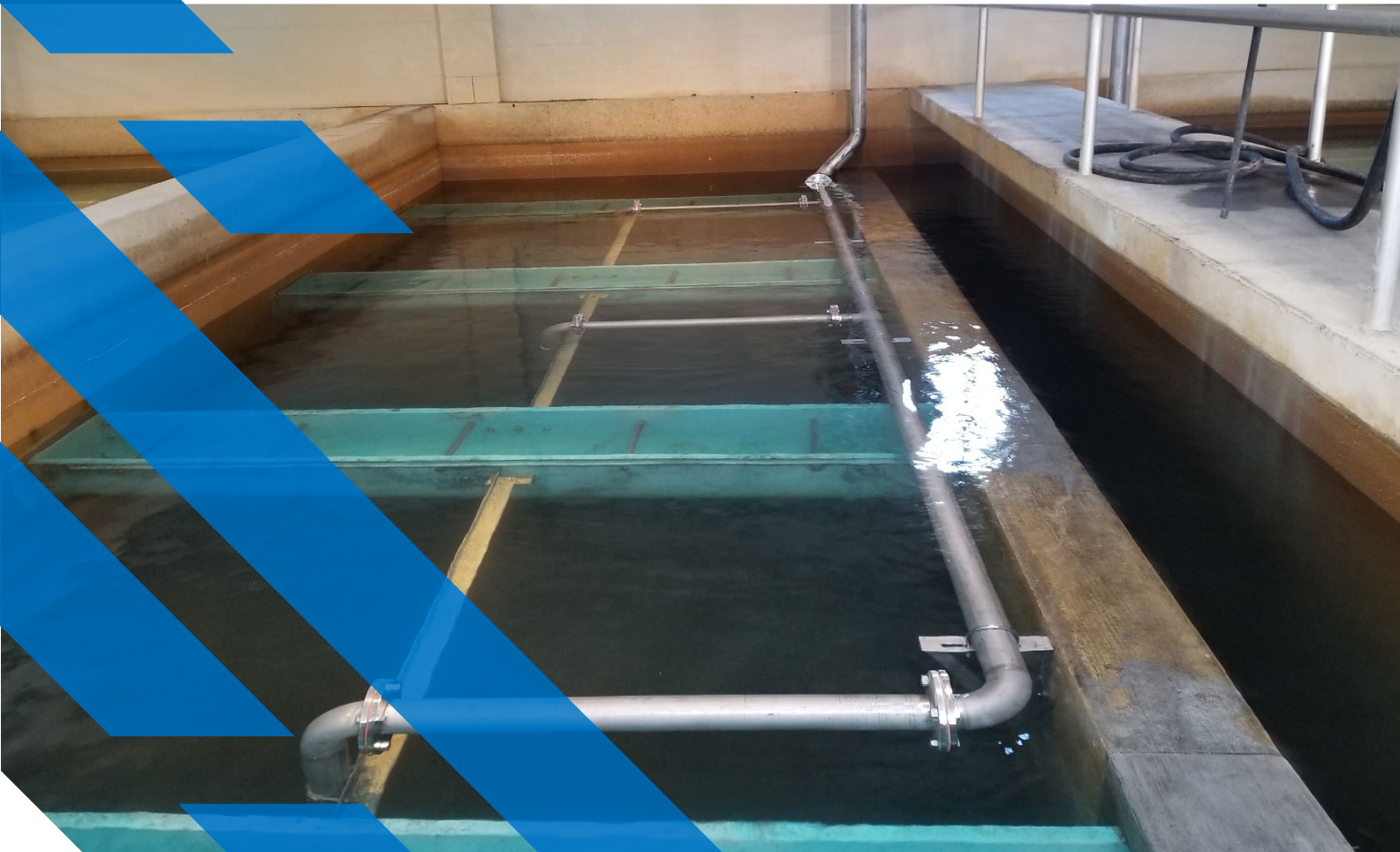


CASE STUDY / WATER TREATMENT PLANT STUDY

FILTER EVALUATION LEADS TO ENHANCED OPERATIONS AND REDUCED COSTS

The City of St. Peters, Missouri, turned to Burns & McDonnell to evaluate its water treatment plant filters. Major indicators pointing to the need for a filter evaluation included lime carryover, which had caused bulking of the filter media, shorter filter run times and decreased efficiency.



EVALUATION IDENTIFIES IMPROVEMENTS FOR WATER TREATMENT PLANT

The study proved beneficial for the city, identifying needed improvements that would increase the plant's functionality and reduce costs.

PROJECT STATS

CLIENT

City of St. Peters, Missouri

LOCATION

St. Peters, Missouri

STUDY COMPLETION DATE

June 2018

8

DUAL MEDIA SAND FILTERS

2

SOURCES FROM WHICH ST. PETERS OBTAINS WATER

6M

GALLONS (MGD) PER DAY

CHALLENGE

The City of St. Peters Utilities Department prides itself on carefully safeguarding its water supplies. The department has never had a violation of a contaminant level or of any other water quality standard since the city's water treatment plant originally was constructed in 1976.

Licensed operators working at the plant control and monitor the treatment process 24/7. The St. Peters Water Treatment Plant is rated to produce 6 million gallons of drinking water per day. Filtration is one of the key treatment processes utilized at the facility.

The city had been experiencing lime carryover into the eight dual media sand filters from the lime contact basins. This caused bulking of the filter

media and decreased efficiency of the filters. To address the lime carryover, the city wanted to gain more insight on the situation before making any costly water plant upgrades.

SOLUTION

St. Peters reached out to Burns & McDonnell for a filter evaluation. Together, the city and project team decided to employ simple tests to evaluate the water treatment process, as well as adopt a holistic approach to solving the city's process issues.

The study involved assessing the plant's dual media sand filters, evaluating the lime carryover and identifying new lime equipment. When the filter evaluation was complete, the team collaborated on making recommended improvements for the

INDICATORS FOR FILTER EVALUATION

Generally, when an owner is deciding whether to evaluate its water treatment plant filters there are several factors that can serve as indicators that an evaluation would be beneficial, including:

- Low run times.
- Increased head loss or effluent turbidity.

- Loss of media.
- Poor performance of upstream process.
- Addition of new process (GAC, ozone, etc.).
- Need for additional plant capacity.



plant. Improvements ranged from minor adjustments like recalibrating backwash flow rates to larger capital upgrades such as a new air scour system and filter media replacements. In addition, the team completed two separate bid packages in order to advance equipment items with long lead times and allow the city to use time-sensitive tax increment financing.

The team identified available manufacturers and equipment alternatives for the city. From collecting and evaluating vendor information, to conducting life-cycle cost analyses for equipment alternatives, the team provided valuable information to help St. Peters work toward implementation of the proposed improvements.

RESULTS

The improvements resulted in enhanced filter media cleaning, better management of solids buildup, better management of calcification, and most importantly, with the type of air scour system installed, the team avoided total replacement of the underdrain infrastructure.

Two further studies were completed to evaluate the plant holistically. One study evaluated the lime carryover and another study identified new lime feed equipment. These studies further evaluated the plant to remove the source of the upstream issue.

Using the recommendations provided by the studies, the city will be able to optimize and improve the plant by increasing the life of the filter media, increasing solids storage capacity and removing the source of the upstream issue.





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