

OZONE ALTERNATIVE DISINFECTION STUDY FOR A LARGE-SCALE WASTEWATER PLANT

TP-11446

SUMMARY

This report describes a feasibility study for the use of an ozonation disinfection system for the treatment of wastewater in the Passaic Valley.

Background

New Jersey recently promulgated stricter limits on effluent chlorine residual from the Passaic Valley Water Pollution Control Plant. This prompted Passaic Valley Sewerage Commissioners to conduct a systematic search for a practical method of achieving the new effluent chlorine target. One option they are considering is the implementation of an ozonation system as an alternative to traditional chlorine-based methods. This report focuses on a study to determine the feasibility of such an option.

Objective

The goal of this study was to determine whether using ozone as a disinfecting agent for wastewater treatment was a better all-around option than the current method of using chlorine to treat the water.

Approach

This study included:

- .A literature search, field investigations and manufacturer surveys to obtain state-of-the-art information on ozone technology.
- .A survey of operating wastewater treatment facilities currently and formerly using ozone for disinfection.
- .An investigation of the power, labor, cost and space requirements for installation and operation of an ozone system at Passaic Valley.

The information obtained from this preliminary research was used to develop three alternative designs for an ozonation system for the region: one for existing secondary effluent, another that includes tertiary treatment of the effluent to reduce the amount of ozone required, and still another that uses injection of ozone into the plant's effluent tunnel in place of a contact chamber to save on construction cost and land use.

Results

The basic design without tertiary treatment was found to cost about \$155 million in capital with annual operating costs of around \$5.6 million. Adding the tertiary treatment increased the capital cost to \$183 million but reduced the operating costs to \$5.5 million per year. Finally, incorporating tunnel injection resulted in a capital cost of \$160 million and operating costs of \$7.7 million. Ozone treatment systems were found to be a viable alternative to conventional.