Adopting the Annual Budget for Orange Water and Sewer Authority for the Fiscal Year July 1, 2018 Through June 30, 2019. (Motion by Barbara Foushee, second by Jeff Danner and unanimously approved.)

8. BE IT RESOLVED THAT the Board of Directors of Orange Water and Sewer Authority adopts the Resolution Approving the Capital Improvements Program and Budget for Fiscal Years 2019-2023. (Motion by Yinka Ayankoya, second by John Young and unanimously approved.)

9. BE IT RESOLVED THAT the Board of Directors of Orange Water and Sewer Authority adopts the Capital Project Resolution for Fiscal Year 2019 Infrastructure Improvements. (Motion by John Young, second by Jeff Danner and unanimously approved.)

10. BE IT RESOLVED THAT the Board of Directors of Orange Water and Sewer Authority adopts the Resolution Updating the Schedule of Employee Classification and Authorized Compensation; Adjusting Affected Employees' Compensation to the Minimum of the Pay Range; and Authorizing Cost of Labor and Merit Pay Increases for Eligible Employees including: a 1% Cost of Labor increase, 3% merit increase to employees earning a performance review rating of Meets Expectations during the October 2018 annual review process, 4.5% merit increase to employees earning a performance review rating of Exceeds Expectations during the October 2018 annual review process and 6% merit increase to employees earning a performance review rating of Exceptional during the October 2018 annual review process. (Motion by John Young, second by Yinka Ayankoya and unanimously approved.)

11. BE IT RESOLVED THAT the Board of Directors of Orange Water and Sewer Authority adopts the Resolution Honoring the Service of Barbara M. Foushee to the Carrboro-Chapel Hill-Orange County Community as a Member of the Orange Water and Sewer Authority. (Motion by John Young, second by John Morris and unanimously approved.)

12. BE IT RESOLVED THAT the Board of Directors of Orange Water and Sewer Authority adopts the Resolution Honoring the Service of Heather Payne to the Carrboro-Chapel Hill-Orange County Community as a Member of the Orange Water and Sewer Authority. (Motion by Jeff Danner, second by Barbara Foushee and unanimously approved.)

13. John Young announced that he was withdrawing his name as candidate for Secretary of the Board of Directors and made a motion to elect Ray DuBose as Secretary of the Board of Director by acclamation; second by Barbara Foushee and unanimously approved.

* * * * * * *

Announcements

Heather Payne asked if any Board Member knows of a conflict of interest or potential conflict of interest with respect to any item on the agenda tonight to disclose the same at this time; none were disclosed.

Ms. Payne said that on June 5, 2018, the Carrboro Board of Aldermen reappointed Robert Morgan to the OWASA Board of Directors.

Ms. Payne said that on May 30, 2018, the Board held its fourth training session with VISIONS, Inc. to support the transition of experienced Board Members rotating off the Board and planning for the orientation and integration of new Board Members, both with respect to the operations of the Board and to recently acquired learnings in working with cultural differences.

Barbara Foushee said that the Human Resources Committee will meet on Monday, June 25, 2018, to continue discussing retiree health benefits for new hires and deferred compensation (457) plan.

Todd Taylor, General Manager of Operations, reported that OWASA has met and exceeds the standards under the Federal Safe Drinking Water Act and related State rules for drinking water. OWASA's report includes information about where OWASA's water comes from, how it is treated and a summary of water testing results. The 2017 water quality report card will be mailed to accountholders and is posted on OWASA's website.

John Morris expressed appreciation to Johnny Riley for an informative tour he provided of OWASA's land surrounding Cane Creek Reservoir.

John Young said that he attended the June 6, 2018, Morehead Planetarium Carolina Science Cafe, which featured Mark Stryner, EPA Chemist, who's work involves analyzing and tracking perfluorinated compounds and will share his presentation with the Board.

Ms. Payne welcomed Bruce Boehm, Chapel Hill Appointee to the OWASA Board, who will be sworn in on or before the July 12, 2018 Board meeting.

Item One: Approve Local Water Supply Plan and Water Shortage Response Plan

Yinka Ayankoya made a motion to approve the Resolution Approving OWASA's 2017 Local Water Supply Plan and (Revised) Water Shortage Response Plan as Approved by the NC Department of Environmental Quality, Division of Water Resources; second by Barbara Foushee and unanimously approved. Please see Motion No. 1 above.

Item Two: Resolution Approving Sole Source Procurement of a Gas Chromatograph/Mass Spectrometer for the Analysis of Malodorous Compounds

Motion by Yinka Ayankoya, second by Barbara Foushee and unanimously approved. Please see Motion No. 2 above.

Item Three: Resolution Honoring the Service of Kelly Thompson to the Orange Water and Sewer Authority and the Carrboro-Chapel Hill-Orange County Community

Motion by Yinka Ayankoya, second by Barbara Foushee and unanimously approved. Please see Motion No. 3 above.

Item Four: Minutes

Yinka Ayankoya made a motion to approve the Minutes May 10, 2018 Work Session of the Board of Directors, second by Barbara Foushee and unanimously approved. Please see Motion No. 4 above.

Item Five: Minutes

Yinka Ayankoya made a motion to approve the Minutes May 24, 2018 Public Hearings and Meeting of the Board of Directors; second by Barbara Foushee and unanimously approved. Please see Motion No. 5 above.

Item Six: Approval of the Schedule of Rates, Fees and Charges; Annual Budget; Five-Year Capital Improvements Program (CIP); and Cost of Living and Merit Pay Increases

Jeff Danner made a motion to adopt the Resolution Adopting the Schedule of Rates, Fees and Charges Effective on or after July 1, 2018 for System Development Fees and on or after October 1, 2018 for all other Rates, Fees and Charges; second by Barbara Foushee and unanimously approved. Please see Motion No. 6 above.

Barbara Foushee made a motion to adopt the Resolution Adopting the Annual Budget for Orange Water and Sewer Authority for the Fiscal Year July 1, 2018 Through June 30, 2019; second by Jeff Danner and unanimously approved. Please see Motion No. 7 above.

Yinka Ayankoya made a motion to adopt the Resolution Approving the Capital Improvements Program and Budget for Fiscal Years 2019-2023; second by John Young and unanimously approved. Please see Motion No. 8 above.

John Young made a motion to adopt the Capital Project Resolution for Fiscal Year 2019 Infrastructure Improvements; second by Jeff Danner and unanimously approved. Please see Motion 9 above.

John Young made a motion to adopt the Resolution Updating the Schedule of Employee Classification and Authorized Compensation; Adjusting Affected Employees' Compensation to the Minimum of the Pay Range; and Authorizing Cost of Labor and Merit Pay Increases for Eligible Employees including: a 1% Cost of Labor increase, 3% merit increase to employees earning a performance review rating of Meets Expectations during the October 2018 annual review process, 4.5% merit increase to employees earning a performance review rating of Exceeds Expectations during the October 2018 annual review process, and 6% merit increase to employees earning a performance review rating of Exceptional during the October 2018 annual

review process. Second by Yinka Ayankoya and unanimously approved. Please see Motion 10 above.

Item Seven: Resolution Honoring the Service of Barbara M. Foushee to the Carrboro-Chapel Hill-Orange County Community as a Member of the Orange Water and Sewer Authority

Motion by John Young, second by John Morris and unanimously approved. Please see Motion No. 11 above.

Item Eight: Resolution Honoring the Service of Heather Payne to the Carrboro-Chapel Hill-Orange County Community as a Member of the Orange Water and Sewer Authority

Motion by Jeff Danner, second by Barbara Foushee and unanimously approved. Please see Motion No. 12 above.

Item Nine: Review Board Work Schedule

Linda Low said she would like to schedule individual meetings with Board Members to learn from each Member's leadership experience in the community and at OWASA, and to understand the Board's collective communications and community engagement goals, to inform the development of OWASA's communications and community engagement plan. The Board agreed.

The Board agreed to cancel the Board's June 28, July 26 and August 9, 2018 Board meetings.

Jeff Danner said he would be absent from the July 12, 2018, Board meeting and would like to review the Water and Wastewater Treatment Plant Reliability and Risk Assessment agenda item, including any PowerPoint presentation, if available, in advance to provide comments.

The Board concurred to discuss and potentially update the Drought Response Operating Protocol in conjunction with the Long-Range Water Supply Plan.

Ruth Rouse informed the Board that at their September 13, 2018, Work Session, they will consider a Memorandum of Agreement for the Triangle Water Supply Partnership.

Item Ten: Election of Officers

Barbara Foushee, Chair of the Nominating Committee, said that at the Board meeting on April 12, 2018, the Board agreed that as a practice for the next Election of Officers of the Board, every Board Member would be considered as eligible for election, except those who have indicated their wish not to serve as Officers. The Board also agreed, at least for those officers presently serving or to be elected tonight, to observe one-year term limits, so that none of the persons currently serving in as Chair, Vice Chair and Secretary, would be eligible for election to succeed himself or herself in his or her current Office.

Ms. Foushee noted that note that each Office is elected annually at the Board's first regular meeting in June, and that the Bylaws provide that Officers hold their Offices for one year or until their successors are elected and qualified. Terms for Officers elected tonight begin July 1, 2018. Five (5) votes are necessary to elect an Officer.

Ms. Foushee said that voting will proceed separately by paper ballot for each Office until a Board member is elected by receiving five or more votes; and, that in the event any round of voting ends in a tie, or if no person receives five votes in subsequent rounds of voting, balloting may be continued to the next Board meeting, and the present Officer will continue to serve until the new Officer is elected in the unfilled Office(s).

The Board Clerk then distributed the ballots for election of the Board Chair; those considered to have been in nomination were Yinka Ayankoya and Ray DuBose.

The Board Clerk announced that three proxy votes from Ray DuBose, Robert Morgan and Ruchir Vora were received for tonight's election.

Board Members cast their votes and Yinka Ayankoya was unanimously elected as Chair of the Board of Directors.

The Board Clerk then distributed the ballots for election of Vice Chair of the Board of Directors; those considered to have been in nomination were Jeff Danner and Ray DuBose.
Board Members cast their votes and Jeff Danner was elected as Vice Chair of the Board of Directors with a vote of seven to two.

John Young announced that he was withdrawing his name as candidate for Secretary of the Board of Directors and made a motion to elect Ray DuBose as Secretary of the Board of Director by acclamation. Please see Motion No. 13 above.

Item Eleven: Executive Director Will Summarize the Key Staff Action Items from the Work Session

There were no items to note.

The Board Work Session was adjourned at 6:45 p.m.

Respectfully submitted by:

Andrea Orbich
Executive Assistant/Clerk to the Board

Attachments

Agenda Item 6:

Discuss Draft Water Treatment Plant (WTP) and Wastewater Treatment Plant (WWTP) Reliability and Risk Assessment Evaluation

Action Requested:

Review and provide feedback on the attached Draft WTP and WWTP Reliability and Risk Assessment Evaluation.

Background:

The primary focus of the Reliability and Risk Assessment project is to identify and assess risks that would prevent OWASA from providing water, wastewater, and reclaimed water services that meet or exceed federal, state, and local quality requirements.

The consultant, CH2M, is using a risk assessment methodology based on the International Organization for Standardization (ISO) 31000 framework and industry best practices. The foundation of CH2M's process is a series of workshops that engage a variety of staff (senior leadership, treatment plant operations, maintenance, engineering, information technology, and systems integrator) throughout the organization. CH2M's industry experts in operations, maintenance, reliability, systems integration, and risk also attended the workshops and provided an outsider's perspective.

JD Solomon, a Practice Leader with CH2M and the Project Director, and staff delivered a presentation at the Board's January 11, 2018 Work Session. The presentation provided an overview and update on the project and was followed by a discussion between the Board, staff, and Mr. Solomon.

The four main components of CH2M's process are risk identification, analysis, evaluation, and treatment. During the initial risk identification phase of the process, staff prioritized treatment plant subsystems and focused the more detailed analysis of the top 8 most critical WTP subsystems and top 10 most critical WWTP subsystems. The risk analysis and evaluation phase involved staff and CH2M's industry experts performing a thorough and detailed review of the selected subsystems. During the final phase, risk registers were developed to document potential opportunities for improvement.

Key Project Takeaways:

CH2M's Draft WTP and WWTP Reliability and Risk Assessment Evaluation (Attachment 1) summarizes the assessment process and results. In addition to specific risk findings, the project demonstrated the value of the risk assessment process and the importance of being a learning organization.

Risk Assessment Process

The project repeatedly demonstrated the value of structured multi-discipline discussions where information is shared and staff proactively identifying deficiencies. OWASA's experienced and knowledgeable staff were engaged throughout the process, actively shared information, and examined every "nook and cranny" of the plant subsystems being evaluated. Every participant provided feedback, contributed valuable information, and improved their detailed understanding of the subsystems evaluated.

Staff was not only made aware of specific risks but also if there was a preplanned contingency plan or mitigation strategy in place to address these issues. These conversations helped identify opportunities for follow-up training on these contingency plans. Staff and CH2M's industry experts also shared and discussed operations, maintenance, and condition assessment practices. This discussion provided the participants with new ideas from an outsider's perspective, a holistic view of plant operations, and a better understanding of how staff can support each other in providing safe and reliable services.

Learning Organization

Staff is dedicated to being a learning organization focused on continuous improvement. Some key components of being a learning organization that were reemphasized by the project include ensuring system documentation is kept up to date, providing opportunities for continuously improving specialized skills, and communicating lessons learned throughout the organization. Standard Operating Procedures, Process and Instrumentation Diagrams, and other reference documents were evaluated during the risk analysis phase of the project. This documentation is an important tool for transferring knowledge because it's regularly used to train staff on proper operations.

Additionally, as technology advances, we must ensure we provide training opportunities for staff in areas such as systems integration troubleshooting and emergency response. Finally, the project also emphasized the need to continually communicate and apply lessons learned within the organization and with other utilities.

Next Steps:

Feedback and comments received from the Board will be addressed and incorporated in the final report.

Staff will prepare a follow-up action plan for the Board's September 13, 2018, Work Session. The action plan will prioritize and assign responsibilities for recommendations from the final report. Tasks may be delegated to a variety of staff including treatment plant operations, maintenance, engineering, or health and safety.

The action plan will also identify tasks requiring Board-level support and guidance. A few items identified during the risk analysis workshops have been incorporated into the Fiscal Year (FY) 2019 operating budget and FY 2019-2023 Capital Improvements Program (CIP). The Board will

be made aware of other tasks included in the action plan that may have significant impacts on future budgets; however, the action plan will not include cost estimates. Board guidance may range from requesting staff take no action on a specific risk, to identifying a risk requiring a more urgent response. The Board's feedback on the action plan will ensure that staff are appropriately addressing the risks identified in the final report. More detailed discussions on individual tasks, including both budget and schedule, will be presented to the Board in the future when appropriate.

The risk assessment process will be incorporated into the annual O&M and CIP development process. Staff throughout the organization are eager to continue to use the same risk assessment process to evaluate other facilities and identify additional opportunities to reduce risk.

JD Solomon will be delivering a presentation accompanying this Agenda Item.

Information:

- Draft WTP and WWTP Reliability and Risk Assessment Evaluation

Draft Reliability and Risk Assessment Evaluation

Prepared for

Orange Water and Sewer Authority

July 2018

CH2M HILL North Carolina, Inc.
3120 Highwoods Blvd; Suite 214
Raleigh, NC 27604

Contents

Acronyms and Abbreviations

AAR	After Action Review
CIP	capital improvement program
CS	critical spare
FMEA	failure modes and effects analysis
HEART	Human Error Assessment and Reduction Technique
HFACS	Human Factors Analysis and Classification System
HRA	Human Reliability Analysis
I&C	instrumentation and control
MCPS	Morgan Creek Pump Station
O&M	operation and maintenance
OWASA	Orange Water and Sewer Authority
RAS	return activated sludge
RBD	reliability block diagrams
RPN	risk priority number
SCADA	supervisory control and data acquisition
SOAP	Solomon-Oldach Asset Prioritization
SOP	standard operating procedure
UV	ultraviolet
WAS	waste activated sludge
WTP	water treatment plant
WWTP	wastewater treatment plant

Draft Reliability and Risk Assessment Evaluation

Executive Summary

In February 2017, a series of events led to a water emergency, resulting in a "Do Not Use, Do Not Drink" directive for the entire Orange Water and Sewer Authority (OWASA) service area for 25 hours. The water emergency resulted from a combination of an accidental overfeed of fluoride, which was contained at the Jones Ferry Road Water Treatment Plant (WTP), and a major water main break. OWASA staff conducted After Action Reviews (AARs) on the various elements of the water emergency. The purpose of the AARs was to identify what went well in response to the water emergency, what should be repeated in the future, and where there are opportunities for improvements. One of the items identified for improvement was the need for a reliability and risk assessment to be performed on OWASA's water, wastewater, and reclaimed water systems.

Reliability is most often defined as the probability that an item will perform its intended function for a specified interval under stated conditions. The definition is the overarching concept on which the "basis of design" is established. In the case of OWASA's facilities, several different generations of designs and associated improvements have been made. One important insight gained from a reliability assessment is a confirmation of a single reliability statement, including performance expectations and key functions, of each facility. Reliability assessments focus on helping ensure that something is reliable, successful, or meets expectations.

Risk is defined as the effect of uncertainty on objectives. The international risk standard, ISO 31000, identifies seven components in a risk framework: establishment of the context, risk identification, risk analysis, risk evaluation, risk treatment, monitoring and review, and communication and coordination. CH2M used ISO 31000 as the framework in its approach. ISO 31000 notes an effect is a deviation from the expected, which gives root to the common perception that minimizing risk is synonymous with minimizing surprises. Risk assessments focus on helping ensure that something is not unreliable, unsuccessful, or fails to meet expectations.

CH2M HILL North Carolina, Inc. (hereafter, "CH2M") conducted a Reliability and Risk Assessment of the Jones Ferry Road WTP and the Mason Farm Wastewater Treatment Plant (WWTP). The project was completed in accordance with the scope of services and agreement for professional services dated September 11, 2017. The evaluation analyzed the most critical plant subsystems, as identified by OWASA staff and reviewed by CH2M, at both facilities. Undertaking a formal reliability and risk analysis process is an industry-leading edge practice. OWASA performed these steps with the development of the formal root cause analysis in February 2017 related to a water emergency, conducting AARs, the initiation of this project's risk and reliability assessment process, and the commitment to ensure this process is sustainable for OWASA.

The primary objective of the Reliability and Risk Assessment was to develop and implement a plan following industry best practices that focused on operations and maintenance (O&M) strategies and the identification of potential capital projects to mitigate and manage risk of a system failure. The evaluation included:

- highly participatory process facilitated by CH2M with industry experts and OWASA employees to identify and assess risks that would prevent OWASA from providing water, wastewater, and reclaimed water services that meet or exceeds all federal, state, and local quality requirements;

- evaluation of options and strategies (administrative controls; system and facility improvements; institutional improvements) to eliminate or mitigate the identified risks;
- prioritized implementation plan for improvements; and
- process to measure the value and effectiveness of the plan.

The assessment did *not* include external or internal security threats or natural disasters (which are covered by other confidential plans). Instead, the assessment focused on risk management "inside the fence," (that is, water and wastewater treatment processes located at the plant sites). The assessment did not include all the plant subsystems. The assessment did not include assessment of the distribution or collection systems.

A cross-functional project team was assembled to include members of senior leadership, information technology, systems integrator, engineering, operations, and maintenance from both the water and wastewater plants. In addition, CH2M provided industry experts in operations, maintenance, reliability, system integration, and risk as key facilitators throughout the process and their outside perspective was welcomed by OWASA staff. The process was successful due to OWASA staff's willingness to be open, honest and examine every "nook and cranny" of the plant subsystems identified for evaluation. Additionally, staff participation and feedback during each workshop and the staff's commitment to address the outcomes of the process were key success factors of the Risk and Reliability Assessment Evaluation.

The international risk standard, ISO 31000, identifies seven components in a risk framework and was used as the underpinning framework in its approach with OWASA.

To establish the context and identify risk, CH2M reviewed performance data, provided an education workshop to align staff understanding of key concepts, conducted a chartering workshop, and performed a criticality assessment on the subsystems in each plant. Using the Solomon-Oldach Asset Prioritization method, OWASA staff determined which plant subsystems would be prioritized for the risk analysis.

Three primary assessment techniques were used for the risk analysis: Failure Modes and Effects Analysis (FMEA), Reliability Block Diagrams (RBDs), and Human Factors Analysis (HRA). FMEA is a technique used to identify the ways (modes) in which components, systems, or processes fail. An RBD is a form of a block diagram that emphasizes aspects influencing system reliability. HRA is based on the understanding that human actions are not without errors and it can assist in identifying risks, suggest potential mitigation strategies, and ultimately improve system reliability. Later in this report, the three primary assessment techniques are discussed in more detail.

Using the FMEAs and RBDs, staff identified failure modes at Jones Ferry Road WTP and failure modes at Mason Farm WWTP. CH2M then suggested risk treatment activities to address the highest risk failure modes. Staff reviewed the major proposed actions and reached consensus on risk treatment activities, which were grouped as follows:

- Capital Projects
- Operation and Maintenance (O&M) Projects
- Training and Awareness
- Preventive Maintenance
- Inspection
- Critical Spares
- Third-Party Responsibility

Risk treatment focused on selecting a preferred alternative for changing the likelihood of occurrence, the effect of the risks, or both. A qualitative assessment was conducted with the senior leadership team to establish the top 15 risk mitigation strategies at the overall system level. More detailed analysis was

performed for specific modes of failure using probabilistic analysis (Monte Carlo simulations) to provide a value-based approach among a combination of ten different mitigation strategies for individual failure modes.

Probable risk reduction was calculated once risk treatment activities were applied. Human factors and interfaces that can influence risk were also discussed and reviewed.

Finally, monitoring and review consisted of developing risk registers from the selected risk treatment strategies in combination with the FMEA framework. As a result of the assessment, staff now proactively identify issues and incorporate risk mitigation techniques to continue to classify failure modes. It will be important to consistently apply lessons learned at both plants and continue the knowledge sharing moving forward not only among staff in the same department, but across all departments.

As a result of the assessment, OWASA is better informed to:

- Manage risk
- Make better-informed decisions
- Prioritize financial and staff resources

The primary actions identified as next steps include:

- Review, prioritize, delegate, and address the issues identified in the risk register (Appendix A). These items or projects will be incorporated into the O&M and CIP programs, when appropriate.
- Review and discuss other key findings included in this report.
- Engage the Board if Board-level guidance and support (resources) is required.
- The current evaluation considered the most critical plant subsystems as identified by OWASA staff; however, this represents approximately one-third of the total plant subsystems. The remaining two-thirds of the plant subsystems should be formally evaluated by OWASA staff in conjunction with outside experts. It is recommended that the risk register be reviewed in a comprehensive manner at least annually and updated quarterly. A review/revision of the risk and reliability assessment evaluation should be undertaken by OWASA every 5-years and/or whenever a change in operating context occurs.

OWASA will be able to use the risk management approach on an ongoing basis to select risk treatment strategies to implement and to understand the value of those strategies for implementation and value achieved after implementation.

1.0 Background

In February 2017, a series of events led to a water emergency that resulted in a "Do Not Use, Do Not Drink" directive for the entire Orange Water and Sewer Authority (OWASA) service area for 25 hours. The water emergency resulted from a combination of an accidental overfeed of fluoride, which was contained at the Jones Ferry Road Water Treatment Plant (WTP), and a major water main break.

OWASA staff conducted After Action Reviews (AARs) on the various elements of the water emergency. The purpose of the AARs were to determine what went well in response to the water emergency and should be repeated in the future, and where there are opportunities for improvements. One of the items identified for improvement was the need for a comprehensive reliability and risk assessment for OWASA's water, wastewater, and reclaimed water systems.

Risk is a fundamental concept in quality management, asset management, and water utility management. Developing and implementing a risk assessment analysis includes a focus on Operations and Maintenance (O&M) strategies to mitigate and manage risk of system failure. In this project, CH2M HILL North Carolina, Inc. (hereafter, "CH2M") conducted a Reliability and Risk Assessment of the Jones Ferry Road WTP and the Mason Farm Wastewater Treatment Plant (WWTP). This project was completed in accordance with the scope of services and agreement for professional services dated September 11, 2017. The evaluation analyzed the most critical plant subsystems, as identified by OWASA staff and reviewed by CH2M, at both facilities.

The primary objective of the Reliability and Risk Assessment was to develop and implement a plan following industry best practices that focused on operations and maintenance (O&M) strategies and the identification of potential capital projects to mitigate and manage risk of a system failure. The evaluation included:

- highly participatory process facilitated by CH2M with industry experts and OWASA employees to identify and assess risks that would prevent OWASA from providing water, wastewater, and reclaimed water services that meet or exceeds all federal, state, and local quality requirements;
- evaluation of options and strategies (administrative controls; system and facility improvements; institutional improvements) to eliminate or mitigate the identified risks;
- prioritized implementation plan for improvements; and
- process to measure the value and effectiveness of the plan.

The assessment did not include external or internal security threats or natural disasters (which are covered by other confidential plans). Instead, the assessment focused on risk management "inside the fence," (that is, wastewater and water treatment processes located at the plant sites). The assessment did not include all the plant subsystems. The assessment did not include assessment of the distribution or collection systems.

2.0 Process Overview and Outcomes

Reliability is most often defined as the probability that an item will perform its intended function for a specified interval under stated conditions. The definition is the overarching concept on which the "basis of design" is established. In the case of OWASA's facilities, several different generations of designs and associated improvements have been made. One important insight gained from a reliability assessment is a confirmation of a single reliability statement, including performance expectations and key functions, of each facility. Reliability assessments focus on helping ensure that something is reliable, successful, or meets expectations.

Risk is defined as the effect of uncertainty on objectives. Risk assessments focus on helping ensure that something is not unreliable, unsuccessful, or fails to meet expectations. The international risk standard, ISO 31000, identifies seven components in a risk framework (see Figure 1) and was used as the underpinning framework in its approach with OWASA.

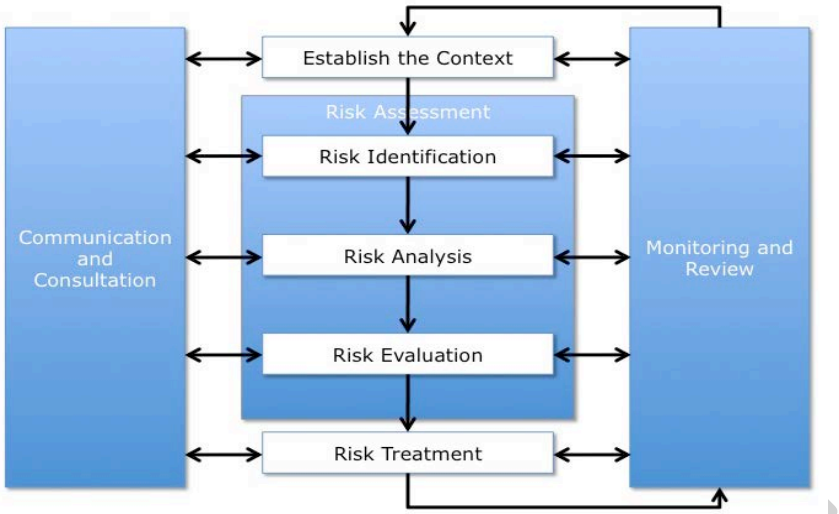


Figure 1. International Risk Standard 31000 Risk Management Framework
Source: http://31000risk.blogspot.com/2011/08/simple-example-of-risk-management.html

Reliability and risk assessment is a highly detailed process that requires significant staff engagement to be successful. OWASA assembled a cross-functional project team, which included senior leadership, engineering, and O&M staff from the WTP and WWTP. In addition, CH2M provided industry experts in operations, maintenance, reliability, system integration, and risk as key facilitators throughout the process. The process was successful because of OWASA staff's willingness to be open and honest and examine every "nook and cranny" of the plant subsystems being evaluated, active staff participation and feedback at all workshops, and the commitment of the staff to address the outcomes of the process.

2.1 Establish the Context

The project education and chartering workshop occurred in September 2017 with the cross-functional project team including senior leadership, engineering, and O&M staff from both the water and wastewater plants. This workshop provided an education on terminology, overview of the process steps, project critical success factors, and project concerns. This workshop resulted in the development of the project charter.

A total of 30 subsystems were identified as part of the overall system (WTP) and a total of 35 sub-systems were identified as part of the overall system (WWTP). Based on the configuration, capabilities, and function statement associated with each plant, it was agreed that subsystems associated with the liquid processes were more critical than those subsystems associated with the solids handling processes. This was a key assumption in the project.

The Solomon-Oldach Asset Prioritization (SOAP) method is an alternative to more traditional methods for evaluating asset criticality and risk.[1] The SOAP method uses a forced-rank approach to assigned relative risk, whereas the more traditional approach assigns scores of likelihood and consequence,

[1] Solomon, J. D. and Jim Oldach. 2016. Forced rank methodologies to more efficiently perform criticality analysis. In Proceedings of 2016 Annual Reliability and Maintainability Symposium (RAMS). Tucson: IEEE. January 25–28.

which are used to determine a risk score. In this case, *the SOAP method was used to establish the context and rank plant subsystems to prioritize future risk assessment activities.*

SOAP workshops were completed in September and October 2017 and involved the cross-functional project team including senior leadership, engineering, and O&M staff from both the water and wastewater plants. These workshops were facilitated, with multi-disciplinary discussions that involved staff reviewing and prioritizing WTP and WWTP subsystems. The first step is to develop function statements for each plant and then rank subsystems according to how critical the subsystem is to achieve the plant's function statement. Function statements started with the word "To...", and usually contain a **verb**, an **object**, and at least one **performance standard**. For example, for a piece of equipment such as a pump, the function statement would be "To pump water at a minimum rate of 300 gallons/minute."

The function statement for the Jones Ferry Road WTP developed for the assessment was as follows:

> *To provide up to 20-mgd peak-day and 7.1-mgd average-day of treated water that meets Federal and State Water Quality standards; partnership standards (enhanced turbidity requirements); and OWASA aesthetics.*

The function statement for the Mason Farm WWTP developed for the assessment was as follows:

> *To treat up a peak month average of 14.5 mgd* [million gallons per day] *and a maximum day of 43.5 mgd of raw wastewater that meets NPDES* [National Pollutant Discharge Elimination System] *permit limits. In addition, to meet UNC* [University of North Carolina] *Contractual Obligations (quality, etc.), provide up to 3 mgd of reclaimed water.*

In the SOAP workshops organizational risks were also discussed and evaluated. The results from the workshops were used to prioritize treatment plant subsystems into three criticality priority tiers: *most critical, critical,* or *least critical*. For this project, criticality is defined as a relative measure of the impact of failure on the mission objective. Overall, OWASA staff agreed about its greatest risks. Priorities for risk were well-aligned throughout the group.

Based on OWASA's desire to evaluate equipment-related issues, human factors, and interface impacts, it was agreed that the most critical subsystems as determined by the SOAP method provided a fair representation of the mechanical, electrical, process air, and chemical feed systems associated with the facility. Supervisory control and data acquisition (SCADA) and instrumentation and control (I&C) were elevated in priority to be one of the subsystems that was analyzed. Ultimately, the assessment included analyzed 8 WTP subsystems (see Table 1) and 10 WWTP subsystems (see Table 2).

Table 1. Jones Ferry WTP Risk Analysis Priority Processes

Priority	Unit Process
1	Electrical – Distribution
2	Chemical feed systems – Hypochlorite
3	Chemical feed systems – Ferric
4	Filtration
5	Finished Water – Clearwell
6	Chemical feed systems – Caustic
7	Finished Water – Pumping
8	SCADA/I&C

Table 2. Mason Farm WWTP Risk Analysis Priority Processes

Priority	Unit Process
1	Electrical – Distribution
2	Influent Pumping (Morgan Creek and Rogerson Drive)
3	Intermediate Pumping 1 and 2
4	Biological Treatment (including blower system)
5	UV Disinfection
6	RAS Pumping
7	SCADA/I&C
8	Electrical – Generators
9	Chemical Feed Systems/Tanks – Caustic
10	WAS Pumping

Notes:
RAS = return activated sludge
UV = ultraviolet
WAS = waste activated sludge

Findings

Details on the subsystem priority rankings and other findings related to establishing the context can be found in Section 2 and Appendix A within *Reliability and Risk Assessment Technical Volume 1: Supporting Data.*[2]

2.2 Risk Identification

Risk identification provides insight as to what might happen or what situations might exist that may affect the successful achievement of the objectives of the system. The cross-functional project team ranked their individual top 10 greatest risks at the risk identification workshop in October 2017. A total of 27 risks were identified by the project team through a pre-workshop survey and then categorized as compliance, facilities and infrastructure, financial, health and safety, human factors, practices and procedures, public image, and workforce. The risks identified by the project team were compiled by CH2M and then OWASA staff voted on the most important risks. Table 3 details staff's top ten greatest risks for OWASA.

Table 3. Risk Brainstorming Exercise Results

What are the 10 greatest risks for OWASA?	Category	OWASA Staff Votes
Critical equipment failure	Facilities and Infrastructure	10
Drinking water contamination	Compliance	9
Accidents, serious injuries, or death	Health and Safety	9
Inability to provide drinking water and wastewater services (including fire protection)	Facilities and Infrastructure	8
Violating regulatory (compliance) standards – current and future	Compliance	7
Knowledge transfer, retention, and training	Workforce	6

[2] CH2M. 2018. *Reliability and Risk Assessment Technical Volume 1: Supporting Data*. June.

Table 3. Risk Brainstorming Exercise Results

What are the 10 greatest risks for OWASA?	Category	OWASA Staff Votes
Critical equipment failure	Facilities and Infrastructure	10
Recruit, hire, and retain a skilled work force	Workforce	6
Loss of community's trust and confidence	Public Image	5
Improved operating standard operating procedures (SOPs)	Workforce	4
Emergency interconnection capacities	Facilities and Infrastructure	3

This exercise lead to consensus of definition and help established a culture of risk awareness.

Findings

Details on the risk identification findings can be found in Section 3.1 within *Reliability and Risk Assessment Technical Volume 1: Supporting Data.*[2]

2.3 Risk Analysis

Two primary assessment techniques were used for the reliability and risk assessment: Failure Modes and Effects Analysis (FMEA) and Reliability Block Diagrams (RBDs). Two additional methodologies (Human Factors Analysis and Classification System [HFACS] and Human Error Assessment and Reduction Technique [HEART]) were used to specifically address in greater detail human factors described below.

2.3.1 Failure Modes and Effect Analysis

FMEA is a technique used to identify the ways (modes) in which components, systems, or processes fail. Failure modes are any errors or defects, both actual and potential, and especially those that impact the owner/user. An FMEA is a step-by-step approach for identifying all possible failures in a design, a manufacturing or assembly process, or a product or service based on the established context and function. Effects analysis is the evaluation of the consequences of the failure modes.

One of the primary benefits of an FMEA is that it starts at the foundational level (base component). In a step-by-step process, a cross-functional team works through the ways something can fail, evaluates consequences, discusses detectability, outlines potential mitigation strategies, and determines a risk priority number (RPN) that serves as a basis for ranking future activities and also serves as a baseline to measure future improvements. The RPN is the multiplicative product of the severity (consequences), occurrence (likelihood), and detectability of the failure mode. OWASA WTP staff and WWTP staff, including representation from senior leadership, information technology, engineering, O&M, dedicated 1 week for the WTP and 1 week for the WWTP to conduct FMEAs for their respective facilities in November 2017. In addition, CH2M provided industry experts in operations, maintenance, reliability, SCADA, and risk as key facilitators throughout the FMEA process.

Prior to the onsite week, if as-builts or process and instrumentation diagrams were outdated, OWASA staff updated those items to reflect each plant's current configuration. During the FMEA process, the team reviewed extensive documentation such as process and instrumentation diagrams, O&M manuals, as-builts, and asset inventory during the FMEA process. The OWASA staff welcomed a fresh outside perspective from CH2M's industry experts throughout the process.

Staff evaluated the priority plant subsystems at the component level—valve by valve and pump by pump. An operational walk through was conducted to verify the subsystem configuration, and operational procedures were reviewed onsite as well. The team analyzed the components of the equipment and considered how they fail and the consequence of each failure. The workshop also served as a cross-training opportunity. One person or position rarely has all of the knowledge of a subsystem. It

takes a whole team to truly understand how things operate and to ensure subsystems are maintained to work effectively.

Findings

Detailed FMEAs can be found in Appendix B within *Reliability and Risk Assessment Technical Volume 1: Supporting Data.*[2]

2.3.2 Reliability Block Diagrams

An RBD is a form of a block diagram that emphasizes aspects influencing system reliability. It depicts the flow, interrelationships, and interdependencies of individual components in a system. Boxes (or blocks) represent the components, and connecting lines between the blocks represent interfaces. Block diagrams are particularly helpful for understanding redundancy and associated aspects, such as series or parallel process relationships. OWASA reviewed RBDs for the priority subsystems during risk analysis workshops and used them to visually identify single points of failure and redundancy in the subsystems.

For example, valving configurations, electrical, and the WTP clearwell are examples of assessment findings that have a greater impact on system reliability as single points of failure.

Findings

Detailed RBDs can be found in Appendix B within *Reliability and Risk Assessment Technical Volume 1: Supporting Data.*[2]

2.3.3 Human Factor Analysis

Human Reliability Analysis (HRA) is based on the understanding that human actions are not without errors. HRA can assist in identifying risks, suggest potential mitigation strategies, and ultimately improve system reliability. Estimating the likelihood of failure without analyzing the human element yields incomplete and misleading results.

For the purposes of this assessment, HFACS was chosen as a qualitative method to identify potential contributors to human errors. It was considered the primary methodology to complement other methods to analyze equipment and interface issues. HEART was selected as a secondary method to demonstrate effectiveness of mitigation strategies for minimizing risk and improving system reliability.

Key issues related to SOPs, communications, shift work, emergency response, timely corrective maintenance of known deficiencies, training, and organization support for workforce analysis (knowledge, skills, and abilities) were examined. In some cases, the subject area was driven by the results of the FMEAs and RBDs. In other cases, the subject area was explored in greater depth to stimulate thoughts, and additional modes have failure related to human factors that may not have been considered by one of the other techniques.

Findings

Human factors and interfaces that can influence risk were discussed and reviewed, with the following findings:

- There is room for SOP improvement and combination with process control procedures into one document set.
- There are consequences for not following SOPs.
- Identified improvement in problems/issues with physical assets are promptly corrected.
- High-priority issues are always addressed but low priority issues may be outstanding for some time.
- Frequency of health and safety meetings is sufficient.

- Consider improvement in culture of providing willingness to provide properly trained staff and adequate equipment.
- The SCADA interface is high risk with significant reliance on CITI and lack of formal SOPs.
- There is a need for specialized training for the electrical system and the SCADA system.

The HFACS was effective in examining and understanding human factors that were particularly enabled by management and organizational culture. Several action items and mitigation strategies, primarily related to review and improvements to SOPs, were developed as a result of this methodology.

Details from the human factor surveys can be found in Appendix C within *Reliability and Risk Assessment Technical Volume 1: Supporting Data.*[2]

2.3.4 System Interfaces

System interfaces are primarily those related to the subsystem-to-subsystem interaction and a human-to-subsystem interaction. However, for this assessment, the HRA covered many of the human-to-subsystem aspects. The subsystem-to-subsystem analysis focused on the SCADA interface.

System interfaces were considered in the reliability assessment aspects of the project. SCADA Instrumentation & Controls (I&C) was elevated in priority to be one of the subsystems that should be covered in the risk and reliability assessment. Separate RBDs and FMEAs were performed for the SCADA systems. A SCADA expert from CITI, OWASA's SCADA integrator, SCADA expert from CH2M, and OWASA's IT staff were present with the overall reliability assessment teams when each plant was evaluated. A fresh perspective from CH2M's SCADA expert facilitated open discussion among CITI/IT and plant staff.

Findings

Several SCADA/I&C issues were identified that needed further evaluation and risk mitigation. Some could be addressed within the current operating paradigms and budgets. Capital expenditures will also need to be implemented, such as a SCADA Master Plan. Findings included the need for miscellaneous SCADA improvements and SOP development based on inadequate feedback loops for pump on/off and remote/local signals, equipment obsolescence, inadequate historical backup, various single points of failure, and other miscellaneous issues. Findings also included the need for specialized training for the SCADA systems.

2.4 Risk Evaluation

Risk evaluation applies the understanding of the risk identification and risk analysis to the risk context. The primary outcome is to make decisions concerning future actions. CH2M conducted two risk evaluation workshops: one in January 2018 and the second in February 2018. Participants included the cross-functional project team of OWASA WWTP, WTP, engineering, and senior leadership staff. In the first workshop, CH2M presented an initial summary of FMEA results and structured facilitation to reach a preliminary outline of future actions associated with each identified risk. In the second workshop, consensus on future actions (treatment activities) was achieved and applied in the risk model.

Findings

At Jones Ferry Road WTP, staff identified 667 failure modes. A total of 140 of the failure modes were considered high-risk potential, and 25 were considered very high-risk potential. At Mason Farm WWTP, staff identified 978 failure modes. A total of 138 of the failure modes were considered high-risk potential, and 39 were considered very high-risk potential. Details on findings from the risk evaluation can be found in Section 3.0 and Appendix D within *Reliability and Risk Assessment Technical Volume 1: Supporting Data.*[2]

2.5 Risk Treatment

In the second risk evaluation workshop in February, the OWASA cross-functional team reviewed the major actions and reached consensus on risk treatment activities. These treatment activities were then grouped in the appropriate category as defined below:

- **Capital Projects:** Proposed capital projects provide risk treatment by both reducing the consequences of failure through design/re-design and through reducing the likelihood of failure through a number of means, including but not limited to, equipment in better condition.
- **Operation and Maintenance Projects:** These projects are associated with repair/replacement of existing equipment through the O&M budget and the normal change-out of important but lower-valued assets. Risk treatment in this case is through reducing the likelihood of failure.
- **Training and Awareness:** This category helps reduce the potential for human errors, which in many cases are the source of unreliability. Training and awareness can decrease the likelihood of failure.
- **Preventive Maintenance:** These improvements typically include either a different frequency of preventive maintenance (PM) or a different type of activity. Improvements to PM can help reduce the likelihood of failure.
- **Inspection:** Inspection improves the ability to detect a problem sooner and before minor issues become major ones. Improved or more frequent inspections can reduce the likelihood of a major failure.
- **Critical Spares:** An active critical spares (CS) program helps reduce the likelihood of failure where redundancy exists and minimizes downtime where redundancy does not exist. CS programs may use contracts with suppliers to ensure that important spares are readily available.
- **Third-Party Responsibility:** Outside vendor or Duke Power is responsible for maintenance activity.

In the risk treatment workshop conducted in April 2018, the OWASA cross-functional team reviewed the major actions, risk model results, and risk register in detail.

Findings

CH2M suggested risk treatment activities to address the 342 high and very high-risk failure modes identified during the risk evaluation workshops. Using the risk treatment activities, CH2M calculated the probable risk reduction once treatment activities are applied. Each category is assigned maximum and probable risk reduction values. A Monte Carlo simulation was completed to inform the best reduction and probable reduction values for each scenario selected. The 342 risk treatment activities were then consolidated into items within the risk register such as training and SOP improvement, critical spare & job safety analysis, etc. Opportunities for minor improvements to the preventative maintenance and inspections practices were also documented in this list and shared with maintenance staff. Details on findings from the risk treatment activities can be found in Section 4.0 and Appendix D within *Reliability and Risk Assessment Technical Volume 1: Supporting Data.*[2]

2.6 Risk Monitoring and Review

CH2M developed risk registers as the tool for evaluating, monitoring, and reviewing over time the alternatives for risk treatment. Risk registers are a common way to document the risk evaluation and to track risk treatment. The risk register or risk log becomes essential as it records identified risks, their severity, and the action steps to be taken. It can be a simple document, spreadsheet, or a database system, but the most effective format is a table. Risk registers for each plant were compiled based on the completion of the previous tasks, including the FMEAs.

Appendix A provides the risk register for the WTP and the WWTP that identifies the risks per facility for which a preliminary risk treatment plan was developed. The risk register contains four main portions for identification, status, action, and tracking impact/probability before and after treatment. In the identification portion, the risk is numbered, described, associated with a system and system function for ease of tracking. In the status portion, the details of the risk status (active or closed), the individual values for severity/criticality, occurrence/likelihood, detectability, along with a calculated RPN, which will change based on the active or closed status. The action portion that includes the risk treatment type, preliminary treatment plan, and owner is established. The final portion identifies the impact, probability, and RPN before and after treatment.

The risk descriptions range from the identification of single points of failure, such as electrical feed, to items identified in the operational walk through conducted during the FMEAs, such as incompatible chemicals in secondary containment, to the improvement of training and SOPs.

Findings

Several potential improvements were identified at each facility related to maintenance, operations, and engineering. OWASA staff have begun the process of addressing many identified issues.

3.0 Additional Key Findings

In addition to the issues documented in the risk registers, other key findings included that staff who participated in the risk analysis workshops gained a better understanding of the plant subsystems. The multi-disciplined approach allowed for knowledge transfer between departments. All participants contributed valuable information. The structure of the workshops allowed staff to proactively identify issues. From an outside perspective, the successful knowledge transfer in this project highlighted the need for knowledge transfer outside this project as critical for the sustainability of OWASA.

In addition, during risk identification one risk that OWASA staff self-identified as one of the 10 greatest risks was the lack of knowledge transfer, retention and training. The FMEA analysis reinforced the need to have formal knowledge transfer among staff. SOPs and Process Control Protocols should be updated, and all staff should have access to this information. During the risk analysis, CH2M and OWASA updated the plant diagrams in this project. Staff also expressed concern about in-house electrical and SCADA capabilities. After the assessment process, OWASA staff indicated the importance of specialized training in electrical and systems integration, an area where OWASA staff did not express confidence in.

As a result of the assessment, staff now proactively identify issues and incorporate risk mitigation to continue to identify failure modes. It will be important to consistently apply lessons learned at both plants and continue the knowledge transfer moving forward not only among staff in the same department, but across all departments.

In summary, each department at OWASA learned specific risk management tools from the Risk and Reliability Assessment that should be applied moving forward:

3.1 Engineering

- Perform cross-disciplinary reviews during the design phase of projects.
- While standardizing equipment provides value, continue to evaluate the entire system before applying a “one size fits all” approach—a pump that is appropriate in one operating context may not be appropriate in another.
- Consider the system of systems, as some processes impact others and should be reviewed holistically.

- Avoid relying solely on O&M to manage risk and instead consider how operators interact with the system and the ongoing maintenance in the design phase to minimize or ideally eliminate risk.

3.2 Operations and Maintenance

- Communicate maintenance and operability concerns to the engineering staff so risk can be designed out of the systems.
- Communicate between plants so that lessons learned at one can be applied to the other.
- Maintain updated SOPs and Process Control Protocols.
- Formalize relationships with third-party vendors and contractors to establish clearly defined roles and responsibilities.

3.3 Senior Leadership

- Conduct risk analysis workshops of the remaining plant subsystems not included as part of this assessment. This will support detailed reviews of the current subsystems and designs.
- Teach all staff members about risk and facilitate greater participation in risk analysis workshops.
- Encourage cross-departmental communication because it takes an entire team to understand the OWASA subsystems in enough detail to evaluate risk.
- Provide specialized training in electrical and SCADA systems.
- Support knowledge transfer between employees and in succession planning.
- Emphasize risk reduction across all departments.

3.4 Industry Best Practices

- Undertaking a formal reliability and risk analysis process is an industry-leading edge practice. From developing the formal root cause analysis in February 2017 related to a water emergency and conducting AARs, the completion of this risk and reliability assessment process and the commitment to this process's sustainability for OWASA is industry-leading. It is recommended that the risk register be reviewed in a comprehensive manner at least annually and updated quarterly. A review/revision of the risk and reliability assessment evaluation should be undertaken by OWASA every 5-years and/or whenever a change in operating context occurs.
- The SCADA system is not uniform across both water and wastewater plants. It is a trend that leading water/wastewater organizations have a SCADA System Master Plan developed and synchronized between departments and organization functions.
- OWASA's Maintenance Program represents the leading edge in the utilities industry, having used asset management, condition assessments, preventive maintenance and predictive maintenance.
- OWASA does not look at third-party contractor-provided maintenance services with the same lens they look at themselves. OWASA has not developed and monitored third-party services in the same manner as they perform internal maintenance. This is not uncommon in the industry but having uniform criteria for internal and external maintenance is an industry leading practice.
- From the critical spare perspective, a formal program is recommended. Typical industry best practices do not solely rely on the maintenance's staff's institutional knowledge but maintain a formalized critical spare inventory.

- OWASA staff has a large amount of institutional knowledge that is not formalized and therefore, is at risk of being lost, which is a driver for SOP development in accordance with industry best practices.
- OWASA has gone through the initial internal effort to standardize equipment preferences such as pump types, etc., which is an industry best practice. These standardized equipment preferences should be formalized into design criteria. This enables the seamless documentation for internal and external designers and can reduce procurement challenges.
- Lastly, OWASA could leverage O&M knowledge in the design process for replacement or expansion projects.

4.0 Conclusion and Recommended Next Steps

4.1 Summary

CH2M developed a Reliability and Risk Assessment Analysis for both the Jones Ferry Road WTP and the Mason Farm WWTP. This analysis provides a comprehensive summary of the outcomes of the preceding tasks. As part of the plan development, the risk register(s) were used to evaluate the value of risk treatment strategies implemented, assessing the value of money spent for risk reduction achieved. OWASA will be able to use this approach on an ongoing basis to select risk treatment strategies to implement and to understand the value of those strategies for implementation and value achieved after implementation.

The risk and reliability assessment process was a highly participatory staff process and OWASA staff reported that the risk and reliability assessment caused a cultural shift within the teams. O&M staff now better considers risk and what can be done to prevent failures or improve failure response.

For example, in the Capital Project division, the group evaluates new design projects differently. They think about the potential risks that come with implementation. They focus more on risk reduction and how the design impacts the operators and maintenance interactions with the system.

As a result of the assessment, OWASA is better informed to:

- Manage risk
- Make better-informed decisions
- Prioritize financial and staff resources

Because not all staff were able to attend the risk analysis workshops, it is important for those who did attend to disseminate that knowledge. OWASA supervisors and management have the experience now to train staff on risk management tools and techniques. Additionally, this reliability and risk analysis only focused on the high-priority plant subsystems but OWASA now has the knowledge to analyze the remaining plant subsystems, bringing in outside resources only as needed.

It is recommended that the risk assessment process be incorporated into OWASA's annual O&M and CIP development process.

4.2 Next Steps

The primary actions identified as next steps include:

- Review, prioritize, delegate, and address the issues identified in the risk register (Appendix A). These items or projects will be incorporated into the O&M and CIP programs, when appropriate.
- Review and discuss other key findings included in this report.
- Engage the Board if Board-level guidance and support (resources) is required.

- The current evaluation considered the most critical plant subsystems as identified by OWASA staff; however, this represents approximately one-third of the total plant subsystems. The remaining two-thirds of the plant subsystems should be formally evaluated by OWASA staff in conjunction with outside experts. It is recommended that the risk register be reviewed in a comprehensive manner at least annually and updated quarterly. A review/revision of the risk and reliability assessment evaluation should be undertaken by OWASA every 5-years and/or whenever a change in operating context occurs.

OWASA will be able to use the risk management approach on an ongoing basis to select risk treatment strategies to implement and to understand the value of those strategies for implementation and the value achieved after implementation.

Appendix A
Risk Registers

Project Risk Register
Qualitative Analysis

Project: OWASA
Location: Jones Ferry WTP

				Current Status					Action			Before Treatment			After Treatment		
												Most Likely			Most Likely		
Risk No.	System	System Function	Risk Description:	Status	Severity/ Criticality	Occurrence/ Likelihood	Detectability	Risk Priority Number	Treatment Type	Treatment Plan	Risk Treatment Owner	Impact	Probability	Risk Priority Number	Impact	Probability	Risk Priority Number
001	Clearwell	To provide disinfectant contact time and store drinking water.	WTP clearwell – Condition of the canvas curtain, which ensures adequate disinfectant contact time required by regulations, is unknown. Failure of drain line valve could drain the Clearwell. Failure of overflow standpipe could significantly reduce storage capacity of Clearwell.	Active	5	3	5	75	Mitigate	Perform Clearwell inspection by diver to assess the condition of the following: joints between the clearwell's concrete walls and floors, surface of concrete walls, expansion joints in the clearwell floor, areas of sediment buildup, concrete roof support columns, stainless steel influent baffle plate, canvas curtain, mechanism supporting curtain, 12-inch overflow pipe, 12-inch drain line located under Clearwell and the associated valve, 30-inch effluent pipe to old clearwell, and 60-inch influent pipe under generator (including valve and surrounding grout). Consider also including old clearwell located in main building and two suction pipes associated with the old clearwell. Address deficiencies identified by the condition assessments. Evaluate abandoning (filling) or replacing drain line and valve; relocating the overflow standpipe to outside of the Clearwell; and Clearwell redundancy.	Capital	High	Medium	75			
002	Post Filter Mix Tank and piping located between Filters and Clearwell	To mix chemicals with filtered water and convey treated water to the Clearwell.	WTP Post-filter pipeline - This system is a single point of failure. Procedures for temporarily bypassing this system is not well known by staff nor formally documented.	Active	5	3	5	75	Accept	Formally document bypass procedure used during prior construction project using archived as-builts. Also, prepare contact time calculations for bypass.	O&M	Medium	Medium	75			
003	Electrical Distribution System	To feed electrical power to plant.	WTP electrical system - Configuration of the electrical power distribution system is complex due to 2300 and 480 voltage systems.	Active	5	3	5	75	Mitigate	Phased capital project to eliminate 2300 voltage system, which would involve converting finished water pump 5 to 480 voltage.	Capital	High	Medium	75			
004	Electrical Distribution System	To feed electrical power to plant.	WTP electrical system - Various single-points of failure	Active	5	5	5	125	Avoid	Conduct component level PM identified in FMEA (gas in oil testing, thermographic survey, insultation test, turns ratio test, etc.)	O&M	High	High	125			
005	Finished Water Flow Meter	Measured finished water flow is used to control flow paced chemical dosing. Flow measurement is also used for adjusting pump speed and regulatory reporting.	WTP finished water meter-Finished water flow meter is single point of failure. There is no finished water flow meter downstream of alternate chemical application vault, which is activated if primary chemical application vault fails.	Active	5	3	5	75	Accept	Evaluate options for meter redundancy. Develop mitigation plan for failure of meter.	Capital; O&M	High	Medium	75			
006	Hypochlorite, Caustic, and Ammonia Chemical Feed Pumps	Chemical feed pumps are used to control the flow of chemicals used to treat water.	WTP chemical feed pumps - Chemical feed pumps were identified as a high risk due to condition and criticality. Difficult to maintain a wide variety of pumps (manufacturer, type, and capacity). Ancillary pumping equipment (check valves, pressure relief valve, etc.) and piping configuration may be inadequate.	Active	5	3	5	75	Mitigate	CIP and O&M projects to replace hypochlorite, caustic, and ammonia chemical feed pumps. Undergo standardization process for chemical feed pumps.	Capital; O&M	High	Medium	75			
007	Various Locations	Variable Frequency Drives (VFDs) are used throughout the plant to control motor speed by varying input frequency and voltage.	WTP VFD - Difficult to repair and replace VFDs due to equipment obsolesces and no bypass.	Active	5	5	5	125	Accept	Upgrade VFDs as parts become obsolete. Evaluate VFD redundancy on critical equipment.	O&M Capital	High	High	125			
008	SCADA	Controls plant process and reports data back to operator for plant management	SCADA miscellaneous improvements and SOP Development - Inadequate feedback loops for pump on/off and remote/local signals, equipment obsolescence, inadequate historical backup, various single points of failure, and other miscellaneous issues.	Active	5	3	5	75	Accept	Prepare SCADA Master Plan for both WTP and WWTP.	Capital	High	Medium	75			
009	SCADA	Controls plant process and reports data back to operator for plant management	Firewall for SCADA system may be inadequate. Overlap and coordination between Information Technology (IT) and Operations Technology (OT).	Active	5	3	5	75	Transfer	Initiate Homeland Security Network Cybersecurity Audit	ENGR	High	Medium	75			
010	Various Locations	N/A	Reliance on services conducted by key third-party vendors/contractors	Active	5	3	5	75	Transfer	Prioritize and review key contracts (CITI, Electric Motor Shop, etc.) using information from Comprehensive Emergency Management Plan	O&M	High	Medium	75			
011	Various Locations	N/A	Training and Standard Operating Procedures need to be improved	Active	5	3	5	75	Transfer	Chemical unloading SOP for Bulk Delivery Drivers; flushing of chemicals annually, valve exercise to avoid overtightening, etc.	O&M	High	Medium	75			
012	Various Locations	N/A	Critical Spare & Job Safety Analysis	Active	5	3	5	75	Accept	Perform Critical Spare Analysis (Identified in FMEA) & Job Safety Analysis on critical tasks.	O&M; Health & Safety	High	Medium	75			

Notes
Under "Current Status," 1 is low, 3 is medium, and 5 is high.
The highest possible risk priority score is 125.
Treatment if Threats: Avoid, Mitigate, Accept, or Transfer
Treatment if Opportunities: Exploit, Share, Enhance, or Accept

Project Risk Register
Qualitative Analysis

Project: OWASA
Location: Mason Farm WWTP

				Current Status					Action			Before Treatment			After Treatment		
												Most Likely			Most Likely		
Risk No.	System	System Function	Risk Description:	Status	Severity/ Criticality	Occurrence/ Likelihood	Detectability	Risk Priority Number	Treatment Type	Treatment Plan	Risk Treatment Owner	Impact	Probability	Risk Priority Number	Impact	Probability	Risk Priority Number
001	Rogerson Drive Pump Station	To pump raw sewage to the plant's headworks.	WWTP Rogerson Drive pump station- Various single points of failure Single electrical feed Generator fuel storage is inadequate Bypass is difficult	Active	5	3	5	75	Mitigate	Diesel fuel storage assessment. Upgrade pump station so that it can easily be bypassed if there is a catastrophic equipment failure. Install a generator access point, bare connection for a temporary electrical connection, and bypass connection point.	Capital	High	Medium	75			
002	Morgan Creek Pump Station	To pump raw sewage to the plant's headworks.	WWTP MCPS Wet Well Stairs - Stair fasteners located in wet well may deteriorate rapidly due to corrosive environment and incompatible material.	Active	5	5	5	125	Mitigate	Proactively replace wet well stair fasteners. Modify air intakes and dampeners for better air turnover.	Capital	High	High	125			
003	Morgan Creek Pump Station	To pump raw sewage to the plant's headworks.	WWTP MCPS Influent Pump - No backup level control for Precision Digital level instrument	Active	5	3	5	75	Mitigate	Install backup capacitance probe level sensor.	O&M	High	Medium	75			
004	Morgan Creek Pump Station	To pump raw sewage to the plant's headworks.	WWTP MCPS Influent Sluice Gates - Influent sluice gate could accidently close due to human error or equipment failure	Closed	1	1	1	1	Mitigate	Remove sluice gate.	O&M	High	Medium	75	Low	Low	1
005	Headworks	To screen and remove debris and grit from wastewater.	WWTP Headworks - Concrete located near the effluent of structure is in poor condition	Active	5	3	5	75	Mitigate	Build bypass structure, rehabilitate concrete, and improve odor control system.	Capital	High	Medium	75			
006	Electrical Distribution	To feed electrical power to plant.	WWTP Electrical System - Transform A is single point of failure for electrical power to plant. Main Breaker A and B are single points of failure. Components of backup power system are located in same building as main power.	Active	5	5	5	125	Avoid	Conduct component level PM identified in FMEA (gas in oil testing, thermographic survey, insultation test, turns ratio test, etc.) Redesign of backup power system or installation of generator access point for critical systems.	O&M Capital	High	High	125			
007	Electrical Distribution	To feed electrical power to plant.	WWTP Electrical System - Penetration where electrical cables exit building and enter conduit tray.	Active	5	5	5	125	Mitigate	Seal penetration in building and install screen below bus bar.	Capital	High	Medium	125			
008	Various Locations	Variable Frequency Drives (VFDs) are used throughout the plant to control motor speed by varying input frequency and voltage.	WWTP VFD - Difficult to repair and replace VFDs due to equipment obsolesces and no bypass.	Active	3	5	5	75	Accept	Upgrade VFDs as parts become obsolete Evaluate VFD redundancy on critical equipment.	O&M CIP	Medium	High	75			
009	Chemical Tank Farm	To store chemicals used to treat wastewater and provide secondary containment if a tank or piping where to fail.	WWTP Chemical Tank Farm - Incompatible chemicals could mix inside of the sodium hydroxide tank's secondary containment if there was a failure of both a sodium hydroxide tank/piping and acetic acid piping that passes through this containment area.	Active	5	3	5	75	Accept	Address this issue as part of WWTP Chemical Building and Bulk Tank Piping Rehab (CIP 278-80).	Capital	High	Medium	75			
010	Ultraviolet (UV) Disinfection	Disinfection of plant effluent prior to discharge or re-use.	WWTP UV Disinfection – The breaker serving the UV disinfection system is a single point of failure. This breaker has not been tested because the UV disinfection system is continuously operated. The programmable logic controller (PLC) that controls the UV disinfection system is a single point of failure and proprietary technology.	Active	5	3	5	75	Transfer	Coordinate temporarily stopping discharge of effluent, shutting off UV disinfection system, and testing breaker. Consider installing a generator access point. Sign a service contract with PLC manufacturer. Either develop a mitigation plan for failure of PLC or purchase a spare PLC.	O&M	High	Medium	75			
011	SCADA	Controls plant process and reports data back to operator for plant management	SCADA miscellaneous improvements and SOP Development - Inadequate feedback loops for pump on/off and remote/local signals, equipment obsolescence, inadequate historical backup, various single points of failure, and other miscellaneous issues.	Active	5	3	5	75	Accept	Prepare SCADA Master Plan for both WTP and WWTP.	Capital	High	Medium	75			
012	SCADA	Controls plant process and reports data back to operator for plant management	SCADA - Firewall for SCADA system may be inadequate. Overlap and coordination between Information Technology (IT) and Operations Technology (OT).	Active	5	3	5	75	Accept	Initiate Homeland Security Network Cybersecurity Audit	ENGR	High	Medium	75			
013	Various Locations	N/A	Reliance on services conducted by key third-party vendors/contractors	Active	5	3	5	75	Transfer	Prioritize and review key contracts (CITI, Electric Motor Shop, etc.) using information from Comprehensive Emergency Management Plan.	O&M	High	Medium	75			
014	Various Locations	N/A	Training and Standard Operating Procedures need to be improved	Active	5	3	5	75	Transfer	Combine SOP & Process Control Procedures into single document; prepare a chemical unloading SOP for bulk delivery drivers; biosolid driver procedure; etc.	O&M	High	Medium	75			
015	Various Locations	N/A	Critical Spare & Job Safety Analysis	Active	5	3	5	75	Accept	Perform Critical Spare Analysis (identified in FMEA) & Job Safety Analysis on critical tasks.	O&M	High	Medium	75			

Notes
Under "Current Status," 1 is low, 3 is medium, and 5 is high.
The highest possible risk priority score is 125.
Treatment if Threats: Avoid, Mitigate, Accept, or Transfer
Treatment if Opportunities: Exploit, Share, Enhance, or Accept

Agenda Item 7:

Status of Action Items on Communications During OWASA-Related Emergencies

Background:

Following the water interruption of February 2017, OWASA staff initiated an after-action review to identify opportunities to improve strategic communications during OWASA-related emergencies. From this review, an action plan was reviewed and approved by the OWASA Board of Directors on April 27, 2017. Additionally, the larger community, led by Orange County Emergency Services, implemented a community-wide after-action review to identify strengths and opportunities in the community-wide response.

This document brings these efforts together and provides:

- An update on OWASA's action plan (as approved by the Board on April 27, 2017)
- Additional recommendations for improvement as highlighted in Orange County's (OC) After Action Report (AAR) (distributed to the Board on June 18, 2018)
- A summary of additional items for consideration in OWASA's emergency communications

Based on these combined learnings and considerations, OWASA aims to develop an emergency communications plan for integration into its Comprehensive Emergency Management Plan.

Action plan:

No.	Item	Progress
1	Meet regularly with leadership and communications professionals of the Towns, County, City Schools, and UNC (herein stakeholders) to discuss emergency preparedness and response, as well as opportunities to collaborate outside of emergencies	Ongoing: OWASA's new Communications and Community Relations Officer (CCRO) is in the process of meeting with her communications counterparts at these stakeholder groups. She is discussing opportunities to collaborate during emergencies and non-emergencies. The CCRO will also join the stakeholders' Communications Working Group which meets quarterly. Her first Working Group meeting will be in July.
2	Update staff training on OC Alerts and work with Everbridge (OC Alerts provider) to identify and fix what went wrong	OC's AAR states that OC Alerts functioned as it should, and that the cause of the confusing alerts distributed last year was administrative error. The AAR recommends that OWASA and other agencies refresh their staff training on how to program OC Alerts, as well as define processes to better coordinate content and distribution – to minimize occurrences

No.	Item	Progress
		where people get the same alert multiple times, either from a single agency or many agencies. The CCRO plans to meet with the OC Emergency Management Coordinator to discuss these items and agree on action steps moving forward.
3	Actively participate in the AAR being organized by OC Emergency Services, take initiative on action items identified in it, and pursue strategies to better coordinate communication	OWASA supported and provided input into the scope of the AAR. Goals that were outlined specific to the communications function included learning what did and did not work, and areas for improvement, independently and collectively with other agencies. OWASA also provided stakeholder contacts to OC for inclusion in their AAR interview process. The progress updates in line 1 and 2 summarize actions taken by OWASA thus far to enable better communications coordination among stakeholders.
4	Conduct regular audit of contact information in OC alerts as well as OWASA's billing system (as contact information for some customers that had been uploaded from our billing system to OC Alerts was inaccurate or out-of-date)	Four actions are ongoing and underway: 1) Once per month, OWASA downloads its updated customer service database to OC Alerts (OWASA's customer service database is updated regularly through daily interactions with customers). 2) OWASA is in the process of contacting groups of customers to inform them of their meter upgrade as part of the Agua Vista program. Letters and door hangers distributed about Agua Vista include a message that invites accountholders to contact OWASA's customer service team to update their contact information (if it has changed). OWASA has received calls from customers to update their information in response to these communications. 3) All accountholder bills include a message inviting them to contact customer service to update their contact information if it has changed. 4) When OWASA sends accountholder bills to USPS for mailing, USPS checks to see if any are being auto-forwarded to a new address. If yes, USPS sends the envelope back to OWASA along with the customer's new address. OWASA's customer service team then contacts the customer by phone (followed by email and letter if no response by phone) asking them to provide their updated contact information.

No.	Item	Progress
5	Explore and implement how language preferences can be set and utilized on OC Alerts.	It is understood that OC Alerts does not offer foreign language options, but it may be possible to arrange advance translations of templates. The CCRO will discuss this item and potential action steps during her meeting with OC's Emergency Management Coordinator.
6	Identify translators for Spanish, Burmese, Karen and other languages spoken by our customers that are willing to assist in emergency (in collaboration with OC where possible)	The CCRO will discuss this item and potential action steps during her meeting with OC's Emergency Management Coordinator.
9	Investigate alternatives to address high-volume calls (such as engagement of an off-site call center, increased use of social media, increasing the number of phone lines)	This item to be explored.
10	Communicate with public about emergency readiness (i.e., how much bottled water you should have at home)	An article was published in the Blue Thumb newsletter in 2017; information is also posted on OWASA's website. Additional action items to be explored.
11	Identify consultant to assist staff to prepare for and respond to such events	This item to be explored.

Additional recommendations for improvement as per Orange County's After-Action Report:

Orange County engaged an external consultant to implement an After-Action Report (AAR). The consultant reviewed relevant documents, conducted stakeholder interviews, and deployed three surveys (1,200 people responded). The AAR includes recommendations to improve the collective agency response in Orange County in times of emergency. Specific to OWASA, some communications recommendations were highlighted, many of which have been captured in OWASA's action plan. Additional communications opportunities the AAR highlighted are outlined below.

No.	Recommendation	OWASA action
1	Leverage more effectively not just OC Alerts, but also the County's Emergency Operations Center (EOC), and WebEOC (the County's virtual emergency operations center).	CCRO will meet with OC's Emergency Management Coordinator to discuss how to more effectively activate these processes and channels for information sharing.
2	A Joint Information System/Center should be developed to ensure coordinated public messaging for complex incidents	OC hosted a table top exercise in January 2018 simulating an emergency. OWASA was not involved in the January exercise, however, we will participate in future table top simulations coordinated by OC. These experiences will inform OC's thinking as it works to develop a model for a Joint Information System.
3	Increase clarity and frequency of messages during emergencies, and coordinate content with other agencies to ensure there is no conflicting information being published	OWASA plans to evaluate the effectiveness and reach of its proprietary communications channels, i.e., Twitter, website, etc., and develop a process to increase the reach of these tools. OWASA will continue to meet with stakeholder communications counterparts to collaborate on emergency and non-emergency communications and processes. OWASA will meet with OC's Emergency Management Coordinator to discuss how to better leverage and coordinate the usage of OC Alerts, WebEOC, and the potential Joint Information System.
4	Monitor media and social media more frequently	OWASA will do so in times of emergency and non-emergency.
5	Businesses did not have the information they needed	OWASA aims to connect with associations such as the local Chamber of Commerce and Rotary to see if they can be a communications conduit to the business community in times of emergency.

Additional items that will be considered in developing OWASA's emergency communications plan:

OWASA's CCRO is currently in the process of meeting with internal and external stakeholders to learn about their communications and engagement goals at OWASA. Ideas that have been generated to extend OWASA's community outreach, and which are relevant to emergency communications, are listed below.

- Identify a process for internal communications during emergencies to ensure all OWASA staff are among the first to know of major water incidents and ongoing updates. OWASA staff are our best ambassadors and channels of information to and from the communities we serve.
- Improve the process for stakeholder communications during emergencies to ensure all stakeholders have the information they need when they need it, and support their efforts to share the information onward to their stakeholders (i.e., UNC to students, schools to parents, towns to first responders, etc.) with consistent and coordinated messaging.
    - Work with these partners to identify opportunities to amplify common key messages during emergencies and non-emergencies, for example, is there an opportunity to integrate key messages on water conservation and stocking during OC's outreach in Emergency Preparedness Month?
- To increase OWASA's communications reach to customers and the community-at-large in times of emergency:
    - Evaluate all of OWASA's proprietary communications channels (for example, website, Constant Contact lists, etc.) to determine effectiveness, and ways to maximize reach through these channels.
    - Identify organizations that OWASA can partner with in times of emergency to engage with harder-to-reach audiences such as non-English speaking community members, businesses, and apartment complexes, for example: Refugee Support Center, El Centro Hispano, Chamber of Commerce, property management companies, homeowners associations, senior services, etc.
    - Maintain relationships with relevant reporters and editors to ensure these lines of communication are already open during times of emergency
    - Identify a process through which to determine frequency of updates shared externally to ensure people have the facts they need, and to minimize misinformation being perpetuated/distributed
- Host emergency communications training, either presentations or simulations
    - For staff, managers, and Board members
    - Potentially with stakeholders

Next Steps:

Feedback collected from the Board, staff, and other OWASA stakeholders will be incorporated into a draft emergency communications plan. This draft plan can be tested through a mini-simulation to evaluate if the emergency communications strategies and processes are effective and practical. Following these steps, another update will be provided to the Board.

Agenda Item 8:

Review Draft of Weights Assigned to Decision-Criteria of a Request for Proposals for Banking Services

Purpose:

The purpose of this discussion is to obtain the Board of Director's input and guidance about assigning weights to the criteria we plan to use to evaluate responses to a request for proposals (RFP) for banking services.

Background:

Staff plans to issue a RFP for banking services this fall. The RFP will include requests for evidence of respondents' approach to certain "social responsibility" criteria. Based on researching RFPs issued by other governmental entities, staff developed a draft of criteria to include; on April 24, 2018, the Board approved including the criteria listed below.

Social Responsibility Criteria:

Socially Responsible Banking

1. List any leadership activities that your bank participates in that show your institution's commitment to the Chapel Hill-Carrboro/Orange County community.
2. Indicate if the bank invests in entities that support community well-being; promote equality of rights regardless of sex, race, age, disability or sexual orientation; and promote community economic development.
3. List your institution's initiatives to address credit needs of Chapel Hill-Carrboro/Orange County residents and businesses, including low and moderate income and minority residents. Describe your success, in number and dollar amount, for these target groups.
4. Please provide your CRA (Community Reinvestment Act) score and a copy of the most recent evaluation issued by the federal regulatory agency.
5. Please provide details regarding any pending investigation and enforcement action undertaken by federal, state or local agencies against the bank.
6. Indicate if the bank has whistleblower protection policies for bank workers who report suspected illegal banking practices to law enforcement authorities.
7. List your institution's policies, protocols, and trainings in place at both the employee and management levels to help prevent the abuse of sales of consumer financial services and products.

Environmental Sustainability

1. Please indicate if the bank is an investor and/or lender in the following (provide two or three examples for each, if applicable):
    a. Entities that support a healthy environment
    b. Entities that support clean energy

   c. Fossil fuel and/or pipeline companies
   d. Organizations that support the production of weapons, military systems or nuclear power
2. Please explain methods that will be used while conducting business in the Chapel Hill-Carrboro area that encourages the implementation of environmentally friendly practices and procedures.

Traditional Banking Criteria:

The RFP will include information about the banking services OWASA needs, the nature and quantity of our bank-related transactions, unique requirements for North Carolina entities like OWASA, etc. The following summarizes other banking services requirements.

Electronic

- Balance and transaction-reporting services (image access and usage)
- Stop payments
- Payment capabilities (ACH, wire, bank draft)
- Deposit capabilities (bank draft, remote deposit capture (check), vault (currency), pay-by-phone (IVR), text)
- Analyses and statements
- Digitized storage of paid checks and statements
- Stale-date check management
- Access to investment performance reporting
- Decisioning on handling of un-processable items or returned items (payments and deposits)
- Bill presentment

Accounts

- Controlled disbursement
- Zero-balance
- Interest-bearing
- Investment sweep

Security Features

- Positive pay services
- Reconciliation services
- Automated Clearing House (ACH) blocking/filtering services
- Non-sufficient funds (NSF) re-presentment

Treasury management services

- Lock-box
- Electronic box
- Credit card merchant
- Procurement cards
- Web links for internet payment

- Change order processing
- Point of sale
- Trustee

Criteria Weights:

RFP responses will be evaluated using a scoring system. Based on staff's review of other entities' approach to scoring, the following information is offered as a guide.

Criteria	Evaluation Weight Percentage Ranges	Staff's Recommendation
Social responsibility	0% - 10%	5%
Environmental sustainability	0% - 10%	5%
Electronic banking	10% - 15%	15%
Accounts and security features	10% - 15%	15%
Treasury management	10% - 15%	15%
Customer support	10% - 15%	10%
Implementation plan	10% - 15%	10%
Cost of service	20% - 30%	25%

Timing and Next Steps:

Changing banks is a complex undertaking. The entire process for soliciting, evaluating, implementing and transitioning bank services will likely take six to 12 months. The steps in the process include:

1. Define objectives
2. Develop business requirements
3. Determine how to evaluate responses (assign "weights" to criteria categories)
4. Assemble relevant data (e.g. types and frequencies of transactions, current costs, etc.)
5. Create a "long-list" of potential vendor banks
6. Develop RFP
    a. Description of OWASA
    b. RFP objectives (incorporating the Board's guidance on social responsibility requirements)
    c. Activity information
    d. Account structure needed
    e. Specific questions
    f. Administrative requirements
7. Issue/distribute RFP
8. Review and score proposal responses
9. Develop "short-list" of potential vendor banks
10. In-person presentations/interviews of short-list selections

11. Make selection
12. Implement

Staff has begun to develop the RFP and will incorporate the Board's guidance regarding criteria-weighing.

No further Board action or involvement in the process is necessary unless the terms of the agreement require Board approval to meet OWASA's purchasing policy or state law requirements.

Action Requested:

Provide guidance to staff regarding assigning weights to criteria for evaluating responses to our planned banking services RFP.

Agenda Item 9:

Review Board Work Schedule

Purpose:

a) Request(s) by Board Committees, Board Members and Staff
b) August 23, 2018 Board Meeting
c) September 13, 2018 Work Session
d) Review and update the 12 Month Board Meeting Schedule
e) Review Pending Key Staff Action Items

Information:

- Draft agenda for the August 23, 2018 meeting
- Draft agenda for the September 13, 2018 meeting
- 12 Month Board Meeting Schedule
- Pending Key Staff Action Items from Board Meetings

July 12, 2018

Agenda
Meeting of the OWASA Board of Directors
Thursday, August 23, 2018, 7:00 P.M.
Chapel Hill Town Hall

In compliance with the "Americans with Disabilities Act," interpreter services are available with five days prior notice. If you need this assistance, please contact the Clerk to the Board at 919-537-4217 or aorbich@owasa.org.

The Board of Directors appreciates and invites the public to attend and observe its meetings. Public comment is invited either by petition upon topics not on the Board's agenda, or by comments upon items appearing on the Board's agenda. Speakers are invited to submit more detailed comments via written materials, ideally submitted at least three days in advance of the meeting to the Clerk to the Board via email or US Postal Service (aorbich@owasa.org/400 Jones Ferry Road, Carrboro, NC 27510).

Public speakers are encouraged to organize their remarks for delivery within a four-minute time frame allowed each speaker, unless otherwise determined by the Board of Directors.

Announcements

1. Announcements by the Chair
   A. Any Board Member who knows of a conflict of interest or potential conflict of interest with respect to any item on the agenda tonight is asked to disclose the same at this time.
   B. Standing Committees of the Board of Directors
2. Announcements by Board Members
3. Announcements by Staff
4. Additional Comments, Suggestions, and Information Items by Board Members (Yinka Ayankoya)

Petitions and Requests

1. Public
2. Board
3. Staff

Consent Agenda

Information and Reports

1. 12 Month Board Meeting Schedule (Yinka Ayankoya/Ed Kerwin)

Action

2. Resolution Awarding a Construction Contract for the Galvanized Water Main Replacement Contract (Dustin Rhodes)
3. (Tentative) Resolution Authorizing Orange Water and Sewer Authority's Executive Director to Apply for Loans and Grants from the State of North Carolina (Stephen Winters)
4. Minutes of the July 12, 2018 Meeting of the Board of Directors (Andrea Orbich)

Regular Agenda

Discussion and Action

5. Discuss Agua Vista (Advanced Metering Infrastructure) Policies (Stephen Winters)

Information and Reports

6. Capital Improvements Program Semiannual Report (Vishnu Gangadharan)
7. Preliminary Financial Report for the Twelve-Month Period Ended June 30, 2018 (Stephen Winters)

Summary of Board Meeting Action Items

8. Executive Director will summarize the key action items from the Board meeting and note significant items for discussion and/or action expected at the next meeting

Closed Session

9. The Board of Directors will convene in a Closed Session for the Purpose of Discussing a Personnel Matter (TBD)

Agenda
Work Session of the OWASA Board of Directors
Thursday, September 13, 2018, 6:00 P.M.
OWASA Community Room

The Board of Directors appreciates and invites the public to attend and observe its meetings. For the Board's Work Session, public comments are invited on only items appearing on this agenda. Speakers are invited to submit more detailed comments via written materials, ideally submitted at least three days in advance of the meeting to the Clerk to the Board via email or US Postal Service (aorbich@owasa.org/400 Jones Ferry Road, Carrboro, NC 27510).

For items on the agenda, public speakers are encouraged to organize their remarks for delivery within a four-minute time frame allowed each speaker, unless otherwise determined by the Board of Directors.

The Board may take action on any item on the agenda.

Announcements

a. Announcements by the Chair
   - Any Board Member who knows of a conflict of interest or potential conflict of interest with respect to any item on the agenda tonight is asked to disclose the same at this time.

b. Announcements by Board Members

c. Announcements by Staff

d. Additional Comments, Suggestions, and Information Items by Board Members (Yinka Ayankoya)

Consent Agenda

Information and Reports

1. Equal Employment Opportunity/Affirmative Action Report for Fiscal Year 2018 (Stephanie Glasgow)
2. Annual Report on Disposal of Surplus Personal Property (Kelly Satterfield)

Action

3. (Tentative) Memorandum of Agreement for Triangle Water Supply Partnership (Ruth Rouse)

Regular Agenda

Discussion

4. Review Draft Water Treatment Plant and Wastewater Treatment Plant Reliability and Risk Assessment Action Plan (Adam Haggerty)
5. Review Updated Implementation Plan for Diversity and Inclusion Program (Stephanie Glasgow)
6. (Tentative) Discuss Long Range Water Supply Plan – Projected Demands & Yield (Ruth Rouse)
7. Review Board Work Schedule (Yinka Ayankoya/Ed Kerwin)
   a. Request(s) by Board Committees, Board Members and Staff
   b. September 27, 2018 Board Meeting
   c. October 11, 2018 Work Session

d. 12 Month Board Meeting Schedule
e. Pending Key Staff Action Items

Summary of Work Session Items

8. Executive Director will summarize the key staff action items from the Work Session

Closed Session

9. The Board of Directors will convene in a Closed Session for the Purpose of Discussing a Personnel Matter (TBD)

OWASA Board of Directors – 12 Month Board Meeting Schedule (July 6, 2018)

Month	Board Meetings		Committee & Other Meetings
	Work Session	Business Meeting	
July 2018	Welcome New Board Members Award the WWTP Intermediate Pump Stations Rehabilitation Contract Award the Pritchard Avenue Water Main Construction Contract NCDOT right-of-way acquisition for Orange Grove Road Review Draft WTP & WWTP Reliability and Risk Assessment Report Status of Action Items on Communications During OWASA-Related Emergencies Assigning weights to Banking RFP Criteria 7/12/2018	CANCELLED 7/26/2018	
August 2018	CANCELLED 8/9/2018	(Tentative) Authorize Applying for SRF Loans Award the Galvanized Water Main Replacement Contract Preliminary 12 Month Financial Report ( ) CIP Semiannual Report ( ) Discuss AMI Policies (other than manual read) CS – General Counsel Review ( ) 8/23/2018	*NRTS Committee Meeting to continue discussion of source water protection (TBD)*
September 2018	EEO/Affirmative Action Report ( ) Annual Report on Disposal of Surplus Personal Property ( ) Review Updated Implementation Plan for D&I Program Discuss Action Plan from WTP & WWTP Reliability and Risk Assessment Project (Tentative) MOA for Triangle Water Supply Partnership ***(Tentative) Discuss LRWSP – Demands & Yield*** CS – General Counsel Review ( ) 9/13/2018	Annual Report and Financial Audit ( ) Approve General Counsel Engagement ( ) Strategic Trends Report and Strategic Plan Update ( ) Award the WTP Sedimentation Basin Rehabilitation Construction Contract CS – ED Review ( ) 9/27/2018	*Finance Committee Meeting to discuss longer-term approach/strategy for cost management (TBD)* *HR Committee Meeting to discuss retiree health and 457 deferred compensation (TBD)* *NRTS Committee Meeting to discuss overall approach for managing forested watershed lands (TBD)*
October 2018	Discuss Recreational Fees for Out-of-County Visitors Discuss KPI Deep Dive on Water Loss and Non-Revenue Water CS – ED Review ( ) 10/11/2018	Q1 Financial Report ( ) Award the WWTP Solids Thickening Construction Contract 10/25/2018	*Chatham-Orange Joint Planning Task Force Meeting (10/4/2018)* *Carrboro Citizen's Academy – OWASA Session (10/10/2018)* *Chapel Hill Peoples Academy – OWASA Session (10/20/2018)*
November 2018	Discuss Strategic Plan Update 11/8/2018	*Holiday - no meeting*	

OWASA Board of Directors – 12 Month Board Meeting Schedule (July 6, 2018)

Month	Board Meetings		Committee & Other Meetings
	Work Session	Business Meeting	
December 2018	Award the Dobbins Drive Water and Sewer Construction Contract 12/13/2018	*Holiday - no meeting*	
January 2019	Employee Health and Dental Insurance Update Appoint Audit Firm Affordability Outreach Program Plan Update 1/10/2019	Annual Lakes Recreation Report CIP Semiannual Report Q2 Financial Report FY 20 Budget Calendar and Assumptions 1/24/2019	
February 2019	CS - General Counsel Interim Review 2/14/2019	CS - General Counsel Interim Review 2/28/2019	
March 2019	FY 20 Draft Budget & Rates CS - ED Interim Review 3/14/2019	Annual Update of the Energy Management Plan FY 20 Draft Budget & Rates and Proposed Staff Rate Adjustment Recommendation Set date for Public Hearings – FY 20 Budget & Rates CS – ED Interim Review 3/28/2019	
April 2019	Review Employee Health and Dental Insurance Renewals FY 20 Draft Budget and Rate Adjustment Information Appointment of the Nominating Committee 4/11/2019	Q3 Financial Report FY 20 Budget and Rates Discussion and Authorize Staff to Publish Proposed Rates 4/25/2019	
May 2019	Approve Employee Health and Dental Insurance Renewals Discuss Employee Merit Pay for FY 2020 5/10/2019	Public Hearings – FY 20 Budget and Rates 5/23/2019	
June 2019	Approve FY 20 Budget and Rates, including merit pay decision Election of Officers 6/13/2019	TBD 6/27/2019	

The 12 Month Board Meeting Schedule shows Strategic Plan initiatives and other priority efforts that the Board and staff plan to give greatest consideration to during the next twelve months. The schedule also shows major recurring agenda items that require Board action, or items that have been scheduled in response to the Board's prior standing request. This schedule does not show all the items the Board may consider in a work session or business meeting. It also does not reflect meetings at which the Board will discuss and act on the update of the Strategic Plan.

The 12 Month Board Meeting Schedule will be reviewed and updated at each monthly work session and may also be discussed and updated at the Board's business meetings.

In addition to the initiatives shown in this schedule, staff will be working on other Strategic Plan and organizational priorities that are not expected to require major additional discussion with the Board except as part of budget deliberations.

The schedule implies that the following Strategic Plan initiatives would be addressed beyond the 12-month period. The Board may conclude that one or more of the following initiatives are higher priority. The schedule will be revised as needed to reflect the Board's priorities, and any additional initiatives that the Board may decide to address.

- Development of a plan and policy framework for OWASA lands is considered a longer-term priority. The NRTS Committee discussed this issue in September 2017 and determined it was lower priority than

Forestry Management. Staff presented an overall approach for Forestry Management to the Board in May 2018, and this was referred to the NRTS Committee for further discussion.

- Improve effectiveness as a learning organization is considered a longer-term priority.
- Water Conservation Plan will be prepared concurrent with update of the Long-Range Water Supply Plan.

The OWASA Board determines which topics it wants to explore as a full Board (potentially in a work session format) and which topics it wants to assign to Board committees or committee chairs for further analysis and development of recommendations. Board also determines priorities and desired timeframes for addressing topics. Committee meetings will be updated on the schedule routinely.

Abbreviations Used in Draft Schedule:

↻	Recurring agenda item (generally these are "required" items)
AMI	Advanced Metering Infrastructure
CE	Community Engagement
CEP	Community Engagement Plan
CIP	Capital Improvements Program
COLA	Cost of Labor Adjustment
CS	Closed Session of the Board
CY	Calendar Year
D&I	Diversity and Inclusion
ED	Executive Director
EEO	Equal Employment Opportunity
FY	Fiscal Year
HR	Human Resources
JLP	Jordan Lake Partnership
KPI	Key Performance Indicator
LRWSP	Long-Range Water Supply Plan
MOA	Memorandum of Agreement
MST	Mountains-to-Sea Trail
MFMM	Multi-Family Master Meter
NCDOT	North Carolina Department of Transportation
NRTS	Natural Resources and Technical Services
Q	Quarter
RFP	Request for Proposals
SRF	State Revolving Fund
SOW	Scope of Work
TBD	To Be Determined
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

Pending Key Staff Action Items from Board Meetings

No.	Date	Action Item	Target Board Meeting Date	Person(s) Responsible	Status
1.	5-10-2018	Provide the Board information for discussion at a future meeting regarding the timing of the next review of the Employee Pay Administration Guidelines.	TBD	Glasgow	
2.	5-10-2018	Provide the Board a list of key tasks/actions for recurring Board attention over the next five years.	TBD	Kerwin	Will provide via e-mail before end of July 2018.
3.	5-10-2018	Schedule a NRTS Committee meeting to continue discussing source water protection.	NA	Rouse	
4.	5-10-2018	Schedule a NRTS Committee meeting to discuss overall approach for managing OWASA's forested watershed lands.	NA	Rouse	
5.	5-10-2018	Schedule a Finance Committee meeting in the fall of 2018 to discuss longer-term approach/strategy for cost management.	NA	Winters	
6.	4-26-2018	Provide Board via email information about renewal and replacement reserves for the reclaimed water system to include an outlook for future capital investment.	NA	Winters Taylor M. Dodson Gangadharan	Staff has updated the reserve calculation and will scheduling a meeting with UNC to discuss before providing to the Board.
7.	4-26-2018	Discuss out-of-County fees for lake use for the next recreation season.	10-11-2018	Taylor Loflin	
8.	1-25-2018	Incorporate Board Members suggestions in the next CIP report.	8-23-2018	Gangadharan	
9.	1-25-2018	Consider an Open House and other opportunities to attract greater MWBE participation in bidding construction projects.	NA	Gangadharan	• Staff's June 25, 2018 email to Board outlined the completed and upcoming MWBE outreach efforts for FY 2019 CIP bidding opportunities. • Discussion of the effectiveness of, and any changes to, these outreach efforts will be included with the usual MWBE participation section of the next semiannual CIP report on August 23, 2018 and future semiannual reports.

Pending Key Staff Action Items from Board Meetings

No.	Date	Action Item	Target Board Meeting Date	Person(s) Responsible	Status
10.	11-9-2017	Address Board member feedback on Strategic Trends Report for next year.	9-27-2018	Rouse	
11.	10-12-2017	Schedule future Board discussion about low-flow benchmarks to be used once AMI is implemented.	8-23-2018	Winters Taylor	
12.	10-12-2017	Schedule Board discussion of strategic communications action items when the County's After Action Review has been completed and issued.	7-12-2018	Kerwin	Completed
13.	9-14-2017	Issue request for proposals in the spring of 2018 for banking services and seek the Board's input on the criteria to be considered in selecting the best-qualified bank.	7-12-2018	Winters	Complete