

Exhibit No.:
Issues: Water Storage Tank Rehabilitation,
Risks of Providing Water &
Wastewater Service, Capital
Investment Program, Description of
Plant Additions
Witness: Matthew Lueders
Exhibit Type: Direct
Sponsoring Party: Missouri-American Water Company
Case No.: WR-2026-0304
SR-2026-0305
Date: July 1, 2026

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. WR-2026-0304

CASE NO. SR-2026-0305

DIRECT TESTIMONY

OF


MATTHEW A. LUEDERS

ON BEHALF OF

MISSOURI-AMERICAN WATER COMPANY

AFFIDAVIT

I, Matthew A. Lueders under penalty of perjury, and pursuant to Section 509.030, RSMo, state that I am a Senior Director of Engineering of Missouri American Water 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.



Matthew A. Lueders

July 1, 2026

Dated

**DIRECT TESTIMONY
MATTHEW A. LUEDERS
MISSOURI AMERICAN WATER COMPANY
CASE NO.: WR-2026-0304
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DIRECT TESTIMONY

MATTHEW A. LUEDERS

I. INTRODUCTION

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Q. Please state your name and business address.

A. My name is Matthew A. Lueders. My business address is 727 Craig Road, Creve Coeur, MO 63141.

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

A. I am employed by Missouri-American Water Company (“MAWC”) as Senior Director of Engineering.

Q. Please summarize your educational background and business experience.

A. I received a Master of Science Degree in Environmental Engineering in 2008, and a Bachelor of Science in Engineering Management in 2004, from the Missouri University of Science and Technology. I am registered as a professional engineer in Missouri and Indiana. I have more than 18 years of experience in water and wastewater system engineering.

From 2008 to 2011, I worked as an engineer for Indiana-American Water Company, and from 2011 to 2019, I worked as an engineer for MAWC. In these two roles I authored or co-authored more than 10 comprehensive planning studies, which guided the capital program for more than 60 water and wastewater systems and developed numerous targeted studies supporting engineering design and operations. In 2019, I was promoted to Engineering Manager for Capital Asset Planning at MAWC, where I was responsible for all water and wastewater capital planning. In 2022, I was promoted to Deputy Director of Engineering for MAWC, where I oversaw several departments: Capital Asset Planning,

1 Supervisory Control and Data Acquisition (“SCADA”), Geographic Information Systems
2 (GIS), and Customer Development. In 2024, I was promoted to Director of Engineering
3 and subsequently promoted to Senior Director of Engineering in 2026.

4 **Q. What are your current employment responsibilities?**

5 A. As Senior Director of Engineering, I oversee and manage the activities and groups
6 supporting comprehensive water and wastewater planning, design and construction of
7 water, wastewater, and other general facilities including lead service line replacement and
8 developer related services. My responsibilities include maintaining compliance with state
9 and federal requirements related to the planning, delivery, and administration of the capital
10 investment program. As a Senior Director of Engineering, I am familiar with the facilities
11 and operations of MAWC in each of its operating areas.

12 **Q. Are you generally familiar with the operations, books and records of MAWC?**

13 A. Yes.

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

15 A. Yes, I adopted Direct Testimony and submitted Rebuttal Testimony for WR-2002-0303,
16 as well as submitted Direct and Rebuttal Testimony for WR-2024-0320.

17 **Q. Are you sponsoring any schedules in this proceeding?**

18 A. Yes. **Schedule MAL-1 – CONFIDENTIAL** addresses the significant capital investment
19 projects proposed in this case. This information is deemed confidential in accordance with
20 Commission Rule 20 CSR 4240-2.135(2)(A).3 and 4, as it contains marketing analysis or
21 other market-specific information for competitive services and other market specific
22 information relating to goods or services purchased or acquired for use by a company in
23 providing services to customers. **Schedule MAL-2** introduces a complete listing of

1 MAWC's steel water storage tanks. **Schedule MAL-3** provides copies of two recently
2 completed tank inspection reports which are representative of typical reports.

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

4 A. In my Direct Testimony, I discuss water storage tank rehabilitation followed by risks
5 related to providing public water and wastewater services. I then describe capital
6 investment planning and governance which supports MAWC's investments in water and
7 wastewater utility plant and equipment. Finally, I outline plant additions including
8 significant capital projects (defined here as those placed in service and having a Company
9 investment greater than \$1,000,000 for water and \$500,000 for wastewater) by MAWC
10 since the conclusion of the test year in MAWC's last general rate case, through the
11 completion of the test year for this rate proceeding (June 1, 2025 through May 31, 2028).
12 Additional project information such as in service dates, and final or anticipated costs are
13 included as an attachment to this Direct Testimony as **Schedule MAL-1 –**
14 **CONFIDENTIAL.**

15 **II. WATER STORAGE TANK REHABILITATION**

16 **Q. What are water storage tanks?**

17 A. In terms of a potable water system, water storage tanks are reservoirs typically located at a
18 water treatment facility or within the distribution system. These tanks hold potable water
19 so that it is available to meet short-term demands for filter wash water at the treatment
20 facility or customer demands that may exceed the instantaneous capacity of the water
21 treatment facility or the distribution system. These tanks are constructed of steel or concrete
22 and are generally classified as ground storage tanks, standpipes, or elevated storage tanks.
23 Each type interacts with the water systems through its unique hydraulic properties but

1 serves the same general purpose of holding water for our customers.

2 **Q. Why are water storage tanks critical to the operation of water systems?**

3 A. Water storage tanks are a key piece of infrastructure allowing water systems to meet peak
4 demands at significant cost savings compared to the design and construction of water
5 treatment facilities to meet peak demands alone. Unlike electric power generation, water
6 treatment plants are not constructed to meet instantaneous peak demands of the customers.
7 Use of storage tanks in a water system is analogous to the use of a battery in an electrical
8 system; storing treated water during non-peak usage periods and then returning it to the
9 system for use during peak usage periods. Peak system demands result from multiple
10 factors, including typical customer usage patterns which may include periods where
11 demands may exceed twice the average and emergencies such as firefighting which are
12 often many times greater than typical demands.

13 MAWC also utilizes storage tanks to improve operational flexibility and reliability. Energy
14 costs are lower by treating and storing finished water when electricity costs are lower and
15 delivering the stored water at reduced energy consumption when electricity costs are
16 higher. Service reliability is increased by using tanks as a backup supply of water in the
17 event of a main break or other disruption in the production or distribution of potable water,
18 helping to maintain service until the problem can be resolved. Without adequate storage,
19 periods of low pressure and the occurrence of boil orders would be common, disruptions
20 of service would be much more frequent, and treatment plants and network transmission
21 would necessarily be constructed much larger to meet peak demands.

22 **Q. Please describe MAWC's steel water storage tank rehabilitation program.**

1 A. MAWC currently owns and operates 128 steel water storage tanks across MAWC’s service
2 areas, ranging in size from 8,000 gallons to 11,000,000 gallons. The integrity of these
3 structures is crucial to helping protect public health and providing safe, clean, and reliable
4 water service to customers. To preserve that integrity, MAWC maintains an asset
5 management program to prioritize optimal investment which currently totals
6 approximately \$2 million to \$3 million each year for water storage tank rehabilitation. This
7 tank rehabilitation significantly extends the service life of these critical system assets. The
8 rehabilitation program entails periodic detailed inspections of the interior and exterior
9 structures of the tanks and a statewide prioritization to determine the current and upcoming
10 investment needs. The specific investments may include the replacement of corroded steel
11 components such as walls and roofs, addition of safety and security upgrades such as access
12 ladders and manways, replacement of appurtenances such as vents and overflows, and
13 renewal or replacement of protective coating systems. The work is bid to qualified licensed
14 contractors. To verify that the coatings were properly applied and are performing as
15 specified, the work is inspected during performance, directly after completion, and again
16 near the end of a one-year warranty period. Depending on service conditions and other
17 variables, the entire rehabilitation process is repeated for each tank on a cycle of
18 approximately 15 to 20 years, aligning with the expected lifespan of the coating systems
19 utilized.

20 **Q. Please describe the service life considerations for steel water storage tanks.**

21 A. Nearly half of MAWC’s active steel water storage tanks have been in service for more than
22 50 years, with the three oldest being in service for more than 85 years. A complete listing
23 of MAWC’s steel water storage tanks is included in **Schedule MAL-2**. If properly

1 designed, constructed, and rehabilitated on a regular basis, these tanks can be expected to
2 have service lives of well over 50 years and approaching 100 years. If not properly
3 rehabilitated, the service life of a steel tank may be no more than 30 years. Rehabilitation,
4 through the regular addition or reapplication of coating systems, is required to protect the
5 interior and exterior steel surfaces from corrosion resulting from long-term exposure to
6 harsh environmental conditions. Most of these tanks are exposed to a wide range of air
7 temperature, water temperature, humidity, wind loading, and both seasonal and severe
8 weather conditions. Tank interiors must also withstand ice formation resulting from
9 extreme winter temperatures which can damage the steel and coating systems, and a
10 persistent environment of chlorinated water vapor, which readily corrodes exposed steel.
11 Corrosion, if left unattended, can lead to structural damage and leaks as well as poor
12 aesthetic conditions. Areas damaged by corrosion can potentially result in a breach of the
13 tank which can lead to contamination from intrusion or infiltration. Under severe
14 circumstances, tank structural failure can occur. Proper periodic inspection, ongoing care
15 to address spot corrosion, and regular rehabilitation projects are necessary for these assets
16 to fully serve their expected useful life.

17 **Q. Please describe the importance of structural steel coating systems.**

18 A. As discussed, steel tanks require occasional but significant investment in the protective
19 coating system. MAWC utilizes a high-performance engineered coating system on both
20 interior and exterior surfaces of tanks. The service life of the interior and exterior coatings
21 varies depending upon several conditions, but typical high-performance coatings can last
22 from 15 years to about 20 years. Installation of new coating systems on existing tanks
23 typically requires removal of existing coatings to bare metal through abrasive blasting and

1 then installation of a new, three-coat engineered coating system that will protect the
2 structural metal and extend its useful life significantly. Work site containment systems are
3 often constructed around the tank to control dust and overspray during abrasive blasting
4 and the application of coatings. Some existing steel structures may have previously been
5 coated with lead-based paint systems. For those facilities, the project activities are
6 supplemented with lead abatement efforts to contain, collect, and properly dispose of
7 possible lead-based residuals to protect workers, neighboring properties, the general
8 public, and the environment.

9 **Q. Have Engineered Coating Systems proven their value in protecting MAWC's**
10 **investment in tanks?**

11 A. Yes. As discussed above, nearly half of MAWC's storage tanks were built prior to 1975
12 and have been in service for more than 50 years. Our oldest tanks have been in service for
13 more than 85 years. These tanks would have failed or required extensive structural repairs
14 without the installation, maintenance, and regular rehabilitation of effective coating
15 systems.

16 **Q. Please discuss any new innovations in tank coating systems.**

17 A. Over time, the industry has provided significant innovation. From the introduction of
18 polyurethane coatings to organic zinc-rich primers, to the development of fluoropolymer
19 coatings and Volatile Organic Carbon (VOC) free coatings, these innovations extend the
20 lives of the tank coating systems, meet current environmental and safety regulations, and
21 help with aesthetic properties such as reducing color fading and retaining a high gloss
22 durable finish for an extended period of time. The latest innovations allow for coating of
23 tanks during periods of cold weather. While tanks can be more easily removed from service

1 during cold periods due to lower water demands, the coating technology did not allow for
2 application during colder temperatures. This latest innovation will allow more tanks to be
3 coated during the off-peak demand season. The current window available for performing
4 this work falls during higher demand periods (summer) and, in many instances, does not
5 allow for tanks to be removed from service.

6 **Q. How are the tank rehabilitation projects prioritized?**

7 A. Capital improvements and maintenance activities for tanks (e.g., engineered coating
8 replacements, structural repairs, surface cleaning, etc.) are prioritized based on inspection
9 results and projected service lives. Notwithstanding this prioritization of the tanks in most
10 urgent need of rehabilitation, MAWC estimates that it will need to rehabilitate the entire
11 inventory of steel water storage tanks, as well as any tanks added through acquisitions,
12 over the next 20 years, or an average of about five to seven tanks per year.

13 **Q. Please discuss the cost to rehabilitate these tanks over the next five years.**

14 A. Over the next five years, the estimated total cost to rehabilitate 25-30 steel water storage
15 tanks is between \$10 million and \$15 million.

16 **Q. What factors are taken into consideration when determining this cost?**

17 A. The cost to rehabilitate a tank can vary greatly based on size, type of construction, physical
18 condition and damage, site constraints and working room, environmental considerations,
19 and other factors. The detailed tank inspections and subsequent reports and
20 recommendations will weigh heavily in determining the actual tank rehabilitation needs
21 and priorities. Further, any operational considerations may drive up costs. For instance,
22 small systems that may have only one storage tank may require the use of portable
23 hydropneumatic tanks to maintain pressure and safe operation of the system while the

1 storage tank is out of service. These tanks are typically rented and temporarily piped to
2 the distribution system to help address instantaneous changes in demand that cannot
3 typically be addressed through pumping alone.

4 **Q. Does MAWC have detailed inspection reports or other materials to support the cost**
5 **of tank rehabilitation?**

6 A. Yes. MAWC is required by the Missouri Department of Natural Resources (MDNR) to
7 inspect each water storage tank on a three-to-five-year cycle. MAWC has numerous
8 detailed inspection reports that include cost estimates for optimal rehabilitation. Copies of
9 the recently completed reports for Forby and Stonebridge tanks have been included in
10 **Schedule MAL-3** and are representative of typical reports.

11 **Q. How does MAWC currently record costs incurred for engineered coating systems**
12 **associated with the rehabilitation program?**

13 A. MAWC currently treats these costs as maintenance supplies and services expenses, as
14 described by Company witness Jennifer Grisham and presented in **Schedule CAS-9**, Line
15 33. MAWC records yearly charges above \$2,080,730 to a Tank Painting Tracker with a
16 maximum limit of \$4,000,000.

17 **Q. Has the Tank Painting Tracker proven itself to be beneficial?**

18 A. Yes. The Tank Painting Tracker is an important tool that allows MAWC to focus on
19 executing tank rehabilitation projects based solely on asset condition, insulated from
20 concerns about any potentially large year-to-year cost fluctuation.

21 **III. RISKS OF PROVIDING PUBLIC WATER & WASTEWATER SERVICES**

22 **Q. Please provide an overview of the risks associated with furnishing safe and adequate**
23 **water quantity and water quality and complying with drinking water and**

1 **environmental regulations that apply to MAWC's water supply facilities and**
2 **operations.**

- 3 A. Water supply utilities are subject to a complex array of regulations at the federal, state, and
4 local levels with respect to water quantity, water quality, and other environmental aspects
5 of their facilities and operations.

6 With respect to water sources and the quantity of water that can be withdrawn, Missouri in
7 general does not currently suffer serious constraints on its supply of usable water.
8 However, that assessment does not apply uniformly to all parts of the state. Limited surface
9 water supplies, the legacy of mining and other industrial activities, run-off from
10 agricultural land use, depleting ground water sources, brackish (saline) groundwater, and
11 contamination of groundwater with various compounds such as hydrocarbons from fuel
12 supplies, and perchloroethylene (PCE) or trichloroethylene (TCE) used in dry cleaning and
13 metal degreasing, create challenges to obtaining adequate supplies of source water in
14 various areas of Missouri.

15 These factors add to the costs of treating existing water sources as well as the costs and
16 uncertainty of obtaining new or increasing existing water resources to meet new demand.
17 These are additional risk factors that directly affect MAWC's ability to furnish safe, clean,
18 and reliable service, and can potentially increase the costs MAWC incurs to provide that
19 service.

20 Drinking water quality is controlled by a combination of federal regulation established
21 under the Safe Drinking Water Act of 1973 and state regulation under the Missouri Safe
22 Drinking Water Act. The federal act established the U.S. Environmental Protection
23 Agency ("US EPA") as the federal regulatory authority on drinking water. Under that

1 authority, US EPA has created standards for contaminant levels in drinking water¹ and a
2 series of mandatory treatment method standards, coupled with monitoring and reporting
3 requirements, and public notification mandates, in the event of contaminant level or
4 treatment method non-compliance². In turn, Missouri has adopted the federal regulatory
5 standards, plus certain other rules, which are administered by the MDNR.

6 **Q. Please describe the US EPA's efforts to make disinfectant byproduct regulations**
7 **more stringent.**

8 A. The US EPA has continued to make its regulations concerning disinfection byproducts
9 more stringent. Disinfection byproducts are produced by the interaction of disinfection
10 agents (such as chlorine) with constituents (such as organic compounds) that naturally
11 occur in source water. The Stage 2 Disinfectants and Disinfection Byproducts Rule
12 ("DBPR") adopted in 2006, coupled with increasingly stringent disinfection regulations,
13 requires a very careful balancing of treatment processes and source water monitoring to
14 meet the twin goals of inactivating microbes (such as giardia and e-coli) while avoiding
15 unacceptable concentrations of disinfection byproducts such as chlorite, bromate,
16 trihalomethanes, and halogenic acetic acids.

17 In addition to the Stage 2 DBPR, the US EPA was required by the 1996 Amendments to
18 the Safe Drinking Water Act to develop rules to balance the risks between microbial
19 pathogens and disinfection byproducts ("DBPs"). The Long Term 2 Enhanced Surface
20 Water Treatment Rule ("LT2"), adopted in 2006, is the second phase of rules required by
21 Congress to address microbial pathogens. The purpose of the LT2 is to reduce illness linked

¹ See: <https://www.epa.gov/sdwa/drinking-water-regulations-and-contaminants#List>

² See: 40 C.F.R. Parts 141-143.

1 to the contaminant cryptosporidium and other pathogenic microorganisms in drinking
2 water. The rule supplements existing regulations by targeting additional cryptosporidium
3 treatment requirements in facilities that take steps to decrease formation of disinfection
4 byproducts that result from chemical water treatment. Cryptosporidium is a significant
5 concern in drinking water because it contaminates most surface water used as drinking
6 water sources, it is resistant to chlorine and other disinfectants, and it has caused
7 waterborne disease outbreaks.

8 **Q. Is MAWC’s water supply at risk from emerging contaminants?**

9 A. Yes. The community of water purveyors along with scientists and regulators work to
10 understand the prevalence and health-effects of constituents in our water supplies, and then
11 decide whether to regulate or not to regulate them. With advances in testing and health
12 research, constituents that were previously undetectable are now being discovered in the
13 water supply and at concentrations far lower than previously possible. Additionally, health
14 science continues to develop the body of research around acute and chronic human
15 exposure to constituents now the environment. These chemicals are known as emerging
16 contaminants and include substances such as pharmaceuticals, personal care products,
17 nanomaterials, microplastics and algal toxins.

18 The US EPA is required by the Safe Drinking Water Act to develop and publish a
19 Contaminant Candidate List (“CCL”) every five years and then make a formal
20 determination on whether or not to regulate at least five constituents on that list. This
21 process has been completed five times with the draft list of contaminants for the sixth CCL
22 being released on April 2nd, 2026.³ The most recent Regulatory Determination based on

³ See: <https://www.epa.gov/ccl/draft-contaminant-candidate-list-6-ccl-6>

1 CCL5, which was published on March 17, 2026, determined that 2-aminotoluene,
2 cylindrospermopsin, ethoprop, microcystins, molybdenum, permethrin, profenofos,
3 tebuconazole, and tribufos did not meet the criteria for regulation.⁴

4 **Q. Has the US EPA proposed any recent National Primary Drinking Water Regulations?**

5 A. Yes. On April 10, 2024, the US EPA announced the most recent addition to the National
6 Primary Drinking Water Regulations by finalizing regulations for six PFAS compounds,
7 including PFOS and PFOA. Concern over PFAS compounds is a current example of how
8 evolving research and regulatory responses can drive the need for higher levels of treatment
9 and impose demands for increased investment in new and more intensive forms of
10 treatment.

11 In addition to the promulgation of the PFAS Primary Drinking Water Regulation, on April
12 19, 2024, the US EPA also designated PFOA and PFOS as hazardous substances under the
13 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).
14 This designation puts MAWC, and many other water utilities, at risk of being held
15 responsible for the presence of these compounds in treatment residual waste. Disposal of
16 these wastes may become more costly, regulatory tracking more onerous, and risk of
17 involvement in clean-up lawsuits higher as the presence of these compounds in source
18 waters makes interaction with them unavoidable.

19 **Q. What steps are being taken by MAWC in regard to PFAS?**

20 A. MAWC has completed testing and the results, to date, have not indicated a need for the
21 high levels of investment anticipated in many water systems throughout the country.

⁴ See: <https://www.epa.gov/ccl/regulatory-determination-5>

1 **Q. Is lead a risk MAWC faces in providing water service to its customers?**

2 A. Yes. On October 8, 2024, the US EPA issued the final Lead and Copper Rule
3 Improvements (“LCRI”) under the Safe Drinking Water Act. The LCRI strengthens prior
4 lead regulations by requiring water systems to identify and fully replace all lead service
5 lines and certain galvanized service lines within 10 years of compliance date, regardless of
6 measured lead levels.

7 The final LCRI strengthens key elements of the rule in three main focus areas of the US
8 EPA: Replacing All Lead Service Lines, Reducing Complexity for Public Health
9 Protection, and Increasing Transparency and Informing the Public. The most significant
10 change is that water systems will be required to replace lead service lines, and galvanized
11 service lines requiring replacement, within 10 years.⁵

12 The rule also requires that when a water system’s lead sampling exceeds 0.010 mg/L when
13 calculating the system’s 90th percentile lead level that the system is required to inform the
14 public and take action to reduce lead exposure while working to expeditiously replace all
15 lead pipes.

16 **Q. Please provide an overview of MAWC’s efforts to address removal of lead service**
17 **lines?**

18 A. MAWC, with support provided by Commission decisions, has initiated a program that
19 addresses the concerns addressed by the US EPA about the presence of lead service lines.
20 In addition to the replacement of the typically utility-owned portion of the lead service
21 lines, under its program, MAWC also replaces the customer-owned portion of the lead

⁵ https://www.epa.gov/system/files/documents/2024-10/final_lcric_fact-sheet_general_public.pdf

1 service lines across its service territory at no direct cost to the customer. This program is
2 underway and has an established internal Company target to replace all lead service lines
3 and galvanized service lines requiring replacement for its systems ahead of the proposed
4 LCRI deadline of ten years.

5 MAWC has initiatives to educate its customers about the risks of lead in drinking water
6 and provides them the information they need to participate in MAWC's customer-owned
7 lead service line replacement program. Generally, MAWC schedules and replaces lead and
8 galvanized services lines as they are identified through the development of the lead service
9 line inventory which is an intensive effort prioritized based on estimated age of structures,
10 community equity, and other factors. Additionally, MAWC is working to significantly
11 reduce the risk of lead exposure to children by implementing a targeted inspection and
12 verification of service line materials at schools and childcare facilities within its service
13 areas, ahead of other targets, followed by replacement of any lead or galvanized service
14 lines found.

15 MAWC is at the forefront of the water industry in proactively eliminating the risks that
16 might accompany the presence of lead service lines. However, these efforts require a great
17 amount of coordination and effort, including customer engagement to authorize the
18 customer-side replacement, the dedication of management time and resources, and the
19 commitment of significant investment of capital to achieve the intended results. These
20 factors, in addition to the demands MAWC already faces to rehabilitate, replace, and
21 enhance aging infrastructure and meet evolving regulatory demands, add to risk factors
22 that MAWC faces as it works to provide safe, adequate and reliable water service.

23 **Q. Please provide an overview of the risks that environmental regulation poses for**

1 **MAWC as the owner and operator of public wastewater systems.**

2 A. As with the provision of public water supply service, the operation of wastewater collection
3 and treatment systems are also regulated at both the federal and state levels pursuant to
4 several statutes and voluminous regulations, and are subject to a range of environmental
5 regulatory risks. At the federal level, wastewater systems are regulated pursuant to the
6 Clean Water Act and numerous regulations adopted by the US EPA under that law. At the
7 state level, the MDNR has adopted and enforces those standards under the Missouri Code
8 of State Regulations Title 10, Division 20. These regulations set standards and
9 requirements for virtually every aspect of wastewater system operation.

10 One risk associated with operating wastewater systems is that effluent limitations imposed
11 on Wastewater Treatment Plants (“WWTP”) discharges are stringent and can become more
12 stringent over time. The Clean Water Act requires wastewater systems to obtain and
13 comply with National Pollutant Discharge Elimination System (NPDES) permits which, in
14 Missouri, are issued by MDNR. NPDES permits establish stringent effluent limits based
15 upon the stricter of: (1) technology-based effluent limits; and (2) water quality-based
16 effluent limits.

17 Technology-based limits are set by US EPA (or, in the absence of US EPA guidelines for
18 effluent limits, by the permit writer’s best professional judgment) at levels that reflect
19 (dependent on the parameter) best conventional control technology (“BCT”), best
20 practicable control technology currently available (“BPT”), or best available technology
21 economically achievable (“BAT”). Determinations of BCT, BPT and BAT can change
22 over time, becoming more stringent as technology evolves.

23 Water quality-based effluent limits (“WQBEL”) are established to avoid discharges to

1 water bodies that exceed instream water quality criteria, which are set to protect existing
2 and designated uses, such as recreation and various categories of fisheries. WQBEL limits
3 are usually based on the assimilative capacity of a stream to receive and dilute the discharge
4 during extremely low flow – that is, when stream flow is at the 7-day, 10-year low flow
5 (Q7-10). By definition, WQBELs may require treatment beyond technology-based values,
6 even beyond what is considered best available technology. Moreover, as streams become
7 cleaner, there exists a possibility that their classifications may be upgraded such that their
8 protected uses are deemed to be more sensitive, which, in turn, leads to even more stringent
9 WQBEL calculations.

10 As just one example, many of MAWC’s small wastewater treatment systems are now
11 required to meet ammonia discharge limits, which are based on the 1999 US EPA Update
12 of Ambient Water Quality Criteria for Ammonia. In the near future, these wastewater
13 treatment plants will be required to meet significantly more stringent effluent limits based
14 on the 2013 US EPA ammonia criteria. A notable risk in wastewater operations is that
15 limits for some parameters may have conflicting impacts on treatment efforts or may not
16 be attainable with existing treatment systems. Such is the case with respect to E. coli
17 standards on the one hand and limits on treatment residuals (residual chlorine) on the other
18 – where a delicate balancing is required to concurrently meet all applicable standards.

19 Thus, more stringent effluent limits may be imposed when technology evolves or stream
20 conditions change, engendering requirements for significant capital improvements and/or
21 increased operating costs for enhanced treatment performance. Every five years, NPDES
22 permits are up for renewal, and in any such renewal more stringent limits may be triggered.

23 Another risk for MAWC is that a number of Missouri streams, including those where

1 MAWC is operating wastewater systems, are parts of watersheds that are classified as
2 “impaired” (meaning their instream quality does not meet state standards). Such impaired
3 waters are subject to the development and imposition of Total Maximum Daily Loads
4 (“TMDLs”) for parameters that contribute to the instream conditions. Where TMDLs are
5 established by US EPA or MDNR, stringent waste load allocations are made to point-
6 source discharges (such as WWTPs), and allocations are also made to non-point sources
7 such as agriculture and urban runoff. Where any cap loading exceedance, irrespective of
8 the cause (such as increased flows and loadings from system customers or high stormwater
9 flows entering the system), can potentially lead to penalties and other enforcement actions.
10 Wastewater systems also face significant regulatory and environmental liability risks.
11 Non-compliance with wastewater system effluent limits and other permit conditions can
12 result in severe penalties. Regulatory violations expose the operator to the risk not only of
13 governmental agency enforcement actions, but also of citizen suits in which both injunctive
14 relief and civil penalties can be imposed.

15 Other potential liability risks from wastewater system operations arise from backups,
16 overflows or releases that may occur from the collection system onto private property or
17 into the environment. Liabilities resulting from wastewater backups into buildings or other
18 unplanned discharges are an inherent part of wastewater system risks. This may become
19 more of a concern in the future given the designation of PFOA and PFOS as hazardous
20 substances by the US EPA under CERCLA. Wastewater collection systems and treatment
21 processes will inherently collect and concentrate these constituents in effluent discharges
22 and waste residuals which will need to be released or disposed of, potentially opening
23 wastewater purveyors to increased costs and legal risks.

1 **Q. What effects did these rules have on MAWC’s infrastructure investment?**

2 A. To comply with these rules, which evolve along with the science, MAWC is required to
3 evaluate and modify its treatment processes which, in turn, requires MAWC to invest in
4 new plant and equipment to enable revised treatment methods. This is another example of
5 the need for MAWC to study, monitor, and comply with new and evolving standards that
6 are accompanied by higher costs and increased demands for new investment. The projects
7 implemented depend on the regulation being met, with examples being: completion of
8 demonstration of performance studies to assert compliance with the LT2 Rule, replacement
9 of treatment components to maintain compliance with the Safe Drinking Water Act,
10 replacement of lead and galvanized service lines to comply with the Lead and Copper Rule
11 Revisions, and wastewater treatment plant upgrades to comply with discharge limits issued
12 through the Clean Water Act. The continued development of the science around health-
13 effects, advancement of testing methods enabling increasingly low detection limits,
14 escalation of public concern over particular contaminants, and the subsequent regulatory
15 determinations from the EPA and state drinking water regulators have resulted in
16 increasingly stringent regulatory standards. This process, along with the specific regulatory
17 examples noted earlier, characterizes the regulatory landscape where demands are, in
18 effect, a “moving target” for water suppliers, making them another significant risk factor
19 for MAWC.

20 **Q. Does climate variability pose additional risks for water supply and wastewater system**
21 **utilities such as MAWC?**

22 A. Yes. Whatever the causes of climate variability may be, water supply and wastewater
23 utilities face the reality of changing climatic conditions and attendant stresses on water

1 resources.

2 Water supply systems are fundamentally resource-dependent and, therefore, the effects of
3 climate variability pose a significant on-going risk and create challenges with regard to
4 maintaining a reliable water supply during the full range of potential future conditions,
5 including even what might be assumed to be “normal” periods. The safe yields of water
6 supply sources have historically been evaluated based on historical climatic patterns, data
7 from so called “droughts of record” or dry period frequency analysis. However, changing
8 climatic conditions suggest that historical hydrologic data (which in many cases only
9 reflect 50-100 years of rainfall and stream flow measurement data collection – a quite short
10 period in geologic or climatic time) may not accurately predict future conditions. Thus,
11 the calculated safe yield of streams, reservoirs and groundwater wells are put in question
12 as the effects of climate variability are experienced across the midwestern United States.
13 Thus, in response to climate variability, water supply systems must address the risks posed
14 to the reliability and resilience of their sources.

15 While droughts are the major challenge for water supply systems, heavy precipitation and
16 high-flow events are the concern of wastewater systems. Wastewater systems of all types
17 are impacted by storm water – directly in the case of combined sewer systems and
18 indirectly (but nevertheless significantly) by infiltration and inflow in “sanitary only”
19 systems. The potential for increased intensity of strong storms and high rainfall events in
20 the midwestern United States portends challenges to wastewater systems which must, in
21 turn, cope with and treat higher peak flows while also avoiding an exceedance of effluent
22 limitations and reducing the potential for untreated overflows. An additional challenge
23 related to high intensity rain events is higher levels and frequency of flooding. Flooding

1 has the potential to impact both water and wastewater treatment facilities which are often
2 located in proximity to water ways.

3 **IV. CAPITAL INVESTMENT PLANNING PROCESS**

4 **Q. Does MAWC have a planning process for capital investment projects?**

5 A. Yes. MAWC has a comprehensive capital planning process that assesses capital
6 investment needs for all aspects of operations and assigns funding to capital programs on
7 a prioritized basis.

8 **Q. How does MAWC decide what capital projects to pursue?**

9 A. MAWC uses a standardized Capital Program Management (“CPM”) process to assess and
10 prioritize its capital investment needs and produce a capital investment plan. Numerous
11 factors are considered when determining funding allocations for infrastructure investment,
12 such as current and future service needs, assessments of the physical condition of existing
13 plant, economic and risk factors, performance characteristics, regulatory compliance,
14 available capital, and the potential to coordinate with municipalities and other utilities in
15 joint improvement projects. The CPM’s planning studies, prioritization activities and other
16 assessments provide a forward-looking review of the needs of the system and the
17 infrastructure and prioritizes among projects to allow MAWC to continue to operate safely,
18 efficiently and meet current and future regulations. By having a good project planning,
19 budget and ongoing review process, MAWC is able to select among competing capital
20 needs and manage a wide variety of projects within the overall cost of its plant construction
21 budget. The CPM also includes a governance process consisting of: (1) formal approvals
22 and consistent controls that optimize the effectiveness of asset investment; (2) dedicated
23 project managers responsible for managing the stage of the project and overseeing project

1 spending; and (3) monthly monitoring of the status of ongoing projects.

2 **Q. Please describe the key elements of the CPM.**

3 A. Key elements of the CPM include: (1) targeted and comprehensive planning studies
4 (“CPS”); (2) pipeline prioritization modeling for distribution system replacement planning;
5 and (3) risk and resiliency and asset assessments. The CPM prioritizes identified projects
6 utilizing drivers appropriate for the asset investment category including safety, regulatory
7 compliance, capacity, customer satisfaction and other drivers. Studies conducted
8 previously may also be updated, as necessary, to assess any changed circumstances that
9 may impact project prioritization. More detailed design engineering is conducted and
10 implementation plans are developed for those projects that are contained in the capital
11 investment plan.

12 **Q. Please describe how the CPS is utilized in the CPM.**

13 A. A CPS evaluates the distribution system, storage facilities and production capacities and is
14 an important piece of planning for construction processes. CPSs identify projects for
15 construction over a fifteen-year planning horizon. Targeted studies are also completed for
16 construction project needs that arise between CPS cycles and are evaluated, developed, and
17 estimated to the same degree as a CPS project prior to being considered and placed within
18 the portfolio of planned projects.

19 **Q. Please describe MAWC’s comprehensive capital planning process.**

20 A. MAWC maintains a planning program to address the needs of each district through
21 comprehensive studies such as a CPS. The planning process begins with the development
22 of anticipated demand projections and regulatory requirements of the system, the
23 identification of improvements needed to meet those demands, and the adoption of

1 strategies to correctly prioritize and distribute capital spending for the various needs of
2 MAWC. Specific capital planning needs are addressed in both the short term (1 year) and
3 longer term (five years and greater) and are included in the CPS developed for a service
4 area. Major updates to the CPS may occur approximately every five to ten years depending
5 on changes to system demand, regulations, facility or asset performance. Between major
6 updates, targeted studies may be completed to address specific issues while aligning with
7 the overall system investment plan. Recommendations from these studies are one of the
8 parameters used to set the baseline for the preparation of the annual capital budgeting
9 process. A key component of the planning technique is that it is flexible and can be
10 adjusted as necessary to address new needs such as unplanned equipment failures, large or
11 sudden growth of a service area, or a new regulatory requirement. Project prioritization is
12 done using objective criteria that validate the need for the project and the risk of not doing
13 the project.

14 MAWC prioritizes capital investment using a risk-based approach known as the Risk
15 Register. Through this process, identified system needs are assigned a relative rating based
16 on the likelihood of an asset failure and consequence(s) of that failure. Projects that
17 mitigate risks in the high tiers of likelihood and consequence of failure, as defined by the
18 Risk Register, are given high priority in Capital Plans.

19 In addition, MAWC utilizes geographic information systems (GIS) based software to
20 identify and prioritize pipeline replacement and rehabilitation investments across its
21 systems. Sewer main replacements or structural lining projects are developed in the GIS
22 system, then informed and prioritized based on flow monitoring and closed caption
23 television (CCTV) inspection. Water main replacements are developed in the GIS system,

1 then informed and prioritized based on a composite analysis of service risks associated
2 with pipe failures and other factors. The likelihood of pipe failures are interpreted from
3 break density (by material type), break frequency, hydraulic velocity, material, age, and
4 survival probabilities. Pipe failure history, identified during MAWC's unscheduled
5 pipeline replacement projects and pipeline repair work, is a significant input in the
6 prioritization. The consequence of pipe failures are interpreted from estimates for the
7 number and type of impacted customers, community and traffic disruption, financial
8 impacts, and proximity to water bodies. Additional considerations include available fire
9 flow rates, lead service counts, water quality records and, when available, municipal paving
10 schedules.

11 Based upon the results of the CPS and other specific needs of the service areas (such as
12 meter replacements and other life cycle replacements), MAWC develops a proposed annual
13 strategic capital expenditure plan ("SCEP") in which capital expenditures are prioritized
14 within the service districts and included as part of a state-wide capital budget. This SCEP
15 outlines spending for specific projects and recurring expenditures for a five-year period.
16 This capital plan is then reviewed for the reasonableness of the proposed projects and their
17 forecasted costs. This process is repeated annually to update the SCEP to reflect any
18 changes in need or prioritization, and to maintain a five-year forward-looking projection.

19 **Q. Does MAWC have significant capital investment requirements?**

20 A. Yes, MAWC's water and wastewater infrastructure investment needs are substantial.
21 MAWC investment needs are primarily related to non-revenue producing infrastructure
22 replacement and compliance with existing and new drinking water or wastewater standards
23 as promulgated and enforced by MDNR. MAWC's systems must comply with ever

1 increasing and more strict regulatory requirements for drinking water (e.g. the Safe
2 Drinking Water Act) and wastewater (e.g. the Clean Water Act). Further, as is the case
3 with much of the water and wastewater industry, MAWC's infrastructure is aging and in
4 need of replacement. Aging infrastructure, pipes, plants, pumping equipment, etc., must
5 be continually replaced so that MAWC can continue to provide our customers with safe,
6 adequate, efficient, and reliable utility service. In addition, MAWC stands ready to work
7 with the Commission to acquire small and struggling water and wastewater systems
8 throughout Missouri. These small systems often require significant investment to meet the
9 basic drinking water and wastewater regulatory requirements of the State of Missouri.

10 **Q. How do aging infrastructure replacement needs impact MAWC?**

11 A As the largest investor-owned water and wastewater utility in Missouri, MAWC bears a
12 considerable portion of the state's aging infrastructure investment burden. Much of the
13 pipe, treatment, storage, supply, and other plant that are used to provide water and
14 wastewater services are nearing the end of their life expectancy. In 2025 for example,
15 MAWC invested approximately \$308 million in improvements to keep pace with the
16 replacement needs of its aging water distribution and wastewater collection infrastructure.
17 In 2026, MAWC plans to place in service approximately \$263 million of capital
18 investments for the replacement of aging systems. These levels of capital investment are
19 anticipated to continue for the foreseeable future as more of MAWC's infrastructure
20 reaches the end of its useful life. While MAWC must continually invest in its aging
21 infrastructure, it does so at rising costs. Costs are rising because of increasing material and
22 labor costs, but also because the right of way restoration requirements have increased.
23 Historical "trench width plus two feet" replacement requirements are now being increased

1 to “full width traffic lane” pavement replacement requirements by municipalities and
2 government agencies. The projects I describe clearly illustrate the types of aging
3 infrastructure issues as well as changing regulatory requirements MAWC faces.

4 **Q What is the amount of MAWC’s planned investment in this case for the replacement**
5 **of water and wastewater distribution and collection system assets?**

6 A. MAWC plant additions in this case include approximately \$430 million for water and
7 wastewater distribution and collection system infrastructure asset replacements that are
8 near the end of their useful lives. From the perspective of long-term sustainable customer
9 service and water rates, replacing pipes that are near the end of their useful life in a
10 systematic and responsible manner will result in lower costs to customers over time as
11 compared with deferring needed replacements and addressing problems, such as leaks and
12 main breaks, as they arise. Planned pipe replacements are much less costly on a unit cost
13 basis than the costs of unplanned pipe breaks. Based on a three year average, pipe
14 replacement is approximately 5-times less costly on a unit length basis than unplanned pipe
15 breaks. This estimate is prior to consideration of service disruptions, property damage, and
16 the steep increase in future pipe replacements resulting from prior deferrals of
17 replacements.

18 Breaks and blockages also lead to unintended service disruptions, possible health risks
19 from potential drinking water contamination, and instances of sewer backups and property
20 damage that can have significant impact on our customers and communities. Revitalizing
21 the distribution and collection infrastructure installed by earlier generations is essential to
22 meet the ongoing requirements of the communities and customers MAWC serves.
23 Investing in the replacement of the infrastructure enhances MAWC’s ability to continue to

1 meet customers' service expectations and improve health and environmental protection
2 within the communities. In addition, the replaced areas of the system will likely be more
3 robust and resilient during periods of high demand and storm events.

4 **Q. Please describe the general project categories in MAWC's capital investment plan.**

5 A. MAWC's capital investment plan can be divided into two distinct areas: recurring projects
6 ("RP") and investment projects ("IP"). RP are capital projects and programs that MAWC
7 undertakes on a regular annual basis. IP are projects individually funded and which require
8 greater planning and scoping needs. Whether RP or IP, all aspects of MAWC's capital
9 program are essential to continuing to provide safe and reliable service to its customers and
10 to support the long-term viability, reliability and resiliency of its water and wastewater
11 systems.

12 **Q. What RPs are included within MAWC's capital investment plan?**

13 A. Recurring projects include, water main installation for new development, watermain
14 replacement and relocation projects, service line and meter setting installation and
15 replacement, meter purchases, installation and replacement of treatment equipment,
16 installation and replacement of supervisory control and data acquisition (SCADA)
17 equipment and systems, the purchase of tools, furniture, equipment, vehicles, and
18 investment in information technology equipment and systems.

19 **Q. How does MAWC determine the RP investments to include in the forecast period?**

20 A. RP investments are trended from historical and forecasted data. Estimates are prepared for
21 the installation of new mains and service lines, meter settings, and the purchase of new
22 meters based on preliminary plans from the appropriate governmental planning agencies
23 and consultations with developers, homebuilders, and engineering firms.

1 The purchase of tools, furniture, equipment, and vehicles are based on anticipated needs.
2 MAWC reviews each item independently and prepares an itemized list of expenditures.
3 Estimates are made based on the current-year pricing and consider inflation. Criteria
4 considered when evaluating the priority of RP include: regulatory requirements; risk and
5 resiliency evaluations; asset condition assessments and engineering requirements;
6 consideration of national, state, and local trends; operational and water quality needs;
7 pipeline prioritization (as described above) and external paving/road construction plans;
8 environmental impact evaluations; water resource management; and consideration of
9 national trends in cybersecurity.

10 MAWC uses engineering criteria based on accepted engineering standards and practices
11 that provide adequate capacity and appropriate levels of reliability to satisfy residential,
12 commercial, industrial, and public authority needs, as well as provide flows for fire
13 protection. The criteria are developed from regulations, professional standards, and
14 Company engineering practices, policies and procedures.

15 Pipelines are designed to meet two conditions of service: (1) deliver projected peak hour
16 customer demands while maintaining system pressures at 35 psi or greater in accordance
17 with the MDNR regulations; and (2) provide adequate fire flow identified by the governing
18 fire authority or the Insurance Service Office Fire Ratings while maintaining distribution
19 system pressure at 20 pounds per square inch (psi) or greater.

20 **Q. How are IP included within MAWC's capital investment plan?**

21 A. IP represent investments made to meet environmental or water quality regulations,
22 infrastructure capacity expansion, resilience, or rehabilitation. These projects allow
23 MAWC to meet the service demands of the community, help ensure regulatory compliance,

1 and reduce asset failure. The determination of IP to include within the investment plan is
2 made through the comprehensive capital planning process discussed earlier in this
3 testimony.

4 **Q. How does MAWC manage capital expenditure procurement as part of its day-to-day**
5 **activities?**

6 A. All significant construction work performed by independent contractors and significant
7 purchases are completed pursuant to a bid solicitation process. MAWC maintains a list of
8 qualified bidders and bids project work to ensure that construction costs are kept
9 reasonable. American Water Works Service Company, Inc. (“Service Company”) annually
10 takes competitive bids for material and supplies that are either manufactured or distributed
11 regionally and nationally through its centralized procurement group. The Service Company
12 is a wholly owned subsidiary of American Water that provides services to Missouri-
13 American and its affiliates. Through the size and breadth of American Water, MAWC has
14 the advantage of being able to purchase these materials and supplies on an as-needed basis
15 at favorable prices. The Service Company continues to review and undertake procurement
16 initiatives for services and materials to reduce costs or mitigate price increases through
17 either streamlined selection or utilization of large volume purchasing power. Initiatives that
18 have directly impacted capital expenditures include the use of master services agreements
19 with pre-qualified engineering consultants, national vehicle fleet procurement, and national
20 contracts to purchase materials directly from manufacturers.

21 **V. DESCRIPTION OF PLANT ADDITIONS**

22 **Q. Please describe MAWC’s plant additions.**

23 A. The projects that comprise MAWC’s plant additions in this case vary from what may be

1 characterized as routine, recurring projects such as: the installation of individual
2 distribution mains, services and hydrants; to substantially larger discrete projects such as:
3 the replacement of transmission mains, safety and reliability upgrades at water production
4 facilities, replacement of electrical switchgear and motor control centers, water storage
5 tank projects, and system acquisition improvements. More detailed descriptions of the plant
6 additions included in this case are detailed later in this testimony.

7 **Q. How are you presenting MAWC's plant additions in your Direct Testimony?**

8 A. MAWC is seeking recovery of capital investments made in its water and wastewater
9 systems since the end of its last rate case through the future test year proposed in this case,
10 which is the period of June 1, 2025 through May 31, 2028. MAWC investment total,
11 including WSIRA, is approximately \$1.57 billion, of which approximately \$630 million
12 will be placed in service in the future test year period, which is the 12-months ending May
13 31, 2028.

14 **Q. Can you describe these plant additions?**

15 A. Yes. I describe the significant capital projects (defined herein to include those projects
16 with a cost of more than \$1 million for water systems and \$500,000 for wastewater) below.
17 **Schedule MAL-1 – CONFIDENTIAL** provides a list with each project described below
18 along with the estimated or actual capital spend and in-service date. Company witness
19 Jennifer Grisham describes how plant additions are reflected in rate base in her direct
20 testimony.

21 **Q. Does the total capital investment in plant additions, for the period June 2025 through**
22 **May 31, 2028, include additional investments in water and wastewater facilities that**
23 **are not specifically described in this Direct Testimony?**

1 A. Yes. In addition to the capital projects listed below and in **Schedule MAL-1 –**
2 **CONFIDENTIAL**, MAWC will also enhance or maintain current levels of service,
3 quality, reliability, and efficiency through numerous projects that do not fit within the
4 definition of “significant capital projects” as I have defined the term above. These projects
5 relate in part to the extension or replacement of water or wastewater distribution and
6 collections mains, minor plant and pump station improvements, installation of
7 replacement services, hydrants, and meters, and other capital expenditures such as vehicles,
8 heavy equipment, building improvements, and computers.

9 **Q. Please describe the significant capital investments in this case.**

10 A. The significant capital investments completed as RP are projects that involve water main
11 replacements due to aging infrastructure, sewer main replacements or structural lining due
12 to aging infrastructure, and/or water or sewer main relocations that are necessary to allow
13 local government road authorities to construct their projects. These projects are
14 recommended and prioritized as described earlier in this testimony. Additionally,
15 municipal, state or county agencies will approach MAWC to relocate our facilities when
16 they are in physical conflict with the agency’s proposed projects or improvements. Some
17 examples of these projects include replacing the pavement, adding new storm sewers, or
18 roadway work resulting in significant elevation changes. A public agency may also
19 periodically request that MAWC replace a water main when they have a roadway project
20 coincident with a main that has a perceived history of failures; they wish to avoid future
21 damage to the new pavement once they complete their project. MAWC will review the
22 water main break history and, if it is warranted, MAWC will replace the main as part of
23 our replacement program in conjunction with their project, even if it's not being relocated

1 due to physical conflict with the improvements. This cooperation allows MAWC to help
2 local authorities achieve their goals while also helping MAWC replace aging infrastructure
3 while lowering restoration costs.

4 Projects that fall into these categories include:

- 5 • MOSL_Page_Ave Ph1_12"_1040'_OBSL (R17-02B2.24-P-0034)
- 6 • MOSL_Page_Ave Ph4_12"_1300'_OBSL (R17-02B2.24-P-0037)
- 7 • MOSL_Baumgartner Rd Ph1_8" DI_1275_ (R17-02B2.24-P-0055)
- 8 • MOSL_Kinswood PH 2_12"_1700'_OBSL (R17-02B2.25-P-0076)
- 9 • MOSL_Kinswood PH 3_12"_220_MOSL (R17-02B2.25-P-0077)
- 10 • MOSL_BAXTER_DR_20"_HDPE_400'_OBSL (R17-02B2.25-P-0078)
- 11 • MOSJ REPL Hickory - Replacement of (R17-03B1.24-P-0002)
- 12 • MOSJ REPL East Hills (R17-03B1.24-P-0005)
- 13 • MOJC_Jefferson to W Miller 12" Repl (R17-12B1.25-P-0006)
- 14 • MORD-Redfield 8 3800 OBSL (R17-41B1.25-P-0001)
- 15 • MOBM_Dalton Dr (R17-55B1.24-P-0003)
- 16 • Eureka I/I Mitigation Phase 2 (R17-60B1.25-P-0003)

17
18 **Q. Are there significant water related capital projects completed as IP included in this**
19 **case?**

20 **A.** Yes. The following significant water capital projects completed as IP are included in this
21 case:

- 22 • SP Intake Reliability Improvements (I17-020167-01) – The South Plant intake,

1 which was the sole intake for the South Water Treatment Plant, was vulnerable to
2 flooding due to its location on the Meramec River which has experienced record
3 high water levels in recent years, threatening pumps and electrical equipment and
4 creating risk of supply interruption. Loss of this facility due to flooding would
5 impact service for a significant timeframe. The project includes relocation and
6 replacement of intake facilities at a higher elevation, above the 500-year flood
7 elevation, and provides additional reliability and efficiency through raw water
8 pump replacements, installation of emergency power generation, and replacement
9 of aging intake pump station components. These improvements enhance system
10 reliability and resiliency by mitigating flood risk, protecting critical infrastructure,
11 and ensure raw water supply to the treatment plant during extreme conditions,
12 supporting reliable service to customers.

- 13 • CP A Basin HS Vault 1-3 Rehabilitation (I17-020250-01) – The existing high
14 service pump vaults at Central Plant A have aging access infrastructure that limits
15 safe and efficient maintenance activities. The project includes rehabilitation of
16 Vaults 1–3, with improvements such as new access covers, walkways, platforms,
17 and related upgrades, along with retirement of deteriorated access features. These
18 improvements enhance worker safety and operational reliability by providing safe
19 access to critical pumping infrastructure, supporting ongoing maintenance
20 activities, and ensuring consistent water service to customers.

- 21 • Purcell Water Tower Replacement (I17-650001-01) – The existing steel riveted
22 water tower was approaching 100 years in age and was in poor condition and unable
23 to reliably support system operations, with limitations in how the system could be

1 filled due to a shared source with another community. The project includes design
2 and construction of a new elevated composite water tower at a higher hydraulic
3 grade to replace the existing structure and improve system pressure and storage
4 capabilities. These improvements enhance storage reliability and operational
5 flexibility while supporting system capacity for future growth and ensuring
6 consistent water supply and service to customers.

- 7 • Install New Elevated Sunset Tank (I17-020068-01) – The previous Sunset Tank
8 was over 90 years old, undersized in both elevation and storage volume, and in
9 deteriorated condition, with corrosion and coating failures limiting its
10 effectiveness. The tank restricted treatment plant operations, including filter
11 backwashing, due to insufficient pressure and storage capacity. The project
12 included replacement with a larger and taller elevated storage tank to increase
13 available storage and improve system hydraulics. These improvements enhanced
14 system reliability and operational performance by providing sufficient storage
15 volume and maintaining consistent customer pressures, ensuring reliable service.

- 16 • 1711-Joplin Service Center Expansion (I17-110032-01) - The existing service
17 center lacked adequate indoor space for storage of materials and large vehicles,
18 resulting in reliance on external storage and exposing equipment to theft and
19 weather-related damage. The project included expansion of the facility with
20 structural additions, relocation of existing elements, and installation of upgraded
21 mechanical and electrical systems to support operations. These improvements
22 enhance operational efficiency and asset protection while providing a safer and
23 more functional work environment, supporting reliable field operations and

1 consistent service to customers.

2 • JFC-New Filter & Chem Feed Building (I17-120015-01) - The existing filter
3 building at the Jefferson City Water Treatment Plant was approximately 100 years
4 old with space constraints, safety concerns and limited operational flexibility. This
5 aging treatment infrastructure required replacement to maintain system reliability
6 and performance. The project includes construction of a new filter and chemical
7 building along with replacement of associated treatment and chemical feed
8 systems. These upgrades improved treatment capacity and operational reliability
9 while enhancing safety and supporting consistent water quality for customers.

10 • MOWB-Ozone (O3) Replacement (I17-060007-01) - The Warrensburg water
11 treatment plant utilizes ozone to treat a significant taste and odor issue. This project
12 replaced end-of-life ozone equipment to address reliability, obsolescence, and
13 safety deficiencies in the existing system. End-of-life issues included component
14 failures, lack of available replacement parts, issues with monitors and other critical
15 controls. The project replaced the ozone units with newer equipment to improve
16 safety controls and reduce maintenance and energy impacts.

17 • MOGC-GC Standpipe BPS (I17-610002-01) – The Garden City standpipe has a
18 total volume of 300,000 gallons but could only utilize approximately 75,000
19 gallons due to system hydraulics, which resulted in water age issues and limited
20 available storage for fire protection. Additionally, the available system storage
21 created operational constraints on plant operation and staffing. The project included
22 installation of booster pump station to utilize a larger fraction of the tank and allow
23 for a consistent plant operations schedule. These improvements enhance

1 operational flexibility, available fire volume and pressure management, supporting
2 reliable system performance and consistent service to customers.

- 3 • 1702-Eureka Water Main Project Phase 4 (I17-020252-01) - This project increases
4 hydraulic connectivity between the northwestern portion of the Eureka network and
5 the central transmission network, improving flow and reliability. Hydraulic
6 constraints due to inadequate diameter piping resulted in difficulty filling the
7 Arbors Tank and reliability concerns in the event of issues with the 12-inch crossing
8 of Interstate-44. The resolution was to extend and upsize key segments to 12-inch
9 diameter. This improvement enhances pressure stability and flow distribution,
10 increases reliability during peak demand and outage conditions, and supports
11 consistent service to customers in the affected areas.

- 12 • I-49 City of Joplin ARPA Main Extension Partnership (I17-110031-01) - This
13 project extends over 35,000 LF of 12” public water mains into targeted areas of
14 Joplin not currently served by a public water system, leveraging ARPA matching
15 funds with Missouri-American Water as a sub-recipient. These improvements
16 provide safe, reliable potable water service and provide fire protection to affected
17 residents, addressing public health and safety risks.

- 18 • NP West Presedimentation Sludge Vault (I17-020264-01) – The existing pre-
19 sedimentation sludge vault at the North Plant was undersized and deteriorated, with
20 safety issues, ineffective operation and frequent maintenance issues associated with
21 aging and tuberculated valves and piping. The project included construction of a
22 new sludge vault located outside of the basin footprint to improve the accessibility
23 and safety for maintenance staff, along with installation of new sludge and drain

1 lines and automated valves. These improvements enhance safety, reliability, and
2 maintainability by replacing end-of-life sludge handling equipment, improving
3 access for maintenance personnel, and restoring effective operation of sludge
4 removal processes, supporting reliable treatment plant performance and service to
5 customers.

6 • 1755-Tri States-A-4 Hwy 165 Transmission Main Replacement (I17-550002-01) –

7 The 6-inch transmission main created hydraulic constraints that limited system
8 capacity and resulted in excessive headloss and pressure challenges within the
9 service area. The project replaced approximately 11,000 feet of undersized main
10 with a 12-inch transmission main and establishes a fully looped configuration to
11 improve system hydraulics. This improvement enhances pressure stability and flow
12 distribution, increases reliability during peak demand and outage conditions, and
13 supports consistent service to customers in the affected zones

14 • MO River Crossing to Levee Ph1 (I17-030019-01) – Prior to this project, there was

15 a single transmission main crossing the Missouri River as the sole supply route to
16 the west side service area, including the City of Elwood, Wathena, and Rosecrans
17 Air Force Base, and represented a critical single point of failure with no available
18 interconnections. The project included installation of new water main across the
19 Missouri River to provide a parallel crossing between McArthur Drive on the east
20 and the Missouri River levee on the west. These improvements enhance system
21 reliability and resiliency by eliminating the single-point failure risk, providing
22 redundant supply capability, and ensuring continuous service to dependent
23 communities in the event of a river crossing failure.

- 1 • NP West Intake Vault and Chemical Vault (I17-020258-01) - The North Plant West
2 intake and chemical vault infrastructure included a 42-inch intake pipe and header
3 system installed in the 1950s that had exceeded its service life, creating a reliability
4 risk and potential single point of failure for intake operations. The project included
5 replacement of header piping, valves, and associated equipment, along with
6 upgrades to the intake structure such as ventilation and access improvements. These
7 improvements enhance system reliability and safety by renewing aging critical
8 infrastructure, eliminating single-point failure risk, and improving maintainability
9 and operational safety at the intake facility, ensuring dependable raw water supply
10 and service to customers.
- 11 • Eureka New Viola Tank Upgrades (I17-020257-01) - The New Viola tank had
12 deteriorating and contributed to water quality issues, including increased water age
13 within the system. The project included installation of a new dome, interior and
14 exterior recoating, replacement of mixers and access hatches, and addition of
15 valving and piping improvements to separate inlet and outlet flows for improved
16 turnover as well as interoperability with both the new and old Viola booster
17 stations. These improvements enhance water quality and system reliability by
18 reducing water age, addressing structural deterioration, and improving operational
19 performance of the storage facility, ensuring consistent and reliable service to
20 customers.
- 21 • STJ-Parallel 16" Main Phase 2 Faraon Booster Station (I17-030016-01) – The 16-
22 inch transmission main from the Faraon Booster Station to the Industrial Park Tank
23 was both undersized for projected demands and represented a single point of failure

1 for supplying the Industrial Park Zone and associated wholesale customers. The
2 project included installation of approximately 8,800 linear feet of new 16-inch
3 water main, including a bore under Interstate 29, to provide a parallel transmission
4 path. These improvements enhance system reliability and capacity by eliminating
5 the single-point failure risk, increasing hydraulic capacity, and ensuring consistent
6 and reliable service to the Industrial Park Zone and surrounding customers.

- 7 • NP Outfall 3 Emergency Replacement (I17-020295-01) – The Outfall 3 pipeline at
8 the North Plant experienced a structural failure, creating an immediate risk to
9 treatment operations and surrounding infrastructure. The project included
10 emergency replacement of the failed outfall pipe along with bank stabilization
11 measures to prevent further erosion and potential collapse of the residuals vault.
12 These improvements restore critical plant functionality and protect essential
13 infrastructure, supporting continued treatment operations and reliable service to
14 customers.

- 15 • MP A/B Basins Generator Replacement (I17-020278-01) – The emergency
16 generator serving the A and B basins at the Meramec Plant had failed and was
17 obsolete, leaving critical treatment processes without reliable backup power. The
18 project included replacement of the emergency generator, with potential upsizing
19 to improve system capacity and resilience. These improvements restore backup
20 power capability for essential treatment operations, supporting continued plant
21 function during utility power interruptions and ensuring reliable service to
22 customers.

- 23 • MOSC Hwy K 20" PVC 4815' OBSL (I17-090023) – The 24-inch ductile iron

1 transmission main was in poor condition, creating a significant risk to system
2 reliability. The project included installation of approximately 4,815 feet of new 20-
3 inch HDPE and fusible PVC water main along the Highway K corridor, including
4 all appropriate connections, valves, and appurtenances to replace the failing
5 infrastructure. These improvements enhance system reliability and service
6 continuity by addressing an active failure condition, restoring transmission
7 capacity, and reducing the risk of unplanned outages affecting customers in the
8 service area.

- 9 • JOP-WTP Plant 1 Filter Backwash Improvements (I17-110021-01) – The
10 backwash water storage tank at the Blendville Water Treatment Plant (“WTP”),
11 which was constructed in 1958 and was the sole source of backwash supply for four
12 of the plant’s six filters, was deteriorating and in need of maintenance. The project
13 included alternative investigations that resulted in construction of a new backwash
14 tank adjacent to the existing backwash tank. These improvements enhance system
15 reliability and redundancy for critical treatment processes, supporting continued
16 filter operation and ensuring consistent water quality and service to customers.
- 17 • CP A Intake Switchgear & Transformer Replacement (I17-020251) - The existing
18 switchgear and transformer equipment at the Central Plant A Intake are aging, in
19 poor condition, nearing the end of their useful life, and the vintage of the existing
20 equipment makes it difficult to secure replacement parts, creating a reliability risk
21 to intake operations and overall plant production. The project includes relocation
22 and reuse of existing switchgear from South Plant along with installation on a new
23 equipment pad, and replacement of two transformers and associated electrical

1 components. These improvements enhance system reliability and operational
2 resiliency by modernizing critical electrical infrastructure, maintaining dependable
3 power supply to raw water intake facilities, and ensuring continued plant operation
4 and consistent service to customers.

- 5 • Joplin Outdoor Training Center (I17-110036) - On-site, hands-on training facilities
6 are optimal to meet directives for workforce safety and operational competency.

7 The project includes construction of an outdoor training facility with dedicated
8 space for distribution system training and instruction, reducing reliance on off-site
9 training resources. These improvements enhance workforce skills and safety
10 preparedness while supporting efficient operations and consistent service to
11 customers.

- 12 • Fee Fee Tank - Elect, Motor, Pump, Replacement (I17-020216-01) – The pump
13 station included outdated electrical systems and lacked supporting infrastructure to
14 meet operational and customer access needs. The project expands the facility
15 footprint and replaces obsolete electrical equipment, while adding a bulk water
16 station and access improvements required for safe and compliant operations. These
17 upgrades improve system reliability and functionality while supporting safe
18 operations and enhancing service capability for both operational personnel and
19 customers.

- 20 • Corporate Office Land Purchase (I17-010004-02) – MAWC currently occupies its
21 corporate office under a lease agreement, and the property has become available
22 for purchase. The project includes acquisition of the corporate office building and
23 associated land to secure long-term operational stability. This investment

1 eliminates leasing dependency and provides continued support for administrative,
2 engineering and operational functions, ensuring continuity of business operations
3 that support service to customers.

- 4 • Joplin Indoor Training Center (I17-110037-01) – A decommissioned high service
5 pump station building is no longer suitable for use and requires rehabilitation to
6 support operational needs. The project includes interior demolition and renovation
7 of the existing structure to create a functional training and meeting facility, along
8 with plumbing upgrades to address sanitary issues and improve safety for
9 personnel. These improvements will provide a safe and usable environment for
10 operational and safety training, supporting workforce readiness and effective
11 operations that contribute to reliable service to customers.

- 12 • Garden City Chemical Building Addition (I17-610006-01) – The existing facility
13 lacks adequate space for proper storage and handling of treatment chemicals,
14 preventing compliance with applicable storage guidelines. The project includes
15 design and construction of a new chemical storage building along with associated
16 electrical upgrades to support operations. These improvements enhance safety and
17 ensure proper chemical handling and storage conditions, supporting reliable
18 treatment operations and compliance with operational standards for customer
19 service.

- 20 • St Joseph Ops Center (I17-030029-01) - The existing service center in St. Joseph
21 requires expansion to support operational needs. The project includes acquisition
22 of a building and associated improvements, including interior remodel for
23 operations, large equipment indoor storage and training functions, as well as site

1 upgrades such as drainage improvements and construction of a concrete parking
2 lot. These improvements enhance operational support by providing adequate
3 facilities for field and support staff, improving functionality and efficiency of
4 service operations, and ensuring reliable service to customers.

- 5 • St. Joseph Training Center (I17-030030-01) - The St. Joseph service area currently
6 lacks adequate facilities to provide hands-on training in a controlled environment,
7 creating limitations on workforce development and safety preparedness. The
8 project includes design and construction of an indoor/outdoor training facility
9 adjacent to the existing distribution center. These improvements enhance
10 operational safety and workforce readiness by providing a dedicated space for
11 hands-on training, allowing employees to develop and refine skills prior to working
12 in active field environments, supporting safe and reliable service to customers.

- 13 • North Plant West Basin Secondary Flocculation (I17-020143-01) - The secondary
14 flocculation equipment in the North Plant West Basin is in poor condition and
15 deteriorating, creating operational risk within the treatment process. The project
16 includes replacement of flocculation equipment, baffle walls, structural supports,
17 and diffusers, along with improvements to the ammonia feed system and portions
18 of the basin foundation. These improvements enhance treatment reliability by
19 restoring critical process equipment and stabilizing basin infrastructure, ensuring
20 consistent treatment performance and reliable service to customers.

- 21 • Jaxson Estates Tank (I17-090021-01) – The existing bolted steel standpipe is in
22 poor condition and contributes to operational issues, including elevated water age
23 that leads to water quality concerns and insufficient height to maintain adequate

1 system pressure. The project includes replacement of the existing standpipe with a
2 properly sized elevated storage tank designed to improve hydraulic performance
3 and system operation. These improvements enhance water quality, increase system
4 pressure, and support reliable service and fire protection for customers in the
5 service area.

- 6 • CP CP3 B Substation Switchgear North Bus (I17-020170-01) - The existing
7 switchgear serving the Central Plant Basin 3 substation was installed in the early
8 1970s and has become obsolete, with declining reliability and limited availability
9 of replacement parts. The project includes replacement of the remaining switchgear
10 components to complete modernization of the electrical system. These
11 improvements enhance equipment reliability and safety for plant staff while
12 supporting continued operation of critical treatment processes and consistent
13 service to customers.

- 14 • MOJP-Install PAC Feed Near Intake Pump Station (I17-110027-01) - The Shoal
15 Creek raw water supply experiences turbidity and algae events that cause taste and
16 odor issues in finished water, requiring powdered activated carbon (PAC)
17 treatment. The current PAC feed location results in reduced effectiveness due to
18 limited contact time and interaction with other chemicals in the treatment process.
19 The project includes relocation of the PAC feed point to the intake to increase
20 contact time and improve treatment efficiency. These improvements enhance water
21 quality by improving taste and odor control, while increasing treatment
22 effectiveness and supporting reliable to customers.

- 23 • 7th Street Relocation (I17-110038-01) - The Missouri Department of

1 Transportation is performing roadway reconstruction and improvements along
2 Route 66 that require existing water infrastructure to be relocated outside of the
3 construction limits. The project includes relocation of approximately 14,000 linear
4 feet of water main to accommodate roadway improvements. These improvements
5 ensure continued operation of the water system and maintain service reliability
6 while complying with external regulatory and transportation requirements.

7 • MP C/D Basins Chemical Line Replacement (I17-020296-01) - The existing
8 chemical feed lines serving the Meramec Plant C and D basins are aging, brittle,
9 and prone to breakage, creating operational risks for treatment processes. Failing
10 lines introduces hazards and could inhibit proper treatment in the basins. The
11 project includes replacement of the deteriorated chemical feed and sampling lines
12 with more durable materials. These improvements enhance treatment plant
13 reliability and ensure proper chemicals to maintain effective treatment operations
14 and reliable service to customers.

15 • NP HS Flow Meter Replacement (I17-02XX38) - The existing venturi flow meter,
16 original to the 1964 construction of the East Basin, has reached the end of its service
17 life and needs replacement. This project replaces the obsolete venturi meter with a
18 modern flow meter. The new flow meter will allow for improved measurement of
19 system delivery which will benefit regulatory system delivery reporting, operating
20 efficiencies, analyses of unaccounted for water, and wire-to-water metrics.

21 • Parkville Land Purchase and Operations Facility Upgrade (I17-040015) - The
22 existing Parkville WTP site has limited usable space for expansion due to steep
23 grades and unstable terrain, and current facilities lack sufficient room to support

1 planned treatment upgrades and increased staffing needs. The project includes
2 acquisition and renovation of a building and property adjacent to the Parkville
3 Water Treatment Plant to provide additional operational and administrative space.
4 These improvements enhance operational flexibility and long-term system
5 capability by enabling critical plant upgrades, accommodating workforce growth,
6 and avoiding costly site stabilization efforts, supporting continued reliable
7 treatment operations and service to customers.

- 8 • CP Replace A and B HS Discharge Header (I17-020256-01, I17-020256-02, I17-
9 020256-03, I17-020256-04) – The existing high service discharge header at Central
10 Plant A and B basins consists of aging 36-inch steel piping installed in 1966, with
11 known deterioration, leaks, and no redundancy. The project includes replacement
12 of approximately 1,000 feet of discharge header piping and installation of isolation
13 valves to allow individual high service vaults to be taken out of service without
14 shutting down the entire treatment train. If the header were to fail significantly, the
15 production from Central Plant would be severely limited, which would have an
16 extensive impact on customers. These improvements enhance system reliability and
17 operational flexibility, supporting continued plant production and reliable service
18 to customers.

- 19 • South Plant South Basin Upflow Clarifier Replacement (I17-020267) - The existing
20 south basin softener at the South Plant is subject to repeated mudslide events that
21 take the entire 18 MGD treatment train out of service, creating a significant
22 operational risk and potential for customer service interruptions. The project
23 includes replacement of the existing softener/clarifier equipment to restore reliable

1 operation of the treatment train. These improvements enhance treatment reliability
2 and system resiliency by eliminating a known failure mode, maintaining consistent
3 production capacity, and reducing the risk of outages that could impact customers.

- 4 • CP B Intake Transformer Replacement (I17-020281-01) and CP B Intake
5 Switchgear Replacement (I17-020281-02) - The existing transformer and
6 switchgear equipment at the Central Plant B Intake has reached the end of its useful
7 life and is in poor condition, creating a risk to reliable intake operations. The project
8 includes replacement of the transformer, switchgear, conductors, disconnect
9 switches, and associated electrical components at the B Intake. These
10 improvements enhance system reliability by addressing aging electrical
11 infrastructure and reducing the risk of equipment failure, ensuring continuous and
12 dependable operation of critical intake facilities and supporting reliable service to
13 customers.

- 14 • STJ WTP - Clarifier (I17-030028-01), Backwash GMP (I17-030028-02), Filter
15 GMP (I17-030028-03), Chemicals (I17-030028-04) - The existing St. Joseph Water
16 Treatment Plant requires additional capacity and process enhancements to meet
17 current and future demand and to improve treatment performance and reliability.
18 The project includes a comprehensive plant expansion to increase capacity to
19 approximately 40 MGD, along with significant process upgrades including
20 construction of an additional solids contact basin, installation of new filters,
21 rehabilitation of existing treatment units, upgrades to chemical feed systems
22 (including conversion to liquid systems), improvements to backwash and plant
23 service water systems, and modernization of supporting infrastructure. These

1 improvements enhance treatment capacity, operational reliability, and process
2 efficiency, ensuring the plant can meet long-term demand while maintaining
3 consistent water quality and reliable service to customers.

- 4 • WTP Switchgear Replacement (I17-100010-01) - The existing switchgear at the
5 Mexico Water Treatment Plant is outdated and nearing the end of its useful life,
6 creating operational and reliability concerns. The project includes replacement of
7 the switchgear and motor control centers, along with installation of variable
8 frequency drives and associated electrical upgrades to modernize the high service
9 pump station. These improvements enhance system reliability, provide improved
10 operational control of pumping systems, and support continued treatment plant
11 operation and reliable service to customers.

- 12 • NP East Intake Vault and Chemical Feed Improvements (I17-020227-01) - The
13 North Plant East Intake includes aging chemical feed vault infrastructure and
14 associated piping that requires replacement and modification to maintain reliable
15 operation. The project includes replacement of the existing chemical feed vault,
16 updates to piping and related components, a backwash valve, and associated intake
17 modifications. These improvements enhance reliability of chemical application at
18 the intake, improve backwashing of the intake screens and support consistent
19 treatment operations, ensuring reliable service delivery to customers.

- 20 • Affton Tank #2 Project (I17-020243) – Affton Tank 2 has structural deficiencies
21 that are causing leakage and loss of water from the tank, including migration of
22 water offsite, creating operational and environmental concerns. This project is to
23 replace the Affton Tank 2 ground storage with a larger, 3MG storage tank,

1 providing resiliency and redundancy in finished water storage in the Meramec Zone
2 of St. Louis County. These improvements reduce water loss, restore structural
3 integrity, and support reliable storage and distribution system performance to
4 maintain dependable service for customers.

- 5 • Ehlmann Dome and Coating (I17-09XXX7) - The existing Ehlmann Road storage
6 tank, constructed in 1964, is experiencing structural distress in the roof and roof-
7 to-sidewall connection, along with localized coating deterioration and corrosion
8 that threaten the long-term integrity of the asset. The project includes replacement
9 of the tank roof with a new aluminum dome and corollary coating to protect the
10 steel surfaces from corrosion. These improvements enhance system reliability and
11 asset longevity by addressing structural deficiencies and preventing further
12 deterioration, reducing the risk of failure or service disruption and ensuring
13 continued safe and reliable water storage for customers.

- 14 • Replace Clearwell Sluice Gates, etc. (I17-100011) - The existing sluice gates at the
15 Mexico water treatment plant clearwell are original infrastructure that have become
16 increasingly difficult to operate, preventing operators from effectively isolating the
17 clearwell for maintenance and creating a reliability risk. The project includes
18 replacement of the existing sluice gates with new gates, slides, frames, and
19 mechanical operators, along with construction of temporary bypass piping to
20 maintain operations during installation. These improvements enhance operational
21 reliability and maintainability by restoring the ability to isolate and service critical
22 infrastructure, reducing the risk of failure that could impact finished water supply
23 and ensuring continued reliable service to customers.

- 1 • 36" Transmission Main - Long Rd to Spirit of St. Louis Blvd (I17-020234-01, I17-
2 020234-02) - The St. Charles service area is currently dependent on a limited
3 number of supply paths, creating a risk associated with a single river crossing and
4 limited redundancy. The project includes completion of a 36-inch transmission
5 main connecting existing large-diameter mains within the St. Louis County system
6 to the St. Charles system, providing an additional source of supply. These
7 improvements enhance system reliability and resiliency by mitigating single-point-
8 of-failure risks and supporting continuous water service to customers.

- 9 • MP New Emergency Intake Generator (I17-020260-01) - The existing electrical
10 infrastructure at the Meramec Plant intake is aging and requires upgrades to
11 maintain reliable operation and resiliency. The project includes replacement of the
12 existing generator, relocation outside of the flood zone, and upgrades to switchgear
13 and associated electrical systems to provide automatic power transfer and improved
14 equipment compatibility. These improvements enhance system reliability and
15 resilience by ensuring continuous power supply to critical intake facilities, reducing
16 the risk of service interruptions and supporting dependable treatment operations.

- 17 • Stratmann #2 Tank Replacement (I17-020248-01) – The existing 1965 era 11-MG
18 storage tank was at risk of failure due to heavy rusting and corrosion, limiting
19 reliability and requiring evaluation of major rehabilitation or replacement. The
20 project includes design and construction of a new concrete tank. A failure in this
21 storage tank would cause significant capacity challenges during peak periods.
22 These improvements enhance storage reliability and operational flexibility while
23 supporting system resiliency and maintaining dependable service for customers.

- 1 • LTA Source Water Treatment (I17-550007) - Emerging regulatory requirements
2 for PFAS require treatment of the source water from the existing Lake Taneycomo
3 wells to meet maximum contaminant levels. The project includes evaluation and
4 implementation of appropriate treatment technologies (such as granular activated
5 carbon or ion exchange) along with expansion of the existing well house to
6 accommodate the new systems. These improvements enhance regulatory
7 compliance and protect public health by ensuring PFAS levels are reduced below
8 mandated limits, while maintaining reliable water supply for the Lake Taneycomo
9 customers.

- 10 • Central City Projects (I17-11XXX8) - The western portion of the Joplin service
11 territory has limited distribution system interconnections and redundancy, creating
12 risk to service reliability and pressure stability during peak demand conditions. The
13 project includes connecting an existing 12-inch dead-end main to a nearby 16-inch
14 main to improve system connectivity. These improvements enhance system
15 reliability and service delivery by increasing redundancy, improving pressure
16 conditions during peak demand, and supporting adequate fire flow capacity in the
17 western portion of the system.

- 18 • SP Emergency Generator (I17-020047) - The South Plant requires reliable backup
19 power capability to maintain critical treatment operations during power outages,
20 and the existing configuration does not provide sufficient resiliency for sustained
21 or emergency conditions. The project includes installation of an emergency
22 generator system to provide standby power for essential plant processes. These
23 improvements enhance system reliability and operational resiliency by ensuring

1 continuous treatment capability during power interruptions, reducing the risk of
2 service disruptions and supporting consistent water supply to customers.

- 3 • Grover Booster Station Upgrade and Relocation (I17-020282) – Customers in
4 higher elevation areas within the southern portion of the Crestview pressure zone
5 experience reduced service pressures during peak demand periods. In addition, the
6 existing Grover Pond booster station is aging and presents operational,
7 maintenance, and safety concerns for company personnel. This project includes
8 realignment of pressure zone boundaries and replacement of the existing booster
9 with a new station in an improved location to better support system operations.
10 These improvements enhance system reliability and service delivery by improving
11 pressure conditions during peak demand, increasing operational flexibility, and
12 supporting safe, efficient operation of critical infrastructure to provide consistent
13 water service to customers.

- 14 • MP Residuals Clean-fill Levee Modifications (I17-020266-01) - The Meramec
15 Plant clean-fill site used for treatment residuals storage has reached its existing
16 capacity, creating a limitation on continued plant operations. The project includes
17 modifications to the clean-fill levee and associated infrastructure to expand storage
18 capacity and allow continued handling and disposal of treatment residuals. These
19 improvements ensure long-term residuals management capability and support
20 uninterrupted treatment operations, maintaining reliable service to customers.

- 21 • CP B Presedimentation Drive Replacement (I17-02X126) - The presedimentation
22 drive has reached the end of its service life and is subject to ongoing deterioration.
23 Failure of this equipment would significantly impact treatment capacity, resulting

1 in the loss of approximately 66 MGD of production. The project includes
2 replacement of the existing drive mechanism to reduce the risk of unplanned
3 outages and maintain available treatment capacity. These improvements enhance
4 system reliability by replacing critical treatment equipment and ensuring sufficient
5 capacity is maintained to meet customer demand.

- 6 • MP Flocculation Basin A Equipment Replacement (I17-02XX22) - The existing
7 flocculation system and associated baffle walls have reached the end of their service
8 life and are subject to ongoing deterioration. Maintenance requirements and repair
9 costs have continued to increase as the infrastructure has aged. The project includes
10 replacement of the flocculation equipment and baffle systems to address these
11 conditions and reduce the risk of unplanned operational issues. These
12 improvements enhance treatment reliability and operational efficiency by replacing
13 aging process infrastructure, ensuring consistent treatment performance of 12 MGD
14 of capacity and supporting continued reliable water service.

- 15 • Anna Meadows Radionuclides Mitigation (I17-090022-01) – The Anna Meadows
16 system experiences naturally occurring radium that has been recently detected at
17 levels at or near the maximum contaminant levels (MCL). The project includes
18 design and installation of treatment systems to remove radionuclides and maintain
19 compliance with drinking water standards. These improvements ensure regulatory
20 compliance and protect water quality, supporting reliable service to customers.

- 21 • Meramec Plant Sodium Hypochlorite Generation System Replacement (I17-
22 020255-01) - The existing sodium hypochlorite generation equipment at the
23 Meramec Plant is nearing the end of its useful life, creating ongoing reliability and

1 maintenance concerns. The project includes replacement of the on-site generation
2 system with a bulk sodium hypochlorite storage and feed system. These
3 improvements enhance treatment reliability by eliminating aging equipment,
4 reducing maintenance needs, and supporting consistent disinfection processes to
5 ensure reliable service to customers.

- 6 • SCP Liquid Chem Feed Upgrade (I17-020043-01) - The existing liquid chemical
7 feed systems at the South Water Treatment Plant are outdated and lack proper
8 secondary containment and separation between chemicals, creating safety and
9 operational risks. The project includes construction of a new chemical storage and
10 feed facility, including updated chemical handling systems and associated
11 infrastructure. These improvements enhance safety for plant personnel, improve
12 operational resiliency of chemical feed systems, and support reliable treatment
13 operations to ensure consistent service to customers.

- 14 • NP W Intake Switchgear and Motor Replacement (I17-020249-01) - The electrical
15 switchgear and motors at the North Plant West Intake are in poor condition and
16 have reached the end of their useful life, creating risk to reliable intake operations.
17 The project includes replacement of the existing switchgear and motors to restore
18 reliable electrical service and support continued operation of critical intake
19 facilities. These improvements enhance system reliability by mitigating risk of
20 electrical failure and ensuring dependable raw water supply to the treatment
21 process, supporting consistent and reliable service to customers.

- 22 • North Zone Transmission to Stratmann (I17-020263) - The Central Plant
23 transmission system is currently operating near capacity during peak demand

1 periods while the North Plant remains underutilized, creating system imbalance and
2 reduced operational efficiency. The project includes development of a new
3 transmission main connection between the North Zone and the Stratmann
4 Tank/Station, including alignment studies and design to enable interzone transfer
5 of water. These improvements increase system flexibility and reliability by
6 redistributing supply, relieving stressed transmission infrastructure, and better
7 utilizing available treatment capacity, supporting consistent service performance
8 during peak demand conditions.

- 9 • St. Louis Training Center (I17-020283) - The St. Louis County service area
10 currently lacks a dedicated training facility to support workforce development,
11 hands-on training, and operational readiness for field and technical staff. The
12 project includes construction of a centralized training center consisting of an indoor
13 training building and a canopied outdoor training area for buried utilities repair and
14 installation activities. These improvements strengthen operational capability and
15 workforce readiness by providing standardized, hands-on training environments,
16 improving employee safety, skill development, and consistency in field practices,
17 supporting reliable service to customers.

- 18 • MO River Crossing Bore (I17-090018-01) - The St. Charles system is currently
19 served by a single 36-inch transmission main beneath the Missouri River, creating
20 a critical single point of failure for water supply. The project includes construction
21 of an additional river crossing to provide a redundant transmission main
22 connection. These improvements enhance system reliability by eliminating the
23 single-source vulnerability and improving pressure conditions in the service area,

1 ensuring continuous and reliable water service to customers.

- 2 • STC Transmission Main - Connection to City (I17-090020-01), Connection to Bore
3 (I17-090020-02) - The St. Charles system relies on a single transmission main
4 crossing beneath the Missouri River, creating a significant single point of failure
5 and limiting system reliability. This project includes construction of a new
6 transmission main connection from the river crossing bore to the St. Charles
7 distribution system. These improvements enhance system reliability by providing
8 a redundant supply path and ensuring continued service to customers in the event
9 of a failure of the existing river crossing infrastructure.

- 10 • Neosho Water New Service Center for Distribution & Collection (Acquisition
11 Project) As discussed by Company witness Brian LeGrand, the Company has filed
12 an Application for a Certificate of Convenience and Necessity associated with the
13 proposed acquisition of the City of Neosho's water and wastewater systems on
14 September 24, 2025. This project includes the purchase and renovation of an
15 existing building to serve as a service center in Neosho for system management as
16 well as transmission and distribution personnel. This facility will enhance
17 operational efficiency and service reliability by providing a centralized location for
18 workforce activities, equipment storage, and system support functions, enabling
19 timely response to operational needs and supporting consistent service to
20 customers.

21 **Q. Are there significant wastewater related capital projects completed as IP included in**
22 **this case?**

1 A. Yes. The following significant wastewater capital projects completed as IP are included in
2 this case:

3 • Arnold Service Center Upgrades (I17-400006-04) - Missouri American Water must
4 maintain operational capability and continuity of service within the Arnold service
5 area, but facilities did not adequately support ongoing distribution and maintenance
6 activities. This phase of the project included a continuation of investment in the
7 Arnold Service Center, including a new roof, HVAC system, and other
8 components. These improvements support reliable field operations and response
9 capability by establishing a stable and adequately equipped service location,
10 improving efficiency of maintenance activities and ensuring timely service to
11 customers.

12 • Monticello WWTP Upgrade (I17-270002-01) - The Monticello Wastewater
13 Treatment Facility lagoons were unable to meet new ammonia effluent limits
14 required under the NPDES permit, creating regulatory compliance risk. The project
15 included construction of a new mechanical activated sludge treatment system
16 (AeroMod), along with influent pumping, screening, flow equalization, secondary
17 treatment, and UV disinfection, and decommissioning of the existing lagoon
18 system. These improvements ensure regulatory compliance and enhance treatment
19 reliability by replacing outdated lagoon processes with modern mechanical
20 treatment, supporting consistent effluent quality and reliable wastewater service to
21 customers.

22 • Emerald Lift Station for Phases 9 and 10 (I17-560001-01) - Development of the
23 Emerald Pointe Phases 9 and 10 area required wastewater infrastructure to support

1 the existing service territory. The infrastructure conditions were unknown due to
2 prior installation before acquisition. The project included design and construction
3 of a new wastewater lift station and force main, along with condition assessment of
4 existing collection infrastructure in the development area. These improvements
5 enable reliable service by supporting organic development within the existing
6 network area, ensuring adequate wastewater conveyance capacity, and verifying
7 the condition of existing assets to maintain dependable service to customers.

- 8 • MOHVW-Hallsville WWTF Mechanical Bar Screen (I17-590001) - The existing
9 Hallsville wastewater treatment facility relies on a manual bar screen that is
10 frequently overwhelmed by screenings, causing bypass into the lagoon system and
11 resulting in operational issues, including damage to aeration equipment. The project
12 includes installation of a mechanical bar screen to improve screening capacity and
13 reliability at the facility. These improvements enhance system reliability and
14 operational performance by preventing debris bypass, protecting downstream
15 equipment, and ensuring consistent wastewater treatment processes, supporting
16 reliable service to customers.

- 17 • Jaxson Estates WWTP Upgrades (I17-670002) - The Jaxson Estates wastewater
18 treatment facility is experiencing operational issues due to inadequate screening at
19 the headworks, resulting in debris passing into the treatment system and
20 contributing to process disruptions, including membrane fouling. The project
21 includes installation of a new influent screen at the upstream end of the facility,
22 with improved configuration to allow safer and more accessible maintenance.
23 These improvements enhance system reliability and treatment performance by

1 preventing debris from impacting downstream processes, reducing operational
2 disruptions, and supporting consistent wastewater service to customers.

- 3 • Rustic Oaks (I17-270019) - The existing Rustic Oaks wastewater treatment facility
4 has exceeded its design life and requires replacement or significant repair, while
5 also facing compliance limitations related to ammonia treatment performance. The
6 project includes construction of a new lift station and force main to eliminate the
7 Rustic Oaks WWTF and convey flows to the upgraded Monticello AeroMod
8 WWTP, which was designed with sufficient capacity to treat both systems. These
9 improvements ensure regulatory compliance and enhance system reliability by
10 retiring an aging facility, regionalizing treatment at a modern plant, and providing
11 consistent wastewater service to customers.

- 12 • Churchview (I17-480006) - The existing Churchview wastewater treatment facility
13 faces new chloride effluent limits that would require significant upgrades to achieve
14 consistent compliance. The project includes construction of a new lift station and
15 force main to convey flows to the Wardsville Northwest WWTP, where treatment
16 capacity and compliance capabilities already exist. The project would allow the
17 closure of the Churchview WWTP. These improvements ensure regulatory
18 compliance and enhance system reliability by retiring non-compliant facility,
19 consolidating treatment at a regional plant, and providing consistent wastewater
20 service to customers.

- 21 • Eureka WW Kircher LS (I17-600008) - The existing Kircher Park lift station is
22 aging and exhibits deficiencies that impact reliability, safety, and ability to meet
23 current regulatory requirements, including capacity limitations and outdated

1 equipment. The project includes replacement of the entire lift station, including wet
2 well, valve vault, pumps, electrical components, and associated infrastructure.
3 These improvements enhance system reliability and safety by replacing
4 deteriorated assets, improving operational performance, and ensuring adequate
5 capacity to support wastewater conveyance and consistent service to customers.

- 6 • Shamrock Heights WWTF Improvements (I17-270018) - The existing Shamrock
7 Heights wastewater treatment facility requires improvements to meet permitted
8 effluent limits and maintain regulatory compliance. The project includes
9 construction of a fixed-film biological treatment process designed to achieve
10 required effluent quality standards. These improvements ensure regulatory
11 compliance and enhance treatment reliability by implementing modern treatment
12 technology, supporting consistent effluent performance and dependable wastewater
13 service to customers.

- 14 • MOEUR-Replace Cahoon Lift Station with Gravity Main (I17-600007) - The
15 existing Cahoon wastewater lift station presents operational and infrastructure
16 limitations within the Eureka wastewater system. The project includes retirement
17 of the Cahoon lift station force main and construction of a new gravity mains to
18 redirect flows, utilizing installation of railroad bores to complete the conveyance
19 path to the existing collection system. These improvements enhance system
20 reliability and operational efficiency by eliminating a lift station, reducing
21 mechanical dependencies, and providing a more robust and simplified conveyance
22 system to support consistent wastewater service to customers.

- 23 • Eureka Operations Center (I17-600011) - The Eureka wastewater system requires

1 establishment of a local operations center to effectively support system
2 management, maintenance, and workforce deployment within the service area. The
3 project includes acquisition of land and development of a facility to house staff,
4 equipment, and materials for optimal ongoing operations. These improvements
5 enhance operational efficiency and service reliability by providing a centralized
6 location for maintenance activities, enabling timely response to system needs, and
7 supporting consistent service to customers.

- 8 • Ironton WWTP Disinfection (I17-73XXX2) - The Ironton wastewater treatment
9 facility does not consistently meet current effluent limitations for E. coli under its
10 existing lagoon-based treatment system. This project includes implementation of
11 disinfection improvements to address these deficiencies and support compliance
12 with permit requirements, including conditions of an Abatement Order on Consent.
13 These improvements enhance regulatory compliance and treatment performance by
14 reducing effluent bacteria levels and ensuring safe and reliable wastewater service
15 to customers.
- 16 • Eureka Lagoon Aeration (I17-600010) - The existing aeration system at the Eureka
17 wastewater lagoon is failing due to age, creating risk to ongoing treatment
18 performance and operability. The project includes study, design, and construction
19 to replace the lagoon aeration system, including blowers and a new blower building,
20 which will be relocated out of the floodplain, to support the upgraded equipment.
21 These improvements enhance system reliability and maintain treatment
22 performance by replacing deteriorated equipment, ensuring continued operability
23 of the lagoon system, and supporting consistent wastewater service to customers.

- 1 • Wardsville NW WWTF Ammonia Upgrade-AOC (I17-480005-01), Markway
2 Meadows LS and Forcemain (I17-480005-02) – The existing Wardsville Northwest
3 WWTF requires upgrades to meet regulatory compliance obligations under an
4 Abatement Order on Consent related to treatment performance. The project
5 includes construction of a new Aero-Mod wastewater treatment facility with
6 expanded capacity to treat flows from multiple surrounding wastewater systems,
7 including Churchview, Markway Meadows, Coyote Ridge, Van Loo, and Kleffner
8 Ridge, with several of these facilities to be eliminated and replaced with lift stations
9 and force mains. These improvements ensure regulatory compliance and enhance
10 system reliability and efficiency by consolidating multiple smaller treatment
11 facilities into a single regional plant, providing consistent treatment performance
12 and reliable wastewater service to customers.
- 13 • Arnold WW - Keller Lift Station (I17-400007) - The existing Keller lift station in
14 the Arnold wastewater system has exceeded its useful life and lacks adequate flood
15 protection, resulting in repeated flood impacts that damage equipment, including
16 pump motor failures. The project includes replacement of key lift station
17 components, including the wet well, generator, dry well, access platform, and
18 lighting improvements. These improvements enhance system reliability and
19 operational resilience by replacing deteriorated infrastructure and addressing flood
20 vulnerability, ensuring continued wastewater service to customers.
- 21 • Lakewood Clarifier Replacement (I17-27XXX5) - The existing 15-foot diameter
22 metal clarifier at the Lakewood Estates wastewater treatment facility has reached
23 the end of its service life and is subject to ongoing deterioration. The clarifier is a

1 critical component of the treatment process and is important to achieve effluent
2 quality required by MDNR permit limits. The project includes replacement of the
3 existing unit with a similarly sized concrete clarifier to address these conditions and
4 reduce the risk of unplanned treatment disruptions. These improvements enhance
5 treatment reliability and regulatory compliance by replacing aging process
6 infrastructure, ensuring consistent effluent quality and reliable wastewater service
7 to customers.

- 8 • Wood Heights WWTP Upgrades (I17-71XXX1) - The Wood Heights wastewater
9 treatment facility requires replacement of multiple process components due to
10 aging and non-functioning equipment, including among others: the existing UV
11 disinfection system, the final clarifier mechanism, and the oxidation ditch aeration
12 rotor. The project includes replacement of these components to address current
13 operational deficiencies and reduce the risk of treatment disruptions. These
14 improvements enhance treatment reliability and regulatory compliance by restoring
15 key treatment processes, supporting consistent effluent quality, and reducing the
16 potential for permit exceedances under MDNR requirements.

17 **Q. Are there significant Enterprise Solutions related capital projects included in this**
18 **case?**

19 A. Yes. The following significant Enterprise Solutions related capital projects are included in
20 this case:

- 21 • DCR - Other Apps (T17-0100-P-1100), DCR - Infrastructure (T17-0100-P-1600) -
22 MAWC, like most businesses today, depends on information technology to operate
23 its business. Several different software applications are utilized by MAWC to

1 efficiently manage the daily tasks to provide water and wastewater service
2 including accounting, mapping, planning, data management, financial planning,
3 human resources, customer service, communications and several other activities.
4 Both software and the data they produce were stored digitally in leased space in the
5 two data centers operated by the Service Company on behalf of MAWC and other
6 affiliates. The entity leasing the space informed the Service Company that it would
7 not extend the lease beyond the October 31, 2025 lease end. The Service Company
8 transitioned its data storage to a cloud-based data center after the leased space
9 ceased to be available. This cloud-based approach is consistent with the manner in
10 which many software services are now being provided and affords greater
11 flexibility in adapting to changing storage needs. These two projects are different
12 components of the transitioning from our leased data center to the cloud solution.
13 Examples of costs associated with transitioning data centers include, licensing tools
14 for data transfer, fees to plan, design and execute migration architecture and other
15 costs to safely transition data.

- 16 • Customer Portal & Mobile (T17-01XA) - The Customer Portal and Mobile solution
17 project will deliver a modern, customer-centric digital experience. This project will
18 replace the legacy customer-facing MyWater application and introduce a new
19 channel (mobile app), enabling customers to efficiently self-serve various high-
20 value tasks both online and on their mobile devices while reducing call volume for
21 transactional tasks.
- 22 • MDMS (T17-01XB) - The Company's current meter data management
23 environment consists of multiple legacy systems supporting Advanced Meter

1 Reading and Advanced Metering Infrastructure platforms, which limits operational
2 efficiency, data consistency, and integration with customer-facing systems. This
3 fragmented environment creates challenges in managing meter data across the
4 meter-to-cash process and supporting ongoing system growth, including future
5 acquisitions. The project includes implementation of a consolidated Meter Data
6 Management System to integrate AMR and AMI head-end systems into a single
7 platform and improve data management capabilities. These improvements enhance
8 operational efficiency and service delivery by providing higher-quality meter data,
9 improving billing accuracy, enabling automated data validation and anomaly
10 detection, and supporting enhanced customer interactions through improved digital
11 tools and communications, ensuring reliable and efficient service to customers.

- 12 • S4 - Upgrade (T17-01XC), S4 - Phase 2 - Wave 1 (T17-01XF) - The Company's
13 existing SAP system is approaching the end of its supported lifecycle, creating
14 increased operational, cybersecurity, and compliance risks as the platform becomes
15 more difficult to maintain and support. The current system supports critical
16 business functions including asset management, customer operations, billing,
17 financial reporting, and regulatory processes, and continued reliance on
18 unsupported technology introduces risk to these core operations. The project
19 includes implementation of the S/4 HANA platform to replace the existing system
20 and modernize enterprise capabilities. These improvements enhance operational
21 reliability and efficiency by providing a supported and secure platform for business
22 operations, improving system performance, and enabling continued support of
23 safety, environmental compliance, capital planning, and customer service functions

1 to ensure reliable service to customers.

- 2 • Work & Asset Management - Wave 1 (T17-01XD) - The work and asset management
3 systems provide a digital tool to record, track and manage physical assets and
4 property. The digital tool enables real-time analytics that can extend asset life, identify
5 efficiency opportunities in maintenance costs, and identify risks that help prevent
6 outages. These systems optimize the full infrastructure lifecycle — from planning to
7 disposal — facilitating proactive repairs, improved safety, and data-driven investment
8 decisions. These tools contributed to enhanced service reliability and allow utilities to
9 more effectively asset manage costs for customers.

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

11 A. Yes.

Schedule MAL-1 has been marked CONFIDENTIAL in its entirety in accordance with Commission Rules 20 CSR 4240-2.135(2)(A).4 and 20 CSR 4240-2.135(2)(A).6.

Water Storage Tank Inventory

System	Name	Capacity (MG)	Tank Style	Use	Material	Diameter	Height	Recent Exterior Coating	Recent Interior Coating	Year Erected
Joplin	32nd St	2.00	Ground Storage	Finished Water Distribution	Steel	102	33	2011	2011	1997
Joplin	4th St (elevated)	1.00	Elevated	Finished Water Distribution	Steel	67	108	2010	2010	1962
St. Louis County	Affton 2 (dome)	1.52	Ground Storage	Finished Water Distribution	Steel	72	50	2013	2016	1953
St. Louis County	Affton 3	4.00	Ground Storage	Finished Water Distribution	Steel	177	50	2020	2021	1967
St. Joseph	Agency	0.07	Standpipe	Finished Water Distribution	Steel	10	120.5	2018	2018	1976
St. Charles	Anna Meadows	0.15	Standpipe	Finished Water Distribution	Steel	15	114	2018	2018	2018
Eureka	Arbors	0.50	Floating Ground Storage	Finished Water Distribution	Steel	69	20	2024	2024	2017
St. Louis County	Baxter	8.00	Ground Storage	Finished Water Distribution	Steel	175	45	2015	2015	1968
Eureka	Brock/Palisesades	0.50	Floating Ground Storage	Finished Water Distribution	Steel	46	40	2025	2025	2003
Brunswick	Brunswick Hill (elevated)	0.10	Elevated	Finished Water Distribution	Steel	25	67	2006	2006	1963
St. Louis County	Carman	4.00	Ground Storage	Finished Water Distribution	Steel	117	50	2008	2008	1975
St. Louis County	Cherry Hills	4.00	Ground Storage	Finished Water Distribution	Steel	117	50	2014	2014	1987
Lawson	City Park Tank	0.05	Elevated	Finished Water Distribution	Steel	20	117.167			1955
St. Louis County	Clayton	2.54	Ground Storage	Finished Water Distribution	Steel	116	32	2020	2012	1962
St. Louis County	Crestview	0.50	Single Ped	Finished Water Distribution	Steel	55.5	146	2016	2024	1998
Parkville	Crooked Rd	0.50	Floating Ground Storage	Finished Water Distribution	Steel	52	32	2012	2012	1969
Joplin	Crossroads	1.00	Fluted Column	Finished Water Distribution	Steel/Concrete Composite	74	140	2003	2003	2003
St. Charles	Ehlmann Rd	0.50	Ground Storage	Finished Water Distribution	Steel	35	41	2006	2006	1964
Joplin	Eland	0.40	Single Ped	Finished Water Distribution	Steel	51.5	136	2006	2006	2005
Jefferson City	Ellis	1.50	Ground Storage	Finished Water Distribution	Steel	105	25	2004	2004	2004
Emerald Point	Emerald Point	0.18	Standpipe	Finished Water Distribution	Steel	15.83	110	2015		1994
St. Louis County	Fee Fee	8.00	Ground Storage	Finished Water Distribution	Steel	172	46	2023	2023	1966
St. Louis County	Ferguson	0.25	Elevated	Finished Water Distribution	Steel	38	143	2016	2016	1939
St. Louis County	Florissant	2.50	Ground Storage	Finished Water Distribution	Steel	110	35	2023	2023	1961
St. Louis County	Forster (dry tank DO NOT INSPECT)	4.00	Ground Storage	Finished Water Distribution	Steel	117	50	2013	2013	1968
Eureka	Forby Road	0.50	Floating Ground Storage	Finished Water Distribution	Steel	46	40			2005
St. Charles	Harvester Rd West (1.5MG)	1.47	Ground Storage	Finished Water Distribution	Steel	50	100	2009	2009	1977
St. Charles	Harvester Rd East (3.5MG)	3.50	Ground Storage	Finished Water Distribution	Steel	78	99	2009	2009	1990
St. Louis County	Hawkins	2.46	Ground Storage	Finished Water Distribution	Steel	92	50	2019	2019	1968
St. Louis County	Hazelwood 1 (dome)	4.00	Ground Storage	Finished Water Distribution	Steel	120	47	2019	2019	1960
St. Louis County	Hazelwood 2	4.00	Ground Storage	Finished Water Distribution	Steel	118	49	2022	2022	1965
Joplin	Hill St	1.00	Ground Storage	Finished Water Distribution	Steel	66	40	2006	2006	1980
St. Joseph	Huntoon Rd 1	3.30	Floating Ground Storage	Finished Water Distribution	Steel	110	40	2018	2008	1954
St. Joseph	Huntoon Rd 2	4.00	Floating Ground Storage	Finished Water Distribution	Steel	117	50	2022	2014	1957
Lawson	Hwy 69 Tank	0.30	Elevated	Finished Water Distribution	Steel	45	93.583			1984
Incline Village	Incline Village	0.20	Elevated	Finished Water Distribution	Steel	30	91	2021	2022	2005
St. Joseph	Industrial Park	1.00	Elevated	Finished Water Distribution	Steel	76	137	2011	2011	1973
St. Charles	Jaxson Estates	0.59	Standpipe	Finished Water Distribution	Steel/Bolted	29	12			2007
St. Joseph	Karnes Rd	0.75	Elevated	Finished Water Distribution	Steel	64.5	115	2010	2010	1970
St. Louis County	Kehrs Mill 1 (elevated)	0.25	Elevated	Finished Water Distribution	Steel	40	102	2017	2017	1955
St. Louis County	Kehrs Mill 2 (dome)	2.46	Ground Storage	Finished Water Distribution	Steel	92	50	2012	2012	1960
Woodland Manor	Kimberling City Cardinal Ln	0.02	Ground Storage	Finished Water Distribution	Steel	10	18.33	2016	2016	2016
St. Joseph	King Hill 1	2.00	Ground Storage	Finished Water Distribution	Steel	100	35	2019	2006	1954

St. Joseph	King Hill 2	2.00	Ground Storage	Finished Water Distribution	Steel	100	35	2018	2006	1954
Lake Carmel	Lake Carmel	0.23	Standpipe	Finished Water Distribution	Steel	8	100			2003
Lake Taneycomo Acres	Lake Taneycomo Acres	0.03	Standpipe	Finished Water Distribution	Steel	12	36	2022	2022	1973
Lakewood Manor	Lakewood Manor	0.01	Ground Storage	Finished Water Distribution	Steel	12	30			2003
St. Joseph	Landis Rd	0.06	Standpipe	Finished Water Distribution	Steel	10	110.6	2012	2012	1987
Eureka	Large/New/West Viola	0.50	Floating Ground Storage	Finished Water Distribution	Steel	52	32			1977
Eureka	Legends	0.50	Floating Ground Storage	Finished Water Distribution	Steel	47	40	2023	2023	1996
Maplewood	Maplewood	0.09	Standpipe	Finished Water Distribution	Steel	11	120			1971
St. Louis County	Mehlville 2 (dome)	2.00	Ground Storage	Finished Water Distribution	Steel	75	60	2016	2016	1956
St. Louis County	Mehlville 3	2.00	Ground Storage	Finished Water Distribution	Steel	75	60	2023	2023	1970
Mexico	Mexico West Tank (elevated)	0.25	Elevated	Finished Water Distribution	Steel	40	110	2006	2006	1988
Eureka	Niehoff/Augustine	0.50	Floating Ground Storage	Finished Water Distribution	Steel	40	56			2007
St. Louis County	Norwood	2.46	Ground Storage	Finished Water Distribution	Steel	92	49	2020	2020	1963
St. Louis County	Oakville 1 (elevated)	0.15	Elevated	Finished Water Distribution	Steel	32	29	2013	2013	1951
St. Louis County	Oakville 2	1.50	Ground Storage	Finished Water Distribution	Steel	72	50	2018	2018	1967
St. Louis County	Old Halls Ferry	8.00	Ground Storage	Finished Water Distribution	Steel	175	44	2012	2012	1971
Ozark Mountain #1	Ozark Mountain 1	0.03	Standpipe	Finished Water Distribution	Steel	12	36			1971
Ozark Mountain #2	Ozark Mountain 2	0.06	Standpipe	Finished Water Distribution	Steel	10	100			2003
Ozark Mountain #3	Ozark Mountain 3	0.04	Standpipe	Finished Water Distribution	Steel	8	101			2003
St. Louis County	Paradise Valley	0.15	Standpipe	Finished Water Distribution	Steel	20	65	2016	2016	1979
Parkville	Park College	1.00	Floating Ground Storage	Finished Water Distribution	Steel	68	37.6	2000	2000	1999
Pevely Farms	Pevely Farms Clearwell East	0.03	Above-ground Clearwell	Finished Water Clearwell	Steel	15.33	24	2020	2020	2020
Pevely Farms	Pevely Farms Clearwell West	0.03	Above-ground Clearwell	Finished Water Clearwell	Steel	15.33	24	2020	2020	2020
Joplin	Plant Washwater	0.36	Standpipe	Wash Water	Steel	26	80	2008	1983	1959
Parkville	Platte Woods	0.31	Elevated	Finished Water Distribution	Steel	44	100	2010	2010	1957
Rogue Creek	Pressure Tank	0.01	Hydropneumatic	Finished Water Distribution	Steel		8	2019	2019	2019
Rankin Acres	Rankin Acres	0.02	Hydropneumatic	Finished Water Distribution	Steel	8	48	2020	2020	2020
Redfield	Redfield	0.04	Standpipe	Finished Water Distribution	Steel	8	110	2016	2016	2000
Joplin	Rex	0.50	Elevated	Finished Water Distribution	Steel	50	125	2011	2000	1955
Parkville	Riverside	0.50	Single Ped	Finished Water Distribution	Steel	50	82.5	2018	2018	1987
Riverside Estates	Riverside Estates	0.01	Ground Storage	Finished Water Distribution	Steel	24	27			2004
Jefferson City	Rockhill Tank	1.50	Hydropillar	Finished Water Distribution	Steel/Concrete Composite	86	159	2014	2014	2014
St. Louis County	Rockwood	0.05	Elevated	Finished Water Distribution	Steel	20	120	2018	2018	1967
St. Joseph	S. 22nd St	0.50	Elevated	Finished Water Distribution	Steel	56	103	2023	2023	1965
Saddlebrook	Saddlebrooke	0.25	Single Ped	Finished Water Distribution	Steel	45	80	2024	2024	2003
St. Louis County	Sappington 1	2.46	Ground Storage	Finished Water Distribution	Steel	92	49	2024	2024	1954
St. Louis County	Sappington 2	2.46	Ground Storage	Finished Water Distribution	Steel	92	49	2015	1992	1968
Tri-State	Skyline (Well 4 Standpipe)	0.30	Standpipe	Finished Water Distribution	Steel	30	88	2015	2015	1987
Eureka	Small/Old/East Viola	0.25	Floating Ground Storage	Finished Water Distribution	Steel	33	32		2024	1966
Spokane	Spokane Well Tank	0.01	Ground Storage	Finished Water Distribution	Steel	12	18	2019	2019	1992
Stonebridge	Stonebridge (elevated)	0.40	Single Ped	Finished Water Distribution	Steel	40	69	2012		1994
Stonebridge	Stonebridge (Ground)	0.25	Ground Storage	Finished Water Distribution	Steel	22	44	2018		2003
Pevely Farms	Stonewall Tank 1	0.11	Floating Ground Storage	Finished Water Distribution	Steel	20	40	2001	2001	2001
Pevely Farms	Stonewall Tank 2	0.20	Floating Ground Storage	Finished Water Distribution	Steel	30	40	2021	2021	2021
Rogue Creek	Storage Tank	0.01	Horizontal Tank	Finished Water Distribution	Steel	21.33	8	2019	2019	2019
St. Louis County	Stratmann 1	11.00	Ground Storage	Finished Water Distribution	Steel	240	33	2009	2009	1960
St. Louis County	Stratmann 2	11.26	Ground Storage	Finished Water Distribution	Steel	264	27	1996	1998	1965
St. Louis County	Sunset	0.25	Hydropillar	Finished Water Distribution	Steel	40	122		2020	1936

St. Louis County	Tesson Ferry 1	3.00	Ground Storage	Finished Water Distribution	Steel	125	33	2017	2017	1967
St. Louis County	Tesson Ferry 2 (dome)	3.00	Ground Storage	Finished Water Distribution	Steel	125	33	2019	2019	1996
St. Charles	Towers Rd	2.00	Ground Storage	Finished Water Distribution	Steel	62	90	2008	2008	1981
Tri-State	Well 6 Standpipe	0.50	Standpipe	Finished Water Distribution	Steel	27	118	2020	2020	2019
St. Joseph	Union Rd	0.04	Standpipe	Finished Water Distribution	Steel	8	110	2012	2012	1973
St. Louis County	Valley Park	0.75	Ground Storage	Finished Water Distribution	Steel	52	50	2006	2006	1981
Tri-State	Vineyard (Well 5 Standpipe)	0.30	Standpipe	Finished Water Distribution	steel	29	93	2014		1994
St. Louis County	Walton	4.00	Ground Storage	Finished Water Distribution	Steel	117	50	2011	2011	1979
Wardsville	Wardsville Elevated	0.15	Elevated	Finished Water Distribution	Steel	25	128	2021	2021	1998
Warrensburg	Warrensburg North (elevated)	0.30	Elevated	Finished Water Distribution	Steel	35	123	2010	2010	1949
Warrensburg	Warrensburg South (elevated)	0.50	Elevated	Finished Water Distribution	Steel	50	125	2008	2008	1989
White Branch	White Branch (Benton County)	0.09	Standpipe	Finished Water Distribution	Steel	11	119			1971
St. Louis County	Wild Horse Creek	0.50	Ground Storage	Finished Water Distribution	Steel/Bolted	48	41	1998	2017	1967
Woodland Manor	Woodland Manor Bayfront Middle	0.02	Ground Storage	Finished Water Distribution	Steel	10	18.33	2017		1986
Woodland Manor	Woodland Manor Bayfront North	0.02	Ground Storage	Finished Water Distribution	Steel	10	18.33	2017		1986
Woodland Manor	Woodland Manor Bayfront South	0.02	Ground Storage	Finished Water Distribution	Steel	10	18.33	2017		1986
St. Louis County	CP1 Backwash (elevated)	0.25	Elevated	Wash Water	Steel	35	58.5	2019	2019	1969
St. Louis County	CP2 Backwash (dome)	1.29	Standpipe	Wash Water	Steel	61.5	60	2023	2023	1999
St. Louis County	CP3 Backwash	1.33	Ground Storage	Wash Water	Steel	90	28	2010	2010	1967
St. Louis County	MP Backwash	1.00	Ground Storage	Wash Water	Steel	65	40	2012	1999	1971
St. Louis County	NP-E Backwash (dome)	0.50	Ground Storage	Wash Water	Steel	57	35	1995	2000	1963
St. Louis County	NP-W Backwash (dome)	0.50	Ground Storage	Wash Water	Steel	52	35	2023	2023	1996
St. Louis County	SP Backwash	1.00	Ground Storage	Wash Water	Steel	59	51	1998	1998	1986
Mexico	Mexico Plant (elevated)	0.50	Elevated	Finished Water Distribution	Steel	56	180	2024	2024	1962
Mexico	Mexico East Tank	0.25	Elevated	Finished Water Distribution	Steel	40	138	2006	2006	1987
Orrick	Orrick Elevated	0.15	Elevated	Finished Water Distribution	Steel	30	138			2000
Garden City	Stand Pipe	0.31	Standpipe	Finished Water Distribution	Steel	31	56			2000
Garden City	Garden City Elevated	0.06	Elevated	Finished Water Distribution	Steel	20	112			1955
Garden City	Clearwell	0.13	Above-ground Clearwell	Finished Water Clearwell	Steel/Bolted	25	35			1989
Ironton	Dent St.	0.20	Floating Ground Storage	Finished Water Distribution	Steel	34	32			1965
Ironton	Ironton North/Hwy 21	0.11	Floating Ground Storage	Finished Water Distribution	Steel/Bolted	25.1	29.1			2007
Ironton	Westwood St	0.11	Floating Ground Storage	Finished Water Distribution	Steel/Bolted	25.1	29.1			2007
Stewartsville	Stewartsville	0.20	Single Ped	Finished Water Distribution	Steel	30				1994
Purcell	Purcell	0.05	Elevated	Finished Water Distribution	Steel	20	85			2025
Wood Heights	Wood Heights	0.10	Elevated	Finished Water Distribution	Steel	30	135			1995
St. Charles	Knaust	2.00	Hydropillar	Finished Water Distribution	Steel/Concrete Composite	98	133	2022	2022	2022
Smithton	Smithton	0.05	Elevated	Finished Water Distribution	Steel	25	84	2012	2012	1956



Visual Sanitary Inspection Report

Project Information
Stonebridge Elevated

Prepared For
Mattie Zautner

Prepared On
2/26/2024

Prepared By
Brad Huebner



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General Information

Tank Details

Capacity: 400,000 Gallon.

Construction Style: Single Pedestal.

Builder: CB&I.

Construction Date: 1994.

Exterior Coating: Fluoro Urethane.

Interior Coating: Epoxy.

Inspector: Brad Huebner.

Inspection Date: 2/21/2024.

Height: 58.5' to bottom of bowl.



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General Information

Exterior Coatings Condition

Exterior coating condition: Coatings are in good to fair condition with an average of 16.0-19.0 mils DFT. Spot failures with rust on lower flange. Multiple spots of top coat delamination on lower cone and roof. Peeling paint wide spread on roof.

Foundation :	Concrete, good condition.
Overflow Pipe:	Good condition.
Overflow Screen:	None.
Flap Gate:	None.
Splash Pad:	Concrete.
Exterior ladder:	None.
Safety Climb:	Safety bar.
Ladder Gate:	None, locked man door into lower access.
Vent:	Steel, insect screen intact.
Manway:	(1) 18"x24" oval at bottom of bowl. 24" portside manway in stem
Catwalk:	N/A.
Cables:	None.
Roof Hatch:	(2) 24" with 4" curb.
Aviation Light:	None.
Roof Ladder:	None.
Cellular Carriers	None.



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General Information

Interior Coating Condition

Interior Coating Condition: Coatings are in fair condition with moderate rusting on overlapping roof seams and on tops of roof support beams. Isolated spots of delaminating rust on riser tube.

Interior Wet Ladder: Good condition, Light rusting on ladder rungs.

Safety Climb: Safety bar.

Interior Riser Ladder: Good condition, with safety bar.

Cathodic Protection: None.

Dry Riser: Rust bleed through coatings in dry riser tube, on bottom of bowl, and multiple spot failures with moderate rusting on condensation plates. moderate rusting on ladder in dry riser tube.



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General Information

Security

Gates and Fences: Rod iron fence with locked gate.

Ladder Gate: None, locked man door into lower access.

Roof Hatch: Locked.



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Exterior Coating Photos



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Overflow outlet needs insect screen and tide flex valve installed



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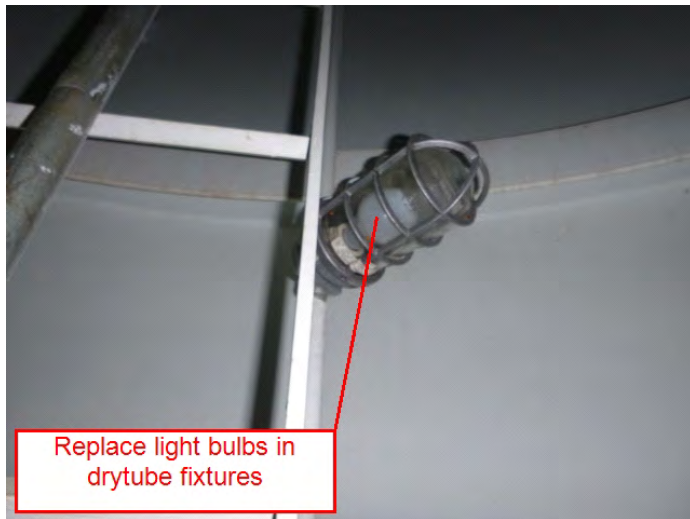
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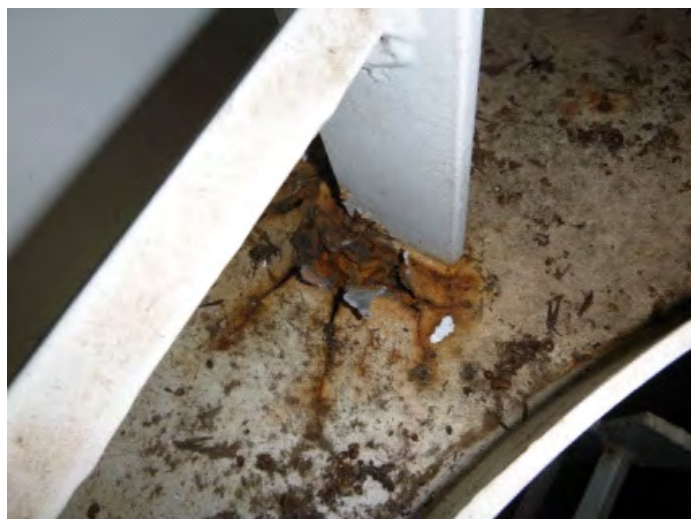




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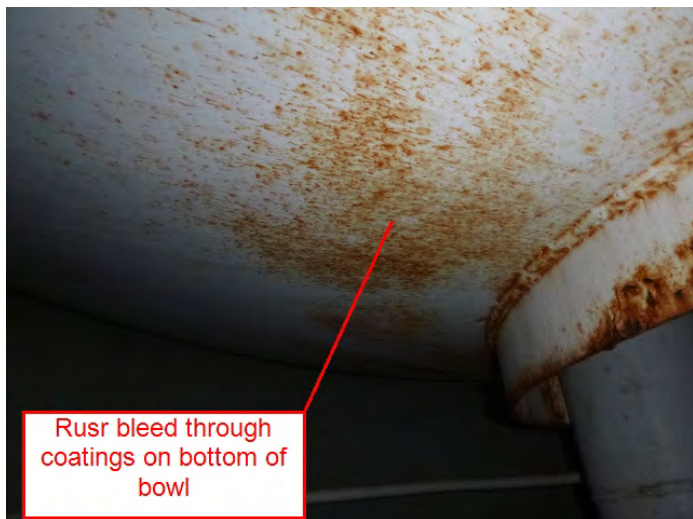






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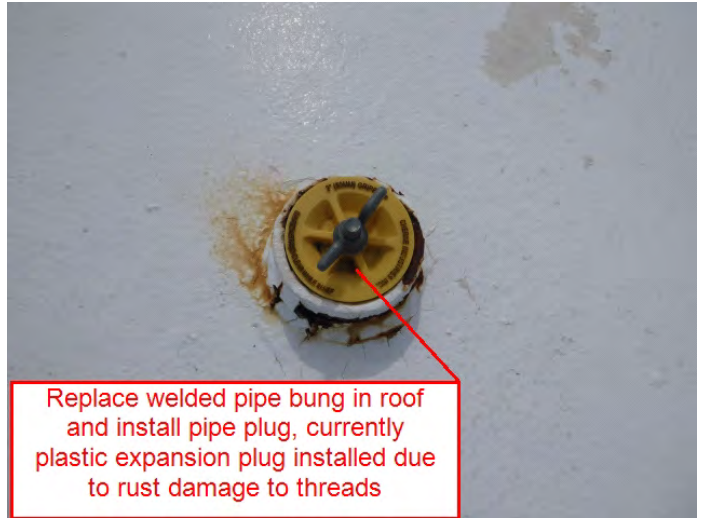
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Replace welded pipe bung in roof and install pipe plug, currently plastic expansion plug installed due to rust damage to threads



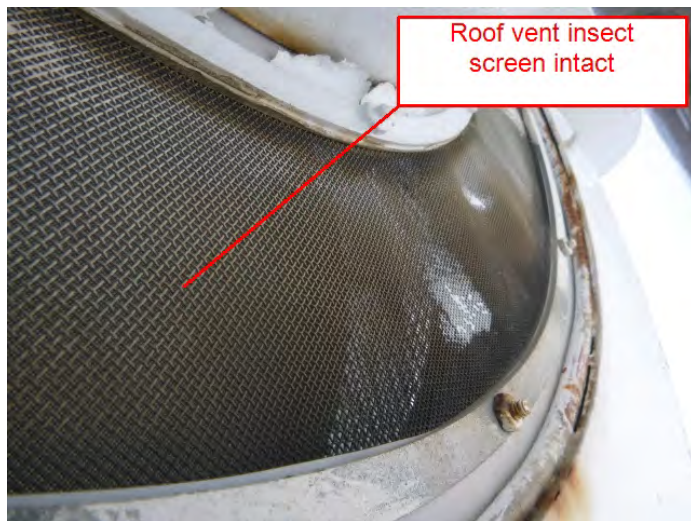


Peeling paint on bowl roof



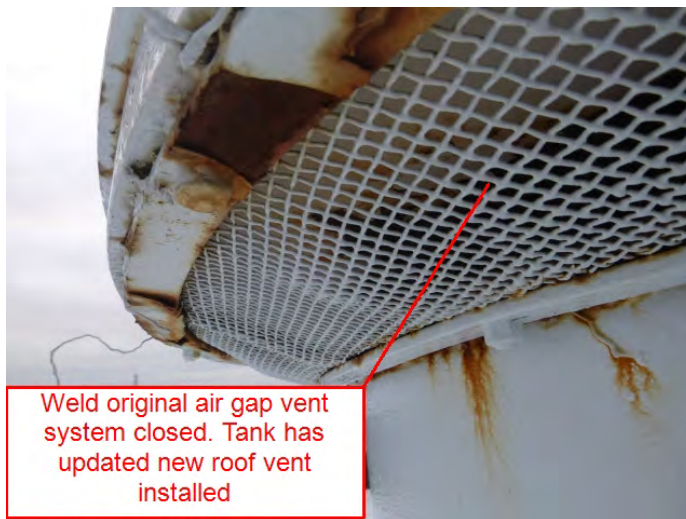
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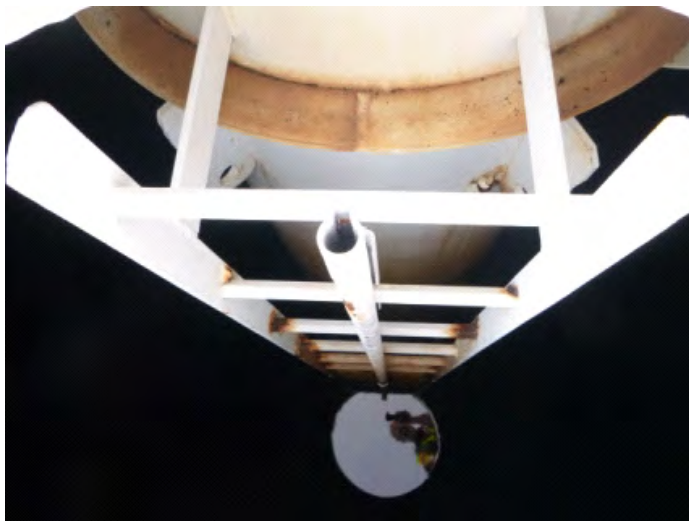


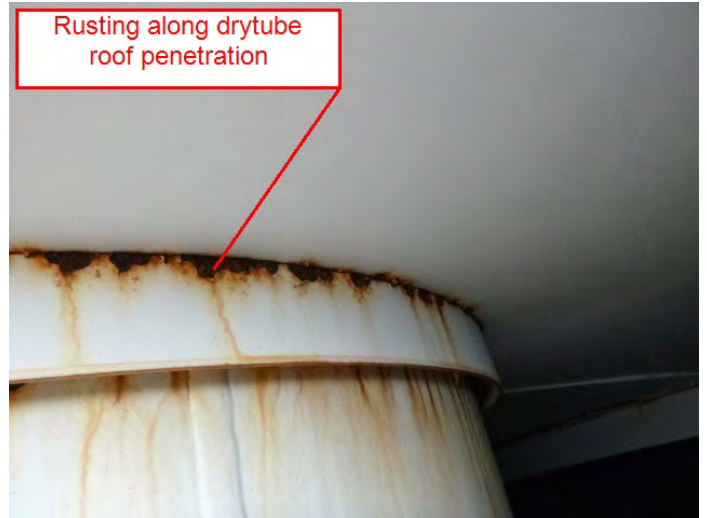
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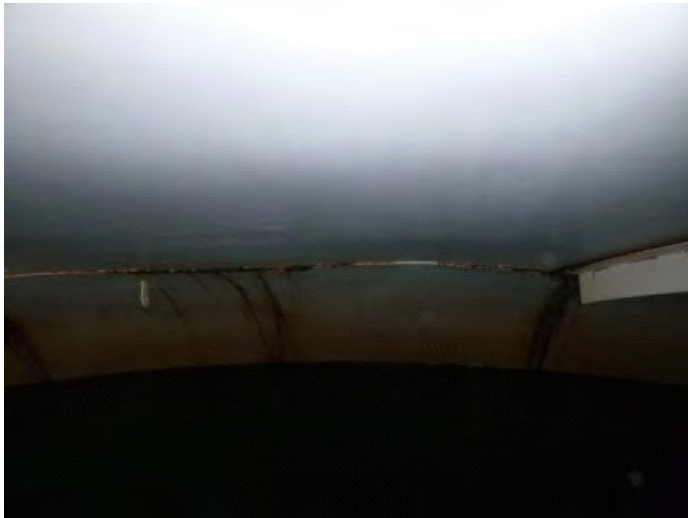
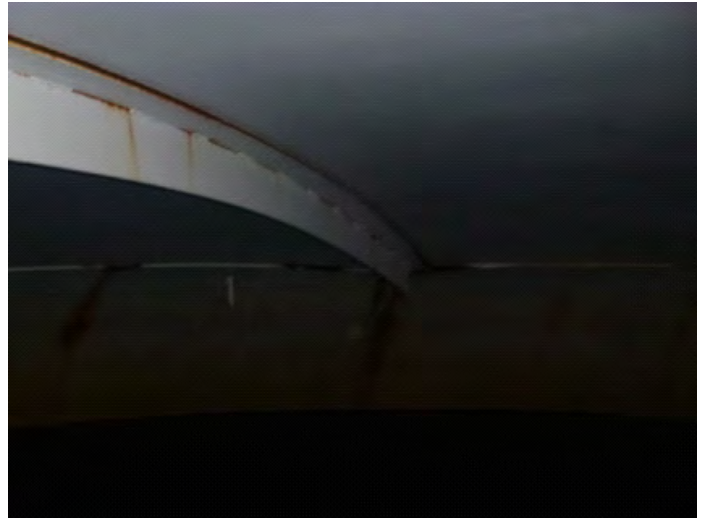




Interior Coating Photos







Spot failure with delaminating rust on drytube





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Tank Recommendations

Recommendations

- Seal portside manway, drytube hatch, and Lower access door to keep wasp and yellow jackets from nesting in tank.
- Replace light bulbs in drytube fixtures.
- Install additional bolts and gasket to close gap on spare manway access on roof.
- Install insect screen and tide flex valve on overflow outlet.
- Replace threaded pipe bung on roof and install threaded plug.
- Weld original air gap vent system closed, tank has been updated with new roof vent.
- Consider complete interior wet and dry riser renovation in the next two years.

- Note, electrical contractor is working on site today inside of tank and pump house. Tank and gate to be locked up by electrical contractor.



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MAWC TANK ACTION SUMMARY

Stonebridge Elevated/400,000 Gallon/Single Pedestal

Category	Exterior Roof	Exterior Sidewall	Interior Roof	Interior Sidewall	Base/Floor
1	No rust; No steel delamination	Minimal blistering or spot failures	No rust; No steel delamination	Minimal blistering or spot failures	Minimal blistering or spot failures
2	Light rust; Light steel delamination	1-5% of spot failures as a percent of surface area	Light rust; Light steel delamination	1-5% of blisters or spot failures as a percent of surface area	1-5% of blisters or spot failures as a percent of surface area
3	Moderate rust; Moderate steel delamination	5-10% of spot failures as a percent of surface area	Moderate rust; Moderate steel delamination	5-10% of blisters or spot failures as a percent of surface area	5-10% of blisters or spot failures as a percent of surface area
4	Heavy rust; Heavy steel delamination	10-15% of spot failures as a percent of surface area	Heavy rust; Heavy steel delamination	10-15% of blisters or spot failures as a percent of surface area	10-15% of blisters or spot failures as a percent of surface area
5	Pinholes in the steel beams; Rusted through; Heavy steel delamination	Metal Loss; Existing failure	Pinholes in the steel beams; Rusted through; Heavy steel delamination	Metal Loss; Existing failure	Metal Loss; Existing failure

Component	Score	Comments
Exterior Roof	2	Spot failures and peeling paint
Exterior Sidewall	1	Isolates spots of top coat delamination
Interior Roof	3	Rusting on tops of roof beams and along roof plate seams
Interior Sidewall	2	Spot failures and peeling paint
Base/Floor	1	Minimal sediment visible on bowl floor

Maximum Score	3
Average Score	1.8

RECOMMENDED TANK ACTION

ITEM	ESTIMATED COST
1 Seal portside manway, drytube hatch, and Lower access door to keep wasp and yellow jackets from nesting in tank.	\$ 700.00
2 Replace light bulbs in drytube fixtures.	\$ 200.00
3 Install additional bolts and gasket to close gap on spare manway access on roof.	\$ 2,000.00
4 Install insect screen and tide flex valve on overflow outlet.	\$ 2,500.00
5 Replace threaded pipe bung on roof and install threaded plug.	\$ 250.00
6 Weld original air gap vent system closed, tank has been updated with new roof vent.	\$ 6,000.00
7 Consider complete interior wet and dry riser renovation in the next two years.	

Note, electrical contractor is working on site today inside of tank and pump house. Tank and gate to be locked up by electrical contractor.

MAWC TANK ACTION SUMMARY

Forby Rd/502,600 Gallon/Standpipe

Category	Exterior Roof	Exterior Sidewall	Interior Roof	Interior Sidewall	Base/Floor
1	No rust; No steel delamination	Minimal blistering or spot failures	No rust; No steel delamination	Minimal blistering or spot failures	Minimal blistering or spot failures
2	Light rust; Light steel delamination	1-5% of spot failures as a percent of surface area	Light rust; Light steel delamination	1-5% of blisters or spot failures as a percent of surface area	1-5% of blisters or spot failures as a percent of surface area
3	Moderate rust; Moderate steel delamination	5-10% of spot failures as a percent of surface area	Moderate rust; Moderate steel delamination	5-10% of blisters or spot failures as a percent of surface area	5-10% of blisters or spot failures as a percent of surface area
4	Heavy rust; Heavy steel delamination	10-15% of spot failures as a percent of surface area	Heavy rust; Heavy steel delamination	10-15% of blisters or spot failures as a percent of surface area	10-15% of blisters or spot failures as a percent of surface area
5	Pinholes in the steel beams; Rusted through; Heavy steel delamination	Metal Loss; Existing failure	Pinholes in the steel beams; Rusted through; Heavy steel delamination	Metal Loss; Existing failure	Metal Loss; Existing failure

Component	Score	Comments
Exterior Roof	1	Areas of missing clearcoat minimal spot failures
Exterior Sidewall	1	Areas of missing clearcoat minimal spot failures
Interior Roof	2	Minor rusting along weld seams
Interior Sidewall	3	Surface rusting visible on sidewalls
Base/Floor	1	Thin layer of sediment

Maximum Score	3
Average Score	1.6

RECOMMENDED TANK ACTION

ITEM	ESTIMATED COST
1 Grass cutter to blow clippings away from tank ringwall.	
2 Pressure wash tank to remove mold and mildew.	\$ 14,000.00
3 Lower grade to 6" below top of foundation	
4 Interior of tank will most likely need to be painted within the next two years.	
5 Relocate conduit off of ladder to comply with OSHA regulations.	\$ 3,500.00
6 Install sika-flex1A where lower flange meets ringwall.	\$ 2,000.00



Visual Sanitary Inspection Report

Project Information

Forby Rd Tank

Prepared For
Mattie Zautner

Prepared On
04/21/2025

Prepared By
Brad Huebner



Report produced using [FastPhotoReports.com](https://www.fastphotorports.com)



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General Information

Tank Details

Capacity: 502,600 Gallon.

Construction Style: Ground Storage.

Builder: Fisher Tank .

Construction Date: 2004.

Exterior Coating: Urethane.

Interior Coating: Epoxy.

Inspector: Brad Huebner.

Inspection Date: 03/26/2025.

Height: 42' 9" H / 45' Dia.



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General Information

Exterior Coatings Condition

Exterior coating condition: Coatings are in fair condition with an average of 12.0-16.0 mils DFT. Minimal spot failures on roof and sidewalls with mold and mildew growth on sidewalls. Clear coat skippers on upper sidewall, ladder cage and entire roof.

Foundation :	Concrete, good condition.
Overflow Pipe:	Good condition.
Overflow Screen:	None.
Flap Gate:	None, Tide-Flex valve.
Splash Pad:	Concrete pad.
Exterior ladder:	Good condition, with safety cage.
Safety Climb:	None.
Ladder Gate:	Locking gate on bottom of ladder cage.
Vent:	Steel, insect and bird screen intact.
Manway:	(2) 24" round.
Catwalk:	N/A.
Cables:	One conduit attached to ladder standoffs.
Roof Hatch:	24" x 24" with 7" curb.
Aviation Light:	None.
Roof Ladder:	None, steps and handrail from ladder landing to roof vent.
Cellular Carriers	None.





General Information

Interior Coating Condition

Interior Coating Condition: Coatings are in fair condition with rusting at roof to sidewall connection and along roof panel weld seams. Rusting is visible through water on sidewalls. Surface rusting on sidewalls is visible above HWL. Minimal sediment visible on floor.

Interior Wet Ladder: Good condition.

Safety Climb: None.

Interior Riser Ladder: N/A.

Cathodic Protection: None.

Dry Riser: N/A



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General Information

Security

Gates and Fences: Chain link fence with locked gate.

Ladder Gate: Locked.

Roof Hatch: Locked.

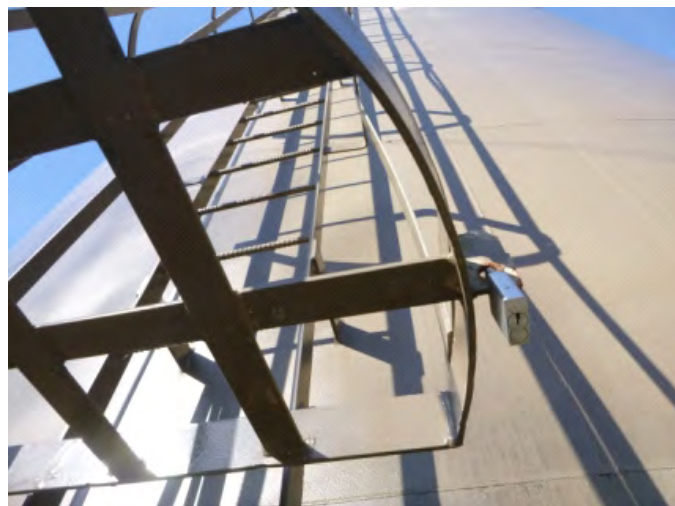
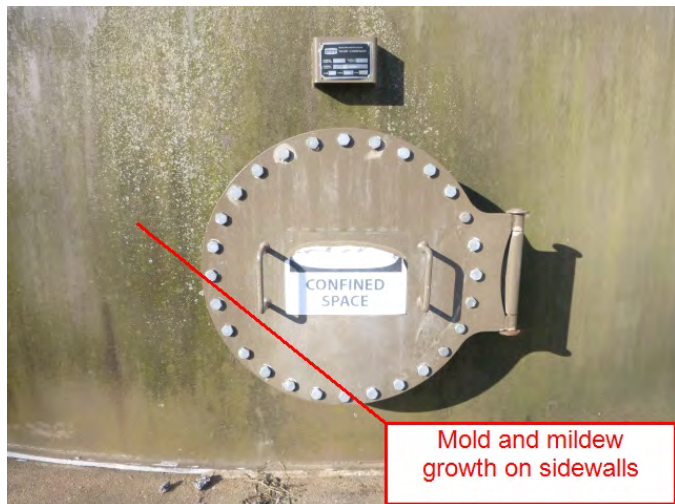


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Exterior Coating Photos



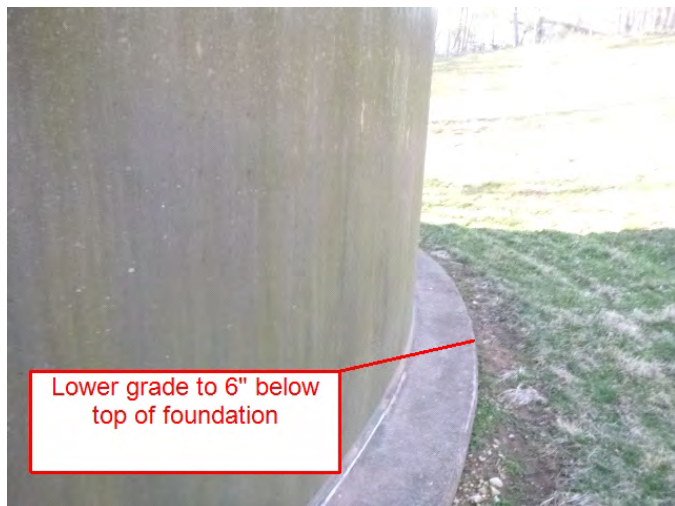
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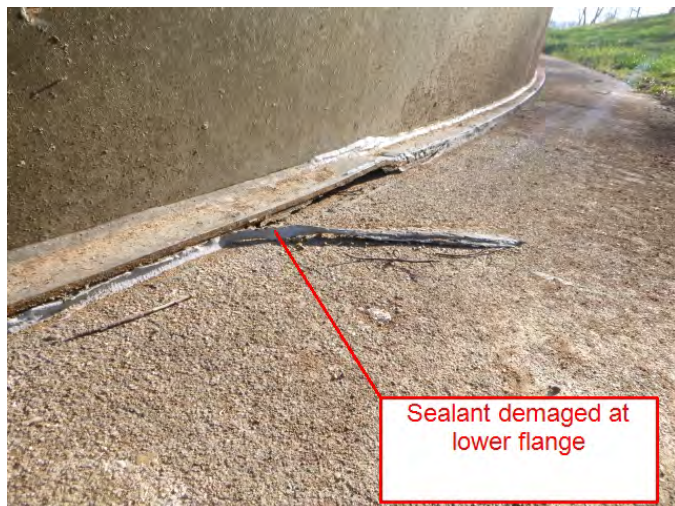


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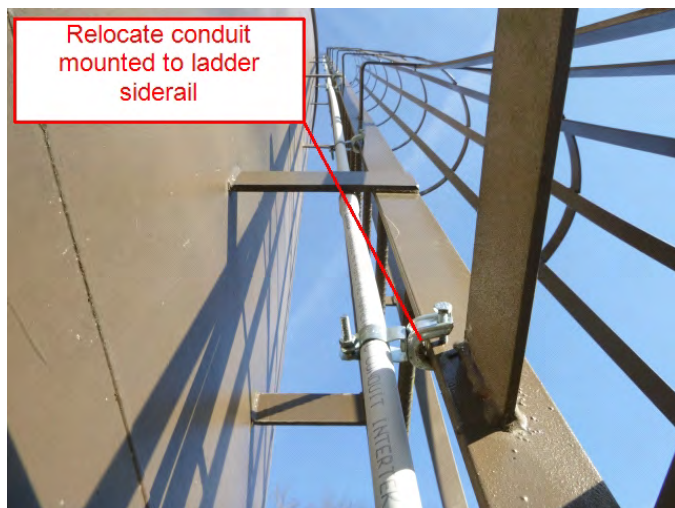




Lower grade to 6" below top of foundation



Sealant damaged at lower flange



Relocate conduit mounted to ladder siderail



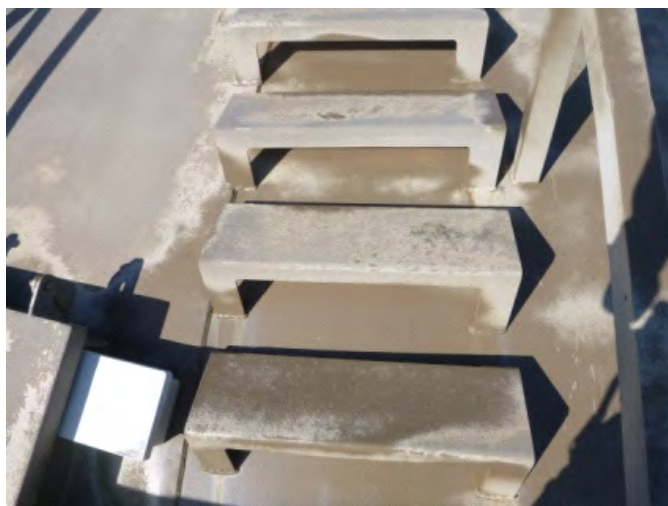
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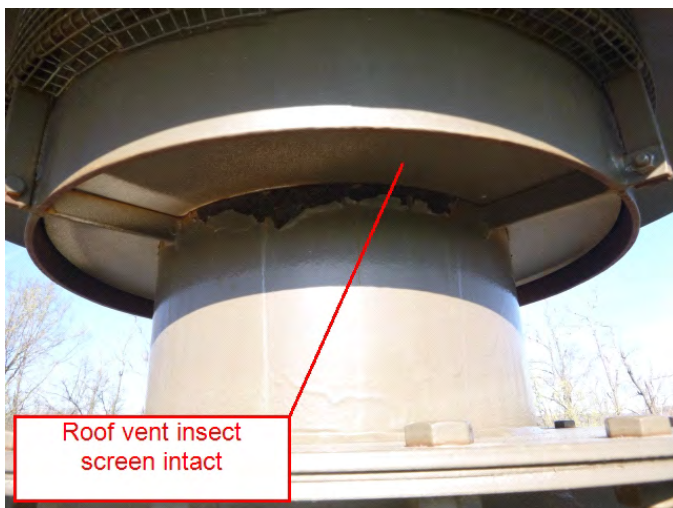
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Roof vent insect screen intact



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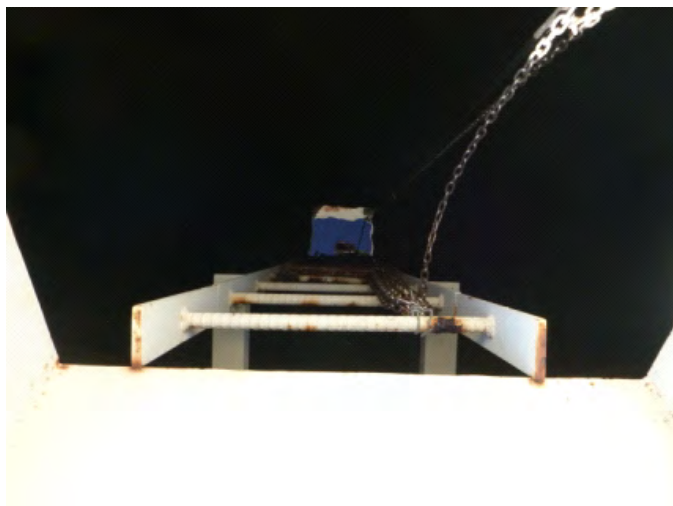


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Interior Coating Photos



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Tank Recommendations

Recommendations

- Grass cutter to blow clippings away from tank ringwall.
- Pressure wash tank to remove mold and mildew.
- Lower grade to 6" below top of foundation
- Interior of tank will most likely need to be painted within the next two years.
- Relocate conduit off of ladder to comply with OSHA regulations.
- Install sika-flex1A where lower flange meets ringwall.



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