COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of

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| *Electronic* Application of Bluegrass Water Utility Operating Company, LLC for an Adjustment of Rates and Approval of Construction | ) | Case No. 2020-00290 |

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**Direct Testimony of Josiah Cox**

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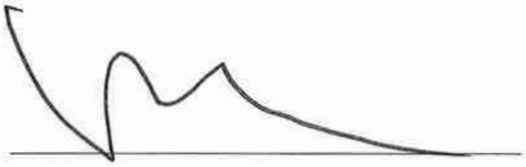
STATE OF MISSOURI
COUNTY OF ST. LOUIS

I, Josiah Cox, being duly sworn, state that the attached is my Direct Testimony in the above styled matter, that I would respond in the same manner to the questions if so asked upon taking the stand, and that my testimony is true and correct to the best of my knowledge, information, and belief formed after reasonable inquiry.



Josiah Cox

Subscribed and sworn to this 28th day of September 2020, before me, a Notary Public in and before said County and State.

DANIEL RYAN JANOWIAK
Notary Public, Notary Seal
State of Missouri
St. Charles County
Commission # 20374795
My Commission Expires 05-04-2024

Notary Public

(SEAL)

My Commission Expires: 5/4/24

**Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

A. My name is Josiah Cox. My business address is 1650 Des Peres Road, Suite 303, St. Louis Missouri, 63131.

**Q. WHAT IS YOUR POSITION WITH BLUEGRASS WATER UTILITY OPERATING COMPANY?**

A. I am President of Bluegrass Water Utility Operating Company ("Bluegrass" or "Company"). I also am President of CSWR, LLC, ("CSWR") and Central States Water Resources, Inc., ("Central States"), each of which is a Bluegrass affiliate. Bluegrass, CSWR, and Central States are part of an affiliated group of companies that provide water or wastewater utility services to more than 40,000 customers in Kentucky, Missouri, Arkansas, Texas, and Louisiana. We have applications pending in Kentucky, Missouri, Texas, Tennessee, and Louisiana seeking authorization from utility regulators in those states to acquire even more systems and customers and expect to imminently file applications seeking similar authority in North Carolina and Mississippi.

**Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?**

A. Yes, in 2019 I provided hearing testimony in Case No. 2019-00104, the first acquisition case filed by Bluegrass. In addition, I have provided the sworn verification for Bluegrass on each of the four acquisition/initial utility operations applications it has filed (Case Nos. 2019-00104, 2019-00360, 2020-00028, and 2020-00297). I also was the listed witness for responses to data requests by Commission Staff and the Attorney General's office in the two 2019 cases.

**Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL EXPERIENCE.**

A. I received a Bachelor of Science with a major in Environmental Science from the University of Kansas. In 2007, I earned an MBA from Washington University in St. Louis.

Professionally, I have worked at the Kansas state biological survey, where I performed wildlife habitat studies. I then worked at a civil engineering firm where I was involved in various facets of the land development process including permitting, entitlement, civil design, project management, and construction management. I focused mainly on the water and wastewater side of the civil engineering business and participated in every part of that business from waste-load allocation studies (now known as the anti-degradation processes), design, permitting, project management, and construction management. I also ran the firm's environmental consulting division and was the second private consultant to submit a water quality impact study in the state of Missouri in 2003. I joined the engineering firm's executive leadership team and helped run all the firm's operations.

Beginning in 2005, I raised money from a group of investors and formed a full-service civil engineering, environmental consulting, general contracting, and construction management firm. I served the firm as the Chief Operating Officer, and finally Chief Executive Officer, and while there I obtained extensive experience with rural communities in every facet of the water and wastewater compliance process, including environmental assessment, permitting, design, construction, operation and community administration of the actual water and wastewater (sewerage) systems. The firm performed stream sampling and built waste-load allocation models to determine receiving water-body protective permit-able effluent pollutant loads. The firm did full engineering design of multiple whole

community wastewater and water infrastructure systems including wells, water distribution, water treatment, water storage, wastewater conveyance, and wastewater treatment plants and taken these designs through federal and state administered permitting processes in Missouri, and administered the construction of these water and wastewater systems from green field site selection all the way through system startup and final engineering sign off.

In addition to running a design/build firm, starting in 2008, I took over the operations of an existing rural sewer district. I still act as the administrator of this system, where I manage the system's functioning, testing, maintenance, performing all the billing, emergency response, accounts payable/accounts receivable, collections, budgeting, customer service, and public meetings required to service the community.

In late 2010, after working on several small, failing water and wastewater systems, I created a business plan to acquire and recapitalize failing systems as investor-owned regulated water and wastewater utility companies. In early 2011, I went to the capital markets to raise money to implement my plan. Over a period of approximately three years, I met with over fifty-two infrastructure investment groups trying to raise necessary financing. In February 2014, I achieved my goal, and I used the debt and equity capital I was able to raise to start CSWR. In 2018, I was able to attract an additional large institutional private equity investor, which allowed me to expand the scope of my business plan. Since its formation, CSWR has acquired, and currently is operating through various affiliates, 257 water and/or wastewater systems in Missouri, Kentucky, Louisiana, and Arkansas. In Missouri, those systems are regulated by the Missouri Public Service

Commission, in Kentucky they are regulated by the Kentucky Public Service Commission, in Louisiana they are regulated by the Louisiana Public Service Commission and in Arkansas, the systems are outside the Arkansas Public Service Commission's jurisdiction due to annual revenue thresholds.

CSWR's affiliate in Tennessee was recent approved by the Tennessee Public Utilities Commission to acquire a water and wastewater system with more acquisition applications to follow in short order. Another CSWR affiliate was also recently approved by the Texas Public Utilities Commission to purchase a number of water and wastewater systems with numerous acquisition application cases currently pending before the Texas Public Utilities Commission.

**Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THIS CASE?**

A. The purpose of my direct testimony is threefold. First, I will describe Bluegrass's operations in Kentucky, including our proposal to acquire additional systems which is the subject of Commission Case No. 2020-0297. Second, I will describe improvements Bluegrass has made to the systems we currently own and operate and will explain how those improvements contribute to our objective of providing safe and reliable service to customers. Finally, I will describe at a high level our request for an increase in rates, why that increase is necessary, and why the Commission should grant that request and also authorize Bluegrass to unify rates over all its Kentucky operations.

## I. DESCRIPTION OF BLUEGRASS'S OPERATIONS

**Q. PLEASE DESCRIBE BLUEGRASS'S CURRENT OPERATIONS IN KENTUCKY.**

A. As a result of acquisition transactions previously approved by the Commission (Case Nos. 2019-00104 and 2019-00360) and closed subsequent to those approvals, Bluegrass currently operates wastewater systems that serve approximately 1,661 customers and a single water system, Center Ridge, that serves approximately 336 customers. In Case No. 2020-0028, the Commission authorized Bluegrass to acquire the assets of Arcadia Pines Sewer Association/Heartland Manufactured Homes, Carriage Park Neighborhood Association, Marshall Ridge Sewer Association, and Randview Septic Corporation. Those transactions are expected to close in October 2020, and when they do the acquired systems will add approximately 157 wastewater customers.

**Q. DOES BLUEGRASS PROPOSE TO ACQUIRE ADDITIONAL SYSTEMS IN KENTUCKY?**

A. Yes. On September 16, 2020, Bluegrass filed an application seeking Commission authority to acquire the assets of Delaplain Disposal Company, Herrington Haven Wastewater Company, Springcrest Sewer Company, and Woodland Acres Utilities. If the Commission approves that application, those transactions would add approximately 464 wastewater customers or wastewater-equivalent commercial customers, bringing the total number wastewater customers served by Bluegrass to approximately 2,500. A map showing the location of all systems we currently own and operate or plan to acquire in the future is attached to the testimony of Bluegrass witness Todd Thomas as Exhibit TT-1.

## II. IMPROVEMENTS ALREADY MADE TO THE BLUEGRASS SYSTEMS

**Q. HAS BLUEGRASS MADE IMPROVEMENTS TO SYSTEMS IT CURRENTLY OWNS AND OPERATES IN KENTUCKY?**

A. Yes. Since Bluegrass acquired its first Kentucky systems, the Company has made significant improvements in its wastewater treatment and collection and treatment systems and drinking water distribution and supply systems to bring them into compliance with federal and state environmental and health regulations, improve the performance and efficiency of those systems, and ensure customers receive safe and reliable service.

When I testified in our initial acquisition case (Case No. 2019-00104), I explained our business plan for Kentucky. First, Bluegrass would identify and acquire small, oftentimes distressed, water and wastewater systems that lacked access to necessary capital resources and could benefit from the managerial and technical expertise of Central States and its affiliates. Second, we would invest capital necessary to bring those systems into full compliance with applicable federal and state laws and regulations and install management systems and personnel to ensure the systems are properly and efficiently operated day-to-day. Finally, we would take additional steps necessary to ensure our customers receive safe and reliable service. As explained elsewhere in this section of my testimony, I believe we already have successfully executed a substantial portion of that business plan, and with the rate support we seek in this case, will complete the remaining portions in the very near future, which should greatly benefit our customers. The rate support will also allow Bluegrass to continue investing in similar utilities across the state of Kentucky.

In addition to the system-specific photographs I have included in the testimony that follows, Bluegrass has prepared a video showing the condition of some of the Kentucky systems the Company acquired as of the acquisition date. This video can be viewed at the following link: https://vimeo.com/462827341/7bb69431a3

## A. Airview

**Q. PLEASE DESCRIBE THE CONDITION OF THE AIRVIEW SYSTEM WHEN ACQUIRED BY BLUEGRASS.**

A. The Airview wastewater treatment facility is an extended aeration package plant with a now inactive single polishing cell lagoon located in Hardin County. At acquisition, the plant was in poor condition, showing clear signs the previous owner had failed to properly operate or reinvest in the plant and facilities. At one point, the previous owner had attempted to formally abandon the property, which clearly showed upon inspection. The facility regularly exceeded prescribed limits for a host of substances, including total residual chlorine, E-coli, and ammonia. Throughout the plant there were signs of abject operational negligence: e.g., damaged fencing, piles of trash and debris, and vegetation overgrowth. The lagoon had been removed from service at some point and had been allowed to become completely overgrown by vegetation. Tanks and other steel components were severely corroded, and the aeration system was performing poorly due to corrosion and parts left in service well past their useful lives. The facility's contact chamber had failed, and rather than replacing it the previous owner merely draped flexible piping over the chamber and allowed effluent to splash on top of the failed component, which resulted in sludge build-up and pooled effluent. These and other deficiencies are shown in the following photographs:

Debris piles were left on site from previous operators.

Piles of rags and sludge were left on plant catwalk.

Damaged fencing and vegetation overgrowth.

Further fencing damage.

Evident overgrowth of abandoned lagoon cell.

Corrosion of steel equipment.

Corrosion of steel tankage structures.

Failed contact chamber and improperly improvised effluent structure.

**Q. WHAT STEPS HAS BLUEGRASS TAKEN TO REMEDY PROBLEMS THE COMPANY FOUND AT AIRVIEW?**

A. Since it acquired the Airview system, Bluegrass has taken numerous steps to make necessary replacements and upgrades to improve system performance. These include: removing trash and debris, smoke testing the collection system to identify leaks, renovating the sludge hauling tank, repairing fences, repairing sludge return lines coming from the

clarifier, replacing effluent pipe, renovating the aeration treatment systems, and installing a Mission alarm system that reports on ongoing equipment performance and immediately notifies operations and maintenance personnel of a system failure. The Mission system also allows the Company to quantitatively monitor inflow and infiltration to determine if collection system repairs are required. The Company also repaired the access road leading to the facility to ensure emergency personnel can reach the facility access in all types of weather ensuring safe and reliable service to customers. The following photographs show some of the repairs and upgrades I just mentioned:

New bar screen pre-install

Vegetation removed, steel repairs in place, blower housings repaired, and debris removed. New RAS (sludge return) visible in shot, repainted handrails.

New blower installed

New Effluent line bypassing derelict contact chamber, outfall structure still needed


Mission Remote monitoring installed

**Q. HOW WOULD YOU DESCRIBE THE CURRENT PERFORMANCE OF THE AIRVIEW SYSTEM?**

A. The Airview system currently is functioning much more reliably than before our improvements. The facility now regularly meets most limits established in applicable health and environmental regulations. Issues that still must be addressed appear to pertain to inflow and infiltration in the collection system during and immediately following rainstorms. We still need to remove the damaged contact chamber I mentioned previously, and we must repair or replace additional fencing sections. In his direct testimony, Jake Freeman, CSWR's Director of Engineering, discusses these and other capital improvements required at Airview and provides an estimate of what those improvements will cost.

**Q. IS THERE ANYTHING ELSE RELATED TO CHANGES MADE TO DATE AT AIRVIEW AND CHANGES BLUEGRASS PLANS TO MAKE IN THE FUTURE THAT YOU WANT TO BRING TO THE COMMISSION'S ATTENTION?**

A. Yes. For Airview and eight other discharging wastewater systems Bluegrass currently owns and operates in Kentucky (Brocklyn, Fox Run, Golden Acres, Great Oaks, Kingswood, Lake Columbia, Longview, and Persimmon Ridge), the Company has entered into individual Agreed Orders with the Energy and Environment Cabinet specifying the short- and longer-term steps Bluegrass will take to bring them into compliance with federal and state environmental laws. Those agreements are further addressed in the direct testimony of another Bluegrass witness, Mr. Jake Freeman. I mention those now because the improvements I just discussed at Airview, as well as those I will discuss for the other systems currently subject to an Agreed Order, have been made to comply with Bluegrass's obligations under those orders.

## B. Brocklyn

**Q. PLEASE DESCRIBE THE CONDITION OF THE BROCKLYN SYSTEM WHEN ACQUIRED BY BLUEGRASS.**

A. Brocklyn is an extended aeration plant with a single lagoon cell located in Madison County. At acquisition, the Brocklyn system exhibited signs of past gross mismanagement, poor operational practices, and an overall lack of investment. Brocklyn had a history of exceeding ammonia and biological oxygen demand (BOD) limits, which appeared to coincide with inflow and infiltration issues following rainstorms. While its compliance history was not as bad as in other acquired Kentucky systems in regard to compliance with effluent limits, the overall quality of the Brocklyn facilities was extremely poor. All steel tanks and plant components were severely corroded, and many treatment components had not been properly maintained. Yard piping consisted of PVC and flexible lines placed above ground, when proper installation of such facilities requires them to be buried. The dechlorination contact chamber was in poor condition and there was evidence of overflow in the facility during inflow and infiltration events, which means the plant continually surcharged putting receiving water bodies and the surrounding community at a health risk. Stormwater from an uphill neighborhood was routed into an open dirt channel running between the lagoon and an on-site package treatment plant, resulting in severe erosion that threatened the structural integrity of the lagoon further putting the surrounding community at risk. The plant structure was in a state of severe deterioration and there was no evidence prior ownership had taken any steps to address these issues. In fact, corrosion was so severe several sections of a tank had rotted away completely causing wastewater to come into

direct contact with surrounding soil. The single-cell lagoon was so full of sludge it offered no meaningful wastewater treatment. The following pictures illustrate some of the conditions I just described:

Yard piping condition and corrosion examples.

Wooden baffling in contact chamber.

Stormwater erosion on site.

Corrosion of steel components.

Corrosion of steel tank structure.

**Q. WHAT WORK HAS BLUEGRASS COMPLETED TO DATE TO DEAL WITH THE CONDITIONS YOU DESCRIBED?**

A. The conditions at Brocklyn were so bad we concluded repair of the existing treatment plant was not possible. So the work Bluegrass has performed to date was designed to enable the current plant to continue operating on an interim basis until a more permanent plant can be installed. These actions also will allow a new plant to be constructed without compromising interim treatment. Additional steps taken to improve the Brocklyn system include: smoke testing the system to identify primary sources of inflow and infiltration, cleaning out the lagoon sufficiently to allow it to treat effluent, making repairs to the damaged dichlorination contact chamber, and replacing diffusers. The following photographs depict some of the activities I just mentioned:

Lagoon during sludge removal.

Extended walls contact chamber and post aeration repaired.

**Q. HOW WOULD YOU DESCRIBE THE CURRENT PERFORMANCE OF THE BROCKLYN SYSTEM?**

A. As I mentioned in my answer to the preceding question, the facilities at Brocklyn cannot be repaired and must be replaced. And while the interim measures we have taken have improved the system's overall performance – e.g., ammonia and BOD levels have been reduced and a non-functioning lagoon has been properly removed from service and the accumulated sludge removed – the conditions at Brocklyn are still unsatisfactory. Significant additional capital investments will be required to bring this facility up to

Bluegrass's standards, and in his direct testimony Mr. Freeman describes both the nature of these additional investments and how much they will cost. Bluegrass is ready and able to expend capital necessary to bring Brocklyn into compliance with all applicable laws and regulations and to ensure the system provides safe and reliable service to our customers. We are currently making substantial progress in accordance with our Agreed Order, we simply have not had sufficient time to permit and complete all work necessary to achieve our final objectives.

## C. Fox Run

**Q. PLEASE DESCRIBE THE CONDITION OF THE FOX RUN SYSTEM WHEN ACQUIRED BY BLUEGRASS.**

A. Fox Run is an extended aeration treatment plant located in Franklin County. At the time of its acquisition by Bluegrass, the Fox Run system was in a position of significant non-compliance with its National Pollutant Discharge Elimination System ("NPEDS") parameters, having failed to satisfy those standards in 11 of the 12 immediately preceding quarters. During that period, the facility regularly exceeded limits for BOD, ammonia, total residual chlorine, E. coli, and total suspended solids. The facility had piles of trash on site, which largely consisted of broken sections of pipe, empty chemical containers, broken concrete, rags, and assorted refuse, which reflected the previous owner's failure to attempt even basic plant upkeep. Fencing was in disrepair, the influent lift station had improper pumps installed, and the lift station and collection system were in such a state of disrepair they regularly broke down and dumped partially treated waste into receiving streams putting the communities health at risk. Tanks and other steel structures exhibited rust and

the entire plant was long overdue for sanding, patching, and painting necessary to ensure longevity. The following photographs illustrate some conditions I just described:

Piles of trash and vegetation overgrowth against fencing.

Damaged fencing and improper maintenance.

Influent lift station with improvised pumping design into treatment plant.

**Q. WHAT STEPS HAS BLUEGRASS TAKEN SINCE ACQUISITION TO REMEDIATE THE PROBLEMS YOU DESCRIBE?**

A. Bluegrass has overhauled the collection system and lift station to stop sewage backups and prevent potential release of untreated wastes. The improper submersible pump at the influent lift station was removed and the original pumps were replaced to restore proper flow and function to the system. The existing underperforming blower system was replaced. Mission remote monitoring equipment was installed to assist the Company in identifying the source of inflow and infiltration. Data from the Mission system also allows operators to become aware of and quickly respond to conditions at the plant before those conditions turn into service-affecting problems.


Mission data monitoring and reporting system.

Tanks patched, sanded, and painted; debris removed

Walkways repaired, handrails sanded and painted, temporary piping repairs in place

New blower installed

New access road gate and road improvements

New control panels installed and electrical improvements

Repainted tanks, handrails, etc. new influent line

**Q WHAT IS THE CURRENT CONDITION OF THE FOX RUN SYSTEM FOLLOWING IMPLEMENTATION OF THE MEASURES YOU DESCRIBE?**

A. Following implementation of the improvements I described, system performance has improved significantly. Test results show improvement on all NPEDS parameters, which represents a significant improvement in the quality of effluent water discharged from the system into receiving waters flowing through the nearby community. Following overhaul of the collection lift station, backups in that portion of the system have ceased. The access road has been improved, gates and fences have been repaired or replaced, and trash has been removed thereby markedly improving plant aesthetics. The system is progressing in accordance with Bluegrass's Agreed Order for the Fox Run system. Problems related to inflow and infiltration and issues related to the plant's ability to handle sludge have been identified as part of the Agreed Order to be resolved. Mr. Freeman's testimony addresses additional steps the Company plans to take at Fox Run to further improve performance and reliability.

## E. Golden Acres

**Q. PLEASE DESCRIBE THE CONDITION OF THE GOLDEN ACRES SYSTEM AT ACQUISITION.**

A. The Golden Acres wastewater treatment facility is an extended aeration treatment facility. At acquisition, the Golden Acres system, located in Marshall County, had failed to comply with NPEDS parameters in ten of the twelve preceding quarters. The facility regularly violated prescribed limits for BOD, total residual chlorine, E. coli, and ammonia. The plant exhibited numerous signs of managerial neglect, including overgrown vegetation and corroded steel structures. Most significantly, the plant had a history of flooding on a regular basis, which indicates excessive I&I flows coming from both the collection system and poor grading of the site routing stormwater into the plant. This also indicates the effluent pipe was not allowing water to flow out of the plant at the rate that flows entered the plant during I&I events. This severely compromises the treatment process, equipment condition, and the ability to operate the plant, and allows partially treated or untreated wastes to leave the plant in each flooding event. The following photographs show some of the problems I describe:

Notable corrosion on steel equipment and staining from regular flooding

Staining notable on riprap indicating regular flooding

Terrible effluent quality at acquisition causing pollution

Toilet paper clogging pipe indicates massive washout events

**Q. WHAT IMPROVEMENTS HAS BLUEGRASS MADE TO THE GOLDEN ACRES SYSTEM?**

A. Since acquisition, a blower that had reached the end of its useful life was replaced, dechlorination was implemented, and the access road for the facility was repaired to ensure emergency personnel can reach the facility access in all types of weather ensuring safe and reliable service to customers. The blower replacement has improved aeration performance and as a result the effluent quality, and dechlorination has led to compliance with total residual chlorine limits. We also installed Mission remote monitoring equipment at the facility. The following photographs show some of the improvements made to date.

Mission remote monitoring installed at lift station


Mission remote monitoring at plant with new flow meter and control panel

New flow meter installed

Effluent quality significantly improved and effluent line cleared

Although we have made significant improvements to the Golden Acres system, more work remains to bring the facility into compliance including significant improvements to the plant site and collection system to limit the excessive I&I flows. In his direct testimony, Mr. Freeman describes what additional investments are required to complete necessary system improvements.

## F. Great Oaks

**Q. PLEASE DESCRIBE THE CONDITION OF THE GREAT OAKS SYSTEM AT ACQUISITION.**

A. The Great Oaks system is an extended aeration treatment facility located in McCracken County. At acquisition, the Great Oaks system had failed to comply with NPEDS parameters in each of the nine preceding quarters. The facility regularly violated prescribed limits for BOD, total residual Chlorine, E.coli, ammonia, and total suspended solids. The plant exhibited numerous signs of almost complete managerial neglect including overgrown vegetation and corroded steel structures. A steel catwalk was so corroded it was unsafe to walk on, which made portions of the plant inaccessible to operators. The previous

operator regularly dumped trash and debris into the effluent clarifier, which caused it to perform well below standards, pushed that waste into receiving water bodies in violation of state and federal law, and likely caused many of the violations the facility experienced. The influent lift station was in need of overhaul and the aeration system was not functioning properly. The following photographs show some of the problems I describe:

Vegetation growing on top of the wastewater treatment facility.

Extensive rust on walkways, handrails and tank structure.

Debris in bottom of clarifier and debris after removal from clarifier.

Terrible effluent quality at acquisition causing pollution

**Q. WHAT IMPROVEMENTS HAS BLUEGRASS MADE TO THE GREAT OAKS SYSTEM?**

A. The influent lift station was overhauled to ensure proper operation and prevent backups into the collection system, and the diffusers, blower, and sludge returns were replaced to

overhaul the aeration system. Since our overhaul of the aeration system, Great Oaks consistently has met limits for BOD and ammonia. Damaged sections of the plant's catwalk have been replaced, and tanks, walkways, stairs, handrails, and other steel structures have been sanded and painted to halt further corrosion and extend their useful lives. During our initial operation of the system, we determined the clarifier was not functioning properly. Upon further investigation, we found the prior owner made a practice of dumping trash and debris into the clarifier. After removing trash and debris, the clarifier is now effectively removing solids. Mission remote monitoring equipment was installed with system monitoring and flow metering to quantitatively evaluate inflow and infiltration. Data from that system also allow operators to respond to abnormal conditions at the plant before those conditions affect customer service. We also smoke tested the system to identify areas significantly contributing to inflow and infiltration problems

Repaired influent line and flow meter installed. Damaged pumps from lift station replaced with line replacement.

New Flow meter output, tank patching and painting visible in background as well

Influent lift station pumps replaced, mission monitoring installed, lift crane installed.

Tanks, stairs, and handrails have been sanded, patched, and painted. Fencing repairs have begun.

We have made significant improvements to the Great Oaks system in accordance and compliance with our Agreed Order. More work remains to bring this system into final compliance

with applicable environmental regulation. In his direct testimony, Mr. Freeman describes what additional investments are required to complete necessary system improvements.

## G. Timberland/Joann Estates

**Q. PLEASE REVIEW THE CONDITION OF THE TIMBERLAND/JOANN ESTATES SYSTEM AT THE TIME IT WAS ACQUIRED BY BLUEGRASS.**

A. Timberland/Joann Estates is an extended aeration treatment plant with a single lagoon cell attached located in McCracken County. At acquisition, the Timberland/Joann Estates system had failed to comply with prescribed operational standards and regulations for each of the preceding 12 quarters. Its failures included failing to meet limits for BOD, total residual chlorine, E.coli, ammonia, dissolved oxygen, and total suspended solids. The system also had been cited for improper operations and maintenance. Vegetation was growing out of the top of the plant, and steel components exhibited severe corrosion, including one tank that had rusted completely through in several locations. Rather than repair these problems, the previous owner appeared to have attempted to plug the holes with sticks, which allowed untreated waste to continue to leak out putting the surrounding communities' health at risk. Other evidence of poor maintenance by the prior owner included poorly designed and installed lift station, deteriorated electrical panels, and broken and overgrown fencing. We also observed damage along the lagoon berm, which may have been resulting in leaks. The existing lagoon also was found to be completely full of sludge, rendering it ineffective as a useful treatment component. The facility's contact chamber was in extremely poor condition and was allowing untreated waste to leak out,

another exposing the surrounding community to health risk. The following photographs show some of the conditions I just described:

Vegetation growth on package plant.

Steel tankage with rusted holes stuffed with sticks to reduce leakage instead of proper repair

Unsafe stack of cinder block used to access the lift station.

Sludge-filled with poorly maintained berms.

Damaged contact chamber with poorly improvised post aeration system.

Bizarre influent line forms influent lift station, dropping waste from above into the plant.

Influent Lift Station

**Q. WHAT IMPROVEMENTS HAS BLUEGRASS MADE TO DATE TO IMPROVE THE TIMBERLAND/JOANN ESTATES FACILITIES?**

A. The damaged berms have been cleared of overgrown vegetation and re-graded to restore their integrity and process utility. These repairs will allow more water to be added to the lagoon, which should aid in breaking down sludge present in the lagoon and eliminate the possibility of continued release of partially treated waste from the lagoon. Mission remote monitoring was installed to monitor system performance, evaluate inflow and infiltration and provide data to operators that will allow them to identify and repair system problems before they create problems for customers. An influent lift station overhaul is underway.

Berms cleared of overgrown vegetation, damaged sections repaired, and height increased to restore their integrity and process utility.

Lift station overhauled. Regraded to be level with ground eliminating improper access with cinderblocks.

Improved influent line station to more efficiently deliver waste to plant and eliminates splattering wastewater.

Facility entrance replaced

Bluegrass has made significant improvements to the system in accordance and compliance with our Agreed Order. Further capital improvements will be required to bring the facilities up into final environmental compliance. Those required improvements are described and discussed in Mr. Freeman's direct testimony.

**H. <u>Kingswood</u>**

**Q. PLEASE DESCRIBE THE CONDITION OF THE KINGSWOOD WASTEWATER TREATMENT SYSTEM AT ACQUISITION.**

A. Kingswood is an extended aeration treatment plant located in Bullitt County. Like many of the facilities I've already discussed as well as most I will discuss later in my testimony, at acquisition the Kingswood system had a record of non-compliance with applicable health and environmental regulations. For six of the twelve quarters immediately preceding acquisition, the facility exceeded permitted limits for BOD, E.coli, ammonia, and total suspended solids. Fencing at the facility was broken or overgrown with vegetation. Overgrown vegetation elsewhere at the facility prevented access or damaged buildings and treatment equipment. The clarifier was not functioning properly and valves on the sludge returns had not been properly maintained. Blower equipment was in need of immediate repair or replacement, and much of the other plant equipment was severely damaged or beyond the limits of its useful life. The following photographs show some of the things we found when we took possession of this facility:

Vegetation overgrowth damaged fencing around the facility.

Damaged equipment damage is unmaintained because of overgrowth near the blower house.

Overgrowth along the facility's fence.

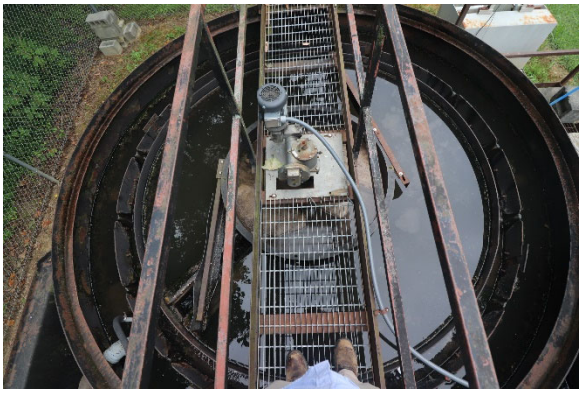
Clarifier skimmer not reaching the edge of the chamber.

**Q. WHAT ACTIONS HAS BLUEGRASS TAKEN TO CORRECT PROBLEMS YOU FOUND AT THE KINGSWOOD FACILITY AND IMPROVE ITS OPERATION?**

A. We cleaned and repaired equipment in the blower house and repaired or replaced diffusers in the aeration tank, which has allowed the facility to comply with permitted limits for BOD and ammonia. The clarifier was repaired, including replacing damaged valves and sludge returns and the repairing and adjusting the position of the skimmer. These repairs brought the plant into compliance with suspended solids limits. Mission remote monitoring equipment was installed, and work was performed to improve operation of the plant's ultra-violet disinfection system, a project made more difficult because of the age of the system and the inability to obtain replacement parts.

Backup generator on site for emergency power.

Damaged walkway sections replaced to ensure safety



Reworked clarifier functioning properly

Bluegrass has made significant improvements to the system in accordance and compliance with our Agreed Order. Further capital improvements will be required to bring the facilities up into final environmental compliance. The additional work that remains to be done, and the nature of these additional upgrades and improvements and their anticipated cost are further discussed by Mr. Freeman in his direct testimony.

## I. Lake Columbia

**Q PLEASE DESCRIBE THE CONDITION OF FACILITIES AT LAKE COLUMBIA AT THE TIME OF THEIR ACQUISITION BY BLUEGRASS.**

A. Lake Columbia is an extended aeration treatment plant located in Bullitt County. For each of the twelve quarters immediately preceding its acquisition by Bluegrass, the Lake Columbia system failed to comply with applicable health and environmental regulations. More specifically, the facility exceeded limits for BOD, total residual chlorine, E.coli, ammonia, and total suspended solids. At acquisition, there were several places where rags and toilet paper had accumulated against chain link fencing, indicating the plant had overflowed and leaked solids or solids were shoveled or dumped on the ground and allowed to be pushed against the fence by stormwater. These overflow/surcharge events put the community's health at risk via exposure to potentially harmful sewerage waste. Past test results indicated severe inflow and infiltration problems, and the bar screen at the front of the plant was severely deteriorated. The contact chamber at the rear of the plant was severely corroded, was leaking in several places, and no longer was providing adequate disinfection. Other steel plant components also were severely corroded, and several locations were found where components had rusted through tank walls. The following photographs illustrate some of these conditions:

Toilet paper and solids accumulated on facility fencing indicating overflows

Deteriorated bar screen and splitter system almost completely rusted out.

Severely deteriorated contact chamber.

Deterioration of aeration tankage.

**Q. WHAT IMPROVEMENTS HAS BLUEGRASS MADE AT LAKE COLUMBIA TO DATE?**

A. We determined the tanks for the bar screen and contact chamber had exceeded their useful lives, so the failed steel tanks were replaced with concrete and the bar screen and contact chamber baffling were replaced. This has significantly improved solids screening at the front of the plant and disinfection prior to discharge. These new components also can be maintained in the future, which would not have been possible if previous equipment had been retained. Corrosion in the aeration tank was repaired by sanding, patching, and painting to prevent further corrosion, which has extended the useful life of the plant and closed holes where there was potential for partially treated wastewater to leave the plant. The clarifier was repaired, and sludge lines were replaced to reduce solids passing through the facility. To restore proper aeration, we replaced an under-performing blower system. Mission remote monitoring equipment was installed with flow metering to monitor equipment performance and identify and track inflow and infiltration. The following photographs depict some of the repairs and upgrades I just described:

Rebuilt bar screen system. New yard piping installed

Rebuilt contact chamber.

Aeration tankage patched, sanded, and repainted. Steel repaired and walkways replaced. Sludge returns replaced.

Blowers and blower housing replaced and mission remote monitoring installed

Bluegrass has made significant improvements to the system in accordance and compliance with our Agreed Order. Further capital improvements will be required to bring the facilities up into final environmental compliance. Those improvements are described in Mr. Freeman's direct testimony.

**J. Longview/Homestead Treatment**

**Q. WHAT WAS THE CONDITION OF WASTEWATER TREATMENT FACILITIES AT L. H. TREATMENT AT THE TIME OF ITS ACQUISITION BY BLUEGRASS?**

A. Longview/Homestead Treatment ("L. H. Treatment") is an extended aeration treatment plant located in Scott County. During six of the twelve quarters immediately preceding acquisition, L. H. Treatment failed to comply with applicable health and environmental regulations, and during three of those quarters the level of non-compliance was listed as "significant." Non-compliance included exceeding prescribed limits for BOD, total residual chlorine, E.coli, ammonia, dissolved oxygen, and total suspended solids. Although in better shape than some of the facilities I previously discussed, when Bluegrass took possession of the system, we noticed numerous examples of the sub-standard operations, maintenance practices, and lack of investment by the prior owner. These include improperly stored chlorine gas cylinders (an extremely toxic chemical), improper clarifier operations, and failure to clean out the blower and blower motor. The bar screen at the influent inlet into the flow equalization basin was completely rusted out, which allows excessive amounts of rags and other nuisance solids to enter and damage the plant. The

following photographs show these and other problems we observed at the L. H. Treatment plant:

Improper chemical storage.

Improperly cleaned and maintained blower housings.

Submerged section of clarifier trough allowing passthrough of solids.

Damaged chlorine room structure.

Rusted, failing bar screen

**Q. WHAT IMPROVEMENTS HAS BLUEGRASS MADE TO THE L. H. TREATMENT FACILITIES?**

A. We cleaned all blowers and replaced a blower we determined had reached the end of its useful life. After evaluating the aeration system, we concluded it was under performing. After inspection, the diffusers were found to be corroded and therefore were replaced. Following these actions, plant performance improved markedly, and these facilities now consistently meet BOD and ammonia standards. After installing a Mission remote monitoring system, we analyzed data it produced and were able to determine the system is significantly impacted by inflow and infiltration. We also smoke-tested the facilities to gather additional data regarding this problem. In addition, we made other general repairs, including adjusting the clarifier and repairing the bar screen. We are continuing to evaluate data regarding inflow and infiltration, and additional investments we plan to make will address that issue. Those additional investments are described in Mr. Freeman's direct testimony.

## K. Persimmon Ridge

**Q. PLEASE DESCRIBE THE CONDITION OF THE PERSIMMON RIDGE ASSETS BLUEGRASS ACQUIRED.**

A. Persimmon Ridge is an aerated lagoon treatment plant located in Shelby County. At acquisition, the Persimmon Ridge plant was in significant non-compliance with health and environmental regulations in five of the twelve immediately preceding quarters. The specific areas of non-compliance included exceeding limits for BOD, total residual chlorine, E.coli, dissolved oxygen, and total suspended solids. The previous owner also received citations for failing to comply with permit schedules. Following closing, we observed four of the system's aerators were out of service (and had been in that condition

for a long time), which significantly reduces the effectiveness of the treatment process. We discovered the baffle dividing the second cell allowing it to function as a three-cell lagoon damaged and allowing water to short-circuit between the two sections of the cell, which again reduces treatment effectiveness. An effluent pipe, which appeared to have been recently re-routed, was discharging through an open dirt channel into a receiving stream. Photographs showing conditions at the Persimmon Ridge facility include the following:

Inactive blower on lagoon berm.

Nonfunctional blower in lagoon.

Chlorine system with post aeration.

Discharge pipe feeding into open dirt channel.

**Q. WHAT IMPROVEMENTS HAS BLUEGRASS MADE TO THIS SYSTEM?**

A. Berms at the facility have been cleaned and repaired to prevent partially-treated and untreated wastes from flowing out of the facility. The four out-of-service aerators I mentioned earlier were repaired and returned to service, which significantly improved performance and has allowed the plant to meet BOD and ammonia limits. Despite these improvements, we are concerned the current aeration system may not be sufficient to allow compliance with BOD and ammonia limits during the winter. We therefore implemented, in conjunction with the Kentucky Energy and Environment Cabinet, a pilot program to test a new type of aeration system that should eliminate problems with wintertime compliance

and accelerate sludge breakdown in the lagoon. We also installed pipe to carry effluent in lieu of the open channel I described earlier. Among other benefits, the pipe allows us to now take accurate samples of effluent at the receiving stream rather than in the open channel. We also plan to repair the baffle between the two lagoons, a project Mr. Freeman describes in his direct testimony.

Damaged aerators returned to service

Airmaster aerator installed improving treatment

Mission remote monitoring installed

**L. River Bluff**

**Q. PLEASE DESCRIBE THE CONDITION OF THE RIVER BLUFF SYSTEM AT THE TIME OF ITS ACQUISITION BY BLUEGRASS.**

A. River Bluff is an extended aeration treatment plant located in Oldham County. Like the other systems I previously discussed, at acquisition River Bluff had a long history of non-compliance. In five of the twelve quarters preceding the acquisition, River Bluff exceeded prescribed standards for ammonia and suspended solids, which we believe was attributable to the previous owner's poor maintenance of the aeration system. General maintenance of the facility also was also very poor. Much of the steel treatment equipment and the structure of the treatment plant itself were severely corroded, causing them to perform sub-optimally and raising concerns about plant safety. For example, many of the catwalk sections were so corroded we concluded they were not safe to walk on. The wiring in the control box at the lift station was in such poor condition it too raised safety concerns over electrocution for operations staff. The influent system also was in poor condition, with major components improperly installed. The following photographs illustrate many of the conditions I just described:

Severe corrosion and rust found throughout the plants.

Unsafe wiring in the lift station control box.

Improper influent line installation.

Influent Lift Station lines improperly installed

**Q. PLEASE DESCRIBE IMPROVEMENTS MADE BY BLUEGRASS SINCE ITS ACQUISITION OF THIS SYSTEM.**

A. Because this acquisition was closed very recently, only limited repairs have been made thus far. These include fixes to the main community lift station to prevent service interruptions, replacement of the exposed influent pipe, emergency electrical repairs, and installation of a Mission remote monitoring system. Additional planned improvements and upgrades are discussed by Mr. Freeman.


Mission remote monitoring installed

Facility gate replaced

## M. Center Ridge

**Q. PLEASE DESCRIBE BLUEGRASS'S CENTER RIDGE WATER SERVICE OPERATIONS.**

A. Center Ridge is the only water service system Bluegrass owns and operates in Kentucky. The combined system, with four geographic areas designated "districts," currently serves approximately 336 customers in Calloway County. The acquisition transaction involving Center Ridge only recently closed, so we have had little time to make final upgrades and

large repairs necessary to bring the system up to Bluegrass's standards. And because these undercapitalized systems were mismanaged by the former owner, many improvements are needed. But while we complete our evaluation of the Center Ridge system's needs and invest the capital necessary to bring the system up to industry standards, we have taken steps necessary to ensure water provided to customers is potable and safe.

**Q. PLEASE DESCRIBE THE CONDITION OF THE CENTER RIDGE SYSTEM AT THE TIME IT WAS ACQUIRED BY BLUEGRASS.**

A. The District No. 1 system currently serves 51 service connections, representing an estimated serving population of 153. Design standards for a population of this size require more than 5,300 gallons of water storage. But at acquisition the system had a single, hydropneumatics storage tank whose capacity is only 1,060 gallons. In addition to inadequate storage capacity, evidence of past mismanagement was readily apparent. The system's well head had exposed wiring and improperly installed conduit. The system currently uses sodium hypo chlorate for water purification with an outdated pump – that is past its useful life – dosing the chemical solution putting community drinking water safety at risk. Purification chemicals currently are dosed in the same room as the storage tank, which is poor practice because it can lead to corrosion of the storage tank leading to system failure. The well house is in poor shape with exposed wiring throughout and there is no fencing to prevent the public from accessing the well head. There also is no proper driveway or access road at the well site. The following photographs illustrate some of the conditions I just described.

Well head with exposed wiring.

Storage tanks and chlorine dosage in the same room with exposed wiring and no finish carpentry.

No Fencing or proper access to the facility.

**Q. PLEASE DESCRIBE CONDITIONS BLUEGRASS FOUND WHEN IT ACQUIRED FACILITIES PREVIOUSLY OWNED AND OPERATED AS CENTER RIDGE WATER DISTRICT NO. 2.**

A. Center Ridge's District No. 2 currently serves 127 service connections, with an estimated population of 377. The system has two wells, but one of those is not in service. Proper design for a population of 377 requires more than 13,000 gallons of storage. However, the single, functioning well pumps to a hydropneumatic tank providing less than 1,000 gallons of storage. The well house is in poor condition, and as with District No. 1 there is no separate room for chlorination equipment. There also is no fencing or driveway or road to provide all-weather access. The following photographs illustrate the conditions I just described.

Out-of-service well with freeze-damaged piping.

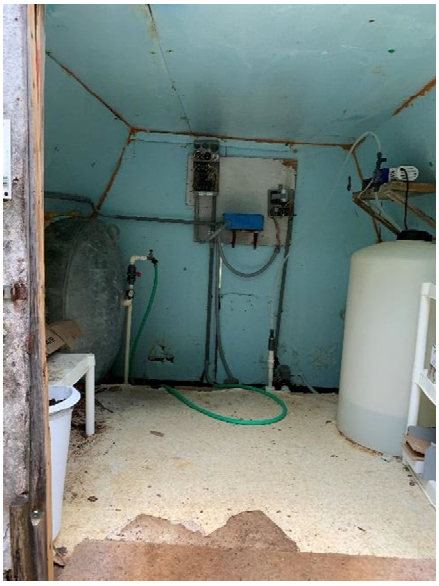
Rust damage and leaking hydropneumatic tank.

Interior of functional well house, dirty and dilapidated.

**Q. PLEASE DESCRIBE CONDITIONS BLUEGRASS FOUND WHEN IT ACQUIRED FACILITIES PREVIOUSLY OWNED AND OPERATED AS CENTER RIDGE DISTRICT NO. 3.**

A. Facilities at District No. 3 currently serve 70 service connections, with an estimated population of 207. To serve that population, storage of at least 7,280 gallons is required, but current storage is far below that level. The well house is in extremely poor condition.

Its roof has failed, but rather than repair the roof the previous owner merely nailed a tarp as a temporary fix. Electrical conduit housing service to the well house is exposed in an adjacent driveway, and cracking is visible which exposes it to rainwater. The wells are surrounded by deteriorating cinderblock structures and there is evidence varmints, including rats, have gained access to the structure. An outdated pump dispenses sodium hypo chlorate used for purification, and the purification chemicals are stored in the same room as the water storage tanks. There also is no fencing or all-weather access to the facility. The following photographs illustrate conditions at the facility at acquisition:



Improper insulation in well house, as well as a safety violation of keeping chlorine and storage equipment in the same room.

Non-compliant, improvised roof repair: a tarp nailed to roof.

Electrical conduit servicing well pumps exposed in driveway.

Deteriorating cinder block containment for well head covered in mouse and toad droppings with vermin infiltration.

Unpainted hydropneumatic storage tank.

**Q. PLEASE DESCRIBE CONDITIONS AT ACQUISITION AT FACILITIES SERVING DISTRICT NO. 4.**

A. The District No. 4 facilities serve 28 homes, with an estimated served population of 84. Design standards for that population require 2,940 gallons of water storage, which greatly exceeds capacity of the current water storage tank. As with the systems I previously described, the well house is in very poor condition, and there is exposed wiring in the well house and at the well head. Chlorine disinfection equipment is also in the same room as all other equipment, which can cause damage to that equipment over time. There also is no fencing or all-weather access to the facility. The following photographs illustrate those conditions:

Rotting wood paneling on the existing well house.

Exposed wiring and ineffective chlorine dosage equipment.

**Q. PLEASE DESCRIBE STEPS BLUEGRASS HAS TAKEN TO DATE TO UPDATE AND IMPROVE THE CONDITIONS YOU JUST DESCRIBED AT THE CENTER RIDGE WATER FACILITIES.**

A. As I stated earlier in my testimony, we have owned these facilities only a short time, and while we have taken steps to ensure our customers are receiving safe and reliable water service we have not had time to address the majority of the problems we found when we took ownership of them. To date, we have cleaned-up the facilities and have installed Mission remote monitoring equipment and new magnetic flow meters at each of the wells. These facilities will provide valuable real time operational data that will allow our third-party operators to respond to abnormal situations before they affect customer service. We have replaced well pumps, made spot repairs to dangerous electrical installations, and repaired dosing pumps. At District 2, the out of service well was rehabilitated and returned to service, and following a breakdown the in service well also underwent significant rehabilitation, significantly improving the state of water supply in District 2. Other

necessary upgrades and improvements will be made in the near-term future. Those are described in greater detail in Mr. Freeman's direct testimony.


Mission remote monitoring installed at all well sites

Well house interior walls replaced to improve insulation and contain wiring.

## III. RATE CASE OVERVIEW

**Q. PLEASE SUMMARIZE THE RATE INCREASE BLUEGRASS IS PROPOSING IN THIS CASE.**

A. Bluegrass is asking the Commission to approve a total revenue requirement of $3,758,757, which represents an increase of $2,513,799 over projected revenues derived from current rates for the systems Bluegrass owns and operates, has been approved to operate, and has applied to operate in Kentucky. The specific elements of the revenue requirement and how they were developed are discussed in detail in the direct testimony of another Bluegrass witness, Brent Thies.

As the Commission is aware, the systems we acquired and those we hope to acquire in Case No. 2020-00297 were not well managed, and the owners of those systems did not make plant investments necessary to ensure those systems complied with applicable laws and regulations and provided safe and reliable service to customers. Most, if not all, of those owners also failed to seek rate increases necessary to enable them to properly operate and maintain those systems. As a result, rates Bluegrass assumed when it acquired those systems – *i.e.* rates in effect at closing – were not sufficient to cover the previous owners' operating costs, operations that were woefully unprofessional and inadequate. And rates that fail to cover operating costs also fail to provide a fair rate of return.

Bluegrass's acquisition has changed and will change all that. Professional, experienced, and licensed professionals now oversee the operation and maintenance of these systems. And we have made plant investments necessary to significantly improve service and set our systems on a path that will ensure they fully comply federal, state, and local laws and regulations. We also have greatly upgraded and improved customer service.

This rate filing is designed to achieve two primary objectives. First, we want to increase rates to a level that allows us to recover reasonable operating costs and provides a

fair return on the investments we make to serve our customers. Second, we want to unify our terms of service and rates statewide.

**Q. WHAT WITNESSES ARE PROVIDING DIRECT TESTIMONY IN SUPPORT OF YOUR RATE INCREASE REQUEST AND WHAT SUBJECTS WILL EACH OF THOSE WITNESSES ADDRESS?**

A. In addition to me, five other witnesses will provide direct testimony in support of the proposed rate increase. Those witnesses and the subjects they will cover in their respective testimonies are as follows:

- Todd Thomas - Discussion of process for qualifying and selecting outside Operations and Maintenance and Customer Service contractors.
- Jacob Freeman – Discussion of required system upgrades and improvements.
- Brent Thies – Discussion of how revenue requirement was developed.
- Dylan D'Ascendis – Return on equity and rate of return.
- Jennifer Nelson – Capital structure.

**Q. WHY ARE THE RATE INCREASES BLUEGRASS SEEKS IN THIS CASE SO LARGE?**

A. We acknowledge the rate increases we seek in this case are significant. But there are several reasons for this. First, it costs more to operate water and wastewater systems competently and professionally and in a manner that complies with applicable law than the way those systems were operated prior to Bluegrass's acquisition. Our rate request reflects these increased operating costs. Second, we have made significant capital investments to upgrade our systems and bring them into compliance with law, and plan even more investments

prior to the end of the period we used to calculate our revenue requirement in this case. Our proposed rate increase seeks a fair return on the value of those investments. Finally, as I mentioned earlier, most of the systems we acquired did not seek regular rate increases, which means the rates currently in effect do not come close to reflecting real operating and compliance costs. The systems we have been approved to acquire in Case No. 2020-00028 or hope to acquire in Case No. 2020-000297 are in the same or similar circumstances. Consequently, the rates proposed in this case represent a significant percentage increase over current rates for all those systems because current rates are well below what would have been in effect had previous owners exercised regulatory diligence and provided safe and reliable service.

**Q. HOW DO YOU PLAN TO MITIGATE THE EFFECT ON CUSTOMERS OF THE RATE INCREASES BLUEGRASS SEEKS IN THIS CASE?**

A. We also acknowledge that the rates required to cover increases in operating costs and provide our investors a fair rate of return will impact our customers. And because the expenditures and investments necessary to bring some of the worst systems into compliance are significantly greater, that impact would be most significant if rates in this case are set on a system by system basis. Therefore, we propose to mitigate the impact of the rate increases we require by unifying rates for all our Kentucky systems. Under our proposal, all Bluegrass customers in the same rate class would be charged the same statewide rate.

**Q. WON'T UNIFIED RATES REQUIRE CUSTOMERS SERVED BY "BETTER" SYSTEMS TO SUPPORT THE COST OF IMPROVEMENTS BLUEGRASS IS MAKING TO SOME OF ITS WORST SYSTEMS?**

A. In the long run, I do not believe that is true, because while our worst systems require investments in upgrades and improvements today our "better" systems will require those same investments in the future. So whatever short-term support may flow from better to worse systems initially, that situation will reverse over time. I also note that cross-subsidies in utility rates are the rule rather than the exception. For example, although it may cost an electric or gas utility much more to serve some individual customers than it does to serve others, electric and gas utilities have for decades had uniform rates for all customers within each rate class. We also believe consolidated rates reflect the common benefits all our Kentucky customers receive from being served by Bluegrass, services that are most cost effectively provided by consolidating more systems together due to economies of scale, and that system-specific rates would, in effect, punish customers of our worst systems for the failings of the former owners of those systems.

**Q. DOES THAT CONCLUDE YOUR DIRECT TESTIMONY?**

A. Yes, it does.

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of

| | | |
|---|---|---|
| *Electronic* Application of Bluegrass Water Utility Operating Company, LLC for an Adjustment of Rates and Approval of Construction | ) | Case No. 2020-00290 |

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**Direct Testimony of Todd Thomas**

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STATE OF MISSOURI
COUNTY OF ST. LOUIS

I, Todd Thomas, being duly sworn, state that the attached is my Direct Testimony in the above styled matter, that I would respond in the same manner to the questions if so asked upon taking the stand, and that my testimony is true and correct to the best of my knowledge, information, and belief formed after reasonable inquiry.

Todd Thomas

Subscribed and sworn to this 28th day of September 2020, before me, a Notary Public in and before said County and State.

DANIEL RYAN JANOWIAK
Notary Public, Notary Seal
State of Missouri
St. Charles County
Commission # 20374795
My Commission Expires 05-04-2024

Notary Public

(SEAL)

My Commission Expires: 5/4/24

**Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

A. My name is Todd Thomas. My business address is 1650 Des Peres Road, Suite 303, St. Louis Missouri, 63131.

**Q. WHAT IS YOUR POSITION WITH BLUEGRASS WATER UTILITY OPERATING COMPANY?**

A. I am Senior Vice President of CSWR, LLC ("CSWR"), the affiliated company that has operational oversight over Bluegrass Water Utility Operating Company, LLC, ("Bluegrass" or "Company"). At CSWR, my responsibilities include the acquisition, development, and rate stabilization of CSWR-affiliated utilities. These duties include maintenance, capital planning, and regulatory compliance for all CSWR-affiliated facilities. I am responsible for engaging and overseeing management and maintenance service providers, customer service and billing service providers, and engineering firms, including those responsible for day-to-day operations and maintenance ("O&M") and customer service activities for operating affiliates like Bluegrass. At the present time, I oversee such activities for affiliated companies providing water or wastewater utility services to more than 40,000 customers/connections in Kentucky, Missouri, Arkansas, Texas, and Louisiana. As Mr. Cox mentioned in his direct testimony, we have applications pending in Kentucky, Missouri, Texas, Louisiana, North Carolina, Tennessee, and Mississippi seeking authorization from utility regulators in those states to acquire even more systems and customers. If and when those applications are approved, my oversight responsibilities will extend to those additional states and customers as well.

**Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?**

A. Yes, in 2019 I provided hearing testimony in Case No. 2019-00104, the first acquisition case filed by Bluegrass. I also was the listed witness for responses to data requests by

Commission Staff and the Attorney General's office in that case and in Case No. 2019-00360, Bluegrass's second acquisition case.

**Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL EXPERIENCE.**

A. My education includes a Bachelor of Science in Civil Engineering from the Missouri University of Science and Technology, and a Master of Business Administration from Washington University in St. Louis.

Before joining CSWR, I was President of Brotcke Well and Pump (the 2nd largest well driller and service provider in the Midwest), Vice President of Operations and Business Development of the Midwest for American Water Contract Operations, and General Manager of Midwest Operations for Environmental Management Corporation. I currently serve on the Technical Advisory Team for the Public Water Supply District 2 of St. Charles County, Missouri.

Brotcke Well and Pump serves municipal potable, regulated potable, and industrial ground water suppliers in the states of Missouri, Illinois, Kansas, Tennessee, Kentucky, and Arkansas. Its total number of clients exceeds 200 and they range in size from the City of Bloomington, Illinois, with 31,000 water customers, to 230 customers in the City of Eminence, Missouri. Brotcke Well and Pump drills wells, cleans and treats wells, installs pumps, services pumps, rebuilds pumps, tests wells for regulatory compliance, and installs and services well controls. As President of Brotcke Well and Pump, I was involved in the design, maintenance, and repair of all client well systems. I have firsthand experience with

how much damage can be done by lack of maintenance on a well system and how much money and effort is required to restore a well system after neglect.

As Vice President of Operations and Business Development of the Midwest for American Water Contract Operations, I was responsible for the water and wastewater operations and maintenance contracts for municipal and industrial clients. These clients included wastewater systems owned and operated by the City of St. Charles, in Missouri, and the cities of Godfrey, Mount Vernon, Quincy, Litchfield, Lincoln, Pittsfield, and Elwood in Illinois. These clients also included water and wastewater systems owned and operated by the City of Foristell, Missouri, and the Illinois cities of Brighton, and Monmouth. At one time I had responsibility for operating water and wastewater systems serving approximately 64,000 residential connections. My responsibilities included the direction and management of annual budgeting for each plant's operations and maintenance, design and planning of plant upgrades and maintenance projects, regulatory reporting, plant operations, and regulatory compliance of these systems.

My position as General Manager of Midwest Operations for Environmental Management Corporation was like that of my position with American Water Contract Operations with regard to the size and scope of the systems the company managed.

**Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THIS CASE?**

A. The purpose of my testimony is to explain the process CSWR uses to identify and engage qualified third-party contractors to provide day-to-day O&M and customer service functions for Bluegrass, and why using third parties to perform these functions is in the best interests of both Bluegrass and its customers.

**Q. WHY DOES BLUEGRASS USE THIRD-PARTY CONTRACTORS TO PERFORM O&M AND CUSTOMER SERVICE FUNCTIONS INSTEAD OF HIRING EMPLOYEES TO PERFORM THOSE FUNCTIONS?**

A. Bluegrass owns and operates water and wastewater systems in Kentucky that are both small (in terms of the number of customers served) and geographically dispersed. A map showing the location of the systems we serve in Kentucky is attached to my testimony as Exhibit TT-1. Those two factors, alone, strongly suggest it would be difficult, if not impossible, for Bluegrass to cost-effectively employ an in-state workforce of sufficient size to perform all required O&M and customer service functions necessary to fulfill our objective of providing our customers safe and reliable utility service at reasonable rates. But workforce size is not the only consideration. Operators of our facilities – the O&M function I mentioned in some of my previous responses – must be highly trained, experienced, and have all state licenses required to operate water and wastewater systems and do so in a manner that complies with federal, state, and local laws and regulations. And insofar as our customer service function is concerned, we believe it is critical to our customers to have unlimited access to personnel who can answer service and billing questions and can competently deal with problems adversely affecting service whenever they arise. We also want to ensure our customers have access to an array of services, like online bill payment, not usually available from utilities the size of Bluegrass. Taken together, our experience in Kentucky and in the other states where CSWR-affiliated utilities provide service has proven time and again that using third parties for O&M and customer service functions is the best available option.

**Q. IN OTHER STATES, DO CSWR-AFFILIATED COMPANIES ALSO USE THIRD PARTIES TO PERFORM O&M AND CUSTOMER SERVICE FUNCTIONS?**

A. Yes. Using third parties is the method all our utility affiliates use to perform O&M and customer service functions.

## PROCESS USED TO SELECT O&M CONTRACTORS

**Q. PLEASE DESCRIBE THE PROCESS CSWR USES TO IDENTIFY AND ENGAGE THIRD-PARTY O&M CONTRACTORS FOR BLUEGRASS.**

A. As the question suggests, the process we use has two distinct parts: identifying qualified contractors and then, after evaluating competitive bids, engaging one or more contractors to provide required O&M services. There is a third aspect as well: management and oversight of contractors we engage. However, for the next few questions I want to focus on the identification and engagement aspects of our process.

**Q. HOW DOES CSWR GO ABOUT IDENTIFYING QUALIFIED CONTRACTORS TO PERFORM THE O&M FUNCTIONS BLUEGRASS REQUIRES?**

A. Our contractor identification process begins with evaluating qualifications of prospective contractors. We have refined and formalized the process to now include a written "Request for Qualification" ("RFQ"). We disseminate information about contracting opportunities (including information about how to obtain and RFQ) as broadly as possible in hopes of identifying as many potential contractors as possible to bid on available work. A copy of the RFQ form we use for Bluegrass is attached to my testimony as Exhibit TT-2.

The RFQ asks prospective contractors to provide basic information about themselves and their experience in performing the kinds of work we require. The RFQ also includes a list of contractor insurance requirements. Making sure contractors have appropriate types and amounts of insurance insulates the Company and its customers from liability for acts or omissions that result in damages to others. And, as you might suspect, activities related to water and wastewater can involve significant risk of damage to public health and the environment.

As I mentioned in my response to a previous question, the contractors we need must be highly trained, experienced, and have all state licenses required to operate water and wastewater systems. Consequently, our RFQ requires interested parties to provide information and documentation sufficient to ensure they satisfy those requirements. But over and above what the law requires, we insist our contractors commit themselves to respond to customer service emergencies within a specified time period – usually within two hours – regardless of when those emergencies arise. We include those requirements in the RFQ so contractors considering bidding are fully informed of what the Company will expect of them.

**Q. WHAT IS THE NEXT STEP IN THE O&M CONTRACTOR SELECTION PROCESS?**

A. The next step is to evaluate all RFQ responses we receive to determine which respondents are qualified to go to the next step in the process. We believe pre-qualifying prospective contractors via their RFQ responses is critical because it saves time we otherwise might waste later on in the selection process evaluating bids from unqualified bidders. If an

interested contractor cannot satisfy all the qualifications and requirements stated in our RFQ, it makes no sense to send that contractor a bid package and spend time reviewing the bid when it's returned. To be considered, a contractor must meet our minimum requirements. The RFQ process allows us to determine which ones do and do not.

**Q. AFTER YOU HAVE EVALUATED THE RFQ RESPONSES AND IDENTIFED POTENTIALLY QUALIFIED CONTRACTORS, WHAT HAPPENS NEXT?**

A. After we eliminate unqualified contractors from the list of RFQ respondents, the next step is to send potentially qualified contractors a formal "Request for Proposal" ("RFP"). Generally, the RFP includes a proposal letter that specifically identifies the contractor's tasks, duties, and responsibilities (sometimes referred to as a "Statement of Work"), a list of all facilities for which Bluegrass is seeking proposals, the permit numbers of those facilities, a draft of the contract the successful bidder would be required to sign (which includes the Statement of Work), and the date the RFP response is due. Also included in the package is a bid response page, which requires the contractor to provide key cost information about its bid. We consider these documents to be a critical part of the response because they provide basic information necessary to compare the RFP responses one to another from a cost standpoint. I have included a typical RFP package as Exhibit TT-3 to my direct testimony.

**Q. WHAT PROCESS DOES CSWR USE TO COMPARE RFP RESPONSES AND PICK THE WINNING BID?**

A. The evaluation process looks at each response to determine if a contractor's bid deviates in any way from specifications in the RFP. We also look at the scope of the bid – *i.e.* does

it include all facilities identified in the RFP or only some. We obviously look at the contractor's proposed price, but our final decision is based on what we refer to as the "lowest and best bid," which considers price in context with our evaluation of the overall quality of the bidder's proposal. Once we have made our preliminary choice of a winning bidder, we schedule a follow-up meeting to confirm the accuracy of the bid documents and make sure the contract understands all our requirements and appreciates their importance. Following that meeting, the winning bidder is confirmed and is asked to enter into a signed agreement.

**Q. IS THERE OTHER INFORMATION REGARDING BLUEGRASS'S USE OF THIRD-PARTY O&M CONTRACTORS YOU BELIEVE THE COMMISSION SHOULD KNOW AND CONSIDER?**

A. Yes. CSWR and Bluegrass utilize several off-the-shelf technologies to cost-effectively enhance work performed by our O&M contractors, help minimize costs, and improve the quality of service we provide our customers. For example, CSWR implemented a computerized maintenance management system called Utility Cloud for the benefit of all its affiliated utility operating companies. Utility Cloud is a workorder-based system used to catalog all equipment in each Bluegrass system, host distribution system mapping, automatically schedule preventive maintenance, schedule necessary repairs, and schedule and record responses to customer complaints and service calls. The system operates via smartphones and handheld devices, so it is easily utilized by all our O&M contractors. Utility Cloud ensures Bluegrass's systems are well-maintained; property, plant, and equipment records are maintained; and customer service needs are systematically and

expeditiously addressed with appropriate record keeping of those customer service needs. And we are able to monitor our Kentucky O&M contractors to make sure they are doing work for which they were hired, are doing that work on a timely and competent basis, and are meeting the needs of the Company and its customers.

Another cost-effective technology we employ is the Mission remote monitoring platform. In his direct testimony regarding steps Bluegrass has taken to improve operations, Mr. Cox mentions our installation of Mission equipment at all our systems and some of the benefits that equipment provides. We have deployed Mission systems at both our wastewater and water systems and the sensors on each system are set to provide ongoing utility system operational performance monitoring and early warnings to Bluegrass and its O&M contractors if there is an issue. In most cases, those warnings are broadcast before the issue adversely affects customer service. Examples of the types of problems the Mission system is designed to detect include power outages at water wells and sewage lift stations, chlorine residual readings on water distribution systems, low pressure issues on water distribution systems, high level alarms on sewage system lift stations, and low levels in water storage tanks. When these alarms activate, they immediately send information to Bluegrass's O&M contractors, which allows them to react and take action before customers are even aware of the problem and before the problem can affect customer service.

**Q. YOU CHARACTERIZED THE MISSION SYSTEM AS "COST-EFFECTIVE." PLEASE EXPLAIN.**

A. As I mentioned in my previous answer, the Mission system is programmed to provide high level alarms at our sewage lift stations. Prudent operation requires operators to check levels

in sewage lift stations daily, so without the Mission system our O&M contractor would have to dispatch an employee each day to check levels. As you can imagine, such a procedure is not inexpensive and the cost of doing so daily mounts quickly. With the Mission system, no employee need be dispatched unless the system detects a problem, yet continuous information is readily available for remote access via computer or smart phone. The Mission system also archives these daily reading so they can be accessed in case the systems are subjected to a compliance audit or develop operational problems. In the latter circumstance, historical data likely would prove extremely helpful in determining the start and duration of the problem, which should aid in promptly resolving the problem.

**THIRD-PARTY CUSTOMER SERVICE CONTRACTOR**

**Q. YOU EARLIER STATED BLUEGRASS ALSO USES A THIRD-PARTY CONTRACTOR FOR CERTAIN CUSTOMER SERVICE FUNCTIONS. PLEASE EXPLAIN.**

A. Bluegrass, like all CSWR-affiliated utility operating companies, uses Nitor Billing Services, LLC ("Nitor") to provide a wide range of services to our customers. The services Nitor provides include generating and mailing monthly service bills, responding to customer billing questions, processing service initiation requests, processing service termination requests, processing customer bill payments, handling involuntary service shut-offs including generating and mailing all required notices, providing information to builders wanting to connect dwellings under construction to our wastewater or water systems, and accumulating and archiving data regarding the activities I previously identified.

**Q. WHY HAS BLUEGRASS ELECTED TO USE NITOR TO PERFORM THE CUSTOMER SERVICE FUNCTIONS YOU JUST DESCRIBED INSTEAD OF HIRING EMPLOYEES TO PERFORM THOSE TASKS?**

A. The consideration primarily responsible for our decision to use Nitor was our desire to provide customers and our Company an array of first-class customer services and service event recording capabilities that a company the size of Bluegrass – or even a company the size of Bluegrass and its utility operating affiliates – would be unable to provide at a reasonable per-customer cost. Nitor has developed and deployed a host of state-of-the-art systems and practices that generally are not available to utilities like Bluegrass. Since Nitor can spread the cost of these systems over all its customers, Bluegrass and its affiliates are able to enjoy the benefits of Nitor's economies of scale. And as customer service technologies improve and expand, a company like Nitor can adopt and deploy these improvements much more quickly and cost-effectively than could Bluegrass or even the affiliated group of which Bluegrass is a part.

**Q. PLEASE PROVIDE EXAMPLES OF BENEFITS BLUEGRASS'S RELATIONSHIP WITH NITOR HAS BROUGHT BOTH CUSTOMERS AND THE COMPANY.**

A. There are many examples, but I will mention only a few. Nitor (or an after-hours contractor engaged for that purpose) provides live answering service – *i.e.* a live human being answers the call – for all customer emergency service calls twenty-four hours as day. If the subject of the call truly is an emergency, Nitor personnel immediately contact an emergency

service responder designated by Bluegrass's O&M contractor, who dispatches personnel to address the problem.

Nitor also has a staff dedicated and trained to answer customer service and billing questions between the hours of 8:00 a.m. and 5:00 p.m. (local time), Monday through Friday. Outside these hours, callers can choose the option of leaving a voicemail or connecting to the emergency service call center. And Nitor is contractually obligated to promptly respond to all voicemails. Nitor's staff has access to and is knowledgeable about Bluegrass's tariff, so they can successfully deal with most billing questions. But if Nitor is unable to answer the question or if the customer wants to escalate, the customer is referred to a CSRW employee who is designated to deal with these issues. All customer contacts with Nitor are thoroughly documented in case questions arise later about when calls were made, how many calls were made, and what information the customer received. Customer calls also are recorded and stored to ensure professional conduct toward customers and also ensure questions or disputes about customer interactions can quickly be resolved.

Through Nitor, our customers have access to a range of payment options including payment by mail, online payment by check or credit card, or electronic withdrawals from the customer's checking account (with customer authorization).

Nitor also provides customer name and address information to our Mission monitoring system to help pinpoint problems with our water and wastewater systems, which aids in focusing and speeding up our responses.

**Q. DO YOU BELIEVE THE SERVICES PROVIDED BY NITOR BENEFIT BLUEGRASS'S CUSTOMERS?**

A. There is no question in my mind our Bluegrass customers benefit from the Company's relationship with Nitor. Without that relationship, we could not provide many of the services currently available and could not expand or improve services as technology evolves. And even if we could, we could not do so cost-effectively.

**Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

A. Yes, it does.

**EXHIBIT TT – 1**

# BLUEGRASS SERVICE LOCATIONS

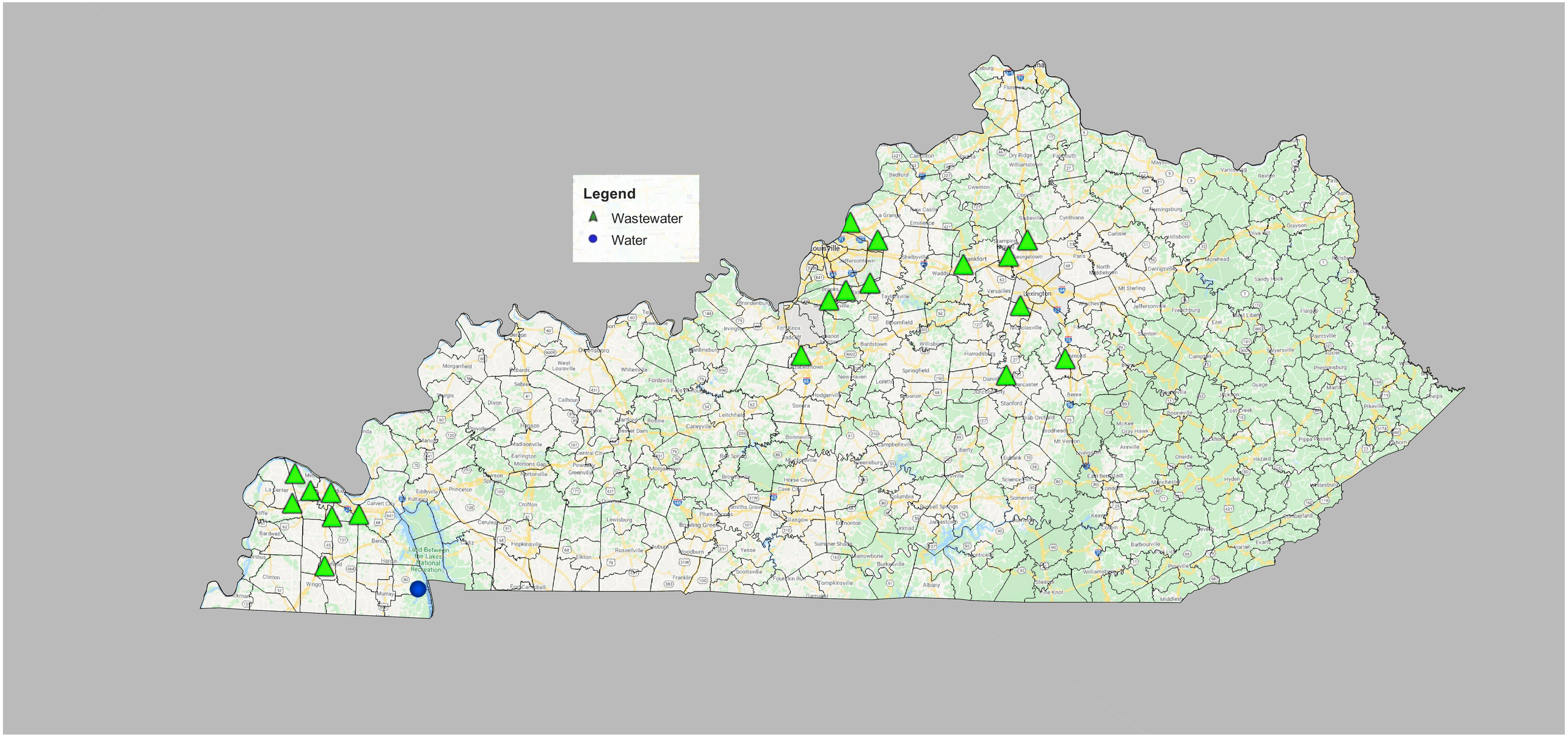


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**EXHIBIT TT - 2**

BLUEGRASS WATER
Utility Operating Company
A CSWR Managed Utility

**We Need You**

CSWR, LLC, (CSWR), and its affiliate, Bluegrass Water, are looking to work with qualified and experienced water operations and management (O&M) firms to bring safe, reliable and environmentally responsible water resources throughout Kentucky.

CSWR, Inc. owns and operates several private, regulated water utility companies across the nation. We provide professional and managerial services to make sure the communities we serve have access to clean, safe and reliable water resources, 24/7. We work with outside firms like yours to make sure our utility operating companies have professional operation, maintenance and construction services. Our goal at CSWR, Inc. is to transform local water treatment facilities across the United States, improving both the quality of water and the quality of life for our customers.

**Benefits of Working with Us**

Bluegrass Water is transforming how water utilities work by using technology and innovation to quickly assess and invest in reliable infrastructure that meets or exceeds stringent state and federal safety standards, while protecting the aquifers, lakes, rivers and streams that are essential to our world.

Our O&M partners get the benefits of access to working with industry-leading technology, a growing network of water professionals and the opportunity to grow your business.

Bluegrass Water also provides:

- Training vouchers pending state approval
- Opportunity to learn how to use a computer-based training monitoring system (CMMS)
- Professional, 24/7 customer service

**We Need You**

We're building our database for all current and future projects for construction and water O&M in Kentucky. This Qualification Application is solely a request for information. It does not represent an offer, nor does it confer any rights on any respondent. CSWR, Inc. or Bluegrass Water is not responsible under any circumstances for any costs incurred by responding to this Qualification Application.

Questions? Please contact us at operations@cswrgroup.com.

BLUEGRASS WATER
Utility Operating Company
A CSWR Managed Utility

## QUALIFICATION APPLICATION

Please fill out the information below to be notified of any current or future Bluegrass Water projects.

| Firm Name: | |
|---|---|

1. Address:
2. Company Headquarters (if different from above):

| Number of years in business under current business name: | |
|---|---|

| List all other business names firm has operated under and the time frames for each: |
|---|
| |
| |
| |

| List any Disadvantaged Business Enterprise (DBE) certifications: |
|---|
| |

Please mark which types of projects you are interested in:

| | Water |
|---|---|
| Operation & Maintenance | |
| Construction | |

If firm is a corporation, LLC or partnership, provide the following information:

| Type of organization: | |
|---|---|
| State of incorporation: | |
| Date of Incorporation: | |
| Name of President: | |
| Name of Vice President: | |
| Name of Secretary: | |
| Name of Treasurer: | |

## SERVICES PROVIDED

### Wastewater Field Operations

Tasks listed below are routine tasks expected for the operation of a wastewater facility and shall be included in the monthly fee. The monthly fee shall include all labor, materials, and costs to complete the following tasks.

- Make minimum of 3 (for mechanical plants) or 1 (for lagoons) weekly visits to the treatment facility to monitor the operation of the Facilities in order to assure the Facilities are in compliance with all required standards of the governing authorities and those set forth in this Agreement or any attachments hereto.
- Perform weekly inspections of the Facilities' components as described in the CMMS (computerized maintenance management system) or as needed to meet manufacturers' specifications and recommendations.
- Perform monthly, quarterly, semiannual, annual duties of the Facilities' components as described in the CMMS (computerized maintenance management system) or as needed to meet manufacturers' specifications and recommendations.
- Create and perform all routine scheduled work orders generated through CMMS.
- Prepare and file the necessary reports to government regulators to maintain regulatory compliance and provide copy of same to Owner.
- Utilize owner provided regulatory results database. Maintain/upload certified test results into the database by the last business day of each month.
- Obtain the sampling requirements for testing by the government regulators and/or the Owner and perform the necessary sampling.
- Maintain all facility records included in CMMS.
- Contact appropriate laboratories to provide adequate testing and reporting services for Owner.
- Provide all test results to the Owner as early as possible.
- Notify the Owner immediately via Email and Phone of any test results that are outside of regulatory or permit limits, represent a potential for a Notice of Violation, could result in a fine from a Regulatory agency, or could cause a negative impact on the public. Any fee or fines resulting from a delay in notifying the Owner will be the responsibility of the successful Bidder.
- Contact and direct appropriate contractors to make repairs to the system as needed for operation.
- Monitor all of the Facilities' system alarms and remote controls and contact Owner in the event of an alarm.
- Maintain a 24-Hour 7 day per week maintenance and emergency service phone line for customer utility service disruption events.



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- Must respond to all customer calls and notifications within a 2-hr period of receiving call or notification.
- Provide a 24-Hour on-call emergency utility service response for operations.
- Perform Utility Locates.

### Wastewater Field Operations – Additional Work

Tasks listed below are non-routine tasks expected for the operation of a wastewater facility and shall be billed in addition to the monthly fee. The Bidder shall provide a list of labor rates and cost markup that will be charged.

- Sewer main, or manhole repair and maintenance
- Service and utility construction inspections
- Sewer main flushing, rodding, or jetting
- Lift station maintenance and repair
- Cleaning and vacuuming of manholes
- Lagoon repair/maintenance requiring excavating equipment (e.g. backhoe, loader, etc.)
- Mowing and trimming of plant, lagoon and right of way areas
- Chemical application to lagoon cells
- Fence repair & upkeep
- Sewer main video inspection and recording
- Sewer main repair and/or replacement
- Customer service issues requiring action on behalf of the utility
- Pavement repairs
- Items identified during start-up by Operator as inoperable or concerning conditions of the facility that would affect treatment performance. Owner to review items and grant approval prior to repair work beginning.
- Electrical Repair Services
- Tree trimming/brush removal services
- Mechanical repair services
- Structural repair services

### Water Field Operations – Included in Monthly Fee

Tasks listed below are routine tasks expected for the operation of a water facility and shall be included in the monthly fee. The monthly fee shall include all labor, materials and costs to complete the following tasks.

- Make weekly or more frequent visits, as required by regulatory requirements, to the treatment facility to monitor the operation of the Facilities in order to assure the Facilities are in compliance with all required standards of the governing authorities and those set forth in this Agreement or any attachments hereto;



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- Perform weekly inspections of the Facilities' components as described in the CMMS (computerized maintenance management system) or as needed to meet manufacturers' specifications and recommendations.
- Perform monthly, quarterly, semiannual, annual duties of the Facilities' components as described in the CMMS (computerized maintenance management system) or as needed to meet manufacturers' specifications and recommendations.
- Maintain all facility records included in CMMS.
- Create and perform all routine scheduled work orders generated through CMMS.
- Prepare and file the necessary reports to government regulators to maintain regulatory compliance and provide copy of same to Owner.
- Utilize owner provided regulatory results database. Maintain/upload certified test results into the database by the last business day of each month.
- Obtain the sampling requirements for testing by the government regulators and/or the Owner and perform the necessary sampling.
- Contact appropriate laboratories to provide adequate testing and reporting services for Owner.
- Provide all test results to the Owner as early as possible.
- Notify the Owner immediately via Email and Phone of any test results that are outside of regulatory or permit limits, represent a potential for a Notice of Violation, could result in a fine from a Regulatory agency, or could cause a negative impact on the public. Any fee or fines resulting from a delay in notifying the Owner will be the responsibility of the successful Bidder.
- Additionally, provide the Owner immediate notification of any situation or activity that would require a precautionary boil order or other interruption to normal service to customers.
- Contact and direct appropriate contractors to make repairs to the system as needed for operation.
- Provide monthly water bac-T results.
- Provide all test results to the Owner as early as possible.
- Notify the Owner immediately via Email and Phone of any test results that are outside of regulatory or permit limits, represent a potential for a Notice of Violation, could result in a fine from a Regulatory agency, or could cause a negative impact on the public.
- Additionally, provide the Owner immediate notification of any situation or activity that would require a precautionary boil order or other interruption to normal service to customers.
- Meter readings.



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- Monitor all of the Facilities' system alarms and remote controls and contact Owner in the event of an alarm.
- Maintain a 24-Hour 7 day per week maintenance and emergency service phone line for customer utility service disruption events.
- Must respond to all customer calls and notifications within a 2-hr period of receiving call or notification.
- Provide a 24-Hour on-call emergency utility service response for operations including 2-Hour emergency service per month.
- Perform Utility Locates.

### Water Field Operations – Additional Work

Tasks listed below are non-routine tasks expected for the operation of a wastewater facility and shall be billed in addition to the monthly fee. The Bidder shall provide a list of labor rates and cost markup that will be charged.

- Water main repair and maintenance
- Service and utility construction inspections
- Water main flushing
- Booster station maintenance and repair
- Mowing and trimming of plant and right of way areas
- Fence repair & upkeep
- Customer service issues requiring action on behalf of the utility
- Pavement repairs



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Please mark each box for services that your firm provides. Do not include services which are subcontracted to other firms.

## Operations & Maintenance (O&M)

| Service | Water |
|---|---|
| System O&M | |
| Engineering | |
| Laboratory Testing | |
| Grounds Maintenance/Landscaping | |
| Discharge Reporting | |
| Permitting | |
| Other (specify): | |
| Other (specify): | |

## Construction

| Service | Water |
|---|---|
| General Contracting | |
| Engineering/Design | |
| Structural | |
| Plumbing/Piping | |
| Electrical | |
| Cement/Foundations | |
| Other (specify): | |
| Other (specify): | |

Insured party where specified herein.

PERSONNEL

**Management Personnel**

Please list all personnel that may have management responsibilities on potential projects, along with their title, years of experience, years with the firm, a brief description of their potential project role and any certifications or licenses they may have. Use additional sheets if necessary. Please include a management organization chart and resumes of management personnel.

| Name | Title | Years of Experience | Years with Firm | Project Role | Certifications/ Licenses |
|---|---|---|---|---|---|
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**Operating Personnel**

Please list all personnel that may have operation & maintenance responsibilities on potential projects, along with their certification and/or licenses (please include the state of licensure), years of experience, years with the firm, and all the types of systems and/or processes they have experience operating and maintaining. Use additional sheets if necessary.

| Name | Certification/ License | Years of Experience | Years with Firm | Types of Systems |
|---|---|---|---|---|
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## PROJECT EXPERIENCE

Please list similar projects your firm has operated or managed in the past five (5) years. For each project, include the type of system operated and maintained, location, designed flow capacity, length on contract, scope of work and the total number of permit violations. A narrative must be attached to explain any permit violations and should describe the violation, why it occurred, the resulting penalty and the corrective action taken.

| System Type | Location | Designed Flow | Length of Contract | Scope of Work | # of Permit Violations |
|---|---|---|---|---|---|
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## REQUIREMENTS

### Customer Service Requirement

The successful bidder shall be responsible for the accurate and timely reading of customer meters, including rereads at Bluegrass Water's request. Each bidder must identify a single point of contact who will be responsible for communications between Bluegrass Water's Customer Service Staff and the bidder's field staff.

### Insurance Requirement

For all of our O&M projects, we require the insurance coverage listed below. The following Certificates of Insurance ("COI"), as outlined here, must be furnished to Bluegrass Water **upon receipt of approval of the award of the contract**. COI shall provide a minimum of a thirty (30) day notice of cancellation to CCPS and shall name CSWR as an additional insured as follows:

#### Comprehensive General Liability Insurance

Comprehensive General liability insurance on an "occurrence basis," in the amount of at least $1,000,000.00 per occurrence, with at least a $2,000,000.00 annual aggregate limit, including broad form property damage, blanket contractual and personal injuries (including death resulting therefrom) coverage.

#### Automobile Liability Insurance

Automobile Liability insurance in the amount of $500,000.00 per person and $1,000,000.00 per occurrence for bodily injury and $500,000.00 per occurrence for property damage or $1,000,000.00 combined single limit. Coverage should extend to any auto or owned, hired or non-owned autos.

#### Worker's Compensation and Employers Liability Insurance

Worker's Compensation and Employers Liability in the amount required by law.

#### Commercial Umbrella Coverage

Commercial Umbrella Coverage on all of the foregoing coverage in the amount of $5,000,000.00 per occurrence and $5,000,000.00 aggregate.

#### Pollution Legal Liability

Operator shall maintain in force Pollution Legal Liability policy with limits of $1,000,000.00 per occurrence and $2,000,000.00 aggregate. In the event that Pollution Liability Coverage is discontinued for any reason by Operator after the termination of this Agreement, Operator agrees to procure tail coverage in force continuously without interruption for a period of three (3) years from the date of the termination of this Agreement.

#### Professional Liability Error and Omissions

Professional Liability Error and Omissions coverage of not less than $1,000,000.00 per occurrence and $2,000,000.00 aggregate. In the event that Professional Liability Errors and



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Omissions coverage is discontinued for any reason after the termination of this Agreement, Operator agrees to procure tail coverage in force continuously without interruption for a period of three (3) years from the date of the termination of this Agreement.

### Duration of Insurance Policies

Except as otherwise expressly required, all insurance policies herein specified shall be in force for the term of the contract and contain a Rider that the insurance policies cannot be cancelled without a thirty (30) day prior written notice to the parties insured.

## SAFETY RECORD

Please provide your firm's Workers' Compensation Experience Modifier and OSHA Recordable Rate for the past three years.

Please provide your Days Away, Restricted, or Transferred (DART) Incident Rate calculated from OSHA's Form 300 and Experience Modifier Rate (EMR) for the last three years in the table below.

| Year | DART | EMR |
|---|---|---|
| | | |
| | | |
| | | |

Please provide a copy of any Drug and Alcohol policies including testing programs. Also, provide a brief narrative summarizing any health and safety programs and/or processes

**References**

Provide three trade references below include name of reference, current contact person, telephone number and address:

1.
2.
3.

Provide two bank references below, include name of reference, current contact person, telephone number and address:

1.
2.

The person undersigned affirms that all information contained within this Qualifications Application is true and accurate. Providing false or misleading or omitting relevant information may result in the Respondent's firm being disqualified for any current or future work for Central States Water Resources.

Affirmed by (signature): _____
Name: _____
Title: _____
Date: _____

**EXHIBIT TT - 3**

BLUEGRASS WATER
Utility Operating Company
A CSWR Managed Utility

## INTRODUCTION

CSWR, LLC (CSWR) owns and operates several private, regulated water and wastewater utility companies including our affiliate, Bluegrass Water. We provide professional and managerial services to make sure the communities we serve have access to clean, safe and reliable water resources, 24/7. We work with outside firms like yours to make sure our utility operating companies have professional operation, maintenance and construction services. Our goal at CSWR, Inc. is to transform local water and wastewater treatment facilities across the United States, improving both the quality of water and the quality of life for our customers.

## BLUEGRASS WATER

Bluegrass Water is looking for a qualified partner to operate and maintain our facilities. The winning bidder will perform routine service and maintenance to the region's water and wastewater treatment facilities for fee. This fee will include payment toward both administrative and field operations. Respondents must provide a plan that includes certification, staffing and insurance information, all of which are more fully detailed on the following pages.

We invite you to submit your proposal based on the information outlined below. We look forward to working with you!

Sincerely,

Jay Favor
CSWR, Director of Environmental Health and Safety



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## BACKGROUND

Bluegrass Water owns and operates several private water and wastewater utility systems across Kentucky. We use firms like yours, which deal in operation, maintenance or construction, to make sure we provide safe, clean and reliable water resources to our customers 24 hours a day, 365 days a year. We use this Request for Proposal (RFP) process to help us find firms willing and qualified to supply these services for our customers.

Our goal at Bluegrass Water is to transform local water and wastewater treatment facilities across Kentucky, by using technology and innovation to quickly assess and invest in reliable infrastructure that meets or exceeds stringent state and federal safety standards. By restoring communities water infrastructure to applicable regulatory standards, we ensure all Bluegrass Water communities have access to safe, clean and reliable water resources while protecting the aquifers, lakes, rivers and streams that are essential to our world.

The objective of this RFP is to identify whether your firm can provide the best overall value to Bluegrass Water. While price is a significant factor, we'll base our decision on a number of other criteria as well, which will be more fully described in the Evaluation Factors section of this RFP below.

## SUBMISSION GUIDELINES & REQUIREMENTS

Here are some helpful guidelines to be aware of when submitting:

- Only qualified individuals or firms with prior experience on projects such as this should submit proposals in response to this RFP.
- Bidders may complete a "Company Narrative," providing up to a 4-page narrative listing their company's experience with similar projects, expertise and why they should be selected by CSWR. Please include references for each example provided. This narrative is optional.
- Bidders must complete the "RFP Response Page" at the end of this RFP that outlines the required submittal documents and pricing.
- Proposals must be signed by a representative that is authorized to commit a bidder's company.
- Proposals must remain valid for a period of 60 days.
- Bluegrass Water anticipates selecting at least two individuals or firms to have more in-depth discussions with and will make an award to one of these "down-selected" individuals or firms.
- Each bidder must read the "Agreement Regarding Operation of Utility Treatment Facilities Water/Wastewater" presented in Attachment A.



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- Each bidder must provide proof of insurance coverage, including all inclusions and exclusions to the policy. For information regarding insurance requirements, please refer to Insurance Requirements below.
- Each bidder must provide a staffing plan for each of the facilities and include the key personnel's biography, resume and certifications.

## PROJECT DESCRIPTION

Our goal at Bluegrass Water is to transform local water and wastewater treatment facilities across Kentucky, improving the quality of water and therefore the quality of life in the region.

Bluegrass Water is looking for qualified groups to operate and maintain water and wastewater treatment facilities across Kentucky. This includes all maintenance and construction projects needed to guarantee the highest quality product to Bluegrass Water's serviced communities while maintaining safe policies and best practices to comply with regulatory standards.

## SITE VISIT (OPTIONAL)

Bluegrass Water will conduct an optional site visit for prospective bidder**, upon request**, to examine the system.

## PROJECT SCOPE

Provided below is Bluegrass Water's Project Scope, focused on administrative duties and field operations which are comprised of operator services for both the water treatment facilities and wastewater treatment facilities at Bluegrass Water, a part of CSWR.

### Scope and Requirements:

Bidder shall provide a monthly fee in its response to this RFP to maintain the system(s), as described below. No additional charges will be allowed for the routine testing, reporting, operations and maintenance of the Facilities. All costs including, but not limited to, routine labor, materials, profit, meter reading and travel shall be included in the monthly fee. Costs for items such as equipment replacement, emergencies or other non-routine repairs are not included in this scope item.

### Administrative

The successful Bidder shall maintain all required certificates, licenses and approvals required by the governing authorities to operate the Facilities and provide copies of



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DT Exh. TT-3

such to the Owner. Each Bidder must provide a staffing plan for each of the facilities and include the key personnel's biography, resume and certifications.

The successful Bidder shall maintain insurance meeting or exceeding the requirements listed below. Certificates of insurance showing that the Bidder meets the minimum requirements must be provided with the Bidder's response to this Request for Proposal (RFP). Failure to include the necessary certificates will result in the Bidder's proposal being disqualified from consideration.

## Customer Service Requirement

The successful Bidder shall be responsible for the accurate and timely reading of customer meters, including rereads at Bluegrass Water's request. Each Bidder must identify a single point of contact who will be responsible for communications between Bluegrass Water Customer Service Staff and the Bidder's field staff.

## Insurance Requirement

Certificates of Insurance ("COI"), as outlined herein, shall be furnished to Bluegrass Water upon receipt of approval of the award of the contract. COI shall provide a minimum of a thirty (30) day notice of cancellation to CCPS and shall name Bluegrass Water as an additional insured as follows:

### Comprehensive General Liability Insurance

Comprehensive General liability insurance on an "occurrence basis," in the amount of at least $1,000,000.00 per occurrence, with at least a $2,000,000.00 annual aggregate limit, including broad form property damage, blanket contractual and personal injuries (including death resulting therefrom) coverage.

### Automobile Liability Insurance

Automobile Liability insurance in the amount of $500,000.00 per person and $1,000,000.00 per occurrence for bodily injury and $500,000.00 per occurrence for property damage or $1,000,000.00 combined single limit. Coverage should extend to any auto or owned, hired or non-owned autos.

### Worker's Compensation and Employers Liability Insurance

Worker's Compensation and Employers Liability in the amount required by law.

### Commercial Umbrella Coverage

Commercial Umbrella Coverage on all of the foregoing coverage in the amount of $5,000,000.00 per occurrence and $5,000,000.00 aggregate.



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### Pollution Legal Liability

Operator shall maintain in force Pollution Legal Liability policy with limits of $1,000,000.00 per occurrence and $2,000,000.00 aggregate. In the event that Pollution Liability Coverage is discontinued for any reason by Operator after the termination of this Agreement, Operator agrees to procure tail coverage in force continuously without interruption for a period of three (3) years from the date of the termination of this Agreement.

### Professional Liability Error and Omissions

Professional Liability Error and Omissions coverage of not less than $1,000,000.00 per occurrence and $2,000,000.00 aggregate. In the event that Professional Liability Errors and Omissions coverage is discontinued for any reason after the termination of this Agreement, Operator agrees to procure tail coverage in force continuously without interruption for a period of three (3) years from the date of the termination of this Agreement.

### Duration of Insurance Policies

All insurance policies herein specified shall be in force for the term of the contract and contain a Rider that the insurance policies cannot be cancelled without a thirty (30) day prior written notice to the parties insured.

### Insurance Policy Review

Insurance policies may be submitted for review to Bluegrass Water. Said policies shall be in form and content satisfactory to Bluegrass Water's said representatives. Said policies shall also name Bluegrass Water as an additional insured party where specified herein.

## Wastewater Field Operations – Included in Monthly Fee

Tasks listed below are routine tasks expected for the operation of a wastewater facility and shall be included in the monthly fee. The monthly fee shall include all labor, materials and costs to complete the following tasks.

- Make minimum of 3 (for mechanical plants) or 1 (for lagoons) weekly visits to the treatment facility to monitor the operation of the Facilities in order to assure the

  Facilities are in compliance with all required standards of the governing authorities and those set forth in this Agreement or any attachments hereto.
- Perform weekly inspections of the Facilities' components as described in the CMMS (computerized maintenance management system) or as needed to meet manufacturers' specifications and recommendations.
- Perform monthly, quarterly, semiannual, annual duties of the Facilities' components as described in the CMMS or as needed to meet manufacturers' specifications and recommendations.



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- Create and perform all routine scheduled work orders generated through CMMS.
- Prepare and file the necessary reports to government regulators to maintain regulatory compliance and provide copy of same to Owner.
- Utilize owner provided regulatory results database. Maintain/upload certified test results into the database by the last business day of each month.
- Obtain the sampling requirements for testing by the government regulators and/or the Owner and perform the necessary sampling.
- Maintain all facility records included in CMMS.
- Contact appropriate laboratories to provide adequate testing and reporting services for Owner.
- Provide all test results to the Owner as early as possible.
- Notify the Owner immediately via email and phone of any test results that are outside of regulatory or permit limits, represent a potential for a Notice of Violation, could result in a fine from a Regulatory agency or could cause a negative impact on the public. Any fee or fines resulting from a delay in notifying the Owner will be the responsibility of the successful Bidder.
- Contact and direct appropriate contractors to make repairs to the system as needed for operation.
- Monitor all of the Facilities' system alarms and remote controls and contact Owner in the event of an alarm.
- Maintain a 24-hour, 7-day-per-week maintenance and emergency service phone line for customer utility service disruption events.
- Must respond to all customer calls and notifications within a two (2) hour period of receiving call or notification.
- Provide a 24-hour on-call emergency utility service response for operations.
- Perform Utility Locates.

## Wastewater Field Operations – Additional Work

Tasks listed below are non-routine tasks expected for the operation of a wastewater facility and shall be billed in addition to the monthly fee. The Bidder shall provide a list of labor rates and cost markup that will be charged.

- Sewer main, or manhole repair and maintenance
- Service and utility construction inspections
- Sewer main flushing, rodding or jetting
- Lift station maintenance and repair
- Cleaning and vacuuming of manholes
- Lagoon repair/maintenance requiring excavating equipment (e.g. backhoe, loader, etc.)
- Mowing and trimming of plant, lagoon and right of way areas
- Chemical application to lagoon cells
- Fence repair & upkeep
- Sewer main video inspection and recording

- Sewer main repair and/or replacement
- Customer service issues requiring action on behalf of the utility
- Pavement repairs
- Items identified during start-up by Operator as inoperable or concerning conditions of the facility that would affect treatment performance. Owner to review items and grant approval prior to repair work beginning.
- Electrical Repair Services
- Tree trimming/brush removal services
- Mechanical repair services
- Structural repair services

## Water Field Operations – Included in Monthly Fee

Tasks listed below are routine tasks expected for the operation of a water facility and shall be included in the monthly fee. The monthly fee shall include all labor, materials and costs to complete the following tasks.

- Make weekly or more frequent visits, as required by regulatory requirements, to the treatment facility to monitor the operation of the Facilities in order to assure the Facilities are in compliance with all required standards of the governing authorities and those set forth in this Agreement or any attachments hereto.
- Perform weekly inspections of the Facilities' components as described in the CMMS (computerized maintenance management system) or as needed to meet manufacturers' specifications and recommendations.
- Perform monthly, quarterly, semiannual, annual duties of the Facilities' components as described in the CMMS or as needed to meet manufacturers' specifications and recommendations.
- Maintain all facility records included in CMMS.
- Create and perform all routine scheduled work orders generated through CMMS.
- Prepare and file the necessary reports to government regulators to maintain regulatory compliance and provide copy of same to Owner.
- Utilize owner provided regulatory results database. Maintain/upload certified test results into the database by the last business day of each month.
- Obtain the sampling requirements for testing by the government regulators and/or the Owner and perform the necessary sampling.
- Contact appropriate laboratories to provide adequate testing and reporting services for Owner.
- Provide all test results to the Owner as early as possible.
- Notify the Owner immediately via email and phone of any test results that are outside of regulatory or permit limits, represent a potential for a Notice of Violation, could result in a fine from a Regulatory agency or could cause a negative impact on the public. Any fee or fines resulting from a delay in notifying the Owner will be the responsibility of the successful Bidder.

- Additionally, provide the Owner immediate notification of any situation or activity that would require a precautionary boil order or other interruption to normal service to customers.
- Contact and direct appropriate contractors to make repairs to the system as needed for operation.
- Provide monthly water bac-T results.
- Provide all test results to the Owner as early as possible.
- Meter readings.
- Monitor all of the Facilities' system alarms and remote controls and contact Owner in the event of an alarm.
- Maintain a 24-hour, 7-day-per-week maintenance and emergency service phone line for customer utility service disruption events.
- Must respond to all customer calls and notifications within a two (2) hour period of receiving call or notification.
- Provide a 24-hour on-call emergency utility service response for operations including two (2) hour emergency service per month.
- Perform Utility Locates.

## Water Field Operations – Additional Work

Tasks listed below are non-routine tasks expected for the operation of a wastewater facility and shall be billed in addition to the monthly fee. The Bidder shall provide a list of labor rates and cost markup that will be charged.

- Water main repair and maintenance
- Service and utility construction inspections
- Water main flushing
- Booster station maintenance and repair
- Mowing and trimming of plant and right of way areas
- Fence repair & upkeep
- Customer service issues requiring action on behalf of the utility
- Pavement repairs



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ATTACHMENT A – SAMPLE AGREEMENT

# AGREEMENT REGARDING OPERATION OF UTILITY TREATMENT FACILITIES WASTEWATER

This Agreement Regarding Operation of Utility Treatment Facilities ("Agreement") is entered into and shall be effective as of the 15th day of May 2019 ("Effective Date"), by and between **UTILITY OPERATING COMPANY, LLC.**, a Arkansas limited liability company ("Owner") and **Contracting Firm**, a Missouri limited liability company ("Operator"), collectively the "Parties".

## RECITALS

**WHEREAS**, **UTILITY OPERATING COMPANY, LLC.**, or its affiliate, is the Owner for the operation, maintenance, and modernization of the water and wastewater treatment facilities, located in Missouri known as, and as more particularly identified under wastewater, and water facilities identified under (Facilities).

**WHEREAS**, **Contracting Firm**, provides the services of an Operator, certified by the appropriate regulatory authority, as required, for utility treatment facilities; and

**WHEREAS**, the Owner, wishes to retain Operator, and Operator desires to provide services to the Owner related to the operation of the Facilities.

**NOW, THEREFORE**, in consideration of the mutual promises and covenants set forth herein and other good and valuable consideration, the Parties agree as follows:

## ENGAGEMENT; TERM; TERMINATION

1. Engagement. The Owner hereby engages Operator to provide services to the Owner related to the operation of the Facilities, as more particularly described herein, subject to the terms and conditions of this Agreement. Operator hereby accepts such engagement and agrees (i) to perform all services, including, without being limited to, those services specifically set forth in this Agreement and any attachment hereto; and (ii) to use reasonable and diligent efforts and to exercise the highest degree of professional competence in the performance of such services, in all cases, subject to the terms of this



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Agreement and any requirements of the Owner with regard to the operation of the Facilities.

2. Term. The term of this Agreement shall be effective as of the Effective Date and shall continue in full force and effect, unless sooner terminated as provided for herein, for a period of two (2) years.

3. Termination of Agreement Without Cause. The Owner or Operator may terminate this Agreement for any reason upon thirty (30) day prior written notice to the other Party of their desire to terminate the relationship and this Agreement.

4. Termination of Agreement With Cause. The Owner or Operator may terminate this Agreement upon written notice in the event of the failure by the other Party to perform in accordance with the terms of this Agreement. The nonperforming Party shall have ten (10) days from the date of the termination notice to cure or submit a plan for cure acceptable to the other Party.

5. Delay in Performance. Neither Owner nor Operator shall be considered in default of this Agreement for delays in performance caused by circumstances beyond the reasonable control of the nonperforming Party. For purposes of this Agreement, such circumstances include, but are not limited to, abnormal weather conditions, floods, earthquakes, fire, epidemics, war, riot, and other civil disturbances, strikes, lockouts, work slowdowns, and other labor disturbances, sabotage, judicial restraint, and inability to procure permits, licenses, or authorizations from any local, state or federal agency for any of the permissions, supplies, materials, accesses, or services required to be provided by either Owner or Operator under this Agreement. Should such circumstances occur, the nonperforming Party shall, within a reasonable time of being prevented from performing, give written notice to the other Party describing the circumstances preventing continued performance of this Agreement.

6. Termination Duties. Upon the termination of this Agreement, Operator shall render to the Owner a final accounting which shall cover the period from the date of the last statement rendered to the Owner. The Operator shall also forthwith (i) deliver copies of all records and reporting documents not already provided to the Owner, as well as, all materials, supplies, contracts, documents, accountings, papers and any and all other reports pertaining to the operation of the Facilities or this Agreement in the possession or under the control of Operator, and (ii) assign to the Owner, or its designee, existing contracts (previously approved by the Owner) in Operator's name, if any, relating to the operation of the Facilities. Within ten (10) days of the effective date of termination of this Agreement, the Owner shall forthwith pay to Operator all compensation then due Operator.

## COMPENSATION TO OPERATOR

7. Operator Fee for Basic Services. In connection with Operator providing those services to the Owner related to the operation of the Facilities, and as more particularly described hereinbelow, and incorporated herein by this reference, the Owner shall pay to Operator a monthly fee of **$$$$$**.

8. Additional Fee Charged for Services Outside of Basic Scope of Services. In the event the Owner requests Operator to provide additional services not included under the Scope of Services as described herein below, Operator shall be compensated for such additional services in accordance with Operator's Prevailing Fee Schedule as follows:

| | |
|---|---|
| Engineer Fee | $110.00/Hour |
| Technician Fee | $60.00/Hour |

9. Reimbursement of Out-of-Pocket Expenses. Operator shall be eligible for reimbursement for any and all documented costs paid by Operator associated with the testing services, electrical, mechanical and/or other parts purchased to repair and/or maintain the Facilities, chemicals required to operate the Facilities, and other out-of-pocket expenses required for the operation of the Facilities that are outside of the scope of the services for which the Operator is being paid the Fee for Basic Services. Prior approval by the Owner is required for all reimbursable expenses. Operator agrees there will be no mark-up, handling charge or other such service fee(s), related to out-of-pocket expenditures and that a copy of the original receipt(s) or other proof of purchase acceptable to Owner will be furnished with the reimbursement invoice. Reimbursement requests that were not approved in advance or are not accompanied by suitable proof of purchase may not be honored by Owner.

10. Payment of Fee and Reimbursable Costs. Operator shall submit to the Owner invoices for all Operator fees and claimed reimbursable costs on a monthly basis. All such invoices shall be due and payable to Operator by the Owner within thirty (30) days of the date of the invoice. Operator agrees that payment for claims for reimbursable expenses not received by Owner within sixty (60) days of the date incurred are at the discretion of the Owner. Invoices will be delivered to: ap@cswrgroup.com, or as provided in Section 20.

11. Collection Costs. If the Owner fails to make payments when due, Operator shall provide written notice to the Owner allowing the Owner fifteen (15) days to cure the default in payment. However, if after the fifteen (15) day cure period the Owner continues to fail to make payment to Operator, and Operator incurs any costs in order to collect the overdue sums from the Owner, the Owner agrees that all such documented collection costs incurred by Operator shall immediately become due and payable to Operator.



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## RESPONSIBILITIES - OWNER

12. Maintaining Permits. Owner shall keep all required permits up to date for the Facilities.

13. Payment of Fees Required by Government Authorities. Owner shall pay the annual operating fees, permit renewal fees, construction fees, testing fees, and any and all other fees as required by the governmental authorities for the operation of the Facilities.

14. Damages Caused by Bypass. Owner shall be responsible for and shall hold Operator harmless from liability for damages caused by a bypass of the Facilities or failure of the Facilities to meet the required effluent limits.

15. Maintenance of Records. Owner shall maintain all records on the operation and maintenance of the Facilities for a period of five (5) years or such additional period of time required by Missouri State law.

## RESPONSIBILITIES - OPERATOR

16. Basic Services. Operator shall provide to Owner the services set forth on the attached **EXHIBIT A**, which by this reference is incorporated herein.

17. Additional or Emergency Services. Any services not listed above shall be considered additional or emergency services. Additional Services are not included as part of the Basic Services and shall be paid for by Owner in accordance with the Operator's fee schedule set forth hereinabove.

18. Standard of Care. The standard of care of all services performed or furnished by Operator under this Agreement will be the care and skill ordinarily used by operators practicing under similar conditions at the same time and in the same locality.

19. Insurance. Operator shall procure and maintain in effect throughout the duration of the term of this Agreement insurance coverage not less than the types and amounts specified below. The Operator also agrees to furnish the Owner, from time to time and on demand, with suitable evidence that such insurance is in force. In the event that additional insurance, not specified herein, is required by Owner during the course of the services covered by this Agreement, Operator shall supply such insurance and all additional costs shall be borne by Owner. Policies containing a self-insured retention will not be acceptable to Owner. A company with an A- or better rating must issue all insurance policies. All coverage required herein shall list Owner as an additional insured


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including ongoing operations and completed operations on a primary and non-contributory basis using form CG 20 10 11 85 or its equivalent, and Operator shall maintain all coverage in force continuously without interruption for a period of three (3) years after the term of this Agreement. In addition, each coverage required herein shall include a waiver of subrogation (where allowable by law).

(a) Comprehensive General liability insurance on an "occurrence basis," in the amount of at least $1,000,000.00 per occurrence, with at least a $2,000,000.00 annual aggregate limit, including broad form property damage, blanket contractual and personal injuries (including death resulting therefrom) coverage.

(b) Automobile Liability insurance in the amount of $500,000.00 per person and $1,000,000.00 per occurrence for bodily injury and $500,000.00 per occurrence for property damage or $1,000,000.00 combined single limit. Coverage should extend to any auto or owned, hired or non-owned autos.

(c) Worker's Compensation and Employers Liability in the amount required by law.

(d) Commercial Umbrella Coverage on all of the foregoing coverage in the amount of $5,000,000.00 per occurrence and $5,000,000.00 aggregate.

(e) Operator shall maintain in force Pollution Legal Liability policy with limits of $1,000,000.00 per occurrence and $2,000,000.00 aggregate. In the event that Pollution Liability Coverage is discontinued for any reason by Operator after the termination of this Agreement, Operator agrees to procure tail coverage in force continuously without interruption for a period of three (3) years.

(f) Professional Liability Error and Omissions coverage of not less than $1,000,000.00 per occurrence and $2,000,000.00 aggregate. In the event that Professional Liability Errors and Omissions coverage is discontinued for any reason after the termination of this Agreement, Operator agrees to procure tail coverage in force continuously without interruption for a period of three (3) years.

In addition, Operator is required and shall require any contractors, subcontractors, vendors or any other party performing work or providing services at or for the operation of the facilities to carry the above insurance.

The policies listed above shall include within their certificate an endorsement that the policy may not be canceled until sixty (60) days prior written notice of cancellation has been served upon Owner by registered or certified mail.

Indemnification: Operator shall to the fullest extent of the law defend, indemnify and hold harmless Owner and all of its parent companies, subsidiaries, affiliates and subcontractors, including their respective officers, directors, employees, principals, partners, agents, successors and assigns, (collectively "Indemnitees") from and against

any and all actions, suits, arbitrations, administrative proceedings, demands and claims for any and all damages, injunctive or any other relief based on any cause of action whatsoever (sometimes individually "Claim" and sometimes collectively "Claims"), that may be brought or made against, or incurred by, Indemnitees on account of liabilities, damages, losses, cost, expenses, settlements, judgments, awards, and governmental penalties and sanctions, including reasonable attorneys' fees and experts' fees, including those attributable to bodily injury (including death), personal injury and property damage (sometimes individually "Liability" and sometimes collectively "Liabilities"), caused by, arising out of, or contributed to by any negligence, acts, errors, omissions or conduct of Operator, its employees, subcontractors, or agents, related in any way to the performance of any and all services described herein, except to the extent the Claims or Liabilities are determined to have been caused by the negligent or the willful misconduct of the Owner. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Agreement.

Operator shall provide to Owner at execution of this Agreement a certificate of insurance showing all required endorsements and additional insureds.

It is further mutually agreed between the parties hereto, that no payment made under this Agreement shall be deemed as conclusive evidence of the performance of this Agreement, either in whole or in part, and that no payment shall be construed to be an acceptance of defective work or improper performance or materials. The Operator is to insure its own risk in and about the property, unless special agreement is made to the contrary, said risk to be considered as the unpaid balance due at any time.

## NOTICES

20. Notices. Any notice, demand, consent, approval, request or other communication, required or permitted to be given hereunder, shall be in writing and shall be deemed to have been delivered (i) on the day personally delivered, (ii) upon receipt if sent by overnight courier, (iii) on the third business day following its mailing by registered or certified mail (return receipt requested), postage prepaid, by deposit in the United States mail, or (iv) on the day received (if received by 5:00 p.m. local time on a business day at the location of the recipient [i.e., any day other than a Saturday or Sunday or Missouri state (depending on the recipient's location) or federal holiday] and if not so received then on the next business day) if sent by facsimile or electronic transmission with proof of successful transmission.

Owner: CONFLUENCE RIVER UTILITY
OPERATING COMPANY, LLC.
500 Northwest Plaza Dr., Suite 500
St. Ann, MO 63074
Attn: Josiah Cox, President
Phone: (314) 736-4672
Facsimile: (314) 736-4743

Email: jcox@cswrgroup.com

Operator: Contractor
1351 Jefferson St,
Washington, MO 63090
Phone:
Email:

Either party may, by notice given as aforesaid, designate a different address or addresses for notices to be given to it.

## GENERAL PROVISIONS

21. Information Provided by Others. Owner shall furnish, at Owner's expense, all information, requirements, reports, data, surveys and instructions required by this Agreement. Operator may use such information, requirements, reports, data, surveys and instructions in performing its services and is entitled to rely upon the accuracy and completeness thereof.

22. Relationship of Parties. The Operator is and will remain for the term of this Agreement an independent contractor completely responsible for its own acts and for the manner in which, and the form by which, it performs this Agreement, and as such shall set its own hours and means and methods and shall not be subject to the supervision and control of the Owner except as to the results obtained. In no event shall the relationship created by this Agreement constitute a joint venture or partnership between the Owner and the Operator. Neither Party is authorized to assume or create any obligation or responsibility on behalf of, or in the name of, the other or bind the other in any manner whatsoever whether as agent, legal representative or otherwise.

23. Third Party Rights. Nothing contained in this Agreement shall be construed to give any rights or benefits to anyone other than Owner and Operator.

24. Waiver. A waiver by either Owner or Operator of any breach of this Agreement shall be in writing. Such a waiver shall not affect the waiving party's rights with respect to any other or further breach.

25. Severability. The invalidity, illegality, or unenforceability of any provision of this Agreement or the occurrence of any event rendering any portion or provision of this Agreement void shall in no way affect the validity or enforceability of any other portion or provision of this Agreement. Any void provision shall be deemed severed from this Agreement, and the balance of this agreement shall be construed and enforced as if this


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Agreement did not contain the particular portion or provision held to be void. The parties further agree to amend this Agreement to replace any stricken provision with a valid provision that comes as close as possible to the intent of the stricken provision. The provisions of this Section shall not prevent this entire Agreement from being void should a provision, which is of the essence of this Agreement, be determined void.

26. Survival. Notwithstanding completion or termination of this Agreement for any reason, all rights, duties and obligations of the parties to this Agreement shall survive such completion or termination and remain in full force and effect until fulfilled.

27. Successors and Assigns. Owner and Operator each binds itself and its successors, assigns, and legal representatives to the other party to this Agreement and to the successors, assigns, and legal representatives of such other party in respect to all provisions of this Agreement.

28. Assignment. The Operator shall assign any rights or duties under this Agreement without the prior written consent of the Owner, which shall not be unreasonably withheld. However, the Owner shall be free to assign the rights and/or duties under this Agreement to any successor in interest by providing written notice to the Operator setting forth the name and contact information for the assignee and the date that the assignment will become effective. Nothing contained in this Section shall prevent Operator from employing independent Operators, associates, and subcontractors to assist in the performance of the Services.

29. Controlling Law. The laws of the State of Missouri shall govern this Agreement.

30. Anti-bribery, Anti-corruption and OFAC Compliance. The Owner takes a zero-tolerance approach to bribery and corruption. By executing this Agreement the Operator expressly acknowledges that all employees, agents, contractors and sub-contractors of the Company must at all times comply with all applicable anti-bribery and anti-corruption laws and Company policies and related procedures in relation to anti bribery and anti-corruption as set out herein or as may be implemented or amended from time to time and which will be made available for review upon request. Operator agrees to comply with the following policies:

- Operator may not provide or receive anything of value to obtain or retain business or favored treatment from public officials; candidates for office; employees of state-owned enterprises; employees or officers of counterparties, clients/customers, or suppliers; any agent of the aforementioned parties; or any other person with whom the Company or Operator does or anticipates doing business.

- The prohibition against providing "anything of value" to obtain or retain business or favored treatment includes improper payments, such as cash bribes or kickbacks, but also may include other direct or indirect benefits and advantages, such as inappropriate gifts, meals, entertainment, charitable contributions, and offers of employment or internships.

In addition, the Company is committed to combating money laundering, terrorist financing, securities fraud and other financial crimes (collectively "money laundering") and complying fully with all applicable laws and regulations relating to combating money laundering. The Company is also committed to complying with economic and trade sanctions administered and enforced by governments and supranational bodies, including, among others, the sanctions programs and designated sanctions lists administered by the U.S. Department of the Treasury's Office of Foreign Assets Control ("OFAC"), the United Nations Security Council, the European Union and Her Majesty's Treasury. Compliance by employees, agents, contractors and sub-contractors of the Company with all applicable anti-money laundering laws and regulations and sanctions programs and lists (collectively, "AML") is strictly required as a condition of this Agreement. Operator's participation with any employee, agent, contractor and/or sub-contractor of the Company to engage in money laundering, or to fail to comply with all applicable AML laws, regulations, and Company's AML policies, will be a breach of this Agreement, and will be cause for immediate termination of this Agreement by the Company.

31. Executed Counterparts/Facsimile Signatures. This Agreement may be executed in any number of counterparts, each of which when so executed and delivered shall be deemed to be an original and all of which counterparts taken together shall constitute but one and the same instrument. Signature pages may be detached from the counterparts and attached to a single copy of this Agreement to physically form one document. This Agreement may be executed by a Party's signature transmitted by facsimile or electronic transmission, and copies of this Agreement executed and delivered with facsimile signatures shall have the same force and effect as copies hereof executed and delivered with original signatures. The Parties hereto may rely upon facsimile signatures as if such signatures were originals. The Parties hereto agree that a facsimile signature page may be introduced into evidence in any proceeding arising out of or related to this Agreement as if it were an original signature page.

32. Further Assurances. From time to time, each Party shall execute and deliver such further documents and shall take such other action as the other Party reasonably may request in order to discharge and perform their obligations and agreements hereunder.

33. Time. Time is of the essence of each provision of this Agreement in which time is an element. Time in which any act provided by this Agreement is to be done shall be computed by excluding the first day and including the last, unless the last day is a Saturday, Sunday or legal holiday under the laws of the States of Missouri or the United

States of America, and then it is also excluded. Unless the context otherwise requires, all periods terminating on a given day, period of days, or date shall terminate at 5:00 p.m. Central Time on that day or date and references to "days" shall refer to calendar days.

34. Attorneys' Fees. In the event of any legal proceeding between the Parties arising out of the subject matter of this Agreement, in addition to any other award to which it shall be entitled, the prevailing party shall be entitled to an award for the reasonable attorneys' fees and costs incurred by its in connection with such proceedings.

35. Entire Agreement. This Agreement, and all attachments hereto, is the entire Agreement between Owner and Operator. It supersedes all prior communications, understandings and agreements, whether oral or written. The paragraph titles used in this Agreement are for general reference only and are not part of the Agreement. Amendments to this Agreement must be in writing and signed by both the Owner and the Operator.

**IN WITNESS WHEREOF**, Owner and Operator have executed this Agreement, effective on the date first above written.

| **OWNER:** | **OPERATOR:** |
|---|---|
| UTILITY<br>OPERATING COMPANY, LLC | OPERATIONS, LLC |
| By_____ | By_____ |
| Title: _____ | Title: Managing Member |

**EXHIBIT A**
**Operator Services – Wastewater**

1. Maintain all required certificates, licenses and approvals required by the governing authorities to operate the Facilities;
2. Make weekly or more frequent visits to the treatment facility to monitor the operation of the Facilities in order to assure the Facilities are in compliance with all required standards of the governing authorities and those set forth in this Agreement or any attachments hereto;
3. Perform weekly inspections of the Facilities' components as described in the CMMS (computerized maintenance management system) or as needed to meet manufacturers' specifications and recommendations.
4. Perform monthly, quarterly, semiannual, annual duties of the Facilities' components as described in the CMMS (computerized maintenance management system) or as needed to meet manufacturers' specifications and recommendations.
5. Maintain all facility records included in CMMS;
6. Perform all routine scheduled work orders generated through CMMS;
7. Prepare and file the necessary reports to government regulators to maintain regulatory compliance and provide copy of same to Owner;
8. Obtain the sampling requirements for testing by the government regulators and/or the Owner;
9. Contact appropriate laboratories to provide adequate testing and reporting services for Owner;
    a. Provide all test results to the Owner as early as possible.
    b. Notify the Owner immediately via Email and Phone of any test results that are outside of regulatory or permit limits, represent a potential for a Notice of Violation, could result in a fine from a Regulatory agency, or could cause a negative impact on the public.
    c. Additionally, provide the Owner immediate notification of any situation or activity that would require a precautionary boil order or other interruption to normal service to customers.
10. Contact and direct appropriate contractors to make repairs to the system as needed for operation;
11. Meter readings;
12. Monitor all of the Facilities' system alarms and remote controls and contact Owner in the event of an alarm;
13. Maintain a 24-Hour 7 day per week maintenance and emergency service phone line for customer utility service disruption events;
14. Must respond to all customer calls and notifications within a 2-hr period of receiving call or notification;
15. Provide a 24-Hour on-call emergency utility service response for operations including 2-Hour emergency service per month;
16. Perform Utility Locates.

17. Perform Operation and Maintenance Tasks (tracked via work orders in the CMMS system), for time and material, which may include but are not limited to:
    a. Sewer main, or manhole repair and maintenance
    b. Service and utility construction inspections
    c. Sewer main flushing, rodding, or jetting
    d. Lift station maintenance and repair
    e. Cleaning and vaccing of manholes
    f. Lagoon repair/maintenance requiring excavating equipment (e.g. backhoe, loader, etc.)
    g. Mowing and trimming of plant, lagoon and right of way areas
    h. Chemical application to lagoon cells
    i. Fence repair & upkeep
    j. Sewer main video inspection and recording
    k. Sewer main repair and/or replacement
    l. Customer service issues requiring action on behalf of the utility
    m. Pavement repairs

**Operator Services – Water**

1. Maintain all required certificates, licenses and approvals required by the governing authorities to operate the Facilities;
2. Make weekly or more frequent visits to the treatment facility to monitor the operation of the Facilities in order to assure the Facilities are in compliance with all required standards of the governing authorities and those set forth in this Agreement or any attachments hereto;
3. Perform weekly inspections of the Facilities' components as described in the CMMS (computerized maintenance management system) or as needed to meet manufacturers' specifications and recommendations.
4. Perform monthly, quarterly, semiannual, annual duties of the Facilities' components as described in the CMMS (computerized maintenance management system) or as needed to meet manufacturers' specifications and recommendations.
5. Maintain all facility records included in CMMS;
6. Perform all routine scheduled work orders generated through CMMS;
7. Prepare and file the necessary reports to government regulators to maintain regulatory compliance and provide copy of same to Owner;
8. Obtain the sampling requirements for testing by the government regulators and/or the Owner;
9. Contact appropriate laboratories to provide adequate testing and reporting services for Owner;
    a. Provide all test results to the Owner as early as possible.
    b. Notify the Owner immediately via Email and Phone of any test results that are outside of regulatory or permit limits, represent a potential for a Notice

of Violation, could result in a fine from a Regulatory agency, or could cause a negative impact on the public.

c. Additionally, provide the Owner immediate notification of any situation or activity that would require a precautionary boil order or other interruption to normal service to customers.

10. Contact and direct appropriate contractors to make repairs to the system as needed for operation;
11. Provide monthly water bac-T results;
    a. Provide all test results to the Owner as early as possible.
    b. Notify the Owner immediately via Email and Phone of any test results that are outside of regulatory or permit limits, represent a potential for a Notice of Violation, could result in a fine from a Regulatory agency, or could cause a negative impact on the public.
    c. Additionally, provide the Owner immediate notification of any situation or activity that would require a precautionary boil order or other interruption to normal service to customers.
12. Meter readings;
13. Monitor all of the Facilities' system alarms and remote controls and contact Owner in the event of an alarm;
14. Maintain a 24-Hour 7 day per week maintenance and emergency service phone line for customer utility service disruption events;
15. Must respond to all customer calls and notifications within a 2-hr period of receiving call or notification;
16. Provide a 24-Hour on-call emergency utility service response for operations including 2-Hour emergency service per month;
17. Perform Utility Locates.
18. Perform Operation and Maintenance Tasks (tracked via work orders in the CMMS system), for time and material which may include but are not limited to:
    a. Water main repair and maintenance
    b. Service and utility construction inspections
    c. Water main flushing
    d. Booster station maintenance and repair
    e. Mowing and trimming of plant and right of way areas
    f. Fence repair & upkeep
    g. Customer service issues requiring action on behalf of the utility
    h. Pavement repairs

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of

| | | |
|---|---|---|
| *Electronic* Application of Bluegrass Water Utility Operating Company, LLC for an Adjustment of Rates and Approval of Construction | ) | Case No. 2020-00290 |

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**Direct Testimony of Jacob Freeman**

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STATE OF MISSOURI
COUNTY OF ST. LOUIS

I, Jacob Freeman, being duly sworn, state that the attached is my Direct Testimony in the above styled matter, that I would respond in the same manner to the questions if so asked upon taking the stand, and that my testimony is true and correct to the best of my knowledge, information, and belief formed after reasonable inquiry.

Jacob Freeman

Subscribed and sworn to this 28th day of September 2020, before me, a Notary Public in and before said County and State.

DANIEL RYAN JANOWIAK
Notary Public, Notary Seal
State of Missouri
St. Charles County
Commission # 20374795
My Commission Expires 05-04-2024

Notary Public

(SEAL)

My Commission Expires: 5/4/24

**Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

A. My name is Jacob Freeman. My business address is 1650 Des Peres Road, Suite 303, St. Louis Missouri, 63131.

**Q. WHAT IS YOUR POSITION WITH BLUEGRASS WATER UTILITY OPERATING COMPANY?**

A. I am Director of Engineering of CSWR, LLC ("CSWR"), the affiliated company responsible for providing management services and oversight to Bluegrass Water Utility Operating Company, LLC ("Bluegrass") and all its affiliated utility operating companies. More specifically, I oversee all engineering, surveying, and facility construction for all newly-acquired CSWR-affiliated water and wastewater utilities. I also oversee capital upgrades for those utilities.

**Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?**

A. No, I have not previously testified before this Commission.

**Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL EXPERIENCE.**

A. I hold a Bachelor of Science degree in Mechanical Engineering from the University of Missouri - Columbia. I am a licensed Professional Engineer in the states of Missouri, Illinois, and Kansas.

Before joining CSWR in January 2019, I was employed for two years by Corrigan Mechanical, a design-build mechanical contractor in St. Louis, Missouri, and in that position my responsibilities included designing, estimating, and managing plumbing, HVAC, and process piping construction projects in Missouri and southern Illinois. After

leaving that position, I spent eleven years performing similar tasks for Brotcke Well & Pump, a well and pump service contractor servicing wells and water treatment equipment throughout Missouri, Illinois, Kentucky, and Kansas. Immediately prior to leaving Brotcke, I served as Vice President and Principal in charge of all the company's engineering services. I also managed Brotcke's office in Kansas City, Missouri.

**Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THIS CASE?**

A. The purpose of my testimony is to provide an overview of the projects Bluegrass will undertake to upgrade the water and wastewater systems it already has acquired, plans to close in October 2020, and has asked the Commission for authority to acquire.

In his direct testimony, Josiah Cox, the President of both Bluegrass and CSWR, describes the condition at acquisition of each Kentucky system we acquired and have been operating and what we have done to date to upgrade and improve of that system. For those systems, my testimony will supplement Mr. Cox's by describing additional steps Bluegrass intends to take to address remaining issues and problems. In addition, I also will describe our plans to upgrade and improve systems the Commission authorized Bluegrass to acquire in Case No. 2020-00028 (Arcadia Pines Sewer Association/Heartland Manufactured Homes, Carriage Park Neighborhood Association, Marshall Ridge Sewer Association, and Randview Septic Corporation) as well as the systems we seek to acquire in Case No. 2020-00297 (Delaplain Disposal Company, Herrington Haven Wastewater Company, Springcrest Sewer Company, and Woodland Acres Utilities). Some or all costs associated with all these projects have been included in the rate base or operating expenses used to

calculate the revenue requirement proposed in this case. My testimony explains and justifies those costs.

**Q. HAS BLUEGRASS CONSULTED WITH THE ENERGY AND ENVIRONMENT CABINET ABOUT WHAT THE COMPANY BELIEVES NEEDS TO BE DONE AT THESE FACILITIES TO BRING THEM INTO COMPLIANCE WITH FEDERAL AND STATE ENVIRONMENTAL REGULATIONS?**

A. Yes. Since before we began actual operations in Kentucky, Bluegrass has engaged with the Division of Enforcement of the Energy and Environment Cabinet ("EEC") to identify current problems at the discharging wastewater facilities we proposed to acquire, identify remedial measures necessary to bring those facilities into compliance, and establish a schedule for completing required remediation. For each of nine discharging facilities Bluegrass currently owns and operates (Airview, Brocklyn, Fox Run, Golden Acres, Great Oaks, Kingswood, Lake Columbia, Longview, and Persimmon Ridge) the Company already has entered into an Agreed Order with the EEC specifying the short- and longer-term steps Bluegrass will take to bring those facilities into compliance. Those corrective actions are detailed in a specific Corrective Action Plan ("CAP") for each facility, which includes a requirement the Company periodically report its progress on fulfilling the CAP to the EEC. Disruptions caused by COVID-19 have prevented Bluegrass from entering into similar Agreed Orders and CAPs for all discharging wastewater facilities it has acquired in Kentucky, but it is the Company's plan to do so as quickly as practicable. All submissions required for additional Agreed Orders have been made to the EEC and we expect to complete those orders in the very near future.

## A. AIRVIEW

**Q. PLEASE DESCRIBE REMAINING PROBLEMS AT THE AIRVIEW WASTEWATER TREATMENT SYSTEM AND HOW BLUEGRASS PROPOSES TO ADDRESS AND REMEDY THOSE PROBLEMS.**

A. Currently the Airview facility is functioning much more reliably than before improvements, and the facility is regularly meeting limits with some exceptions. The continued issues appear to be primarily resulting from excessive inflow and infiltration ("I&I") in the collection system attributable to exceedances occurring either during or immediately after rainstorms. While the effluent pipe has been replaced, the damaged contact chamber still needs to be removed from the creek and some damaged fencing sections still require repair or replacement.

**Q. HAVE YOU IDENTIFIED THE SPECIFIC IMPROVEMENTS REQUIRED AT AIRVIEW AND ESTIMATED THEIR COST?**

A. Yes. The following table shows the specific repairs, replacements, and improvements we intend to make at Airview and our current estimate of their costs:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Install flow equalization storage (20,000 gal) | $55,000 |
| Influent Pumps from flow eq | $15,000 |
| Chainlink fence replacement | $25,000 |
| Sludge Holding tank renovation | $5,000 |
| Clarifier Repairs | $205,000 |
| Install Mission Alarm and wiring with meter | $10,000 |
| Replace diffusers in aeration tankage | $30,000 |
| Replace RAS lines from clarifier | $15,000 |
| Replace blower | $25,000 |
| Replace effluent pipe | $15,000 |
| Remove contact chamber from creek | $5,000 |

| | |
|---|---|
| Access road repair | $15,000 |
| Smoke test system | $9,000 |
| Collection system repair for I&I | $55,000 |
| **SUBTOTAL** | **$299,000** |
| Construction Design and Investigative Services | $119,000 |
| **TOTAL** | **$418,900** |

**Q. PLEASE EXPLAIN WHY BLUEGRASS BELIEVES THE REPAIRS, REPLACEMENTS AND IMPROVEMENTS YOU JUST IDENTIFIED ARE NECESSARY.**

A. The improvements listed above are necessary to finish bringing the system into consistent compliance with permit limits and bring it into a state where it can be properly maintained in the future. Flow equalization and the associated pumping system, which allows a steady dosage rate to the plant instead of wash-out events during and following rainfall, are needed to allow the facility to not violate limits during high flow I&I events. The collection system repairs also will address this issue by significantly reducing the amount of I&I entering the facility. The blowers, diffusers, and air header on the current plant are reaching the end of their useful lives and are undersized. They will be replaced, and this will improve the treatment process at the facility. Removal of the damaged contact chamber is necessary because the damaged equipment has led to pooling of effluent and gradual accumulation of sludge. Fence repair and replacement is necessary to prevent the public from entering the treatment facility and potentially being exposed to partially treated wastewater and injured by the treatment equipment. We also will install signage on the fencing indicating the presence of the treatment facility to discourage public entry to the plant area.

As I noted earlier in my testimony, Airview is subject to an Agreed Order and related CAP with the EEC, and the improvements Bluegrass proposes for this facility are required for it to fully comply with that agreement.

## B. ARCADIA PINES

**Q. PLEASE DESCRIBE PROBLEMS AT THE ARCADIA PINES WASTWATER TREATMENT SYSTEM AND HOW BLUEGRASS PROPOSES TO ADDRESS AND REMEDY THOSE PROBLEMS.**

A. Bluegrass has not yet closed its acquisition of the Arcadia Pines wastewater system, located in McCracken County and therefore the problems I will identify in my testimony, the repairs, upgrades, and replacement necessary to remedy those problems, and the associated cost estimates are based on our current knowledge of that system.

Arcadia Pines is a non-discharging lagoon wastewater treatment facility with several site components that show signs of failure and will require repair or replacement. Currently there is limited access to the plant and no all-weather access road. The fencing surrounding the facility is damaged in several locations and there is not adequate signage indicating the presence of the wastewater facility. There are numerous varmint holes in the berms surrounding the lagoon as well as significant erosion around the inner edge of the lagoon berm, and this damage appears to cause occasional leaking on the south side of the lagoon into a drainage ditch. The leaking represents an unauthorized discharge of partially treated wastewater and is a serious violation of environmental regulations. The lagoon is fed by a gravity collection system and there appears to be some I&I in the collection system that flows into the lagoon.

**Q. WHAT SPECIFIC REPAIRS, REPLACEMENTS, AND IMPROVEMENTS ARE REQUIRED AT ARCADIA PINES AND WHAT IS THE ESTIMATED COST?**

A. The following table shows the specific repairs, replacements, and improvements we intend to make at Arcadia Pines and our current estimate of their costs:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Chainlink fence repair | $5,000 |
| Repair leaking berm/drain field | $20,000 |
| Repair varmint damage | $5,000 |
| New access road | $5,000 |
| **SUBTOTAL** | **$35,000** |
| Construction Design and Investigative Services | $26,000 |
| **TOTAL** | **$61,000** |

**Q. WHY DOES BLUEGRASS BELIEVE THE REPAIRS, REPLACEMENTS, AND IMPROVEMENTS YOU LISTED ARE NECESSARY?**

A. The improvements listed above are necessary to bring the system into consistent environmental compliance and bring it into a state where it can be properly maintained in the future. The erosion and varmint damage to the berm must be repaired to prevent further illegal discharge of partially treated waste. In addition to the capital items I listed, operational improvements will include a proper varmint management plan to prevent further damage. Fencing repair and signage installation must be completed to help keep varmints out of the lagoon area and to prevent the public entering the treatment facility. An all-weather access road is necessary to ensure it is possible to perform emergency maintenance to the facility in any weather condition. To reduce I&I flows to the facility, the collection system will be evaluated, and problem areas repaired.

## C. BROCKLYN

**Q. PLEASE DESCRIBE REMAINING PROBLEMS AT THE BROCKLYN WASTEWATER TREATMENT SYSTEM AND HOW BLUEGRASS PROPOSES TO ADDRESS AND REMEDY THOSE PROBLEMS.**

A. With improved operations and the basic repairs made thus far at the facility, there has been some improvement in ammonia and Biological Oxygen Demand ("BOD") levels in effluent, which means receiving waters are cleaner than they were under previous ownership. As mentioned by Mr. Cox, the current plant is not consistently capable of meeting limits. It is in such poor condition it cannot simply be repaired. Permits have been submitted to the EEC for replacement of the failing plant with a Moving Bed Biofilm Reactor ("MBBR") system, which I further describe below.

**Q. WHAT REPAIRS, REPLACEMENTS, AND IMPROVEMENTS ARE REQUIRED AT BROCKLYN AND WHAT IS THE ESTIMATED COST?**

A. The following table identifies the repairs, replacements, and improvements we believe need to be made – which, in effect, constitute replacement of the current plant – and our current estimate of those costs:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Influent lift station | $50,000 |
| Lagoon closure | $199,000 |
| MBBR Activated Sludge | $300,000 |
| Install Mission Alarm and wiring with meter | $10,000 |
| Clarifier | $70,000 |
| Replace RAS lines from clarifier | $15,000 |
| Peroxyacetic Acid disinfection | $30,000 |
| Replace blower | $20,000 |
| Regrade around lagoon | $15,000 |
| Sludge judge lagoon cell | $2,500 |

| | |
|---|---|
| Cleanup sludge from creek | $10,000 |
| Storm culvert | $20,000 |
| Yard piping and miscellaneous piping | $50,000 |
| Cat walk | $60,000 |
| Smoke test system | $7,000 |
| **SUBTOTAL** | **$858,500** |
| Construction Design and Investigative Services | $155,850 |
| **TOTAL** | **$1,014,350** |

**Q. WHY IS THE PLANT REPLACEMENT YOU PROPOSE NECESSARY?**

A. The improvements listed above are necessary to replace the deteriorated plant with a cost-effective treatment plant that will consistently meet limits and operate more cost-effectively. An influent lift station will be installed which will provide some flow equalization to handle I&I from the collection system and maintain a consistent dosage to the MBBR. Flow will go to the MBBR system for primary treatment, will pass through a clarifier with sludge return, and then through a peroxyacetic acid disinfection system with post aeration. Various yard piping modifications will be implemented to properly route flow through the facility, and catwalks will be installed to facilitate proper operations. Switching from chlorination and de-chlorination to peroxyacetic acid disinfection will provide more effective disinfection, be more environmentally friendly and more cost-effective over time. The new plant will be built on the concrete pad that was at the bottom of the now closed lagoon. To protect the new plant, the culvert carrying storm water will be extended past the plant site and the area around the lagoon structure will be regraded to redirect storm water. A Mission remote monitoring system with flow metering will be installed at the plant and lift station to quantitatively evaluate flows and I&I in the system. This will allow a determination if further collection system analysis and repair are needed

to reduce the I&I. Live data from the remote monitoring system will also drastically improve operational awareness, allowing operators to respond to some abnormal conditions at the plant or lift station before they become an issue for customers. There is some sludge in the creek from previous ownership that will also be cleaned up during the construction project.

As I noted earlier in my testimony, Brocklyn is subject to an Agreed Order and related CAP with the EEC, and the improvements Bluegrass proposes for this facility are required for it to fully comply with that agreement and the facility discharge permit.

## D. CARRIAGE PARK

**Q. PLEASE DESCRIBE PROBLEMS AT THE CARRIAGE PARK WASTEWATER TREATMENT SYSTEM AND HOW BLUEGRASS PROPOSES TO ADDRESS AND REMEDY THOSE PROBLEMS.**

A. Bluegrass has not yet closed its acquisition of the Carriage Park wastewater system, located in McCracken County, and therefore the problems I identify in my testimony, the repairs, upgrades, and replacement necessary to remedy those problems, and the associated cost estimates are based on currently-available information.

Carriage Park is a non-discharging lagoon wastewater treatment facility, with several components that show signs of failure and will require repair or replacement. Currently there is limited access to the plant and no all-weather access road. The fencing surrounding the facility is damaged in several locations and there is not adequate signage indicating the presence of the wastewater facility. There are numerous varmint holes and significant erosion on the berms surrounding the lagoon, and notable overgrowth of

vegetation making maintenance of berms difficult. Berm damage appears to cause an ongoing leak on the northeast side of the lagoon into a drainage ditch, which. represents an unauthorized discharge of partially treated wastewater and is a serious violation of environmental regulations. The lagoon is fed by a gravity collection system and there appears to be some I&I in the collection system that flows into the lagoon.

**Q. WHAT CAPITAL IMPROVEMENTS DO YOU CURRENTLY BELIEVE ARE NECESSARY TO REMEDY CONDITIONS YOU JUST DESCRIBED?**

A. The specific capital improvements we preliminarily have identified as necessary to remedy problems at Carriage Park and the cost of those improvements are shown below:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Chainlink fence repair | $10,000 |
| Repair leaking berm/drain field | $50,000 |
| Repair varmint damage | $5,000 |
| New access road | $10,000 |
| **SUBTOTAL** | **$75,000** |
| Construction Design and Investigative Services | $31,000 |
| **TOTAL** | **$106,000** |

**Q. WHY DOES BLUEGRASS BELIEVE THESE CAPITAL IMPROVEMENTS ARE NECESSARY?**

A. The improvements listed above are necessary to bring the Carriage Park system into consistent environmental compliance and bring it into a state where it can be properly maintained in the future. The erosion and varmint damage to the berm must be repaired to prevent further illegal discharge of partially treated waste. In addition, operational improvements will be implemented to ensure proper varmint management in the future to prevent further damage. Vegetation will be cleared from the berms and areas around the

fencing and kept clear to make it possible to maintain the lagoon structure and fencing. Fence repairs and signage installation must be completed to help keep varmints out of the lagoon area and to prevent the public from entering the treatment facility. An all-weather access road is necessary to ensure it is possible to perform emergency maintenance to the facility in any condition. In addition, to reduce I&I flows to the facility, the collection system will be evaluated, and problem areas will be repaired.

## E. FOX RUN

**Q. PLEASE DESCRIBE REMAINING PROBLEMS AT THE FOX RUN WASTEWATER TREATMENT SYSTEM AND HOW BLUEGRASS PROPOSES TO ADDRESS AND REMEDY THOSE PROBLEMS.**

A. Following initial improvements at Fox Run, facility performance has improved significantly, with test results showing significant improvements on all effluent parameters. This represents an improvement in water quality in the receiving waters that flow through the community. Following the collection lift station overhaul, the regular backups in that portion of the system have ceased, providing a very tangible improvement for some customers. The gates and gravel on the access road have been replaced and trash has been cleared form the site, significantly improving the aesthetics of the plant. The facility still has some issues with compliance with effluent limits that appear to primarily relate to I&I and the plant's ability to handle sludge. The further improvements detailed below will allow the plant to reach consistent compliance.

**Q. PLEASE DESCRIBE ADDITIONAL CAPITAL IMPROVEMENTS BLUEGRASS HAS PLANNED FOR THE FOX RUN SYSTEM.**

A. The additional capital improvements planned for Fox Run and their estimated cost are shown in the following table:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Install flow equalization storage (5,000 gal) | $20,000 |
| Overhaul influent pump station | $15,000 |
| Sludge Holding tank | $20,000 |
| Install Mission Alarm and wiring with meter | $10,000 |
| Install Mission Alarm on collection lift station | $12,000 |
| Replace diffusers in aeration tankage | $15,000 |
| Replace RAS lines from clarifier | $7,500 |
| Replace blower | $20,000 |
| Sand blast and paint tankage | $10,000 |
| Replace fence | $15,000 |
| Collection system lift station overhaul | $33,000 |
| Smoke test system | $7,500 |
| Collection system repair for I&I | $20,000 |
| Granular rock per easement deal | $5,000 |
| **SUBTOTAL** | **$210,000** |
| Construction Design and Investigative Services | $76,950 |
| **TOTAL** | **$321,450** |

**Q. WHY ARE THE ADDITIONAL IMPROVEMENTS YOU JUST LISTED NECESSARY?**

A. As I previously mentioned, the Fox Run facility has struggled to meet some effluent limits, which is primarily due to difficulty with I&I and the facility's ability to handle sludge. To generally aid treatment and sludge breakdown, the diffusers in the aeration tank will be replaced because it appears current diffusers are underperforming and have reached the end of their useful lives. The sludge return lines from the clarifier also will be replaced to improve the facilities' solids handling. Sludge holding will be installed to improve

operational efficiency (by reducing the frequency of sludge hauling) and improve solids handling at the facility. Flow equalization will be added to prevent washout events during high I&I periods at the facility, and collection system evaluation and repair will occur to reduce I&I. Fencing around the facility will be repaired and replaced, vegetation will be cleared around the fencing, and proper signage will be installed. Fencing repair and signage installation must be completed to prevent the public from entering the treatment facility and potentially being exposed to partially treated wastewater or injured by the treatment equipment.

As I noted earlier in my testimony, Fox Run is subject to an Agreed Order and related CAP with the EEC, and the improvements Bluegrass proposes for this facility are required for it to fully comply with that agreement.

## F. GOLDEN ACRES

**Q. PLEASE DESCRIBE THE ADDITIONAL REPAIRS AND CAPITAL IMPROVEMENTS BLUEGRASS HAS PLANNED FOR THE GOLDEN ACRES WASTEWATER TREATMENT FACILITIES.**

A. Following installation of improvements described by Mr. Cox, many effluent parameters have shown significant improvement. However, the primary issue of excessive I&I from the collection system and site layout remains an issue. There is very little space for additional treatment or for expanding the plant on site, so I&I must be drastically reduced or eliminated to bring this system into compliance.

**Q. WHAT CAPITAL IMPROVEMENTS DOES BLUEGRASS HAVE PLANNED FOR GOLDEN ACRES TO REMEDY THE SITUATION YOU JUST DESCRIBED?**

A. The specific capital projects we have planned and their estimated cost is shown in the table below:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Regrade around perimeter of facility | $15,000 |
| Install Mission Alarm and wiring with meter | $15,000 |
| Rebuild road per easement agreement | $10,000 |
| Replace fencing | $15,000 |
| Replace blower | $15,000 |
| Install flow equalization tank and pump | $35,000 |
| Dechlorination | $1,500 |
| Replace effluent pipe | $25,000 |
| Sanitary sewer video inspection | $6,500 |
| Sanitary sewer lining | $25,000 |
| Sludge Digestor | $15,000 |
| Smoke test system | $6,000 |
| SUBTOTAL | **$184,000** |
| Construction Design and Investigative Services | $55,900 |
| TOTAL | **$239,900** |

**Q. PLEASE EXPLAIN WHY YOU BELIEVE THE REPAIR AND REPLACEMENT ITEMS YOU JUST LISTED ARE REQUIRED.**

A. The Golden Acres facility faces challenges in being brought into compliance because there is very little space available to expand the plant or install additional equipment, and also because the facility has an excessive amount of I&I, which causes flows to significantly exceed the plant's capacity during rain events. To reduce flow into the plant, the perimeter of the facility will be regraded to redirect storm water around the plant instead of into it. While there is not enough room to account for total I&I flow, flow equalization will be installed to help as much as possible with maintaining a treatable quantity of flow to the

facility rather than allowing washout and flooding to occur. To stop continued flooding at the facility, the effluent piping will be replaced with a larger pipe that can handle a higher flow rate and not cause backing up into the plant. To reduce sludge hauling costs and improve solids handling at the facility, a sludge digestor will be added. To reduce I&I in the collection system, the gravity lines will be video inspected to identify what areas exhibit the worst damage. Areas identified will be repaired with sewer liner installation where possible and line replacement where needed to reduce I&I. These improvements should improve facility performance and drastically reduce issues related to I&I. In addition to the treatment and collection system improvements, fencing around the facility is damaged and lacks signage and therefore must be replaced and proper signage installed.

As I noted earlier in my testimony, Golden Acres is subject to an Agreed Order and related CAP with the EEC, and the improvements Bluegrass proposes for this facility are required for it to fully comply with that agreement and permit requirements.

## G. GREAT OAKS

**Q. WHAT IMPROVEMENTS DOES BLUEGRASS BELIEVE ARE REQUIRED TO THE WASTEWATER TREATMENT FACILITIES AT GREAT OAKS?**

A. Following completion of the initial improvements described by Mr. Cox, effluent quality at the Great Oaks facility has significantly improved. The facility now consistently meets limits for BOD, ammonia, and total suspended solids, however it still struggles to meet limits for E.coli and total residual chlorine. We have determined that exceedances in those two areas were attributable to damage to the internal steel structure, which allowed the digestor/sludge holding components to leak directly into the contact chamber. This

introduced bacteria-dense sludge into the effluent, which made disinfection ineffective. Following lift station repair, the facility is no longer at risk of causing backups into the collection system and potentially onto customers property due to improper maintenance of the influent lift station

**Q. WHAT CAPITAL PROJECTS ARE PLANNED TO ADDRESS AND REMEDY THE CONTINUING PROBLEMS YOU JUST DESCRIBED?**

A. The capital projects we have planned to address the ongoing problems at the Great Oaks system are listed below along with their estimated costs:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Overhaul influent lift station | $10,000 |
| Install Mission Alarm and wiring with meter | $10,000 |
| Replace diffusers in aeration tankage | $20,000 |
| Replace RAS lines from clarifier | $15,000 |
| Replace blower | $7,500 |
| Sand blast and repaint tankage, cat walk and railing | $36,000 |
| Install new sludge digestor, blower and aeration | $35,000 |
| Fencing repair | $6,000 |
| Smoke test system | $14,000 |
| Pump down aeration and clarifier due to trash and clean | $10,000 |
| Collection system repair for I&I | $20,000 |
| **SUBTOTAL** | **$183,500** |
| Construction Design and Investigative Services | $58,350 |
| **TOTAL** | **$241,850** |

**Q. WHY DO YOU BELIEVE THE CAPITAL IMPROVEMENTS YOU JUST LISTED ARE NECESSARY?**

A. The new sludge digestor must be installed and the current digestor taken offline and cleaned out to prevent further leaking of sludge into the contact chamber. Current leaking

of sludge significantly compromises the plant's ability to effectively disinfect effluent. The new digestor will be two stand-alone tanks with aeration, which should both solve the current leaking issue and improve the plant's ability to break down sludge and handle solids. This will reduce operating costs related to sludge hauling and management. Based on the results of smoke testing, the areas in the collection system identified as significant contributors to I&I will be repaired. This will improve plant performance and help prevent wash-out events. Fencing repairs and signage installation will be completed to ensure public safety around the facility.

As I noted earlier in my testimony, Great Oaks is subject to an Agreed Order and related CAP with the EEC, and the improvements Bluegrass proposes for this facility are required for it to fully comply with that agreement and permit requirements.

## H. TIMBERLAND/JOANN ESTATES

**Q. PLEASE DESCRIBE CAPITAL IMPROVEMENTS BLUEGRASS HAS PLANNED FOR WASTEWATER FACILITIES SERVING TIMBERLAND/JOANN ESTATES.**

A. This facility was only recently acquired, and even most short-term improvements have been delayed awaiting approved construction permits from the DOW. Currently, the facility is struggling to comply with permitted limits. However, even with the minor operational improvements Bluegrass has been able to make, we have seen some improvement in effluent quality. Ultimately, the facility will require significant investment to comply with all its permit limits.

**Q. WHAT CAPITAL IMPROVEMENTS DOES BLUEGRASS BELIEVE WILL BE NECESSARY TO ALLOW THIS FACILITY TO COMPLY WITH APPLICABLE LIMITS AND REGULATIONS, AND WHAT IS YOUR ESTIMATE OF THE COST OF THOSE IMPROVEMENTS?**

A. The following is a list of the capital improvements we believe will be necessary to allow the Timberland/Joann Estates facility to operate in compliance with applicable environmental regulations, and the estimated cost of those improvements:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Address Inflow and Infiltration | $25,000 |
| Mission Monitoring | $8,000 |
| Lift station overhaul | $40,000 |
| Berm Maintenance and rock interior | $35,000 |
| Flowmeter with v-notch weir box | $10,000 |
| Treatment facility cleanup and repair (Air headers, returns, and path welding) | $50,000 |
| Replace diffusers and blowers | $25,000 |
| New upgraded electrical service and panel | $25,000 |
| Contact chamber (with plans to switch to PAA in the future) | $20,000 |
| Yard piping | $15,000 |
| **SUBTOTAL** | **$253,000** |
| Construction Design and Investigative Services | $119,900 |
| **TOTAL** | **$442,900** |

**Q. PLEASE EXPLAIN WHY YOU BELIEVE THE CAPITAL IMPROVEMENTS YOU LISTED ARE NECESSARY.**

A. The influent lift station requires overhaul because it currently is in poor condition (including control panels and power supply). Additionally, the influent pipe must be reworked because the current arrangement causes waste to splatter and splash partially out of the plant. Basic repairs and replacements must be implemented throughout the facility

to restore proper function to the plant, which will include replacement of air-headers, sludge returns, welding and patching existing steel tankage, and reworking the clarifier. Existing air headers and piping facility are in poor condition largely due to corrosion of steel materials and a pattern of replacement with PVC. These components should have been replaced with steel piping because PVC is vulnerable to degradation due to exposure to sunlight.

The existing steel plant also has many areas with severe corrosion deterioration, including locations where wastewater is leaking from tanks. The tanks must be patched where leaking, then sanded and painted to extend their lives. The existing clarifier is in poor condition and must be rebuilt to ensure solids are not allowed to flow from the facility in effluent. The level of treatment the facility is currently achieving is inadequate to meet the permit limits for ammonia and BOD. Current blowers and diffusers are underperforming and will need to be replaced to provide adequate aeration for waste treatment. The current contact chamber is in extremely poor condition and has reached the end of its useful life. As a result, the contact chamber needs to be replaced and proper post aeration added. This will improve disinfection and allow for the possibility of switching to peroxyacetic acid disinfection in the future to reduce environmental impact and operating costs. Yard piping must be reworked to replace damaged and improperly built and allow proper process flow through the repaired plant.

Finally, targeted repairs must be implemented in the collection system to reduce I&I flows to the plant. This will improve the facility's performance and help to prevent wash-out events due to stormwater infiltration. In addition to the initial buildout necessary

to bring the facility into compliance, future capital projects have been planned to improve facility performance, including switching to peroxyacetic acid disinfection to reduce operational costs and improve disinfection reliability, adding a miniature MBBR and aeration to the lagoon cell to break down existing sludge, and adding a new digestor to reduce sludge production from the plant. These improvements are less critical in achieving compliance and therefore will be implemented in the future but eventually will aid in reducing operational costs and improving the plant's ability to handle solids.

## I. KINGSWOOD

**Q. PLEASE DESCRIBE CURRENT OPERATIONS AT THE KINGSWOOD WASTEWATER FACILITY AND WHY ADDITIONAL CAPITAL INVESTMENT IN THIS FACILITY IS NECESSARY.**

A. Overall, the improvements already implemented at Kingswood have produced a drastic improvement in effluent quality, with the facility meeting all limits since the completion of improvements. However, analysis of the system shows the existing blower is underperforming and the existing air header is undersized for the facility's loading, which means the facility will still struggle to meet limits especially in the winter months. Additionally, check valves in the lift station are still failing and must be replaced to prevent the possibility of sewage backup into the collection system. Finally, analysis of the system shows significant I&I flows reaching the plant, which could potentially cause wash-out events.

**Q. WHAT SPECIFIC CAPITAL IMPROVEMENTS HAS BLUEGRASS IDENTIFIED FOR KINGSWOOD AND WHAT IS THE COMPANY'S ESTIMATE OF THE COST OF THOSE IMPROVEMENTS?**

A. The capital improvements we believe are necessary at Kingswood are listed below along with our estimate of their costs:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Cleanup blower house and equipment | $15,000 |
| Install Mission Alarm, wiring and mag meter | $11,000 |
| Replace some diffusers in aeration tankage (assumed) | $10,000 |
| Replace blower (assumed) | $12,500 |
| Lift Station Check valves replaced - failed | $2,500 |
| Air header replacement due to lack of air to aeration | $10,000 |
| Smoke Test system (Might be pressure, to verify) | $20,000 |
| **SUBTOTAL** | **$81,000** |
| Construction Design and Investigative Services | $48,100 |
| **TOTAL** | **$129,100** |

**Q. WHY DOES BLUEGRASS BELIEVE THESE IMPROVEMENTS ARE NECESSARY?**

A. Our analysis of the system shows an existing blower is underperforming and reaching the end of its useful life, and therefore must be replaced to ensure proper aeration. Similarly, we have determined the air header is undersized and will not offer adequate treatment, especially in winter months, and therefore must be replaced to ensure compliance with effluent limits and provide consistent treatment. Failed check valves in the lift station must be replaced to prevent potential backups into the collection systems that could affect customers. Finally, repairs to locations significantly contributing to I&I will prevent wash-out events at the plant and ensure the plant is able to adequately treat flows through the

facility. The current ultraviolet ("UV") disinfection system is properly disinfecting waste, but many parts are no longer available from the manufacturer to maintain the UV disinfection system. Therefore, while a new disinfection system will not be included in the initial rehabilitation of the Kingswood facility, the disinfection system will be replaced sometime in the future with either a newer UV system or a chemical disinfection system (either Chlorine/dechlorination or peroxyacetic acid with post aeration).

As I noted earlier in my testimony, Kingswood is subject to an Agreed Order and related CAP with the EEC, and the improvements Bluegrass proposes for this facility are required for it to fully comply with that agreement and permitted limits.

## J. LAKE COLUMBIA

**Q. PLEASE DESCRIBE CONDITIONS AT THE LAKE COLUMBIA WASTEWATER TREATMENT FACILITY THAT REQUIRE ADDITIONAL CAPITAL INVESTMENT BY BLUEGRASS.**

A. As a result of Bluegrass's initial efforts to improve operations at Lake Columbia, the facility is in much better shape in terms of its material condition and treatment performance than it was at acquisition. The facility meets most of its permit limits in testing and now offers effective disinfection and better solids removal following replacement of the bar screen and contact chamber. BOD and ammonia levels have significantly improved following the clarifier and blower improvements. Analysis of plant performance and flow data shows the facility still has significant issues with I&I and peak hour usage flows to the plant, which potentially are compromising treatment performance. Also, the plant

struggles to keep up with the quantity of solids flowing to the facility and would benefit from digestor tanks.

**Q. WHAT CAPITAL IMPROVEMENTS DOES BLUEGRASS PLAN TO MAKE AT LAKE COLUMBIA TO BRING THE FACILITY INTO FULL OPERATIONAL COMPLIANCE?**

A. The list that follows details the specific capital improvements Bluegrass intends to make at Lake Columbia and our estimate of the cost of those improvements:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Repair bar screen system | $5,000 |
| Flow equalization and pumping system | $40,000 |
| Sludge digestor tank & blower | $30,000 |
| Install aeration in Flow Eq and Sludge holding | $15,000 |
| Install Mission Alarm and wiring with meter | $10,000 |
| Return piping from new clarifier | $5,000 |
| Tank Replacement for Bar Screen and Contact Chamber | $25,000 |
| Replace motor on blower | $13,000 |
| Sand blast, paint, and repair tankage | $20,000 |
| New fencing | $15,000 |
| Cleanup sludge from creek | $10,000 |
| Smoke test system | $15,000 |
| Collection system repair for I&I | $30,000 |
| **SUBTOTAL** | **$233,000** |
| Construction Design and Investigative Services | $75,800 |
| **TOTAL** | **$308,800** |

**Q. WHY DOES BLUEGRASS BELIEVE THESE CAPITAL IMPROVEMENTS ARE NECESSARY?**

A. Our analysis of flow data shows the facility still struggles at peak demand hours and at peak flow times because of issues related to I&I. To aid in addressing this, flow equalization with a pumping system will be added at the front end of the system. This will allow flow rates to be reduced to a steady rate that does not exceed treatment capacity of the plant. Additionally, the facility is struggling to keep up with solids flows into the plant. To improve the plant's ability to break down sludge and expand capacity for sludge storage, a separate sludge digestor will be installed. This should provide for more effective treatment of sludge as well as lowering operations cost by reducing the frequency of sludge hauling. A new aeration system will be added to provide aeration to the new flow equalization and sludge digestor tanks, which will result in improvement to treatment overall.

The poor condition of the plant under previous ownership led to significant accumulation of sanitary sludge in the receiving creek. This sludge will be cleaned up to improve the environmental quality of the stream. Our flow analysis suggests I&I is a significant issue for this facility. To improve facility performance and to allow consistent compliance with permitted limits, analysis will be performed on the collection system to identify the primary sources of I&I and repairs will be made to eliminate those additional flows.

As I noted earlier in my testimony, Lake Columbia is subject to an Agreed Order and related CAP with the EEC, and the improvements Bluegrass proposes for this facility are required for it to fully comply with that agreement and permit requirements.

## K. LONGVIEW/HOMESTEAD

**Q. PLEASE DESCRIBE CONDITIONS AT THE LONGVIEW/HOMESTEAD TREATMENT WASTEWATER TREATMENT FACILITY AND THE CAPITAL IMPROVEMENTS BLUEGRASS HAS PLANNED FOR THAT FACILITY.**

A. Following implementation of initial improvements, repairs, and operational improvements described in Mr. Cox's direct testimony, performance at the Longview/Homestead ("LH") treatment facility has improved significantly. With few exceptions, the facility has been consistently meeting limits. However, additional improvements are required, including improvements necessary to address significant I&I flows to the plant that cause it to struggle during rain events.

**Q. WHAT CAPITAL IMPROVEMENTS DOES BLUEGRASS INTEND TO IMPLEMENT TO ADDRESS REMAINING PROBLEMS AT THIS FACILITY AND WHAT ARE THE COMPANY'S CURRENT ESTIMATES OF THE COST OF THOSE IMPROVEMENTS?**

A. The list below shows capital improvements Bluegrass intends to make to the LH treatment facility to improve its performance and our estimate of the cost of those improvements:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---:|
| Cleanup blower house and equipment | $15,000 |
| Install Mission Alarm and wiring | $7,500 |
| Replace diffusers in aeration tankage | $10,000 |
| Replace blower | $7,500 |
| Sanitary sewer video inspection | $6,500 |
| Sanitary sewer lining | $30,000 |
| Smoke Test system | $13,000 |
| **SUBTOTAL** | **$89,500** |
| Construction Design and Investigative Services | $48,950 |

| | |
|---|---|
| **TOTAL** | **$138,450** |

**Q. WHY DOES BLUEGRASS BELIEVE THE IMPROVEMENTS YOU IDENTIFY ARE NECESSARY?**

A. As I stated in my response to a previous question, final improvements needed relate to reduction of I&I flows to the plant. To reduce I&I in the collection system, the gravity lines will be video inspected to identify areas that exhibit the worst damage. The areas identified will be repaired with sewer liner installation where possible and line replacement where needed to eliminate the I&I. These improvements should improve facility performance and greatly reduce issues related to I&I.

## L. MARSHALL RIDGE

**Q. PLEASE DESCRIBE THE MARSHALL RIDGE WASTEWATER SYSTEM AND THE PROBLEMS STILL EXISTING THERE.**

A. Bluegrass has not yet closed its acquisition of the Marshall Ridge wastewater system located in McCracken County. Therefore the problems I will identify in my testimony, the repairs, upgrades, and replacement necessary to remedy those problems, and the associated cost estimates are based on information currently available.

Marshall Ridge is a non-discharging lagoon wastewater treatment facility. There are several site components that show signs of failure and will require repair or replacement. Currently, there is limited access to the plant and no all-weather access road. Fencing surrounding the facility is damaged in several locations and there is not adequate signage indicating the presence of the wastewater facility. There are numerous varmint holes in the berms surrounding the lagoon and significant erosion around the inner edge of

the lagoon berm. The lagoon overflow pipe is also not properly installed and has been exposed to the elements for a significant length of time. The lagoon is fed by a gravity collection system and there appears to be I&I in the collection system that flows into the lagoon.

**Q. WHAT CAPITAL IMPROVEMENTS DOES BLUEGRASS INTEND TO MAKE TO THE MARSHALL RIDGE FACILITIES?**

A. A list of specific capital improvements we intend to make at Marshall Ridge is provided below along with our estimate of the cost of those improvements:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Chainlink fence repair | $7,500 |
| Repair leaking berm/drain field | $25,000 |
| Repair varmint damage | $5,000 |
| New access road | $7,500 |
| Clear brush from lagoon berms | $5,000 |
| **SUBTOTAL** | **$50,000** |
| Construction Design and Investigative Services | $31,000 |
| Engineering | $17,500 |
| **TOTAL** | **$81,000** |

**Q. WHY ARE THE CAPITAL IMPROVEMENTS YOU IDENTIFY NECESSARY AT MARSHALL RIDGE?**

A. The improvements listed above are necessary to bring the Marshall Ridge system into consistent environmental compliance and bring it into a state where it can be properly maintained in the future. Erosion and varmint damage to the berm must be repaired to prevent illegal discharge of partially treated waste. In addition to required capital investment, operational improvements will include a proper varmint management plan to prevent further damage. Fencing repair and signage installation must be completed to help

keep varmints out of the lagoon area and to prevent the public from entering the treatment facility. An all-weather access road is necessary to allow emergency maintenance to the facility in any condition. In addition, to reduce I&I flows to the facility the collection system will be evaluated, and problem areas repaired.

## M. RANDVIEW

**Q. WHAT IS THE CURRENT CONDITION OF THE RANDVIEW WASTEWATER TREATMENT FACILITY?**

A. Although the Commission has authorized Bluegrass to acquire the Randview wastewater treatment facility, located in Graves County, the Company has not yet closed that transaction and taken control of that system. We expect that closing to occur in October 2020, therefore my description of Randview will identify the repairs, upgrades, and replacement necessary to remedy identified problems, and the associated cost estimates are based on information we have gathered to date.

Randview is a non-discharging lagoon wastewater treatment facility consisting of an odd lagoon system with two cells roughly 2,000 feet apart. The first cell has a lift station that pumps to the second cell, and all equipment and facilities appear to be very poorly maintained and overgrown. The second cell feeds a drainage field where a farmer plants crops over the field. Soil over the field appears to be severely over-compacted, which blocks proper flow into the drainage field. Based on preliminary site visits, the second lagoon cell was overflowing a berm into the crop field where the drainage field is located. This would be considered an illegal, unauthorized discharge of wastewater and suggests the field has been over compacted. The overgrowth around the lagoon and the lift stations

is so severe it is unlikely any maintenance or operations activities have taken place for some time. The system has been essentially abandoned from an operations and maintenance standpoint. It also appears that either operations staff or the surrounding community have frequently dumped trash on the site leaving piles of debris in several locations. There also currently is no clear access to the site, further emphasizing the complete lack of operations activities.

**Q. WHAT CAPITAL INVESTMENTS AND IMPROVEMENTS DOES BLUEGRASS INTEND TO MAKE TO ADDRESS SUBSTANDARD CONDITIONS AT THE RANDVIEW FACILITY?**

A. The following list identifies the capital improvements Bluegrass plans to make at Randview and our estimate of how much those improvements will cost:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Address I&I | $30,000 |
| Chainlink fence repair | $30,000 |
| Repair berms and varmint damage on both lagoons | $30,000 |
| Clear vegetation from berms | $30,000 |
| Debris cleanup around site | $2,500 |
| Access Road Construction | $20,000 |
| Cleanup and repair Lift Station 1 | $25,000 |
| Cleanup and repair Lift Station 2 | $45,000 |
| Repair effluent pipe | $4,000 |
| Effluent drainage field repairs | $40,000 |
| **SUBTOTAL** | **$256,500** |
| Construction Design and Investigative Services | $68,150 |
| **TOTAL** | **$324,650** |

**Q. WHAT JUSTIFICATION CAN YOU PROVIDE FOR THE IMPROVEMENTS BLUEGRASS INTENDS AT RANDVIEW?**

A. The improvements listed above are necessary to bring the Randview system into consistent environmental compliance and bring it into a state where it can be properly maintained in the future. This plant currently is in an inoperable state and is illegally discharging partially treated waste. To begin to restore proper operations, vegetation must be cleared from the berms and lift station sites, and a proper access road must be installed to provide suitable operations access. The two lift stations are in very poor condition and have not been maintained in a very long time, and both will require major repair and parts replacement to be restored to working order. Erosion and varmint damage to the berm must be repaired to prevent illegal discharge of partially treated waste. In addition, operational improvements will include a proper varmint management plan to prevent further damage. Fencing repair and signage installation must be completed to help keep varmints out of the lagoon area and prevent the public entering the treatment facility and potentially being exposed to partially treated wastewater and treatment equipment. Finally, all farming activities must be ceased over the drain field, and the drainage field equipment and effluent pipe feeding them must be repaired or replaced. This is the minimum scope of work to bring this facility back into compliance as a non-discharging wastewater treatment facility.

## N. PERSIMMON RIDGE

**Q. PLEASE DESCRIBE THE CURRENT CONDITION OF WASTEWATER TREATMENT FACILITIES AT PERSIMMON RIDGE.**

A. Mr. Cox described the condition of the Persimmon Ridge system at acquisition and the preliminary steps we took to address those conditions. Following those initial improvements and repairs, Persimmon Ridge's performance has improved significantly.

With few exceptions, the facility consistently meets its permit limits. The main outstanding issue at the facility is the damage to the baffle in cell 2.

**Q. WHAT CAPITAL IMPROVEMENTS DOES BLUEGRASS INTEND TO MAKE TO ADDRESS REMAINING PROBLEMS AT PERSIMMON RIDGE?**

A. The list of proposed capital improvements and their estimated cost is as follows:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Airmaster Aerator (1 - 25 Hp units) | $36,667 |
| Electrical upgrades for Airmaster and install | $35,000 |
| Miscellaneous Berm Repair | $15,000 |
| Install Mission Alarm and wiring with meter | $10,000 |
| Install Mission Alarm and wiring at pumps stations | $30,000 |
| Repair existing aerators | $10,000 |
| Riprap or improved effluent channel | $2,500 |
| Modify chlorine pump dosage rate | $5,000 |
| Smoke test system | $27,000 |
| Lagoon baffle repair | $4,000 |
| **SUBTOTAL** | **$175,167** |
| Construction Design and Investigative Services | $85,017 |
| **TOTAL** | **$260,183** |

**Q. PLEASE EXPLAIN WHY BLUEGRASS BELIEVES THE IMPROVEMENTS YOU IDENTIFY ARE NECESSARY.**

A. To completely restore the facility to proper function, the baffle in cell 2 of the lagoon must be repaired. This will restore the ability of the system to function as a three-cell lagoon without improper leakage between the two final treatment sections and will improve facility performance.

As I noted earlier in my testimony, Persimmon Ridge is subject to an Agreed Order and related CAP with the EEC, and the improvements Bluegrass proposes for this facility are required for it to fully comply with that agreement.

## O. RIVER BLUFF

**Q. PLEASE DESCRIBE THE CONDITION OF THE RIVER BLUFF WASTEWATER SYSTEM.**

A. Because Bluegrass only recently closed this acquisition, many of the planned improvements have yet to be implemented. However, items such as basic site cleanup and proper installation of the influent line have been completed since acquisition. Repairs and patching of corroded steel tankage are underway and continue. The operational improvements made in the short time since Bluegrass began operations at River Bluff have led to improved customer service and some improvement in effluent quality. Additional improvements are underway.

**Q. WHAT IMPROVEMENTS DOES BLUEGRASS BELIEVE ARE REQUIRED AT RIVER BLUFF?**

A. The following list identifies the improvements Bluegrass intends to make at River Bluff and our estimate of the cost of those improvements:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Address Inflow and Infiltration | $25,000 |
| Mission Monitoring | $18,000 |
| Lift station cleanup | $33,000 |
| Control Panel Replacement | $10,000 |
| Replace influent/exposed PVC pipe | $10,000 |
| Treatment facility cleanup and repair | $20,000 |
| Replace diffusers and blowers | $32,500 |
| Replace air header | $5,000 |

| | |
|---|---|
| Replace sludge returns | $10,000 |
| **SUBTOTAL** | **$163,500** |
| Construction Design and Investigative Services | $88,700 |
| **TOTAL** | **$302,700** |

**Q. WHY ARE THE IMPROVEMENTS PLANNED FOR THE RIVER BLUFF SYSTEM NECESSARY?**

A. The River Bluff facility should be able to meet its permit limits if it is properly maintained and operated. Current and past noncompliance resulted from a failure to reinvest in and maintain the plant. To return the facility to a serviceable condition where it can meet limits and be maintained in the future, some improvements are needed. The influent lift station must be overhauled and rewired to bring it to a condition that is safe to operate and will perform reliably. Corrosion seems to be one of the main issues with this plant. The corroded steel tank will be sanded, repaired where needed with welding and patching, and then painted to extend its life and prevent further corrosion. Steel components that exhibit severe corrosion will be replaced, including sludge returns, aeration drop pipes and diffusers, walkways, and handrails. Replacing diffusers and drop pipes will aide in improved aeration. The rest of the aeration system also will be evaluated, and blowers and air headers replaced to restore proper aeration. As part of those replacements, blowers will be designated to each plant rather than the current operator's practice of running the whole facility from two centralized blowers. This will make the treatment process more resilient and offer more redundancy moving forward. Flow monitoring has demonstrated that I&I flows to the facility are significant. Therefore, the collection system will be analyzed to identify problem areas for I&I and targeted repairs will be made to reduce I&I flows.

## P. CENTER RIDGE

**Q. WHAT IS THE CONDITION OF THE CENTER RIDGE WATER SYSTEM THAT BLUEGRASS RECENTLY ACQUIRED?**

A. Center Ridge is the only water system Bluegrass currently owns and operates in Kentucky. In fact, Center Ridge comprises four separate water systems. Because we only recently closed the transaction involving these four systems, we have not had time to do a lot of initial repairs and upgrades. Improvements we have made thus far are described in Mr. Cox's direct testimony.

**Q. PLEASE DESCRIBE CURRENT CONDITIONS AT CENTER RIDGE DISTRICT 1.**

A. Center Ridge District 1 is a public drinking water system with a single well with chlorination, a tank house with hydropneumatic tanks, and backup generator. It appears that the current hydropneumatic storage tanks will require repair or replacement to comply with design standards. While the system has been functional, it is evident maintenance and operations standards were not adequate for the long-term health of the system. The well head has exposed wiring not properly installed in conduit. The system currently uses sodium hypochlorite, with an outdated chemical pump dosing the chlorine solution that has reached the end of its useful life. Chlorine currently is dosed in the same room as the storage tanks, which is poor practice because it can lead to corrosion of storage equipment. The well house lacks proper finish carpentry with exposed wiring throughout, and there is no fencing to prevent the public from accessing the well head. Additionally, there currently is no proper driveway or access road at the well site.

**Q. WHAT PLANS DOES BLUEGRASS HAVE TO REPAIR, UPGRADE, OR REPLACE EQUIPMENT AND FACILITIES AT THE DISTRICT 1 SITE?**

A. The chart below identifies the improvements Bluegrass intends to make to the facilities at District 1 and our cost estimates for those improvements:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| New chlorine pump, containment unit, scale, analyzer | $30,000 |
| New chlorine room constructed on slab outside of building | $15,000 |
| New Fencing around Well House | $4,800 |
| Gravel for all weather road | $3,000 |
| Remove and install new heater in building | $2,500 |
| Repaint existing hydropneumatic tanks | $10,000 |
| Building repairs (inside and outside) | $30,000 |
| Well Inspection | $1,250 |
| Replace well pump and wiring | $30,000 |
| New magnetic flow meter for well | $4,500 |
| Mission monitoring | $8,000 |
| Convert well head to pitless unit | $15,000 |
| Electrical upgrades in well house | $10,000 |
| **SUBTOTAL** | **$164,050** |
| Construction Design and Investigative Services | $75,405 |
| **TOTAL** | **$229,455** |

**Q. WHY DOES BLUEGRASS BELIEVE THE IMPROVEMENTS YOU LIST ARE NECESSARY?**

A. To bring the system into compliance and ensure reliable service to customers, the improvements I list are necessary. First, the well must be inspected and reworked because of its age. The well pump and wiring must be replaced to ensure reliable supply and to eliminate exposed wiring at the well head. A new chlorine room must be built that is separate from storage equipment to ensure the longevity of water storage equipment. Chlorine

equipment must be replaced, including the dosage pump, the chemical containment, and a scale for the chemical to ensure proper disinfection, prevent over or under dosing of chemical and allow for remote monitoring of chemical supply. This will help ensure safe and reliable disinfection while replacing equipment that has reached the end of its useful life. The hydropneumatic storage tanks are being evaluated and inspected for repair or replacement. The existing heater in the well house, which is needed to prevent water equipment from freezing in the winter and potentially interrupting water supply and damaging equipment, has reached the end of its useful life and requires replacement. To ensure all-weather maintenance access to the facility is available, a new access road/driveway must be installed. Fencing and signage must be installed to prevent members of the public from accessing the well site and potentially tampering with water supply equipment. This is necessary to ensure safe and reliable water supply to our customers. The existing distribution system appears to have many issues related to age, improper materials and construction. As repairs are made to the distribution system and pressure increases, many leaks are likely to occur, which will require additional and ongoing repairs to the system. Wells and storage tanks must be outfitted with appropriate meters to report live data through a mission remote monitoring system. Live data from the remote monitoring system will improve operational awareness, allowing operators to respond to some abnormal conditions (leaks, power outages, pump failures, etc.) before they become an issue for customers.

**Q PLEASE DESCRIBE CURRENT CONDITIONS AT FACILITIES SERVING CENTER RIDGE DISTRICT 2.**

A. Center Ridge District 2 consists of a distribution system with two wells; however, one well is not in service. The out-of-service well appears to have been originally removed from service due to exposed PVC piping freezing and cracking inside the well house. Existing hydropneumatic storage is in poor condition with excessive rust and some pinholes due to corrosion. The well house of the functioning well is in poor condition, with damaged insulation. The out-of-service well house is in better condition but requires repairs to existing equipment and has no separate room for chlorination equipment. There is no fencing at the well sites and no proper all-weather access roads or driveways.

**Q. WHAT PLANS DOES BLUEGRASS HAVE TO UPGRADE OR IMPROVE FACILITIES SERVING DISTRICT 2?**

A. The table below lists the capital improvements Bluegrass plans to implement at District 2 and our estimate of the cost of those improvements:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Return existing out of use well to service | $20,000 |
| New chlorine pump, containment unit, scale, analyzer | $60,000 |
| New chlorine room constructed on slab outside of building | $30,000 |
| Building repairs on both buildings (inside and outside) | $40,000 |
| Gravel for all weather road | $5,000 |
| New Fencing around Well House | $9,000 |
| Remove and install new heater in building | $5,000 |
| Repaint existing hydropneumatic tanks | $10,000 |
| Install two new hydropneumatic tanks in south well house | $15,000 |
| Well Inspection | $2,500 |
| Replace well pump and wiring | $15,000 |
| New Quick Connect | $5,000 |
| New Generator | $20,000 |
| New magnetic flow meter for well | $9,000 |
| Mission monitoring | $16,000 |

| | |
|---|---|
| **SUBTOTAL** | **$261,500** |
| Construction Design and Investigative Services | $75,150 |
| **TOTAL** | **$336,650** |

**Q. WHY DOES BLUEGRASS BELIEVE THE IMPROVEMENTS YOU LIST ARE NECESSARY?**

A. Following required well rehabilitations, the District 2 well houses must also be renovated. Those renovations include heater installation, installing a wall to separate chlorination equipment from well and storage equipment, reinstallation of chlorine equipment, and general repairs. A 1000-gallon hydropneumatic tank will be installed to replace the damaged tank, and the hydropneumatic tank at the Well 2 well house will be brought back into service. With both wells back online, pressure will increase in some portions of the system. Distribution system repairs will be necessary throughout this process as the improvements will increase the pressure to adequate levels in the system. As the pressure increases, existing damage to the distribution system and areas where improper construction methods or materials were used may develop leaks which will be repaired. A backup power supply is required for each well, therefore upgrades will be made to the electrical systems and generators installed at each well house. Wells and storage tanks must be outfitted with appropriate meters to report live data through a mission remote monitoring system.

**Q. PLEASE DESCRIBE CONDITIONS AT CENTER RIDGE DISTRICT 3.**

A. District 3 consists of a distribution system with two wells connected to a single well house. The storage tank will require evaluation to determine if repair or replacement is required. The well house is in extremely poor condition and appears to have been made from a prefabricated shed that was lined with spray foam and foam board for insulation and set on a cinderblock foundation. The roof failed at some point, and instead of properly replacing

the entire shed or roof, a tarp was nailed over the failing roof. Electrical conduit running to the wells near the well house has become exposed in the dirt driveway around the well site and is run over on a regular basis. There is visible cracking in the conduit, which means rainwater likely enters the conduit which could cause service interruption. The two wells are surrounded by cinderblock structures with tin roof lids. The cinderblocks are deteriorating, and the lids are only set on, not attached to, the cinderblock structures. It appears varmints regularly enter the cinderblock structures, as rodent droppings, spiders, and toads were observed in the box at initial site inspection. The system currently is using sodium hypochlorite, with an outdated chemical pump, which has reached the end of its useful life, dosing the chlorine solution. Chlorine currently is dosed in the same room as the storage tank, which is poor practice and can lead to corrosion of storage equipment. The driveway accessing the facility is a dirt road and does not constitute all-weather access for emergency maintenance, and there is no fencing currently installed at the facility.

**Q. WHAT ARE BLUEGRASS'S PLANS TO IMPROVE AND UPGRADE FACILITIES AT DISTRICT 3?**

A. A list of the upgrades and improvements Bluegrass plans to make at District 3 is shown below along with our estimate of the cost of those improvements:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| New chlorine pump, containment unit, scale, analyzer | $30,000 |
| New chlorine room constructed on slab outside of building | $15,000 |
| New Fencing around Well House | $7,500 |
| Gravel for all weather road | $5,000 |
| New well house and appurtenances | $85,000 |
| Miscellaneous yard piping | $30,000 |
| Well Inspection | $2,500 |

| | |
|---|---|
| Replace well pump and wiring | $40,000 |
| Mission monitoring | $8,000 |
| New generator | $20,000 |
| Convert well head to pitless unit | $15,000 |
| Repaint existing hydropneumatic tank | $10,000 |
| **SUBTOTAL** | **$268,000** |
| Construction Design and Investigative Services | $95,800 |
| **TOTAL** | **$363,800** |

**Q. WHY DOES BLUEGRASS BELIEVE THE UPGRADES AND IMPROVEMENTS YOU LIST ARE NECESSARY?**

A. To ensure proper supply, both wells at District 3 must be rehabilitated, which will include performing a well inspection, replacement of pumps and wiring, and rebuilding the well heads and housing. The power supply conduit that is exposed in the driveway must be replaced and reinstalled at the proper depth to prevent further damage. The well house is in extremely poor condition and must be replaced. The new structure must include adequate insulation, a new heater and a separate room for chlorination to prevent damage to storage and supply equipment. The chlorine equipment must be replaced because the existing equipment has reached the end of its useful life and is outdated. To provide adequate storage, the hydropneumatic tank must be properly evaluated and repaired or replaced. Wells and storage tanks must be outfitted with appropriate meters to report live data through a mission remote monitoring system. Distribution system repairs will be necessary throughout this process because the improvements will increase pressure to adequate levels in the system. As pressure increases, existing damage to the distribution system and areas where improper construction methods or materials were used may develop leaks which must be repaired.

**Q. TURNING FINALLY TO DISTRICT 4, PLEASE DESCRIBE THE FACILITIES AND THEIR CONDITION.**

A. Center Ridge District 4 is a water system with a single well, with chlorination and a tank house with a hydropneumatic tank. Current hydropneumatic storage requires evaluation for repair or replacement. The existing well house is in poor condition, with some rotting on panels near the ground and improperly installed foam board insulation with gaps that invalidate the insulation value. There are areas with exposed wiring in the well house and at the well head. Chlorine disinfection is in the same room as the rest of the equipment, which can cause damage to well and storage equipment over time, and chlorine equipment is reaching the end of its useful life as well. The current access road to the facility is a dirt road that has many areas with severe erosion and there is currently no fencing around the water facilities.

**Q. WHAT IMPROVEMENTS AND UPGRADES DOES BLUEGRASS PLAN TO MAKE AT DISTRICT 4?**

A. A list of the improvements and upgrades planned for District 4, and our estimate of the costs of those improvements, is as follows:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| New chlorine pump, containment unit, scale, analyzer | $30,000 |
| New chlorine room constructed on slab outside of building | $15,000 |
| New Fencing around Well House | $4,800 |
| Gravel for all weather road | $15,000 |
| Remove and install new heater in building | $2,500 |
| Repaint existing hydropneumatic tanks | $10,000 |
| Building repairs (inside and outside) | $15,000 |

| | |
|---|---|
| Well Inspection | $1,250 |
| Replace well pump and wiring | $20,000 |
| New magnetic flow meter for well | $4,500 |
| Mission monitoring | $8,000 |
| New generator | $20,000 |
| Electrical upgrades in well house | $15,000 |
| **SUBTOTAL** | **$161,050** |
| Construction Design and Investigative Services | $65,105 |
| **TOTAL** | **$226,155** |

**Q. PLEASE EXPLAIN WHY BLUEGRASS BELIEVES THE UPGRADES AND IMPROVEMENTS YOU LIST ARE NECESSARY AT DISTRICT 4.**

A. To bring District 4 into compliance and ensure reliable service to customers, the improvements I listed are necessary. The well must be inspected and reworked because of its age. The well pump and wiring must be replaced to ensure reliable supply and to eliminate exposed wiring at the well head. A new chlorine room must be constructed separate from storage equipment to ensure the longevity of water storage equipment Chlorine equipment must be replaced including the dosage pump, chemical containment and a chemical scale to ensure proper disinfection, prevent over or under dosing of chemicals, and allow for remote monitoring of the chemical supply. All these measures will help ensure safe and reliable disinfection while replacing equipment that has reached the end of its useful life. The existing hydropneumatic tank does not offer adequate storage for the population this system serves, therefore that tank must be replaced with a new 8,000-gallon tank to ensure adequate water supply. Insulation must be replaced and properly installed to help prevent freezing in the well house, and the existing heater, which has reached the end of its useful life, must be replaced. To ensure all-weather maintenance

access to the facility is available, a new access road must be installed. Fencing and signage also must be installed to prevent the public from accessing the well site and potentially tampering with any water supply equipment. The existing distribution system appears to have many issues related to age, improper materials and construction. Consequently, as repairs are made to the supply system and pressure increases, many leaks are likely to occur that will require ongoing repairs to the system. Wells and storage tanks must be outfitted with appropriate meters to report live data through a mission remote monitoring system.

## Q. DELAPLAIN DISPOSAL

**Q. PLEASE DESCRIBE CURRENT CONDITIONS AND PROBLEMS AT THE DELAPLAIN DISPOSAL WASTEWATER TREATMENT SYSTEM.**

A. In Case No. 2020-00297, Bluegrass seeks authority to acquire the Delaplain Disposal wastewater treatment facility as well as the other systems I will describe in the balance of my direct testimony. Based on preliminary due diligence, the Delaplain wastewater facility has numerous problems that must be addressed immediately after closing as well as within the period covered by the forward-looking test year Bluegrass is proposing in this case.

Delaplain Disposal is an extended aeration/activated sludge treatment plant serving a combination of residential and commercial customers in Scott County. The original treatment process consists of two influent lines: one via gravity from the east side of the facility and the other enters via force main from the west side of the facility which flows to a comminutor designed to grind and remove influent solids, then to a manually cleaned bar screen which finalizes the pre-treatment removal of solids. The screened waste then discharges into the aeration tank which is supplied air by two 50 hp centrifugal blowers.

A surge chamber with transfer pump exists and was designed to convey stored wastewater into the aeration tank if needed. The partially treated waste then flows to a circular clarifier equipped with a Return Activated Sludge ("RAS")/Waste Activated Sludge ("WAS") system and floating scum return piping to the aerobic digester. The mostly treated waste then gets dosed with chlorine in the contact chamber and finally dechlorinated to the effluent outfall.

The existing facility has aged and needs fresh coatings, protection from exposed wires, and spot-welding repairs, but otherwise is in relatively good working order. The comminutor is no longer utilized, and the manual bar screen appears to cause overflows periodically from the uncleaned bar screen rack. The air pattern in the aeration tank indicates relatively turbulent mixing conditions, using coarse bubble diffuser design that would likely not be improved significantly with diffuser replacement. It is unclear whether the surge tank is utilized or if the surge tank transfer pumps are in working condition. The existing gaseous chlorine and gaseous sulfur dioxide systems were in working condition according to the operators (however, the chemical solution feed lines were not evident).

The primary issue facing the facility is that flows massively exceed its design capacity. The facility has a design flow of 240,000 gpd but has experienced monthly average daily flows of up to 360,000 gpd and peak daily flows of 910,000 gpd. Current ownership has attributed all flows exceeding the design capacity to Inflow and Infiltration (I&I), which likely is contributing to the high flows, but testing shows high BOD and total suspended solids during the high flow events, implying that a significant portion of the flow is wastewater and not just I&I. This indicates that the facility is undersized and needs

to be expanded to treat the true high wastewater loading the facility receives rather than just attempting to reduce I&I in the system. The facility has struggled to meet limits for BOD, total suspended solids, ammonia, dissolved oxygen, E. Coli and total residual chlorine. All of this is consistent with the facility being undersized and needing expansion and process modification to meet permitted limits.

**Q. HAVE YOU IDENTIFIED THE SPECIFIC IMPROVEMENTS REQUIRED AT DELAPLAIN AND ESTIMATED THEIR COST?**

A. Yes. The following table shows the specific repairs, replacements, and improvements we intend to make at Delaplain and our current estimate of their costs:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Mission Monitoring systems at 5 Lift Stations and Plant | $50,000 |
| Site improvements at lift stations | $20,000 |
| Supplemental blower addition | $43,000 |
| MBBR Media | $100,000 |
| MBBR Diffusers | $12,000 |
| Flow Equalization Tank Diffusers | $10,000 |
| Influent Pump Station Equipment | $25,000 |
| Influent Flow Meter | $5,000 |
| Mechanically Cleaned Bar Screen | $45,000 |
| Concrete and Excavation | $125,000 |
| Install manual transfer switches (plant and 5 lift stations) | $62,500 |
| Install new electrical distribution panel | $30,000 |
| Remove sludge from existing system and rehab clarifier and aeration tanks | $100,000 |
| Install current density baffles | $30,000 |
| Tertiary auto-strainer | $50,000 |
| Strainer Feed pump system | $30,000 |
| UV Disinfection equipment | $55,000 |
| Aluminum Sulfate feed system | $25,000 |
| Building (250 sf) | $37,500 |

| | |
|---|---|
| Site work and yard piping | $42,000 |
| **SUBTOTAL** | **$897,000** |
| Construction Design and Investigative Services | $284,700 |
| **TOTAL** | **$1,181,700** |

**Q. PLEASE EXPLAIN WHY BLUEGRASS BELIEVES THE REPAIRS, REPLACEMENTS AND IMPROVMENTS YOU JUST IDENTIFIED ARE NECESSARY.**

A. The improvements listed above are necessary to bring the system into consistent compliance with permit limits and bring it into a state where it can be properly maintained in the future. Because the facility receives flows and loadings exceeding current capacity (by roughly 40-50%), there will be a need to upgrade the system BOD, total suspended solids, and ammonia reduction capacity. The facility does face excessive I&I, so flow equalization and an influent pump station will be needed to reduce demands on the final clarifier.

The failure of the original comminutor results in the need to collect significant screenings in multiple five-gallon buckets. The addition of a mechanically cleaned screen for this application to ensure proper removal of screened solids. The improvements proposed to address the above issues include the addition of a "roughing" MBBR, an influent pump station with variable frequency drives with an influent flow meter, injection of Aluminum Sulfate in the flow equalization tank and clarifier to improve solids capture during wet weather, and the addition of a tertiary auto-strainer for solids separation downstream of the existing clarifier.

The addition of current density baffles to the side wall of the clarifier will improve clarifier performance and to allow for regulatory acceptance of surface overflow rates in excess of the typically allowable surface overflow rates.

The addition of a tertiary automatic straining system will add protection for the system from BOD and total suspended solids excursions during wet weather events. Use of an in-line UV disinfection system will achieve compliance with the disinfection requirements and reduce chemical usage and costs over time.

While the above improvements should allow a good operator to significantly improve performance, the addition of an alum feed system to promote improved solids capture during wet weather events (in both the flow equalization tank and in the clarifier) will further aid in preventing solids release during high flow events.

## R. HERRINGTON HAVEN

**Q. PLEASE DESCRIBE PROBLEMS AT THE HERRINGTON HAVEN WASTEWATER TREATMENT SYSTEM AND HOW BLUEGRASS PROPOSES TO ADDRESS AND REMEDY THOSE PROBLEMS.**

A. Bluegrass also seeks approval for the purchase of the Herrington Haven wastewater treatment facility in Case No. 2020-00297. Based on preliminary due diligence, we have identified several problems at Herrington Haven that will require capital investment to remedy.

The existing facility includes an extended aeration package plant including a mechanically cleaned bar rack screen, a single aeration basin, two hopper bottomed clarifiers, and a chlorine contact chamber. Downstream of the packaged plant there is a V-

notched weir box that is used for dechlorination contact time and flow monitoring. The packaged plant has aged and shows significant signs of wear and corrosion. The blowers and diffusers need replacement, and one of the two return activated sludge lines has broken off into the aeration basin. This prevents the activated sludge from one of the clarifiers to be returned to the beginning of the aeration process. The access platform must be replaced. The basin does not include handrails needed to protect operators or visitors from falling into the package plant. The plant is surrounded on three sides by a brick retaining wall, which leaves little to no room for expansion at the plant. Additionally, the plant is very close to flood plain elevation and has been flooded several times in its history. The gravity collection system has significant I&I issues as the whole system is near the water table. Many components are reaching the end of their useful lives and there currently is no proper method for dosing chlorine and dechlorination chemicals. The v-notch weir box is located away from the plant below the flood plain and is regularly submerged, making flow measurements at the facility inaccurate.

**Q. WHAT SPECIFIC REPAIRS, REPLACEMENTS, AND IMPROVEMENTS ARE REQUIRED AT HERRINGTON HAVEN AND WHAT IS THE ESTIMATED COST?**

A. The following table shows the specific repairs, replacements, and improvements we intend to make at Herrington Haven and our current estimate of their costs:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Install Mission monitoring - plant | $15,000 |
| Blower replacement | $14,000 |
| RAS line addition | $3,000 |
| Install manual transfer switch in electrical service | $7,500 |

| | |
|---|---|
| Install new electrical distribution panel | $12,000 |
| Remove sludge from existing system and rehab | $20,000 |
| Install Roughing MBBR Manhole | $20,000 |
| Install MBBR media, sieves, diffusers | $50,000 |
| Install Aluminum Sulfate feed and storage system | $12,000 |
| Install Peroxyacetic Acid feed and storage system | $18,000 |
| Install flow meter | $3,200 |
| Install aeration in existing contact chamber | $4,500 |
| **SUBTOTAL** | **$177,200** |
| Construction Design and Investigative Services | $67,500 |
| **TOTAL** | **$244,700** |

**Q. WHY DOES BLUEGRASS BELIEVE THE REPAIRS, REPLACEMENTS, AND IMPROVEMENTS YOU LISTED ARE NECESSARY?**

A. The improvements listed above are necessary to bring the system into consistent environmental compliance and bring it into a state where it can be properly maintained in the future. The condition of the tank requires taking the facility off-line for structural repair, which would include, at a minimum, the addition of either supplemental or replacement stiffeners, safety handrail, welding repairs, and the addition of a new RAS line from one of the hopper-bottomed clarifiers to the front end of the plant. A new roughing Moving Bed Biofilm Reactor (MBBR) in the form of a four-foot diameter, eleven-foot deep manhole must be installed upstream of the existing influent manhole to remove Biological Oxygen Demand (BOD), reducing the load and in turn stabilizing the existing system and improving nitrification. The new system will generate significantly less sludge than before, thereby decreasing sludge hauling costs.

The ten-foot deep clarifier would function much better in this application than with only the existing activated sludge system, as the roughing MBBR will reduce the amount

of activated sludge mixed liquor required to meet effluent objectives. This would reduce the risk of solids carry over during wet weather significantly. The effluent from the aeration basin would be evenly distributed into and through the clarifier, and the level control in the clarifier will be maintained with the addition of a weir trough and weir. Aluminum sulfate would be introduced in the extended aeration effluent, upstream of the influent into the clarifier to aid in dropping out solids. A flow meter will be installed in the clarifier effluent piping, in route to the contact chamber, eliminating issues with the v-notch weir box flooding.

Peroxyacetic acid ("PAA") would be introduced directly into the contact tank in lieu of attempting to install chlorination and dechlorination tablet feeders in the limited hydraulic profile. The PAA chemical requires less contact time and would more consistently achieve the necessary disinfection objectives. The existing chlorine contact tank will be equipped with diffusers to help in meeting the dissolved oxygen effluent limit and aid in the PAA disinfection.

## S. SPRINGCREST SEWER

**Q. PLEASE DESCRIBE PROBLEMS AT THE SPRINGCREST WASTEWATER TREATMENT SYSTEM AND HOW BLUEGRASS PROPOSES TO ADDRESS AND REMEDY THOSE PROBLEMS.**

A. Bluegrass currently is seeking acquisition approval for the purchase of the Springcrest wastewater treatment facility. Based on preliminary due diligence, the following represents the existing problems we have identified at Springcrest that will require capital investment to rectify.

The Springcrest system is a non-discharging wastewater system consisting of waste collecting in septic tanks at each home and then pumping through a low-pressure sewer system to a common disposal site. At the disposal site, waste flows into four irrigation pump wet wells, which pump water to four irrigation zones. The system is aging, and many components have reached the end of their useful lives. Valves, pumps, and controls need replacement to ensure proper function in the system, and hatches are damaged on all wet wells. Improvements are needed to extend the life of the system and continue to provide service to the community.

**Q. WHAT SPECIFIC REPAIRS, REPLACEMENTS, AND IMPROVEMENTS ARE REQUIRED AT SPRINGCREST SEWER AND WHAT IS THE ESTIMATED COST?**

A. The following table shows the specific repairs, replacements, and improvements we intend to make at Springcrest Sewer and our current estimate of their costs:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Install Mission monitoring - Plant | $15,000 |
| Hatch replacement on 4 wet well covers | $8,000 |
| Irrigation pump replacement and installation (3 pumps total) | $9,000 |
| Low pressure pump and controls replacement (5 systems assumed in need of repairs) | $15,000 |
| Replace system valves | $5,000 |
| Replace additional irrigation pumps (3 pumps total) if necessary | $9,000 |
| Replace additional low pressure pumps/controls (5 systems total) if necessary | $15,000 |
| **SUBTOTAL** | **$76,000** |
| Construction Design and Investigative Services | $51,000 |
| **TOTAL** | **$127,000** |

**Q. WHY DOES BLUEGRASS BELIEVE THE REPAIRS, REPLACEMENTS, AND IMPROVEMENTS YOU LISTED ARE NECESSARY?**

A. Each low-pressure system pump station and irrigation pump station will be inspected. Five pumps and controllers will be replaced initially in the low-pressure system and three pumps and controllers replaced in the irrigation system. The deteriorating pump vault hatches will be replaced with lockable hatches. An inventory will be developed, and spare pumps, controllers, and valves acquired to allow Bluegrass to maintain safe and reliable service.

## T. WOODLAND ACRES

**Q. PLEASE DESCRIBE PROBLEMS AT THE WOODLAND ACRES WASTEWATER TREATMENT SYSTEM AND HOW BLUEGRASS PROPOSES TO ADDRESS AND REMEDY THOSE PROBLEMS.**

A. Woodland Acres is the fourth facility Bluegrass seeks authority to acquire in Case No. 2020-00297. Based on preliminary due diligence, the problems will require capital investment to bring them into operating compliance.

The existing facility includes an extended aeration package plant, including a mechanically-cleaned bar rack screen, a single aeration basin, flow equalization basin with two influent pumps (one portable), aerobic digestion, rapid sand filter, and a chlorine contact chamber. Dechlorination is utilized downstream of disinfection. The package plant has aged and shows significant signs of wear and corrosion. The blowers and diffusers need replacement and one of the two return activated sludge lines has broken off into the aeration

basin. The basin itself appears to have been modified over time with changes to original structural components. The basin currently does not include handrails needed to protect operators or visitors from falling into the package plant. The facility has a history of regularly exceeding limits for BOD, ammonia, and E.coli and struggles with significant I&I issues, which necessitates operators to turn the aeration basin blowers off during high flow rain events to prevent loss of solids and healthy biomass. The tertiary treatment basin (rapid sand filter, contact chamber and dechlorination) is extremely corroded. Chlorine and dechlorination tablets are not properly introduced to the system with any sort of tablet feeder. There is no flow monitoring at the facility currently and electrical systems are riddled with exposed wiring and improper repairs.

**Q. WHAT SPECIFIC REPAIRS, REPLACEMENTS, AND IMPROVEMENTS ARE REQUIRED AT WOODLAND ACRES AND WHAT IS THE ESTIMATED COST?**

A. The following table shows the specific repairs, replacements, and improvements we intend to make at Woodland Acres and our current estimate of their costs:

| CONSTRUCTION ITEM | ESTIMATED COST |
|---|---|
| Install Mission monitoring - plant | $15,000 |
| Blower replacement | $12,000 |
| RAS line addition | $3,000 |
| Install manual transfer switch in electrical service | $7,500 |
| Install new electrical distribution panel | $15,000 |
| Remove sludge from existing system and rehab | $65,000 |
| Install Baffles for 3-Stage MBBR | $50,000 |
| Install MBBR media, sieves, diffusers, blower | $160,000 |
| Install Aluminum Sulfate feed and storage system | $12,000 |
| Install Peroxyacetic Acid feed and storage system | $18,000 |
| Install digester system blower | $8,000 |
| Install flow meter | $5,000 |
| Install aeration in existing contact chamber | $5,000 |

| | |
|---|---|
| **SUBTOTAL** | **$375,500** |
| Construction Design and Investigative Services | $82,000 |
| **TOTAL** | **$457,500** |

**Q. WHY DOES BLUEGRASS BELIEVE THE REPAIRS, REPLACEMENTS, AND IMPROVEMENTS YOU LISTED ARE NECESSARY?**

A. The condition of the tank calls for taking the facility off-line for structural repair, which would include, at a minimum, addition of access bridge improvements, safety handrail, welding repairs, and a new return activated sludge line from one of the hopper-bottomed clarifiers to the front end of the plant. The system also will be upgraded with an MBBR treatment system to simplify operations, improve performance during wet weather events and bring the facility into compliance with BOD and Ammonia limits. The conversion from extended aeration-activated sludge to MBBR would include the addition of baffle walls, new diffusers, new blowers, media, and media retention sieves.

The smaller required footprint of the MBBR system would allow a portion of the existing tankage to be used for digestion. The new system would generate significantly less sludge than the existing extended aeration system as well, so sludge handling costs will significantly decrease. The shallow ten-foot deep clarifier is adequate for a fixed film type system but would function much better in this MBBR application than it did originally as an activated sludge system. The effluent from the three-stage MBBR will be evenly distributed into and through the clarifier, and the level control in the clarifier will be maintained with the addition of a weir trough and weir. A flow meter will be installed in the clarifier effluent piping en route to the contact chamber. PAA will be introduced directly into the contact tank in lieu of attempting to install chlorination and dechlorination

tablet feeders in the limited hydraulic profile. The PAA chemical requires less contact time and will more consistently achieve the necessary disinfection objectives. Aluminum Sulfate would be introduced into the clarifier to improve settleability when required to consistently achieve solids reduction and in turn, BOD effluent limit compliance. The existing chlorine contact chamber will be equipped with diffusers to help in meeting the dissolved oxygen effluent limit. Three blowers would replace the existing two blowers, one of which would serve the aeration tank needs, air lift needs, and post-aeration needs; one would serve the digester needs; and the third would serve as standby for both applications.

**Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

A. Yes, it does.

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of

| | | |
|---|---|---|
| *Electronic* Application of Bluegrass Water Utility Operating Company, LLC for an Adjustment of Rates and Approval of Construction | ) | Case No. 2020-00290 |

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**Direct Testimony of Brent Thies**

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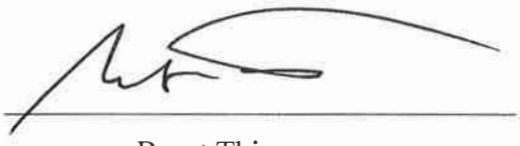
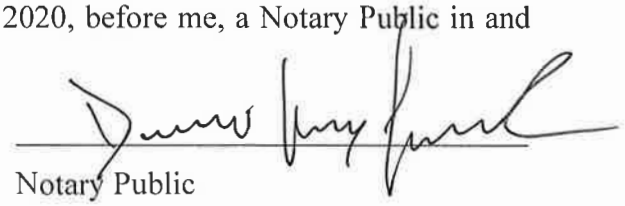
STATE OF MISSOURI
COUNTY OF ST. LOUIS

I, Brent Thies, being duly sworn, state that the attached is my Direct Testimony in the above styled matter, that I would respond in the same manner to the questions if so asked upon taking the stand, and that my testimony is true and correct to the best of my knowledge, information, and belief formed after reasonable inquiry.



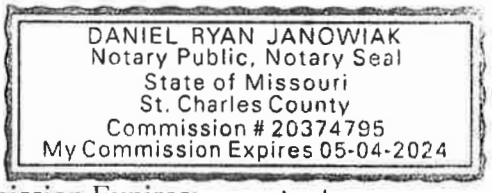
Brent Thies

Subscribed and sworn to this 28th day of September 2020, before me, a Notary Public in and before said County and State.



Notary Public

(SEAL)




My Commission Expires: 5/4/24

**Q. Please state your name and business address.**

A. My name is Brent G. Thies and my business address is 1650 Des Peres Rd., Suite 303, St. Louis, MO 63131.

**Q. By whom are you employed and in what capacity?**

A. I am employed by CSWR, LLC. My current role is Controller.

**Q. On whose behalf are you filing this direct testimony?**

A. I am filing on behalf of Bluegrass Water Utility Operating Company, LLC ("Bluegrass Water" or "Company"), which is a subsidiary of CSWR, LLC.

**Q. Have you previously filed testimony before this Commission?**

A. No.

**Q. Please describe your educational and professional background.**

A. I hold a Bachelor of Arts in Communications/Public Relations from Missouri Baptist University in St. Louis, Missouri, and a Bachelor of Science in Accounting from Liberty University in Virginia. I also hold a Master of Business Administration degree from the University of Missouri-St. Louis. I am licensed as a Certified Public Accountant in the state of Missouri. I have been employed in the Accounting and Finance department of CSWR, LLC since July 2017. I started at CSWR, LLC as the Senior Accountant, responsible for monthly accounting work for CSWR, LLC and its regulated utility subsidiaries. I have held the position of Controller since October 2018. Prior to CSWR, LLC, I was employed as the Controller of a multi-entity non-profit in St. Louis, Missouri. During my time at CSWR, LLC, I have completed the Fundamentals, Intermediate and Advanced Regulatory Studies Programs through the Institute of Public Utilities at Michigan State University.

**Q. What are your duties as Controller?**

A. As Controller I am responsible for the accounting books and records of CSWR, LLC, and its regulated utility subsidiaries. This includes responsibility for the accurate recording of revenues, expenses and capital expenditures. Along with my team, I am also responsible for preparing and filing regulatory annual reports and responding to certain data requests for the regulated utility subsidiaries of CSWR, LLC. My responsibilities also include preparation of monthly and quarterly reports and interfacing with external auditors and tax professionals.

**Q. What is the purpose of your direct testimony in this proceeding?**

A. My testimony will support the revenue requirement in this case and explain how our filing complies with the filing requirements specified by Commission rules. Specific topics covered in my testimony include:

- Development of the Forecasted Test Year
- Revenue Requirement and Revenue Deficiency
- Rate Design
- Average Bill
- Present and Proposed Rate Revenue
- Operating Expenses
- Rate Base
- Depreciation and Amortization

**Q. Are you sponsoring any schedules with your testimony?**

A. Yes. I am sponsoring the following schedules:[1]

[1] These schedules are listed in a reference table contained in Attachment A to this testimony.

| Schedule | Description |
|---|---|
| SR1 | Sewer Revenues |
| SE1 | Sewer Expenses – Operations |
| SE2 | Sewer Expenses – Fuel and Power, Chemicals |
| SE3 | Sewer Expenses – Maintenance |
| WR1 | Water Revenues |
| WE1 | Water Expenses – Operations |
| WE2 | Water Expenses – Fuel and Power, Chemicals |
| WE3 | Water Expenses – Maintenance |
| CE1 | Property Taxes |
| CE2 | Customer Billing Expense |
| CE3 | Overhead Allocations |
| CE4 | Outside Services Expense |
| CE5 | Property & Liability Insurance |
| CE6 | Regulatory Expense |
| CE7 | Uncollectible Accounts |
| OHA1 | Overhead Allocations |
| A | Revenue Requirement |
| B | Rate Base |
| C | Income Statement |
| D | Description of Adjustments |
| E | Tax Summary |
| H | Gross Revenue Conversion Factor |

**Q. Was the information contained in the schedules obtained or derived from the books and records of Bluegrass Water?**

A. Yes.

## DEVELOPMENT OF THE FORECASTED TEST YEAR

**Q. Why has the Company chosen to use a forecasted test year in this case?**

A. Bluegrass Water has made numerous acquisitions of distressed sewer and water systems during 2019 and 2020. Bluegrass Water has also received Commission approval to acquire four more sewer systems via Case No. 2020-00028 and has requested approval via Case No. 2020-00297 to acquire four additional sewer systems. Under these circumstances, a forecasted test year is necessary to ensure that the needed

operational improvements can be sustained. In addition to the cost of improved operations, significant capital improvements are necessary on most of the sewer and water systems. Bluegrass Water believes the forecasted test year is more representative of the financial situation than a historical test year.

**Q. What is the base period that you have used in this case?**

A. Bluegrass Water has used a base period of the twelve months ended December 31, 2020. This base period reflects actual data for the 8 months ended August 31, 2020 and forecasted data for the four months ended December 31, 2020.

**Q. What is the forecasted test period in this case?**

A. The fully forecasted test period in this case is the twelve months following the suspension period. For revenues and expenses, this is the 12 months ended April 30, 2022. Rate base and capitalization are based on the 13-month averages from April 1, 2021, through April 30, 2022.

**Q. Please explain how the forecasts included in this case were developed.**

A. Bluegrass Water developed forecasts by analyzing base year revenues and expense data for operations, maintenance, administrative and capital investments. Where necessary, base year amounts were annualized or otherwise adjusted to arrive at forecasted test year revenues, expenses and capital investments. Bluegrass Water has also made pro forma adjustments to the base year values to incorporate increases in revenue, expense and capital investment that are anticipated due to planned acquisitions. This methodology is the same as that used to develop forecast used for management.

## REVENUE REQUIREMENT AND REVENUE DEFICIENCY

**Q. What is Bluegrass Water's revenue requirement for the forecasted test year in this proceeding?**

A. The revenue requirement for the 12 months ended April 2022 is $3,327,750 for sewer and $426,747 for water. Bluegrass Water's revenue requirement is equivalent to the costs necessary to provide service to Bluegrass Water's existing sewer and water customers as well as customers expected to be added through acquisitions in the near future and provide Bluegrass Water a reasonable return of the value of its investment devoted to the public service . The provision of safe and reliable service to Bluegrass Water's customers has already and continues to require increased operational expense and new capital improvements at both the water and sewer systems. Operating expenses for the owned and proposed systems include various costs which are discussed in this testimony. The capital improvement projects that must be completed on the systems are discussed in detail in the testimony of Company witness Jacob Freeman. In addition to operating expense and capital improvements, Bluegrass Water is entitled to earn a fair a return on the value of the capital investments that support the improvements. The rate of return used in this process is supported in the testimony of Company expert witnesses Dylan D'Ascendis and Jennifer Nelson. Bluegrass Water seeks recovery of its revenue requirement through the ratemaking process. The forecasted revenue requirement accomplishing the cost recovery is found in Schedule[2] C-1 for both sewer and water.

**Q. How is the revenue deficiency derived?**

[2] Hereinafter, all referenced "Schedules" are contained in the concurrently filed Notice of Filing containing the relevant workbooks to the application (and this testimony).

A. The revenue deficiency is found in Application Exhibit _, Schedule C-1. It is the difference between the forecasted revenue requirement and forecasted revenues at present rates. The revenue deficiency in this case is $2,172,762 for sewer and $336,747 for water, which represent a 188.12% deficiency for sewer and 374.16% for water respectively. The deficiency results from the substantial capital investments and operating improvements that Bluegrass Water has implemented since acquiring the subject properties and has planned for the near future, as well as expected capital investments and operating improvements for upcoming acquisitions.

## RATE DESIGN

**Q. Please describe the rate design that Bluegrass Water is proposing in this case.**

A. Bluegrass Water proposes that residential customers across its systems be charged a unified tariff rate for sewer service and a unified tariff rate for water services. In addition, commercial sewer customers (other than those in the Delaplain service area) would also be charged a flat per- month tariff rate based on a residential customer equivalency. Commercial and industrial sewer customers in the Delaplain nonresidential service area would be charged on a volumetric basis consistent with the design of Delaplain Disposal Company's current tariff.

**Q. Why is Bluegrass Water proposing a unified rate for most of its customers?**

A. Bluegrass Water works to offer the same level of safe and reliable service to all of its water and sewer customers. Many of Bluegrass Water's water customers do not currently have metered service. The cost to install meters on all customer accounts would be significant, so Bluegrass Water is not currently planning to install meters for

all water customers. In addition, where Bluegrass Water provides only sewer service to a customer, it is difficult to accurately and efficiently charge a volumetric rate at the individual customer level. As a result, Bluegrass Water believes it more equitable to provide its services on a flat rate basis for most of its customers. Bluegrass Water is proposing to unify rates across its Kentucky service area for two reasons. First, a unified rate would reduce "rate shock" for customers served by systems that require greater than average expenditures to upgrade their operations in the near term, including capital investments necessary to bring their systems into regulatory compliance. The second reason for proposing unified rates is because such rates reflect the fact that over time all the water and sewer systems we serve will require the same level of capital investments to keep them in compliance with ever more stringent environmental regulations. Spreading the burden of these future investments over all our Kentucky customers is the most equitable to accomplish our objective of ensuring all our customers receive safe and reliable service that complies with all applicable health and environmental regulations.

**Q. Please describe the process used to calculate the rates proposed for various customer classes in this case.**

A. Rate classes consist of residential, multi-unit residential, fixed commercial, and volumetric commercial/industrial. Revenues under current rates were determined for each class A rate which was then developed for the residential class, which includes the majority of our Kentucky customers. The remaining non-volumetric classes were assigned a residential customer equivalent. The customer count for each class was multiplied by the residential customer equivalent to determine a total customer

equivalent for each class. Revenues remaining after the portion assigned to volumetric commercial/industrial customers were allocated to the remaining classes proportionally based on the customer equivalents. The increase for the volumetric commercial/industrial customers was based on the overall percentage increase requested in this case.

## AVERAGE BILL

**Q. What will be the impact of this rate request on residential customers?**

A. As mentioned above in the discussion on rate design, Bluegrass Water is proposing that all residential customers pay the same fixed rate in the future. Since this case applies to numerous systems currently charged under tariffs unique to those systems, the impact on individual customers will vary. The impact of the new rate on customers is outlined in Schedule N.

## PRESENT RATE REVENUE AND PROPOSED RATE REVENUE

**Q. Please describe the increase in present rate revenue between the base year and the forecasted test year.**

A. The base year represents the twelve months ended December 31, 2020. Revenue for that period includes actual rate revenues for the eight months ended August 31, 2020 and forecasted revenue for the four months ended December 31, 2020. The calculation of forecasted test year revenue at present involves annualizing present rate revenue for systems that have been or will be acquired within the base year. Systems that have already been acquired by Bluegrass Water in the base year include the River Bluffs and JoAnn Estates sewer systems and the Center Ridge water systems. The Commission already has authorized Bluegrass Water to acquire the Randview,

Carriage Park, Arcadia Pines and Marshall Ridge sewer systems and Bluegrass anticipates closing each of those transactions prior to the end of the base year. Also included in the forecasted test year at present rates are a group of systems that Bluegrass Water has sought Commission approval to acquire via Case No. 2020-00297. These include the Delaplain, Herrington Haven, Springcrest and Woodland Acres sewer systems. The annualization of present rate revenues and the inclusion of revenue for systems to be acquired results in an increase of $449,687 in revenue between the base year and the forecasted test year at present rates for sewer and $40,223 for water.

**Q. Please describe the process for calculating forecasted rate revenue under present rates.**

A. Forecasted rate revenue under present rates is calculated by determining the number of customers and the number of billing periods and multiplying these by the present tariff rates. To calculate the number of customers, Bluegrass Water used actual customer numbers as of the August 2020 billing and added to that the estimate of customers which will be included in the planned acquisitions. Bluegrass Water's current procedure of billing monthly for sewer and water service results in twelve billing periods in the forecasted test year. The tariff rates used in calculating forecasted rate revenue under present rates are the tariff rates that Bluegrass Water adopts upon acquisition of systems. Bluegrass Water anticipates adopting existing tariff rates for other expected system acquisitions which would be in effect until proposed new tariff rates become effective.

**Q. How was the proposed rate revenue developed?**

A. The proposed rate revenue represents Bluegrass Water's cost to provide safe and reliable water and sewer service to its customers in the forecasted test year and is equivalent to the revenue requirement for the forecasted test year. It is summarized in the Revenue Requirement and Conversion Factor (Sewer) and Revenue Requirement and Conversion Factor (Water) schedules included with Schedule A.

## OPERATING EXPENSES

**Q. Please describe the operating expenses included in your filing.**

A. This case includes both water and sewer customers, so the operating expenses have been categorized to reflect this fact. Certain expenses are combined as they cover both water and sewer and are then allocated between the two. Bluegrass Water works to find the most equitable basis to assign combined expense. Most often, combined expenses are allocated on the basis of water and sewer customer counts. Included in combined expenses are overhead charges allocated from Bluegrass Water's parent, CSWR, LLC. Overhead Allocation expense is discussed in further detail later in this testimony.

**Q. What are the major categories of combined operating expenses?**

A. These include:

- Customer Billing
- Overhead Allocations from CSWR, LLC
- Outside Services
- Insurance (property and liability)

**Q. Please describe Overhead Allocation expense.**

A. Certain general and administrative expenses are allocated to Bluegrass Water from its parent, CSWR, LLC, on an indirect basis. These expenses include administrative services such as customer service, legal, accounting, finance, engineering, accounts payable, risk management and executive leadership. These shared administrative expenses allow Bluegrass Water and its component systems to benefit from cost efficiencies and shared expertise of a larger organization that might not otherwise be available to a company like Bluegrass. CSWR, LLC, uses the Massachusetts formula to allocate indirect general and administrative costs to its subsidiaries. "The Massachusetts formula is based on the ratio of direct labor, capital investment and gross revenue of each affiliate to total direct labor, capital investment and gross revenue."[3] The component factors used in the Massachusetts formula correspond to the significant drivers of general and administrative expense at CSWR, LLC. For example, a higher level of capital investment would require more time and higher expense to perform the necessary accounting procedures to track those fixed assets. Logically, this should result in a proportionately higher ratio of shared cost allocation. Calculation of the Overhead Allocation is reviewed at the end of each fiscal quarter by CSWR, LLC, management. For the base period, the allocation used was based on the second quarter 2020 factor values. The allocation for the forecasted test year at proposed rates is based on the estimated allocation factor values at the fourth quarter of calendar year 2021. The Overhead Allocation factors and calculation are presented in Schedule OHA1.

[3] Hahne, Robert L. & Aliff, Gregory E. (2019). "Accounting for Public Utilities, Vol. 1". LexisNexis. Pp. 19.03[4][d].

**Q. Please describe Insurance Expense**

A. Property, general liability and environmental liability insurance is provided to Bluegrass Water as part of a policy held through its parent, CSWR, LLC. The costs for the policy coverage are allocated to Bluegrass Water based on the values of covered assets.

**Q. What are the major categories of expense applicable to sewer or water?**

A. These include:

- Contracted Operations
- Fuel and Power, Chemicals
- Maintenance
- Depreciation
- Property taxes
- Regulatory Expenses

**Q. Please describe Contracted Operations expense.**

A. Bluegrass Water does not employ sewer or water operations staff but instead contracts with third-party water and sewer operations and maintenance companies. Bluegrass Water's process for operating and maintaining its properties using outside contractors is discussed in detail in the direct testimony of Company witness Todd Thomas.

## RATE BASE

**Q. What are the components of rate base included in this filing?**

A. Major components of rate base include:

- Utility Plant in Service (UPIS)

- Accumulated Depreciation
- Construction Work in Progress (CWIP)
- Working Capital Allowance
- Contributions in Aid of Construction (CIAC)

Each of these components is described in my testimony below. Supporting schedules are included in the concurrently filed Notice of Filing to the Application.

**Q. Please describe utility plant in service (UPIS).**

A. UPIS includes the original cost of acquired systems along with improvements and equipment used to provide sewer and water services. The UPIS calculation begins with the actual balance on the books as of August 31, 2020. Forecasted additions for the four-month period ending December 31, 2020, are added to arrive at an ending UPIS value for the base year. UPIS balances in the forecasted test year were calculated by adding forecasted acquisitions and plant additions and subtracting forecasted retirements through April, 2022. The $8,438,874 sewer balance and $1,188,537 water balance of UPIS included in the rate base calculation are based on a thirteen-month average of the forecasted balances from April 1, 2021 through April 30, 2022. The calculations are shown in Schedule B-2.

**Q. Please describe the calculation of accumulated depreciation.**

A. Accumulated depreciation consists of the historic total of plant depreciation to date. The balances in accumulated depreciation that were associated with assets acquired by Bluegrass Water from the prior owners have been carried forward on the books of Bluegrass Water. Assets that Bluegrass Water has placed into service have been depreciated according to the rates shown on the schedules found in Schedule B-3.

Accumulated depreciation balances in the forecasted test year have been calculated by month using the depreciation rates shown on Schedule B-3. The thirteen-month average for accumulated depreciation for sewer is calculated to be $2,564,880 and for water is $263,430. The calculation is shown in Schedule B-3.

**Q. Please describe how you arrived at construction work in progress (CWIP) included in rate base.**

A. CWIP is the value of utility plant that is under construction but has not yet been placed into service. The forecast for the test year started with actual balances at August 31, 2020, and was forecasted through the test year by adding projected construction expenditures and deducting transfers to UPIS. The $877,758 balance in sewer and $97,909 water balance of CWIP included in the rate base calculation are based on a thirteen-month average of the forecasted balances from April 1, 2021, through April 30, 2022 and are shown in Schedule B-4.

**Q. How did you calculate the cash working capital allowance in this case?**

A. Cash working capital is the capital that is required to bridge the gap from when cash is paid for expenses necessary to provide safe and reliable service and when cash is received from customers for that service. This amount of required capital must be supplied by investors as part of their investment. While known methods, such as a lead/lag study, are used to calculate the working capital allowance, Bluegrass Water has opted to use the "45-day convention". Many jurisdictions use a "45-day convention" to produce a reasonable working capital adjustment. The "45-day convention" multiplies the operating expenses (excluding depreciation and taxes) by 45/365 to produce a working capital amount to be included in rate base. We have

used the "45-day convention" to calculate the $256,178 and $35,756 cash working capital amounts for sewer and water, respectively. These amounts are included in the rate base calculation. The Working Capital calculation is shown in Schedule B-5.

**Q. Please describe CIAC in rate base.**

A. CIAC reflects property or money received from third parties related to the establishment of service. For ratemaking purposes, it is not considered to be investor supplied capital. Bluegrass Water expects that it will primarily incur CIAC from amounts paid for sewer and water tap-in fees. Bluegrass Water's CIAC balances will be amortized as an offset to depreciation expense and the net amount of CIAC calculated into rate base. A portion of the CIAC carried on the books of Bluegrass Water during the base year has been carried forward from the books and records of the prior owners of the acquired system assets. The forecasted test year reflects additional CIAC that Bluegrass Water expects to record with the acquisitions that have been approved by the Commission via Case No. 2020-00028 and those that have been proposed to the Commission via Case No. 2020-00297. The thirteen-month average balance of CIAC that is included in the rate base calculation is $100,385 for sewer and $0 for water. CIAC is shown in Schedule B-6.

## DEPRECIATION AND AMORTIZATION

**Q. How was depreciation expense calculated in this case?**

A. Depreciation expense was calculated for the forecasted test year by multiplying forecasted UPIS balances of each plant account by the applicable life depreciation rates and cost of removal rates proposed by Bluegrass Water. Depreciation expense is offset by amortization of CIAC, which is also calculated by multiplying CIAC

balances by their corresponding amortization rate. Bluegrass Water proposes to use unified depreciation rates for future depreciation. The schedule of rates is included in Schedule B-3.1. The calculation of depreciation expense for the forecasted test year appear in Schedule B-3.1.

**Q. How did Bluegrass Water arrive at its proposed depreciation rates?**

A. As has been discussed earlier, Bluegrass Water's assets consist of properties obtained from numerous separate entities. Each of these had their own depreciation schedule and in some instances the records appear to be incomplete. Under the circumstances, Bluegrass Water proposes that like accounts in all of its utility systems be subject to the same depreciation rates. Bluegrass Water has developed these rates based on the rates in use in other jurisdictions where its affiliates operate.

## CONCLUSION

**Q. Does this conclude your direct testimony?**

A. Yes.

# ATTACHMENT A

Reference Table

| Schedule | 20-290 Notice of Filing with Workbooks |
|---|---|
| SR1 | Sewer Revenues |
| SE1 | Sewer Expenses – Operations |
| SE2 | Sewer Expenses – Fuel and Power, Chemicals |
| SE3 | Sewer Expenses – Maintenance |
| WR1 | Water Revenues |
| WE1 | Water Expenses – Operations |
| WE2 | Water Expenses – Fuel and Power, Chemicals |
| WE3 | Water Expenses – Maintenance |
| CE1 | Property Taxes |
| CE2 | Customer Billing Expense |
| CE3 | Overhead Allocations |
| CE4 | Outside Services Expense |
| CE5 | Property & Liability Insurance |
| CE6 | Regulatory Expense |
| CE7 | Uncollectible Accounts |
| OHA1 | Overhead Allocations |
| A | Revenue Requirement |
| B | Rate Base |
| C | Income Statement |
| D | Description of Adjustments |
| E | Tax Summary |
| H | Gross Revenue Conversion Factor |

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of

| | | |
|---|---|---|
| *Electronic* Application of Bluegrass Water Utility Operating Company, LLC for an Adjustment of Rates and Approval of Construction | ) | Case No. 2020-00290 |

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**Direct Testimony of Dylan W. D'Ascendis**

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STATE OF NEW JERSEY
COUNTY OF BURLINGTON

I, Dylan W. D'Ascendis, being duly sworn, state that the attached is my Direct Testimony in the above styled matter, that I would respond in the same manner to the questions if so asked upon taking the stand, and that my testimony is true and correct to the best of my knowledge, information, and belief formed after reasonable inquiry.

Dylan W. D'Ascendis

Subscribed and sworn to this 28th day of September 2020, before me, a Notary Public in and before said County and State.

Notary Public

(SEAL)

My Commission Expires:

KENDRA LONG
Notary Public, State of New Jersey
My Commission Expires
April 14, 2025

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# I. INTRODUCTION

**Q. Please state your name, profession, and address.**

A. My name is Dylan W. D'Ascendis. I am a Director at ScottMadden, Inc. My business address is 3000 Atrium Way, Suite 241, Mount Laurel, NJ 08054.

**Q. Please summarize your educational background and experience.**

A. I have offered expert testimony on behalf of investor-owned utilities in over 20 state regulatory commissions in the United States, one Canadian province, and one American Arbitration Association panel on issues including, but not limited to, common equity cost rate, rate of return, valuation, capital structure, relative investment risk, class cost of service, and rate design.

On behalf of the American Gas Association ("AGA"), I calculate the AGA Gas Index, which serves as the benchmark against which the performance of the American Gas Index Fund ("AGIF") is measured on a monthly basis. The AGA Gas Index and AGIF are a market capitalization weighted index and mutual fund, respectively, comprised of the common stocks of the publicly traded corporate members of the AGA.

I am a member of the Society of Utility and Regulatory Financial Analysts ("SURFA"). In 2011, I was awarded the professional designation "Certified Rate of Return Analyst" ("CRRA") by SURFA, which is based on education, experience, and the successful completion of a comprehensive written examination.

I am also a member of the National Association of Certified Valuation Analysts ("NACVA") and was awarded the professional designation Certified Valuation Analyst ("CVA") in 2015.

I am a graduate of the University of Pennsylvania, where I received a Bachelor of Arts degree in Economic History. I have also received a Master of Business Administration with high honors and concentrations in Finance and International Business from Rutgers University.

The details of my educational background and expert witness appearances are shown in Attachment A.

**Q. On whose behalf are you presenting this testimony?**

A. I am presenting this testimony ("Direct Testimony") before the Kentucky Public Service Commission (the "Commission") on behalf of Bluegrass Water Utility Operating Company, LLC ("Bluegrass Water" or the "Company"), the applicant for rate increase in the present docket.

**Q. What is the purpose of your Direct Testimony?**

A. The purpose is to provide testimony related to the appropriate return on common equity ("ROE") that the Company should be afforded the opportunity to earn on its property used and useful in the public service.

**Q. What is your recommended common equity cost rate?**

A. I recommend the Commission authorize the Company the opportunity to earn an overall rate of return on common equity of 11.80% on its jurisdictional rate base.

**Q. Have you prepared an exhibit that supports your recommended ROE?**

A. Yes, I am sponsoring Exhibit No. DD-1, which contains Schedules DWD-1 through DWD-7, and was prepared by me or my staff under my supervision and control.

## II. SUMMARY

**Q. Please summarize your recommended common equity cost rate.**

A. My recommended common equity cost rate of 11.80% is summarized on page 2 of Schedule DWD-1. Because Bluegrass Water's common stock is not publicly traded, a market-based common equity cost rate cannot be directly observed for the Company. Consequently, I have assessed the market-based common equity cost rates of companies with relatively similar, but not necessarily identical risk, *i.e.*, a proxy group, for insight into a recommended common equity cost rate applicable to Bluegrass Water. Using companies of relatively similar risk as proxies is consistent with the principle of fair and reasonable rates of return required by the *Hope*[1] and *Bluefield*[2] decisions, adding reliability to the informed expert judgment necessary to arrive at a recommended common equity cost rate.

However, no proxy group is completely identical in risk to any single entity. Accordingly, a comparison of relative risk between Bluegrass Water and a proxy group of publicly traded water utilities ("Utility Proxy Group"), discussed in further detail later in this testimony, must be made to determine whether any adjustments to the Utility Proxy Group's indicated common equity cost rate are justified or necessary.

In determining my recommended common equity cost rate, I applied several well-recognized cost of common equity models (*i.e.,* Discounted Cash Flow ("DCF"), Risk Premium Model ("RPM"), and Capital Asset Pricing Model ("CAPM")) to the market data of a Utility Proxy Group whose selection will also be discussed below. In addition, I applied the DCF model, RPM, and CAPM to a proxy group of non-price regulated companies comparable in total risk to the Utility Proxy Group ("Non-Price Regulated

[1] *Federal Power Comm'n v. Hope Natural Gas Co.,* 320 U.S. 591 (1944).
[2] *Bluefield Water Works Improvement Co. v. Public Serv. Comm'n,* 262 U.S. 679 (1922).

Proxy Group"). The results derived from each model are summarized as follows:

**Table 1: Summary of Common Equity Cost Rate**

| | Utility Proxy Group |
|---|---|
| Discounted Cash Flow Model | 9.07% |
| Risk Premium Model | 10.88% |
| Capital Asset Pricing Model | 10.96% |
| Cost of Equity Models Applied to Non-Price Regulated Proxy Group | 10.71% |
| Indicated Range of Common Equity Cost Rates before Adjustment | 9.74% - 10.41% |
| Business Risk Adjustment | 1.75% |
| Indicated Range of Common Equity Cost Rates after Adjustment | 11.49% -12.16% |
| Recommended Common Equity Cost Rate | 11.80% |

After reviewing the cost rates based on these models, I conclude that the indicated common equity cost rate applicable to the Utility Proxy Group is between 9.74% – 10.41%. The 9.74% low end of the range is calculated by taking the average model result (10.41%) and averaging that with the lowest model result (9.07%). The 10.41% high end of the range is the approximate average of model results.

The indicated range of common equity cost rates of 9.74% – 10.41% based solely on the Utility Proxy Group must then be adjusted upward by 175 basis points (1.75%) to reflect Bluegrass Water's increased unique business risk, as I will explain in more detail in Section VII. After adjustment, my recommended Company-specific risk-adjusted common equity cost range is 11.49% – 12.16%. The approximate midpoint of that range is 11.80%, which is the common equity cost rate I ultimately recommend for Bluegrass Water in this proceeding.

**Q. Why did you use the midpoint between your average model result and your lowest model result as the bottom of your indicated reasonable range before adjustment?**

A. As explained in detail below, the turmoil in markets attributable to the COVID-19 pandemic has increased risk for the entire economy generally, and utilities, specifically. Key takeaways include:

- The full impact and duration of the COVID-19 pandemic are unknown, and outcomes are highly uncertain;
- This uncertainty increases volatility. Volatility increases the chances of investment losses. As a result, investors flee to bonds to limit their investment losses, which is known as "the flight to safety". Increased levels of bond purchases increase their price, and drive down their yields, *i.e.,* interest rates. Because of this, the current low-interest rate environment is due to increased volatility in the market, and not a steady lowering of the cost of debt over time; and
- The same increased market volatility that caused investors' "flight to safety" also created a situation where utilities are traded similar to the S&P 500. These correlated returns of utility stocks and market indices increase Beta coefficients (a measure of risk), and by extension, investor-required returns.

My recommendation to use the lower end of the range of my results of my Utility Proxy Group is designed to be conservative given that volatility and uncertainty.

## III. CAPITAL MARKET CONDITIONS

**Q. Please summarize the recent capital market conditions.**

A. The recent, dramatic shifts in the capital markets brought about by COVID-19 cannot be overstated. Central banks have implemented multiple policies to address the financial market instability. The Federal Reserve reduced the overnight lending rate to a target range of 0.00% to 0.25%, announced plans to increase holdings of Treasury securities and agency mortgage-backed securities by a total of $700 billion,[3] established a facility to promote lending to small businesses via the Small Business Administration's Paycheck Protection Program ("PPP") by providing term financing backed by PPP loans,[4] and took additional actions to provide up to $2.3 trillion in loans to support the economy.[5]

The U.S. Government also acted to attempt to address the unstable financial markets. The Coronavirus Aid, Relief, and Economic Security Act, provided $2.4 trillion in economic stimulus and the PPP and Health Care Enhancement Act provided an additional $484 billion in emergency aid.[6]

Despite government and central bank actions, the debt and equity markets have experienced significant and abrupt increases in volatility.

**Q. How do significant and abrupt increases in volatility affect interest rates?**

A. Significant and abrupt increases in volatility tend to be associated with declines in Treasury yields. That relationship makes intuitive sense; as volatility (*i.e.,* risk) increases, investors will seek to avoid a capital loss by investing in Treasury securities in a "flight to safety."

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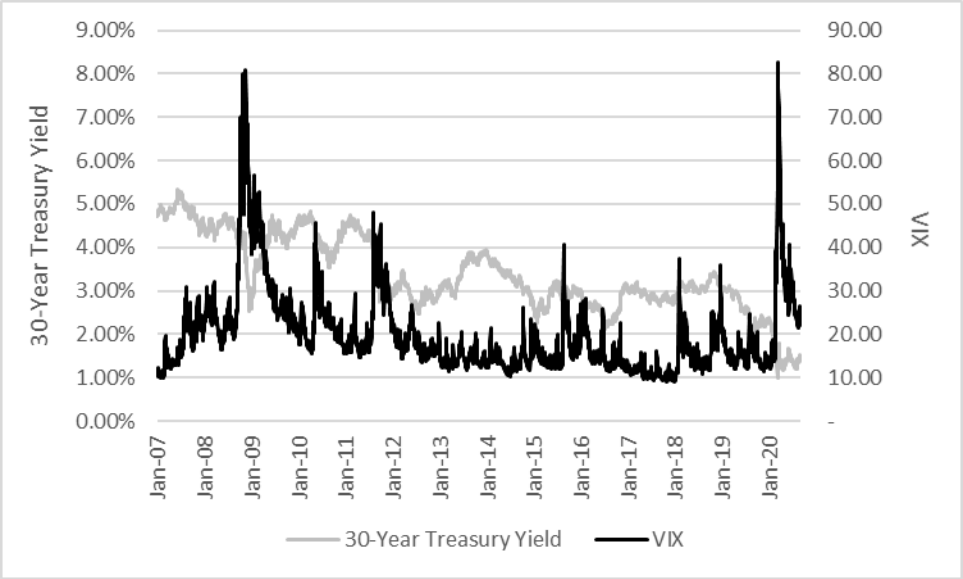
3 Federal Reserve Press Release, March 15, 2020.
4 Federal Reserve Press Release, April 6, 2020.
5 Federal Reserve Press Release, April 9, 2020.
6 S&P Global Market Intelligence, *Trump signs $484B coronavirus relief package into law*, April 24, 2020.

Because Treasury yields are inversely related to Treasury bond prices, as investors bid up the prices of bonds, they bid down the yields. As Chart 1 below demonstrates, decreases in the 30-year Treasury yield coincide with significant increases in the VIX.[7] In those instances, the fall in yields does not reflect a reduction in required returns, it reflects an increase in risk aversion and, therefore, an increase in required equity returns.

**Chart 1: 30-Year Treasury Yields vs. VIX[8]**




**Q. Has market volatility increased in recent months?**

A. Yes, it has. A visible and widely reported measure of expected volatility is the VIX. Because volatility is a measure of risk, increases in the VIX, or in its volatility, are a broad indicator of expected increases in market risk. That is, if the level of the VIX was 15.00, it would be interpreted as an expected standard deviation in annual market returns of 15.00% over the coming 30 days. Since 1990, the VIX has averaged about 19.39, which

[7] The VIX is a calculation designed to produce a measure of constant, 30-day expected volatility of the U.S. stock market, derived from real-time, mid-quote prices of S&P 500 Index call and put options. Source: www.cboe.com/vix.

[8] Source: Bloomberg Professional Service.

is consistent with the long-term standard deviation on annual market returns as reported by Duff & Phelps.[9] From February 1, 2020 to August 31, 2020, the VIX averaged 33.24, or more than 71.00% above its long term average.[10] In other words, since the COVID-19 pandemic began, market volatility has been, on average, 71.00% higher than the market's long-term average volatility.

**Q. Is market volatility expected to remain elevated in the near term?**

A. Yes. One means of assessing market expectations regarding the future level of volatility is to review CBOE's "Term Structure of Volatility", which is described by CBOE as:

> The implied volatility term structure observed in SPX options markets is analogous to the term structure of interest rates observed in fixed income markets. Similar to the calculation of forward rates of interest, it is possible to observe the option market's expectation of future market volatility through use of the SPX implied volatility term structure.[11]

As shown in Table 2, the implied volatility is expected to remain approximately 50% above historical volatility[12] until at least June 2022.

[9] Source: Duff & Phelps, 2020 SBBI Yearbook, at 6-17.
[10] Source: Bloomberg Professional Service.
[11] Source: www.cboe.com/trading-tools/strategy-planning-tools/term-structure-data.
[12] As noted earlier, the long-term average price of VIX is approximately 19.39, which is similar to the long-term standard deviation of market returns.

**Table 2: CBOE Term Structure of Volatility**[13]

| Date | Projected VIX |
|---|---|
| October 2020 | 29.16 |
| November 2020 | 31.99 |
| December 2020 | 32.91 |
| January 2021 | 33.38 |
| February 2021 | 32.57 |
| March 2021 | 33.61 |
| June 2021 | 33.60 |
| September 2021 | 33.48 |
| December 2021 | 31.86 |
| June 2022 | 29.22 |

As discussed above, investors reacted to the increase in market uncertainty associated with COVID-19 by moving away from equity securities (including utilities) to Treasury securities, pushing down long-term Treasury yields. Both long-term Treasury and utility bond yields have been extremely volatile, as shown on Charts 2 and 3, below, as seen in its Coefficient of Variation ("CoV"):[14]

[13] Source: http://www.cboe.com/trading-tools/strategy-planning-tools/term-structure-data, accessed September 21, 2020.

[14] The coefficient of variation is used by investors and economists to determine volatility.

**Chart 2: Coefficient of Variation in 30-Year Treasury Yields**[15]

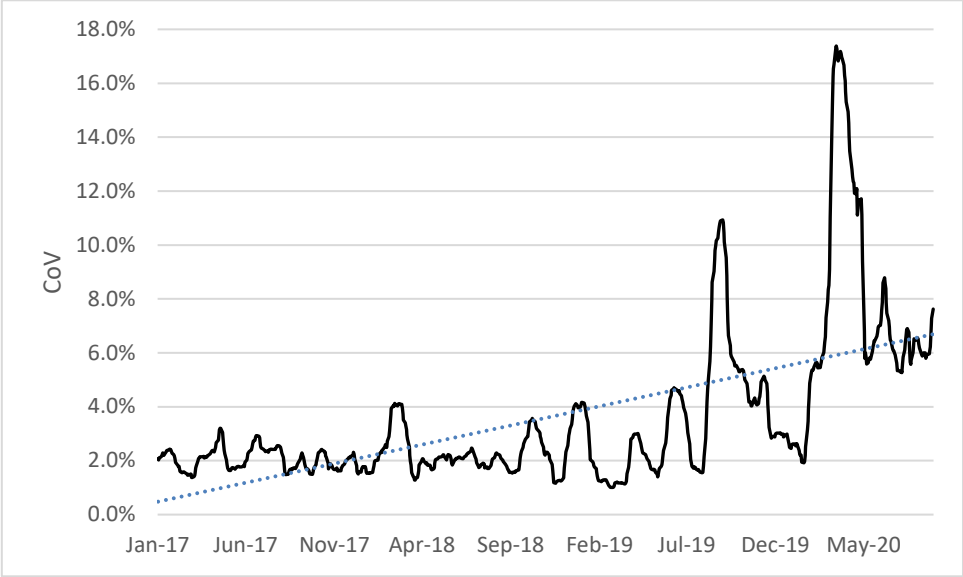
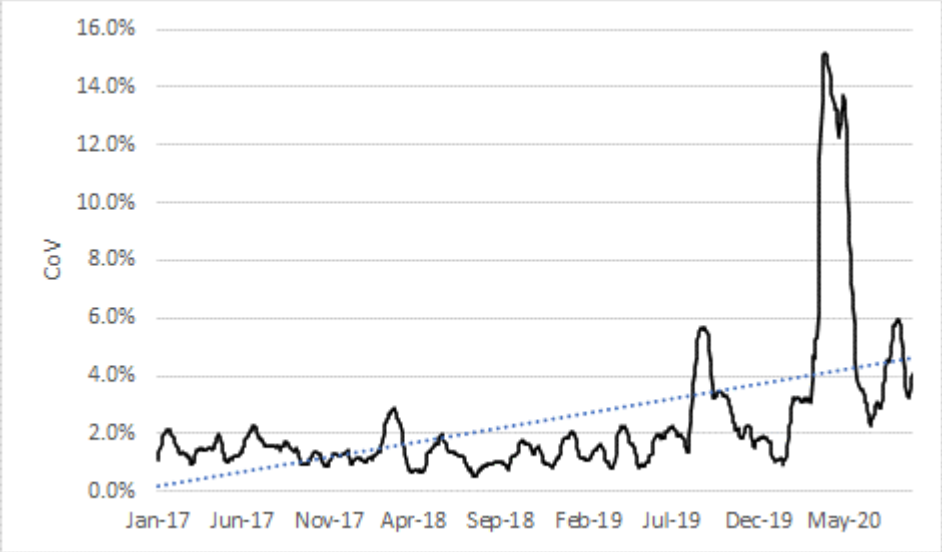



**Chart 3: Coefficient of Variation in A-Rated Public Utility Bonds**[16]




In view of all of the above, current levels of interest rates are the result of a volatility-driven "flight to safety" on the part of investors, which indicates increased risk

[15] Source: Bloomberg Professional. Data through August 31, 2020.
[16] Source: Bloomberg Professional. Data through August 31, 2020.

aversion, and thus, an increased investor-required return.

## IV. GENERAL PRINCIPLES

**Q. What general principles have you considered in arriving at your recommended common equity cost rate?**

A. The cost of common equity is the return investors require to make an equity investment in a given firm. From the firm's perspective, the required return, whether it is provided to debt or equity investors, has a cost. Collectively, the "cost of debt" and the "cost of equity" are referred to as the "cost of capital."

The cost of capital is based on the economic principle of "opportunity cost," meaning that investing in any asset or security implies a forgone opportunity to invest in alternative assets or securities. The opportunity cost of an investment should equal the return available on investments of comparable risk.

Although both debt and equity have costs, those costs differ fundamentally. The cost of debt is often contractually defined and can be directly observed in the market as the interest rate or yield on debt securities. In contrast, the cost of equity is not normally contractually defined nor can it be directly observed in the market. Rather, because common equity investors have a claim on a firm's cash flows only after debt holders are paid, it is the uncertainty (or risk) associated with the equity investors' lower priority, or junior position to receive those residual cash flows, that determines the cost of equity. In other words, because common equity investors bear this "residual risk," they require higher returns than debt holders. In that sense, common equity and debt investors are distinct: they invest in different securities, face different risks, and require different returns. That is not to say that the risks facing debt and equity investors are completely separate and

distinct; the two may share common risks, but only to a point. Therefore, commentary from both debt and equity analysts is instructive and helps inform the determination of the required return.

According to the basic financial principle of risk and return, the investor-required return on investment is a function of the level of investor-perceived risk as reflected in the market prices paid by investors. The higher/lower the investor-perceived risk, the higher/lower the investor-required return. The investor-required return is forward-looking, or expectational, as it is the return investors expect to receive in the future for investing capital today, and is reflective of expected economic and capital market conditions.

In unregulated industries, the competition of the marketplace is the principal determinant of the price of products or services. For regulated public utilities, like Bluegrass Water, regulation acts as a substitute for marketplace competition. A sufficient level of earnings is required to assure that the utility can: (1) fulfill its obligation to provide safe and reliable service at all times; (2) maintain the integrity of presently invested capital through future reinvestment; and (3) attract needed new capital at a reasonable cost and on reasonable terms in competition with other firms of comparable risk. This is consistent with the previously noted rate of return standard established by the Supreme Court in the *Hope* and *Bluefield* cases.

In rate base/rate of return regulation, the authorized return on common equity is defined as the investor-required return. In turn, the investor-required return is defined as the return required by the investor on the funds invested in the publicly traded common stocks of firms. As stated previously, the cost of common equity is not directly observable in the capital markets since there is no contractual basis or obligation on the part of a firm to provide a return to its common shareholders, unlike its debt obligations. Therefore, the

cost of common equity must be estimated from market (economic and financial) data, using financial models developed for that purpose, such as the CAPM, DCF, and RPM. Therefore, my recommended common equity cost rate is based on the marketplace data of a proxy group of utilities that are similar in risk to Bluegrass Water.

Because empirical financial models for determining the cost of common equity are subject to limiting assumptions or other constraints, most finance texts recommend using multiple approaches to estimate the cost of common equity. As such, regulatory commissions commonly rely on multiple financial models in determining the allowed ROE for regulated utilities. As a practical matter, no individual model is more reliable than all others under all market conditions. The use of multiple common equity cost rate models adds reliability to the estimation of the investor-required return.

Applying market data of proxy companies of similar risk to multiple common equity cost rate models adds reliability to the informed expert judgment used in estimating the common equity cost rate. Therefore, it is prudent and appropriate to use multiple methodologies to mitigate the effects of limiting assumptions and inputs associated with any single approach.

### A. Business Risk

**Q. Please define business risk and explain why it is important to the determination of a reasonable rate of return.**

A. The investor-required return on common equity reflects investors' assessment of the total investment risk of an individual firm. Total investment risk is often discussed in the context of business risk and financial risk.

Business risk refers to the basic viability of a business; that is, whether a company will be able to generate sufficient revenue to cover its operational expenses and cost of capital. Financial risk is related to the company's ability to generate sufficient cash flow to cover interest payments on financing or to meet other debt-related obligations.

Examples of the business risks generally faced by water and wastewater utilities include, but are not limited to, the legal and regulatory environment, mandatory environmental compliance requirements, customer mix and concentration of customers, service territory economic growth, declining per customer water use, risks and uncertainties of water supply limitations, operations, capital intensity, size, the degree of operating leverage, and the like, all of which have a direct bearing on earnings.

Although analysts, including rating agencies, may classify business risks according to individual categories, as a practical matter, they are inter-related and are not wholly distinct from one another. For determining an appropriate return on equity, the relevant issue is where investors see the subject company's risk compared to comparable companies. To the extent investors view a company as being exposed to additional risk, the required return will increase.

For regulated water and wastewater utilities, business risks are both long- and near-term in nature. Whereas near-term business risks are reflected in the year-to-year variability in earnings and cash flow brought about by economic or regulatory factors, long-term business risks reflect the prospect of an impaired ability of investors to earn a return on and of their invested capital. Moreover, because water and wastewater utilities accept the obligation to provide safe, adequate, and reliable service at all times (in exchange for the opportunity to earn a fair and reasonable return on their investment), they generally do not have the option to delay, defer, or reject required long-term capital investments in order to

comply with Safe Drinking Water Act ("SDWA") standards. Since those investments are generally capital-intensive, water and wastewater utilities cannot choose to avoid raising external funds during periods of capital market distress.

Because water and wastewater utilities invest in long-lived assets, long-term business risks are of considerable concern to equity investors. That is, the risk of not recovering the return on and of their investment extends far into the future. However, the timing and nature of events that may lead to losses are also uncertain. Consequently, those risks and their implications for the required return on equity tend to be difficult to quantify. That does not mean, however, that the risk is of no consequence to investors. Analysts may apply, for example, simulation-based methods to assess the potential risk, but in the final analysis (like the investors that commit their capital) regulatory commissions, like the Kentucky Public Service Commission, must review a variety of quantitative and qualitative data, applying their reasoned judgment to determine how long-term risks weigh in their assessment of the market-required return on equity.

**Q. What business risks does the water utility industry in general face today?**

A. Water is necessary for life and is the only utility product intended for customers to ingest. Consequently, water quality is of paramount importance to the public health and well-being of customers. As a result, water utilities are subject to additional and increasingly stringent public health and safety regulations. Beyond health and safety concerns, customers also have significant aesthetic (*e.g.* taste and odor) concerns regarding the water delivered to them, with regulators paying close attention to these concerns because of the strong reactions they evoke in consumers.

Increasingly stringent environmental standards necessitate additional capital investment in the treatment and distribution of water, thereby increasing the pressure on water utilities' free cash flow through increased capital expenditure for infrastructure, repair, and replacement. In addition, the United States Environmental Protection Agency, and individual state and local environmental agencies, continually monitor potential contaminants in the water supply and promulgate or expand regulations when necessary. In the course of procuring water supplies and treating water so that it complies with SDWA standards, water utilities have an ever-increasing responsibility to be stewards of the environment from which supplies are drawn in order to preserve and protect essential natural resources.

Water utilities are typically vertically engaged in the entire process of acquiring supply, producing, treating, and distributing water, serving both a production function and a delivery function. Accordingly, water utilities require significant capital investment, not only in transmission and distribution systems, but also in sources of supply (surface and groundwater), production (wells), treatment, and storage. Significant capital investment is necessary to serve additional customers and to replace aging systems, creating a major risk factor for the water utility industry.

*Value Line Investment Survey* ("*Value Line*") observes the following about the water utility industry:

> Following a long period of underinvestment in the nation's water infrastructure, these utilities are now spending large amounts of funds to upgrade and modernize pipelines and wastewater treatment facilities. Thus, almost every company in this space has a substantial capital budget. External financing will likely continue to be needed to finance these building programs. Still the members of this industry have at least average, and in most cases, strong balance sheets. Another key factor behind the industry's

success has to do with the constructive relationships with regulators.[17]

**Q. How will water and wastewater utilities raise the capital required to fund necessary infrastructure replacements?**

A. The water and wastewater utility industry's high degree of capital intensity, coupled with the need for substantial infrastructure capital spending, requires regulatory support in the form of adequate and timely rate relief, including the allowance of a sufficient rate of return on investment.

Substantial water and wastewater utility investment and expenditures require significant financing. The three sources typically used for financing are debt, equity (common and preferred), and cash flow from operations. All three are intricately linked to the opportunity to earn a sufficient rate of return on investment and the ability to actually achieve that return. The return must be sufficient to maintain credit quality and enable the utility to attract necessary new capital, be it debt or equity capital. If unable to raise debt or equity capital, the utility must turn to either retained earnings or free cash flow[18], both of which are directly linked to earning a sufficient rate of return. The level of free cash flow represents the financial flexibility of a firm, *i.e.*, its ability to meet the needs of its debt and equity holders. If either retained earnings or free cash flows are inadequate, it will be nearly impossible for the utility to attract the new capital (at a reasonable cost and on reasonable terms) needed to invest in critical new utility infrastructure. An insufficient rate of return can be financially devastating for utilities given their obligation to protect the

[17] *Value Line Investment Survey*, July 10, 2020.
[18] Operating cash flow (funds from operations) minus capital expenditures.

public health by providing safe, adequate, and reliable service to their customers at all times.

**Q. Please continue your discussion of business risks.**

A. In addition to its capital-intensive nature, the water and wastewater utility industry also experiences low depreciation rates. Given that depreciation is one of the principal sources of internally-generated cash flows for all utilities, low depreciation rates mean that utilities cannot rely on depreciation as a source of cash like other industries do. Because utility assets have long lives and, hence, long capital recovery periods, utilities face increased risk due to inflation, which results in a significantly higher cost to replace a decades-old utility plant (*i.e.*, the original cost was a small fraction of the replacement cost of the plant). Low depreciation rates put significant pressure on cash flow for water and wastewater utilities.

In view of the foregoing, the water and wastewater utility industry's high degree of capital intensity and low depreciation rates, coupled with the need for capital spending to replace aging and failing water infrastructure, makes the need to maintain financial integrity through a sufficient rate of return increasingly important. The ability to attract needed new capital is essential in order for water and wastewater utilities to be able to successfully meet the challenges and investment needs they face.

## B. Financial Risk

**Q. Please define financial risk and explain why it is important to the determination of a fair rate of return.**

A. Financial risk is created by the introduction of senior capital, *i.e.*, debt and preferred stock, into the capital structure. As noted above, it is the additional risk that a company may not have sufficient cash flow to meet its financial obligations. The higher the proportion of

debt in the capital structure, the higher the financial risk which must be factored into the common equity cost rate. That principle is consistent with the previously mentioned basic financial principle of risk and return, *i.e.*, investors demand a higher common equity return as compensation for bearing higher investment risk.

**Q. Can the combined business and financial risks (*i.e.*, investment risk) of an enterprise be proxied by bond and credit ratings?**

A. Yes, but not entirely. Similar bond/issuer credit ratings reflect and are representative of similar combined business and financial risks, *i.e.*, the total risk faced by bond investors. Although specific business or financial risks may differ between companies, the same bond/credit rating indicates that the combined risks are similar, albeit not necessarily equal, as the purpose of the bond/credit rating process is to assess credit quality or credit risk and not common equity risk.

However, one must keep in mind that a long-term credit or bond issue rating is the rating agency's opinion regarding the particular company's overall financial capacity to pay its financial obligations as they become due and payable. It is not an assessment of the risk faced by equity investors. The claims of equity holders are subordinate to the claims of debt holders, including bond holders, and are perpetual in life. As noted above, whereas bondholders can be assured of the probability that a particular company will be able to meet its financial obligations (and thus have higher credit/bond ratings), common equity holders bear the residual risk of insufficient or volatile cash flows in perpetuity. For that fundamental reason, the risks of owning common equity do not directly correspond to the risks of owning bonds.

## V. BLUEGRASS WATER OPERATING COMPANY, LLC AND THE UTILITY PROXY GROUP

**Q. Please summarize Bluegrass Water's operations.**

A. Bluegrass Water will serve 339 water customers and 2,309 sewer customers at the end of the forecasted test year. These customers are served by three independent water systems and 15 independent wastewater systems across the state of Kentucky. All of these systems were acquired or will be acquired by Bluegrass Water between September 2019 and January 2021. Upon acquisition, the systems needed significant capital investment as the assets were distressed and unable to provide safe, reliable service to customers.

**Q. Is Bluegrass Water, or its parent, publicly traded?**

A. No. Bluegrass Water is an operating subsidiary of CSWR, LLC ("CSWR"). Neither Bluegrass Water nor CSWR are publicly traded. Consequently, it is necessary to develop a proxy group of publicly traded comparable companies in order to estimate the Company's ROE using market-based models.

**Q. Please explain how you chose the Utility Proxy Group.**

A. I chose the Utility Proxy Group by selecting those water utility companies that met the following criteria:

1. They are included in the Water Utility Group of *Value Line's* Standard Edition (July 10, 2020);
2. They have 70% or greater of 2019 total operating income derived from, and 70% or greater of 2019 total assets devoted to, regulated water operations;

3. They had not publicly announced involvement in any major merger or acquisition activity (*i.e.*, one publicly-traded utility merging with or acquiring another) at the time of the preparation of this testimony;
4. They have not cut or omitted their common dividends during the past five years or through the time of the preparation of this testimony;
5. They have *Value Line* and Bloomberg adjusted Beta coefficients;
6. They have a positive *Value Line* five-year dividends per share ("DPS") growth rate projection and,
7. They have *Value Line*, Bloomberg, Zacks or Yahoo! Finance, consensus five-year earnings per share ("EPS") growth rate projections.

The following seven companies meet these criteria:

- American States Water Co. ("AWR");
- American Water Works Co. Inc. ("AWK");
- California Water Service Corp. ("CWT");
- Essential Utilities, Inc. ("WTRG");
- Middlesex Water Co. ("MSEX");
- SJW Corporation ("SJW"); and
- York Water Co. ("YORW").

## VI. COMMON EQUITY COST RATE MODELS

**Q. Is it important that cost of common equity models be market-based?**

A. Yes. Regulated public utilities, like Bluegrass Water, must compete for equity in capital markets along with all other companies with commensurate risk, including non-utilities.

The cost of common equity is thus determined based on equity market expectations for the returns of those risk-comparable companies by applying market data to various financial models. If an individual investor is choosing to invest their capital among companies with comparable risk, they will choose the company providing a higher return over a company providing a lower return.

**Q. Are the cost of common equity models you use market-based models?**

A. Yes. The DCF model is market-based in that market prices are used in developing the dividend yield component of the model. The RPM and CAPM are also market-based in that the bond/issuer ratings and expected bond yields/risk-free rate used in the application of the RPM and CAPM reflect the market's assessment of bond/credit risk. In addition, the use of the Beta coefficient to determine the equity risk premium also reflects the market's assessment of market/systematic risk, as Beta coefficients are derived from regression analyses of market prices. Moreover, market prices are used in the development of the monthly returns and equity risk premiums used in the Predictive Risk Premium Model ("PRPM"). Selection criteria for the Non-Price Regulated Proxy Group are based on regression analyses of market prices and reflect the market's assessment of total risk.

**A. <u>Discounted Cash Flow Model</u>**

**Q. What is the theoretical basis of the DCF model?**

A. The theory underlying the DCF model is that the present value of an expected future stream of net cash flows during the investment holding period can be determined by discounting those cash flows at the cost of capital, or the investors' capitalization rate. DCF theory assumes that an investor buys a stock for an expected total return rate which is derived from cash flows received in the form of dividends plus appreciation in market price (the

expected growth rate). Mathematically, the dividend yield on market price plus a growth rate equals the capitalization rate (*i.e.*, the total common equity return rate expected by investors).

**Q. Which version of the DCF model did you use?**

A. I used the single-stage constant growth DCF model. The single-stage DCF model is expressed as:

$$K = ( D_1 / P_0 ) + g$$

Where:

| | | |
|---|---|---|
| K | = | Cost of Equity Capital; |
| $D_1$ | = | Expected Dividend Per Share in one year; |
| $P_0$ | = | Current Market Price; and |
| G | = | Expected Dividend Per Share Growth. |

**Q. Please describe the dividend yield used in your application of the DCF model.**

A. The unadjusted dividend yields are based on a recent (August 31, 2020) indicated dividend, divided by the average of closing market prices for the 60 days ending August 31, 2020, as shown in Column [1] on page 1 of Schedule DWD-2.

**Q. Please explain the adjusted dividend yield shown in Column [7] on page 1 of Schedule DWD-2.**

A. Because dividends are paid quarterly, or periodically, as opposed to continuously (daily), an adjustment must be made to the dividend yield. This is often referred to as the discrete, or the Gordon Periodic, version of the DCF model.

DCF theory calls for the use of the full expectational growth rate, referred to as $D_1$, in calculating the dividend yield component of the model. However, since the companies in the Utility Proxy Group increase their quarterly dividend at various times during the year, a reasonable assumption is to reflect one-half the annual dividend growth rate in the dividend yield component, referred to as $D_{1/2}$. This is a conservative approach because it does not overstate the dividend yield, which should be representative of the next 12-month period. Therefore, the actual average dividend yields in Column [1] on page 1 of Schedule DWD-2, have been adjusted upward to reflect one-half the average projected growth rate, as shown in Column [7].

**Q. Please explain the basis of the growth rates of the Utility Proxy Group used in your application of the DCF model.**

A. Investors with more limited resources than institutional investors are likely to rely on widely available financial information services, such as *Value Line*, Bloomberg, Zacks, and Yahoo! Finance. Investors recognize that analysts have significant insight into the dynamics of the industries and individual companies they analyze, as well as an entity's historical and future ability to adequately manage the effects of changing laws and regulations and ever-changing economic and market conditions.

Over the long run, there can be no growth in DPS without growth in EPS. Thus, the use of earnings growth rate forecasts in a DCF analysis provides a better match between investors' market price appreciation expectations and the growth rate component of the DCF. Therefore, I have relied on security analysts' five-year forecasts of EPS growth in my application of the DCF model.

**Q. Please summarize the DCF model results.**

A. As shown on page 1 of Schedule DWD-2, the average result of the single-stage DCF model is 9.36%, while the median result is 8.77%. I have averaged these two results in arriving at a DCF-indicated common equity cost rate of 9.07% for the Utility Proxy Group. By doing so, I have considered the DCF results for each company without giving undue weight to outliers on either the high or the low side.

## B. The Risk Premium Model

**Q. Please describe the theoretical basis of the RPM.**

A. The RPM is based on the basic financial principle of risk and return, namely, that investors require greater returns for bearing greater risk. The RPM recognizes that common equity capital has greater investment risk than debt capital, as common equity shareholders are last in line in any claim on an entity's assets and earnings, as previously discussed. Therefore, investors require higher returns from investment in common stocks than from investment in bonds to compensate them for bearing additional risk.

While it is possible to directly observe bond returns and yields, the investor-required common equity return cannot be directly determined or observed. According to RPM theory, one can estimate a common equity risk premium over bonds, either historically or prospectively, and then use that premium to derive a cost rate of common equity. In summary, according to the RPM, the cost of common equity equals the expected cost rate for long-term debt capital, plus a risk premium over that cost rate, to compensate common shareholders for the added risk of being unsecured and last-in-line for any claim on a corporation's assets and earnings.

**Q. Please explain how you derived your indicated cost of common equity based on the RPM.**

A. I relied on the results of the application of two risk premium methods, as shown in Schedule DWD-3. The first method is the PRPM. The second method is a risk premium model using an adjusted total market approach.

### 1. The Predictive Risk Premium Model

**Q. Please explain the PRPM.**

A. The PRPM, published in the *Journal of Regulatory Economics ("JRE")*[19] and *The Electricity Journal ("TEJ")*,[20] was developed from the work of Robert F. Engle, who shared the Nobel Prize in Economics in 2003, "for methods of analyzing economic time series with time-varying volatility ("ARCH")"[21] (with "ARCH" standing for autoregressive conditional heteroskedasticity). Engle found that the volatility in market prices, returns, and equity risk premiums cluster over time, making them highly predictable and available to predict future levels of risk and risk premiums.

The PRPM estimates the risk/return relationship directly as the predicted equity risk premium is generated by the predictability of volatility, or risk. Thus, the PRPM is not based on an estimate of investor behavior, but rather on the evaluation of the actual results of that behavior, *i.e.*, the variance of historical equity risk premiums.

The inputs to the model are the historical returns on the common shares of each publicly traded utility in the Utility Proxy Group, minus the historical monthly yield on long-term U.S. Treasury securities, through August 2020. Using a generalized form of

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19 "A New Approach for Estimating the Equity Risk Premium for Public Utilities", Pauline M. Ahern, Frank J. Hanley and Richard A. Michelfelder, Ph.D. The Journal of Regulatory Economics (December 2011), 40:261-278.

20 "Comparative Evaluation of the Predictive Risk Premium Model™, the Discounted Cash Flow Model and the Capital Asset Pricing Model", Pauline M. Ahern, Richard A. Michelfelder, Ph.D., Rutgers University, Dylan W. D'Ascendis, and Frank J. Hanley, The Electricity Journal (May, 2013).

21 www.nobelprize.org

ARCH, known as GARCH, each Utility Proxy Group company's projected equity risk premium was determined using Eviews© statistical software. When the GARCH model is applied to the historical return data, it produces a predicted GARCH variance series[22] and a GARCH coefficient.[23] I then added a projected 30-year U.S. Treasury Bond yield of 2.05%[24] to the predicted risk premium of each proxy company. The average PRPM indicated common equity cost rate is 11.61% for the Utility Proxy Group, while the median is 10.49%, as shown in Column [7] on page 2 of Schedule DWD-3. Consistent with my use of the average of the mean and median DCF results, I rely on the average of the mean and median PRPM results of 11.05% as my conclusion of the PRPM equity cost rate, also shown in Column [7] on page 2 of Schedule DWD-3.

**2. Adjusted Total Market Approach RPM**

**Q. Please explain the adjusted total market approach RPM.**

A. The adjusted total market approach RPM adds a prospective public utility bond yield to the average of: (1) an equity risk premium derived from a Beta-adjusted total market equity risk premium, and (2) an equity risk premium based on the S&P Utilities Index.

**Q. Please explain the basis of the adjusted prospective bond yield of 3.62% applicable to the Utility Proxy Group, shown on line 5 on page 3 of Schedule DWD-3.**

A. The first step in the adjusted total market approach RPM analysis is to determine the expected bond yield. Because both ratemaking and the cost of capital, including the common equity cost rate, are prospective in nature, a prospective yield on long-term utility

[22] Illustrated in Columns [1] and [2] on page 2 of Schedule DWD-3.
[23] Illustrated in Column [4] on page 2 of Schedule DWD-3.
[24] Based on the average of the consensus forecasts for the six quarters ending with the fourth quarter 2021, derived from the September 1, 2020 *Blue Chip Financial Forecasts* ("*Blue Chip*"), and *Blue Chip's* long-range forecasts for 2022 – 2026 and 2027 – 2031 as of June 1, 2020.

debt similarly rated to the Utility Proxy Group is essential. Since *Blue Chip Financial Forecasts ("Blue Chip")* does not publish consensus yield forecasts for the Moody's A-rated public utility bonds, I averaged the expected yield on Aaa-rated corporate bonds for each of the six calendar quarters ending in the fourth calendar quarter of 2021 as reported in the September 1, 2020 *Blue Chip*[25] consensus forecast with *Blue Chip's* long-range forecasts for 2022 – 2026 and 2027 – 2031, as of June 1, 2020.[26] As shown on line 1 on page 3, the average expected yield on Moody's Aaa-rated corporate bonds is 2.98%. In order to derive a prospective Moody's A-rated public utility bond yield, an adjustment of 0.58% must be made to the average Aaa-rated corporate bond yield, which reflects the average spread between Moody's Aaa-rated corporate bond yields and Moody's A-rated public utility bond yields for the three months ending August 2020.[27] Adding this adjustment results in a bond yield of 3.56% applicable to a Moody's A-rated public utility bond.

Because the Utility Proxy Group average Moody's issuer rating is A2/A3, as shown on page 5 of Schedule DWD-3, I made a 0.06% upward adjustment to the prospective Moody's A-rated public utility bond yield of 3.56% to account for the difference in ratings. The 0.06% adjustment represents one-sixth (1/6) of the average spread of 0.35% between Moody's A-rated and Baa-rated public utility bonds for the three months ending August 2020. This adjustment is necessary so that the prospective bond yield is consistent with the Utility Proxy Group's average A2/A3 long-term issuer rating. Adding 0.06% to the 3.56% prospective Moody's A-rated public utility bond yield results in a 3.62% expected bond yield for the Utility Proxy Group, as shown on line 5 on page 3 of Schedule DWD-3.

[25] *Blue Chip* provides consensus forecasts of about 50 economists.
[26] See pages 10 and 11 of Schedule DWD-3.
[27] See page 4 of Schedule DWD-3.

**Q. Please explain the derivation of the Beta-derived equity risk premium.**

A. The components of the Beta-derived risk premium model are: (1) An expected market equity risk premium over corporate bonds, and (2) the Beta coefficient. The derivation of the Beta-derived equity risk premium applied to the Utility Proxy Group is shown on lines 1 through 9 on page 8 of Schedule DWD-3. The Beta-derived equity risk premium is developed by averaging six estimates of the equity risk premium: three historical data-based equity risk premiums, two *Value Line*-based equity risk premiums, and one Bloomberg-based equity risk premium. Each of these six estimates is described in turn.

**Q. How did you derive a market risk premium based on long-term historical data?**

A. To derive a historical market equity risk premium, I used the most recent holding period returns for the large company common stocks from the 2020 SBBI® Yearbook: Stocks, Bonds, Bills, and Inflation ("SBBI – 2020")[28] less the average historical yield on Moody's Aaa/Aa-rated corporate bonds for the period 1928 to 2019. The use of holding period returns over a very long period of time is appropriate because it is consistent with the long-term investment horizon presumed by investing in a going concern, *i.e.*, a company expected to operate in perpetuity.

SBBI's long-term arithmetic mean monthly total return rate on large company common stocks was 11.83% and the long-term arithmetic mean monthly yield on Moody's Aaa/Aa-rated corporate bonds was 6.05%.[29] As shown on line 1 on page 8 of Schedule DWD-3, subtracting the mean monthly bond yield from the total return on large company stocks results in a long-term historical equity risk premium of 5.78%.

I used the arithmetic mean monthly total return rates for the large company stocks

[28] SBBI – 2020 Appendix A Tables.
[29] As explained in note 1 on page 8 of Schedule DWD-3.

and yields (income returns) for the Moody's Aaa/Aa corporate bonds, because they are appropriate for the purpose of estimating the cost of capital as noted in SBBI – 2020.[30] The use of the arithmetic mean return rates and yields is appropriate because historical total returns and equity risk premiums provide insight into the variance and standard deviation of returns needed by investors in estimating future risk when making a current investment. If investors relied on the geometric mean of historical equity risk premiums, they would have no insight into the potential variance of future returns because the geometric mean relates the change over many time periods to a constant rate of change, thereby obviating the year-to-year fluctuations, or variance, which is critical to risk analysis.

**Q. Please explain the derivation of the regression-based equity risk premium.**

A. To derive the regression analysis-derived market equity risk premium of 9.39%, shown on line 2 on page 8 of Schedule DWD-3, I used the same monthly annualized total returns on large company common stocks relative to the monthly annualized yields on Moody's Aaa/Aa corporate bonds as mentioned above. The relationship between interest rates and the market equity risk premium was modeled using the observed monthly market equity risk premium as the dependent variable, and the monthly yield on Moody's Aaa/Aa corporate bonds as the independent variable. I used a linear Ordinary Least Squares ("OLS") regression, in which the market equity risk premium is expressed as a function of the Moody's Aaa/Aa corporate bonds yield:

$$RP = \alpha + \beta\ (R_{Aaa/Aa})$$

**Q. Please explain the derivation of the PRPM equity risk premium.**

A. I used the same PRPM approach described previously to develop my third historical equity

[30] SBBI – 2020, at 10-22.

risk premium estimate. The inputs to the model are the historical monthly returns on large company common stocks minus the monthly yields on Aaa/Aa corporate bonds during the period from January 1928 through August 2020.[31] Using the previously discussed generalized form of ARCH, known as GARCH, the projected equity risk premium is determined using Eviews© statistical software. The resulting PRPM predicted market equity risk premium is 9.62%.[32]

**Q. Please explain the derivation of a projected equity risk premium based on *Value Line* data for your RPM analysis.**

A. As noted previously, because both ratemaking and the cost of capital, including the cost rate of common equity, are prospective, a prospective market equity risk premium is essential. The derivation of the forecasted or prospective market equity risk premium can be found in note 4 on page 8 of Schedule DWD-3. Consistent with my calculation of the dividend yield component in my DCF analysis, my first prospective market equity risk premium using *Value Line* data is derived from an average of the three- to five-year median market price appreciation potential by *Value Line* for the 13 weeks ending September 4, 2020, plus an average of the median estimated dividend yield for the common stocks of the 1,700 firms covered in *Value Line*'s Standard Edition.[33]

The average median expected price appreciation is 58%, which translates to a 12.12% annual appreciation, and, when added to the average of *Value Line's* median expected dividend yields of 2.33%, equates to a forecasted annual total return rate on the market of 14.45%. The forecasted Aaa-rated corporate bond yield of 2.98% is deducted

[31] Data from January 1926-December 2019 is from SBBI – 2020. Data from January 2020 – August 2020 is from Bloomberg Professional Services.
[32] Shown on line 3 on page 8 of Schedule DWD-3.
[33] As explained in detail in page 2, note 1 of Schedule DWD-4.

from the total market return of 14.45%, resulting in an equity risk premium of 11.47%, shown on page 8, line 4 of Schedule DWD-3.

**Q. Please explain the derivation of an equity risk premium based on the S&P 500 composite index companies using *Value Line* data.**

A. For my second projected equity risk premium using *Value Line* data, I calculated an expected total return on the S&P 500 using *Value Line*'s expected dividend yields and long-term growth estimates as a proxy for capital appreciation. The expected total return for the S&P 500 is 13.83%. Subtracting the prospective yield on Aaa-rated corporate bonds of 2.98% results in a 10.85% projected equity risk premium.

**Q. Please explain the derivation of your sixth equity risk premium based on the S&P 500 composite index companies using Bloomberg data.**

A. Using data from Bloomberg Professional Services, I calculated an expected total return on the S&P 500 using expected dividend yields and long-term growth estimates as a proxy for capital appreciation, identical to the method described above relative to *Value Line* data. The expected total return for the S&P 500 is 13.78%. Subtracting the prospective yield on Aaa-rated corporate bonds of 2.98% results in a 10.80% projected equity risk premium.

**Q. What is your conclusion of the market equity risk premium for your total market approach RPM?**

A. I give equal weight to each of the six market equity risk premiums to arrive at my market equity risk premium of 9.65%. After calculating the average market equity risk premium of 9.65%, I adjust it by the Beta coefficient of the Utility Proxy Group to account for the risk of the Utility Proxy Group. As discussed below, the Beta coefficient is a meaningful

measure of prospective relative risk to the market as a whole and is a logical means by which to allocate a company's or proxy group's share of the market's total equity risk premium, relative to corporate bond yields. As shown on page 1 of Schedule DWD-4, the average of the mean and median Beta coefficients for the Utility Proxy Group is 0.82. Multiplying the Beta coefficient of the Utility Proxy Group of 0.82 by the market equity risk premium of 9.65% results in a Beta-adjusted equity risk premium of 7.91% for the Utility Proxy Group.

**Q. How did you derive the equity risk premium based on the S&P Utility Index and Moody's A2-rated public utility bonds?**

A. I derived my estimate of the equity risk premium based on the S&P Utility Index by averaging five utility-specific estimates of the equity risk premium: three equity risk premiums based on historical S&P Utility Index holding returns, and two equity risk premiums based on the expected returns of the S&P Utilities Index, using *Value Line* and Bloomberg data, respectively. Turning first to the S&P Utility Index holding period returns, I derived a long-term monthly arithmetic mean equity risk premium from the S&P Utility Index total returns of 10.74% and monthly A2-rated public utility bond yields of 6.53%, from 1928 to 2019, to arrive at an equity risk premium of 4.21%.[34] I then used the same historical data to derive a second historical equity risk premium of 6.83% based on a regression of the monthly equity risk premiums. The final historical S&P Utility Index holding period equity risk premium involves applying the PRPM using the historical monthly equity risk premiums from January 1928 to August 2020 to arrive at a PRPM-derived equity risk premium of 5.53% for the S&P Utility Index.

[34] As shown on line 1 on page 12 of Schedule DWD-3.

I then derived expected total returns on the S&P Utilities Index of 10.36% and 11.45% using data from *Value Line* and Bloomberg Professional Services, respectively, and subtracted the prospective A2-rated public utility bond yield (3.56%)[35], which results in equity risk premium estimates of 6.80% and 7.89%, respectively. As with the market equity risk premiums, I averaged all five risk premiums to arrive at my utility-specific equity risk premium of 6.25%.

**Q. What is your conclusion regarding the appropriate equity risk premium for use in your adjusted total market approach RPM analysis?**

A. The equity risk premium I applied to the adjusted total market approach RPM for the Utility Proxy Group is 7.08%. My 7.08% estimate is derived by averaging the Beta-derived premium of 7.91% (line 9 on page 8 of Schedule DWD-3) with the utility-specific equity risk premium of 6.25% (line 6 on page 12 of Schedule DWD-3).

**Q. What is the RPM-based common equity cost rate based on the adjusted total market approach?**

A. The indicated common equity cost rate based on the adjusted total market approach is 10.70% for the Utility Proxy Group as shown on line 7 on page 3 of Schedule DWD-3.

**Q. What are the results of your application of the PRPM and the adjusted total market approach RPM?**

A. As shown on page 1 of Schedule DWD-3, the indicated RPM-derived common equity cost rate is 10.88%, derived by averaging the PRPM results (11.05%) with the results of the adjusted total market approach (10.70%).

[35] Derived on line 3 on page 3 of Schedule DWD-3.

## C. The Capital Asset Pricing Model

**Q. Please explain the theoretical basis of the CAPM.**

A. CAPM theory defines risk as the co-variability of a security's returns with the market's returns as measured by the Beta coefficient (β). A Beta coefficient of less than 1.0 indicates lower variability while a Beta coefficient greater than 1.0 indicates greater variability than the market.

The CAPM assumes that all other risk, *i.e.*, all non-market or unsystematic risk, can be eliminated through diversification. The risk that cannot be eliminated through diversification is called market or systematic risk. In addition, the CAPM presumes that investors require compensation only for those systematic risks that are the result of macroeconomic and other events that affect the returns on all assets. The model is applied by adding a risk-free rate of return to a market risk premium, which is adjusted proportionately to reflect the systematic risk of the individual security relative to the total market, as measured by Beta coefficient. The traditional CAPM model is expressed as:

$$Rs = Rf + \beta(Rm - Rf)$$

Where:

Rs = Return rate on the common stock;

Rf = Risk-free rate of return;

Rm = Return rate on the market as a whole; and

β = Adjusted beta (volatility of the security relative to the market as a whole).

Numerous tests of the CAPM have measured the extent to which security returns and Beta coefficients are related, as predicted by the CAPM, confirming the CAPM's validity. The empirical CAPM ("ECAPM") reflects the reality that, while the results of

these tests support the notion that the Beta coefficient is related to security returns, the empirical Security Market Line ("SML") described by the CAPM formula is not as steeply sloped as the predicted SML. Morin[36] states:

> With few exceptions, the empirical studies agree that … low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted.
>
> * * *
>
> Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:
>
> $$K = R_F + x\,\beta(R_M - R_F) + (1-x)\,\beta(R_M - R_F)$$
>
> where x is a fraction to be determined empirically. The value of x that best explains the observed relationship Return = 0.0829 + 0.0520 β is between 0.25 and 0.30. If x = 0.25, the equation becomes:
>
> $$K = R_F + 0.25(R_M - R_F) + 0.75\,\beta(R_M - R_F)$$
>
> In view of theory and practical research, I have applied both the traditional CAPM and the ECAPM to the companies in the Utility Proxy Group and averaged the results.

**Q. Please describe your selection of the Beta coefficient for your CAPM analysis?**

A. I relied on an average of the adjusted Beta coefficients for each proxy company published by *Value Line* and provided by Bloomberg Professional Services. While both of those services adjust their calculated (or "raw") Beta coefficients to reflect the tendency of the Beta coefficient to regress to the market mean of 1.00, *Value Line* calculates its Beta coefficients over a five-year period, while Bloomberg's calculation is based on two years of data.

[36] Roger A. Morin, New Regulatory Finance, Public Utility Reports, 2006, at 175, 190.

**Q. Please describe your selection of a risk-free rate for your CAPM analysis.**

A. As shown in Column [5] on page 1 of Schedule DWD-4, the risk-free rate adopted for both applications of the CAPM is 2.05%. The risk-free rate of 2.05% is based on the average of *Blue Chip's* consensus forecast for each of the forthcoming six quarters ending in the fourth quarter 2021 as of September 1, 2020, and *Blue Chip's* long-range forecasts for 2022 – 2026 and 2027 – 2031, from the June 1, 2019 *Blue Chip* edition,[37] as detailed in note 2 on page 2 of Schedule DWD-4.

**Q. Why is the yield on long-term U.S. Treasury bonds appropriate for use as the risk-free rate?**

A. The yield on long-term U.S. Treasury Bonds is almost risk-free and its term is consistent with: (1) the long-term cost of capital to public utilities measured by the yields on A-rated public utility bonds; (2) the long-term investment horizon inherent in utilities' common stock; and (3) the long-term life of the jurisdictional rate base to which the allowed reasonable rate of return (*i.e.,* cost of capital) will be applied. In contrast, short-term U.S. Treasury yields are more volatile, and reflect a short-term investment horizon that is not consistent with the long-term investment horizon, and life of the rate base to which the allowed rate of return is applied.

**Q. Please explain the derivation of the expected market risk premium you applied in your CAPM analyses.**

A. The basis of the market risk premium is explained in detail in note 1 on page 2 of Schedule DWD-4. As discussed previously, the market risk premium is derived from an average of six market risk premium estimates: three historical data-based market risk premiums, two

[37] See pages 10 and 11 of Schedule DWD-3.

*Value Line* data-based market risk premiums, and one Bloomberg data-based market risk premium. The difference in the CAPM analyses is that long-term U.S. Treasury bond yields are used as the risk-free rate, rather than corporate or utility bond yields.

For my first historical estimate, the long-term income return on U.S. Government Securities of 5.09% was deducted from the SBBI – 2020 monthly historical total market return of 12.10%, which resulted in a historical market equity risk premium of 7.01%.[38] In my second historical estimate, I applied a linear OLS regression to the monthly annualized historical returns on the S&P 500 relative to historical yields on long-term U.S. Government Securities from SBBI – 2020. That regression analysis yielded a market equity risk premium of 10.24%. My third historical estimate results in a PRPM-based market equity risk premium of 10.73% and is derived by using the PRPM relative to the yields on long-term U.S. Treasury securities from January 1926 through August 2020.

The *Value Line*-derived forecasted total market equity risk premium is derived by deducting the forecasted risk-free rate of 2.05% discussed above, from the *Value Line* projected total annual market return of 14.45%, resulting in my first *Value Line* forecasted total market equity risk premium of 12.40%. The S&P 500 projected market equity risk premium using *Value Line* data is derived by subtracting the projected risk-free rate of 2.05% from the projected total return of the S&P 500 of 13.83%. The resulting projected market equity risk premium from that second *Value Line* approach is 11.78%.

The S&P 500 projected market equity risk premium using Bloomberg data is derived by subtracting the projected risk-free rate of 2.05% from the projected total return of the S&P 500 of 13.78%. The resulting Bloomberg-based projected market equity risk

[38] SBBI – 2020, at Appendix A-1 (1) through A-1 (3) and Appendix A-7 (19) through A-7 (21).

premium is 11.73%.

These six measures, when averaged, result in an average total market equity risk premium of 10.65%.

**Q. What are the results of applying the traditional and empirical CAPM to the Utility Proxy Group?**

A. As shown in Column [8] on page 1 of Schedule DWD-4, the average and median CAPM/ECAPM equity cost rate is 10.96%.

## D. Common Equity Cost Rates for a Proxy Group of Domestic, Non-Price Regulated Companies Based on the DCF, RPM, and CAPM

**Q. Why do you also consider a proxy group of domestic, non-price regulated companies?**

A. In the *Hope* and *Bluefield* cases, the U.S. Supreme Court did not specify that comparable risk companies had to be utilities. Since the purpose of rate regulation is to be a substitute for marketplace competition, non-price regulated firms operating in the competitive marketplace make an excellent proxy if they are comparable in total risk to the Utility Proxy Group being used to estimate the cost of common equity. The selection of such domestic, non-price regulated competitive firms theoretically and empirically results in a proxy group which is comparable in total risk to the Utility Proxy Group, since all of these companies compete for capital in the exact same markets.

**Q. How did you select non-price regulated companies that are comparable in total risk to the Utility Proxy Group?**

A. In *order* to select a proxy group of domestic, non-price regulated companies similar in total risk to the Utility Proxy Group, I relied on the Beta coefficients and related statistics

derived from *Value Line* regression analyses of weekly market prices over the most recent 260 weeks (*i.e.*, five years). These selection criteria resulted in a proxy group of 23 domestic, non-price regulated firms comparable in total risk to the Utility Proxy Group. Total risk is the sum of non-diversifiable market risk and diversifiable company-specific risks. The criteria used in selecting the domestic, non-price regulated firms included:

1) They must be covered by *Value Line* (Standard Edition);
2) They must be domestic, non-price regulated companies, *i.e.*, not utilities;
3) Their Beta coefficients must lie within plus or minus two standard deviations of the average unadjusted Beta coefficients of the Utility Proxy Group; and
4) The residual standard errors of the *Value Line* regressions which gave rise to the unadjusted Beta coefficients must lie within plus or minus two standard deviations of the average residual standard error of the Utility Proxy Group.

Beta coefficients measure market, or systematic, risk, which is not diversifiable. The residual standard errors of the regressions measure each firm's company-specific, diversifiable risk. This is demonstrated clearly by Jack C. Francis on page 273 of Investments: Analysis and Management, where he states "Total risk can be measured by the variance of returns, denoted Var(*r*). This measure of *total risk is partitioned into its systematic and unsystematic components*."[39] essentially, companies that have similar Beta coefficients and standard errors of regression have similar total investment risk.

**Q. Have you prepared a schedule which shows the data from which you selected the 23 domestic, non-price regulated companies that are comparable in total risk to the**

[39] Jack C. Francis, Investments: Analysis and Management 5th (McGraw-Hill, 1991) at 273 (italics in original).

**Utility Proxy Group?**

A. Yes, the basis of my selection and both proxy groups' regression statistics are shown in Schedule DWD-5.

**Q. Did you calculate common equity cost rates using the DCF model, RPM, and CAPM for the Non-Price Regulated Proxy Group?**

A. Yes. Because the DCF model, RPM, and CAPM have been applied in an identical manner as described above, I will not repeat the details of the rationale and application of each model. One exception is in the application of the RPM, where I did not use public utility-specific equity risk premiums, nor did I apply the PRPM to the individual non-price regulated companies.

Page 2 of Schedule DWD-6 derives the constant growth DCF model common equity cost rate. As shown, the indicated common equity cost rate, using the constant growth DCF for the Non-Price Regulated Proxy Group comparable in total risk to the Utility Proxy Group, is 10.32%.

Pages 3 through 5 of Schedule DWD-6 contain the data and calculations that support the 11.43% RPM common equity cost rate. As shown on line 1, page 3 of Schedule DWD-6, the consensus prospective yield on Moody's Baa2-rated corporate bonds for the six quarters ending in the fourth quarter of 2021, the years 2022 – 2026, and the years 2027 – 2031, is 4.10%.[40] Because the Non-Price Regulated Proxy Group average Moody's issuer rating is Baa1, as shown on page 4 of Schedule DWD-6, a 0.20% downward adjustment to the prospective Moody's Baa-rated corporate bond yield of 4.10% is necessary. The 0.20% represents one-third (1/3) of the average spread of 0.61% between

[40] *Blue Chip Financial Forecasts*, June 1, 2020, at page 14 and September 1, 2020, at page 2.

Moody's A2-rated and Baa2-rated corporate bonds for the three months ending August 2020. This is necessary so that the prospective bond yield is consistent with the Non-Price Regulated Proxy Group's average Baa1 long-term issuer rating. Subtracting 0.20% from the 4.10% prospective Moody's Baa-rated corporate bond yield results in a 3.90% expected bond yield for the Non-Price Regulated Proxy Group. When the Beta-adjusted risk premium of 7.53%[41] relative to the Non-Price Regulated Proxy Group is added to the prospective Baa1-rated corporate bond yield of 3.90%, the indicated RPM common equity cost rate is 11.43%.

Page 6 of Schedule DWD-6 contains the inputs and calculations that support my indicated CAPM/ECAPM common equity cost rate of 10.63%.

**Q. What is the cost rate of common equity based on the Non-Price Regulated Proxy Group?**

A. As shown on page 1 of Schedule DWD-6, the results of the common equity models applied to the Non-Price Regulated Proxy Group – which group is comparable in total risk to the Utility Proxy Group – are as follows: 10.32% (DCF), 11.43% (RPM), and 10.63% (CAPM). The average of the mean and median of these models is 10.71%, which I used as the indicated common equity cost rate for the Non-Price Regulated Proxy Group.

[41] Derived on page 5 of Schedule DWD-6.

## VII. INDICATED COMMON EQUITY COST RATE BEFORE ADJUSTMENT FOR COMPANY-SPECIFIC RISK

**Q. What is the indicated common equity cost rate based on the cost of common equity model results?**

A. It is between 9.74% and 10.41%, based on the common equity cost rates resulting from the application of cost of common equity models to the Utility Proxy Group and the Non-Price Regulated Proxy Group, summarized in Table 1 above and on Schedule DWD-1. As discussed above, I employ multiple cost of common equity models as primary tools in arriving at my recommended common equity cost rate because:

1) No single model is so inherently precise that it can be relied on solely to the exclusion of other theoretically sound models;
2) All of the models are market-based;
3) The use of multiple models adds reliability to the estimation of the common equity cost rate; and
4) The prudence of using multiple cost of common equity models is supported in both the financial literature and regulatory precedent.

Based on these common equity cost rate results, I conclude that a common equity cost rate between 9.74% and 10.41%% is indicated for the Utility Proxy Group before determining any Company-specific adjustments.

### A. Company-Specific Business Risk Adjustment

**Q. Does Bluegrass Water's smaller size compared with the Utility Proxy Group increase its business risk?**

A. Yes. Bluegrass Water's smaller size relative to the Utility Proxy Group companies

indicates greater relative business risk for the Company because, all else being equal, size has a material bearing on risk.

Size affects business risk because smaller companies generally are less able to cope with significant events that affect sales, revenues and earnings. For example, smaller companies face more risk exposure to business cycles and economic conditions, both nationally and locally. Additionally, the loss of revenues from a few larger customers would have a greater effect on a small company than on a bigger company with a larger, more diverse, customer base. This is true for utility companies, as well as non-regulated companies.

As further evidence illustrates that smaller firms are riskier, investors generally demand greater returns from smaller firms to compensate for less marketability and liquidity of their securities. Duff & Phelps 2020 Valuation Handbook Guide to Cost of Capital - Market Results through 2019 ("D&P - 2020") discusses the nature of the small-size phenomenon, providing an indication of the magnitude of the size premium based on several measures of size. In discussing "Size as a Predictor of Equity Premiums," D&P - 2020 states:

> The size effect is based on the empirical observation that companies of smaller size are associated with greater risk and, therefore, have greater cost of capital [sic]. The "size" of a company is one of the most important risk elements to consider when developing cost of equity capital estimates for use in valuing a business simply because size has been shown to be a *predictor* of equity returns. In other words, there is a significant (negative) relationship between size and historical equity returns - as size *decreases*, returns tend to *increase*, and vice versa. (footnote omitted) (emphasis in original)[42]

Furthermore, in "The Capital Asset Pricing Model: Theory and Evidence," Fama and French note size is indeed a risk factor which must be reflected when estimating the

[42] Duff & Phelps 2019 Valuation Handbook Guide to Cost of Capital - Market Results through 2018, Wiley 2018, at 4-1.

cost of common equity. On page 14, they note:

> . . . the higher average returns on small stocks and high book-to-market stocks reflect unidentified state variables that produce undiversifiable risks (covariances) in returns not captured in the market return and are priced separately from market betas.[43]

Based on this evidence, Fama and French proposed their three-factor model which includes a size variable in recognition of the effect size has on the cost of common equity.

Also, it is a basic financial principle that the use of funds invested, and not the source of funds, is what gives rise to the risk of any investment.[44] Eugene Brigham, a well-known authority, states:

> A number of researchers have observed that portfolios of small-firms (sic) have earned consistently higher average returns than those of large-firm stocks; this is called the "small-firm effect." On the surface, it would seem to be advantageous to the small firms to provide average returns in a stock market that are higher than those of larger firms. In reality, it is bad news for the small firm; **what the small-firm effect means is that the capital market demands higher returns on stocks of small firms than on otherwise similar stocks of the large firms.** (emphasis added)[45]

Consistent with the financial principle of risk and return discussed above, increased relative risk due to small size must be considered in the allowed rate of return on common equity. Therefore, the Commission's authorization of a cost rate of common equity in this proceeding must appropriately reflect the unique risks of Bluegrass Water, including its small size, which is justified and supported above by evidence in the financial literature.

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43 Eugene F. Fama and Kenneth R. French, "The Capital Asset Pricing Model: Theory and Evidence," *Journal of Economic Perspectives*, Volume 18, Number 3, Summer 2004, at 25-43.

44 Brealey, Richard A. and Myers, Stewart C., Principles of Corporate Finance (McGraw-Hill Book Company, 1996), at 204-205, 229.

45 Brigham, Eugene F., Fundamentals of Financial Management, Fifth Edition (The Dryden Press, 1989), at 623.

**Q. Does Bluegrass Water also face extraordinary operating risk as compared to the Utility Proxy Group?**

A. Yes. Bluegrass Water's extraordinary operating risks are described in detail by Company Witness Mr. Josiah Cox in his Direct Testimony.

**Q. Is there a way to quantify an adjustment to compensate Bluegrass Water for higher business risk due to its smaller size and extraordinary operating risks relative to the Utility Proxy Group?**

A. Yes. In the absence of other empirical methods, I compared Bluegrass Water's and the Utility Proxy Group's relative size, as measured by an estimated market capitalization of common equity for Bluegrass Water.

**Table 6: Size as Measured by Market Capitalization for Bluegrass Water and the Utility Proxy Group**

| | Market Capitalization* | Times Greater Than The Company |
|---|---|---|
| | ($ Millions) | |
| Bluegrass Water | $13.513 | |
| Utility Proxy Group | $6,204.73 | 459.2x |
| *From page 1 of Schedule DWD-7. | | |

Bluegrass Water's estimated market capitalization was $13.5 million as of August 31, 2020, compared with the market capitalization of the average company in the Utility Proxy Group of $6.205 billion as of August 31, 2020. The average company in the Utility Proxy Group has a market capitalization 459.2 times the size of Bluegrass Water's estimated market capitalization.

As a result, it is necessary to upwardly adjust the indicated common equity cost rate range of 9.74% to 10.41% to reflect Bluegrass Water's greater risk due to their smaller relative size. The determination is based on the size premiums for portfolios of the New

York Stock Exchange, American Stock Exchange, and NASDAQ listed companies ranked by deciles for the 1926 to 2019 period, as shown on the bottom half of page 1 of Schedule DWD-7. The average size premium for the Utility Proxy Group with a market capitalization of $6.2 billion falls in the fourth decile, while the Company's estimated market capitalization of $13.5 million places it in the tenth decile. The size premium spread between the fourth decile and the tenth decile is 4.20% as shown on the top half of page 1 of Schedule DWD-7. Even though a 4.20% upward size adjustment is indicated, I applied a size premium of 1.75% (*i.e.*, 175 basis points) to the Company's indicated common equity cost rate.

**Q. What is the indicated cost of common equity after adjustments for Company size?**

A. After applying the 1.75% size adjustment to the Utility Proxy Group indicated cost of common equity range of 9.74% to 10.41%, the cost of common equity applicable to Bluegrass Water is between 11.49% and 12.16%; from which, I recommend a common equity cost rate of 11.80%.

## VIII. CONCLUSION

**Q. In your opinion, is your proposed ROE of 11.80% fair and reasonable to Bluegrass Water and its customers?**

A. Yes, it is.

**Q. Does this conclude your Direct Testimony?**

**A.** Yes, it does.

**EXHIBIT DD-1**

Bluegrass Water Operating Company, LLC
Table of Contents to
Exhibit No. DD-1


| | Schedule |
|---|---|
| Summary of Common Equity Cost Rate | DWD-1 |
| Indicated Common Equity Cost Rate Using the Discounted Cash Flow Model | DWD-2 |
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| Basis of selection for the Non-Price Regulated Companies Comparable in Total Risk to the Utility Proxy Group | DWD-5 |
| Cost of Common Equity Models Applied to the Comparable Risk Non-Price Regulated Companies | DWD-6 |
| Estimated Market Capitalization for Bluegrass Water Operating Company, LLC and the Utility Proxy Group | DWD-7 |

Bluegrass Water Operating Company, LLC
Brief Summary of Common Equity Cost Rate

| Line No. | Principal Methods | Proxy Group of Seven Water Companies |
|---|---|---|
| 1. | Discounted Cash Flow Model (DCF) (1) | 9.07% |
| 2. | Risk Premium Model (RPM) (2) | 10.88% |
| 3. | Capital Asset Pricing Model (CAPM) (3) | 10.96% |
| 4. | Market Models Applied to Comparable Risk, Non-Price Regulated Companies (4) | 10.71% |
| 5. | Indicated Range of Common Equity Cost Rates before Adjustment for Unique Risk | 9.74% - 10.41% |
| 6. | Business Risk Adjustment (5) | 1.75% |
| 7. | Indicated Range of Common Equity Cost Rates after Adjustment | 11.49% - 12.16% |
| 8. | Recommended Common Equity Cost Rate | 11.80% |

Notes:
(1) From Schedule DWD-2.
(2) From page 1 of Schedule DWD-3.
(3) From page 1 of Schedule DWD-4.
(4) From page 1 of Schedule DWD-6.
(5) Business risk adjustment to reflect Bluegrass' unique risk compared to the Utility Proxy Group as detailed in the accompanying direct testimony.

Bluegrass Water Operating Company, LLC
Indicated Common Equity Cost Rate Using the Discounted Cash Flow Model for the
Proxy Group of Seven Water Companies

| Proxy Group of Seven Water Companies | [1] Average Dividend Yield (1) | [2] Value Line Projected Five Year Growth in EPS (2) | [3] Zack's Five Year Projected Growth Rate in EPS | [4] Yahoo! Finance Projected Five Year Growth in EPS | [5] Bloomberg Projected Five Year Growth in EPS | [6] Average Projected Five Year Growth in EPS (3) | [7] Adjusted Dividend Yield (4) | [8] Indicated Common Equity Cost Rate (5) |
|---|---|---|---|---|---|---|---|---|
| American States Water Co. | 1.72 % | 6.50 % | 4.90 % | 5.30 % | 6.00 % | 5.68 % | 1.77 % | 7.45 % |
| American Water Works Company Inc | 1.60 | 8.50 | 8.10 | 8.30 | 8.19 | 8.27 | 1.67 | 9.94 |
| California Water Service Group | 1.79 | 6.50 | NA | 11.50 | 9.00 | 9.00 | 1.87 | 10.87 |
| Essential Utilities, Inc. | 2.28 | 7.00 | 6.00 | 6.40 | 6.27 | 6.42 | 2.35 | 8.77 |
| Middlesex Water Co. | 1.55 | 6.00 | NA | 2.70 | NA | 4.35 | 1.58 | 5.93 |
| SJW Group | 2.01 | 10.50 | 14.00 | 14.10 | NA | 12.87 | 2.14 | 15.01 |
| York Water Co. | 1.54 | 7.00 | NA | 4.90 | NA | 5.95 | 1.59 | 7.54 |
| | | | | | | | Average | 9.36 % |
| | | | | | | | Median | 8.77 % |
| | | | | | | | Average of Mean and Median | 9.07 % |

NA= Not Available

Notes:

(1) Indicated dividend at 08/31/2020 divided by the average closing price of the last 60 trading days ending 08/31/2020 for each company.

(2) From pages 2 through 8 of this Schedule.

(3) Average of columns 2 through 4 excluding negative growth rates.

(4) This reflects a growth rate component equal to one-half the conclusion of growth rate (from column 5) x column 1 to reflect the periodic payment of dividends (Gordon Model) as opposed to the continuous payment. Thus, for American States Water Co., 1.72% x (1+( 1/2 x 5.68%) ) = 1.77%.

(5) Column 5 + column 6.

Source of Information:

Value Line Investment Survey
www.zacks.com Downloaded on 08/31/2020
www.yahoo.com Downloaded on 08/31/2020
Bloomberg Professional Services

# AMER. STATES WATER NYSE-AWR

RECENT PRICE **77.29** | P/E RATIO **33.6** (Trailing: 33.5 Median: 22.0) | RELATIVE P/E RATIO **1.64** | DIV'D YLD **1.7%** | **VALUE LINE**

**TIMELINESS** 2 Lowered 7/10/20
**SAFETY** 2 Raised 7/20/12
TECHNICAL 2 Lowered 6/19/20
**BETA** .65 (1.00 = Market)

**18-Month Target Price Range**

| Low-High | Midpoint (% to Mid) |
|---|---|
| $67-$124 | $96 (25%) |

**2023-25 PROJECTIONS**

| | Price | Gain | Ann'l Total Return |
|---|---|---|---|
| High | 80 | (+5%) | *3%* |
| Low | 60 | (-20%) | *-3%* |

**Institutional Decisions**

| | 3Q2019 | 4Q2019 | 1Q2020 |
|---|---|---|---|
| to Buy | 149 | 137 | 125 |
| to Sell | 124 | 145 | 166 |
| Hld's(000) | 27173 | 26734 | 26162 |

| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | © VALUE LINE PUB. LLC | 23-25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| High: | 19.4 | 19.8 | 18.2 | 24.1 | 33.1 | 38.7 | 44.1 | 47.2 | 58.4 | 69.6 | 96.0 | 96.6 | | | | | | | | |
| Low: | 14.9 | 15.6 | 15.3 | 17.0 | 24.0 | 27.0 | 35.8 | 37.3 | 41.1 | 50.1 | 63.3 | 65.1 | | | | | | | | |
| | 6.81 | 7.03 | 7.88 | 8.75 | 9.21 | 9.74 | 10.71 | 11.12 | 12.12 | 12.19 | 12.17 | 12.56 | 11.92 | 12.01 | 11.88 | 12.86 | *13.10* | *13.40* | Revenues per sh | *16.40* |
| | 1.11 | 1.32 | 1.45 | 1.65 | 1.69 | 1.70 | 2.11 | 2.13 | 2.48 | 2.65 | 2.67 | 2.81 | 2.70 | 2.96 | 2.84 | 3.26 | *3.30* | *3.60* | "Cash Flow" per sh | *4.50* |
| | .53 | .66 | .67 | .81 | .78 | .81 | 1.11 | 1.12 | 1.41 | 1.61 | 1.57 | 1.61 | 1.62 | 1.88 | 1.72 | 2.28 | *2.30* | *2.45* | Earnings per sh [A] | *2.90* |
| | .44 | .45 | .46 | .48 | .50 | .51 | .52 | .55 | .64 | .76 | .83 | .87 | .91 | .99 | 1.06 | 1.16 | *1.25* | *1.35* | Div'd Decl'd per sh [B]■ | *1.85* |
| | 2.51 | 2.12 | 1.95 | 1.45 | 2.23 | 2.09 | 2.12 | 2.13 | 1.77 | 2.52 | 1.89 | 2.39 | 3.55 | 3.08 | 3.44 | 4.12 | *3.50* | *3.50* | Cap'l Spending per sh | *3.75* |
| | 7.51 | 7.86 | 8.32 | 8.77 | 8.97 | 9.70 | 10.13 | 10.84 | 11.80 | 12.72 | 13.24 | 12.77 | 13.52 | 14.45 | 15.19 | 16.33 | *17.15* | *18.10* | Book Value per sh [D] | *21.35* |
| | 33.50 | 33.60 | 34.10 | 34.46 | 34.60 | 37.06 | 37.26 | 37.70 | 38.53 | 38.72 | 38.29 | 36.50 | 36.57 | 36.68 | 36.76 | 36.85 | *37.00* | *37.25* | Common Shs Outst'g [C] | *37.50* |
| | 23.2 | 21.9 | 27.7 | 24.0 | 22.6 | 21.2 | 15.7 | 15.4 | 14.3 | 17.2 | 20.1 | 24.6 | 25.6 | 25.7 | 34.0 | 34.4 | *Bold figures are Value Line estimates* | | Avg Ann'l P/E Ratio | *23.5* |
| | 1.23 | 1.17 | 1.50 | 1.27 | 1.36 | 1.41 | 1.00 | .97 | .91 | .97 | 1.06 | 1.24 | 1.34 | 1.29 | 1.84 | 1.87 | | | Relative P/E Ratio | *1.30* |
| | 3.6% | 3.1% | 2.5% | 2.5% | 2.9% | 2.9% | 3.0% | 3.2% | 3.1% | 2.7% | 2.6% | 2.2% | 2.2% | 2.0% | 1.8% | 1.5% | | | Avg Ann'l Div'd Yield | *2.6%* |
| | | | | | | | 398.9 | 419.3 | 466.9 | 472.1 | 465.8 | 458.6 | 436.1 | 440.6 | 436.8 | 473.9 | *485* | *500* | Revenues ($mill) | *615* |
| | | | | | | | 41.4 | 42.0 | 54.1 | 62.7 | 61.1 | 60.5 | 59.7 | 69.4 | 63.9 | 84.3 | *85.0* | *90.0* | Net Profit ($mill) | *110* |
| | | | | | | | 43.2% | 41.7% | 39.9% | 36.3% | 38.4% | 38.4% | 36.8% | 36.0% | 22.0% | 22.6% | *23.0%* | *23.0%* | Income Tax Rate | *23.0%* |
| | | | | | | | 5.8% | 2.0% | 2.5% | -- | -- | -- | -- | -- | 2.5% | -- | *1.0%* | *1.0%* | AFUDC % to Net Profit | *1.0%* |
| | | | | | | | 44.3% | 45.4% | 42.2% | 39.8% | 39.1% | 41.1% | 39.4% | 38.0% | 40.5% | 44.4% | *46.0%* | *47.0%* | Long-Term Debt Ratio | *49.5%* |
| | | | | | | | 55.7% | 54.6% | 57.8% | 60.2% | 60.9% | 58.9% | 60.6% | 62.0% | 59.5% | 55.6% | *54.0%* | *53.0%* | Common Equity Ratio | *51.5%* |
| | | | | | | | 677.4 | 749.1 | 787.0 | 818.4 | 832.6 | 791.5 | 815.3 | 854.9 | 938.4 | 1082.5 | *1180* | *1275* | Total Capital ($mill) | *1565* |
| | | | | | | | 855.0 | 896.5 | 917.8 | 981.5 | 1003.5 | 1060.8 | 1150.9 | 1205.0 | 1296.3 | 1415.7 | *1485* | *1590* | Net Plant ($mill) | *1780* |
| | | | | | | | 7.6% | 7.1% | 8.3% | 8.9% | 8.6% | 9.0% | 8.6% | 9.3% | 7.9% | 8.9% | *8.0%* | *8.0%* | Return on Total Cap'l | *8.5%* |
| | | | | | | | 11.0% | 10.3% | 11.9% | 12.7% | 12.0% | 13.0% | 12.1% | 13.1% | 11.4% | 14.0% | *13.0%* | *13.5%* | Return on Shr. Equity | *14.0%* |
| | | | | | | | 11.0% | 10.3% | 11.9% | 12.7% | 12.0% | 13.0% | 12.1% | 13.1% | 11.4% | 14.0% | *13.0%* | *13.5%* | Return on Com Equity | *14.0%* |
| | | | | | | | 5.8% | 5.3% | 6.6% | 6.8% | 5.7% | 6.0% | 5.3% | 6.2% | 4.5% | 6.9% | *6.0%* | *6.0%* | Retained to Com Eq | *5.0%* |
| | | | | | | | 47% | 49% | 45% | 47% | 53% | 54% | 56% | 52% | 61% | 51% | *56%* | *56%* | All Div'ds to Net Prof | *64%* |

**LEGENDS**
1.35 x Dividends p sh divided by Interest Rate
. . . . Relative Price Strength
2-for-1 split 9/13
Options: Yes
*Shaded area indicates recession*

**Target Price Range** 2023 | 2024 | 2025

**% TOT. RETURN 5/20**

| | THIS STOCK | VL ARITH.* INDEX |
|---|---|---|
| 1 yr. | 13.7 | -1.3 |
| 3 yr. | 87.7 | 5.2 |
| 5 yr. | 133.8 | 18.7 |

**CAPITAL STRUCTURE as of 3/31/20**
**Total Debt** $313.3 mill. **Due in 5 Yrs** $6.9 mill.
**LT Debt** $281.0 mill. **LT Interest** $24.5 mill. (32% of Cap'l)

**Leases, Uncapitalized:** Annual rentals $2.7 mill.
**Pension Assets-12/19** $192.5 mill. **Oblig.** $231.9 mill.
**Pfd Stock** None

**Common Stock** 36,883,771 shs. **as of 5/1/20**

**MARKET CAP: $2.9 billion (Mid Cap)**

| CURRENT POSITION ($MILL.) | 2018 | 2019 | 3/31/20 |
|---|---|---|---|
| Cash Assets | 7.1 | 1.3 | .4 |
| Accts Receivable | 23.4 | 20.9 | 24.6 |
| Other | 101.0 | 100.3 | 102.4 |
| Current Assets | 131.5 | 122.5 | 127.4 |
| Accts Payable | 59.5 | 55.6 | 43.5 |
| Debt Due | 40.3 | 5.3 | 32.3 |
| Other | 46.8 | 55.1 | 56.7 |
| Current Liab. | 146.6 | 116.0 | 132.5 |

| ANNUAL RATES of change (per sh) | Past 10 Yrs. | Past 5 Yrs. | Est'd '17-'19 to '23-'25 |
|---|---|---|---|
| Revenues | 3.0% | -- | *5.0%* |
| "Cash Flow" | 6.0% | 3.0% | *7.0%* |
| Earnings | 9.5% | 5.0% | *6.5%* |
| Dividends | 8.0% | 7.5% | *9.5%* |
| Book Value | 5.5% | 4.0% | *5.5%* |

| Calendar | QUARTERLY REVENUES ($ mill.) Mar.31 | Jun. 30 | Sep. 30 | Dec. 31 | Full Year |
|---|---|---|---|---|---|
| 2017 | 98.8 | 113.2 | 124.4 | 104.2 | 440.6 |
| 2018 | 94.7 | 106.9 | 124.2 | 111.0 | 436.8 |
| 2019 | 101.7 | 124.7 | 134.5 | 113.0 | 473.9 |
| 2020 | 109.1 | *120.9* | *140* | *115* | *485* |
| 2021 | *110* | *125* | *145* | *120* | *500* |

| Calendar | EARNINGS PER SHARE [A] Mar.31 | Jun. 30 | Sep. 30 | Dec. 31 | Full Year |
|---|---|---|---|---|---|
| 2017 | .34 | .62 | .57 | .35 | 1.88 |
| 2018 | .29 | .44 | .62 | .37 | 1.72 |
| 2019 | .35 | .72 | .76 | .45 | 2.28 |
| 2020 | .38 | *.67* | *.74* | *.51* | *2.30* |
| 2021 | *.43* | *.72* | *.75* | *.55* | *2.45* |

| Calendar | QUARTERLY DIVIDENDS PAID [B]■ Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|---|---|---|---|---|---|
| 2016 | .224 | .224 | .224 | .242 | .91 |
| 2017 | .242 | .242 | .255 | .255 | .99 |
| 2018 | .255 | .255 | .275 | .275 | 1.06 |
| 2019 | .275 | .275 | .305 | .305 | 1.16 |
| 2020 | .305 | .305 | | | |

**BUSINESS:** American States Water Co. operates as a holding company. Through its principal subsidiary, Golden State Water Co., it supplies water to 260,708 customers in 10 California counties. Service areas include the metropolitan areas of Los Angeles and Orange Counties. The company also provides electricity to 24,420 customers in Big Bear Lake and San Bernardino Cnty. Provides water & wastewater services to U.S. military bases through its ASUS subsidiary. Sold Chaparral City Wtr. of AZ. (6/11). Employs 841. BlackRock, Inc. owns 15.9% of out. shares; Vanguard, 11.9%; off. & dir. 1.0%. (4/20 Proxy). Chairman: Lloyd Ross. Pres. & CEO: Robert Sprowls. Inc: CA. Address: 630 East Foothill Blvd., San Dimas, CA 91773. Tel: 909-394-3600. Internet: www.aswater.com.

**American States Water should only be marginally impacted by the coronavirus and the recent economic downturn.** The company's main operation supplies 10 counties in California with water. Although recessions usually result in consumers scaling back on most purchases, the demand for water remains mostly unchanged because it is such an essential commodity.

**Our earnings estimates for this year and next remain basically unchanged.** In 2020, we think that American States' share net will be flattish. However, this is better than it appears because 2019 was a such a banner year. The implementation of higher rates and a continued solid showing from the nonregulated operations (more below) may result in share earnings reaching $2.30. With the help of ongoing cost-control measures, we expect a 7% gain in share net to $2.45, in 2021. It should be noted that utilities file rate cases every three years in the state. A new filing will be required for the years 2022 to 2024. Typically, the first year of a rate increase does not go into effect immediately. So, earnings will probably be soft in 2022.

**The ASUS business will likely continue to be a force behind the company's growth.** This operation provides water services to military bases around the country. More facilities are expected to privatized in the years ahead. ASUS has been successful in winning a number of these 50-year contracts in the past, and we expect this trend to continue. Profits from this segment ought to account for at least 30% of American States' income, and this percentage could go higher, depending upon the amount of new contracts obtained. Also, since this segment is not overseen by regulators, the return on investment here are higher.

**Shares of American States Water are expected to outpace the broader market averages in the year ahead.** On the positive side, the company has a strong balance sheet, well-defined earnings, and above-average dividend growth prospects. Conversely, investors are currently paying a high premium for these attributes, as reflected in the stock's elevated P/E ratio. Consequently, long-term total return potential is very unattractive.

*James A. Flood* *July 10, 2020*

**(A)** Primary earnings. Excludes nonrecurring gains/(losses): '04, 7¢; '05, 13¢; '06, 3¢; '08, (14¢); '10, (23¢); '11, 10¢. Next earnings report due early August.
**(B)** Dividends historically paid in early March, June, September, and December. ■ Div'd reinvestment plan available.
**(C)** In millions, adjusted for split.
**(D)** Includes intangibles. As of 12/31/19; $1.1 million/$0.04 a share.

| | |
|---|---|
| **Company's Financial Strength** | A |
| **Stock's Price Stability** | 100 |
| **Price Growth Persistence** | 95 |
| **Earnings Predictability** | 85 |

# AMERICAN WATER NYSE-AWK

RECENT PRICE 125.37 | P/E RATIO 32.6 (Trailing: 35.9 Median: 22.0) | RELATIVE P/E RATIO 1.59 | DIV'D YLD 1.8% | VALUE LINE

**TIMELINESS** 2 Raised 6/5/20
**SAFETY** 3 New 7/25/08
TECHNICAL 2 Lowered 6/12/20
**BETA** .85 (1.00 = Market)

**18-Month Target Price Range**

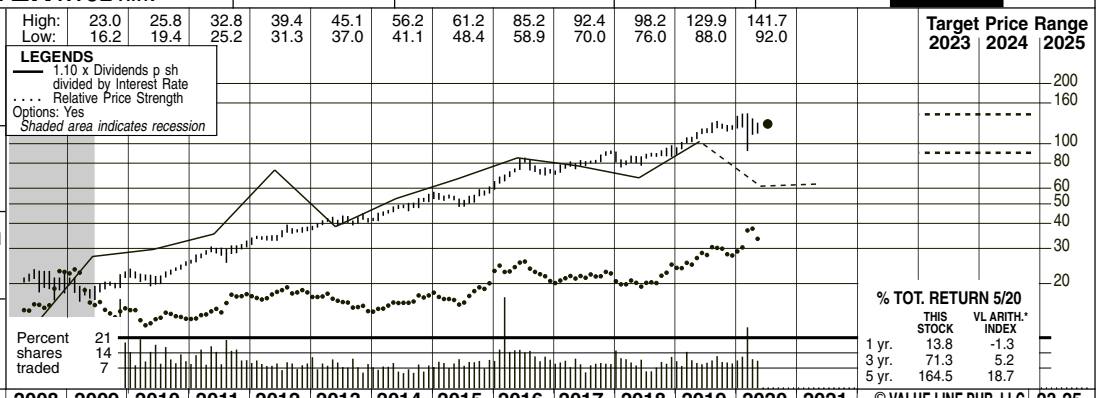
| Low-High | Midpoint (% to Mid) |
|---|---|
| $89-$213 | $151 (20%) |

**2023-25 PROJECTIONS**

| | Price | Gain | Ann'l Total Return |
|---|---|---|---|
| High | 140 | (+10%) | 5% |
| Low | 90 | (-30%) | -5% |

**Institutional Decisions**

| | 3Q2019 | 4Q2019 | 1Q2020 |
|---|---|---|---|
| to Buy | 385 | 393 | 333 |
| to Sell | 322 | 361 | 415 |
| Hld's(000) | 153329 | 155435 | 151948 |




| 2004 | 2005 | 2006E | 2007E | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | © VALUE LINE PUB. LLC | 23-25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -- | -- | 13.08 | 13.84 | 14.61 | 13.98 | 15.49 | 15.18 | 16.25 | 16.28 | 16.78 | 17.72 | 18.54 | 18.81 | 19.04 | 19.97 | *20.95* | *21.85* | Revenues per sh | *24.75* |
| -- | -- | .65 | d.47 | 2.87 | 2.89 | 3.56 | 3.73 | 4.27 | 4.36 | 4.75 | 5.13 | 5.26 | 5.14 | 6.15 | 6.65 | *8.00* | *8.15* | "Cash Flow" per sh | *8.75* |
| -- | -- | d.97 | d2.14 | 1.10 | 1.25 | 1.53 | 1.72 | 2.11 | 2.06 | 2.39 | 2.64 | 2.62 | 2.38 | 3.15 | 3.43 | *3.85* | *4.00* | Earnings per sh A | *4.90* |
| -- | -- | -- | -- | .40 | .82 | .86 | .90 | 1.21 | .84 | 1.21 | 1.33 | 1.47 | 1.62 | 1.78 | 1.96 | *2.15* | *2.35* | Div'd Decl'd per sh B■ | *2.90* |
| -- | -- | 4.31 | 4.74 | 6.31 | 4.50 | 4.38 | 5.27 | 5.25 | 5.50 | 5.33 | 6.51 | 7.36 | 8.04 | 8.78 | 9.15 | *8.70* | *9.20* | Cap'l Spending per sh | *9.00* |
| -- | -- | 23.86 | 28.39 | 25.64 | 22.91 | 23.59 | 24.11 | 25.11 | 26.52 | 27.39 | 28.25 | 29.24 | 30.13 | 32.42 | 33.83 | *35.35* | *36.95* | Book Value per sh D | *42.50* |
| -- | -- | 160.00 | 160.00 | 160.00 | 174.63 | 175.00 | 175.66 | 176.99 | 178.25 | 179.46 | 178.28 | 178.10 | 178.44 | 180.68 | 180.81 | *181.20* | *182.00* | Common Shs Outst'g C | *189.00* |
| -- | -- | -- | -- | 18.9 | 15.6 | 14.6 | 16.8 | 16.7 | 19.9 | 20.0 | 20.5 | 27.7 | 33.8 | 27.3 | 32.9 | *Bold figures are Value Line estimates* | | Avg Ann'l P/E Ratio | *23.5* |
| -- | -- | -- | -- | 1.14 | 1.04 | .93 | 1.05 | 1.06 | 1.12 | 1.05 | 1.03 | 1.45 | 1.70 | 1.47 | 1.79 | | | Relative P/E Ratio | *1.30* |
| -- | -- | -- | -- | 1.9% | 4.2% | 3.8% | 3.1% | 3.4% | 2.0% | 2.5% | 2.5% | 2.0% | 2.0% | 2.1% | 1.7% | | | Avg Ann'l Div'd Yield | *2.5%* |
| | | | | | | 2710.7 | 2666.2 | 2876.9 | 2901.9 | 3011.3 | 3159.0 | 3302.0 | 3357.0 | 3440.0 | 3610.0 | *3800* | *3975* | Revenues ($mill) | *4675* |
| | | | | | | 267.8 | 304.9 | 374.3 | 369.3 | 429.8 | 476.0 | 468.0 | 426.0 | 567.0 | 621.0 | *700* | *730* | Net Profit ($mill) | *925* |
| | | | | | | 40.4% | 39.5% | 40.7% | 39.1% | 39.4% | 39.1% | 39.2% | 53.3% | 28.2% | 25.5% | *21.0%* | *21.0%* | Income Tax Rate | *21.0%* |
| | | | | | | -- | -- | 6.2% | 5.1% | -- | -- | -- | -- | 5.1% | 4.0% | *5.0%* | *5.0%* | AFUDC % to Net Profit | *5.0%* |
| | | | | | | 56.8% | 55.7% | 53.9% | 52.4% | 52.4% | 53.7% | 52.4% | 54.7% | 56.3% | 58.5% | *58.5%* | *59.0%* | Long-Term Debt Ratio | *59.0%* |
| | | | | | | 43.2% | 44.2% | 46.1% | 47.6% | 47.4% | 46.2% | 47.5% | 45.3% | 43.6% | 41.4% | *41.5%* | *41.0%* | Common Equity Ratio | *41.0%* |
| | | | | | | 9561.3 | 9580.3 | 9635.5 | 9940.7 | 10364 | 10911 | 10967 | 11875 | 13433 | 14760 | *15400* | *16325* | Total Capital ($mill) | *20000* |
| | | | | | | 11059 | 11021 | 11739 | 12391 | 12900 | 13933 | 14992 | 16246 | 17409 | 18232 | *19100* | *19900* | Net Plant ($mill) | *22200* |
| | | | | | | 4.4% | 4.8% | 5.4% | 5.1% | 5.5% | 5.7% | 5.6% | 4.9% | 5.4% | 5.4% | *5.5%* | *6.0%* | Return on Total Cap'l | *6.0%* |
| | | | | | | 6.5% | 7.2% | 8.4% | 7.8% | 8.7% | 9.4% | 9.0% | 7.9% | 9.7% | 10.1% | *10.5%* | *11.0%* | Return on Shr. Equity | *11.5%* |
| | | | | | | 6.5% | 7.2% | 8.4% | 7.8% | 8.7% | 9.4% | 9.0% | 7.9% | 9.7% | 10.1% | *10.5%* | *11.0%* | Return on Com Equity | *11.5%* |
| | | | | | | 2.8% | 3.5% | 3.6% | 4.7% | 4.3% | 4.7% | 4.0% | 2.5% | 4.2% | 4.4% | *4.5%* | *4.5%* | Retained to Com Eq | *4.5%* |
| | | | | | | 56% | 52% | 57% | 40% | 50% | 50% | 56% | 68% | 56% | 57% | *56%* | *59%* | All Div'ds to Net Prof | *59%* |

**CAPITAL STRUCTURE as of 3/31/20**
**Total Debt** $10315 mil. **Due in 5 Yrs** $2500 mil.
**LT Debt** $8625 mil. **LT Interest** $354 mil. (58% of Cap'l)

**Leases, Uncapitalized:** Annual rentals $14.0 mill.
**Pension Assets12/19** $1747.0 mill
**Oblig.** $2161.0 mill.
**Pfd Stock** $5.0 mill. **Pfd Div'd** $.4 mill

**Common Stock** 181,022,992 shares
**as of 4/30/20**

**MARKET CAP: $22.7 billion (Large Cap)**

| CURRENT POSITION ($MILL.) | 2018 | 2019 | 3/31/20 |
|---|---|---|---|
| Cash Assets | 158 | 91 | 589 |
| Accts Receivable | 301 | 294 | 292 |
| Other | 322 | 900 | 920 |
| Current Assets | 781 | 1285 | 1801 |
| Accts Payable | 175 | 203 | 152 |
| Debt Due | 1035 | 814 | 1690 |
| Other | 884 | 1028 | 925 |
| Current Liab. | 2094 | 2045 | 2767 |

| ANNUAL RATES of change (per sh) | Past 10 Yrs. | Past 5 Yrs. | Est'd '17-'19 to '23-'25 |
|---|---|---|---|
| Revenues | 3.0% | 3.0% | *4.5%* |
| "Cash Flow" | 13.0% | 6.0% | *6.5%* |
| Earnings | 45.5% | 6.5% | *8.5%* |
| Dividends | 16.0% | 10.5% | *8.5%* |
| Book Value | 2.5% | 4.0% | *5.0%* |

| Calendar | QUARTERLY REVENUES ($ mill.) Mar.31 | Jun. 30 | Sep. 30 | Dec. 31 | Full Year |
|---|---|---|---|---|---|
| 2017 | 756 | 844 | 936 | 821 | 3357 |
| 2018 | 761 | 853 | 976 | 850 | 3440 |
| 2019 | 813 | 882 | 1013 | 902 | 3610 |
| 2020 | 844 | *926* | *1080* | *950* | *3800* |
| 2021 | *885* | *970* | *1120* | *1000* | *3975* |

| Calendar | EARNINGS PER SHARE A Mar.31 | Jun. 30 | Sep. 30 | Dec. 31 | Full Year |
|---|---|---|---|---|---|
| 2017 | .52 | .73 | 1.12 | .01 | 2.38 |
| 2018 | .59 | .91 | 1.03 | .62 | 3.15 |
| 2019 | .62 | .94 | 1.33 | .54 | 3.43 |
| 2020 | .68 | *.99* | *1.45* | *.74* | *3.85* |
| 2021 | *.73* | *1.05* | *1.45* | *.77* | *4.00* |

| Calendar | QUARTERLY DIVIDENDS PAID B■ Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|---|---|---|---|---|---|
| 2016 | .34 | .375 | .375 | .375 | 1.47 |
| 2017 | .375 | .415 | .415 | .415 | 1.62 |
| 2018 | .415 | .455 | .455 | .455 | 1.78 |
| 2019 | .455 | .50 | .50 | .50 | 1.96 |
| 2020 | .50 | .55 | | | |

**BUSINESS:** American Water Works Company, Inc. is the largest investor-owned water and wastewater utility in the U.S., providing services to approximately 15 million people in 46 states. Nonregulated business assists municipalities and military bases with the maintenance and upkeep as well. Regulated operations made up 86% of 2019 revenues. New Jersey is its largest market accounting for 24.6% of regulated revenues; Pennsylvania, 22.3%; Missouri, 10.5%. Has 6,800 employees. The Vanguard Grp, owns 12.4% of outstanding shares; BlackRock, Inc., 8.7%; officers & directors, less than 1.0%. (3/20 Proxy). President & CEO: Susan N. Story. Chairman: George MacKenzie. Address: 1 Water Street, Camden, NJ 08102. Tel.: 856-346-8200. Internet: www.amwater.com.

**Neither a recession nor the coronavirus ought to impede American Water Works.** In the first quarter, the water utility posted share earnings of $0.68, a 10% increase over the similar period in 2019. What's more, we expect this positive trend to continue throughout the year, which should result in the bottom line posting a 12% annual increase to $3.85 a share. There are three main reasons for this: the demand for water is somewhat immune to sudden downturns in the economy as the commodity is essential for everyday life; expense controls; and rate relief. Next year, against this difficult comparison, we estimate that share earnings will increase a more moderate 4%.

**Bolt-on acquisitions will remain a key strategy.** American Water has been aggressively purchasing smaller municipally run water districts that are in need of capital to upgrade their infrastructures. The company is then able to wring substantial savings from the new operations. Already this year, five acquisitions have closed with 26 more purchases currently pending final approval. With the water industry greatly fragmented in the United States, there should be much more consolidation in the future.

**The construction program is huge.** Management estimates that capital spending to repair older pipelines and other facilities will total around $5 billion over the next few years. New debt will have to be taken on to fund some of these expenditures, as American Water does not like to issue new equity. (Shares outstanding have risen only 3% since year-end 2009.) So, we only expect the balance sheet to remain about average.

**These shares are ranked to outperform the market in the year ahead.** But, as has been the case for the past several years, investors will have to pay a premium for this stock, which benefits from American Water being the largest and most diversified company of all the water utilities we cover. Also, well-defined earnings and diversification in the utility sector do not come cheap, as measured by the price-earnings ratio of this equity. In addition, accounts should be aware that AWK has well-below-average total return prospects though 2023-2025.

*James A. Flood* *July 10, 2020*

**(A)** Diluted earnings. Excludes nonrecur. losses: '08, $4.62; '09, $2.63; '11, $0.07. Disc. oper.: '06, ($0.04); '11, $0.03; '12, ($0.10); '13,($0.01). GAAP used as of 2014. Next earnings report due August 6th.
**(B)** Dividends paid in March, June, September, and December. ■ Div. reinvestment available.
**(C)** In millions. **(D)** Includes intangibles. On 3/31/20: $1.563 billion, $8.63/share.
**(E)** Pro forma numbers for '06 & '07.

| | |
|---|---|
| Company's Financial Strength | B++ |
| Stock's Price Stability | 85 |
| Price Growth Persistence | 80 |
| Earnings Predictability | 80 |

# CALIFORNIA WATER NYSE-CWT

RECENT PRICE **46.39** | P/E RATIO **38.7** (Trailing: 44.2 Median: 23.0) | RELATIVE P/E RATIO **1.89** | DIV'D YLD **1.8%** | **VALUE LINE**

**TIMELINESS** 3 Lowered 3/6/20
**SAFETY** 3 Lowered 7/27/07
TECHNICAL 4 Lowered 7/10/20
**BETA** .65 (1.00 = Market)

**18-Month Target Price Range**

| Low-High | Midpoint (% to Mid) |
|---|---|
| $39-$74 | $57 (20%) |

**2023-25 PROJECTIONS**

| | Price | Gain | Ann'l Total Return |
|---|---|---|---|
| High | 55 | (+20%) | 7% |
| Low | 35 | (-25%) | -4% |

**Institutional Decisions**

| | 3Q2019 | 4Q2019 | 1Q2020 |
|---|---|---|---|
| to Buy | 118 | 115 | 104 |
| to Sell | 94 | 101 | 118 |
| Hld's(000) | 36133 | 36624 | 35792 |

| High: | 24.1 | 19.8 | 19.4 | 19.3 | 23.4 | 26.4 | 26.0 | 36.8 | 46.2 | 49.1 | 57.5 | 57.4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low: | 16.7 | 16.9 | 16.7 | 16.8 | 18.4 | 20.3 | 19.5 | 22.5 | 32.4 | 35.3 | 44.6 | 39.7 |

LEGENDS
1.33 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
2-for-1 split 6/11
Options: Yes
*Shaded area indicates recession*

Target Price Range 2023 | 2024 | 2025

Percent shares traded 18 12 6

**% TOT. RETURN 5/20**

| | THIS STOCK | VL ARITH.* INDEX |
|---|---|---|
| 1 yr. | -3.3 | -1.3 |
| 3 yr. | 42.2 | 5.2 |
| 5 yr. | 116.8 | 18.7 |

| 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | © VALUE LINE PUB. LLC | 23-25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8.59 | 8.72 | 8.10 | 8.88 | 9.90 | 10.82 | 11.05 | 12.00 | 13.34 | 12.23 | 12.50 | 12.29 | 12.70 | 13.89 | 14.53 | 14.72 | *14.60* | *15.20* | Revenues per sh | *15.00* |
| 1.42 | 1.52 | 1.36 | 1.56 | 1.86 | 1.93 | 1.93 | 2.07 | 2.32 | 2.21 | 2.47 | 2.22 | 2.34 | 3.00 | 3.11 | 3.14 | *2.80* | *3.30* | "Cash Flow" per sh | *3.50* |
| .73 | .74 | .67 | .75 | .95 | .98 | .91 | .86 | 1.02 | 1.02 | 1.19 | .94 | 1.01 | 1.40 | 1.36 | 1.31 | *1.20* | *1.75* | Earnings per sh [A] | *2.00* |
| .57 | .57 | .58 | .58 | .59 | .59 | .60 | .62 | .63 | .64 | .65 | .67 | .69 | .72 | .75 | .79 | *.82* | *.86* | Div'd Decl'd per sh [B] ■ | *1.05* |
| 1.87 | 2.01 | 2.14 | 1.84 | 2.41 | 2.66 | 2.97 | 2.83 | 3.04 | 2.58 | 2.76 | 3.69 | 4.77 | 5.40 | 5.65 | 5.64 | *4.85* | *4.75* | Cap'l Spending per sh | *4.25* |
| 7.83 | 7.90 | 9.07 | 9.25 | 9.72 | 10.13 | 10.45 | 10.76 | 11.28 | 12.54 | 13.11 | 13.41 | 13.75 | 14.44 | 15.19 | 16.07 | *15.70* | *15.90* | Book Value per sh [C] | *16.05* |
| 36.73 | 36.78 | 41.31 | 41.33 | 41.45 | 41.53 | 41.67 | 41.82 | 41.98 | 47.74 | 47.81 | 47.88 | 47.97 | 48.01 | 48.07 | 48.53 | *50.00* | *51.00* | Common Shs Outst'g [D] | *53.00* |
| 20.1 | 24.9 | 29.2 | 26.1 | 19.8 | 19.7 | 20.3 | 21.3 | 17.9 | 20.1 | 19.7 | 24.8 | 29.6 | 26.9 | 30.3 | 39.3 | *Bold figures are Value Line estimates* | | Avg Ann'l P/E Ratio | *23.0* |
| 1.06 | 1.33 | 1.58 | 1.39 | 1.19 | 1.31 | 1.29 | 1.34 | 1.14 | 1.13 | 1.04 | 1.25 | 1.55 | 1.35 | 1.64 | 2.13 | | | Relative P/E Ratio | *1.25* |
| 3.9% | 3.1% | 2.9% | 3.0% | 3.1% | 3.1% | 3.2% | 3.4% | 3.5% | 3.1% | 2.8% | 2.9% | 2.3% | 1.9% | 1.8% | 1.5% | | | Avg Ann'l Div'd Yield | *2.3%* |
| 460.4 | 501.8 | 560.0 | 584.1 | 597.5 | 588.4 | 609.4 | 666.9 | 698.2 | 714.6 | *730* | *775* | Revenues ($mill) [E] | *795* |
| 37.7 | 36.1 | 42.6 | 47.3 | 56.7 | 45.0 | 48.7 | 67.2 | 65.6 | 63.1 | *60.0* | *90.0* | Net Profit ($mill) | *105* |
| 39.5% | 40.5% | 37.5% | 30.3% | 33.0% | 36.0% | 35.5% | 30.1% | 24.5% | 19.1% | *21.0%* | *21.0%* | Income Tax Rate | *21.0%* |
| 4.2% | 7.6% | 8.0% | 4.3% | 2.7% | 4.3% | 6.1% | 3.5% | 3.1% | 5.8% | *5.0%* | *5.0%* | AFUDC % to Net Profit | *5.0%* |
| 52.4% | 51.7% | 47.8% | 41.6% | 40.1% | 44.4% | 44.6% | 42.7% | 49.3% | 50.2% | *49.0%* | *47.0%* | Long-Term Debt Ratio | *43.5%* |
| 47.6% | 48.3% | 52.2% | 58.4% | 59.9% | 55.6% | 55.4% | 57.3% | 50.7% | 49.8% | *51.0%* | *53.0%* | Common Equity Ratio | *56.5%* |
| 914.7 | 931.5 | 908.2 | 1024.9 | 1045.9 | 1154.4 | 1191.2 | 1209.3 | 1440.2 | 1566.7 | *1535* | *1525* | Total Capital ($mill) | *1500* |
| 1294.3 | 1381.1 | 1457.1 | 1515.8 | 1590.4 | 1701.8 | 1859.3 | 2048.0 | 2232.7 | 2406.4 | *2425* | *2450* | Net Plant ($mill) | *2500* |
| 5.5% | 5.5% | 6.3% | 6.0% | 6.3% | 5.2% | 5.5% | 7.1% | 5.9% | 5.5% | *5.0%* | *6.5%* | Return on Total Cap'l | *8.0%* |
| 8.6% | 8.0% | 9.0% | 7.9% | 9.1% | 7.0% | 7.4% | 9.7% | 9.0% | 8.1% | *7.5%* | *11.0%* | Return on Shr. Equity | *12.5%* |
| 8.6% | 8.0% | 9.0% | 7.9% | 9.1% | 7.0% | 7.4% | 9.7% | 9.0% | 8.1% | *7.5%* | *11.0%* | Return on Com Equity | *12.5%* |
| 3.0% | 2.3% | 3.4% | 3.4% | 4.1% | 2.0% | 2.4% | 4.7% | 4.0% | 3.2% | *2.0%* | *5.5%* | Retained to Com Eq | *6.0%* |
| 66% | 71% | 62% | 56% | 55% | 71% | 68% | 51% | 55% | 60% | *71%* | *51%* | All Div'ds to Net Prof | *53%* |

**CAPITAL STRUCTURE as of 3/31/20**
**Total Debt** $1143.5 mill. **Due in 5 Yrs** $357.0 mill.
**LT Debt** $786.5 mill. **LT Interest** $40.0 mill.
(Total interest coverage: 1.7x) (50% of Cap'l)

**Pension Assets-12/19** $573.6 mill.
**Oblig.** $812.0 mill.

**Pfd Stock** None

**Common Stock** 48,714,000 shs.

**MARKET CAP: $2.3 billion (Mid Cap)**

| CURRENT POSITION ($MILL.) | 2018 | 2019 | 3/31/20 |
|---|---|---|---|
| Cash Assets | 47.2 | 42.7 | 140.4 |
| Other | 141.5 | 142.0 | 129.7 |
| Current Assets | 188.7 | 184.7 | 270.1 |
| Accts Payable | 95.6 | 108.5 | 99.0 |
| Debt Due | 170.0 | 197.0 | 357.0 |
| Other | 55.6 | 53.2 | 57.1 |
| Current Liab. | 321.2 | 358.7 | 513.1 |

**BUSINESS:** California Water Service Group provides regulated and nonregulated water service to 489,600 customers in 100 communities in the state of California. Accounts for over 94% of total customers. Also operates in Washington, New Mexico, and Hawaii. Main service areas: San Francisco Bay area, Sacramento Valley, Salinas Valley, San Joaquin Valley & parts of Los Angeles. Acquired Rio Grande Corp; West Hawaii Utilities (9/08). Revenue breakdown, '19: residential, 67%; business, 20%; industrial, 5%; public authorities, 5%; other 3%. Off. and dir. own 1% of common stock (4/20 proxy). Has 1,184 employees. Pres. and CEO: Martin A. Kropelnicki. Inc.: DE. Addr.: 1720 North First St., San Jose, CA 95112-4598. Tel.: 408-367-8200. Internet: www.calwatergroup.com.

| ANNUAL RATES of change (per sh) | Past 10 Yrs. | Past 5 Yrs. | Est'd '17-'19 to '23-'25 |
|---|---|---|---|
| Revenues | 4.0% | 2.5% | *.5%* |
| "Cash Flow" | 5.5% | 5.5% | *2.0%* |
| Earnings | 4.5% | 4.5% | *6.5%* |
| Dividends | 2.5% | 3.5% | *5.5%* |
| Book Value | 4.5% | 4.5% | *1.0%* |

| Calendar | QUARTERLY REVENUES ($ mill.) [E] Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|---|---|---|---|---|---|
| 2017 | 122.1 | 171.1 | 211.7 | 162.0 | 666.9 |
| 2018 | 134.6 | 174.9 | 221.3 | 167.4 | 698.2 |
| 2019 | 126.1 | 179.0 | 232.6 | 176.9 | 714.6 |
| 2020 | 125.6 | *185* | *237* | *182.4* | *730* |
| 2021 | *147* | *195* | *248* | *185* | *775* |

| Calendar | EARNINGS PER SHARE [A] Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|---|---|---|---|---|---|
| 2017 | .02 | .39 | .70 | .29 | 1.40 |
| 2018 | d.02 | .31 | .75 | .32 | 1.36 |
| 2019 | d.16 | .35 | .88 | .24 | 1.31 |
| 2020 | d.42 | *.40* | *.85* | *.37* | *1.20* |
| 2021 | *.05* | *.42* | *.90* | *.38* | *1.75* |

| Calendar | QUARTERLY DIVIDENDS PAID [B] ■ Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|---|---|---|---|---|---|
| 2016 | .1725 | .1725 | .1725 | .1725 | .69 |
| 2017 | .18 | .18 | .18 | .18 | .72 |
| 2018 | .1875 | .1875 | .1875 | .1875 | .75 |
| 2019 | .1975 | .1975 | .1975 | .1975 | .79 |
| 2020 | .2125 | .2125 | | | |

**California Water Service Group posted rather uninspiring results to open 2020.** It is worth noting that the water utility's March-period financials were adversely impacted by the California Public Utilities Commission's decision to postpone a resolution on the company's General Rate Case (GRC) that was filed in late 2019. On a year-over-year basis, first-quarter revenues of $126 million were flat, while share losses ballooned to $0.42 from a deficit of $0.16 last year. Rising production costs and a $2.2 million pension benefit expense also weighed on the bottom line. Should the rate case have been approved, results would have likely fell in line with our estimates. In the meantime, California is allowed to charge existing rates and, once the GRC is eventually passed, the difference between approved and interim rates can be recouped via surcharges over the subsequent 12-month stretch.

**We now expect share profits to contract this year before rebounding in the next.** Specifically, we are shaving $0.35 from our 2020 EPS call, to $1.20. For 2021, we anticipate a substantial earnings recovery, which is based partly on reduced operating costs and higher water rates.

**The company's subsidiary, Washington Water Service Company, has acquired Rainer View Water Company.** Rainer View Water serves more than 35,000 customers in Washington State through 27 water systems and 18,500 service connections, effectively doubling Washington Water's customer base. The deal's financial terms were not disclosed.

**Infrastructure investment is apt to move forward as previously planned.** Despite the lingering health pandemic, California's operations, including the maintenance and efficiency of its water service to West Coast residents, is undoubtedly essential. On balance, capital spending on infrastructure-related projects such as water main replacements and treatment plant upgrades ought to range between $200 million-$250 million per year over the pull to mid-decade.

**At the recent quotation, neutrally ranked California Water stock is not presently on our recommendation list.**

*Nicholas P. Patrikis* *July 10, 2020*

**(A)** Basic EPS. Excl. nonrecurring gain (loss): '11, 4¢. Next earnings report due early August.
**(B)** Dividends historically paid in late Feb., May, Aug., and Nov. ■ Div'd reinvestment plan available.
**(C)** Incl. intangible assets. In '19 : $24.9 mill., $0.51/sh.
**(D)** In millions, adjusted for split.
**(E)** Excludes non-reg. rev.

| | |
|---|---|
| Company's Financial Strength | B++ |
| Stock's Price Stability | 90 |
| Price Growth Persistence | 60 |
| Earnings Predictability | 65 |

# ESSENTIAL UTIL. NYSE-WTRG

RECENT PRICE **41.67** | P/E RATIO **41.7** (Trailing: 37.5 Median: 23.0) | RELATIVE P/E RATIO **2.03** | DIV'D YLD **2.4%** | **VALUE LINE**

**TIMELINESS** 2 Lowered 4/24/20
**SAFETY** 2 Raised 4/20/12
TECHNICAL 2 Lowered 6/12/20
**BETA** .90 (1.00 = Market)

**18-Month Target Price Range**

| Low-High | Midpoint (% to Mid) |
|---|---|
| $34-$87 | $61 (45%) |

**2023-25 PROJECTIONS**

| | Price | Gain | Ann'l Total Return |
|---|---|---|---|
| High | 55 | (+30%) | *9%* |
| Low | 40 | (-5%) | *2%* |

**Institutional Decisions**

| | 3Q2019 | 4Q2019 | 1Q2020 |
|---|---|---|---|
| to Buy | 248 | 274 | 252 |
| to Sell | 210 | 242 | 292 |
| Hld's(000) | 143792 | 149836 | 161407 |

| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | © VALUE LINE PUB. LLC | 23-25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| High: | 17.2 | 18.4 | 19.0 | 21.5 | 28.1 | 28.2 | 31.1 | 35.8 | 39.6 | 39.4 | 47.3 | 54.5 | | | | | | | | |
| Low: | 12.3 | 13.2 | 15.4 | 16.8 | 20.6 | 22.4 | 24.4 | 28.0 | 29.4 | 32.1 | 32.7 | 30.4 | | | | | | | | |
| | 2.78 | 3.08 | 3.23 | 3.61 | 3.71 | 3.93 | 4.21 | 4.10 | 4.32 | 4.32 | 4.37 | 4.61 | 4.62 | 4.56 | 4.71 | 4.03 | *7.00* | *8.15* | Revenues per sh | *8.45* |
| | .87 | .97 | 1.01 | 1.10 | 1.14 | 1.29 | 1.42 | 1.45 | 1.51 | 1.82 | 1.89 | 1.87 | 2.07 | 2.12 | 1.90 | 1.73 | *1.75* | *2.00* | "Cash Flow" per sh | *2.65* |
| | .51 | .57 | .56 | .57 | .58 | .62 | .72 | .83 | .87 | 1.16 | 1.20 | 1.14 | 1.32 | 1.35 | 1.08 | 1.04 | *1.00* | *1.20* | Earnings per sh [A] | *1.75* |
| | .29 | .32 | .35 | .38 | .41 | .44 | .47 | .50 | .54 | .58 | .63 | .69 | .74 | .79 | .85 | .91 | *.97* | *1.03* | Div'd Decl'd per sh [B]■ | *1.30* |
| | 1.23 | 1.47 | 1.64 | 1.43 | 1.58 | 1.66 | 1.89 | 1.90 | 1.98 | 1.73 | 1.84 | 2.07 | 2.16 | 2.69 | 2.78 | 2.49 | *3.80* | *3.80* | Cap'l Spending per sh | *4.75* |
| | 4.71 | 5.04 | 5.57 | 5.85 | 6.26 | 6.50 | 6.81 | 7.21 | 7.90 | 8.63 | 9.27 | 9.78 | 10.43 | 11.02 | 11.28 | 17.58 | *18.60* | *18.85* | Book Value per sh | *20.00* |
| | 158.97 | 161.21 | 165.41 | 166.75 | 169.21 | 170.61 | 172.46 | 173.60 | 175.43 | 177.93 | 178.59 | 176.54 | 177.39 | 177.71 | 178.09 | 220.76 | *250.00* | *252.00* | Common Shs Outst'g [C] | *260.00* |
| | 25.1 | 31.8 | 34.7 | 32.0 | 24.9 | 23.1 | 21.1 | 21.3 | 21.9 | 21.2 | 20.8 | 23.5 | 23.9 | 24.7 | 32.6 | 39.1 | *Bold figures are Value Line estimates* | | Avg Ann'l P/E Ratio | *27.0* |
| | 1.33 | 1.69 | 1.87 | 1.70 | 1.50 | 1.54 | 1.34 | 1.34 | 1.39 | 1.19 | 1.09 | 1.18 | 1.25 | 1.24 | 1.76 | 2.12 | | | Relative P/E Ratio | *1.50* |
| | 2.3% | 1.8% | 1.8% | 2.1% | 2.8% | 3.1% | 3.1% | 2.8% | 2.8% | 2.4% | 2.5% | 2.6% | 2.3% | 2.4% | 2.4% | 2.2% | | | Avg Ann'l Div'd Yield | *2.7%* |
| | | | | | | | 726.1 | 712.0 | 757.8 | 768.6 | 779.9 | 814.2 | 819.9 | 809.5 | 838.1 | 889.7 | *1745* | *2055* | Revenues ($mill) | *2200* |
| | | | | | | | 124.0 | 144.8 | 153.1 | 205.0 | 213.9 | 201.8 | 234.2 | 239.7 | 192.0 | 224.5 | *250* | *300* | Net Profit ($mill) | *455* |
| | | | | | | | 39.2% | 32.9% | 39.0% | 10.0% | 10.5% | 6.9% | 8.2% | 6.6% | 6.6% | 6.6% | *2.0%* | *3.5%* | Income Tax Rate | *8.0%* |
| | | | | | | | -- | -- | -- | 1.1% | 2.4% | 3.1% | 3.8% | 6.3% | 6.8% | 7.2% | *7.0%* | *7.0%* | AFUDC % to Net Profit | *7.0%* |
| | | | | | | | 56.6% | 52.7% | 52.7% | 48.9% | 48.5% | 50.3% | 48.4% | 50.6% | 54.4% | 43.1% | *56.5%* | *57.5%* | Long-Term Debt Ratio | *40.5%* |
| | | | | | | | 43.4% | 47.3% | 47.3% | 51.1% | 51.5% | 49.7% | 51.6% | 49.4% | 45.6% | 56.9% | *43.5%* | *42.5%* | Common Equity Ratio | *59.5%* |
| | | | | | | | 2706.2 | 2646.8 | 2929.7 | 3003.6 | 3216.0 | 3469.5 | 3587.7 | 3965.4 | 4407.8 | 6824.2 | *10650* | *11250* | Total Capital ($mill) | *12800* |
| | | | | | | | 3469.3 | 3612.9 | 3936.2 | 4167.3 | 4402.0 | 4688.9 | 5001.6 | 5399.9 | 5930.3 | 6345.8 | *9500* | *10150* | Net Plant ($mill) | *12000* |
| | | | | | | | 5.9% | 6.9% | 6.6% | 8.0% | 7.8% | 6.9% | 7.6% | 7.1% | 5.5% | 4.2% | *3.0%* | *3.5%* | Return on Total Cap'l | *4.5%* |
| | | | | | | | 10.6% | 11.6% | 11.0% | 13.4% | 12.9% | 11.7% | 12.7% | 12.2% | 9.6% | 5.8% | *5.5%* | *6.5%* | Return on Shr. Equity | *9.0%* |
| | | | | | | | 10.6% | 11.6% | 11.0% | 13.4% | 12.9% | 11.7% | 12.7% | 12.2% | 9.6% | 5.8% | *NMF* | *6.5%* | Return on Com Equity | *9.0%* |
| | | | | | | | 3.7% | 4.6% | 4.3% | 6.7% | 6.1% | 4.7% | 5.6% | 5.1% | 2.1% | .9% | *NMF* | *1.0%* | Retained to Com Eq | *2.5%* |
| | | | | | | | 65% | 60% | 61% | 50% | 52% | 60% | 56% | 59% | 79% | 84% | *97%* | *86%* | All Div'ds to Net Prof | *74%* |

**CAPITAL STRUCTURE as of 3/31/20**
**Total Debt** $5225.0 mill. **Due in 5 Yrs** $496.0 mill.
**LT Debt** $4729.0 mill. **LT Interest** $145.0 mill. (49% of Cap'l)

**Pension Assets-12/19** $266.4 mill.
**Oblig.** $310.5 mill.

**Pfd Stock** None
**Common Stock** 245,041,284 shares
**as of 4/27/20**

**MARKET CAP: $10.2 billion (Large Cap)**

| CURRENT POSITION ($MILL.) | 2018 | 2019 | 3/31/20 |
|---|---|---|---|
| Cash Assets | 3.6 | 1868.9 | 31.8 |
| Receivables | 101.2 | 67.1 | 179.6 |
| Inventory (AvgCst) | 15.8 | 18.4 | 33.9 |
| Other | 26.6 | 58.3 | 122.7 |
| Current Assets | 147.2 | 2012.7 | 368.0 |
| Accts Payable | 77.3 | 74.9 | 115.6 |
| Debt Due | 160.0 | 130.8 | 496.0 |
| Other | 161.7 | 113.1 | 215.8 |
| Current Liab. | 399.0 | 318.8 | 827.4 |

| ANNUAL RATES of change (per sh) | Past 10 Yrs. | Past 5 Yrs. | Est'd '17-'19 to '23-'25 |
|---|---|---|---|
| Revenues | 1.5% | .5% | *11.5%* |
| "Cash Flow" | 5.0% | 2.0% | *5.5%* |
| Earnings | 7.0% | 1.5% | *7.0%* |
| Dividends | 7.5% | 8.0% | *7.5%* |
| Book Value | 8.0% | 9.0% | *7.0%* |

| Calendar | QUARTERLY REVENUES ($ mill.) Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|---|---|---|---|---|---|
| 2017 | 187.8 | 203.4 | 215.0 | 203.3 | 809.5 |
| 2018 | 194.3 | 211.9 | 226.2 | 205.7 | 838.1 |
| 2019 | 201.1 | 218.9 | 243.6 | 226.1 | 889.7 |
| 2020 | 255.6 | *475* | *515* | *499.4* | *1745* |
| 2021 | *520* | *490* | *530* | *515* | *2055* |

| Calendar | EARNINGS PER SHARE [A] Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|---|---|---|---|---|---|
| 2017 | .28 | .34 | .43 | .30 | 1.35 |
| 2018 | .29 | .37 | .44 | d.02 | 1.08 |
| 2019 | .09 | .25 | .38 | .28 | 1.04 |
| 2020 | .20 | *.23* | *.30* | *.27* | *1.00* |
| 2021 | *.22* | *.27* | *.33* | *.38* | *1.20* |

| Calendar | QUARTERLY DIVIDENDS PAID [B] ■ Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|---|---|---|---|---|---|
| 2016 | .178 | .178 | .1913 | .1913 | .74 |
| 2017 | .1913 | .1913 | .2047 | .2047 | .79 |
| 2018 | .2047 | .2047 | .219 | .219 | .85 |
| 2019 | .219 | .219 | .2343 | .2343 | .91 |
| 2020 | .2343 | .2343 | | | |

**BUSINESS:** Essential Utilities, Inc. became the new name for Aqua America on Feb. 3, 2020, to reflect the acquisition of Peoples, a natural gas utility, which occurred in 3/20. In 2019, Aqua Amer. provided water and wastewater services to about three million people in PA, OH, TX, IL, NC, NJ, IN, and VA. Employed 1,583. Acquired AquaSource, 7/13; North Maine Utilities, 7/15; and others. Water supply revenues 2019: residential, 58%; commercial, 16%; industrial, wastewater & other, 26%. Off. & dir. own less than 1% of the common stock; BlackRock, 10.5%; Vanguard, 10.4%; (4/20 proxy). Canadian Pension Plan about 8.8%. Pres. & CEO: Christopher Franklin. Inc.: PA Addr.: 762 West Lancaster Ave., Bryn Mawr, PA 19010. Tel.: 610-525-1400. Int.: www.essential.co.

**Essential Utilities will probably not be affected much by the coronavirus.** The demand for water and natural gas will likely increase from the residential sector as stay-at-home mandates were in effect for most of the company's service area. Sales here should easily offset declines in the commercial and industrial segments. Barring a considerable move in prices, consumer demand for water and natural gas is relatively inelastic.

**Integrating a recent large acquisition into existing operations ought to remain the primary focus this year.** In mid-March, the company spent $4.3 billion (including the assumption of $1.1 billion in debt) to buy Peoples gas utility. Though the businesses will operate as separate entities, Essential is trying to cut administrative and regulatory costs where functions overlap. Our presentation now includes both companies. The one area we still don't have a solid handle on is revenues, as they were included in just two weeks of the first quarter.

**Earnings should probably be subdued in the near term.** Expenses related to the merger will most likely put a damper on the bottom line both this year and next. In addition, since we use GAAP accounting in our estimates, much will have to do with how management chooses to write off its intangible assets. These soared from $64 million at yearend, to $2.35 billion in the first quarter. It is important to note, however, that these charges to the bottom line won't impact the company's cash balance.

**The construction budget is considerable.** As part of the deal to gain regulatory approval for the purchase of Peoples, Essential agreed to repair about 3,000 miles of antiquated gas pipelines. The company's water business is also in the midst of a major rebuilding program (as are almost all of its peers). Thus, capital expenditures are expected to total $2.8 billion through 2022. In 2020, about $550 million and $400 million will be spent on the water and gas operations, respectively.

**These shares are appropriate for short-term conservative accounts.** The equity is pegged to outperform the market in the year ahead. However, total return potential out to 2023-2025 is well below the *Value Line* median.

*James A. Flood* *July 10, 2020*

**(A)** Diluted egs. Excl. nonrec. gains: '12, 18¢. Excl. gain from disc. operations: '12, 7¢; '13, 9¢; '14, 11¢. Quarterly EPS do not add in '19 due to a large change in the number of shares outstanding in the Dec. period. Next earnings report August 5th. **(B)** Dividends historically paid in early March, June, Sept. & Dec. ■ Div'd. reinvestment plan available (5% discount). **(C)** In millions, adjusted for stock splits. **(D)** Includes intangibles: 3/31/20, $2.352 bill./$9.60 a share.

| | |
|---|---|
| **Company's Financial Strength** | A |
| **Stock's Price Stability** | 90 |
| **Price Growth Persistence** | 75 |
| **Earnings Predictability** | 60 |

# MIDDLESEX WATER NDQ-MSEX

RECENT PRICE **65.92** | P/E RATIO **31.4** (Trailing: 32.0 Median: 21.0) | RELATIVE P/E RATIO **1.53** | DIV'D YLD **1.6%** | **VALUE LINE**

**TIMELINESS** 2 Raised 5/15/20
**SAFETY** 2 New 10/21/11
TECHNICAL 2 Raised 5/1/20
**BETA** .75 (1.00 = Market)

**18-Month Target Price Range**

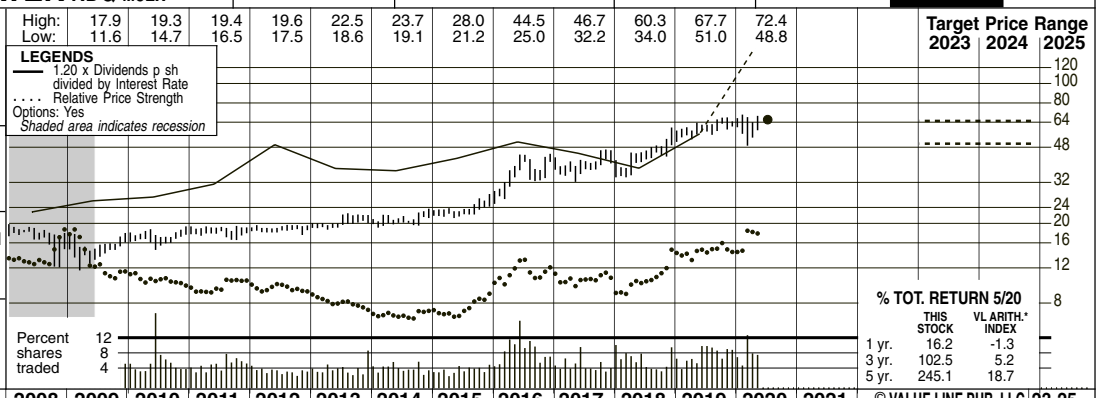
| Low-High | Midpoint (% to Mid) |
|---|---|
| $52-$99 | $76 (15%) |

**2023-25 PROJECTIONS**

| | Price | Gain | Ann'l Total Return |
|---|---|---|---|
| High | 65 | (Nil) | *2%* |
| Low | 50 | (-25%) | *-4%* |

**Institutional Decisions**

| | 3Q2019 | 4Q2019 | 1Q2020 |
|---|---|---|---|
| to Buy | 56 | 68 | 55 |
| to Sell | 67 | 68 | 70 |
| Hld's(000) | 9915 | 10433 | 10280 |




| 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | © VALUE LINE PUB. LLC | 23-25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6.25 | 6.44 | 6.16 | 6.50 | 6.79 | 6.75 | 6.60 | 6.50 | 6.98 | 7.19 | 7.26 | 7.77 | 8.16 | 8.00 | 8.42 | 7.72 | *8.20* | *8.45* | Revenues per sh | *9.15* |
| 1.28 | 1.33 | 1.33 | 1.49 | 1.53 | 1.40 | 1.55 | 1.46 | 1.56 | 1.72 | 1.84 | 1.97 | 2.17 | 2.24 | 2.89 | 2.90 | *2.95* | *3.10* | "Cash Flow" per sh | *3.50* |
| .73 | .71 | .82 | .87 | .89 | .72 | .96 | .84 | .90 | 1.03 | 1.13 | 1.22 | 1.38 | 1.38 | 1.96 | 2.01 | *2.10* | *2.20* | Earnings per sh [A] | *2.50* |
| .66 | .67 | .68 | .69 | .70 | .71 | .72 | .73 | .74 | .75 | .76 | .78 | .81 | .86 | .91 | .98 | *1.04* | *1.10* | Div'd Decl'd per sh [B]■ | *1.25* |
| 2.54 | 2.18 | 2.31 | 1.66 | 2.12 | 1.49 | 1.90 | 1.50 | 1.36 | 1.26 | 1.40 | 1.59 | 2.91 | 3.08 | 4.40 | 5.11 | *3.50* | *3.50* | Cap'l Spending per sh | *3.50* |
| 8.02 | 8.26 | 9.52 | 10.05 | 10.03 | 10.33 | 11.13 | 11.27 | 11.48 | 11.82 | 12.24 | 12.74 | 13.40 | 14.02 | 15.17 | 18.57 | *16.15* | *16.50* | Book Value per sh | *17.35* |
| 11.36 | 11.58 | 13.17 | 13.25 | 13.40 | 13.52 | 15.57 | 15.70 | 15.82 | 15.96 | 16.12 | 16.23 | 16.30 | 16.35 | 16.40 | 17.43 | *17.65* | *17.75* | Common Shs Outst'g [C] | *18.00* |
| 26.4 | 27.4 | 22.7 | 21.6 | 19.8 | 21.0 | 17.8 | 21.7 | 20.8 | 19.7 | 18.5 | 19.1 | 25.6 | 28.4 | 22.2 | 29.7 | *Bold figures are Value Line estimates* | | Avg Ann'l P/E Ratio | *23.0* |
| 1.39 | 1.46 | 1.23 | 1.15 | 1.19 | 1.40 | 1.13 | 1.36 | 1.32 | 1.11 | .97 | .96 | 1.34 | 1.43 | 1.20 | 1.61 | | | Relative P/E Ratio | *1.30* |
| 3.4% | 3.5% | 3.7% | 3.7% | 4.0% | 4.7% | 4.2% | 4.0% | 4.0% | 3.7% | 3.7% | 3.3% | 2.3% | 2.2% | 2.1% | 1.6% | | | Avg Ann'l Div'd Yield | *2.2%* |
| | | | | | | 102.7 | 102.1 | 110.4 | 114.8 | 117.1 | 126.0 | 132.9 | 130.8 | 138.1 | 134.6 | *145* | *150* | Revenues ($mill) | *165* |
| | | | | | | 14.3 | 13.4 | 14.4 | 16.6 | 18.4 | 20.0 | 22.7 | 22.8 | 32.5 | 33.9 | *37.0* | *39.0* | Net Profit ($mill) | *45.0* |
| | | | | | | 32.1% | 32.7% | 33.9% | 34.1% | 35.0% | 34.5% | 34.0% | 32.7% | 2.8% | 2.8% | *21.0%* | *21.0%* | Income Tax Rate | *21.0%* |
| | | | | | | 6.8% | 6.1% | 3.4% | 1.9% | 1.7% | 1.9% | 2.7% | 3.1% | 1.4% | 3.4% | *2.0%* | *2.0%* | AFUDC % to Net Profit | *2.5%* |
| | | | | | | 43.1% | 42.3% | 41.5% | 40.4% | 40.5% | 39.4% | 37.9% | 37.5% | 37.8% | 41.5% | *42.5%* | *41.5%* | Long-Term Debt Ratio | *39.0%* |
| | | | | | | 55.8% | 56.6% | 57.4% | 58.7% | 58.8% | 59.8% | 61.5% | 61.8% | 61.6% | 58.2% | *57.0%* | *58.0%* | Common Equity Ratio | *60.5%* |
| | | | | | | 310.5 | 312.5 | 316.5 | 321.4 | 335.8 | 345.4 | 355.4 | 370.7 | 404.1 | 556.7 | *500* | *505* | Total Capital ($mill) | *515* |
| | | | | | | 405.9 | 422.2 | 435.2 | 446.5 | 465.4 | 481.9 | 517.8 | 557.2 | 618.5 | 705.7 | *720* | *735* | Net Plant ($mill) | *775* |
| | | | | | | 5.7% | 5.2% | 5.4% | 5.9% | 6.3% | 6.6% | 7.1% | 6.9% | 8.9% | 6.7% | *8.0%* | *8.5%* | Return on Total Cap'l | *9.5%* |
| | | | | | | 8.1% | 7.5% | 7.8% | 8.7% | 9.2% | 9.6% | 10.3% | 9.8% | 12.9% | 10.4% | *13.0%* | *13.0%* | Return on Shr. Equity | *14.5%* |
| | | | | | | 8.2% | 7.5% | 7.8% | 8.7% | 9.3% | 9.6% | 10.3% | 9.9% | 13.0% | 10.4% | *13.0%* | *13.5%* | Return on Com Equity | *14.5%* |
| | | | | | | 2.1% | 1.0% | 1.4% | 2.4% | 3.1% | 3.5% | 4.3% | 3.8% | 7.0% | 5.4% | *6.5%* | *6.5%* | Retained to Com Eq | *7.5%* |
| | | | | | | 75% | 87% | 83% | 73% | 67% | 63% | 58% | 62% | 46% | 48% | *49%* | *50%* | All Div'ds to Net Prof | *50%* |

**CAPITAL STRUCTURE as of 3/31/20**
**Total Debt** $275.5 mill. **Due in 5 Yrs** $33.3 mill.
**LT Debt** $234.8 mill. **LT Interest** $7.2 mill.
(Total interest coverage: 7.0x)
(42% of Cap'l)

**Pension Assets-12/19** $80.4 mill.
**Oblig.** $100.9 mill.
**Pfd Stock** $2.4 mill. **Pfd Div'd:** $.1 mill.

**Common Stock** 17,439,000 shs.

**MARKET CAP: $1.1 billion (Mid-Cap)**

| CURRENT POSITION ($MILL.) | 2018 | 2019 | 3/31/20 |
|---|---|---|---|
| Cash Assets | 3.7 | 2.2 | 15.4 |
| Other | 27.1 | 26.9 | 24.6 |
| Current Assets | 30.8 | 29.1 | 40.0 |
| Accts Payable | 19.3 | 23.3 | 24.1 |
| Debt Due | 55.8 | 27.2 | 40.7 |
| Other | 19.3 | 14.5 | 15.7 |
| Current Liab. | 94.4 | 65.0 | 80.5 |

| ANNUAL RATES of change (per sh) | Past 10 Yrs. | Past 5 Yrs. | Est'd '17-'19 to '23-'25 |
|---|---|---|---|
| Revenues | 2.0% | 2.5% | *2.0%* |
| "Cash Flow" | 6.0% | 9.5% | *4.5%* |
| Earnings | 8.0% | 12.0% | *6.0%* |
| Dividends | 2.5% | 4.0% | *5.5%* |
| Book Value | 4.5% | 6.0% | *1.5%* |

| Calendar | QUARTERLY REVENUES ($ mill.) Mar.31 | Jun. 30 | Sep. 30 | Dec. 31 | Full Year |
|---|---|---|---|---|---|
| 2017 | 30.1 | 33.0 | 36.2 | 31.5 | 130.8 |
| 2018 | 31.2 | 34.9 | 38.7 | 33.3 | 138.1 |
| 2019 | 30.7 | 33.4 | 37.8 | 32.7 | 134.6 |
| 2020 | 31.8 | *36.0* | *42.0* | *35.2* | *145* |
| 2021 | *33.0* | *37.0* | *44.0* | *36.0* | *150* |

| Calendar | EARNINGS PER SHARE [A] Mar.31 | Jun. 30 | Sep. 30 | Dec. 31 | Full Year |
|---|---|---|---|---|---|
| 2017 | .27 | .33 | .46 | .32 | 1.38 |
| 2018 | .27 | .52 | .74 | .43 | 1.96 |
| 2019 | .39 | .49 | .66 | .46 | 2.01 |
| 2020 | .44 | *.50* | *.69* | *.47* | *2.10* |
| 2021 | *.45* | *.52* | *.73* | *.50* | *2.20* |

| Calendar | QUARTERLY DIVIDENDS PAID [B]■ Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|---|---|---|---|---|---|
| 2016 | .19875 | .19875 | .19875 | .21125 | .81 |
| 2017 | .21125 | .21125 | .21125 | .22375 | .86 |
| 2018 | .22375 | .22375 | .22375 | .24 | .91 |
| 2019 | .24 | .24 | .24 | .2562 | .98 |
| 2020 | .2562 | .2562 | | | |

**BUSINESS:** Middlesex Water Company engages in the ownership and operation of regulated water utility systems in New Jersey, Delaware, and Pennsylvania. It also operates water and wastewater systems under contract on behalf of municipal and private clients in NJ and DE. Its Middlesex System provides water services to 61,000 retail customers, primarily in Middlesex County, New Jersey. In 2019, the Middlesex System accounted for 60% of operating revenues. At 12/31/19, the company had 352 employees. Incorporated: NJ. President, CEO, and Chairman: Dennis W. Doll. Officers & directors own 3.1% of the com. stock; BlackRock Inst. Trust Co., 7.7% (4/20 proxy). Add.: 485 C Route 1 South, Suite 400, Iselin, NJ 08830. Tel.: 732-634-1500. Int.: www.middlesexwater.com.

**Middlesex Water Company stock etched a fresh all-time high over the June interim.** To no surprise, the regulated utility, though not completely immune to broader market turbulence, has held up better than most year to date. In fact, investors bid up shares of MSEX to record levels, as the equity surpassed the $70-per-share mark in recent trading sessions. Based on our Timeliness Ranking System, Middlesex stock is a favorable selection (2) for relative year-ahead price performance, and ought to appeal to short-term subscribers.

**The first quarter was a good one.** Revenues of $31.8 million, which fell in line with our $32.0 million call, expanded nearly 4% year over year, thanks to increased water demand and a growing customer base in its Delaware operations. March-period earnings of $0.44 beat our estimate by $0.04, advancing 13% from the previous-year figure. We are maintaining our current-year top- and bottom-line forecasts of $145 million and $2.10 per share, respectively. Our optimistic projections for the next few quarters factor in several tailwinds spurred by the COVID-19 pandemic. These include a notable increase in the frequency of hand washing, as well as an uptick in appliance usage due to a greater percentage of residents staying at home. In addition, the uncertainty of public summer activities appears to have sparked demand for backyard pools of late, which augurs well for near-term water consumption.

**The company's long-term infrastructure upgrade plans are still intact.** Middlesex encountered minimal disruption to current projects, even at the height of the crisis, and should fully exhaust its $300 million budget under its Water for Tomorrow program, which aims to bolster the company's distribution systems.

**Buy-and-hold accounts should remain on the sidelines, for now.** At the recent quotation, MSEX shares are trading beyond the upper boundary of our 3- to 5-year Target Price Range, even after applying a more generous P/E multiple. In fact, seasoned investors may want to consider taking some profits off the table. The issue probably won't appeal to income-seekers, either.

*Nicholas P. Patrikis* *July 10, 2020*

**(A)** Diluted earnings. Next earnings report due late July.

**(B)** Dividends historically paid in mid-Feb., May, Aug., and November.■ Div'd reinvestment plan available.

**(C)** In millions.

| | |
|---|---|
| **Company's Financial Strength** | B++ |
| **Stock's Price Stability** | 80 |
| **Price Growth Persistence** | 55 |
| **Earnings Predictability** | 75 |

# SJW GROUP NYSE-SJW

RECENT PRICE **60.01** | P/E RATIO **30.8** (Trailing: 49.2 Median: 21.0) | RELATIVE P/E RATIO **1.50** | DIV'D YLD **2.1%** | **VALUE LINE**

TIMELINESS — E
SAFETY **3** New 4/22/11
TECHNICAL — E
BETA .80 (1.00 = Market)

**18-Month Target Price Range**

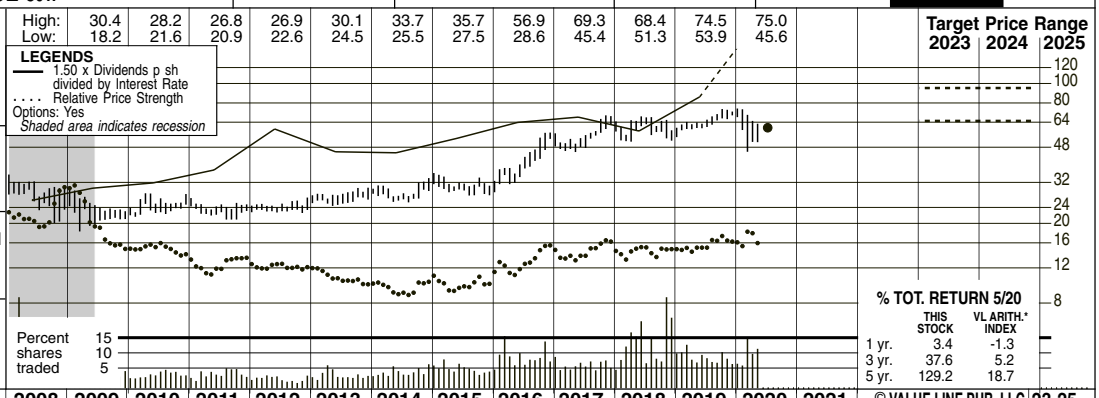
| Low-High | Midpoint (% to Mid) |
|---|---|
| $47-$95 | $71 (20%) |

**2023-25 PROJECTIONS**

| | Price | Gain | Ann'l Total Return |
|---|---|---|---|
| High | 95 | (+60%) | *14%* |
| Low | 65 | (+10%) | *4%* |

**Institutional Decisions**

| | 3Q2019 | 4Q2019 | 1Q2020 |
|---|---|---|---|
| to Buy | 94 | 93 | 72 |
| to Sell | 69 | 76 | 95 |
| Hld's(000) | 19354 | 19650 | 19448 |




| 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | © VALUE LINE PUB. LLC | 23-25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.14 | 9.86 | 10.35 | 11.25 | 12.12 | 11.68 | 11.62 | 12.85 | 14.01 | 13.73 | 15.76 | 14.97 | 16.61 | 18.97 | 14.00 | 14.78 | *18.95* | *19.50* | Revenues per sh | *21.65* |
| 1.89 | 2.21 | 2.38 | 2.30 | 2.44 | 2.21 | 2.38 | 2.80 | 2.97 | 2.90 | 4.42 | 3.86 | 4.76 | 5.24 | 3.29 | 3.67 | *3.65* | *4.15* | "Cash Flow" per sh | *5.30* |
| .87 | 1.12 | 1.19 | 1.04 | 1.08 | .81 | .84 | 1.11 | 1.18 | 1.12 | 2.54 | 1.85 | 2.57 | 2.86 | 1.82 | 1.35 | *1.95* | *2.45* | Earnings per sh [A] | *3.65* |
| .51 | .53 | .57 | .61 | .65 | .66 | .68 | .69 | .71 | .73 | .75 | .78 | .81 | 1.04 | 1.12 | 1.20 | *1.28* | *1.36* | Div'd Decl'd per sh [B]■ | *1.58* |
| 2.31 | 2.83 | 3.87 | 6.62 | 3.79 | 3.17 | 5.65 | 3.75 | 5.67 | 4.68 | 5.02 | 5.24 | 6.95 | 7.26 | 5.08 | 6.25 | *5.25* | *5.75* | Cap'l Spending per sh | *6.50* |
| 10.11 | 10.72 | 12.48 | 12.90 | 13.99 | 13.66 | 13.75 | 14.20 | 14.71 | 15.92 | 17.75 | 18.83 | 20.61 | 22.57 | 31.31 | 31.27 | *32.25* | *35.60* | Book Value per sh | *39.15* |
| 18.27 | 18.27 | 18.28 | 18.36 | 18.18 | 18.50 | 18.55 | 18.59 | 18.67 | 20.17 | 20.29 | 20.38 | 20.46 | 20.52 | 28.40 | 28.46 | *29.00* | *29.50* | Common Shs Outst'g [C] | *30.00* |
| 19.6 | 19.7 | 23.5 | 33.4 | 26.2 | 28.7 | 29.1 | 21.2 | 20.4 | 24.3 | 11.2 | 16.6 | 15.7 | 18.8 | 32.7 | 47.8 | *Bold figures are Value Line estimates* | | Avg Ann'l P/E Ratio | *22.0* |
| 1.04 | 1.05 | 1.27 | 1.77 | 1.58 | 1.91 | 1.85 | 1.33 | 1.30 | 1.37 | .59 | .84 | .82 | .95 | 1.77 | 2.58 | | | Relative P/E Ratio | *1.20* |
| 3.0% | 2.4% | 2.0% | 1.7% | 2.3% | 2.8% | 2.8% | 2.9% | 3.0% | 2.7% | 2.6% | 2.5% | 2.0% | 1.9% | 1.9% | 1.9% | | | Avg Ann'l Div'd Yield | *2.0%* |
| | | | | | | 215.6 | 239.0 | 261.5 | 276.9 | 319.7 | 305.1 | 339.7 | 389.2 | 397.7 | 420.5 | *550* | *575* | Revenues ($mill) | *650* |
| | | | | | | 15.8 | 20.9 | 22.3 | 23.5 | 51.8 | 37.9 | 52.8 | 59.2 | 38.8 | 38.7 | *56.5* | *72.5* | Net Profit ($mill) | *110* |
| | | | | | | 38.8% | 41.1% | 41.1% | 38.7% | 32.5% | 38.1% | 38.8% | 36.7% | 20.6% | 25.3% | *21.0%* | *21.0%* | Income Tax Rate | *21.0%* |
| | | | | | | -- | -- | -- | -- | -- | -- | -- | -- | 2.0% | 1.5% | *1.5%* | *1.5%* | AFUDC % to Net Profit | *1.5%* |
| | | | | | | 53.7% | 56.6% | 55.0% | 51.1% | 51.6% | 49.8% | 50.7% | 48.2% | 32.7% | 59.1% | *58.0%* | *53.5%* | Long-Term Debt Ratio | *39.0%* |
| | | | | | | 46.3% | 43.4% | 45.0% | 48.9% | 48.4% | 50.2% | 49.3% | 51.8% | 67.3% | 40.9% | *42.0%* | *46.5%* | Common Equity Ratio | *61.0%* |
| | | | | | | 550.7 | 607.9 | 610.2 | 656.2 | 744.5 | 764.6 | 855.0 | 894.3 | 1320.7 | 2173.6 | *2235* | *2250* | Total Capital ($mill) | *1925* |
| | | | | | | 785.5 | 756.2 | 831.6 | 898.7 | 963.0 | 1036.8 | 1146.4 | 1239.3 | 1328.8 | 2206.5 | *2300* | *2450* | Net Plant ($mill) | *2775* |
| | | | | | | 4.3% | 4.9% | 5.0% | 5.0% | 8.3% | 6.3% | 7.4% | 7.9% | 3.9% | 2.5% | *3.0%* | *4.0%* | Return on Total Cap'l | *6.5%* |
| | | | | | | 6.2% | 7.9% | 8.1% | 7.3% | 14.4% | 9.9% | 12.5% | 12.8% | 4.4% | 4.3% | *6.0%* | *7.0%* | Return on Shr. Equity | *9.5%* |
| | | | | | | 6.2% | 7.9% | 8.1% | 7.3% | 14.4% | 9.9% | 12.5% | 12.8% | 4.4% | 4.3% | *6.0%* | *7.0%* | Return on Com Equity | *9.5%* |
| | | | | | | 1.2% | 3.1% | 3.3% | 2.8% | 10.2% | 5.7% | 8.6% | 8.2% | 1.8% | .5% | *2.0%* | *3.0%* | Retained to Com Eq | *5.5%* |
| | | | | | | 80% | 61% | 59% | 62% | 29% | 42% | 31% | 36% | 60% | 88% | *66%* | *55%* | All Div'ds to Net Prof | *43%* |

**CAPITAL STRUCTURE as of 3/31/20**
**Total Debt** $1339.3 mill. **Due in 5 Yrs** $22.3 mill.
**LT Debt** $1317.0 mill. **LT Interest** $50.0 mill.
(LT Interest Coverage: 2.8x)
(60% of Cap'l)

**Pension Assets-12/19** $243.5 mill.
**Oblig.** $338.2 mill.
**Pfd Stock** None.
**Common Stock** 28,497,841 shs.

**MARKET CAP: $1.7 billion (Mid Cap)**

| CURRENT POSITION ($MILL.) | 2018 | 2019 | 3/31/20 |
|---|---|---|---|
| Cash Assets | 420.7 | 17.9 | 28.3 |
| Accts Receivable | 19.2 | 36.3 | 34.7 |
| Other | 62.8 | 67.8 | 65.8 |
| Current Assets | 502.7 | 122.0 | 128.8 |
| Accts Payable | 24.9 | 34.9 | 25.2 |
| Debt Due | - - | 22.3 | 22.3 |
| Other | 139.1 | 177.4 | 190.9 |
| Current Liab. | 164.0 | 234.6 | 238.4 |

| ANNUAL RATES of change (per sh) | Past 10 Yrs. | Past 5 Yrs. | Est'd '17-'19 to '23-'25 |
|---|---|---|---|
| Revenues | 3.0% | 2.0% | *5.5%* |
| "Cash Flow" | 6.0% | 3.5% | *4.5%* |
| Earnings | 7.5% | 4.5% | *10.5%* |
| Dividends | 6.0% | 9.0% | *6.0%* |
| Book Value | 7.5% | 12.0% | *5.5%* |

| Calendar | QUARTERLY REVENUES ($ mill.) Mar.31 | Jun. 30 | Sep. 30 | Dec. 31 | Full Year |
|---|---|---|---|---|---|
| 2017 | 69.0 | 102.1 | 124.6 | 93.5 | 389.2 |
| 2018 | 75.0 | 99.1 | 124.9 | 98.7 | 397.7 |
| 2019 | 77.7 | 103.0 | 114.0 | 126.0 | 420.5 |
| 2020 | 115.8 | *135* | *165* | *134.2* | *550* |
| 2021 | *120* | *140* | *170* | *145* | *575* |

| Calendar | EARNINGS PER SHARE [A] Mar.31 | Jun. 30 | Sep. 30 | Dec. 31 | Full Year |
|---|---|---|---|---|---|
| 2017 | .18 | .90 | .94 | .84 | 2.86 |
| 2018 | .06 | .62 | .76 | .38 | 1.82 |
| 2019 | .21 | .47 | .33 | .34 | 1.35 |
| 2020 | .08 | *.60* | *.85* | *.42* | *1.95* |
| 2021 | *.20* | *.70* | *.90* | *.65* | *2.45* |

| Calendar | QUARTERLY DIVIDENDS PAID [BD]■ Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|---|---|---|---|---|---|
| 2016 | .2025 | .2025 | .2025 | .2025 | .81 |
| 2017 | .2175 | .2175 | .2175 | .3875 | 1.04 |
| 2018 | .28 | .28 | .28 | .28 | 1.12 |
| 2019 | .30 | .30 | .30 | .30 | 1.20 |
| 2020 | .32 | .32 | | | |

**BUSINESS:** SJW Group engages in the production, purchase, storage, purification, distribution, and retail sale of water. It provides water service to approximately 231,000 connections with a total population of roughly one million people in the San Jose area and 16,000 connections that reach about 49,000 residents in the region between San Antonio and Austin, Texas. The company merged with Connecticut Water (10/19) which provides service to approx. 138,000 connections with a total population of 450,000 people. Has 361 employees. Officers and directors own 8.3% of outstanding shares (3/20 proxy). Chairman & CEO: Richard Roth. Incorporated: California. Address: 110 West Taylor Street, San Jose, CA 95110. Telephone: (408) 279-7800. Internet: www.sjwater.com.

**Several factors played roles in SJW Group's weaker-than-anticipated first-quarter earnings performance.** To start, integration costs related to the October, 2019 acquisition of Connecticut Water continue to weigh on profits. In the March period, SJW incurred merger and integration expenses of $1.3 million, or $0.05 per share. On top of that, COVID-19-related expenses amounted to a more modest $0.02 per share, while interest expense also rose considerably due to the issuance of senior notes in the back half of 2019. In sum, SJW Group earned $0.08 a share in the first quarter, down from $0.21 one-year prior.

**Management significantly reduced its current-year EPS guidance, thus spurring us to notably scale back our bottom-line forecasts.** In addition to the abovementioned pressures, water production costs are expected to rise in the coming quarters, largely a consequence of historically low rainfall levels that would require SJW to make up its water shortfall through increased purchases. Should dry weather persist, near-term production expenses could soar by as much as $10 million. All things considered, we are shaving $0.40 from our 2020 earnings call, to $1.95 a share, which falls at the low end of management's range. Too, we are lowering our 2021 share profit estimate from $2.75, to $2.45.

**The long term holds more promise, in our view.** SJW's recent marriage with CTWS has already begun to bear fruit in terms of revenue growth and, once the integration is in the rearview mirror, should eventually contribute meaningfully to the bottom line. Moreover, shockingly low rainfall is not likely to be a recurring theme. On the operational front, robust infrastructure spending is apt to continue, as the company upgrades water mains, filtration systems, treatment plants, and more-efficient metering technology. Lastly, a good portion of these costs can probably be passed along to customers through periodic rate hikes.

**Unranked SJW shares do not stand out at the recent quotation.** Price upside over the pull to 2023-2025 is unappealing, and the current dividend yield is below the *Value Line* median.

*Nicholas P. Patrikis* *July 10, 2020*

**(A)** Diluted earnings. Excludes nonrecurring losses: '04, $3.78; '05, $1.09; '06, $16.36; '08, $1.22; '10, $0.46. GAAP accounting as of 2013. Next earnings report due early August. Quarterly egs. may not add due to rounding.
**(B)** Dividends historically paid in early March, June, September, and December. ■ Div'd reinvestment plan available.
**(C)** In millions.
**(D)** Paid special dividend of $0.17 per share on 11/17.
**(E)** Suspended due to recent CTWS merger.

| | |
|---|---|
| Company's Financial Strength | B+ |
| Stock's Price Stability | 75 |
| Price Growth Persistence | 55 |
| Earnings Predictability | 45 |

# YORK WATER NDQ-YORW

RECENT PRICE 47.02 | P/E RATIO 37.6 (Trailing: 39.2 Median: 26.0) | RELATIVE P/E RATIO 1.83 | DIV'D YLD 1.5% | VALUE LINE

TIMELINESS 2 Raised 5/29/20
SAFETY 3 Lowered 7/17/15
TECHNICAL 2 Lowered 5/29/20
BETA .80 (1.00 = Market)

**18-Month Target Price Range**

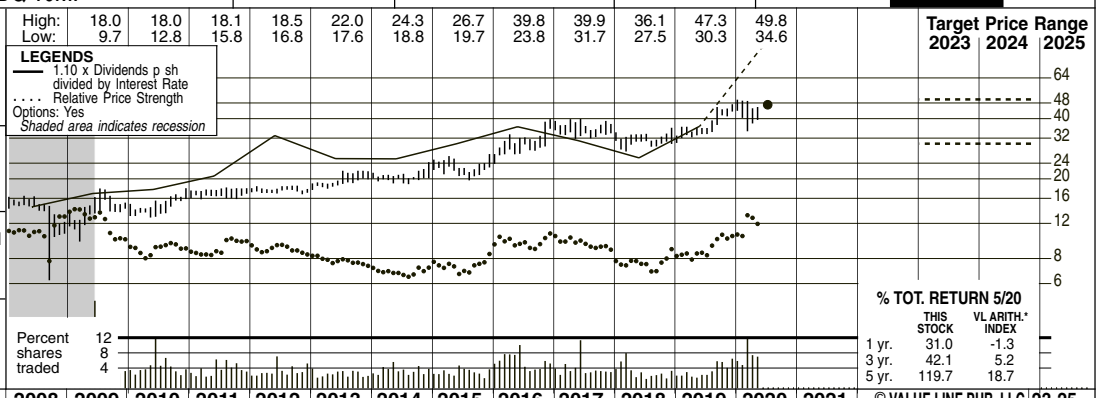
| Low-High | Midpoint (% to Mid) |
|---|---|
| $36-$76 | $56 (20%) |

**2023-25 PROJECTIONS**

| | Price | Gain | Ann'l Total Return |
|---|---|---|---|
| High | 50 | (+5%) | *3%* |
| Low | 30 | (-35%) | *-8%* |

**Institutional Decisions**

| | 3Q2019 | 4Q2019 | 1Q2020 |
|---|---|---|---|
| to Buy | 55 | 52 | 61 |
| to Sell | 30 | 39 | 52 |
| Hld's(000) | 5111 | 5387 | 5387 |




| 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | © VALUE LINE PUB. LLC | 23-25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.18 | 2.58 | 2.56 | 2.79 | 2.89 | 2.95 | 3.07 | 3.18 | 3.21 | 3.27 | 3.58 | 3.68 | 3.70 | 3.77 | 3.74 | 3.96 | *4.10* | *4.20* | Revenues per sh | *5.10* |
| .65 | .79 | .77 | .86 | .88 | .95 | 1.07 | 1.09 | 1.12 | 1.19 | 1.36 | 1.45 | 1.42 | 1.53 | 1.58 | 1.70 | *1.85* | *1.85* | "Cash Flow" per sh | *2.40* |
| .49 | .56 | .58 | .57 | .57 | .64 | .71 | .71 | .72 | .75 | .89 | .97 | .92 | 1.01 | 1.04 | 1.11 | *1.25* | *1.25* | Earnings per sh [A] | *1.60* |
| .39 | .42 | .45 | .48 | .49 | .51 | .52 | .53 | .54 | .55 | .57 | .60 | .63 | .65 | .67 | .70 | *.73* | *.78* | Div'd Decl'd per sh [B] | *.95* |
| 2.50 | 1.69 | 1.85 | 1.69 | 2.17 | 1.18 | .83 | .74 | .94 | .76 | 1.10 | 1.11 | 1.03 | 1.95 | 1.95 | .16 | *.85* | *1.35* | Cap'l Spending per sh | *1.85* |
| 4.65 | 4.85 | 5.84 | 5.97 | 6.14 | 6.92 | 7.19 | 7.45 | 7.73 | 7.98 | 8.15 | 8.51 | 8.88 | 9.28 | 9.75 | 10.31 | *11.15* | *11.60* | Book Value per sh | *12.50* |
| 10.33 | 10.40 | 11.20 | 11.27 | 11.37 | 12.56 | 12.69 | 12.79 | 12.92 | 12.98 | 12.83 | 12.81 | 12.85 | 12.87 | 12.94 | 13.02 | *13.00* | *12.95* | Common Shs Outst'g [C] | *12.80* |
| 25.7 | 26.3 | 31.2 | 30.3 | 24.6 | 21.9 | 20.7 | 23.9 | 24.4 | 26.3 | 23.1 | 23.5 | 32.8 | 34.6 | 30.3 | 33.8 | *Bold figures are Value Line estimates* | | Avg Ann'l P/E Ratio | *25.0* |
| 1.36 | 1.40 | 1.68 | 1.61 | 1.48 | 1.46 | 1.32 | 1.50 | 1.55 | 1.48 | 1.22 | 1.18 | 1.72 | 1.74 | 1.64 | 1.83 | | | Relative P/E Ratio | *1.40* |
| 3.1% | 2.9% | 2.5% | 2.8% | 3.5% | 3.6% | 3.5% | 3.1% | 3.1% | 2.8% | 2.8% | 2.6% | 2.1% | 1.9% | 2.1% | 1.9% | | | Avg Ann'l Div'd Yield | *2.4%* |
| | | | | | | 39.0 | 40.6 | 41.4 | 42.4 | 45.9 | 47.1 | 47.6 | 48.6 | 48.4 | 51.6 | *53.0* | *54.5* | Revenues ($mill) | *65.0* |
| | | | | | | 8.9 | 9.1 | 9.3 | 9.7 | 11.5 | 12.5 | 11.8 | 13.0 | 13.4 | 14.4 | *16.5* | *16.5* | Net Profit ($mill) | *20.5* |
| | | | | | | 38.5% | 35.3% | 37.6% | 37.6% | 29.8% | 27.5% | 31.3% | 25.9% | 15.7% | 13.5% | *21.0%* | *21.0%* | Income Tax Rate | *21.0%* |
| | | | | | | 1.2% | 1.1% | 1.1% | .8% | 1.8% | 1.6% | 1.9% | 6.7% | 1.7% | 2.5% | *1.5%* | *1.5%* | AFUDC % to Net Profit | *1.5%* |
| | | | | | | 48.3% | 47.1% | 46.0% | 45.1% | 44.8% | 44.4% | 42.6% | 43.0% | 42.5% | 41.3% | *38.5%* | *37.5%* | Long-Term Debt Ratio | *36.0%* |
| | | | | | | 51.7% | 52.9% | 54.0% | 54.9% | 55.2% | 55.6% | 57.4% | 57.0% | 57.5% | 58.7% | *61.5%* | *62.5%* | Common Equity Ratio | *64.0%* |
| | | | | | | 176.4 | 180.2 | 184.8 | 188.4 | 189.4 | 196.3 | 198.7 | 209.5 | 219.5 | 228.7 | *235* | *240* | Total Capital ($mill) | *250* |
| | | | | | | 228.4 | 233.0 | 240.3 | 244.2 | 253.2 | 261.4 | 270.9 | 288.8 | 299.2 | 313.2 | *315* | *320* | Net Plant ($mill) | *335* |
| | | | | | | 6.5% | 6.4% | 6.4% | 6.5% | 7.4% | 7.6% | 7.2% | 7.5% | 7.3% | 7.4% | *8.0%* | *8.0%* | Return on Total Cap'l | *9.0%* |
| | | | | | | 9.8% | 9.5% | 9.3% | 9.3% | 11.0% | 11.5% | 10.4% | 10.9% | 10.6% | 10.7% | *11.0%* | *11.0%* | Return on Shr. Equity | *13.0%* |
| | | | | | | 9.8% | 9.5% | 9.3% | 9.3% | 11.0% | 11.5% | 10.4% | 10.9% | 10.6% | 10.7% | *11.0%* | *11.0%* | Return on Com Equity | *13.0%* |
| | | | | | | 2.7% | 2.5% | 2.4% | 2.4% | 3.9% | 4.4% | 3.4% | 4.0% | 3.8% | 4.0% | *4.5%* | *4.0%* | Retained to Com Eq | *5.0%* |
| | | | | | | 72% | 73% | 74% | 74% | 64% | 62% | 67% | 63% | 64% | 62% | *58%* | *62%* | All Div'ds to Net Prof | *59%* |

**CAPITAL STRUCTURE as of 3/31/20**
**Total Debt** $101.4 mill. **Due in 5 Yrs** $42.5 mill.
**LT Debt** $94.9 mill. **LT Interest** $5.5 mill.
(41% of Cap'l)
**Pension Assets12/19** $49.3 mill.
**Oblig.** $47.3 mill.
**Pfd Stock** None
**Common Stock** 13,024,187 shs.
**MARKET CAP: $600 million (Small Cap)**

| CURRENT POSITION ($MILL.) | 2018 | 2019 | 3/31/20 |
|---|---|---|---|
| Cash Assets | - - | - - | - - |
| Accounts Receivable | 4.8 | 4.4 | 4.9 |
| Inventory (Avg. Cost) | .9 | 1.0 | 1.1 |
| Other | 3.3 | 4.0 | 3.9 |
| Current Assets | 9.0 | 9.4 | 9.9 |
| Accts Payable | 3.0 | 3.4 | 3.9 |
| Debt Due | 1.0 | 6.5 | 6.5 |
| Other | 6.8 | 5.3 | 5.3 |
| Current Liab. | 10.8 | 15.2 | 15.7 |

| ANNUAL RATES of change (per sh) | Past 10 Yrs. | Past 5 Yrs. | Est'd '17-'19 to '23-'25 |
|---|---|---|---|
| Revenues | 3.0% | 2.5% | *5.0%* |
| "Cash Flow" | 6.0% | 5.5% | *7.0%* |
| Earnings | 6.0% | 6.0% | *7.0%* |
| Dividends | 3.0% | 4.0% | *6.0%* |
| Book Value | 4.5% | 4.0% | *4.0%* |

| Calendar | QUARTERLY REVENUES ($ mill.) Mar.31 | Jun. 30 | Sep. 30 | Dec. 31 | Full Year |
|---|---|---|---|---|---|
| 2017 | 11.3 | 12.3 | 12.7 | 12.3 | 48.6 |
| 2018 | 11.6 | 12.0 | 12.7 | 12.1 | 48.4 |
| 2019 | 11.8 | 13.0 | 13.7 | 13.1 | 51.6 |
| 2020 | 12.9 | *13.0* | *14.0* | *13.1* | *53.0* |
| 2021 | *13.0* | *13.5* | *14.5* | *13.5* | *54.5* |

| Calendar | EARNINGS PER SHARE [A] Mar.31 | Jun. 30 | Sep. 30 | Dec. 31 | Full Year |
|---|---|---|---|---|---|
| 2017 | .20 | .23 | .31 | .27 | 1.01 |
| 2018 | .20 | .26 | .29 | .29 | 1.04 |
| 2019 | .22 | .28 | .35 | .26 | 1.11 |
| 2020 | .31 | *.29* | *.35* | *.30* | *1.25* |
| 2021 | *.25* | *.32* | *.36* | *.32* | *1.25* |

| Calendar | QUARTERLY DIVIDENDS PAID [B] Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|---|---|---|---|---|---|
| 2016 | .1555 | .1555 | .1555 | .1602 | .627 |
| 2017 | .1602 | .1602 | .1602 | .1666 | .647 |
| 2018 | .1666 | .1666 | .1666 | .1733 | .673 |
| 2019 | .1733 | .1733 | .1733 | .1802 | .70 |
| 2020 | .1802 | .1802 | | | |

**BUSINESS:** The York Water Company is the oldest investor-owned regulated water utility in the United States. It has operated continuously since 1816. As of December 31, 2019, the company's average daily availability was 35.4 million gallons and its service territory had an estimated population of 201,000. Has more than 71,400 customers. Residential customers accounted for 65% of 2019 revenues; commercial and industrial (28%); other (7%). It also provides sewer billing services. Incorporated: PA. York had 106 full-time employees at 12/31/19. President/Chief Executive Officer: J.T. Hand. Officers/directors own 1.2% of the common stock (3/20 proxy). Address: 130 East Market Street, York, Pennsylvania 17401. Telephone: (717) 845-3601. Internet: www.yorkwater.com.

**York Water Company posted better-than-expected first-quarter financial results.** The Pennsylvania-based regulated water utility generated revenues of $12.9 million (+9% year over year) in the March period, driven largely by a combination of an expanding customer base and increased water rates, despite slimmer contributions from add-on fees related to qualifying infrastructure upgrades. Meanwhile, earnings of $0.31 a share (partly boosted by a nonrecurring life insurance gain) rose roughly 40% from the previous-year tally, handily topping our call.

**All told, we have made some adjustments to our estimates.** The COVID-19 pandemic is still very much a domestic concern but, in our view, York is well positioned to navigate the uncertain environment. While some local municipalities have begun to lift stay-at-home orders, we think residential water consumption is likely to remain strong, underpinned by more-frequent hand washing, appliance usage, and, to a certain extent, a surge in home pool installations. Thus, we are adding $0.5 million to our 2020 and 2021 revenue forecasts, to $53.0 million and $54.5 million, respectively. Too, share profits are now expected to clock in at $1.25 for this year and next.

**It is business as usual on the capital spending and acquisition front.** Management recently announced that it has brought the Felton Borough wastewater collection and treatment system (+130 customers) into the fold for a price of $882,000. Meanwhile, its full steam ahead in regard to investment spending on numerous initiatives, such as main extensions, water pumping station upgrades, and overall pipe and facility improvements. York is apt to splash over $20 million this year on infrastructure projects, which represents an annual budget that may be par for the course going forward.

**The equity, which is trading around levels seen three months prior, is pegged to outperform the broader market over the coming six to 12 months.** Conversely, subscribers with an eye to mid-decade might want to refrain from making a capital commitment here at the recently elevated quotation. The dividend yield is subpar, as well.

*Nicholas P. Patrikis* *July 10, 2020*

**(A)** Diluted earnings. Next earnings report due late July.
**(B)** Dividends historically paid in late February, June, September, and December.
**(C)** In millions, adjusted for split.

| | |
|---|---|
| Company's Financial Strength | B+ |
| Stock's Price Stability | 75 |
| Price Growth Persistence | 65 |
| Earnings Predictability | 95 |

Bluegrass Water Operating Company, LLC
Summary of Risk Premium Models for the
Proxy Group of Seven Water Companies

| | Proxy Group of Seven Water Companies | |
|---|---|---|
| Predictive Risk Premium Model (PRPM) (1) | 11.05 | % |
| Risk Premium Using an Adjusted Total Market Approach (2) | 10.70 | % |
| Average | 10.88 | % |

Notes:
(1) From page 2 of this Schedule.
(2) From page 3 of this Schedule.

Bluegrass Water Operating Company, LLC
Indicated ROE
Derived by the Predictive Risk Premium Model (1)

| | [1] | [2] | [3] | [4] | [5] | [6] | [7] |
|---|---|---|---|---|---|---|---|
| Proxy Group of Seven Water Companies | LT Average Predicted Variance | Spot Predicted Variance | Recommended Variance | GARCH Coefficient | Predicted Risk Premium (2) | Risk-Free Rate (3) | Indicated ROE (4) |
| American States Water Co. | 0.38% | 0.39% | 0.38% | 1.86735 | 8.86% | 2.05% | 10.91% |
| American Water Works Company Inc | 0.23% | 0.16% | 0.23% | 5.92464 | 17.72% | 2.05% | NMF |
| California Water Service Group | 0.32% | 0.31% | 0.32% | 1.90091 | 7.48% | 2.05% | 9.53% |
| Essential Utilities, Inc. | 0.44% | 0.44% | 0.44% | 2.25314 | 12.63% | 2.05% | 14.68% |
| Middlesex Water Co. | 0.30% | 0.34% | 0.30% | 2.15118 | 8.02% | 2.05% | 10.07% |
| SJW Group | 0.42% | 0.39% | 0.42% | 1.53200 | 7.91% | 2.05% | 9.96% |
| York Water Co. | 0.45% | 0.39% | 0.45% | 2.19522 | 12.44% | 2.05% | 14.49% |
| | | | | | | Average | 11.61% |
| | | | | | | Median | 10.49% |
| | | | | | Average of Mean and Median | | 11.05% |

NMF = Not Meaningful Figure

Notes:

(1) The Predictive Risk Premium Model uses historical data to generate a predicted variance and a GARCH coefficient. The historical data used are the equity risk premiums for the first available trading month as reported by Bloomberg Professional Service.

(2) (1+(Column [3] * Column [4])^12) - 1.

(3) From note 2 on page 2 of Schedule DWD-4.

(4) Column [5] + Column [6].

Bluegrass Water Operating Company, LLC
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

| Line No. | | Proxy Group of Seven Water Companies | |
|---|---|---|---|
| 1. | Prospective Yield on Aaa Rated Corporate Bonds (1) | 2.98 | % |
| 2. | Adjustment to Reflect Yield Spread Between Aaa Rated Corporate Bonds and A2 Rated Public Utility Bonds | 0.58 | (2) |
| 3. | Adjusted Prospective Yield on A2 Rated Public Utility Bonds | 3.56 | % |
| 4. | Adjustment to Reflect Bond Rating Difference of Proxy Group | 0.06 | (3) |
| 5. | Adjusted Prospective Bond Yield | 3.62 | % |
| 6. | Equity Risk Premium (4) | 7.08 | |
| 7. | Risk Premium Derived Common Equity Cost Rate | 10.70 | % |

Notes:
(1) Consensus forecast of Moody's Aaa Rated Corporate bonds from Blue Chip Financial Forecasts (see pages 10-11 of this Schedule).
(2) The average yield spread of A2 rated public utility bonds over Aaa rated corporate bonds of 0.58% from page 4 of this Schedule.
(3) Adjustment to reflect the A2/A3 Moody's LT issuer rating of the Utility Proxy Group as shown on page 5 of this Schedule. The 0.06% upward adjustment is derived by taking 1/6 of the spread between A2 and Baa2 Public Utility Bonds (1/6 * 0.35% = 0.06%) as derived from page 4 of this Schedule.
(4) From page 7 of this Schedule.

Bluegrass Water Operating Company, LLC
Interest Rates and Bond Spreads for
Moody's Corporate and Public Utility Bonds

Selected Bond Yields

| | [1] Aaa Rated Corporate Bond | [2] A2 Rated Public Utility Bond | [3] Baa2 Rated Public Utility Bond |
|---|---|---|---|
| Aug-2020 | 2.25 % | 2.73 % | 3.06 % |
| Jul-2020 | 2.14 | 2.74 | 3.09 |
| Jun-2020 | 2.41 | 3.07 | 3.44 |
| Average | 2.27 % | 2.85 % | 3.20 % |

Selected Bond Spreads

A2 Rated Public Utility Bonds Over Aaa Rated Corporate Bonds: 0.58 % (1)

Baa2 Rated Public Utility Bonds Over A2 Rated Public Utility Bonds: 0.35 % (2)

Notes:
(1) Column [2] - Column [1].
(2) Column [3] - Column [2].

Source of Information:
Bloomberg Professional Service

Bluegrass Water Operating Company, LLC
Comparison of Long-Term Issuer Ratings for
Proxy Group of Seven Water Companies

| | Moody's Long-Term Issuer Rating August 2020 | | Standard & Poor's Long-Term Issuer Rating August 2020 | |
|---|---|---|---|---|
| Proxy Group of Seven Water Companies | Long-Term Issuer Rating | Numerical Weighting (1) | Long-Term Issuer Rating | Numerical Weighting(1) |
| American States Water Co. (2) | A2 | 6.0 | A+ | 5.0 |
| American Water Works Company Inc (3) | A3 | 7.0 | A | 6.0 |
| California Water Service Group (4) | NR | - - | A+ | 5.0 |
| Essential Utilities, Inc. (5) | NR | - - | A | 6.0 |
| Middlesex Water Co. | NR | - - | A | 6.0 |
| SJW Corp. (6) | NR | - - | A/A- | 6.5 |
| York Water Co. | NR | - - | A- | 7.0 |
| Average | A2/A3 | 6.5 | A | 5.9 |

Notes:

(1) From page 6 of this Schedule.
(2) Ratings that of Golden State Water Company.
(3) Ratings that of New Jersey and Pennsylvania American Water Companies.
(4) Ratings that of California Water Service Company.
(5) Ratings that of Aqua Pennsylvania, Inc.
(6) Ratings that of San Jose Water Company and The Connecticut Water Company

Source Information: Moody's Investors Service
Standard & Poor's Global Utilities Rating Service

Numerical Assignment for
Moody's and Standard & Poor's Bond Ratings

| Moody's Bond Rating | Numerical Bond Weighting | Standard & Poor's Bond Rating |
|---|---|---|
| Aaa | 1 | AAA |
| Aa1 | 2 | AA+ |
| Aa2 | 3 | AA |
| Aa3 | 4 | AA- |
| A1 | 5 | A+ |
| A2 | 6 | A |
| A3 | 7 | A- |
| Baa1 | 8 | BBB+ |
| Baa2 | 9 | BBB |
| Baa3 | 10 | BBB- |
| Ba1 | 11 | BB+ |
| Ba2 | 12 | BB |
| Ba3 | 13 | BB- |
| B1 | 14 | B+ |
| B2 | 15 | B |
| B3 | 16 | B- |

Bluegrass Water Operating Company, LLC
Judgment of Equity Risk Premium for
Proxy Group of Seven Water Companies

| Line No. | | Proxy Group of Seven Water Companies |
|---|---|---|
| 1. | Calculated equity risk premium based on the total market using the beta approach (1) | 7.91 % |
| 2. | Mean equity risk premium based on a study using the holding period returns of public utilities with A2 rated bonds (2) | 6.25 |
| 3. | Average equity risk premium | 7.08 % |

Notes: (1) From page 8 of this Schedule.
(2) From page 12 of this Schedule.

Bluegrass Water Operating Company, LLC
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for the
Proxy Group of Seven Water Companies

| Line No. | Equity Risk Premium Measure | Proxy Group of Seven Water Companies |
|---|---|---|
| | Ibbotson-Based Equity Risk Premiums: | |
| 1. | Ibbotson Equity Risk Premium (1) | 5.78 % |
| 2. | Regression on Ibbotson Risk Premium Data (2) | 9.39 |
| 3. | Ibbotson Equity Risk Premium based on PRPM (3) | 9.62 |
| 4. | Equity Risk Premium Based on Value Line Summary and Index (4) | 11.47 |
| 5. | Equity Risk Premium Based on Value Line S&P 500 Companies (5) | 10.85 |
| 6. | Equity Risk Premium Based on Bloomberg S&P 500 Companies (6) | 10.80 |
| 7. | Conclusion of Equity Risk Premium | 9.65 % |
| 8. | Adjusted Beta (7) | 0.82 |
| 9. | Forecasted Equity Risk Premium | 7.91 % |

Notes provided on page 9 of this Schedule.

Bluegrass Water Operating Company, LLC
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for the
Proxy Group of Seven Water Companies

Notes:

(1) Based on the arithmetic mean historical monthly returns on large company common stocks from Ibbotson® SBBI® 2020 Market Report minus the arithmetic mean monthly yield of Moody's average Aaa and Aa2 corporate bonds from 1926-2019.

(2) This equity risk premium is based on a regression of the monthly equity risk premiums of large company common stocks relative to Moody's average Aaa and Aa rated corporate bond yields from 1928-2019 referenced in Note 1 above.

(3) The Predictive Risk Premium Model (PRPM) is discussed in the accompanying direct testimony. The Ibbotson equity risk premium based on the PRPM is derived by applying the PRPM to the monthly risk premiums between Ibbotson large company common stock monthly returns and average Aaa and Aa2 corporate monthly bond yields, from January 1928 through August 2020.

(4) The equity risk premium based on the Value Line Summary and Index is derived by subtracting the average consensus forecast of Aaa corporate bonds of 2.98% (from page 3 of this Schedule) from the projected 3-5 year total annual market return of 14.45% (described fully in note 1 on page 2 of Schedule DWD-4).

(5) Using data from Value Line for the S&P 500, an expected total return of 13.83% was derived based upon expected dividend yields and long-term earnings growth estimates as a proxy for capital appreciation. Subtracting the average consensus forecast of Aaa corporate bonds of 2.98% results in an expected equity risk premium of 10.85%.

(6) Using data from the Bloomberg Professional Service for the S&P 500, an expected total return of 13.78% was derived based upon expected dividend yields and long-term earnings growth estimates as a proxy for capital appreciation. Subtracting the average consensus forecast of Aaa corporate bonds of 2.98% results in an expected equity risk premium of 10.80%.

(7) Average of mean and median beta from Schedule DWD-4.

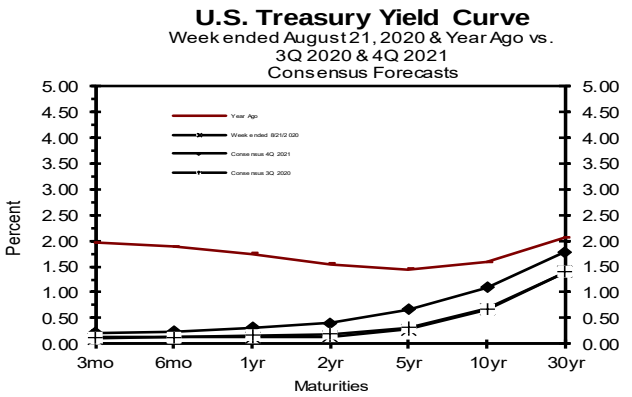
Sources of Information:

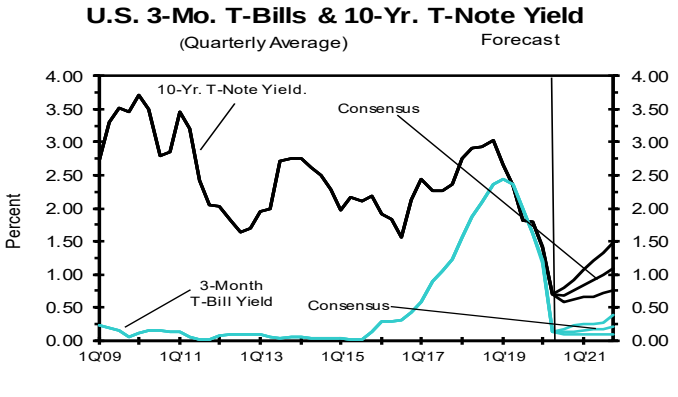
Stocks, Bonds, Bills, and Inflation - 2020 SBBI Yearbook, John Wiley & Sons, Inc.
Industrial Manual and Mergent Bond Record Monthly Update.
Value Line Summary and Index
Blue Chip Financial Forecasts, September 1, 2020 and June 1, 2020
Bloomberg Professional Service

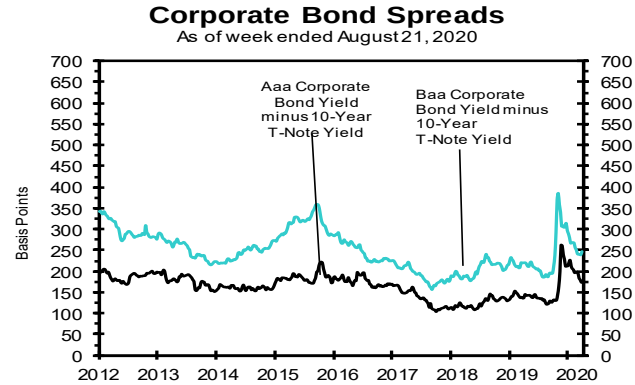
# Consensus Forecasts of U.S. Interest Rates and Key Assumptions

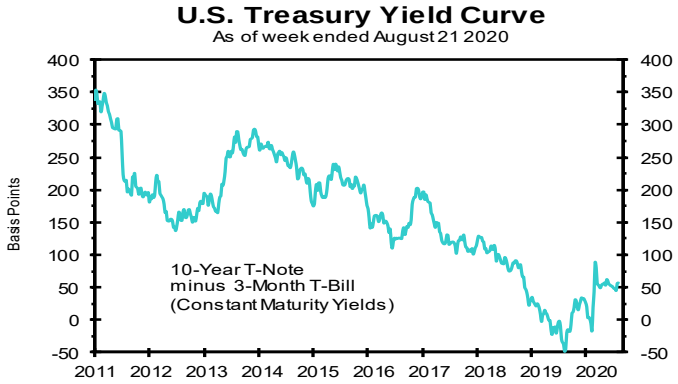
| | History | | | | | | | | Consensus Forecasts-Quarterly Avg. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Average For Week Ending | | | | Average For Month | | | *Latest Qtr* | 3Q | 4Q | 1Q | 2Q | 3Q | 4Q |
| Interest Rates | Aug 21 | Aug 14 | Aug 7 | Jul 31 | Jul | Jun | May | 2Q 2020 | 2020 | 2020 | 2021 | 2021 | 2021 | 2021 |
| Federal Funds Rate | 0.10 | 0.10 | 0.10 | 0.09 | 0.09 | 0.08 | 0.05 | 0.06 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Prime Rate | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 |
| LIBOR, 3-mo. | 0.25 | 0.27 | 0.25 | 0.26 | 0.27 | 0.31 | 0.40 | 0.60 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 |
| Commercial Paper, 1-mo. | 0.09 | 0.10 | 0.10 | 0.11 | 0.11 | 0.12 | 0.13 | 0.24 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 |
| Treasury bill, 3-mo. | 0.10 | 0.11 | 0.10 | 0.10 | 0.13 | 0.16 | 0.13 | 0.14 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 |
| Treasury bill, 6-mo. | 0.12 | 0.12 | 0.11 | 0.12 | 0.14 | 0.18 | 0.15 | 0.17 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Treasury bill, 1 yr. | 0.13 | 0.14 | 0.13 | 0.13 | 0.15 | 0.18 | 0.16 | 0.17 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 |
| Treasury note, 2 yr. | 0.14 | 0.15 | 0.11 | 0.13 | 0.15 | 0.19 | 0.17 | 0.19 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 |
| Treasury note, 5 yr. | 0.28 | 0.28 | 0.21 | 0.25 | 0.28 | 0.34 | 0.34 | 0.36 | 0.3 | 0.4 | 0.4 | 0.5 | 0.6 | 0.7 |
| Treasury note, 10 yr. | 0.67 | 0.67 | 0.55 | 0.58 | 0.62 | 0.73 | 0.67 | 0.69 | 0.7 | 0.8 | 0.8 | 0.9 | 1.0 | 1.1 |
| Treasury note, 30 yr. | 1.40 | 1.36 | 1.21 | 1.22 | 1.31 | 1.49 | 1.38 | 1.38 | 1.4 | 1.5 | 1.6 | 1.6 | 1.7 | 1.8 |
| Corporate Aaa bond | 2.53 | 2.46 | 2.32 | 2.32 | 2.43 | 2.73 | 2.85 | 2.81 | 2.3 | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 |
| Corporate Baa bond | 3.14 | 3.06 | 2.95 | 2.98 | 3.12 | 3.44 | 3.69 | 3.67 | 3.5 | 3.6 | 3.7 | 3.7 | 3.8 | 3.8 |
| State & Local bonds | 2.87 | 2.85 | 2.89 | 2.91 | 2.99 | 3.10 | 3.33 | 3.28 | 2.5 | 2.4 | 2.5 | 2.5 | 2.6 | 2.6 |
| Home mortgage rate | 2.99 | 2.96 | 2.88 | 2.99 | 3.02 | 3.16 | 3.23 | 3.23 | 3.0 | 3.1 | 3.1 | 3.1 | 3.2 | 3.2 |
| | History | | | | | | | | Consensus Forecasts-Quarterly | | | | | |
| | 3Q | 4Q | 1Q | 2Q | 3Q | 4Q | 1Q | 2Q | 3Q | 4Q | 1Q | 2Q | 3Q | 4Q |
| Key Assumptions | 2018 | 2018 | 2019 | 2019 | 2019 | 2019 | 2020 | 2020 | 2020 | 2020 | 2021 | 2021 | 2021 | 2021 |
| Fed's AFE $ Index | 107.8 | 109.4 | 109.4 | 110.3 | 110.5 | 110.3 | 111.2 | 112.4 | 108.0 | 107.7 | 107.5 | 107.4 | 107.0 | 106.8 |
| Real GDP | 2.1 | 1.3 | 2.9 | 1.5 | 2.6 | 2.4 | -5.0 | -31.7 | 21.5 | 5.7 | 5.0 | 4.4 | 3.8 | 3.5 |
| GDP Price Index | 1.8 | 1.8 | 1.2 | 2.5 | 1.5 | 1.4 | 1.4 | -2.0 | 1.9 | 1.3 | 1.5 | 1.4 | 1.6 | 1.6 |
| Consumer Price Index | 2.1 | 1.3 | 0.9 | 3.0 | 1.8 | 2.4 | 1.2 | -3.5 | 3.2 | 1.8 | 1.9 | 1.7 | 2.0 | 2.0 |

Forecasts for interest rates and the Federal Reserve's Major Currency Index represent averages for the quarter. Forecasts for Real GDP, GDP Price Index and Consumer Price Index are seasonally-adjusted annual rates of change (saar). Individual panel members' forecasts are on pages 4 through 9. Historical data: Treasury rates from the Federal Reserve Board's H.15; AAA-AA and A-BBB corporate bond yields from Bank of America-Merrill Lynch and are 15+ years, yield to maturity; State and local bond yields from Bank of America-Merrill Lynch, A-rated, yield to maturity; Mortgage rates from Freddie Mac, 30-year, fixed; LIBOR quotes from Intercontinental Exchange. All interest rate data are sourced from Haver Analytics. Historical data for Fed's Major Currency Index are from FRSR H.10. Historical data for Real GDP and GDP Chained Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index (CPI) history is from the Department of Labor's Bureau of Labor Statistics (BLS).



# Long-Range Survey:

The table below contains the results of our twice-annual long-range CONSENSUS survey. There are also Top 10 and Bottom 10 averages for each variable. Shown are consensus estimates for the years 2021 through 2026 and averages for the five-year periods 2022-2026 and 2027-2031. Apply these projections cautiously. Few if any economic, demographic and political forces can be evaluated accurately over such long time spans.

| | | Average For The Year | | | | | | Five-Year Averages | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2022-2026 | 2027-2031 |
| 1. Federal Funds Rate | **CONSENSUS** | **0.2** | **0.4** | **1.0** | **1.6** | **1.9** | **2.1** | **1.4** | **2.3** |
| | Top 10 Average | 0.4 | 0.8 | 1.6 | 2.2 | 2.5 | 2.7 | 1.9 | 2.8 |
| | Bottom 10 Average | 0.1 | 0.1 | 0.4 | 1.0 | 1.3 | 1.5 | 0.9 | 1.7 |
| 2. Prime Rate | **CONSENSUS** | **3.4** | **3.6** | **4.1** | **4.7** | **5.0** | **5.2** | **4.5** | **5.4** |
| | Top 10 Average | 3.5 | 3.9 | 4.6 | 5.3 | 5.5 | 5.7 | 5.0 | 5.9 |
| | Bottom 10 Average | 3.3 | 3.3 | 3.7 | 4.2 | 4.5 | 4.7 | 4.1 | 4.9 |
| 3. LIBOR, 3-Mo. | **CONSENSUS** | **0.6** | **0.9** | **1.4** | **2.0** | **2.3** | **2.4** | **1.8** | **2.6** |
| | Top 10 Average | 0.8 | 1.3 | 1.9 | 2.5 | 2.7 | 3.0 | 2.3 | 3.1 |
| | Bottom 10 Average | 0.4 | 0.5 | 0.9 | 1.6 | 1.9 | 2.0 | 1.4 | 2.1 |
| 4. Commercial Paper, 1-Mo | **CONSENSUS** | **0.6** | **0.9** | **1.4** | **2.0** | **2.2** | **2.3** | **1.7** | **2.6** |
| | Top 10 Average | 0.7 | 1.2 | 1.8 | 2.3 | 2.6 | 2.8 | 2.1 | 3.0 |
| | Bottom 10 Average | 0.3 | 0.5 | 1.1 | 1.6 | 1.9 | 2.0 | 1.4 | 2.2 |
| 5. Treasury Bill Yield, 3-Mo | **CONSENSUS** | **0.2** | **0.5** | **1.1** | **1.6** | **1.9** | **2.1** | **1.4** | **2.3** |
| | Top 10 Average | 0.4 | 0.9 | 1.6 | 2.2 | 2.4 | 2.6 | 1.9 | 2.8 |
| | Bottom 10 Average | 0.1 | 0.2 | 0.5 | 1.1 | 1.4 | 1.6 | 0.9 | 1.8 |
| 6. Treasury Bill Yield, 6-Mo | **CONSENSUS** | **0.3** | **0.6** | **1.1** | **1.7** | **2.0** | **2.2** | **1.5** | **2.5** |
| | Top 10 Average | 0.4 | 0.9 | 1.7 | 2.3 | 2.6 | 2.7 | 2.0 | 3.0 |
| | Bottom 10 Average | 0.2 | 0.2 | 0.6 | 1.2 | 1.5 | 1.7 | 1.1 | 1.9 |
| 7. Treasury Bill Yield, 1-Yr | **CONSENSUS** | **0.4** | **0.7** | **1.3** | **1.8** | **2.1** | **2.3** | **1.7** | **2.6** |
| | Top 10 Average | 0.5 | 1.1 | 1.8 | 2.4 | 2.7 | 2.9 | 2.2 | 3.1 |
| | Bottom 10 Average | 0.2 | 0.3 | 0.7 | 1.3 | 1.6 | 1.8 | 1.1 | 2.0 |
| 8. Treasury Note Yield, 2-Yr | **CONSENSUS** | **0.5** | **0.9** | **1.5** | **2.0** | **2.3** | **2.5** | **1.8** | **2.7** |
| | Top 10 Average | 0.8 | 1.3 | 2.0 | 2.5 | 2.9 | 3.0 | 2.4 | 3.3 |
| | Bottom 10 Average | 0.3 | 0.4 | 0.9 | 1.4 | 1.7 | 2.0 | 1.3 | 2.2 |
| 9. Treasury Note Yield, 5-Yr | **CONSENSUS** | **0.7** | **1.1** | **1.7** | **2.2** | **2.5** | **2.7** | **2.0** | **2.9** |
| | Top 10 Average | 1.1 | 1.6 | 2.3 | 2.8 | 3.1 | 3.3 | 2.6 | 3.5 |
| | Bottom 10 Average | 0.5 | 0.7 | 1.2 | 1.6 | 1.8 | 2.1 | 1.5 | 2.3 |
| 10. Treasury Note Yield, 10-Yr | **CONSENSUS** | **1.2** | **1.5** | **2.1** | **2.5** | **2.7** | **2.9** | **2.3** | **3.1** |
| | Top 10 Average | 1.5 | 2.0 | 2.6 | 3.1 | 3.3 | 3.5 | 2.9 | 3.8 |
| | Bottom 10 Average | 0.8 | 1.1 | 1.6 | 1.9 | 2.1 | 2.2 | 1.8 | 2.5 |
| 11. Treasury Bond Yield, 30-Yr | **CONSENSUS** | **1.8** | **2.2** | **2.7** | **3.1** | **3.3** | **3.5** | **3.0** | **3.8** |
| | Top 10 Average | 2.2 | 2.7 | 3.3 | 3.7 | 3.9 | 4.1 | 3.5 | 4.4 |
| | Bottom 10 Average | 1.4 | 1.7 | 2.2 | 2.6 | 2.8 | 2.9 | 2.4 | 3.1 |
| 12. Corporate Aaa Bond Yield | **CONSENSUS** | **2.8** | **3.2** | **3.6** | **4.0** | **4.2** | **4.3** | **3.9** | **4.6** |
| | Top 10 Average | 3.1 | 3.6 | 4.2 | 4.6 | 4.7 | 4.8 | 4.4 | 5.1 |
| | Bottom 10 Average | 2.4 | 2.7 | 3.1 | 3.5 | 3.7 | 3.8 | 3.4 | 4.2 |
| 13. Corporate Baa Bond Yield | **CONSENSUS** | **4.1** | **4.5** | **4.9** | **5.2** | **5.3** | **5.4** | **5.0** | **5.7** |
| | Top 10 Average | 4.6 | 5.0 | 5.4 | 5.7 | 5.8 | 6.0 | 5.6 | 6.2 |
| | Bottom 10 Average | 3.6 | 3.9 | 4.3 | 4.6 | 4.7 | 4.8 | 4.4 | 5.2 |
| 14. State & Local Bonds Yield | **CONSENSUS** | **2.6** | **3.0** | **3.5** | **3.7** | **3.8** | **3.8** | **3.6** | **4.1** |
| | Top 10 Average | 3.0 | 3.3 | 3.9 | 4.2 | 4.3 | 4.4 | 4.0 | 4.6 |
| | Bottom 10 Average | 2.3 | 2.6 | 2.9 | 3.2 | 3.2 | 3.3 | 3.0 | 3.7 |
| 15. Home Mortgage Rate | **CONSENSUS** | **3.4** | **3.6** | **4.0** | **4.4** | **4.5** | **4.7** | **4.2** | **4.9** |
| | Top 10 Average | 3.8 | 4.0 | 4.5 | 4.8 | 5.0 | 5.2 | 4.7 | 5.5 |
| | Bottom 10 Average | 3.0 | 3.2 | 3.5 | 3.9 | 4.1 | 4.1 | 3.7 | 4.4 |
| A. Fed's AFE Nominal $ Index | **CONSENSUS** | **112.8** | **112.6** | **112.5** | **111.8** | **111.4** | **111.0** | **111.9** | **110.6** |
| | Top 10 Average | 114.1 | 114.5 | 114.1 | 113.8 | 113.5 | 113.4 | 113.9 | 113.9 |
| | Bottom 10 Average | 111.7 | 110.7 | 110.7 | 110.2 | 109.5 | 108.7 | 110.0 | 107.6 |
| | | Year-Over-Year, % Change | | | | | | Five-Year Averages | |
| | | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2022-2026 | 2027-2031 |
| B. Real GDP | **CONSENSUS** | **3.2** | **3.2** | **2.4** | **2.2** | **2.1** | **2.0** | **2.4** | **2.1** |
| | Top 10 Average | 5.7 | 4.3 | 2.9 | 2.5 | 2.3 | 2.3 | 2.9 | 2.4 |
| | Bottom 10 Average | 0.5 | 2.2 | 1.9 | 1.9 | 1.8 | 1.8 | 1.9 | 1.8 |
| C. GDP Chained Price Index | **CONSENSUS** | **1.1** | **1.7** | **1.9** | **2.0** | **2.0** | **2.0** | **1.9** | **2.0** |
| | Top 10 Average | 1.8 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 |
| | Bottom 10 Average | 0.3 | 1.3 | 1.6 | 1.8 | 1.8 | 1.8 | 1.7 | 1.9 |
| D. Consumer Price Index | **CONSENSUS** | **1.3** | **2.0** | **2.1** | **2.1** | **2.1** | **2.1** | **2.1** | **2.2** |
| | Top 10 Average | 2.2 | 2.5 | 2.3 | 2.3 | 2.4 | 2.3 | 2.4 | 2.4 |
| | Bottom 10 Average | 0.4 | 1.5 | 1.8 | 1.8 | 1.9 | 1.9 | 1.8 | 2.0 |

Bluegrass Water Operating Company, LLC
Derivation of Mean Equity Risk Premium Based Studies
Using Holding Period Returns and
Projected Market Appreciation of the S&P Utility Index

| Line No. | | Implied Equity Risk Premium |
|---|---|---|
| | Equity Risk Premium based on S&P Utility Index Holding Period Returns (1): | |
| 1. | Historical Equity Risk Premium | 4.21 % |
| 2. | Regression of Historical Equity Risk Premium (2) | 6.83 |
| 3. | Forecasted Equity Risk Premium Based on PRPM (3) | 5.53 |
| 4. | Forecasted Equity Risk Premium based on Projected Total Return on the S&P Utilities Index (Value Line Data) (4) | 6.80 |
| 5. | Forecasted Equity Risk Premium based on Projected Total Return on the S&P Utilities Index (Bloomberg Data) (5) | 7.89 |
| 6. | Average Equity Risk Premium (6) | 6.25 % |

Notes:
(1) Based on S&P Public Utility Index monthly total returns and Moody's Public Utility Bond average monthly yields from 1928-2019. Holding period returns are calculated based upon income received (dividends and interest) plus the relative change in the market value of a security over a one-year holding period.

(2) This equity risk premium is based on a regression of the monthly equity risk premiums of the S&P Utility Index relative to Moody's A2 rated public utility bond yields from 1928 - 2019 referenced in note 1 above.

(3) The Predictive Risk Premium Model (PRPM) is applied to the risk premium of the monthly total returns of the S&P Utility Index and the monthly yields on Moody's A2 rated public utility bonds from January 1928 - August 2020.

(4) Using data from Value Line for the S&P Utilities Index, an expected return of 10.36% was derived based on expected dividend yields and long-term growth estimates as a proxy for market appreciation. Subtracting the expected A2 rated public utility bond yield of 3.56%, calculated on line 3 of page 3 of this Schedule results in an equity risk premium of 6.80%. (10.36% - 3.56% = 6.80%)

(5) Using data from Bloomberg Professional Service for the S&P Utilities Index, an expected return of 11.45% was derived based on expected dividend yields and long-term growth estimates as a proxy for market appreciation. Subtracting the expected A2 rated public utility bond yield of 3.56%, calculated on line 3 of page 3 of this Schedule results in an equity risk premium of 7.89%. (11.45% - 3.56% = 7.89%)

(6) Average of lines 1 through 5.

Bluegrass Water Operating Company, LLC
Indicated Common Equity Cost Rate Through Use
of the Traditional Capital Asset Pricing Model (CAPM) and Empirical Capital Asset Pricing Model (ECAPM)

| | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] |
|---|---|---|---|---|---|---|---|---|
| Proxy Group of Seven Water Companies | Value Line Adjusted Beta | Bloomberg Adjusted Beta | Average Beta | Market Risk Premium (1) | Risk-Free Rate (2) | Traditional CAPM Cost Rate | ECAPM Cost Rate | Indicated Common Equity Cost Rate (3) |
| American States Water Co. | 0.65 | 0.56 | 0.60 | 10.65 % | 2.05 % | 8.44 % | 9.50 % | 8.97 % |
| American Water Works Company Inc | 0.85 | 0.99 | 0.92 | 10.65 | 2.05 | 11.85 | 12.06 | 11.95 |
| California Water Service Group | 0.65 | 0.55 | 0.60 | 10.65 | 2.05 | 8.44 | 9.50 | 8.97 |
| Essential Utilities, Inc. | 0.90 | 0.96 | 0.93 | 10.65 | 2.05 | 11.95 | 12.14 | 12.05 |
| Middlesex Water Co. | 0.75 | 0.78 | 0.76 | 10.65 | 2.05 | 10.14 | 10.78 | 10.46 |
| SJW Group | 0.80 | 0.88 | 0.84 | 10.65 | 2.05 | 11.00 | 11.42 | 11.21 |
| York Water Co. | 0.80 | 0.91 | 0.85 | 10.65 | 2.05 | 11.10 | 11.50 | 11.30 |
| Mean | | | 0.79 | | | 10.42 % | 10.99 % | 10.70 % |
| Median | | | 0.84 | | | 11.00 % | 11.42 % | 11.21 % |
| Average of Mean and Median | | | 0.82 | | | 10.71 | 11.21 | 10.96 % |

Notes on page 2 of this Schedule.

Bluegrass Water Operating Company, LLC
Notes to Accompany the Application of the CAPM and ECAPM

Notes:

(1) The market risk premium (MRP) is derived by using six different measures from three sources: Ibbotson, Value Line, and Bloomberg as illustrated below:

Historical Data MRP Estimates:

Measure 1: Ibbotson Arithmetic Mean MRP (1926-2019)

| | |
|---|---|
| Arithmetic Mean Monthly Returns for Large Stocks 1926-2019: | 12.10 % |
| Arithmetic Mean Income Returns on Long-Term Government Bonds: | 5.09 |
| MRP based on Ibbotson Historical Data: | 7.01 % |

Measure 2: Application of a Regression Analysis to Ibbotson Historical Data
(1926-2019) 10.24 %

Measure 3: Application of the PRPM to Ibbotson Historical Data:
(January 1926 - August 2020) 10.73 %

Value Line MRP Estimates:

Measure 4: Value Line Projected MRP (Thirteen weeks ending September 04, 2020)

| | |
|---|---|
| Total projected return on the market 3-5 years hence*: | 14.45 % |
| Projected Risk-Free Rate (see note 2): | 2.05 |
| MRP based on Value Line Summary & Index: | 12.40 % |

*Forcasted 3-5 year capital appreciation plus expected dividend yield

Measure 5: Value Line Projected Return on the Market based on the S&P 500

| | |
|---|---|
| Total return on the Market based on the S&P 500: | 13.83 % |
| Projected Risk-Free Rate (see note 2): | 2.05 |
| MRP based on Value Line data | 11.78 % |

Measure 6: Bloomberg Projected MRP

| | |
|---|---|
| Total return on the Market based on the S&P 500: | 13.78 % |
| Projected Risk-Free Rate (see note 2): | 2.05 |
| MRP based on Bloomberg data | 11.73 % |

Average of Value Line, Ibbotson, and Bloomberg MRP: 10.65 %

(2) For reasons explained in the direct testimony, the appropriate risk-free rate for cost of capital purposes is the average forecast of 30 year Treasury Bonds per the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts. (See pages 10-11 of Schedule DWD-3.) The projection of the risk-free rate is illustrated below:

| | |
|---|---|
| Third Quarter 2020 | 1.40 % |
| Fourth Quarter 2020 | 1.50 |
| First Quarter 2021 | 1.60 |
| Second Quarter 2021 | 1.60 |
| Third Quarter 2021 | 1.70 |
| Fourth Quarter 2021 | 1.80 |
| 2022-2026 | 3.00 |
| 2027-2031 | 3.80 |
| | 2.05 % |

(3) Average of Column 6 and Column 7.

Sources of Information:
Value Line Summary and Index
Blue Chip Financial Forecasts, September 1, 2020 and June 1, 2020
Stocks, Bonds, Bills, and Inflation - 2020 SBBI Yearbook, John Wiley & Sons, Inc.
Bloomberg Professional Services

Bluegrass Water Operating Company, LLC
Basis of Selection of the Group of Non-Price Regulated Companies
Comparable in Total Risk to the Utility Proxy Group

The criteria for selection of the Non-Price Regulated Proxy Group was that the non-price regulated companies be domestic and reported in Value Line Investment Survey (Standard Edition).

The Non-Price Regulated Proxy Group was then selected based on the unadjusted beta range of 0.45 – 0.77 and residual standard error of the regression range of 2.8942 – 3.4518 of the Utility Proxy Group.

These ranges are based upon plus or minus two standard deviations of the unadjusted beta and standard error of the regression. Plus or minus two standard deviations captures 95.50% of the distribution of unadjusted betas and residual standard errors of the regression.

The standard deviation of the Utility Proxy Group's residual standard error of the regression is 0.1394. The standard deviation of the standard error of the regression is calculated as follows:

$$\text{Standard Deviation of the Std. Err. of the Regr.} = \frac{\text{Standard Error of the Regression}}{\sqrt{2N}}$$

where: N = number of observations. Since Value Line betas are derived from weekly price change observations over a period of five years, N = 259

$$\text{Thus, } 0.1394 = \frac{3.1730}{\sqrt{518}} = \frac{3.1730}{22.7596}$$

Source of Information: Value Line, Inc., June 2020
Value Line Investment Survey (Standard Edition)

Bluegrass Water Operating Company, LLC
Basis of Selection of Comparable Risk
Domestic Non-Price Regulated Companies

| Proxy Group of Seven Water Companies | [1] Value Line Adjusted Beta | [2] Unadjusted Beta | [3] Residual Standard Error of the Regression | [4] Standard Deviation of Beta |
|---|---|---|---|---|
| American States Water Co. | 0.65 | 0.44 | 2.6930 | 0.0680 |
| American Water Works Company Inc | 0.85 | 0.71 | 3.1574 | 0.0797 |
| California Water Service Group | 0.65 | 0.40 | 3.1163 | 0.0787 |
| Essential Utilities, Inc. | 0.90 | 0.82 | 2.6697 | 0.0674 |
| Middlesex Water Co. | 0.75 | 0.55 | 3.4326 | 0.0867 |
| SJW Group | 0.80 | 0.68 | 3.5244 | 0.0890 |
| York Water Co. | 0.80 | 0.64 | 3.6173 | 0.0913 |
| Average | 0.77 | 0.61 | 3.1730 | 0.0801 |
| Beta Range (+/- 2 std. Devs. of Beta) | 0.45 | 0.77 | | |
| 2 std. Devs. of Beta | 0.16 | | | |
| Residual Std. Err. Range (+/- 2 std. Devs. of the Residual Std. Err.) | 2.8942 | 3.4518 | | |
| Std. dev. of the Res. Std. Err. | 0.1394 | | | |
| 2 std. devs. of the Res. Std. Err. | 0.2788 | | | |

Source of Information: Valueline Proprietary Database, June 2020

Bluegrass Water Operating Company, LLC
Proxy Group of Non-Price Regulated Companies
Comparable in Total Risk to the
Proxy Group of Seven Water Companies

| Proxy Group of Twenty-Three Non-Price Regulated Companies | [1] VL Adjusted Beta | [2] Unadjusted Beta | [3] Residual Standard Error of the Regression | [4] Standard Deviation of Beta |
|---|---|---|---|---|
| Adobe Inc. | 0.85 | 0.72 | 3.1209 | 0.0788 |
| Bristol-Myers Squibb | 0.85 | 0.75 | 3.3342 | 0.0842 |
| Casey's Gen'l Stores | 0.80 | 0.66 | 3.3239 | 0.0839 |
| CSG Systems Int'l | 0.75 | 0.62 | 3.1843 | 0.0804 |
| Citrix Sys. | 0.80 | 0.64 | 3.2241 | 0.0814 |
| Dollar General | 0.70 | 0.51 | 3.2273 | 0.0815 |
| Ennis, Inc. | 0.75 | 0.61 | 3.2688 | 0.0825 |
| FirstCash, Inc. | 0.80 | 0.68 | 3.2874 | 0.0830 |
| Gilead Sciences | 0.65 | 0.46 | 3.2542 | 0.0822 |
| Gen'l Mills | 0.70 | 0.48 | 2.9433 | 0.0743 |
| Heartland Express | 0.75 | 0.58 | 3.1090 | 0.0785 |
| St. Joe Corp. | 0.80 | 0.65 | 2.9722 | 0.0751 |
| Kellogg | 0.65 | 0.45 | 2.8959 | 0.0731 |
| Keysight Technologies | 0.85 | 0.74 | 3.3859 | 0.0855 |
| Lancaster Colony | 0.65 | 0.46 | 3.0091 | 0.0760 |
| Lilly (Eli) | 0.75 | 0.56 | 2.9256 | 0.0739 |
| ManTech Int'l 'A' | 0.85 | 0.75 | 2.9683 | 0.0750 |
| MAXIMUS Inc. | 0.80 | 0.68 | 3.3329 | 0.0842 |
| Altria Group | 0.85 | 0.72 | 2.9098 | 0.0735 |
| Smucker (J.M.) | 0.65 | 0.46 | 3.0025 | 0.0758 |
| Standard Motor Prod. | 0.80 | 0.68 | 3.3706 | 0.0851 |
| Tyler Technologies | 0.80 | 0.65 | 3.1083 | 0.0785 |
| Walgreens Boots | 0.75 | 0.60 | 3.1663 | 0.0800 |
| Average | 0.77 | 0.61 | 3.1400 | 0.0800 |
| Proxy Group of Seven Water Companies | 0.77 | 0.61 | 3.1730 | 0.0801 |

Source of Information: Valueline Proprietary Database, June 2020

Bluegrass Water Operating Company, LLC
Summary of Cost of Equity Models Applied to
Proxy Group of Twenty-Three Non-Price Regulated Companies
Comparable in Total Risk to the
Proxy Group of Seven Water Companies

| Principal Methods | | Proxy Group of Twenty-Three Non-Price Regulated Companies | |
|---|---|---|---|
| Discounted Cash Flow Model (DCF) (1) | | 10.32 | % |
| Risk Premium Model (RPM) (2) | | 11.43 | |
| Capital Asset Pricing Model (CAPM) (3) | | 10.63 | |
| | Mean | 10.79 | % |
| | Median | 10.63 | % |
| | Average of Mean and Median | 10.71 | % |

Notes:
(1) From page 2 of this Schedule.
(2) From page 3 of this Schedule.
(3) From page 6 of this Schedule.

Bluegrass Water Operating Company, LLC
DCF Results for the Proxy Group of Non-Price-Regulated Companies Comparable in Total Risk to the
Proxy Group of Seven Water Companies

| | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] |
|---|---|---|---|---|---|---|---|---|
| Proxy Group of Twenty-Three Non-Price Regulated Companies | Average Dividend Yield | Value Line Projected Five Year Growth in EPS | Zack's Five Year Projected Growth Rate in EPS | Yahoo! Finance Projected Five Year Growth in EPS | Bloomberg Projected Five Year Growth in EPS | Average Projected Five Year Growth Rate in EPS | Adjusted Dividend Yield | Indicated Common Equity Cost Rate (1) |
| Adobe Inc. | - % | 19.50 % | 16.00 % | 15.00 % | 16.35 % | 16.71 % | - % | NA % |
| Bristol-Myers Squibb | 3.01 | 12.50 | 8.60 | 18.40 | 10.65 | 12.54 | 3.20 | 15.74 |
| Casey's Gen'l Stores | 0.79 | 6.50 | NA | 6.78 | 16.31 | 9.86 | 0.83 | 10.69 |
| CSG Systems Int'l | 2.19 | 10.00 | NA | NMF | 8.00 | 9.00 | 2.29 | 11.29 |
| Citrix Sys. | 0.97 | 9.00 | 7.00 | 9.37 | 9.63 | 8.75 | 1.01 | 9.76 |
| Dollar General | 0.75 | 12.00 | 12.50 | 13.75 | 11.22 | 12.37 | 0.80 | 13.17 |
| Ennis, Inc. | 5.14 | 3.00 | NA | 5.00 | NA | 4.00 | 5.24 | 9.24 |
| FirstCash, Inc. | 1.69 | 9.00 | NA | 8.59 | NA | 8.80 | 1.76 | 10.56 |
| Gilead Sciences | 3.74 | 3.50 | 5.50 | 1.40 | 8.43 | 4.71 | 3.83 | 8.54 |
| Gen'l Mills | 3.11 | 3.00 | 7.50 | 4.90 | 5.53 | 5.23 | 3.19 | 8.42 |
| Heartland Express | 0.39 | 8.50 | NA | 5.80 | NA | 7.15 | 0.40 | 7.55 |
| St. Joe Corp. | - | 16.50 | NA | NMF | NA | 16.50 | - | NA |
| Kellogg | 3.36 | 3.00 | 6.00 | 1.75 | 4.15 | 3.72 | 3.42 | 7.14 |
| Keysight Technologies | - | 17.00 | 8.80 | 7.70 | 7.52 | 10.26 | - | NA |
| Lancaster Colony | 1.74 | 5.00 | NA | 3.00 | 10.00 | 6.00 | 1.79 | 7.79 |
| Lilly (Eli) | 1.89 | 10.00 | 15.60 | 13.17 | 16.25 | 13.75 | 2.02 | 15.77 |
| ManTech Int'l 'A' | 1.83 | 12.00 | 7.40 | 7.02 | 7.36 | 8.45 | 1.91 | 10.36 |
| MAXIMUS Inc. | 1.53 | 10.00 | NA | 12.50 | 7.50 | 10.00 | 1.61 | 11.61 |
| Altria Group | 8.30 | 6.00 | 5.00 | 6.10 | 4.45 | 5.39 | 8.52 | 13.91 |
| Smucker (J.M.) | 3.28 | 3.00 | 2.20 | 0.22 | NMF | 1.81 | 3.31 | 5.12 |
| Standard Motor Prod. | - | 6.50 | NA | 7.00 | NA | 6.75 | - | NA |
| Tyler Technologies | - | 10.50 | 15.00 | 10.00 | 13.25 | 12.19 | - | NA |
| Walgreens Boots | 4.54 | 6.00 | 5.00 | NMF | NMF | 5.50 | 4.66 | 10.16 |
| | | | | | | | Mean | 10.38 % |
| | | | | | | | Median | 10.26 % |
| | | | | | | | Average of Mean and Median | 10.32 % |

NA= Not Available
NMF= Not Meaningful Figure

(1) The application of the DCF model to the domestic, non-price regluated comparable risk companies is identical to the application of the DCF to the utility proxy group. The dividend yield is derived by using the 60 day average price and the spot indicated dividend as of August 31, 2020. The dividend yield is then adjusted by 1/2 the average projected growth rate in EPS, which is calculated by averaging the 5 year projected growth in EPS provided by Value Line, Bloomberg, www.zacks.com, and www.yahoo.com (excluding any negative growth rates) and then adding that growth rate to the adjusted dividend yield.

Source of Information:
Value Line Investment Survey
www.zacks.com Downloaded on 08/31/2020
www.yahoo.com Downloaded on 08/31/2020
Bloomberg Professional Services

Bluegrass Water Operating Company, LLC
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

| Line No. | | Proxy Group of Twenty-Three Non-Price Regulated Companies |
|---|---|---|
| 1. | Prospective Yield on Baa2 Rated Corporate Bonds (1) | 4.10 % |
| 2. | Adjustment to Reflect Proxy Group Bond Rating (2) | (0.20) |
| 2. | Equity Risk Premium (3) | 7.53 |
| 3. | Risk Premium Derived Common Equity Cost Rate | 11.43 % |

Notes: (1) Average forecast of Baa2 corporate bonds based upon the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts dated September 1, 2020 and June 1, 2020 (see pages 10 and 11 of Schedule DWD-3). The estimates are detailed below.

| | |
|---|---|
| Third Quarter 2020 | 3.50 % |
| Fourth Quarter 2020 | 3.60 |
| First Quarter 2021 | 3.70 |
| Second Quarter 2021 | 3.70 |
| Third Quarter 2021 | 3.80 |
| Fourth Quarter 2021 | 3.80 |
| 2022-2026 | 5.00 |
| 2027-2031 | 5.70 |
| Average | 4.10 % |

(2) To reflect the Baa1 average rating of the Non-Price Regulated Proxy Group, the prosepctive yield on Baa2 corporate bonds must be adjusted downward by 1/3 of the spread between A2 and Baa2 corporate bond yields as shown below:

| | A2 Corp. Bond Yield | Baa2 Corp. Bond Yield | Spread |
|---|---|---|---|
| Aug-2020 | 2.68 % | 3.27 % | 0.59 % |
| Jul-2020 | 2.69 | 3.31 | 0.62 |
| Jun-2020 | 3.02 | 3.65 | 0.63 |
| | Average yield spread | | 0.61 % |
| | | 1/3 of spread | 0.20 % |

(3) From page 5 of this Schedule.

Bluegrass Water Operating Company, LLC
Comparison of Long-Term Issuer Ratings for the
Proxy Group of Twenty-Three Non-Price Regulated Companies of Comparable risk to the
Proxy Group of Seven Water Companies

| | Moody's Long-Term Issuer Rating August 2020 | | Standard & Poor's Long-Term Issuer Rating August 2020 | |
|---|---|---|---|---|
| Proxy Group of Twenty-Three Non-Price Regulated Companies | Long-Term Issuer Rating | Numerical Weighting (1) | Long-Term Issuer Rating | Numerical Weighting (1) |
| Adobe Inc. | A2 | 6.0 | A | 6.0 |
| Bristol-Myers Squibb | A2 | 6.0 | A+ | 5.0 |
| Casey's Gen'l Stores | NR | -- | NR | -- |
| CSG Systems Int'l | NR | -- | BB+ | 11.0 |
| Citrix Sys. | NR | -- | BBB | 9.0 |
| Dollar General | Baa2 | 9.0 | BBB | 9.0 |
| Ennis, Inc. | NR | -- | NR | -- |
| FirstCash, Inc. | Ba1 | 11.0 | BB | 12.0 |
| Gilead Sciences | A3 | 7.0 | A | 6.0 |
| Gen'l Mills | Baa2 | 9.0 | BBB | 9.0 |
| Heartland Express | NR | -- | NR | -- |
| St. Joe Corp. | NR | -- | NR | -- |
| Kellogg | Baa2 | 9.0 | BBB | 9.0 |
| Keysight Technologies | Baa2 | 9.0 | BBB | 9.0 |
| Lancaster Colony | NR | -- | NR | -- |
| Lilly (Eli) | A2 | 6.0 | A+ | 5.0 |
| ManTech Int'l 'A' | WR | -- | BB+ | 11.0 |
| MAXIMUS Inc. | NR | -- | NR | -- |
| Altria Group | A3 | 7.0 | BBB | 9.0 |
| Smucker (J.M.) | Baa2 | 9.0 | BBB | 9.0 |
| Standard Motor Prod. | NR | -- | NR | -- |
| Tyler Technologies | NR | -- | NR | -- |
| Walgreens Boots | Baa2 | 9.0 | BBB | 9.0 |
| Average | Baa1 | 8.1 | BBB+/BBB | 8.5 |

Notes:
(1) From page 6 of Schedule DWD-3.

Source of Information:
Bloomberg Professional Services

Bluegrass Water Operating Company, LLC
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for
Proxy Group of Twenty-Three Non-Price Regulated Companies of Comparable risk to the
Proxy Group of Seven Water Companies

| Line No. | Equity Risk Premium Measure | Proxy Group of Twenty-Three Non-Price Regulated Companies |
|---|---|---|
| | Ibbotson-Based Equity Risk Premiums: | |
| 1. | Ibbotson Equity Risk Premium (1) | 5.78 % |
| 2. | Regression on Ibbotson Risk Premium Data (2) | 9.39 |
| 3. | Ibbotson Equity Risk Premium based on PRPM (3) | 9.62 |
| 4. | Equity Risk Premium Based on Value Line Summary and Index (4) | 11.47 |
| 5 | Equity Risk Premium Based on Value Line S&P 500 Companies (5) | 10.85 |
| 6. | Equity Risk Premium Based on Bloomberg S&P 500 Companies (6) | 10.80 |
| 7. | Conclusion of Equity Risk Premium | 9.65 % |
| 8. | Adjusted Beta (7) | 0.78 |
| 9. | Forecasted Equity Risk Premium | 7.53 % |

Notes:
(1) From note 1 of page 9 of Schedule DWD-3.
(2) From note 2 of page 9 of Schedule DWD-3.
(3) From note 3 of page 9 of Schedule DWD-3.
(4) From note 4 of page 9 of Schedule DWD-3.
(5) From note 5 of page 9 of Schedule DWD-3.
(6) From note 6 of page 9 of Schedule DWD-3.
(7) Average of mean and median beta from page 6 of this Schedule.

Sources of Information:
Stocks, Bonds, Bills, and Inflation - 2020 SBBI Yearbook, John Wiley & Sons, Inc.
Value Line Summary and Index
Blue Chip Financial Forecasts, September 1, 2020 and June 1, 2020
Bloomberg Professional Services

Bluegrass Water Operating Company, LLC
Traditional CAPM and ECAPM Results for the Proxy Group of Non-Price-Regulated Companies Comparable in Total Risk to the
Proxy Group of Seven Water Companies

| Proxy Group of Twenty-Three Non-Price Regulated Companies | [1] Value Line Adjusted Beta | [2] Bloomberg Beta | [3] Average Beta | [4] Market Risk Premium (1) | [5] Risk-Free Rate (2) | [6] Traditional CAPM Cost Rate | [7] ECAPM Cost Rate | [8] Indicated Common Equity Cost Rate (3) |
|---|---|---|---|---|---|---|---|---|
| Adobe Inc. | 0.85 | 0.86 | 0.86 | 10.65 % | 2.05 % | 11.21 % | 11.58 % | 11.39 % |
| Bristol-Myers Squibb | 0.85 | 0.81 | 0.83 | 10.65 | 2.05 | 10.89 | 11.34 | 11.11 |
| Casey's Gen'l Stores | 0.80 | 0.87 | 0.84 | 10.65 | 2.05 | 11.00 | 11.42 | 11.21 |
| CSG Systems Int'l | 0.75 | 0.91 | 0.83 | 10.65 | 2.05 | 10.89 | 11.34 | 11.11 |
| Citrix Sys. | 0.80 | 0.64 | 0.72 | 10.65 | 2.05 | 9.72 | 10.46 | 10.09 |
| Dollar General | 0.70 | 0.68 | 0.69 | 10.65 | 2.05 | 9.40 | 10.22 | 9.81 |
| Ennis, Inc. | 0.75 | 0.79 | 0.77 | 10.65 | 2.05 | 10.25 | 10.86 | 10.56 |
| FirstCash, Inc. | 0.80 | 1.00 | 0.90 | 10.65 | 2.05 | 11.63 | 11.90 | 11.77 |
| Gilead Sciences | 0.65 | 0.56 | 0.60 | 10.65 | 2.05 | 8.44 | 9.50 | 8.97 |
| Gen'l Mills | 0.70 | 0.49 | 0.59 | 10.65 | 2.05 | 8.33 | 9.42 | 8.88 |
| Heartland Express | 0.75 | 0.80 | 0.78 | 10.65 | 2.05 | 10.36 | 10.94 | 10.65 |
| St. Joe Corp. | 0.80 | 0.96 | 0.88 | 10.65 | 2.05 | 11.42 | 11.74 | 11.58 |
| Kellogg | 0.65 | 0.64 | 0.65 | 10.65 | 2.05 | 8.97 | 9.90 | 9.44 |
| Keysight Technologies | 0.85 | 0.83 | 0.84 | 10.65 | 2.05 | 11.00 | 11.42 | 11.21 |
| Lancaster Colony | 0.65 | 0.64 | 0.65 | 10.65 | 2.05 | 8.97 | 9.90 | 9.44 |
| Lilly (Eli) | 0.75 | 0.72 | 0.73 | 10.65 | 2.05 | 9.82 | 10.54 | 10.18 |
| ManTech Int'l 'A' | 0.85 | 1.10 | 0.98 | 10.65 | 2.05 | 12.49 | 12.54 | 12.51 |
| MAXIMUS Inc. | 0.80 | 0.88 | 0.84 | 10.65 | 2.05 | 11.00 | 11.42 | 11.21 |
| Altria Group | 0.85 | 0.84 | 0.85 | 10.65 | 2.05 | 11.10 | 11.50 | 11.30 |
| Smucker (J.M.) | 0.65 | 0.50 | 0.58 | 10.65 | 2.05 | 8.23 | 9.34 | 8.79 |
| Standard Motor Prod. | 0.80 | 0.95 | 0.87 | 10.65 | 2.05 | 11.31 | 11.66 | 11.49 |
| Tyler Technologies | 0.80 | 0.75 | 0.77 | 10.65 | 2.05 | 10.25 | 10.86 | 10.56 |
| Walgreens Boots | 0.75 | 0.78 | 0.76 | 10.65 | 2.05 | 10.14 | 10.78 | 10.46 |
| Mean | | | 0.77 | | | 10.30 % | 10.90 % | 10.60 % |
| Median | | | 0.78 | | | 10.36 % | 10.94 % | 10.65 % |
| Average of Mean and Median | | | 0.78 | | | 10.33 % | 10.92 % | 10.63 % |

Notes:
(1) From Schedule DWD-4, note 1.
(2) From Schedule DWD-4, note 2.
(3) Average of CAPM and ECAPM cost rates.

Bluegrass Water Operating Company, LLC
Derivation of Investment Risk Adjustment Based upon
Ibbotson Associates' Size Premia for the Decile Portfolios of the NYSE/AMEX/NASDAQ

| Line No. | | [1] Market Capitalization on August 31, 2020 (1) ( millions ) | | [2] Applicable Decile of the NYSE/AMEX/ NASDAQ (2) | [3] Applicable Size Premium (3) | [4] Spread from Applicable Size Premium (4) |
|---|---|---|---|---|---|---|
| 1. | Bluegrass Water Operating Company, LLC | $ 13.513 | | 10 | 4.99% | |
| 2. | Proxy Group of Seven Water Companies | $ 6,204.730 | 459.2 x | 4 | 0.79% | 4.20% |
| | | | [A] | [B] | [C] | [D] |

| | Decile | Market Capitalization of Smallest Company ( millions ) | Market Capitalization of Largest Company ( millions ) | Size Premium (Return in Excess of CAPM)* |
|---|---|---|---|---|
| Largest | 1 | $ 31,090.379 | $ 1,061,355.011 | -0.28% |
| | 2 | 13,142.606 | 30,542.936 | 0.50% |
| | 3 | 6,618.604 | 13,100.225 | 0.73% |
| | 4 | 4,312.546 | 6,614.962 | 0.79% |
| | 5 | 2,688.889 | 4,311.252 | 1.10% |
| | 6 | 1,669.856 | 2,685.865 | 1.34% |
| | 7 | 993.855 | 1,668.282 | 1.47% |
| | 8 | 515.621 | 993.847 | 1.59% |
| | 9 | 230.024 | 515.602 | 2.22% |
| Smallest | 10 | 1.973 | 229.748 | 4.99% |

*From 2020 Duff & Phelps Cost of Capital Navigator

Notes:

(1) From page 2 of this Schedule.

(2) Gleaned from Columns [B] and [C] on the bottom of this page. The appropriate decile (Column [A]) corresponds to the market capitalization of the proxy group, which is found in Column [1].

(3) Corresponding risk premium to the decile is provided in Column [D] on the bottom of this page.

(4) Line No. 1 Column [3] – Line No. 2 Column [3]. For example, the 4.20% in Column [4], Line No. 2 is derived as follows 4.20% = 4.99% - 0.79%.

Bluegrass Water Operating Company, LLC
Market Capitalization of Bluegrass Water Operating Company, LLC and the
Proxy Group of Seven Water Companies

| Company | Exchange | [1] Common Stock Shares Outstanding at Fiscal Year End 2019 ( millions ) | [2] Book Value per Share at Fiscal Year End 2019 (1) | [3] Total Common Equity at Fiscal Year End 2019 ( millions ) | [4] Closing Stock Market Price on August 31, 2020 | [5] Market-to-Book Ratio on August 31, 2020 (2) | [6] Market Capitalization on August 31, 2020 (3) ( millions ) |
|---|---|---|---|---|---|---|---|
| LLC | | NA | NA | $ 3.950 (4) | NA | | |
| Based upon Proxy Group of Seven Water Companies | | | | | | 342.1 (5) | $ 13.513 (6) |
| Proxy Group of Seven Water Companies | | | | | | | |
| American States Water Co. | NYSE | 36.847 | $ 16.325 | $ 601.530 | $ 76.080 | 466.0 % | $ 2,803.290 |
| American Water Works Company Inc | NYSE | 180.813 | 33.853 | 6,121.000 | 141.340 | 417.5 | $ 25,556.091 |
| California Water Service Group | NYSE | 48.532 | 16.070 | 779.906 | 45.340 | 282.1 | $ 2,200.450 |
| Essential Utilities, Inc. | NYSE | 220.759 | 17.580 | 3,880.860 | 42.500 | 241.8 | $ 9,382.246 |
| Middlesex Water Co. | NASDAQ | 17.434 | 18.572 | 323.792 | 64.130 | 345.3 | $ 1,118.042 |
| SJW Group | NYSE | 28.457 | 31.275 | 889.984 | 62.530 | 199.9 | $ 1,779.385 |
| York Water Co. | NASDAQ | 13.015 | 10.310 | 134.185 | 45.610 | 442.4 | $ 593.609 |
| Average | | 77.979 | $ 20.569 | $ 1,818.751 | $ 68.219 | 342.1 % | $ 6,204.730 |

NA= Not Available

Notes: (1) Column 3 / Column 1.
(2) Column 4 / Column 2.
(3) Column 1 * Column 4.
(4) Company requested rate base multiplied by Company requested equity ratio.
(5) The market-to-book ratio of Bluegrass Water Operating Company, LLC on August 31, 2020 is assumed to be equal to the market-to-book ratio of Proxy Group of Seven Water Companies on August 31, 2020 as appropriate.
(6) Column [3] multiplied by Column [5].

Source of Information: 2019 Annual Forms 10K
yahoo.finance.com

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of

| | | |
|---|---|---|
| *Electronic* Application of Bluegrass Water Utility Operating Company, LLC for an Adjustment of Rates and Approval of Construction | ) | Case No. 2020-00290 |

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**Direct Testimony of Jennifer Nelson**

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COMMONWEALTH OF MASSACHUSETTS
COUNTY OF WORCESTER

I, Jennifer Nelson, being duly sworn, state that the attached is my Direct Testimony in the above styled matter, that I would respond in the same manner to the questions if so asked upon taking the stand, and that my testimony is true and correct to the best of my knowledge, information, and belief formed after reasonable inquiry.

Jennifer Nelson

Subscribed and sworn to this 28th day of September 2020, before me, a Notary Public in and before said County and State.

Notary Public

(SEAL)

My Commission Expires:

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III. COST OF DEBT ..... 9

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## I. WITNESS IDENTIFICATION AND QUALIFICATIONS

**Q. Please state your name, affiliation, and business address.**

A. My name is Jennifer E. Nelson. I am a Director at ScottMadden, Inc. My business address is 1900 West Park Drive, Suite 250, Westborough, Massachusetts, 01581.

**Q. On whose behalf are you submitting this testimony?**

A. I am submitting this direct testimony ("Direct Testimony") before the Public Service Commission of Kentucky ("Commission") on behalf of Bluegrass Water Utility Operating Company, LLC ("Bluegrass Water" or the "Company").

**Q. Please describe your educational background.**

A. I hold a Bachelor's degree in Business Economics from Bentley College (now Bentley University) and a Master's degree in Resource and Applied Economics from the University of Alaska.

**Q. Please describe your experience in the energy and utility industries.**

A. I have worked in the energy industry for over ten years, having served as a consultant and energy/regulatory economist for state government agencies. Since 2013, I have provided consulting services to utility and regulated energy clients on a range of financial and economic issues including rate case support (*e.g.*, cost of capital and integrated resource planning) and policy and strategy issues (*e.g.*, alternative ratemaking and natural gas distribution expansion). Prior to consulting, I was a staff economist at the Massachusetts Department of Public Utilities, where I worked on regulatory filings related to energy efficiency, renewable power contracts, smart grid and electric grid modernization, and

retail choice. A summary of my professional and educational background, including a list of my testimony filed before regulatory commissions, is included as Attachment A to my Direct Testimony.

**Q. Have you previously testified before the Commission?**

A. No, I have not. However, I have previously filed testimony before the Arkansas Public Service Commission, the Maine Public Utilities Commission, and the New Mexico Public Regulation Commission. I have also provided live testimony before the Alaska State Legislature in my role as a petroleum economist for the State of Alaska. During my time as a consultant, I have supported the development of expert witness testimony and analyses regarding the Return on Equity and capital structure in more than 100 proceedings filed before numerous U.S. state regulatory commissions and the Federal Energy Regulatory Commission.

**Q. What is the purpose of your Direct Testimony?**

A. The purpose of my Direct Testimony is to present evidence and provide the Commission with a recommendation regarding the appropriate capital structure and cost of long-term debt to be used for ratemaking purposes for Bluegrass Water in this proceeding. My analyses and conclusions are supported by the data presented in Exhibit JEN-1 through Exhibit JEN-3, which have been prepared by me or under my direction.

**Q. What are your conclusions regarding the appropriate ratemaking capital structure and cost of debt for the Company?**

A. My analyses indicate that a capital structure consisting of 50.00%equity and 50.00% long-term debt, as well as a cost of long-term debt of 9.50%, are reasonable and should be approved for Bluegrass Water.

## II. CAPITAL STRUCTURE

**Q. What is the overall rate of return requested in this proceeding?**

A. As explained in detail below, I recommend the Commission authorize a capital structure consisting of 50.00% equity and 50.00% long-term debt to be used for ratemaking purposes for Bluegrass Water. I also recommend a cost of long-term debt of 9.50%. Company witness Mr. Dylan W. D'Ascendis recommends a cost of equity of 11.80%. Those cost rates combined with my recommended capital structure result in an overall rate of return of 10.65%, as shown in Table 1 below.

**Table 1: Overall Rate of Return**

| | Capital Structure | Cost Rate | Return |
|---|---|---|---|
| Long-Term Debt | 50.00% | 9.50% | 4.75% |
| Equity | 50.00% | 11.80% | 5.90% |
| | 100.00% | | 10.65% |

**Q. How does the capital structure affect the rate of return?**

A. It is well understood that from a financial perspective, there are two general categories of risk: business risk and financial risk. Business risk includes operating, market, regulatory, and competitive uncertainties, while financial risk is the incremental risk to investors associated with additional levels of debt. As such, the capital structure relates to a

company's financial risk, which represents the risk that a company may not have adequate cash flows to meet its financial obligations, and is a function of the percentage of debt (or financial leverage) in its capital structure. In that regard, as the percentage of debt in the capital structure increases, so do the fixed obligations for the repayment of that debt. Consequently, as the degree of financial leverage increases, the risk of financial distress (*i.e.*, financial risk) also increases.[1] In essence, even if two firms face the same business risks, a company with meaningfully higher levels of debt in its capital structure is likely to have a higher cost of both debt and equity. Since the capital structure can affect the subject company's overall level of risk, it is an important consideration in establishing a just and reasonable rate of return.

**Q. Is there support for the proposition that the capital structure is a key consideration in establishing an appropriate rate of return?**

A. Yes. The U.S. Supreme Court ("Supreme Court") and various utility commissions have long recognized the role of capital structure in the development of a just and reasonable rate of return for a regulated utility. In particular, a utility's leverage, or debt ratio, has been explicitly recognized as an important element in determining a just and reasonable rate of return:

> Although the determination of whether bonds or stocks should be issued is for management, the matter of debt ratio is not exclusively within its province. Debt ratio substantially affects the manner and cost of obtaining new capital. It is therefore an important factor in the rate of return and must necessarily be considered by and come within the authority of the body charged by law with the duty of

[1] *See,* Roger A. Morin, New Regulatory Finance, Public Utility Reports, Inc., 2006, at 45-46.

fixing a just and reasonable rate of return.[2]

Perhaps ultimate authority for balancing the issues of cost and financial integrity is found in the Supreme Court's statement in *Hope*:

> The rate-making process under the Act, i.e., the fixing of "just and reasonable' rates, involves a balancing of the investor and the consumer interests.[3]

As the U.S. Court of Appeals, District of Columbia Circuit found in *Communications Satellite Corp. et. al. v. FCC*:

> The equity investor's stake is made less secure as the company's debt rises, but the consumer rate-payer's burden is alleviated.[4]

Consequently, the principles of fairness and reasonableness with respect to the allowed rate of return and capital structure are considered at both the federal and state levels.

**Q. What is the Company's actual capital structure?**

A. Based on information provided to me by the Company, I understand its actual capital structure as of the end of 2019 consisted of all or nearly 100.00% equity.[5] Because its actual capital structure is disproportionately leveraged in favor of equity, it deviates substantially from standard utility practice. I also understand that CSWR, LLC's (Bluegrass Water's parent) actual capital structure is heavily leveraged in favor of equity, consisting of approximately 2.00% long-term debt, and 98.00% equity. As such, neither

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2 *New England Telephone & Telegraph Co. v. State*, 98 N.H. 211, 97 A.2d 213, (1953), citing *New England Tel. & Tel. Co. v. Department of Pub. Util*., (Mass.) 327 Mass. 81, 97 N.E. 2d 509, 514; *Petitions of New England Tel. & Tel. Co*. 116 Vt. 480, 80 A2d 671, at 6.

3 *Federal Power Commission v. Hope Natural Gas Co.,* 320 U.S., at 603 (1944).

4 *Communications Satellite Corp. et. al. v. FCC*, 198 U.S. App. D.C. 60, 63-64611 F.2d 883.

5 Case No. 2019-00360, Compliance Filing, Plan Re: Capital Structure, March 16, 2020, at 1.

the Company's nor its parent's actual capital structures are appropriate for ratemaking purposes.

**Q. Is there financial literature that supports the use of a hypothetical capital structure for companies with atypical capital structures?**

A. Yes. In the Cost of Capital Manual, a fundamental textbook for the Certified Rate of Return Analyst designation, the authors discuss the circumstances where a hypothetical capital structure would be appropriate:

> There are circumstances where a hypothetical capital structure is used for a utility, rather than the utility's own capital structure. The most common reasons for utilizing a hypothetical capital structure are:
>
> 1. The utility's capital structure is deemed to be substantially different from the typical or "proper" utility capital structure.
>
> 2. The utility is funded as part of a diversified organization whose overall capital structure reflects its diversified nature rather than its utility operations only.
>
> In both cases, a "reasonableness test" is generally applied in order to determine if the actual capital structure is unreasonable or produces an excessive cost of capital. [6]

In addition, Charles F. Phillips in The Regulation of Public Utilities (1993)[7] discusses the applicability of hypothetical capital structures for ratemaking purposes:

> The Colorado Commission said that it "could adopt a hypothetical structure for rate making in the event that applicants' actual financial structure is not in the long run public interest"
>
> ****
>
> The Florida Commission held that capital structures "fall within the prerogatives of management" and that "invasion of the field of management in such a sensitive area is justified only when the public interest requires the exercise of extreme measures for its protection

[6] Parcell, David C., The Cost of Capital – A Practitioner's Guide, 2010, at 47.
[7] Phillips, Charles F., The Regulation of Public Utilities, Public Utilities Reports, Inc., 1993, pp. 389-391.

and benefit."

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A hypothetical capital structure is used only where a utility's actual capitalization is clearly out of line with those of other utilities in its industry or where a utility is diversified.

**Q. Is the requested capital structure consistent with the Company's target capital structure?**

A. Yes. I understand that in Case No. 2019-00104, the Commission approved the Company's acquisition of several wastewater assets in eight counties,[8] which included a proposed capital structure consisting of 50.00% long-term debt and 50.00% common equity.[9] I further understand that in a subsequent asset acquisition proceeding, Case No. 2019-00360, the Company proposed the same capital structure. In approving the acquisition, and with it the Company's proposed capital structure, the Commission directed the Company to file a capital structure plan within 30 days of the Commission's order in Case No. 2019-00360. On March 16, 2020, the Company filed its capital structure plan reiterating its "goal is to have a 50/50 capitalization structure on average over time."[10]

**Q. Have you performed analyses to assess the reasonableness of the requested capital structure?**

A. Yes, I have. In general, it is important to consider the capital structure in light of industry norms and investor requirements. As such, it is appropriate to review the proxy companies'

[8] The application sought approval of the transfer of wastewater treatment plants, collection systems, and other assets of P.R. Wastewater, Marshall County Environmental, LH Treatment, Kingswood, Airview, Brocklyn, Fox Run, and Lake Columbia to Bluegrass Water, representing approximately 1,300 sewer customers in Bullitt, Franklin, Hardin, Madison, Marshall, McCracken, Scott, and Shelby counties. Case No. 2019-00104, Order at 1 (August 14, 2019).

[9] Case No. 2019-00104, Order at 6, 18 (August 14, 2019).

[10] Case No. 2019-0360, Compliance Filing, Plan Re: Capital Structure, March 16, 2020, at 1. Emphasis added.

actual capital structures as a means of assessing whether my recommended capital structure is consistent with industry practice.

To make that assessment, I calculated the average capital structure for each of the proxy group companies over the last eight quarters (*see* Exhibit JEN-1). The mean of the proxy group actual capital structure is 55.23% common equity and 44.77% long-term debt; the common equity ratios range from 43.13% percent to 67.12%.[11] Similarly, the median capital structure for the proxy group is 55.44% common equity and 44.56% long-term debt.

**Q. What is the basis for using average capital components rather than a point-in-time measurement?**

A. Measuring the capital components at a particular point in time can skew the capital structure by the specific circumstances of a particular period. Therefore, it is logical to normalize the relative relationship between the capital components over a period of time.

**Q. What is the projected capital structure for the proxy group?**

A. To gain another perspective, I also considered the capital structure projected by *Value Line Investment Survey* in 2023-2025 for each proxy company. As shown in Exhibit JEN-2, *Value Line* projects the proxy group to have an average common equity ratio of 56.29% and a long-term debt ratio of 43.79% in the next three to five years (median of 59.50% common equity and 40.50% long-term debt). Consequently, the requested capital structure is consistent with, albeit slightly more leveraged than, the proxy group companies' actual and projected capital structures.

[11] Source: S&P Global Market Intelligence.

**Q. What is your conclusion regarding an appropriate capital structure to be used for ratemaking purposes in this proceeding?**

A. I conclude that a capital structure consisting of 50.00% equity and 50.00% long-term debt is consistent with the Company's previously stated capital structure target, as well as with actual and projected capital structures in place at the proxy companies. As such, I conclude a capital structure consisting of 50.00% equity and 50.00% long-term debt is reasonable and should be approved.

## III. COST OF DEBT

**Q. What is your recommendation regarding the appropriate cost of debt to be used for ratemaking purposes for Bluegrass Water?**

A. In this proceeding, I recommend the Commission authorize Bluegrass Water a cost of long-term debt of 9.50% to be used for ratemaking purposes. I understand the Company is currently negotiating the terms for a loan and expects the rate to be in the range of 9.00% to 10.00%. As such, I believe a cost of debt at the midpoint of the expected debt cost range is reasonable until the terms of the financing are finalized and the actual rate is known.

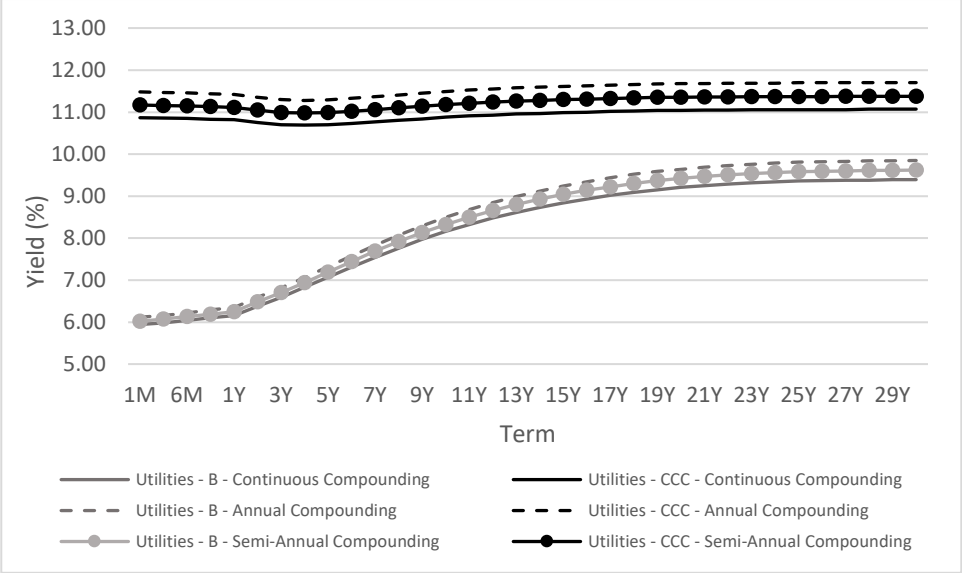
**Q. In your opinion, is a cost of long-term debt in the range of 9.00% to 10.00% reasonable for Bluegrass Water?**

A. Yes, it is. I understand that operations of small, distressed water utilities such as Bluegrass Water cannot attract traditional financing from commercial lenders. Simply, there is no established market for financing small, distressed utilities.

In order to assess the reasonableness of the 9.00% to 10.00% range of long-term debt cost requested in this proceeding, I reviewed current yield curve data on B-rated and

CCC-rated utility debt from S&P Capital IQ as of September 23, 2020. B-rated and CCC-rated utility debt yields reflect higher risk, below-investment grade utility debt rate costs in the current market. While not identical to, or fully reflective of, the risks facing small, distressed water utilities such as Bluegrass Water, B-rated and CCC-rated utility debt yields are the closest proxy I could find to assess the reasonableness of the Company's requested cost of long-term debt. As Chart 1 below demonstrates, B-rated and CCC-rated utility debt yields for terms of 15 years or more, are currently within a range of approximately 9.00% to 11.70% (*see also* Exhibit JEN-3).

**Chart 1: Yield Curve of B-Rated and CCC-Rated Utility Debt (September 23, 2020)**[12]




Based on the data shown in Chart 1 above, a cost of long-term debt in the 9.00% to 10.00% range for Bluegrass Water is reasonable, conservative, and should be approved for ratemaking purposes. Within that range, the midpoint of 9.50% is reasonable.

[12] Source: S&P Capital IQ, accessed September 24, 2020. *See* Exhibit JEN-3.

## IV. CONCLUSIONS

**Q. What is your conclusion regarding the appropriate capital structure and cost of debt to be used for ratemaking purposes for Bluegrass Water?**

A. For the reasons explained in my Direct Testimony, a ratemaking capital structure consisting of 50.00% equity and 50.00% long-term debt is reasonable and appropriate and should be approved for Bluegrass Water. Further, a cost of debt of 9.50%– which is the midpoint of the 9.00% to 10.00% range of the expected interest rate on the loan the Company is currently negotiating – is reasonable and conservative and should be approved for ratemaking purposes.

**Q. Does this conclude your Direct Testimony?**

A. Yes, it does.

### *Summary*

Jennifer Nelson has more than ten years of experience in the energy industry, spanning the oil, natural gas, electric, and renewable energy segments. She has provided research and analysis on a variety of utility regulatory matters including cost of capital, ratemaking and regulatory policy, integrated resource planning, electric grid modernization, energy efficiency, and wholesale energy markets. Ms. Nelson has also provided analytical support for natural gas pipeline development and natural gas utility supply planning. She has extensive experience researching regulatory and energy market issues, performing statistical analyses and economic and financial modeling, and providing policy analyses and recommendations.

Prior to joining ScottMadden, Ms. Nelson was a managing consultant at Sussex Economic Advisors, LLC, and was formerly a staff economist at the Massachusetts Department of Public Utilities and a petroleum economist for the State of Alaska. Ms. Nelson holds a Bachelor of Science degree in Business Economics from Bentley College, where she graduated *magna cum laude*, and a Master of Science degree in Resource and Applied Economics from the University of Alaska.

### *Areas of Specialization*

- Utilities
- Regulation and rates
- Regulatory strategy and rate case support
- Analytics
- Natural gas
- Utility benchmarking
- Markets and RTOs

### *Recent Assignments*

- Submitted expert testimony on behalf of an electric utility before the New Mexico Public Regulation Commission regarding the cost of capital.
- Submitted expert testimony on behalf of a water utility before the Arkansas Public Service Commission regarding the utility's proposed Formula Rate Plan.
- Co-sponsored expert testimony on behalf of a natural gas utility before the Maine Public Utilities Commission regarding the utility's proposed capital investment cost recovery mechanism.
- Supported expert testimony regarding the cost of capital for ratemaking purposes before numerous state utility regulatory commissions and the FERC on behalf of electric and natural gas utilities through state and company-specific research and analysis, financial analysis and modeling, and testimony development.
- Supported expert testimony and performed research and analysis on alternative ratemaking frameworks.
- Supported expert testimony on the reasonableness of utility resource supply portfolio decisions.
- Assisted in a benchmarking analysis on behalf of a Northeast natural gas utility regarding its supply planning standards and design day demand forecast process.
- Developed a dynamic natural gas demand forecast model for in-state use for the State of Alaska, which included forecasting demand from both existing and anticipated natural gas utilities, power consumption, and large commercial operations.
- Conducted research and prepared analyses for a natural gas pipeline Open Season.
- Performed research and financial analysis to evaluate the benefits, costs, and policy options associated with natural gas expansion by Massachusetts natural gas utilities as part of a prepared report for the Massachusetts Department of Energy Resources.
- Supported the development of a New Hampshire electric utility's Integrated Resource Plan filed with the New Hampshire Public Utility Commission.
- Performed buy-side benchmarking and regulatory analysis for a utility acquisition.
- Performed statistical analyses to support a utility's natural gas forecast and supply plan.
- Provided research and analytical support estimating financial damages incurred as a result of construction delays for an electric transmission company.
- Prepared a Feasibility Study for an electric cooperative utility supporting a utility-owned solar project.

| Sponsor Company | Date Filed | Docket No. | Subject Matter |
|---|---|---|---|
| **Arkansas** | | | |
| Liberty Utilities (Pine Bluff Water) | 10/2018 | 18-027-U | Sponsored testimony supporting Liberty Utility's proposed Formula Rate Plan and tariff |
| **Maine** | | | |
| Unitil Corporation (Northern Utilities, Inc.) | 6/2019 | 19-00092 | Co-sponsored testimony supporting Northern Utilities proposed CIRA capital tracking mechanism |
| **New Mexico** | | | |
| El Paso Electric Company | 7/2020 | 20-00104-UT | Cost of Capital |

**EXHIBT JEN-1**

Proxy Group Actual Capital Structure

| | | % Common Equity | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Company | Ticker | 2020Q1 | 2019Q4 | 2019Q3 | 2019Q2 | 2019Q1 | 2018Q4 | 2018Q3 | 2018Q2 | Average |
| American Water Works Company, Inc. | AWK | 42.00% | 41.47% | 41.74% | 41.09% | 43.96% | 43.65% | 43.63% | 47.48% | 43.13% |
| American States Water Company | AWR | 68.27% | 68.16% | 67.96% | 67.32% | 66.64% | 66.51% | 66.35% | 65.74% | 67.12% |
| California Water Service Group | CWT | 48.98% | 49.78% | 48.41% | 47.24% | 50.12% | 50.70% | 49.92% | 62.33% | 50.94% |
| Essential Utilities, Inc. | WTRG | 49.38% | 56.87% | 57.13% | 58.18% | 44.72% | 45.59% | 47.44% | 47.89% | 50.90% |
| Middlesex Water Company | MSEX | 58.24% | 58.39% | 54.71% | 61.90% | 61.83% | 61.94% | 63.70% | 62.66% | 60.42% |
| SJW Group | SJW | 40.15% | 40.95% | 63.70% | 63.64% | 63.49% | 67.33% | 52.41% | 51.90% | 55.44% |
| The York Water Company | YORW | 58.96% | 58.67% | 58.32% | 57.33% | 57.47% | 57.49% | 61.05% | 60.14% | 58.68% |
| Mean | | 52.28% | 53.47% | 56.00% | 56.67% | 55.46% | 56.17% | 54.93% | 56.88% | 55.23% |
| Median | | 49.38% | 56.87% | 57.13% | 58.18% | 57.47% | 57.49% | 52.41% | 60.14% | 55.44% |

| | | % Long-Term Debt | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Company | Ticker | 2020Q1 | 2019Q4 | 2019Q3 | 2019Q2 | 2019Q1 | 2018Q4 | 2018Q3 | 2018Q2 | Average |
| American Water Works Company, Inc. | AWK | 58.00% | 58.53% | 58.26% | 58.91% | 56.04% | 56.35% | 56.37% | 52.52% | 56.87% |
| American States Water Company | AWR | 31.73% | 31.84% | 32.04% | 32.68% | 33.36% | 33.49% | 33.65% | 34.26% | 32.88% |
| California Water Service Group | CWT | 51.02% | 50.22% | 51.59% | 52.76% | 49.88% | 49.30% | 50.08% | 37.67% | 49.06% |
| Essential Utilities, Inc. | WTRG | 50.62% | 43.13% | 42.87% | 41.82% | 55.28% | 54.41% | 52.56% | 52.11% | 49.10% |
| Middlesex Water Company | MSEX | 41.76% | 41.61% | 45.29% | 38.10% | 38.17% | 38.06% | 36.30% | 37.34% | 39.58% |
| SJW Group | SJW | 59.85% | 59.05% | 36.30% | 36.36% | 36.51% | 32.67% | 47.59% | 48.10% | |
| The York Water Company | YORW | 41.04% | 41.33% | 41.68% | 42.67% | 42.53% | 42.51% | 38.95% | 39.86% | |
| Mean | | 47.72% | 46.53% | 44.00% | 43.33% | 44.54% | 43.83% | 45.07% | 43.12% | 44.77% |
| Median | | 50.62% | 43.13% | 42.87% | 41.82% | 42.53% | 42.51% | 47.59% | 39.86% | 44.56% |

Source: S&P Global Market Intelligence

**EXHIBT JEN-2**

Proxy Group Projected Capital Structure

| Company | Ticker | Common Equity Projected 2023-2025 |
|---|---|---|
| American Water Works Company, Inc. | AWK | 41.00% |
| American States Water Company | AWR | 51.50% |
| California Water Service Group | CWT | 56.50% |
| Essential Utilities, Inc. | WTRG | 59.50% |
| Middlesex Water Company | MSEX | 60.50% |
| SJW Group | SJW | 61.00% |
| The York Water Company | YORW | 64.00% |
| Mean | | 56.29% |
| Median | | 59.50% |

| Company | Ticker | Long-Term Debt Projected 2023-2025 |
|---|---|---|
| American Water Works Company, Inc. | AWK | 59.00% |
| American States Water Company | AWR | 49.50% |
| California Water Service Group | CWT | 43.50% |
| Essential Utilities, Inc. | WTRG | 40.50% |
| Middlesex Water Company | MSEX | 39.00% |
| SJW Group | SJW | 39.00% |
| The York Water Company | YORW | 36.00% |
| Mean | | 43.79% |
| Median | | 40.50% |

Source: Value Line as of August 31, 2020

**EXHIBT JEN-3**

S&P Capital IQ

Accessed: September 24, 2020

| Term | USD - Utilities - CCC - All In Yield - Annual Compounding - 09/23/2020 | USD - Utilities - CCC - All In Yield - Semi-Annual Compounding - 09/23/2020 | USD - Utilities - CCC - All In Yield - Continuous Compounding - 09/23/2020 | USD - Utilities - B - All In Yield - Annual Compounding - 09/23/2020 | USD - Utilities - B - All In Yield - Semi-Annual Compounding - 09/23/2020 | USD - Utilities - B - All In Yield - Continuous Compounding - 09/23/2020 |
|---|---|---|---|---|---|---|
| 1M | 11.48 | 11.17 | 10.87 | 6.12 | 6.02 | 5.94 |
| 3M | 11.47 | 11.16 | 10.86 | 6.16 | 6.07 | 5.98 |
| 6M | 11.46 | 11.15 | 10.85 | 6.22 | 6.13 | 6.04 |
| 9M | 11.44 | 11.13 | 10.83 | 6.29 | 6.19 | 6.1 |
| 1Y | 11.42 | 11.11 | 10.82 | 6.35 | 6.25 | 6.16 |
| 2Y | 11.35 | 11.05 | 10.75 | 6.59 | 6.48 | 6.38 |
| 3Y | 11.3 | 10.99 | 10.7 | 6.82 | 6.7 | 6.59 |
| 4Y | 11.28 | 10.98 | 10.69 | 7.06 | 6.94 | 6.83 |
| 5Y | 11.29 | 10.99 | 10.7 | 7.32 | 7.19 | 7.07 |
| 6Y | 11.33 | 11.02 | 10.73 | 7.58 | 7.44 | 7.31 |
| 7Y | 11.37 | 11.06 | 10.77 | 7.83 | 7.69 | 7.54 |
| 8Y | 11.41 | 11.1 | 10.81 | 8.07 | 7.92 | 7.76 |
| 9Y | 11.45 | 11.14 | 10.84 | 8.29 | 8.13 | 7.97 |
| 10Y | 11.49 | 11.18 | 10.88 | 8.5 | 8.32 | 8.16 |
| 11Y | 11.53 | 11.21 | 10.91 | 8.68 | 8.5 | 8.32 |
| 12Y | 11.55 | 11.24 | 10.93 | 8.85 | 8.66 | 8.48 |
| 13Y | 11.58 | 11.26 | 10.96 | 8.99 | 8.8 | 8.61 |
| 14Y | 11.6 | 11.28 | 10.97 | 9.12 | 8.93 | 8.73 |
| 15Y | 11.61 | 11.3 | 10.99 | 9.24 | 9.04 | 8.84 |
| 16Y | 11.63 | 11.31 | 11 | 9.34 | 9.14 | 8.93 |
| 17Y | 11.64 | 11.32 | 11.02 | 9.44 | 9.22 | 9.02 |
| 18Y | 11.66 | 11.34 | 11.03 | 9.52 | 9.3 | 9.09 |
| 19Y | 11.67 | 11.35 | 11.04 | 9.59 | 9.37 | 9.15 |
| 20Y | 11.68 | 11.35 | 11.04 | 9.64 | 9.42 | 9.21 |
| 21Y | 11.68 | 11.36 | 11.05 | 9.69 | 9.47 | 9.25 |
| 22Y | 11.69 | 11.36 | 11.05 | 9.73 | 9.51 | 9.29 |
| 23Y | 11.69 | 11.37 | 11.06 | 9.76 | 9.54 | 9.32 |
| 24Y | 11.69 | 11.37 | 11.06 | 9.79 | 9.56 | 9.34 |
| 25Y | 11.7 | 11.37 | 11.06 | 9.81 | 9.58 | 9.36 |
| 26Y | 11.7 | 11.37 | 11.06 | 9.82 | 9.59 | 9.37 |
| 27Y | 11.7 | 11.38 | 11.06 | 9.83 | 9.6 | 9.38 |
| 28Y | 11.7 | 11.38 | 11.07 | 9.84 | 9.61 | 9.38 |
| 29Y | 11.7 | 11.38 | 11.07 | 9.84 | 9.61 | 9.39 |
| 30Y | 11.7 | 11.38 | 11.07 | 9.85 | 9.62 | 9.39 |