

The logo is a circular emblem with a light blue border. Inside the border, the words "SPRINGFIELD" are written in a light blue, sans-serif font along the top arc, and "WATER & SEWER" is written along the bottom arc. The center of the logo features a stylized globe with light blue and light green curved segments. Two small light blue dots are positioned on the left and right sides of the inner circle.

Springfield Water & Sewer
Commission

Capital Improvement Plan

December 2022

SWSC CAPITAL IMPROVEMENT PLAN

Assess water pump stations preceding repair, rehab, or replacement.

The water system includes 5 pump stations that range from 20 to 40 years old. These stations have useful life remaining but require impellor and pump replacements from time to time. Impellor replacement costs between \$5,000 and \$10,000 and is typically done when impellers are worn such that gallons pumped per minute are reduced to a rate that becomes inefficient or just can't keep up with demand.

The SWSC also has possible plans to convert the system to disinfection using bleach and move away from chlorine. If that occurred, upgrades to use bleach would also be made to the pump stations. The cost of that is currently unknown.

Assess aging watermains preceding strategic Repair or Replacement

The water mains, within the city limits, have been in place for over 50 years and have reached the end of their useful life. A 3rd Party assessment of the city system will be done and then a strategic repair/replacement plan will be done.

The City System is composed of 50,000 +/- feet of various sizes and classes of pipe. Realizing that all will not need replacement, it is anticipated that the cost, in today's dollars, to replace what may need replacing to be \$10,000,000.

Funding opportunities will be aggressively pursued and the timeframe to get this work completed is expected to be 10 years.

Replacing water mains would also assist in the current EPA mandate to remove all lead service lines, public and private, within all water systems in the United States.

Lead Service Line Replacement (LSLR)

The EPA has mandated that lead service lines, public and private, must be replaced in all water systems in the United States. The initial phase of this is to perform a Lead Service Line Inventory on or before October 2024. This phase is followed by planning and removal of lead service lines based on lead test results.

Prior to final inventory, the SWSC anticipates that there are 1000 – 1500 LSLs in the system and anticipate the cost of replacement to be \$3,000,000 to \$10,000,000 in today's dollars if replacement is necessary.

Cover WTP settling basins.

The current settling basins are open air and even though they are fenced, are a security concern. Protection of our treated water is priority and covering these basins would greatly enhance their security and lessen harm from the public.

These basins can be covered by retractable, structurally supported geo membranes.

The SWSC plans to install these covers in the next 5 years as projects develop and funding become available.

The 2022 cost estimate for this work is \$350,000 for materials + \$50,000 for installation.

Rehab and Paint the 200,000 gallon Clearwell

Rehabilitate and paint the 200,000 gallon clearwell at the WTP.

The estimated cost is \$150,000 and should be done in the next 5-7 years.

Replace aging weirs in the settling basins.

The Fiberglass V-notch weirs in the existing settling basin are over 25 years old and need replacing due to wear and tear.

Weirs are used to restrict flow and force that flow thru the v-notches. As flow changes, the top of the pool rises and falls, and that flow can be measured or metered. In addition, it allows the cleanest water to flow thru the weir and on to the final filters inside the plant.

The existing weirs will be replaced in kind, or with a different material and minimal engineering will be required.

The SWSC plans to make these revisions in the next 2 years.

The 2022 estimate of those repairs is \$130,000 + installation (\$25,000) for a total cost of \$155,000.

Revise WTP Sludge Disposal Method

The WTP backwashes the filters on a regular basis and that process of cleaning the filters produces sludge that is deposited in an outside open-air basin at the WTP site. That sludge is then pumped directly into the normal waste stream that goes to the WWTP.

The WTP sludge is different than WWTP sludge and reacts, settles, and dries differently and possibly disrupts the sewage treatment process.

Alternate methods of sludge disposal need investigation and pursuit of that alternate will be made as projects develop and funding is made available.

The SWSC plans to make these revisions in the next 5 years.

The estimated cost of this revision is \$500,000.

Replace The Carbon Feed System at the WTP

The current carbon feed was installed in 2005 and is now near the end of its life cycle.

Powdered Activated Carbon (PAC) treatment is an established technology for purification of potable water. A simple and cost-effective method to meter PAC into liquid streams is the NORIT Americas Inc. PORTA-PAC® feeder. The PORTA-PAC® wet injection system hydraulically mixes and conveys a predetermined and adjustable amount of PAC from bulk bags into the liquid stream being purified. The feeder is portable and built in two eight-foot sections which makes shipping, set-up, and relocation quick and easy. A volumetric feeder meters PAC into a hydraulic eductor where a motive liquid transfers the carbon slurry to the injection point in the process. Feeder operation is controlled with a series of interlocks, which allow local and / or remote operation, and monitoring of the system.

Activated Carbon assists in the treatment of water by removal of Total Organic Carbon (TOC) and that helps in the reduction of Disinfection By-Products (DBP), in addition to producing better quality water.

The description above is based on the current make and model that is used at the WTP. Future installations may vary.

The estimated purchase value of the equipment in 2022 is \$120,000 + installation.

The SWSC plans to purchase a new Carbon Feed System in the next 5 years as water projects develop and funding become available.

Perform a Sanitary Sewer Evaluation Study

Perform a Sanitary Sewer Evaluation Study (SSES) of the sanitary system. The SSES will cost approximately \$50,000 and take approximately 6 months depending on wet weather conditions. It is necessary to get wet and dry weather flows. This study precedes the development of a sewer model and report on the Inflow and Infiltration of the system.

Develop sewer repairs, rehabs or replacement Plans and Projects based on SSES.

Upon completion of the SSES, results will be reviewed and sewer rehabilitation and/or replacements will be developed to decrease or eliminate Inflow and Infiltration. The magnitude and cost cannot be determined at this time. The work involved would be expected to occur over the next 10 years.

Build Sanitary Sewer Model based on SSES.

Build a computer hydraulic sewer model base on results of SSES. The cost of the model is approximately \$50,000 and will be complete within a year after completion of the SSES.

Assess Sewer Lift Stations followed by necessary repair, rehab, or replacement.

Perform a Sewer Lift Station to determine current flow and efficiency and then develop plans for repair, rehabilitation, or replacement. The cost of the assessment is \$60,000 and will be completed in 2023.

The future work is currently unknown, but based on need and funding, the work should be done in the next 5 years.

Complete the 4th quadrant of the SBR at the WWTP

The recently completed Wastewater Treatment Plant (WWTP) expansion increased the permitted treatment capacity from 0.88 million Gallons per Day (MGD) to 1.30 MGD. Due to funding limits and bid over runs, one quadrant of the SBR system was not constructed.

Since completion of the upgrade, 2 distilleries have chosen Springfield and will have water and sewer needs in the future. Their future needs may dictate the construction of that 4th quadrant at the WWTP.

When added, the 4th quadrant increases the capacity from 1.30 MGD to 1.60 MDG and is expected to cost \$3,000,000. Anticipated construction would be within 5 years.

Install sewer lift station telemetry.

The current 10 pump stations include no flow metering, monitoring or telemetry. SWSC personnel visit each pump station daily. Telemetry would allow flow and performance monitoring remotely from the WWTP.

Pump Station visits would still be made on a regular basis but would be lessened.

The SWSC intends to install telemetry in ALL pump stations in 2023.

The estimated cost of the telemetry installation is \$175,000.

NOTES to the Capital Improvement Plan

- All dollars referenced are 2023 dollars.
- Most items listed will require funding (grants and loans).
- Completion of this list MAY require rate increases if and when funding become unavailable.
- This is a living document and may be amended and revised from time to time.