

Orange Water and Sewer Authority

Meeting of the Board of Directors

July 14, 2022

The Board of Directors of the Orange Water and Sewer Authority (OWASA) held its duly noticed regular work session by virtual means in accordance with law, on Thursday, July 14, 2022, at 6:00 p.m. utilizing Microsoft Teams software.

Board Members attending virtually: Bruce Boehm (Chair), Todd BenDor (Vice Chair), Raymond (Ray) DuBose (Secretary), Jody Eimers, Pedro Garcia, David Gorelick, Melody Kramer, Kevin Leibel, and Elmira Mangum.

OWASA staff attending virtually: Mary Darr, Robert Epting, Esq. (Epting and Hackney), Vishnu Gangadharan, Monica Hill, Robin Jacobs, Esq. (Epting and Hackney), Coleman Olinger, Andrea Orbich, Dan Przybyl, Ruth Rouse, Todd Taylor, Mary Tiger, Stephen Winters, and Richard Wyatt.

Others attending virtually: Meg Holton (UNC), and Henry DePietro.

Motions

1. BE IT RESOLVED THAT the Board of Directors of the Orange Water and Sewer Authority adopts the Resolution Approving the Long-Range Water Supply Plan. (Motion by Ray DuBose, second by Kevin Leibel and the motion unanimously approved.)
2. BE IT RESOLVED THAT the Board of Directors of the Orange Water and Sewer Authority adopts the Resolution Adjusting the Executive Director's Compensation. (Motion by Ray DuBose, second by Kevin Leibel and the motion unanimously approved.)
3. Ray DuBose made a Motion to approve the Minutes of the June 9, 2022, Board of Directors Meeting; second by Kevin Leibel and the Motion was unanimously approved.
4. Ray DuBose made a Motion to approve the Minutes of the June 9, 2022, Closed Session of the OWASA Board of Directors for the Purpose of Discussing a Personnel Matter; second by Kevin Leibel and the Motion was unanimously approved.
5. BE IT RESOLVED THAT the Board of Directors of the Orange Water and Sewer Authority adopts the Resolution Approving the Elimination of Account Delinquency Fee. (Motion by Todd BenDor, second by Kevin Leibel and the motion was unanimously approved.)
6. Kevin Leibel made a Motion to approve the Key Focus Areas for OWASA's Executive Director as amended for the Period of June 2022 to May 2023; second by Todd BenDor and the Motion was unanimously approved.

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Announcements

Chair Bruce Boehm announced that due to the ongoing North Carolina State of Emergency, the OWASA Board of Directors held the meeting virtually utilizing Microsoft Teams software. Chair Boehm stated that Board Members, General Counsel, and staff participated in the meeting remotely.

Chair Boehm asked if any Board Member knew 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.

Chair Boehm welcomed four new Board Members and announced that on June 15, 2022, the Chapel Hill Town Council appointed David Gorelick to the OWASA Board of Directors to complete the unexpired term of John Morris which will end on June 30, 2023. He said that on June 21, 2022, the Carrboro Town Council appointed Melody Kramer to replace Robert Morgan's seat and Elmira Mangum to replace Yinka Ayankoya's seat on the OWASA Board. A new Board Member orientation session was held on Tuesday, July 12, 2022, for the Carrboro Appointees. Because of the four new Board Members, Chair Boehm conducted a short icebreaker to welcome and warm up the conversation among participants in the meeting,

Chair Boehm said the new Executive Committee met on July 12, 2022, to review the roles and responsibilities and review OWASA's general topics for this fiscal year.

Vishnu Gangadharan, Director of Engineering and Planning, introduced Coleman Olinger, OWASA's new Asset Manager.

Petitions and Requests

Chair Boehm said no petitions or requests were received from the public.

Chair Boehm asked for petitions and requests from the Board and staff; none were provided.

Item One: Quarterly Report on Attendance at Board and Committee Meetings

The Board accepted this as an information item.

Item Two: Resolution Approving the Long-Range Water Supply Plan

Ray DuBose made a Motion to approve resolution; second by Kevin Leibel and the Motion was unanimously approved. Please see Motion 1.

Item Three: Resolution Adjusting the Executive Director's Compensation

Ray DuBose made a Motion to approve resolution; second by Kevin Leibel and the Motion was unanimously approved. Please see Motion 2.

Item Four: Minutes of the June 9, 2022, OWASA Board of Directors Meeting

Ray DuBose made a Motion to approve the Minutes of the June 9, 2022, Board of Directors Meeting; second by Kevin Leibel and the Motion was unanimously approved. Please see Motion 3.

Item Five: Minutes of the June 9, 2022, Closed Session of the OWASA Board of Directors Meeting

Ray DuBose made a Motion to approve the Minutes of the June 9, 2022, Closed Session of the OWASA Board of Directors for the purpose of discussing a personnel matter; second by Kevin Leibel and the Motion was unanimously approved. Please see Motion 4.

Item Six: Proposed Elimination of Account Delinquency Fee

Todd BenDor made a Motion to approve the Resolution Approving the Elimination of Account Delinquency Fee; second by Kevin Leibel and the Motion was unanimously approved. Please see Motion 5.

The Board also requested staff inform the public of the elimination of the delinquency fee.

Item Seven: Review Proposed Work Plan for OWASA's Executive Director

The Board requested the Executive Director's Work Plan be amended to rename item one as High Quality Service, include long-term regulations outlook, fraud resiliency, and financial management and billing. Item two (equitable services) will include a task to explore rate study options. Item seven (service reliability and resiliency) will include the new computerized maintenance management system regarding the asset management plan and the project delivery optimization plan will be updated to identify the Capital Improvements Plan. The 2022 Communications Plan will be updated to reflect the suggestions communicating the elimination of the customer delinquency fee and to connect with UNC students regarding their water use.

Kevin Leibel made a Motion to approve the Key Focus Areas for OWASA's Executive Director as amended for the Period of June 2022 to May 2023; the was Motion seconded by Todd BenDor and unanimously approved. Please see Motion 6.

Item Eight: Review Board Work Schedule

The Board discussed and requested accommodations for in-person Board meetings (masking, availability of masks for the public who attend the meeting, seating, attendance, remote rooms, etc.) which will be implemented on September 8, 2022, following the end of the State of Emergency on August 15, 2022. The Board requested information on the cost and time to provide public participation virtually for future Board meetings.

The Board agreed the Standing Committees of the Board would not be assigned at this time since there has not been a need for committee meetings.

The Board agreed to cancel the August 11, 2022, OWASA Board Meeting.

Item Nine: Summary of Board Meeting Action Items

Todd Taylor noted the following staff action items:

- Incorporate feedback into Executive Director's Key Focus Areas;
- Implement requests for in-person Board meetings; and
- Provide an updated 2022 Communications and Community Engagement Plan.

Item Ten: Closed Session

Without objection, the Board of Directors convened in a closed session for the purpose of discussing a personnel matter as provided in N.C. General Statutes 143.318.11(6).

Following the closed session, the Board reconvened in open session, reported no action was taken in the closed session, and the meeting was adjourned at 8:22 p.m.

Respectfully submitted by:



Andrea Orbich

Executive Assistant/Clerk to the Board

Attachments

Resolution to Adopt Long-Range Water Supply Plan

Whereas, to update its 2010 Long Range Water Supply Plan, OWASA determined in its Strategic Plan adopted on March 13, 2014 and subsequently updated on June 9, 2016 to consider, develop and adopt plans and strategies to assure a sufficient, reliable and high quality water supply sufficient to serve the community's needs for the next fifty years; and,

Whereas, in accordance with that direction, OWASA has since followed an inclusive and thoughtful process to update the Long-Range Water Supply Plan including discussion at 29 Board meetings and two public processes where public interest and participation were solicited and received, with more than 800 pages of written informational reports and materials provided by OWASA staff, all to inform the Board of Directors and assist in its decision making as to how to best meet the community's water supply needs over the next fifty years; and,

Whereas, at the June 10, 2022 Board of Directors meeting, the Board authorized staff to work with the Western Intake Partnership (City of Durham, Chatham County, and Town of Pittsboro) to invest in the planned intake and transmission infrastructure on the west side of Jordan Lake and to include this as the preferred alternative in the Long-Range Water Supply Plan; and,

Whereas, the OWASA Board of Directors authorized staff to fund OWASA's share of studies currently underway by the Western Intake Partnership to plan, permit, and design the proposed intake and transmission infrastructure on the west side of Jordan Lake; and,

Whereas, the attached Long-Range Water Supply Plan summarizes the Long-Range Water Supply Plan process and decisions made by the Board of Directors:


Now, Therefore, Be It Resolved by the Orange Water and Sewer Authority Board of Directors:

1. That the Long-Range Water Supply Plan dated July 14, 2022, attached hereto, is hereby adopted as a principal guide for future policy and investment decisions concerning OWASA's water supply, and staff is directed to implement the Report's recommendations.

Adopted this 14th day of July 2022.


Bruce Boehm, Chair

ATTEST:


Raymond E. DuBose, P.E., Secretary

Long-Range Water Supply Plan

Approved July 14, 2022



Orange Water and Sewer Authority

OWASA is Carrboro-Chapel Hill's not-for-profit public service agency delivering high quality water, wastewater, and reclaimed water services.

Long-Range Water Supply Plan

July 14, 2021

Executive Summary

OWASA is committed to supplying reliable and high-quality water to our growing community and economy for years to come. The planning, permitting, and partnerships required in water supply development can take decades to develop and secure. That is why OWASA is planning for the water needs of our community two generations ahead.

In coordination with local planners, OWASA recently updated our 50-year forecast for water demands in the Chapel Hill-Carrboro community, as well as our projected water supply with current resources in a changing climate. These analyses show that OWASA has enough water under most circumstances for the next few decades.

We do have one vulnerability: the watershed that fills the Cane Creek Reservoir, which stores most of the community's water, is relatively small and the reservoir is slow to refill. University Lake has a relatively large watershed for its size, but offers significantly less water storage than Cane Creek Reservoir and by itself does not meet the community's needs. Thus, when we experience an extended drought or back-to-back droughts in the future, we risk low water supplies, particularly in light of climate variability.

OWASA used a thoughtful, inclusive process to identify and evaluate supply and demand management (conservation) alternatives. OWASA staff met with local government planners, UNC Chapel Hill (UNC), and developers, obtained input from Board members and neighboring utilities, and reviewed existing plans and documents to identify demand management, reuse, and supply alternatives to meet our long-term needs through 2070.

We used a multi-step process to evaluate the alternatives which included opportunities for the community to provide input on two separate occasions. Feedback from the first round of community engagement was considered by the Board of Directors as they developed guiding principles to evaluate alternatives against. This evaluation resulted in the Board of Directors selecting an alternative which provides access to Jordan Lake as the best method to meet our long-term needs. At this stage, the Board directed staff to obtain feedback from the community on this decision; they later evaluated three alternatives to access our Jordan Lake allocation against criteria that included improving OWASA's water supply resiliency and reliability, cost, and feedback from the community. Ultimately the Board of Directors selected working with neighboring utilities to invest in a new intake and transmission facilities on the west side of Jordan Lake; the Board postponed investing in a proposed new treatment plant on the west side of the lake. By focusing investment in new infrastructure on the facilities that are difficult and costly to expand in the future, OWASA seeks to balance securing our future water supply in Jordan Lake with minimizing cost.

OWASA recognizes that working to further conserve water is important to our customers. Conservation by residents and customers across the service area in recent years has greatly reduced our average daily water use, to the point that our future water supply needs could not be

met through additional day-to-day conservation measures. However, OWASA is developing a Water Conservation Plan that will serve as a companion document to this Long-Range Water Supply Plan. Conservation alternatives that are cost-effective will be included and further evaluated through that program.

What is OWASA’s Long-Range Water Supply Plan?

OWASA’s Long-Range Water Supply Plan is an evaluation of our 50-year water needs (through 2070) and an evaluation of alternatives to meet those needs to ensure we have enough water for our community two generations from now.

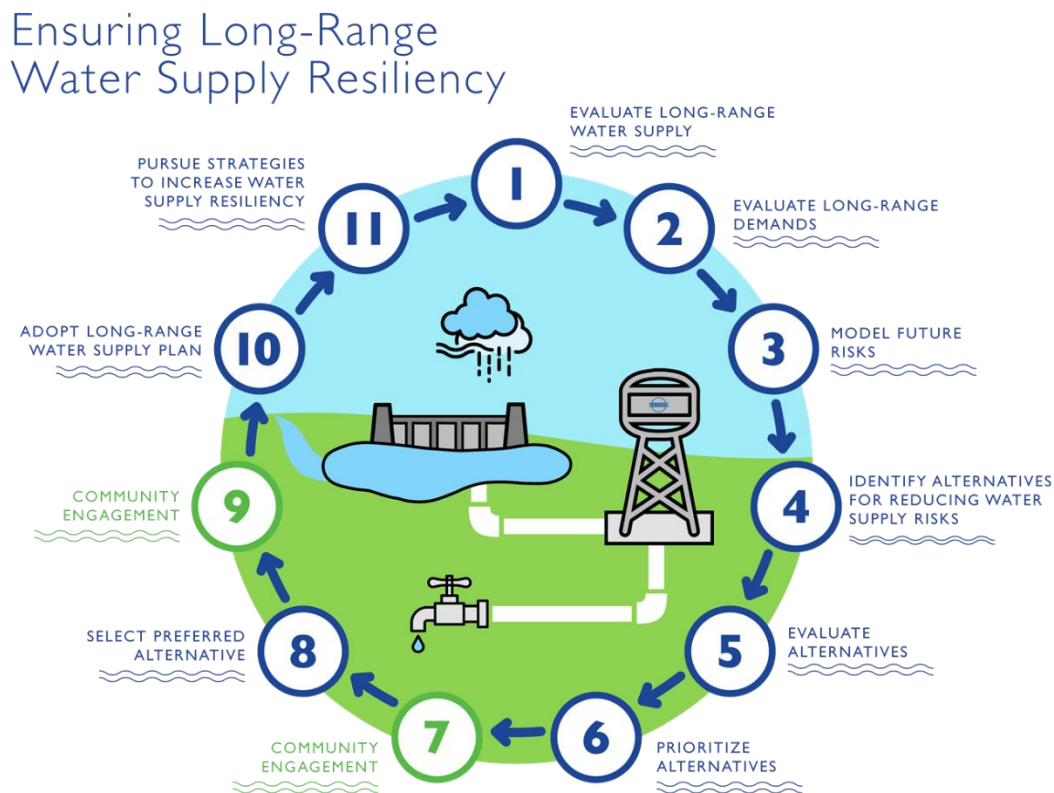
Why do we need to look out 50 years?

The planning, permitting, and partnerships required to develop new water supplies can take decades to develop and secure. Thus, it is common practice for water utilities to plan for water needs 30-50 years into the future, and even longer.

What are the key steps to develop the Long-Range Water Supply Plan?

Figure 1 illustrates the key steps to develop the LRWSP.

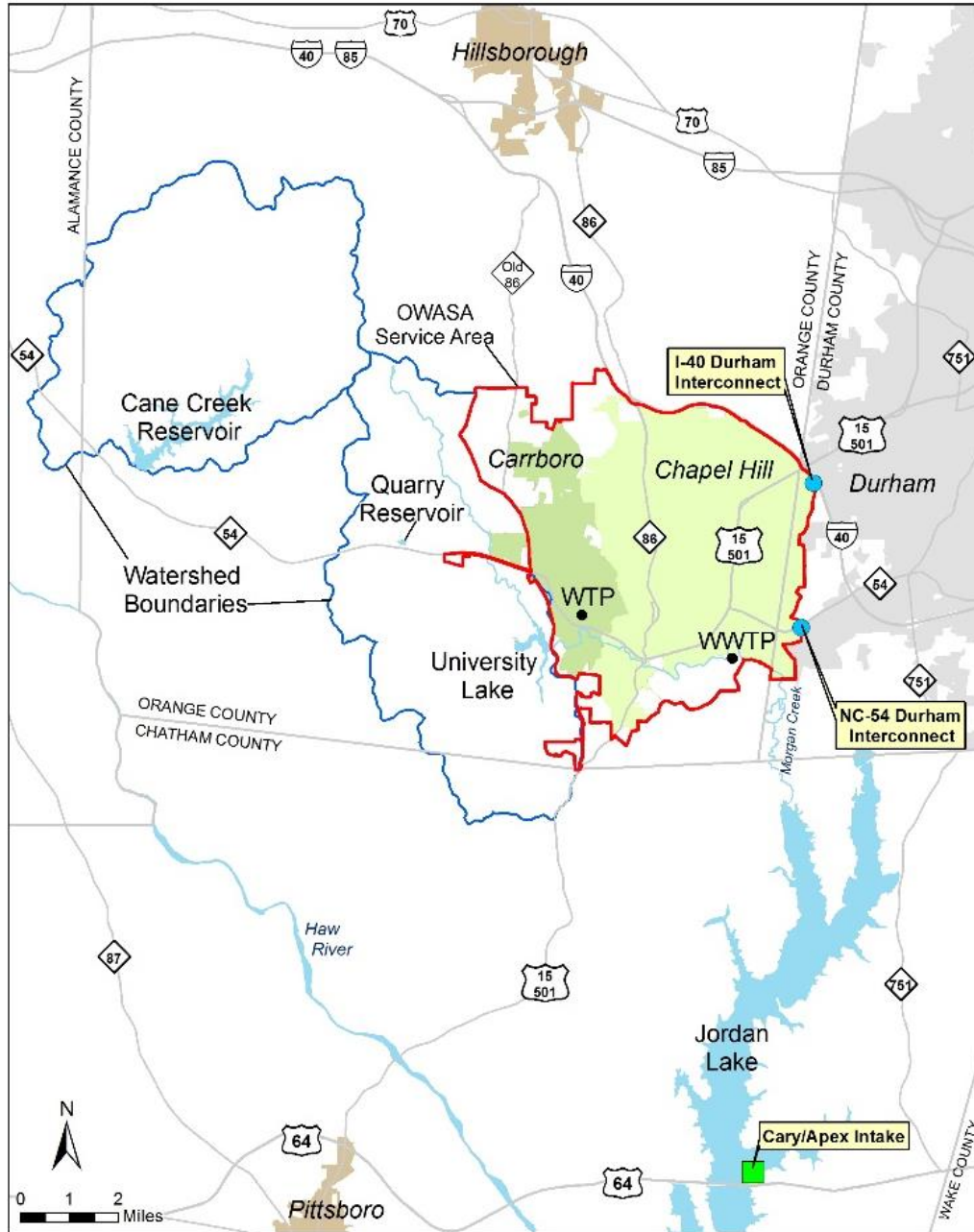
Figure 1: Long-Range Water Supply Planning Process



Where does OWASA currently get its water?

OWASA has three locally managed water supply sources including Cane Creek Reservoir, University Lake, and its Quarry Reservoir as illustrated in Figure 2. OWASA also has an allocation of 5 percent of Jordan Lake’s water supply pool which we can access on an emergency basis through our mutual aid agreements with the Town of Cary and City of Durham.

Figure 2: OWASA’s Water Supply Sources



How much water do we currently have?

OWASA’s three local reservoirs can provide approximately 10.5 million gallons per day (mgd) of water over the course of a year, assuming the drought-of-record. There are plans to expand our Quarry Reservoir, and when that expansion is completed in approximately 2035, we will have about 12.6 mgd of water. The blue line in Figure 3 illustrates the amount of water over time these local water supplies provide. We expect that our allocation from Jordan Lake can reliably provide approximately 5 mgd, but we do not have the infrastructure in place to access that water on a permanent basis and have no guaranteed access to it. Thus, our allocation of water is not included in the estimated yield line shown on Figure 3.

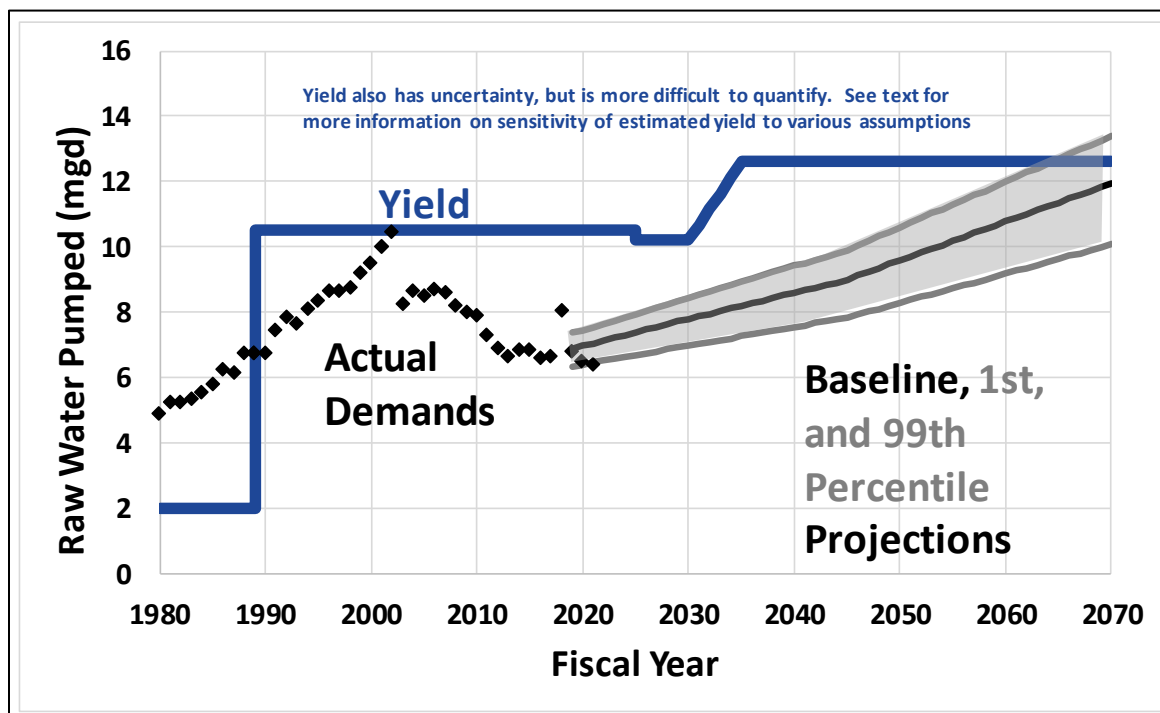
How much water do we currently use?

We currently use about 7 mgd of water on an annual average basis.

How much water will we need in the future?

Figure 3 illustrates the amount of water we can obtain from our existing water supplies and planned Quarry Reservoir expansion (shown by the increase in yield starting in 2030 on Figure 3) along with our 50-year estimated water demands. The figure shows that under most circumstances we have enough water to meet our needs for several decades.

Figure 3: The Yield of OWASA’s Water Supplies and Long-Term Water Demands



How did OWASA develop its water demand projections?

OWASA based its water demand projections on regional growth projections that were finalized in 2018 for the regional Metropolitan Transportation Plan that the Towns of Carrboro and Chapel

Hill and Orange County participated in. The transportation planning effort also included information obtained from UNC about its expected growth. This regional transportation planning effort used a model to estimate the number of new single family and multi-family dwelling units and non-residential square footage for 2045 and build-out conditions based on land use plans provided by the local governments. OWASA then applied water use factors estimated from billing data for each residential dwelling unit and each square foot of non-residential space. We assumed that build-out will occur in 2070. We tested this assumption and it appeared reasonable assuming a linear rate of growth. More details on the methods used to develop the water demands can be found in this [report](#).

OWASA recognizes that estimating water demands in 50 years has much uncertainty. Growth could occur faster or slower than anticipated, different types of growth could occur than anticipated (new large water user could move to area), our service area boundary could change, and water demands could change depending on behaviors and technology. Climate change could also impact the rate of growth (will people relocate from coastal areas to the Triangle?) and water use (will we use more water as temperatures rise?). Thus we included an uncertainty analysis in our demand projections as illustrated by the grey shading in Figure 3 (more information is [here](#)).

Is there also uncertainty in our yield estimates?

Yes. The following factors contribute to uncertainty in the yield estimates:

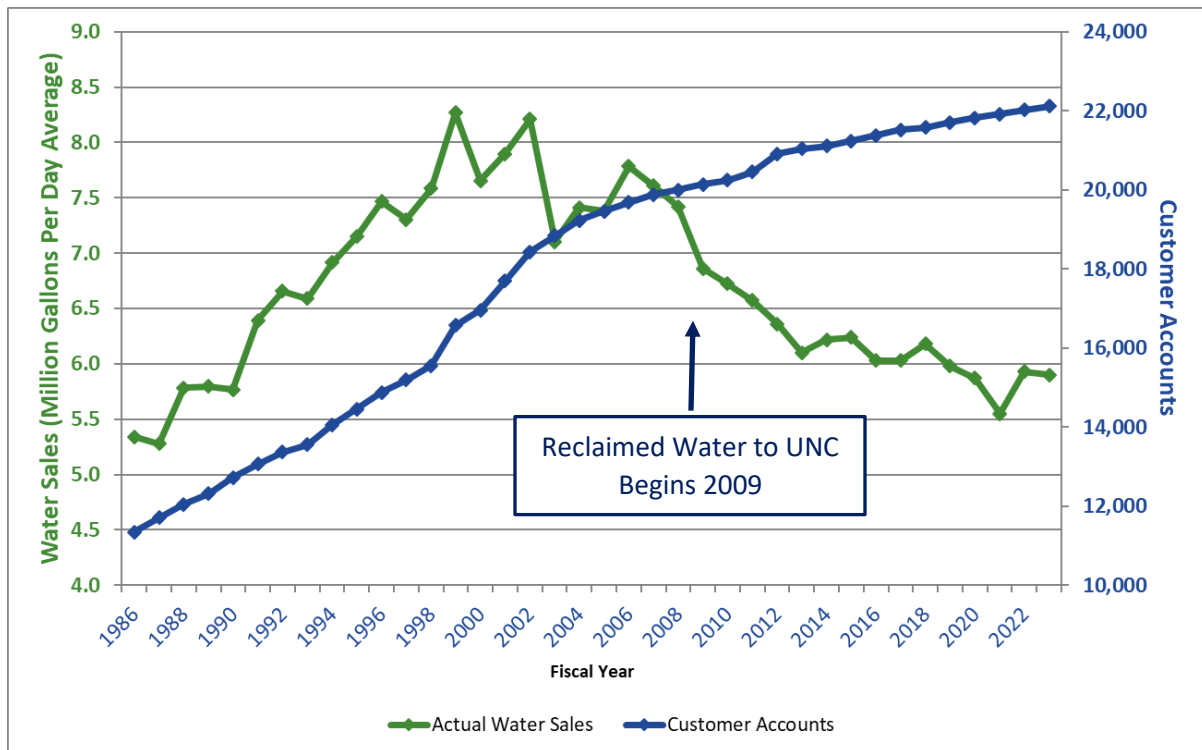
- Streamflow records – the stream flow records available to estimate the yield of our reservoirs have measurement errors and limited spatial and temporal extent. They may not be representative of long-term historical flows.
- Estimates in storage volume – potential errors in storage volume include (1) the accuracy of the original survey data, and (2) the rate of sedimentation into the reservoir
- Climate change – climate change will impact flows into our reservoirs and evaporation rates. The majority of climate change models indicate that the southeast will receive approximately the same or more rainfall on an average basis, but we will have more frequent high flow events. Some of those models also indicate there will be more intense droughts. The [North Carolina Climate Science Report](#) states that it is likely that future severe droughts will likely be more frequent and intense due to higher temperatures and their associated increase in evaporation. Thus OWASA wants to be prepared for when a new drought of record occurs.

Because of the difficulty in estimating uncertainty around climate change and the cost to develop an analysis similar to the one completed for the demand projections, OWASA opted not to perform a similar analysis for yield. However, our consultant did perform a sensitivity analysis around the inputs and noted that changing inflows to the reservoir have the highest impact on our estimated yield. Based on the sensitivity runs performed, OWASA's estimated yield after the expanded Quarry Reservoir is online could vary between 11.5 and 15 mgd (baseline estimated yield is 12.6 mgd).

What role does water conservation and water recycling and reuse play in our water needs?

Water conservation and recycling water have played a very important role in OWASA’s service area resulting in reduced drinking water demands and energy use. As illustrated in Figure 4, we are selling the same amount of water as in the early 1990s despite an increase of about 70 percent in customer accounts. Following the droughts of 2001-02 and 2007-08, our customers conserved water and have continued to save water. This is in part due to conservation-based rate structures implemented in 2002 and 2007. In addition, UNC partnered with us to develop a reclaimed water system that allows them to use highly treated wastewater to meet non-drinking water needs such as for cooling buildings and irrigation. Our reclaimed water system now meets over 10 percent of the community’s water needs. OWASA also developed a system to recycle water within its Jones Ferry Road WTP, which saves approximately 7 percent of our drinking water.

Figure 4: OWASA Water Sales and Customer Accounts



Our water demand projections assume that our customers will continue to look for ways to save water. We’ve assumed that conservation practices will continue to result in unit demands decreasing by 5 to 10 percent (factors varied depending on whether new/existing development and whether residential or commercial development) over the next 25 years.

Why do we need additional supplies or demand management strategies?

As seen in Figure 3, we will have plenty of water under most circumstances. However, we want to plan for an unclear future given the uncertainty in our demand projections, the uncertainty in the model used to estimate the reliable yield of our reservoirs, and the uncertainty of a changing

climate. We also need to be prepared to reliably meet demands should we have a major operational emergency at one of our water supplies.

While we have plenty of water under most circumstance, Cane Creek Reservoir is vulnerable to extended drought or back-to-back droughts. It was designed to maximize storage, which is generally good and provides us a higher yield. However, it has a relatively small drainage area for its storage volume and can take a long time to refill. Figure 5 illustrates the drainage area and storage for Cane Creek Reservoir and other water supply reservoirs in the Triangle region. University Lake refills quickly, but it does not hold enough water to meet our daily needs; Cane Creek Reservoir could take over a year to refill depending on weather conditions. When the expanded Quarry Reservoir is online in approximately 2035, this issue will be exacerbated. The small watershed area of Cane Creek Reservoir leaves our water supply susceptible for a period of time after a drought.

Having options to meet future needs helps ensure the reliability and resiliency of our water. Running out of water is not an option.

Figure 5: Cane Creek Reservoir (CCR) and Other Triangle Water Supply Reservoir Volume to Drainage Area Ratios

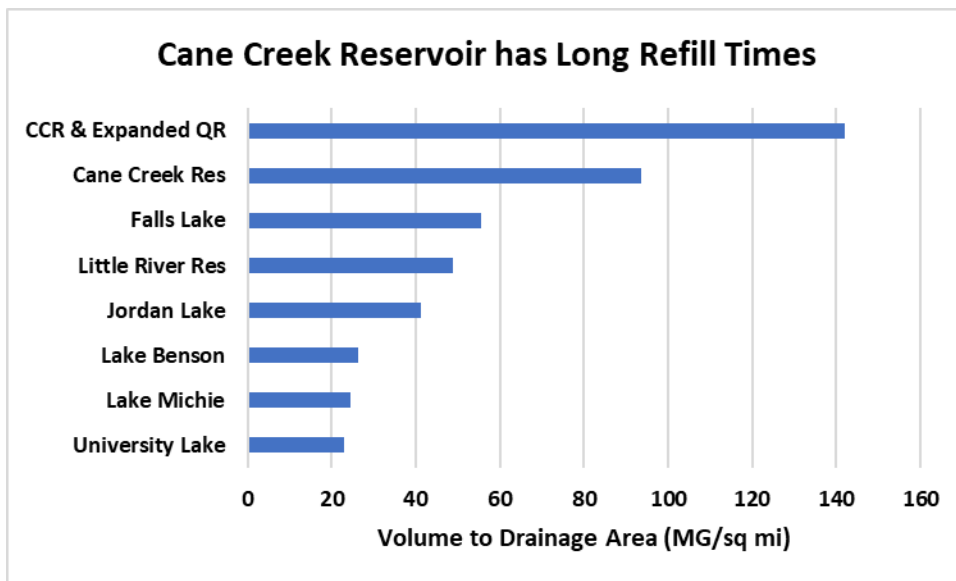


Figure 3 shows higher demands than yield in the 1980s. Did we run out of water then?

Before Cane Creek Reservoir came online in 1989, OWASA’s estimated yield was 2 mgd. This estimated yield is based on the drought of record, so years with higher flows than the drought of record would result in actual yields higher than 2 mgd and we would not have a water shortage. However, in the 1980s, we often had to impose mandatory restrictions on our customers, and we also had to purchase a lot of water from our neighboring utilities.

If we have an allocation of water from Jordan Lake, do we need additional supply?

We do have an allocation of water from Jordan Lake that is not accounted for in Figure 3. However, we do not have a method to access that allocation of water on a regular basis. We can use our mutual aid agreements with the Town of Cary and City of Durham to access it on an emergency basis. However, there could be constraints in infrastructure such as the capacity of the Cary-Apex water treatment plant or the interconnections between Cary and Durham. If capacity constraints would jeopardize their water customers or other regional utilities, OWASA's request for water could be denied under the current agreements. If we had guaranteed access to Jordan Lake, we would not need to find an alternative supply.

Are there opportunities to work on water supply more cost-effectively with our neighboring utilities?

Yes. OWASA and other utilities in the Triangle have a history of working proactively to plan for regional water supply and emergencies. OWASA and twelve other local governments worked collaboratively through the Jordan Lake Partnership to develop the Triangle Regional Water Supply Plan which identified supplies to meet the region's needs through 2060. This Partnership has been reformed as the Triangle Water Supply Partnership (TWP). The TWP is currently updating an interconnection model that is being used to plan for water emergencies such as water treatment plants being offline. The TWP also plans to update the Regional Water Supply Plan in the next decade.

A subset of these Partners have been working together to develop a new water supply intake and treatment facility on the western side of Jordan Lake. The City of Durham, Chatham County, and the Town of Pittsboro have formed the Western Intake Partnership (WIP) and are funding studies to plan, design, permit, and construct a new intake, treatment plant, and transmission facilities on the west side of Jordan Lake. OWASA has been attending meetings, but to date has not participated financially. As part of this LRWSP process, OWASA evaluated different ways of partnering with the WIP. Based on that evaluation, the Board of Directors has determined that OWASA will participate in the permitting, preliminary design of the intake and transmission routes, and the governance planning projects and begin to participate financially in the WIP beginning in July 2022.

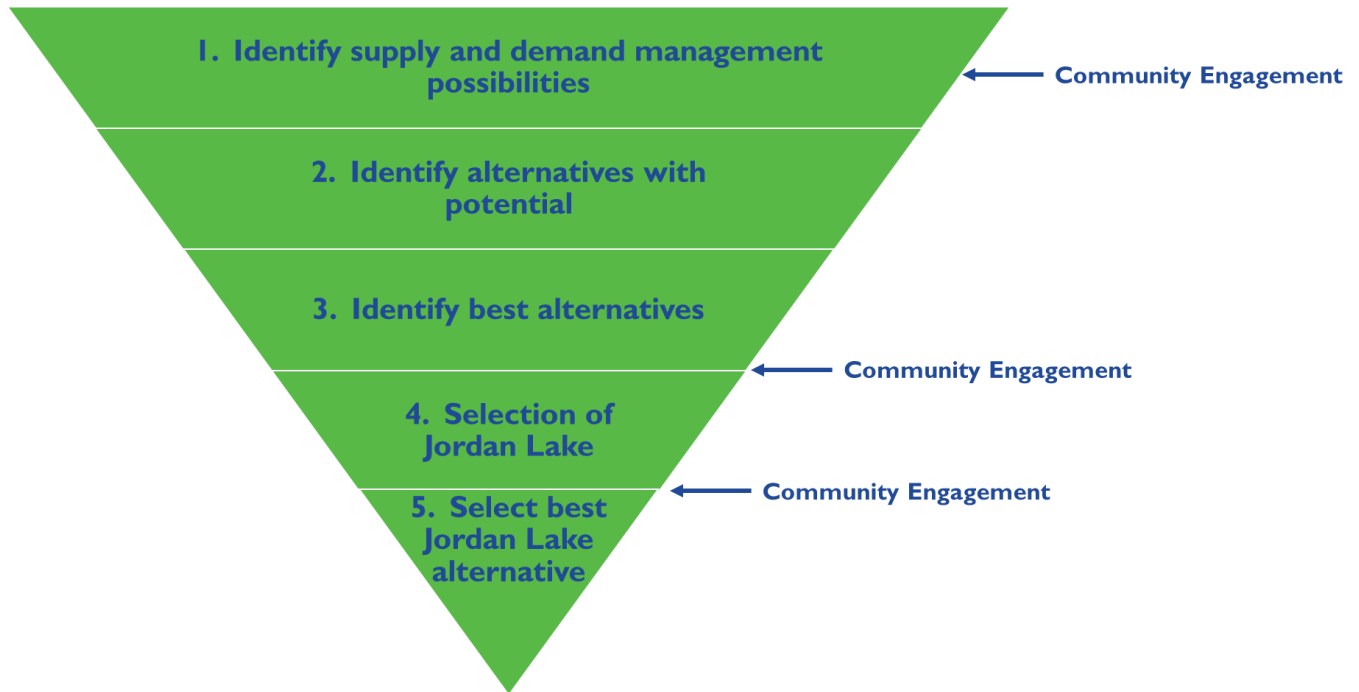
What are supply and demand management strategies?

Supply-side options are strategies which increase the total reliable yield of our water supply system. In other words, they would raise the blue line shown in Figure 3. Demand management options are strategies which reduce raw water demands from existing and/or new development or lower the black line shown in Figure 3.

What process did OWASA use to identify and evaluate supply and demand management alternatives?

OWASA used the process summarized in Figure 6 to identify and eliminate supply and demand side alternatives. Each of the steps illustrated in Figure 6 is described in the text below.

Figure 6: Process to Identify and Eliminate Supply and Demand Management Alternatives



Step 1: Identify supply and demand management possibilities

OWASA met with local government planners and UNC, obtained input from Board members and neighboring utilities, and reviewed existing plans and documents to identify potential alternatives to meet our long-term needs through 2070. Participants in meetings were asked to provide all their ideas and not to worry about any constraints that may impede their implementation. The goal of this step was to identify any demand management or supply alternative that may be feasible.

Step 2: Identify alternatives with potential

During this step, OWASA staff prescreened the various alternatives against the following criteria:

- Potential water provided or saved by the alternative
- Relative cost of the alternative
- Ease of implementation

Based on this analysis, OWASA identified nine supply alternatives that fell in 3 major categories:

1. Jordan Lake alternatives (4 alternatives)
2. Quarry Reservoir (2 alternatives)

3. Indirect and direct potable reuse (3 alternatives)

The four Jordan Lake alternatives are summarized below:

- **Alternative 1 – Full Partner in New Intake and Water Treatment Plant (WTP) on Western Side of Jordan Lake** – OWASA would partner with the Western Intake Partners (currently City of Durham, Town of Pittsboro, and Chatham County) on a new water supply intake, water treatment plant, and major transmission infrastructure on the western side of Jordan Lake.
- **Alternative 2 – Continue with Mutual Aid Agreements** - This is our existing baseline condition. Under this alternative, OWASA would access its Jordan Lake allocation using its mutual aid agreements with the Town of Cary and City of Durham. This alternative does not guarantee access to our allocation.
- **Alternative 3 – Develop New Agreement with Towns of Cary and Apex to Guarantee Access to Jordan Lake Water** – The Towns of Cary and Apex jointly own the only water supply intake on Jordan Lake and share a water treatment plant. Under this alternative, OWASA would develop a new agreement with the Towns to guarantee withdrawal and treatment of a certain amount of water on an annual basis.
- **Alternative 4 – Develop Agreement with Western Intake Partners to Guarantee Access to Jordan Lake Water** – OWASA would develop an agreement with the Western Intake Partners to guarantee capacity in the proposed intake and water treatment plant on the western side of Jordan Lake. This agreement would guarantee a certain amount of water on an annual basis in return for payment from OWASA.

Two Quarry Reservoir supply alternatives were evaluated:

- **Alternative 5 – Shallow Quarry** – access with existing pumping infrastructure. This is the alternative selected in the 2010 LRWSP and considered the future baseline alternative. The yield from the expanded Quarry Reservoir is included on Figure 3.
- **Alternative 6 – Deep Quarry** – deeper quarry depths would be accessed with new pumping infrastructure when the expanded Quarry Reservoir is online.

OWASA evaluated the use of reclaimed water (highly treated wastewater) for drinking (potable) water uses. As used in our LRWSP, indirect potable reuse involves mixing reclaimed water in an environmental buffer prior to being treated at the Jones Ferry Road WTP; direct potable reuse involves further treating the reclaimed water at the Mason Farm Wastewater Treatment Plant (WWTP) and then pumping it directly into our water distribution system. Potable reuse alternatives evaluated are summarized below:

- **Alternative 7a: Indirect Potable Reuse with Pretreatment Mixing Basin near Quarry Reservoir** – this alternative was developed to meet the requirements of a general statute which allows for indirect potable reuse mixed at specified ratios with another source water in an engineered pretreatment mixing basin. Reclaimed water from the

Mason Farm WWTP would be pumped to a new pretreatment mixing basin near the Quarry Reservoir. This water would be mixed with water from Cane Creek Reservoir in accordance with the statute.

- **Alternative 7b: Indirect Potable Reuse with Return to Quarry Reservoir** – This alternative is similar to Alternative 7a, but water from the Mason Farm WWTP is pumped to the Quarry Reservoir rather than a new pretreatment mixing basin.
- **Alternative 8: Indirect Potable Reuse with Return to University Lake** – Reclaimed water from the Mason Farm WWTP is returned to University Lake.
- **Alternative 9: Direct Potable Reuse** – Under this alternative, additional treatment would be constructed at the Mason Farm WWTP and treated water would then be pumped directly to our distribution system. Two methods of treating the reclaimed water were identified: (1) use of carbon (generally preferred since typically lower capital and operating/maintenance costs) and (2) reverse osmosis – may be required to removed total dissolved solids.

OWASA considered four main demand management alternatives. Three of these alternatives involve the use of reclaimed water and one is a series of programmatic demand management strategies that collectively had the potential to reduce water demand to a degree that could delay the need for additional supply.

- **Alternative 10: Reclaimed Water to UNC Cogeneration Facilities** – This alternative involves the installation, operation and maintenance of new infrastructure that would enable UNC to use RCW instead of drinking water at its Cogeneration Facility.
- **Alternative 11: Expanded Reclaimed Water Use at UNC Main Campus** – This alternative involves expanding the use of reclaimed water on UNC’s campus to meet certain non-drinking water demands in new buildings envisioned in the University’s recently updated Master Plan.
- **Alternative 12: Onsite Wastewater Treatment and Reuse** – This alternative evaluated the use of reclaimed water systems to meet non-drinking water needs at the building or major development scale.
- **Alternative 13: Programmatic Demand Management Strategies** – Four alternatives were evaluated:
 - **Alternative 13a: Unit Submetering and WaterSense Installation** – Multi-family development is projected to be a significant area of water use growth in our service area. Sub-metering will help to ensure that the users of water within those developments are aware of the amount of water they use. This strategy was coupled with a requirement for developers to use high efficiency WaterSense fixtures.

- **Alternative 13b: Water Efficiency Design Assistance and Conservation-Oriented System Development Fee** – Under this alternative, OWASA would provide individualized design review assistance for new development. This service would be complemented with a system development fee that further incentivizes efficiency beyond our current fee structure. Rather than a regulatory requirement, this alternative would act more as a customer service enhancement to encourage more efficient development.
- **Alternative 13c: On-bill Financing for Water Efficient Fixtures** – Older homes may have inefficient water fixtures, which became a requirement in 1994. Under this alternative, OWASA would loan a customer money to replace older fixtures, and the loan is paid back through an on-bill financing program.
- **Alternative 13d: Minimize Need for System Flushing for Water Quality Purposes** – OWASA flushes its water lines to maintain high levels of water quality. There are some regions in the system where low water flow results in “stale” water (dead end lines) that require more frequent flushing. Under this alternative, OWASA would loop lines to remove dead end areas.

Step 3: Identify best alternatives

During this step, OWASA evaluated the 13 alternatives against the three pillars of sustainability: social performance, environmental performance, and financial performance. Generally, these goals included the following criteria:

- **Social** – the social impacts include whether the source meets our long-term water supply needs; the impact on the diversity of our water supply; permit requirements and legality; whether the alternative requires a partnership; and impacts on the community during construction or operation of the source.
- **Environmental** – this includes impacts on energy use, greenhouse gas emissions, and streams and wetlands. In general, the greater the amount of new infrastructure needed, the greater the impacts. However, in order to permit any of the alternatives, many of the impacts would need to be minimized through planning and design and then mitigated.
- **Financial** – staff evaluated the capital costs in 2020 dollars and the life cycle costs (capital and operating/maintenance costs) of each alternative.

Based on this evaluation against the pillars of sustainability, the Board directed staff to continue to evaluate alternatives to access our Jordan Lake allocation. The Board also directed staff to complete the first round of community engagement. Based on the alternatives analysis described above and feedback from the community, OWASA selected the following alternatives to evaluate in the next step:

- **SQ: Status Quo** - Continue with mutual aid agreements and plans to access expanded Quarry Reservoir with existing pumping infrastructure (down 100 feet).

- **JL-P: Partner in new intake and WTP on Jordan Lake** at Phase 1 capacity of 0.5 mgd and Phase 2 capacity of 2 mgd.
- **JL-A: Agreement with Western Intake Partners (WIP)** to invest in a long-term option to join the WIP as a partner in Phase 2 with payments also serving as an option fee that would give OWASA the right to request water transfers from the WIP during Phase 1 under specified conditions such as drought. (Phase 1 facilities will be online in about 2031 and Phase 2 facilities will be available in about 2050).
- **DQ: Deep Quarry** - access deeper depths of expanded Quarry Reservoir with new pumping and transmission infrastructure.
- **DPR: Direct Potable Reuse** returning additionally treated wastewater from Mason Farm WWTP to the drinking water distribution system.

Step 4: Selection of Jordan Lake

Based on feedback received from the community, OWASA developed and ranked guiding principles to evaluate the five best alternatives against:

1. We will continue to provide the community with high-quality treated drinking water that meets or surpasses federal and state public health requirements regardless of the source(s) of supply. Any supply alternative that cannot meet this guiding principle will be eliminated from further consideration.
2. We will consider the following factors for each supply option:
 - a. Highest Priority
 - i. ability to reduce our vulnerability to extended drought conditions
 - ii. ability to improve the reliability and resiliency of our water supply including addressing single points of failure;
 - iii. impact on current rates.
 - b. High Priority
 - i. impact on future rates;
 - ii. incremental long-term impacts on the environment from operation of the infrastructure needed to support the water supply;
 - iii. incremental impacts on the community from OWASA's participation in the construction and operation of the water supply source including impacts to landowners, recreation, and transportation;
 - iv. flexibility to change course as we learn more about future customer demands, growth, climate impacts, and other uncertainties.

c. Other Considerations

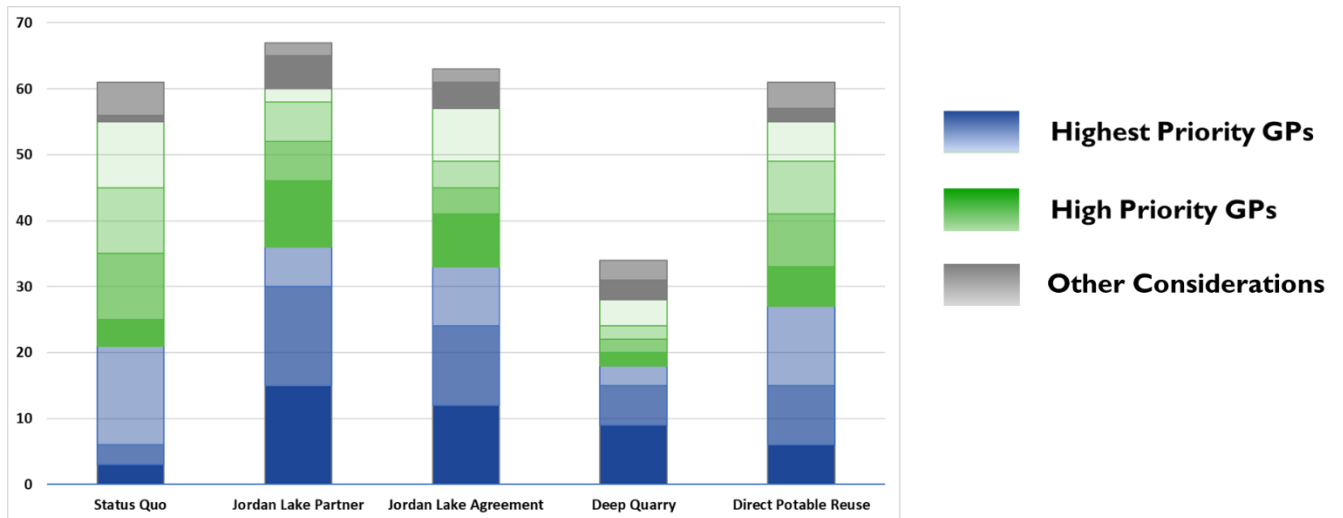
- i. support for regional water supply planning efforts, recognizing that we rely on neighboring water utilities to supply water during our occasional planned and unplanned interruptions to water supply;
- ii. incremental short-term impacts on the environment from development of the water supply and construction of the associated infrastructure including temporary impacts to streams, wetlands, aquatic and terrestrial habitat, and other environmental considerations.

Each of the five alternatives identified in Step 3 were evaluated against the guiding principles. The guiding principles were weighted as follows:

- Highest priority guiding principles – assigned a weight of 3
- High priority guiding principles – assigned a weight of 2
- Other considerations – assigned a weight of 1

The weighted results are illustrated in Figure 7. As illustrated in Figure 7, the two Jordan Lake alternatives scored highest overall and when looking only at the highest priority guiding principles (level of the stacked blue bars in Figure 7).

Figure 7: Results of Alternatives Evaluated Against Guiding Principles Using Weighted Scoring



Step 5: Select preferred alternative to access Jordan Lake allocation

After the Board of Directors identified Jordan Lake as the preferred alternative to augment our current water supply sources, staff held a second round of community engagement to provide information to the community on the process to come to that decision and to learn if there was widespread resistance to OWASA’s use of Jordan Lake. Outreach included activities to hear from the general public; targeted outreach to specific community groups such as local advisory

Boards and local elected bodies for Orange County, Town of Carrboro, and Town of Chapel Hill; and an interactive presentation to the Youth Water Academy and interested students at Chapel Hill High School's Tigerfest where students played the role of the OWASA Board of Directors to choose our next supply.

Overall, the community was glad that OWASA was proactively planning for future water supplies, addressing drought, and reaching out to provide information to them. The comments heard from the community reflected the highest and high priority guiding principles established by the Board of Directors and described above.

- Drinking water quality – people did express some concern over compounds of emerging concern, but these were largely allayed by fact that a new treatment plant on Jordan Lake would be designed to remove them. There was also a perception in the community that OWASA provides higher quality water to its customers than our neighboring utilities. Staff responded by stating that other communities also provide high quality drinking water, but the community seemed to want OWASA to have input on how a new intake and treatment plant were designed and operated.
- Reducing vulnerability to drought and improving water supply reliability and resiliency – commenters appreciated that we were proactively planning and some were happy that OWASA was finally securing access to Jordan Lake although there was a small group of people who were opposed to the use of Jordan Lake as a drinking water supply.
- Impact on rates – many commented that it was important to note that OWASA does not need water from Jordan Lake on a regular basis at this point in time and it was important to balance the financial costs with the benefits accessing Jordan Lake provides.

The Board of Directors authorized staff to evaluate three Jordan Lake alternatives:

- **JL-A: Agreement with WIP** to invest in a long-term option to join the WIP as a partner in Phase 2 with payments also serving as an option fee that would give OWASA the right to request water transfers from the WIP during Phase 1 under specified conditions such as drought.
- **JL-P-All: Partner in new intake, water treatment plant (WTP), and transmission infrastructure.** For purposes of comparison to the partner alternative in intake and infrastructure described immediately below, we assume that this option will enable OWASA to obtain its full allocation of water in Phase 1 (approximately 5 mgd on average day basis).
- **JL-P-Intake_Trans: Partner in new intake and transmission infrastructure** that would enable OWASA to withdraw and transfer its full allocation of water during Phase 1 (approximately 5 mgd on average day basis).

The Board of Directors agreed upon the following list of criteria to evaluate the three alternatives against:

Criteria reflecting water supply risk:

- Ability for OWASA to have access to its Jordan Lake allocation at any time
- Ability for OWASA to maintain its allocation of Jordan Lake water
- Likelihood that the water treatment plant, intake, and transmission infrastructure are built to meet OWASA’s future demands
- Likelihood that corporate structure and agreements developed for the alternative will match the goals set by the OWASA Board

Criteria reflecting financial impacts:

- Capital and net present cost through 2050
- Impact on rates through 2030

Criteria reflecting community input:

- Feedback from the community –We did not explicitly ask the community to rate these three alternatives, but comments made during the engagement process touch on the other evaluation criteria as described above.

Table 1 summarizes how the three alternatives rank against one another from the risk and cost evaluation criteria.

Table 1: Summary of the Three Jordan Lake Alternatives Against the Evaluation Criteria

	Risk				Cost		
	Access to JL Allocation at any time	Maintain JL Allocation	Water Treatment Plant, Intake & Transmission meet OWASA needs	Governance and Agreement match Goals	Capital Cost through 2050	Net Present Cost through 2050	Impact on Rates through 2030
JL-A	Yellow	Light Green	Yellow	Yellow	Dark Green	Dark Green	Dark Green
JL-P-All	Dark Green	Dark Green	Dark Green	Dark Green	Light Green	Light Green	Light Green
JL-P-Intake_Trans	Light Green	Dark Green	Light Green	Dark Green	Light Green	Light Green	Light Green

Darker shades of green indicate better alignment with criteria.
 Yellow indicates that an alternative may not meet the criteria.

Based on the evaluation, the Board of Directors selected alternative JL-P-Intake_Trans as the preferred alternative to include in this LRWSP. They made this decision based on the following reasons:

- Balances addressing water supply risk with the impact on rates
- Secures our Jordan Lake allocation for future rounds by investing in infrastructure
- Enables OWASA to access its allocation of water in Jordan Lake when it is needed
- Provides OWASA with more say in how the infrastructure is designed and operated than in the Agreement alternative

The Board of Directors did note that there is a lot of uncertainty associated with each of these Jordan Lake alternatives. They noted that they could decide to pursue an Agreement if OWASA's share in the cost of the infrastructure ended up being too high for our risk or if we could not negotiate an arrangement with the other Western Intake Partners that meets OWASA's needs and goals.

What are OWASA's next steps?

OWASA's next steps are as follows:

- OWASA staff and general council will work with the Western Intake Partners on a draft Memorandum of Understanding (MOU) that summarizes the governance structure of the Partnership and items that must be addressed in a future interlocal agreement (ILA).
- The Board of Directors approves the MOU.
- OWASA staff and general counsel work with the Western Intake Partners to draft an ILA based on the MOU.
- The Board of Directors approves the ILA.
- The Board of Directors will approve budget items related to OWASA's participation in the Western Intake Partnership's studies and capital investments on an annual basis.

When will the LRWSP be updated again?

The Plan will be updated if and when major changes in assumptions and conditions occur, such as if water demands increase at a much faster pace than projected, or the anticipated cost, complexity, and feasibility of a supply option changes considerably. At a minimum, the water demand projections will be updated at least every ten years.

Uncertainties that could impact the LRWSP and the timeline to update it include:

- Rate of population and employment growth
- The cost to implement the Jordan Lake alternative becomes too high to warrant the investment to meet long-term demands and address our drought vulnerability
- Adoption of water conservation and efficiency practices which reduce our demands

- Regulatory changes that may impact the feasibility of a given water supply option or result in change in our water supply demands
- Technology changes that may impact the feasibility of a given water supply option
- Declining source yields due to new drought of record, greater risk due to projected effects of climate change, or findings of studies which indicate that our reservoirs are silting in faster than anticipated

Resolution Adjusting the Executive Director's Compensation

Whereas, the Board of Directors has reviewed the Executive Director's Accomplishment Report and overall performance for the period June 2021 to May 2022; and

Whereas, the Board of Directors has met with the Executive Director to discuss his performance review; and

Whereas, the Board of Directors has determined to adjust the Executive Director's compensation as provided herein:

Now, Therefore, Be It Resolved by the Board of Directors of Orange Water and Sewer Authority:


1. That the Executive Director's annual base salary is hereby increased by 8.35%.
2. This increase shall be effective the first pay period in July 2022.

Adopted this 14th day of July 2022.



Bruce Boehm, Chair

ATTEST:



Raymond E. DuBose, P.E., Secretary

Resolution Approving the Elimination of Account Delinquency Fee

Whereas, access to clean drinking water is fundamental to the health of a household and the quality of life of the residents therein; and

Whereas, OWASA is committed to protecting the health of the Chapel Hill and Carrboro community; and

Whereas, approximately 20% of households in Chapel Hill and Carrboro are estimated to have incomes below \$25,000; and

Whereas, the monthly bill for 4,000 gallons of water and sewer service from OWASA will increase to \$92.17 in October 2022, which represents over 4% of household income for those making \$25,000 per year; and

Whereas, the account delinquency fee, on average, increases the cost-of-service reconnection for non-payment by about 52% and can serve as a financial barrier to service reconnection; and

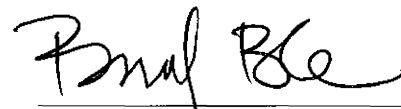
Whereas, the elimination of the account delinquency fee will help a customer more easily pay their next month's bill; and

Whereas, the elimination of revenue collected from account delinquency fees will have a negligible impact on bills for other OWASA customers:

Now, Therefore, Be It Resolved by the Orange Water and Sewer Authority Board of Directors:

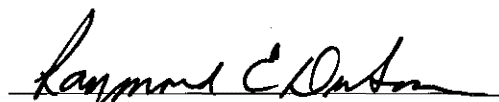
1. That OWASA will eliminate its account delinquency fee charged to customers for reconnection of service after disconnection due to non-payment.
2. That this resolution be recorded in the minutes of the OWASA Board of Directors and part of the permanent records of OWASA.

Adopted this 14th day of July 2022.



Bruce Boehm, Chair

ATTEST:



Raymond E. DuBose, P.E., Secretary