



TONKA EQUIPMENT COMPANY

Project Profile

CITY OF MAHOMET, IL WATER TREATMENT PLANT

MAHOMET WATER DEPARTMENT

Superintendent

Contact: Jason Heid
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CITY ENGINEER

Berns Clancy & Associates

Contact: Don Wauthier
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DESIGN ENGINEER

Daily & Associates, Engineers

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TONKA REPRESENTATIVE

Gasvoda & Associate

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APPLICATION:

Iron Removal and Ion Exchange Softening
Flow: 1800 gpm

PROJECT:

The rapid population increase of the Village of Mahomet near Champaign, IL encouraged the design of a water treatment system that would provide the village with an adequate water supply for the next 20 years. City engineers, Berns, Clancy & Associates, worked closely with Daily & Associates to expand the existing site with the addition of new Tonka Dualator® VI filters. The Village Water Superintendent, after a tour of the Tonka factory, decided to incorporate the Tonka Simul-Wash™ process into the new filters. He also added softening to the treatment system to provide a higher quality water to the community.

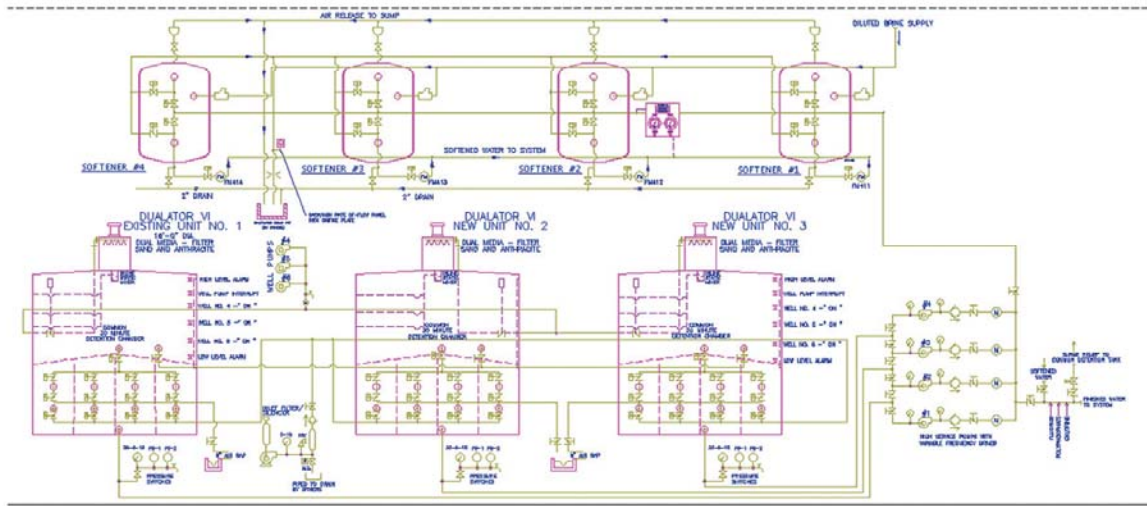
PROCESS:

The three package treatment systems incorporate aeration, detention and filtration in a vertical configuration in a single vessel. The aerator adds oxygen to the raw water supply to accomplish oxidation of the raw water iron. The aerated water is collected at the bottom of the aerator and discharged through a static mixer into a 30-minute detention chamber, then collected and routed to a four-cell filter. The iron is filtered out through a sand and anthracite filter media. The treated water is then pumped to four 9' diameter softeners where hardness is removed through an ion exchange process.

TONKA PROCESS EQUIPMENT:

The plant incorporates:

- ◆ Tonka Dualator® VI filters
- ◆ Tonka's Simul-Wash™ backwash system
- ◆ Ion Exchange softeners



Each softener vessel has the capacity to treat 224,000 gallons of filtered water between regenerations. The softened water is blended with a raw water bypass flow creating a treatment plant effluent of 100 mg/L of hardness. Following the softeners, fluoride, polyphosphate and chlorine are added to the water to condition it for distribution and consumption.

The Dualator® VI treatment unit plant includes the value-added Simul-Wash® backwash system. This unique backwash system uses air and water simultaneously, at sub-fluidized rates, to provide the most effective means of backwashing granular filter media.¹ Tonka’s media-rejecting Simul-Wash® trough enables the air and water backwash cycle to continue indefinitely without media loss. This results in optimal filter cleaning efficiency and prolonged filter runs, while saving approximately 50% of backwash wastewater compared to conventional methods. The system is controlled by Tonka’s PLC-based automatic control panel with an interface touch pad.

Tonka Equipment Company customizes each Dualator® VI treatment plant to meet the requirements of each application.

PERFORMANCE:

The raw water analysis summarized below reflects high concentrations of iron existing in the water. The treatment process has been highly effective in delivering quality water as indicated below.

	Raw Water	Finished Water
Iron (Fe)	1.5 mg/L	0.05 mg/L
Hardness	341 mg/L	Blended to 100 mg/L

FOR ADDITIONAL DETAILS, PLEASE CONTACT:

Tonka Equipment Company

¹ Amirtharajah, Appiah, et al. *Optimum Backwash of Dual Media Filters and GAC Filter-Adsorbers With Air Scour*, AWWA Research Foundation and American Water Works Association, 1991.



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