**BEFORE THE PUBLIC SERVICE COMMISSION**
**OF THE STATE OF MISSOURI**

| | | |
|---|---|---|
| In the Matter of the Application of Osage Utility Operating Company, Inc. to Acquire Certain Water and Sewer Assets and for a Certificate of Convenience and Necessity | ) ) ) ) ) | Case No.: WA-2019-0185 |

**GREAT SOUTHERN BANK'S**
**RESPONSE TO STAFF RECOMMENDATION AND MEMORANDUM**

Great Southern Bank ("**Great Southern**") responds to the Staff Recommendation and Staff Memorandum, dated May 24, 2019 (collectively, the "**Staff Response**") as follows:

1. On page 17 of the Staff Memorandum, the Staff states that certain PVC piping and valving does not meet the requirements of the Department of Natural Resources ("**DNR**") and that the above-ground section of the potable water distribution system needs a heat source.

2. Attached hereto as **Exhibit A** is a letter from DNR dated May 21, 2018. In this letter, DNR approved an engineering report prepared by Michael Stalzer, P.E. dated April 9, 2018 regarding the Reflections' water system, which report only recommended the addition of three (3) hydropneumatic tanks and a new chlorination system.

3. The report of Michael Stalzer, P.E. dated April 9, 2018 regarding the Reflections' water system is attached hereto as **Exhibit B** (the "**Stalzer Report**").

4. Great Southern believes that the two improvements discussed in the Stalzer Report are the only repairs/improvements that need to be made to the potable water system at Reflections to satisfy DNR.

5. Great Southern notes that while the improvements proposed by the Applicant and referenced in the Staff Response greatly exceed those in the Stalzer Report, in both scope and cost, there is no reference to installation of a chlorination system.

6. To the extent chlorination would become necessary to provide adequate water quality, Great Southern requests that the Applicant be directed to include chlorination in its improvements.

7. As Great Southern intends to offer the remaining ground it owns at the Reflections subdivision for development of additional residential and/or commercial uses, Great Southern requests the Commission's order in this matter reflect that new connections to the Reflections' systems will not incur a tap-on fee; provided that should additional back-bone facilities (e.g. significant additional storage) be required to serve any new development that would connect to the systems at Reflections, such new development may be required to contribute to the cost of such back-bone facilities.

8. Great Southern requests that the Commission's order in this matter direct that any tax on any future contributions in aid of construction at Reflections be deferred; and that the Applicant include a tariff substantially similar to Missouri American Water Company's P.S.C. Mo. No. 13, 2nd Revised Tariff Sheet No. R. 65, a copy of which is attached hereto as **Exhibit 3**, in its tariff's for Reflections, whereby any income tax amounts associated with a contribution in aid of construction will be deferred.

9. Should the other intervenors in this proceeding raise issues with the systems other than Reflections that require additional consideration by the parties and/or Commission that do not involve Reflections, Great Southern respectfully requests that the proceeding regarding Reflections be separated from the further proceedings for such other system(s), so that approval of the Applicant's acquisition of the Reflections' systems is not unnecessarily delayed.

Respectfully submitted,

SANDBERG, PHOENIX & VON GONTARD, P.C.

By: /s/ Sue A, Schultz

Sue A. Schultz MO #37219
475 Regency Park, Suite 175
O'Fallon, IL 62269
Phone: (618) 624-3478
Fax: (314) 241-7604
sschultz@sandbergphoenix.com

ATTORNEYS FOR GREAT SOUTHERN BANK

**CERTIFICATE OF SERVICE**

I hereby certify that a true and correct copy of the foregoing was served, either electronically or by hand-delivery or by First Class United States Mail, postage prepaid, on this 3rd day of June, 2019, with notice of the same being sent to all counsel of record.

*/s/Sharon Ludwig*

**EXHIBIT 1**

RECEIVED MAY 23 2018

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Eric R. Greitens, Governor
Carol S. Comer, Director

May 21, 2018

Mr. John Wright, President
Reflections Condominiums
Owners Association, Inc.
P.O. Box 2409
Lake Ozark, MO 65049

RE: Reflections Condos, MO3071337, Camden County, Review No. 5000063-18

Dear Mr. Wright:

The Missouri Department of Natural Resources' Public Drinking Water Permits and Engineering Section has reviewed the Engineering Report for the Reflections Condos, in Camden County, Missouri. The report was examined as to sanitary features which may affect the operation of the system, including size, capacities, of units, and factors which may affect efficiency and ease of operation. Approval of the Engineering Report as regards to these points is hereby given. This approval is valid for two years.

It is suggested that you proceed to make arrangements for financing the proposed projects and instruct your engineer to prepare the necessary detailed plans and specifications for the proposed improvements.

Regulations require written approval of detailed plans and specifications before awarding the contract or initiating construction. Upon receipt of the detailed plans and specifications, we will proceed with our review and advise you by written report of our approval. An updated Engineering Report must be submitted with the detailed plans and specifications if there is a change in the scope of the project or if the original report is more than two years old.

If you have any questions concerning this letter or if you need any further assistance, please contact Ms. Diane Muenks by phone at 573-751-5924, or contact the engineer by email at brandon.bach@dnr.mo.gov, or email me at maher.jaafari@dnr.mo.gov. Thank you

Sincerely,

WATER PROTECTION PROGRAM

Maher Jaafari, Ph.D., P.E., Chief
Drinking Water Permits and Engineering Section

MJ:bbm

Enclosure

c: Mr. Michael Stalzer, P.E.
Southwest Regional Office

Recycled paper

# DEPARTMENT OF NATURAL RESOURCES OF MISSOURI

## ENGINEERING EVALUATION FOR APPROVAL OF ENGINEERING REPORT

Reflections Condos
Camden County, Missouri
May 21, 2018

**INTRODUCTION**

Review Number 5000063-18

An Engineering Report dated April 9, 2018, for Reflections Condos, in Camden County, Missouri were submitted for review and approval by Michael Stalzer, P.E., of Tampa, Florida.

**BRIEF DESCRIPTION**

An Engineering Report for Reflections Condos has been reviewed. The report was examined as to sanitary features which may affect the operation of the project, including size, capacities of units, and factors which may affect efficiency and ease of operation.

The Engineering Report consists of the following:

- Description of the existing water.
  - The water system currently consists of 50 condominiums. Twelve of these are occupied year round.
  - The system is supplied by one well equipped with a 125 gallon per minute (gpm) submersible pump
  - Storage is provided by seven 119 gallon hydropneumatic tanks.
- A brief description of the exposed water main is included that indicates the water main currently has no leaks and is acceptable as constructed.

The Engineer Report recommends the following

- Based on an average daily flow of 3,700 gpm and a population equivalent of 74 people. The Engineering Report recommends the addition of three additional 119 gallon hydropneumatic tanks.
- New chlorination system at the well including solution tank, metering pump, and injection tap at the well house.

**NOTE**

- Should the exposed water main develop issues it needs to be properly installed and bedded below ground.
- Before the installation of the new hydropneumatic tanks a construction permit along with plans and specifications must be submitted to the Department for review and approval.

**STAFF RECOMMENDATION**

On the basis of the review in accordance with Missouri Drinking Water Regulation 10 CSR 60-10.010(1), I recommend this Engineering Report be granted approval.

Brandon Bach

Brandon Bach, E.I.
Drinking Water Permits and Engineering Section

**APPROVAL TO CONSTRUCT**

**The engineering plans and specifications described above were examined as to sanitary features of design which may affect the operation of the sanitary works, including size, capacities of the units, and factors which may affect the efficiency and ease of operation. Approval as regards these points is hereby given.**

**Approval is given with the understanding that final inspection and approval of the completed work shall be made by the Department of Natural Resources before same is accepted and placed in operation. If construction is not commenced two (2) years after the date of issue or there is a halt in construction of more than two years, the approval to construct will be void unless an extension of time has been granted by the department.**

**In the examination of plans and specifications, the Department of Natural Resources, Public Drinking Water Program does not examine the structural features of design or efficiency of mechanical equipment. This approval does not include approval of these features.**

**The Department of Natural Resources, Public Drinking Water Program reserves the right to withdraw the approval of plans and specifications at any time it is found that additional treatment or alterations are necessary to assure reasonable operating efficiency and to afford adequate protection to public health.**

**EXHIBIT 2**

# ENGINEERING REPORT

## WATER SYSTEM IMPROVEMENT
## REFLECTIONS CONDOMINIUM
## CAMDEN COUNTY, MISSOURI

**OWNER:**
**REFLECTIONS CONDOMINIUM OWNERS' ASSOCIATION, INC**
**HCR 82, BOX 5040**
**CAMDENTON, MO 65020**

April 9, 2018

MICHAEL STALZER, P.E.
CPWG
3918 N. Highland Ave
Tampa, FL 33603
417-860-9697

# Table of Contents



# Appendices

# 1 Introduction

This report is for the purpose of obtaining the approval from the State of Missouri for the addition of new bladder tanks to the water system serving Reflections Condominium, Camdenton, Missouri. This improvement will bring the system into compliance based on the number of units served. The site location in Section 8, Township 39 North, Range 17 West, Camden County, Missouri.

# 2 Description

Currently, the distribution system serves fifty condominium units, of which twelve are occupied year round. The metered water usage from 2016 resulted in an average demand of 3,700 gallons per day, and a peak daily demand of 7,400 gallons.

According to the MDNR High Yield and Public Well Record and Pump Information Data report #A072734, the state approved deep well has a pump rate of 125 gallons per minute (gpm) and a well yield of 193 gpm. The well is controlled by 7 - 119 gallon bladder tanks and a 20/40 pounds per square inch (psi) pressure switch. The water storage for the system is provided by the 7 bladder tanks. At an operating pressure rage of 20/40 psi, the usable tank volume is 47.8 gallons or a combined total of 334.6 gallons.

The system does not provide a minimum fire hydrant flow rate of 250 gpm as required by MDNR, however, under NFPA 13-R the water system does provide adequate flow and pressure for a fire sprinkler system. The required fire flow is 0.05 gpm per square feet of area sprinkled.

Based on a well production rate of 125 gallons per minute, a sprinkled system can serve a floor area of:

Well pumping rate = 125 gpm
Domestic demand = 10.27 gpm

Flow available for fire suppression = (125 – 10.27) = 114.73 gpm

Floor area served = 114.73 gpm / 0.05 gpm/sf = 2,294 sf

With the existing maximum unit size at approximately 1,100 sf, the system as constructed is adequate to serve both the needed domestic flow and the needed flow for the fire suppression system.

# 3 Operation and Maintenance

Great Southern Bank currently owns the land and improvements where the water system is located; and Reflections Condominium Owners' Association operates and maintains the system. Both such entities intend to turn the system over to Ozarks Clean Water Company to own, operate, and maintain.

The exposed water main has been inspected, and there are no issues or leaks. The main, as constructed, is acceptable.

# 4 Drinking Water Facility Description

Based on available metered flow data from 2016, the average daily flow was 3,700 gpd. Given an average flow of 3,700 gpd, the maximum daily demand would be 7,400 gpd. At twice the maximum day demand, the maximum hour demand would be 14,800 gallon per day or 10.27 gallons per minute.

Based on metered usage, the population served by the system is:

3,700 gpd / 50 gpd/person = 74 people

For this population equivalent, the required number of bladder tanks is:

74 people x 6.25 gallons/person served = 462.5gallons

Usable tank volume per bladder tank at 20/40 psi = 47.8 gal

Required number of tanks = 462.5/47.8 gal = 9.67 use 10

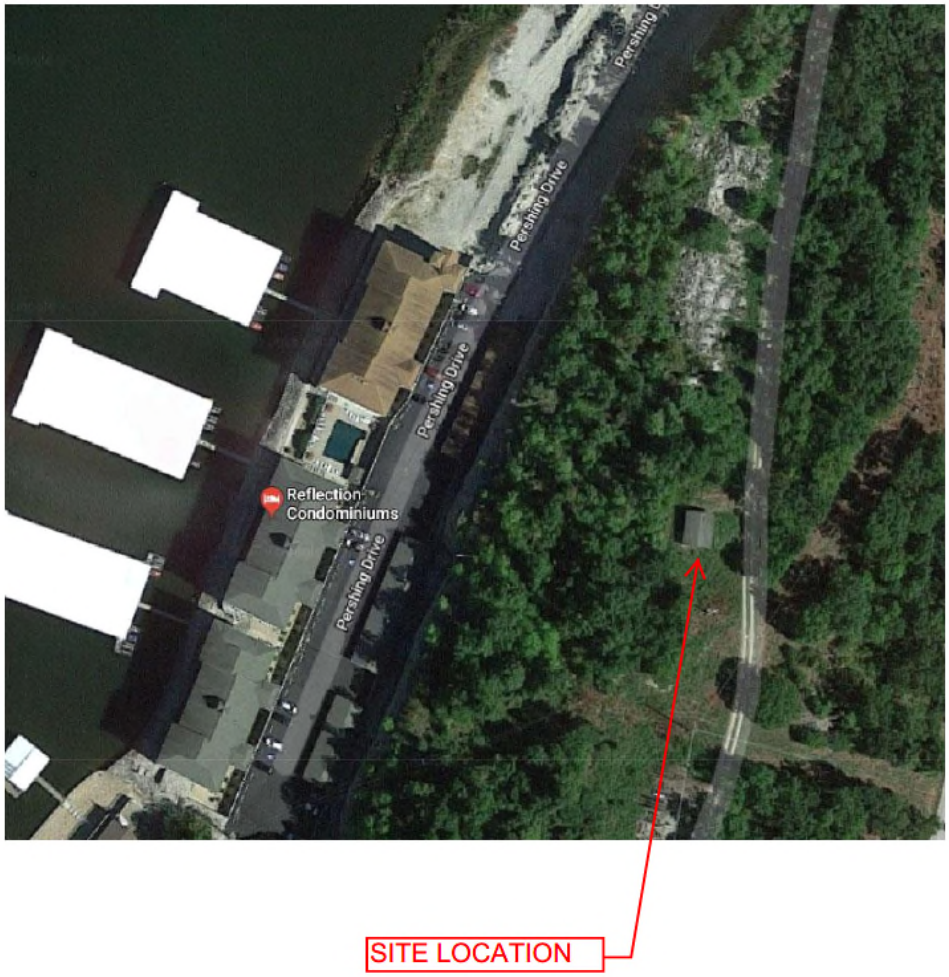
With seven bladder tanks currently installed, three additional tanks are needed. After approval of the engineering report, a construction permit application will be submitted for the installation of the additional bladder tanks and chlorination system.

## 4.1 Disinfection

A review of the water quality reports indicates that the water system is in compliance with the applicable water quality standards. Although the system does not have the needed water storage capacity for the required 30 minutes of chlorine contact time, a tap for a chlorine injection pump has been included. If water quality deteriorates prior to the addition of a ground level storage tank, an LMI model P122-352S1 metering pump with a 35 gallon T40-0003 solution tank may be used as a chlorination system. The system operator will need to meter the pump in a manner necessary to meet the allowable chlorine level.

# Appendix A

SECTION 8, T39N, R17W
CAMDEN COUNTY, MISSOURI



# Appendix B


WELL-X-TROL
Professional
by AMTROL
WELL-X-TROL PROFESSIONAL
Pre-Pressurized
Water System
Tanks
AMTROL INC.
Water Systems Solutions

# WELL-X-TROL® Professional revolutionizes the industry

WELL-X-TROL® Professional redefined the industry with its advanced engineering and innovative product design including the pre-pressurized well tank, sealed-in air charge, and unique water chamber design. With proven performance since 1963, WELL-X-TROL Professional continues to deliver unparalleled results making it **the most trusted choice of professionals** in today's market.WELL-X-TROL Professional offers many unique features that result in consistent, reliable performance, including design elements that prevent tank corrosion and reduce wear and tear on the well pump.

## Features and Benefits

Exclusive butyl diaphragm, along with the 100% corrosion resistant virgin polypropylene liner, are secured by a positive hoop ring seal for added strength and reliability. This totally integrated system outperforms other types of water chamber designs.

The stainless steel air valve is welded rather than threaded to prevent loss of air pressure.

The finest quality, custom mill steel is used in the deep drawn dome for extra strength while keeping tank weight to a minimum.

## More choices mean more flexibility

WELL-X-TROL Professional offers more options and sizes than any other well tank manufacturer, including both vertical and horizontal designs, and sizes ranging from 2 gallons to 119 gallons so you can configure a system that's right for any application.

## First on Industry Safety Standards

WELL-X-TROL Professional tanks were the first to meet all industry standards for quality and safety. The butyl diaphragm in all models meets EPA requirements for potable water as defined in the Safe Drinking Water Act of 1986. The entire tank which includes the virgin polypropylene liner, butyl diaphragm, and acceptance fittings for a 100% corrosion resistant water reservoir is listed by NSF International Standard 61.

# Advanced design features continue to set industry standards

- Stainless steel air valve is welded in position rather than mechanically threaded to prevent loss of air pressure and to minimize stress on the well's pump system. It also carries a tamper-evident warning label.
- Deep-drawn steel domes offer twice the strength of rolled steel while minimizing weight.
- Unique positive hoop ring seal secures diaphragm and liner for added strength and reliability.
- Heavy duty butyl diaphragm features seamless construction for uniform strength and flexibility. It conforms exactly to the shell configuration without stretching, creasing, or forming bubbles or corners that could trap water or sediment. Butyl is the best known elastomer to prevent air loss.
- Heavy duty butyl diaphragm is extremely resistant to bacterial growth and meets FDA requirements for potable water supply.
- Virgin polypropylene liner provides a 100% corrosion resistant, non-metallic rigid water reservoir that is listed by NSF International Standard 61.
- Stainless-steel system connection withstands aggressive water.
- Exclusive welding process eliminates interior rough spots and sharp edges which prevent damage to the diaphragm and liner.
- Each finished tank is pressure tested for safety.
- Each finished tank is pre-pressurized to the most common pump cut-in pressure.
- Exterior appliance-like finish looks attractive while protecting the tank from the elements.


WELL-X-TROL Professional by AMTROL

# esp (Effective System Protection):
# maximum system output with **minimal pump starts**

The ESP sizing procedure covers modern residential water-use habits, increased off-peak demands and the general increase in water use that have occurred over the past twenty-five years.

ESP sizing is designed to reduce pump wear and tear, and reduce energy consumption by keeping pump starts to a minimum.

## Choose the amount of protection you need.

**ESP I:** Tank selection is based on approximately one minute minimum pump running time. This is recommended for pumps up to 3/4 H.P.

**ESP II:** Tank selection is based on approximately two minute minimum pump running time. This is recommended for 3/4 H.P. or larger pumps.

## ESP Sizing Table

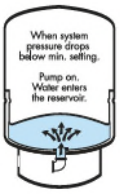
| | OPERATING PRESSURE - PSIG | | | | | |
|---|---|---|---|---|---|---|
| | | ESP I | | | ESP II | |
| PUMP DISCHARGE RATE GPM (Approx.) | 20/40 | 30/50 | 40/60 | 20/40 | 30/50 | 40/60 |
| 5 | WX-202 | WX-202 | WX-202 | WX-202XL | WX-205 | WX-205 |
| 7 | WX-202 | WX-202 | WX-202XL | WX-205 | WX-250 | WX-251 |
| 10 | WX-202XL | WX-205 | WX-205 | WX-251 | WX-251 | WX-255 |
| 12 | WX-205 | WX-250 | WX-250 | WX-251 | WX-255 | WX-255 |
| 15 | WX-250 | WX-250 | WX-251 | WX-255 | WX-302 | WX-350 |
| 20 | WX-251 | WX-251 | WX-255 | WX-350 | WX-350 | (2) WX-255 |
| 25 | WX-251 | WX-255 | WX-302 | (2) WX-251 | (2) WX-255 | (2) WX-302 |
| 30 | WX-255 | WX-302 | WX-350 | (2) WX-255 | (2) WX-302 | (2) WX-350 |
| 35 | WX-302 | WX-350 | WX-350 | (2) WX-302 | (2) WX-350 | (2) WX-350 |
| 40 | WX-350 | WX-350 | (2) WX-255 | (2) WX-350 | (2) WX-350 | (3) WX-302 |

# WELL-X-TROL Professional tank operation

## time-tested design

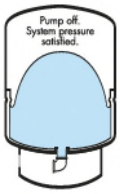

1

WELL-X-TROL Professional has a sealed in air chamber that is pre-pressurized before it leaves our factory. Air and water do not mix.




2

When the pump starts, water enters the WELL-X-TROL Professional. Only usable water is stored.




3

When the pressure in the chamber reaches cut-out pressure, the pump stops. The WELL-X-TROL Professional is filled.


4

When water is demanded, pressure in the air chamber forces water into the system. Since WELL-X-TROL Professional consistently delivers the maximum usable water, minimum pump starts are assured.

# WELL-X-TROL Professional

# residential models

## In-Line Models

| Model No. | Dimensions Diameter (ins) | Dimensions Height (ins) | Total Volume (gals) | Max. Accept. Factor | System Drawdown 20/40 (gals) | System Drawdown 30/50 (gals) | System Drawdown 40/60 (gals) | Shipping Wt. (Vol.) lbs (cu ft) |
|---|---|---|---|---|---|---|---|---|
| WX-101 | 8 | 12 5/8 | 2.0 | 0.45 | .8 | .7 | .6 | 5 (0.6) |
| WX-102 | 11 | 15 | 4.4 | 0.55 | 1.8 | 1.5 | 1.3 | 9 (1.2) |
| WX-103 | 11 | 22 1/4 | 7.6 | 0.42 | 3.1 | 2.6 | 2.2 | 15 (1.8) |
| WX-104 | 15 3/8 | 17 3/4 | 10.3 | 1.00 | 4.1 | 3.5 | 3.0 | 20 (2.6) |
| WX-200 | 15 3/8 | 22 | 14.0 | 0.81 | 5.6 | 4.8 | 4.1 | 22 (3.3) |

Precharge Pressure for WX-101 & WX-102 is 20 PSIG and Sys. Conn. is 3/4" NPTM.
Precharge Pressure for WX-103 is 30 PSIG and Sys. Conn. is 3/4" NPTM.
Precharge Pressure for WX-104 and WX-200 is 30 PSIG and Sys. Conn. is 1" NPTM.
Maximum Working Pressure is 125 PSIG and Maximum Working Temperature is 200° F.
WX-101 and WX-102 models available with Ultra TUF-KOTE™ exterior coating option.

## Stand Models

| Model No. | Dimensions Diameter (ins) | Dimensions Height (ins) | Total Volume (gals) | Max. Accept. Factor | System Drawdown 20/40 (gals) | System Drawdown 30/50 (gals) | System Drawdown 40/60 (gals) | Shipping Wt. (Vol.) lbs (cu ft) |
|---|---|---|---|---|---|---|---|---|
| WX-104-S | 15 3/8 | 19 1/4 | 10.3 | 1.00 | 4.1 | 3.5 | 3.0 | 23 |
| WX-201 | 15 3/8 | 23 7/8 | 14.0 | 0.81 | 5.6 | 4.8 | 4.1 | 25 |
| WX-202 | 15 3/8 | 31 5/8 | 20.0 | 0.57 | 8.0 | 6.8 | 5.9 | 33 |
| WX-202XL | 15 3/8 | 38 1/4 | 26.0 | 0.44 | 10.5 | 8.8 | 7.6 | 36 |
| WX-203 | 15 3/8 | 46 1/2 | 32.0 | 0.35 | — | 10.9 | 9.4 | 43 |
| WX-205 | 22 | 29 5/8 | 34.0 | 1.00 | 13.7 | 11.6 | 10.0 | 61 |
| WX-250 | 22 | 36 | 44.0 | 0.77 | 17.7 | 15.0 | 12.9 | 69 |
| WX-251 | 22 | 46 3/4 | 62.0 | 0.55 | 24.9 | 21.1 | 18.2 | 92 |
| WX-255 | 22 | 56 3/8 | 81.0 | 0.41 | 32.6 | 27.5 | 23.8 | 103 |
| WX-252 | 22 | 62 1/4 | 86.0 | 0.39 | 34.6 | 29.2 | 25.3 | 114 |
| WX-302 | 26 | 47 1/4 | 86.0 | 0.54 | 34.6 | 29.2 | 25.3 | 123 |
| WX-350 | 26 | 61 7/8 | 119.0 | 0.39 | 47.8 | 40.5 | 35 | 166 |

Tank Specified

Precharge Pressure for WX-104-S thru WX-203 is 30 PSIG and Sys. Conn. is 1" NPTF.
Precharge Pressure for WX-205 thru WX-350 is 38 PSIG and Sys. Conn. is 1 1/4" NPTF.
Maximum Working Temperature is 200° F. Maximum Working Pressure for all models except WX-252 is 125 PSIG.
Maximum Working Pressure for WX-252 is100 PSIG.
All models available with Ultra TUF-KOTE™ except WX-104-S, WX-201, and WX-252.
All models except, WX-104S, WX-201, WX-252 are available with Pro-Access.

## Underground Models

| Model No. | Dimensions Diameter (ins) | Dimensions Height (ins) | Total Volume (gals) | Max. Accept. Factor | System Drawdown 20/40 (gals) | System Drawdown 30/50 (gals) | System Drawdown 40/60 (gals) | Shipping Wt. (Vol.) lbs (cu ft) |
|---|---|---|---|---|---|---|---|---|
| WX-200-UG | 15 3/8 | 22 | 14.0 | 0.81 | 5.6 | 4.8 | 4.1 | 22 |
| WX-202-UG | 15 3/8 | 30 | 20.0 | 0.57 | 8.0 | 6.8 | 5.9 | 30 (4.9) |
| WX-250-UG | 22 | 33 3/8 | 44.0 | 0.77 | 17.7 | 15.0 | 13.0 | 60 (9.8) |
| WX-251-UG | 22 | 44 1/8 | 62.0 | 0.55 | 24.9 | 21.1 | 15.3 | 83 (13.9) |

Precharge Pressure for WX-202-UG is 30 PSIG and Sys. Conn. is 1" NPTF Coupling.
Precharge Pressure for WX-205-UG and WX-251-UG is 38 PSIG and Sys. Conn. is 1 1/4" NPTF Coupling.
Maximum Working Pressure is 125 PSIG and Maximum Working Temperature is 200° F.

WELL-X-TROL Professional by AMTROL

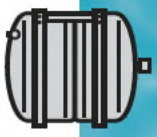
# WELL-X-TROL Professional

# specialty residential models

## Pump Stand Models

| Model No. | Dimensions Height (ins) | Width (ins) | Length (ins) | Total Volume (gals) | Max. Accept. Factor | System Drawdown 20/40 (gals) | 30/50 (gals) | 40/60 (gals) | Shipping Wt. (Vol.) lbs (cu ft) |
|---|---|---|---|---|---|---|---|---|---|
| WX-105-PS | 11 | 10 9/16 | 18 1/4 | 5.3 | 0.80 | 2.1 | 1.8 | 1.6 | 13 |
| WX-200-PS | 16 | 15 3/8 | 20 7/8 | 14.0 | 0.81 | 5.6 | 4.8 | 4.1 | 29 |

Precharge Pressure is 30 PSIG and Sys. Conn. is 3/4" NPTM Fitting for 103-PS and 105-PS; and 1" NPTF Coupling for 200-PS. Maximum Working Pressure is 125 PSIG and Maximum Working Temperature is 200° F.



## Offset Connector Models

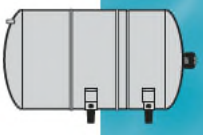
| Model No. | Dimensions Diameter (ins) | Height (ins) | Total Volume (gals) | Max. Accept. Factor | System Drawdown 20/40 (gals) | 30/50 (gals) | 40/60 (gals) | Shipping Wt. (Vol.) lbs (cu ft) |
|---|---|---|---|---|---|---|---|---|
| WX-202-OC | 15 3/8 | 29 | 20.0 | .57 | 8.0 | 6.8 | 5.9 | 32 (5.0) |

1" Barb Connection. 30 PSIG Precharge Pressure. 100 PSI Maximum Working Pressure. 200° (F) Maximum Working Temperature

## Space Saver Model

| Model No. | Height (ins) | Dimensions Width (ins) | Length (ins) | Total Volume (gals) | Max. Accept. Factor | System Drawdown 20/40 (gals) | 30/50 (gals) | 40/60 (gals) | Shipping Wt. (Vol.) lbs (cu ft) |
|---|---|---|---|---|---|---|---|---|---|
| WX-202-H | 28 5/8 | 15 3/8 | 15 1/4 | 20.0 | 0.57 | 8.0 | 6.8 | 5.9 | 33 (4.9) |

Precharge Pressure is 30 PSIG. System connection is 1" NPTF (straight coupling connection). Maximum Working Pressure is 125 PSIG. Maximum Working Temperature is 200° F.



## Specialty Options

Ultra TUF-KOTE®

**A new improved paint finish available only on WELL-X-TROL tanks. This new paint has been re-formulated for outdoor applications where acids, salts and moisture can harm regular paint. It is crack proof and impermeable to moisture.**

PRO Access®

**PRO Access Stainless Steel System Connection piped through the stand is available on most WELL-X-TROL models. Indicate PRO Access when ordering.**

WELL-X-TROL Professional by AMTROL®

# AMTROL has innovative ways to help you grow your business

AMTROL INC.
Water Treatment Technologies

## Water Treatment Technologies

ODOR OXIDIZER Professional by AMTROL
Hydrogen Sulfide Removal System

SORB-TROL by AMTROL
Arsenic Removal System

ARMOR-TROL PRESSURIZED IRON REMOVAL SYSTEM by AMTROL
Iron Removal System

AMTROL Water Soft INC.
Water Softening and Filtration

AMTROL INC.
Hydronic Technologies

## Hydronic Technologies

EXTROL by AMTROL
Boiler Expansion Tanks

THERM-X-TROL by AMTROL
Water Heater Expansion Tanks

BOILER MATE by AMTROL
Indirect-Fired Water Heaters

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www.amtrol.com


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Fax: 519-748-4231


NSF ANSI/NSF 61 · WATER SYSTEMS COUNCIL · Made in USA

# Appendix C

# CHLORINATION SYSTEMS: LIQUID SODIUM HYPOCHLORITE INJECTION

**Household Bleach** is 5 1/4% Sodium Hypochlorite

**Liquid Pool Chlorine** is 12 1/2% Sodium Hypochlorite

For best results use 12 1/2% NSF certified chlorine designed for potable water; or use fresh pool chlorine, and size of system and injection rate so that you make up fresh solution once a month.

**LMI Metering Pumps:** The standard for excellence in electronic diaphragm metering pumps. Unlike cheaper pumps made from pvc or polyproprolyene, these units use heavy-duty, chemically resistant PVDF pump heads for very long usage between replacement. Pump 12% sodium hypochlorite with no failures. All pumps come standard with the LMI Four Function Valve for safety and ease-of-use.

| Part # | LMI Model | GPD | PSI | VOLT | Price Each |
|---|---|---|---|---|---|
| P5001030 | P121-352SI | 5 | 150 | 120 | $424 |
| P5001110 | P122-352SI | 5 | 150 | 240 | $424 |
| P5001020 | P131-392SI | 10 | 110 | 120 | $431 |
| P5001140 | P132-392SI | 10 | 110 | 240 | $431 |
| P5001040 | P141-352SI | 14 | 250 | 120 | $441 |
| P5001150 | P142-352SI | 14 | 250 | 240 | $441 |
| P5000810 | P151-392SI | 24 | 110 | 120 | $450 |
| P5000820 | P152-392SI | 24 | 110 | 240 | $450 |
| P5000830 | P161-362SI | 48 | 50 | 120 | $467 |
| P5000840 | P162-362SI | 48 | 50 | 240 | $467 |

**Three Sizes of Solution Tanks to Choose From:**

**10-Gallon**

Pump Installs on Top

T40-0004 $119.00

**35-Gallon**

Pump Installs on Tank Shelf for Flooded Suction

T40-0003 $289.00

**50-Gallon**

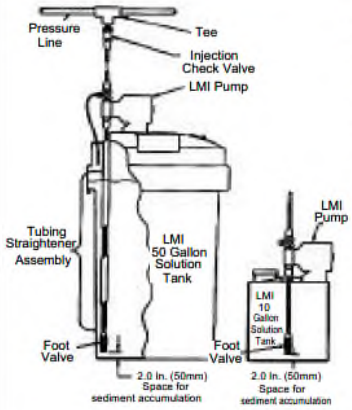
Pump Installs on Top

T40-0006 $209.00

**Hundreds of Metering Pumps and Accessories For Practically Any Flow Rate Available Including:**

- Proportionally Fed Systems
- Electronic Flow Meters
- Flow Computers
- Check Valves, Anti-Sypon Valves
- Static Mixers
- Electrical Mixers

**Typical Installation of Metering Pumps for Chlorination:**




How To Figure out What Size Pump to Use, and How To Set the Speed and the Stroke To Achieve Proper Dosage:

Step One : Determine Flow Rate of the water stream you are injecting into, in Gallons Per Minute (GPM)
Step Two : Determine the parts per million of chlorine you are trying to achieve (PPM).
Step Three : Use the formula below to compute the gallons per day and select the pump.
Step Four : Adjust the output of the meterng pump to achieve proper dosage.

Multiply the FLOW RATE (GPM) times the Applied Dosage in Parts Per Million Desired times 1440. Then Divide by the Solution Strength being used. Household bleach is 5 1/4%, Pool Chlorine is 12%. You can vary the applied dosage of chlorine by adjusting the solution strength and by adjusting the speed knob and/or the stroke knob of the metering pump. If both the speed and stroke knobs are set to 100%, then the metering pump will deliver 100% of its rated output in gallons per day. After you use the formula below to compute the gallons per day adjust the knobs to end up with the desired dosage.

$$\frac{12 \text{ GPM} \times 1.5 \text{ PPM} \times 1440}{1{,}000{,}000 \times 5\ 1/4\%} = 0.49 \text{ Gallons Per Day}$$

Divide the Gallons Per Day figure by the Rated Maximum Output of the Metering Pump: For Instance: Using Model P50-0005 which has a maximum output of 10 Gallons Per day: 0.49 divided by 10 = .049 or 5% SO! You could set the metering for 5% of its rated output by adjusting the Speed Knob to 10 and the Stroke Knob to 50, since 10% x 50% = 5%.


AWS
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Dedicated to Safe Drinking Water
American Water Works Assoc.
Proud Members for 10 Years

PACIFIC WATER QUALITYASSOCIATION

Rev. 02/14/2006

# Appendix D

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-2165

# HIGH YIELD AND PUBLIC WELL RECORD AND PUMP INFORMATION DATA

| | |
|---|---|
| REF NO | 00252901 |
| CR NO | |
| DATE RECEIVED | 11/01/2001 |
| STATE CERT NO APPROVED DATE | A072734 11/30/2001 |
| CHECK NO. | 2485 |
| DATE ENTERED | PHASE 1 PHASE 2 PHASE 3<br>11/01/2001 11/13/2001 11/13/2001 |
| ROUTE | PCD |
| REVENUE NO. | 110101 |

INFORMATION SUPPLIED BY WELL OR PUMP INSTALLATION CONTRACTOR

DNR VARIANCE NUMBER _____
CASING DEPTH NUMBER _____
Applicable only if casing depth or variance were obtained from DNR

OWNER NAME: REFLECTIONS CONDOMINIUMS
TELEPHONE (OPTIONAL):
OWNER ADDRESS: HCR 76 BOX 733
CITY: CAMDENTON
STATE: MO
ZIP: 65020
ADDRESS OF WELL (IF DIFFERENT THAN ABOVE):
CITY:
STATE: MO
ZIP:

PROPOSED USE OF WELL — **SEE BACK OF FORM FOR WELL CLASSIFICATIONS**

- [ ] Water Supply for Irrigation (capable of producing more than 70 gpm to surface)
  Unconsolidated Material Well [ ] Bedrock Well [ ]
- [ ] Water Supply for a High-Capacity Well capable of producing more than 70 gpm to surface - get casing depth from GSRAD before start
- [ ] Open Loop Heat Pump
  Supply Well [ ] Return Well [ ]
- [X] Water Supply to a Public Facility (convenience store, restaurant, church, business, condo, mobile home park, rural or urban water supply)

**CONTACT THE DNR REGIONAL OFFICE to get instructions for water supply to a PUBLIC FACILITY**

## CASING DETAILS

CASING LENGTH: 440.0 FT. O.D. OF CASING: 6.62 IN. DIAMETER OF DRILL HOLE: 10.0 IN.
CASING MATERIAL: [X] STEEL [ ] PLASTIC [ ] CONCRETE
POSITION OF GROUT SEAL: [ ] BOTTOM [X] FULL LENGTH [ ] TOP

CASING GROUT MATERIAL
CEMENT: [X] TYPE 1 [ ] HI-EARLY
BENTONITE: [ ] SLURRY [ ] CHIPS [ ] GRANULAR [ ] PELLETS
METHOD OF GROUT INSTALLATION: [ ] GRAVITY [ ] OPEN HOLE [ ] POS. DISPLACEMENT [ ] TREMIE
PRESSURE GROUT: [ ] THROUGH CASING [ ] THROUGH TREMIE
DRILLING SUSPENDED: [ ] NO [X] YES 72 HRS

NO. OF SACKS USED 230.0 POUNDS PER SACK _____



## LINER DETAILS

LENGTH FT. O.D. OF LINER IN. LINER MATERIAL: [ ] STEEL [ ] PLASTIC POSITION OF SEAL: [ ] FULL LENGTH [ ] BOTTOM [ ] TOP

LINER GROUT MATERIAL
CEMENT: [ ] TYPE 1 [ ] HI-EARLY
BENTONITE: [ ] SLURRY [ ] CHIPS [ ] GRANULAR [ ] PELLETS
METHOD OF GROUT INSTALLATION: [ ] GRAVITY [ ] OPEN HOLE [ ] POS. DISPLACEMENT [ ] TREMIE
LINER USED TO: [ ] HOLD BACK FORMATION [ ] SEAL OUT UNDESIREABLE AQUIFER CONDITIONS [ ] PREVENT RUST

NO. OF SACKS USED POUNDS PER SACK 94 ABANDONED WELL ON SITE? [ ] YES PLUGGED? [ ] YES

## LOCATION OF WELL

LAT. 38 ° 7' 53.5"
LONG. 92 ° 49' 12.5"
COUNTY CAMDEN

**Please be aware that we do not guarantee the accuracy of the data. It is submitted to us by a third party and has not been field verified.**

| | |
|---|---|
| DEPTH TO FIRST GROUNDWATER | FEET |
| WELL YIELD | 193.0 GPM |
| STATIC WATER LEVEL | 131.0 FEET |
| WELL COMPLETION DATE | 10/12/2001 |
| PUMP RATE | 125.0 GPM |
| PUMP SET DEPTH | 357.0 FEET |
| PUMP INSTALLATION DATE | |
| | pump info required this record or on pump card |

| DEPTH FROM | DEPTH TO | FORMATION DESCRIPTION |
|---|---|---|
| 0.0 | 220.0 | WT LS |
| 220.0 | 225.0 | OPEN BRKN |
| 225.0 | 305.0 | LS |
| 305.0 | 325.0 | WT SS |
| 325.0 | 430.0 | WT LS |
| 430.0 | 432.0 | BLK SHELL |
| 432.0 | 900.0 | GRY LS |

DEPTH TO BEDROCK FEET
TOTAL DEPTH 900.0 FEET

(OPTIONAL) ELEVATION 787 FT.
LEGAL LOCATION (OPTIONAL) NE 1/4 SW 1/4 SW 1/4 SEC. 8 TWN. 39 RNG. 17 W
AREA 1B
C DATA REQ'D [ ]

OTHER INFORMATION OR LOCATION DATA (OPTIONAL)

**I HEREBY CERTIFY THE WELL/PUMP INFORMATION DESCRIBED HEREIN IS TRUE AND ACCURATE**

| | | |
|---|---|---|
| PRIMARY CONTRACTOR SIGNATURE<br>LLOYD MORELAND | PERMIT NUMBER<br>002450 | DATE |
| WELL DRILLER SIGNATURE<br>LLOYD MORELAND | PERMIT NUMBER<br>002450 | DATE |
| PUMP INSTALLER SIGNATURE<br>LLOYD MORELAND | PERMIT NUMBER<br>002450 | DATE |
| APPRENTICE DRILLER SIGNATURE | PERMIT NUMBER | DATE |
| APPRENTICE PUMP SIGNATURE | PERMIT NUMBER | DATE |

# EXHIBIT 3

FORM NO. 13 | P.S.C MO NO. 13 | 2nd Revised Sheet No. R 65
Cancelling 1st Revised Sheet No. R 65

Missouri-American Water Company (Name of Issuing Corporation) | For | All Missouri Service Areas (Community, Town or City)

**Rules and Regulations Governing the Rendering of Water Service**

**Taxable Advances and Contributions in Aid of Construction** *

Any Federal, State or Local income tax incurred by the Company due to the receipt of taxable Advances or Contributions in Aid of Construction, as defined by the Internal Revenue Service, the State of Missouri, or other taxing authority, and not otherwise paid by a third party, will be paid by the Company. Such income taxes shall be segregated in a deferred account for inclusion in rate base in the Company's next general rate proceeding. * * * *

* *Indicates new rate or text*
\+ *Indicates change*

Date of Issue: August 21, 2018 Effective Date: December 7, 2018 ~~September 20, 2018~~

Issued By: Cheryl Norton, President
727 Craig Road, St. Louis, MO 63141

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