Exhibit No. 24

MAWC – Exhibit 24
Thomas O'Drain
Direct Testimony
File No. WR-2022-0303

Exhibit No.:	
Issues:	Chemical Expense
Witness:	Thomas O'Drain
Exhibit Type:	Direct
Sponsoring Party:	Missouri-American Water Company
Case No.:	WR-2022-0303 SR-2022-0304
Date:	July 1, 2022

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. WR-2022-0303
CASE NO. SR-2022-0304

DIRECT TESTIMONY

OF

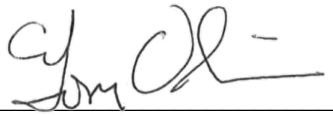
THOMAS O'DRAIN

ON BEHALF OF

MISSOURI-AMERICAN WATER COMPANY

AFFIDAVIT

I, Thomas O'Drain under penalty of perjury, and pursuant to Section 509.030, RSMo, state that I am Sr. Manager of National Categories for American Water Works Service Company, Inc., that the accompanying testimony has been prepared by me or under my direction and supervision; that if inquiries were made as to the facts in said testimony, I would respond as therein set forth; and that the aforesaid testimony is true and correct to the best of my knowledge and belief.



Thomas O'Drain

July 1, 2022
Dated

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THOMAS O'DRAIN

MISSOURI-AMERICAN WATER COMPANY
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DIRECT TESTIMONY

THOMAS O'DRAIN

I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Thomas O'Drain. My business address is 1 Water Street, Camden, NJ 08102.

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

A. I am employed by the American Water Works Service Company, Inc. ("AWWSC" or the "Service Company"). The Service Company is a wholly owned subsidiary of American Water Works Company, Inc. ("American Water") that provides services to Missouri-American Water Company ("MAWC" or the "Company"). My title is Senior Manager of National Category Management, but I am currently acting in the role of Interim Director of National Categories and Corporate Procurement.

Q. Please summarize your educational background and business experience.

A. I received a Bachelor of Arts in History from Rowan University in 1995 and I received my Masters of Business Administration from the University of Phoenix in 2006. I have over 25 years of experience in supply chain management and procurement, with relevant experience in category and product management, supplier relationship management, demand forecasting, and inventory management. I began my career in retail store management for CompUSA in 1993 and worked my way through several promotions from Regional Purchasing Manager in 1998, Replenishment Buyer in 2001, to Category Manager in 2004. I then worked as a Category Manager for TESSCO Technologies from 2006 – 2008, and as Manager of Replenishment and Allocations for David's Bridal from 2008 until joining AWWSC as a Category Manager in 2014. In 2016, I was promoted to Senior Manager of Corporate Procurement and in March of 2022, I was named Senior

Manager of National Category Management. I have been serving as the Interim Director of National Categories and Corporate Procurement since September of 2021.

Q. What are your current employment responsibilities?

A. My responsibilities as Senior Manager of National Category Management include the management of a team of procurement professionals who are responsible for the sourcing, contracting, and ongoing relationship management of American Water's national material suppliers. Some of the areas the team covers are Chemicals, Direct Materials, Meters, and MRO (Maintenance, Repair and Operations supplies). My additional responsibilities as Interim Director of National Categories and Corporate Procurement include management of the Energy and Fleet buyers, as well as management of the Corporate Procurement team, who are responsible for the sourcing, contracting, and ongoing relationship management of American Water's corporate service suppliers, which, among others, include areas such as Information Technology, Human Resources, Corporate Engineering, Accounting / Finance / Treasury, and Supply Chain.

Q. Have you previously testified before the Missouri Public Service Commission?

A. No. This will be my first time testifying before the Missouri Public Service Commission.

Q. What is the purpose of your Direct Testimony in this proceeding?

A. The purpose of my Direct Testimony is to support the current chemical prices and drivers of increases from 2021 through 2023 used to calculate the annual level of chemical expense for the Company. The annual level of chemical expense, including the methodology for calculating this amount, is explained in greater detail in the Direct Testimony of Company witness Michael L. Schwarzell.

II. OVERVIEW OF CHEMICAL USE

Q. Please provide a general overview of MAWC's chemical use to continue to provide safe and reliable water and wastewater services to customers.

A. MAWC is committed to providing safe and reliable water and wastewater services that meet State and federal public health and environmental standards. Water treatment chemicals are required to transform raw water into safe, potable water for customer use. There are combinations of several distinct treatment processes that require multiple uses of various chemicals, including:

- Pre-chlorination
- Ozonation
- Coagulation
- Flocculation
- Clarification
- Filtration
- Disinfection
- Corrosion Control
- Taste & Odor Control
- Hardness Treatment
- Sequestration
- Fluoride Treatment
- Residuals Treatment

Each year, American Water conducts more than one million tests and measurements at its state-of-the-art research laboratory in Belleville, Illinois and at local utility labs to analyze samples throughout the treatment process and distribution system. This supports MAWC's

commitment and ability to meet state and federal public health and environmental standards throughout the process, from distribution of safe drinking water to customers, to the collection of wastewater from customers and its treatment and return to the environment.

Q. What specific chemicals does MAWC use as part of its treatment processes?

A. Chemicals are, of course, a required component in water treatment. Without use of specific chemicals, the Company would be unable to provide safe water service as required by governmental regulations. Within its treatment processes, MAWC relies on multiple chemicals, grouped and summarized into categories as follows:

- Aluminum Sulfate, Ferric Chloride, and various Polymers – used primarily in coagulation to separate compounds for filtration.
- Caustic Soda – used primarily as corrosion control for the distribution system, and to regulate the acidity during water treatment.
- Chlorine and Sodium Hypochlorite – used primarily in pre-chlorination to oxidize naturally-occurring inorganic compounds, as well as to aid in inactivation of potentially harmful microorganisms.
- Fluoride (Hydrofluosilicic acid, or "HFS") – added to drinking water because of its demonstrated effectiveness in preventing dental cavities.
- Lime – used to treat water hardness by removing minerals such as calcium and magnesium.
- Phosphates – used in the sequestration process to separate naturally occurring iron and manganese from groundwater supplies.

- Other Chemicals – various chemicals used in multiple stages, such as the addition of carbon to remove odor producing compounds and to manage taste, or ammonia to prevent growth of pathogens within the distribution system.

Q. Are there restrictions in MAWC's ability to change its chemical consumption based on price or supply pressure?

A. Yes. MAWC is required to comply with all drinking water quality, water pollution, residuals management, air pollution and hazardous materials laws and regulations, as described in greater detail in the Direct Testimony of Company witness Jeffrey T. Kaiser. These compliance requirements preclude the Company from changing the suite of chemicals used in the Company's water treatment process based on price or supply pressure without making additional investments to change its operations. Water treatment requires the purchasing of the specific chemicals used in the process, and the Company cannot maintain its legal and regulatory compliance without them. Water treatment chemicals are a smaller part of the overall chemical market, and the chemicals MAWC uses are very carefully manufactured and transported to adhere to standards (NSF-60)[1], and must be of the quality and specifications required by the American Water Works Association.

III. CHEMICAL SOURCING PROCESS

Q. Please provide a general overview of how chemicals are sourced to manage MAWC's business requirements.

A. MAWC relies on the specialized expertise of Service Company, with a center-led Supply Chain Department to handle, among other responsibilities, supplier management, contract

[1] NSF/ANSI/CAN 60: Drinking Water Treatment Chemicals – Health Effects is "an American National Standard that establishes the minimum health-effects requirements for the chemicals, chemical contaminants and impurities that are directly added to drinking water from drinking water treatment chemicals." https://www.nsf.org

negotiations and conducting the Company's annual chemical bid, all of which support MAWC's chemical needs. Annually, Supply Chain collaborates with MAWC's operations teams to prepare the aforementioned chemical bid. This collaboration includes an understanding of all chemical requirements that would impact the upcoming bid; confirmation of the chemicals that will be bid along with specifications and typical order quantities; any changes to treatment plant processes or equipment that would require changes to the current chemical specifications; any new facilities planned that will be added to the bid, and any new facility chemical requirements.

Supply Chain conducts an annual nationwide sourcing event for all chemicals enterprise-wide (including MAWC), working with approximately 90 to 100 chemical suppliers during the bidding process. Several new suppliers are certified and added to the bidding process each year. In late August to early September, Supply Chain releases the bid requirements (chemicals required, specifications, expected order quantities and delivery locations) to certified suppliers, with the request for the suppliers to offer firm, fixed prices for the upcoming year. These prices are expected to be all-in, delivered prices to ensure that Supply Chain can evaluate all suppliers on a level playing field. The deadline for suppliers to submit bids is typically 4-to-5 weeks from the release date of the bid, at which point Supply Chain reviews the submissions to assess reasonableness of the supplier's responses. The goal of the process is to determine the most ideal supplier based on the best value for the specific state, plant, and chemical.

The bid recommendations are provided to the MAWC operations teams for assessment of financial impacts and operational alignment. Once the bids are finalized and accepted, Supply Chain works with the suppliers to draft new or amend existing contracts to create the next year's pricing terms for each of the chemicals the supplier has been selected to

provide.

Q. Has Service Company typically been able to lock in agreed-upon prices for chemicals for an annual period?

A. Yes, with a few exceptions. Service Company has in some instances allowed for temporary pricing relief due to extenuating circumstances, such as severe weather, natural disasters, or other force majeure events. These events often cause a supplier to use alternate means to acquire chemical supplies, adding additional time and costs. In these instances, Service Company has had to balance the risk and impact of a price increase outside of the standard bidding process with the supplier's ability to continue to deliver an uninterrupted supply of chemicals to support all of the operating companies' ongoing water treatment obligations.

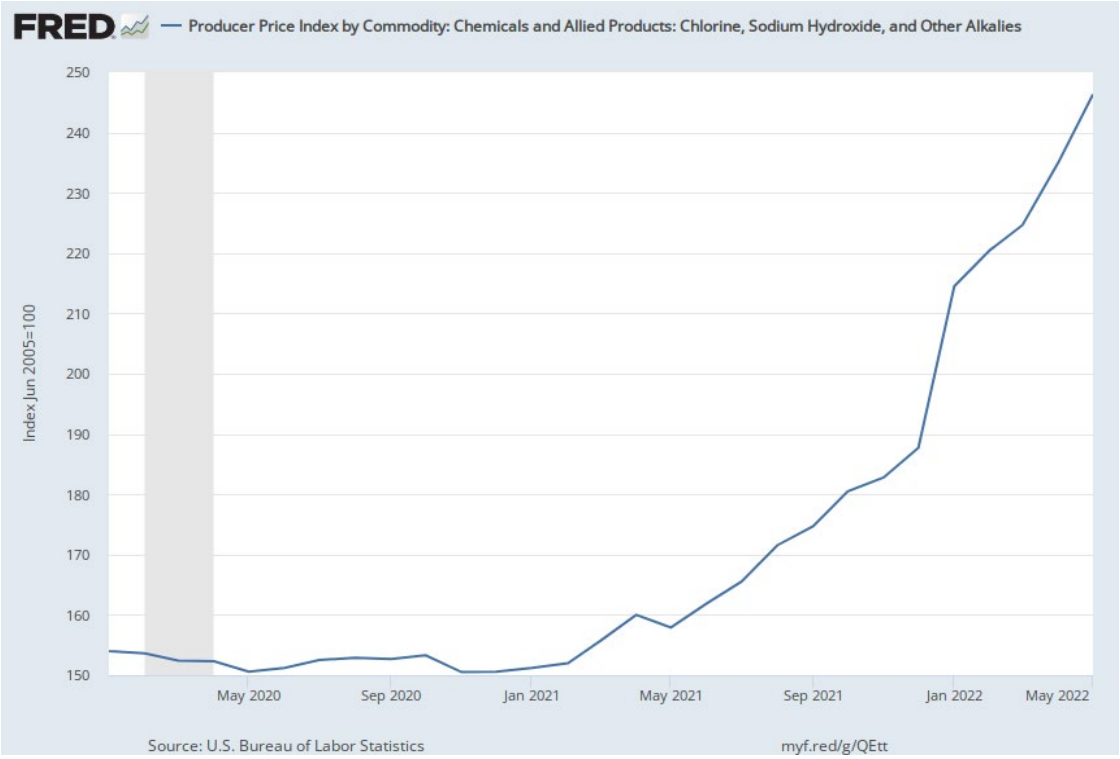
Q. Has Service Company been able to lock in agreed-upon prices for chemicals for all of calendar year 2022?

A. Not in all instances. Specific to MAWC, there are 124 unique chemical, supplier, plant combinations that carry agreed upon prices. Of these, 62 have current agreements governing prices for the calendar year of 2022, 58 have prices through June 30, 2022, two have prices that are negotiated on a quarterly basis, and two use a monthly negotiated price.

Q. How has the process for 2022 differed from prior years?

A. During the bidding process conducted in 2021, there was significant volatility in prices compared to prior years. For example, in 2021, Chlorine deliveries averaged $0.3485 a pound. For 2022, the average price bid was $0.9217 a pound, an increase of 164%, and these prices are only firm for the first six months of the year. Information gathered from

the Federal Reserve Economic Data ("FRED")[2] specific to Chlorine, Sodium Hydroxide, and Other Alkalis shows the pricing trend starting mid 2021 through current (May 2022).



In discussions prior to the formal bidding process, many suppliers indicated that, due to this extreme volatility in the chemical market, they were no longer willing to lock in chemical prices for the calendar year, instead requesting that the Company consider month-to-month pricing. When pressed, some agreed to reconsider, but indicated that they would set prices at high levels to hedge against future uncertainty. Since few were even willing to consider annual fixed prices, and others were offering long-term prices that would not appear to be in the best interest of customers, suppliers were allowed to bid for a shorter period, with prices set for three or six-month increments.

[2] FRED is "an online database consisting of hundreds of thousands of economic data time series from scores of national, international, public, and private sources." https://fred.stlouisfed.org

IV. 2022 CHEMICAL PRICING

Q. What is driving the significant increases and volatility in chemical prices in 2022?

A. The chemical market has been extremely volatile compared to historical levels, driven by many factors such as COVID-19 impacts, inflationary growth in commodity prices, impacts on energy prices caused by the conflict in Ukraine, and overall supply and demand pressure within a consolidating chemical market. The following categories give an initial view of why prices are increasing so dramatically in 2022.

- Transportation Costs: Across the country, companies are experiencing the impacts of a national driver shortage, national truck and truck part shortage, and increases in fuel costs, creating significant pricing pressure on goods and services. For chemicals specifically, government regulations make the transport of chemicals even less desirable for a driver than other types of freight. The importing of chemicals or raw materials has also been impacted by labor shortages at ports and COVID-19 restrictions, delaying the ability to move product into the United States, and then to the end purchaser. These delays also impact the supply of shipping containers (e.g., metal cylinders for chlorine gas, drums for chemical shipments), which further delays the ability (and adds to the cost) to move chemicals.

- Supplier Consolidation: Larger suppliers are dominating the chemical production space, which leaves little room for opportunities to seek more favorable prices. As an example, the chlor-alkali market in 2010 had more than 10 major producers that produced product for the water treatment industry. In 2021, only 5 major producers remained, three of which typically supply the Company's suppliers. Of those three, one of the largest producers has made it clear publicly in an earnings call that the price increases, or ratchets, currently experienced will not reverse, going so far as to say they

would sell zero volume to preserve this ratcheted price policy.[3] These suppliers have also had frequent unplanned plant shutdowns, or emergency maintenance procedures that have limited the supply of material, leading to longer lead times and higher prices.

- Energy Costs: Chemicals are heavily linked with the energy market, both in the consumption of raw materials and the production of the end-product. The Consumer Price Index for Energy commodities in May 2022 showed a 50.3% year-over-year increase, and prices for natural gas increased 30.2% over the last 12 months, the largest such increase since the period ending July 2008. As these costs increase for manufacturers, they pass those costs onto chemical distributors who then pass those increased costs onto the Company through significantly elevated all-in prices for chemicals.

- Demand for Other Products: Global demand was weak during the 2020 COVID-19 government-mandated shutdowns, and many companies were forced to cut production and lay off workers. The global economy came back in 2021, and those companies that had reduced production capacity were suddenly struggling to keep up with the increased needs of the market. This has impacts not only on the availability of necessary raw materials and chemicals, but also indirect impacts on chemicals used for non-water treatment activities. As an example, chlorine availability and cost have been impacted by the demand for PVC pipe, as construction and home building has ramped up. There have also been impacts on lead times for key suppliers, who previously maintained water treatment chemical supply for contract requirements that dried up in

[3] Olin Corporation Second Quarter Earnings Conference Call, July 28, 2021 https://www.olin.com/investors/events-presentations/past-events/

2021, leaving the Company exposed at times when supply was not available to support and maintain operations.

Q. Has MAWC experienced growth in its chemical prices from 2021 contracts?

A. Yes. MAWC's contractual prices in 2022 have grown 27% from levels in 2021, equating to nearly $3 million of increases to annual expense.

2022 Contractual Price Impacts Chemical Family	Growth in Price at Normalized Usage	% Increase - 2021 to 2022
Aluminum sulfate	$ (21)	-4%
Chemicals - Other	$ 298,719	27%
Chlorine	$ 1,063,255	164%
Ferric Chloride	$ 180,901	35%
Ferric Sulfate	$ 284,739	29%
HFS (Fluoride)	$ (5,086)	-2%
Lime	$ 317,408	6%
Phosphates	$ 197,950	60%
Polymers	$ 260,983	58%
Sodium Hypochlorite	$ 235,661	44%
Total Increase	**$ 2,834,509**	**27%**

Looking at the largest movement, Chlorine (an essential chemical used to disinfect the water supply) saw an increase of 166% from 2021 end of year prices. Only one chlorine supplier was willing to accept an annual fixed-price contract. The other suppliers either pushed for a six-month agreement or a three-month agreement (which has already reflected an increase of 27% from first quarter 2022 to second quarter 2022). Depending on location and plant specifications, MAWC has experienced an 82% price increase on the low end and as high as a 230% price increase from 2021 to 2022. The general view of suppliers in discussions with Supply Chain is that demand increases in non-water treatment activities have been the largest driver of price growth, with Chlorine used as a bleach in the manufacture of paper and cloth, to make pesticides (insect killers), rubber, solvents, and in swimming pools, in addition to water treatment and disinfection. On top of this, supply is

extremely tight, as producers have shuttered aging production facilities and suffered unplanned production outages, lowering overall capacity.

Q. What if anything is Supply Chain doing today to mitigate these price increases?

A. Supply Chain continues to actively work with suppliers to find ways to mitigate market pressure, but as I explained earlier, this is extremely difficult when all suppliers are experiencing the same increases. The intent of agreeing to shorter term contracts was to provide an opportunity to adjust if the market moved. Recent experience, however, does not demonstrate that the market is declining for any chemicals required by MAWC. For example, Supply Chain is receiving the first round of quarterly pricing updates, and suppliers are passing along information on the market. A supplier has shared with Service Company that in the first quarter of 2022, they have seen Chlorine prices increase $200-$250 a ton and Caustic Soda increase $225 a dry ton. Since these increases are coming from the manufacturers, it is extremely likely that all of the Company's suppliers are seeing the same increases. Three suppliers have already warned Service Company that prices are increasing, and while, so far, the Company has been successful at holding off current price increases, the suppliers will have the opportunity to raise prices as early as June 2022. In other states, suppliers have been unwilling or unable to wait as their pricing from their manufacturers has increased significantly since the bid period. While Supply Chain always tries to negotiate any potential price increase, suppliers are not willing to sell chemicals at a loss. As previously stated, the Company cannot treat water without the appropriate treatment chemicals.

Q. What does this increase in prices mean for the term beyond current contracts?

A. Service Company does not see this trend in current prices plateauing at any point in 2022. Based on current market trends and discussions with multiple suppliers, MAWC will

experience another increase above current levels for those contracts that expire at the end of June 2022. Since the start of 2022, signs of future increase have been apparent. For example, on April 20, 2022, a large producer declared force majeure on Chlorine after a fire and chlorine leak at their Plaquemine, Louisiana plant. On June 14, 2022, that same manufacturer stated that it is temporarily curtailing a "significant portion" of its ethylene dichloride and related chlor-alkali production at its Freeport, Texas, complex. The next day, another major producer declared force majeure on chlorine and all grades of caustic soda throughout its US system due to unanticipated failures of its processing equipment. These events, along with production capacity reductions in previous years will most certainly lead to supply shortages, and higher prices.

Another example of increasing prices with no immediate end is Ammonia – up more than 64% since January 1, 2022. Market pricing when suppliers bid for 2022 (bids from suppliers received in late 2021) was approximately $600 per metric ton, and as of early March 2022, pricing is greater than $1,600 per metric ton. Since the start of the year, the Company's suppliers have continued to see increased pricing pressures, especially since the start of the Ukraine – Russia conflict, which has led to historically high fuel prices, and at the current time, there is no evidence that the increases are slowing down.

V. 2023 CHEMICAL PRICING

Q. How has the Company assessed prices into 2023?

A. Current pricing has shown that historical trends are no longer determinative of future chemical costs. Communications between Supply Chain and its suppliers have revolved around cost increases to suppliers and the need to build these into future bids. As discussed previously, many factors are contributing to the rise in chemical prices. Raw material cost increases, transportation shortages, fuel and energy prices have not yet stabilized. Global

demand is still as strong as ever, and as of April 2022, inflation is still at 40+ year highs. With the upcoming hurricane season, weather could also play a part in 2023 prices. A hurricane strike in the Gulf of Mexico, where most of the domestic chemical production takes place, could make a bad situation much worse.

Moving forward to 2023, Supply Chain has compiled pricing for MAWC that reflect an approximate 12% increase from 2022 to 2023.

Growth in 2023 Projected Prices	
Chemical Family	% Increase to 2022
Aluminum sulfate	15%
Chemicals - Other	15%
Chlorine	25%
Ferric Chloride	8%
Ferric Sulfate	7%
HFS (Fluoride)	20%
Lime	6%
Phosphates	25%
Polymers	15%
Sodium Hypochlorite	18%
Total Increase	**12%**

By chemical family, the drivers of these increases are as follows:

- Aluminum Sulfate: Liquid aluminum sulfate pricing is increasing due to increased costs of sulfuric acid and alumina. Aluminum pricing is expected to continue to increase throughout 2022 and 2023 due to demand and the effect of sanctions.

- Caustic Soda: Caustic Soda prices vary based on caustic demand and market conditions for water treatment needs and other sectors of the economy. Producer outages are also creating a tight supply. Some planned maintenance turnarounds are always expected, but some complete shutdowns of antiquated sites have lowered total production

capacity. Producers already announced a 10%-14% increase for March 2022, with additional increases expected up to and including 2023.

- Chlorine: Chlorine increases typically follow the caustic market. We have seen that restrictions on shipping chlorine make it more susceptible to freight escalation and environment charges compared to caustic. Transportation costs (including fuel surcharges added by carriers to the Company's supplier) also continue to increase. Finally, major manufacturers of chlorine and caustic soda have had maintenance issues which reduced capacity or shut down several plants for extended periods, resulting in less available product.

- Ferric Chloride: Transportation increases are expected to continue, with fuel and labor prices increasing. In addition, two of the three main raw materials – chlorine and hydrochloric acid – are experiencing significant cost increases, and reductions to steel availability due to US sanctions and a reduction in availability of scrap steel has reduced availability of a base rate material.

- HFS (Hydrofluosilicic acid or Fluoride): Overall, the HFS market has been steadily increasing. Transportation issues are also driving cost increases, with specific HFS trailers difficult to procure. This will continue to drive prices higher in 2023.

- Lime: Pollution caused by industries by way of harmful emissions and inadequate wastewater treatment is driving up demand for lime, a product that negates some of these issues.

- Phosphates: Demand for fertilizer products is driving significant increases to phosphate costs. In addition, the market is experiencing supply constraints from China and now Russia. These constraints, coupled with existing US production issues, are

driving price increases for 2022 and 2023. Finally, transportation cost increases (e.g. driver shortages, tanker shortages) are driving upward pressure on prices.

- Polymers: Demand is a significant driver of price increases recently. In addition, emulsion polymers are a petroleum-based product, and as petroleum prices have risen due to unrest in Europe, upward pressure on polymers prices are expected to continue in 2023. Finally, transportation costs also are significantly impacting prices.

- Sodium Hypochlorite: Caustic prices also impact the prices of sodium hypochlorite, and as noted above, major manufacturers of caustic and chlorine have shut down several plants, reducing supply of this necessary product.

- Chemicals – Other: National market drivers noted earlier for 2022 prices continue to put pressure on various chemicals. For instance, sulfuric acid demand has gone up, and supply is limited, which means much of the US's demand is met by overseas supply. This puts additional transportation cost pressure on chemicals prices.

VI. CONCLUSION

Q. Please summarize the impacts to chemical expenses as a result of these pricing updates.

A. Throughout my Direct Testimony, I have discussed how recent movements in the chemical market are impacting the costs of the Company's water treatment chemicals. Material price increases in 2022 have been driven by external factors, outside of the control of the Company and in many cases outside of the control of many of the Company's suppliers. These factors will continue to impact pricing beyond current contracts, based on ongoing discussions with suppliers. Although contract timelines have been adjusted in an effort to hedge future price risk, the Company will see continued growth in bids and agreed-upon

prices effective July 1, 2022, and for calendar year 2023. In short, historical trends in chemical prices are not determinative of future chemical costs.

Q. Does this conclude your Direct Testimony?

A. Yes, it does.