



# TONKA EQUIPMENT COMPANY

## Project Profile

### Town of Converse, IN Water Treatment Plant

#### TOWN OF CONVERSE

Contact: Wayne Carmack  
Plant Operator  
(765) 922-7880

#### DESIGN ENGINEER

*Foresight Engineering*

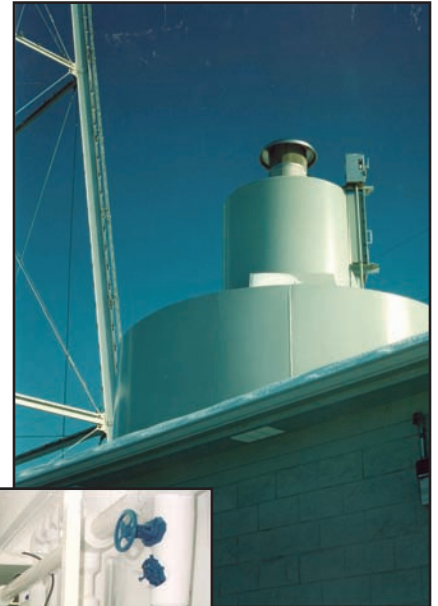
#### GENERAL CONTRACTOR

*M.K. Betts Construction*

Contact: David Grimes  
Jack May  
(765) 649-1294

#### TONKA REPRESENTATIVE

*B. L. Anderson Company*  
Contact: Mark Gasvoda  
(765) 463-1518



#### APPLICATION:

Iron and Manganese Removal  
Hardness Reduction

#### TONKA PROCESS EQUIPMENT:

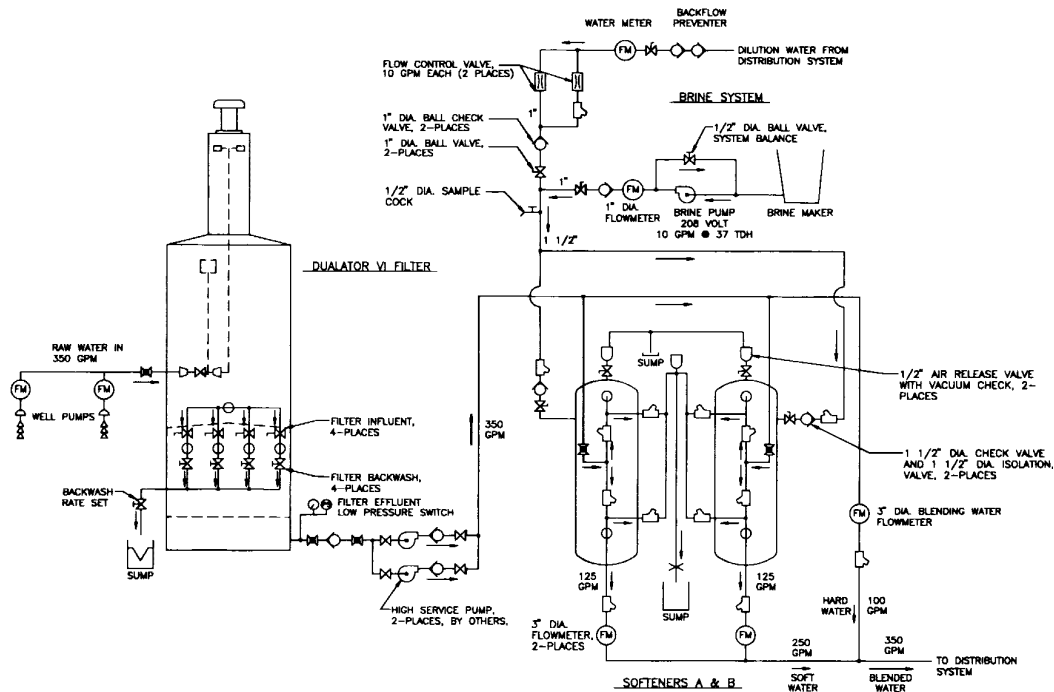
Automatic Dualator® VI package treatment system  
Ion Exchange Softeners (2)

#### PROJECT

Prior to the new water treatment plant installation, only disinfection of raw well water was provided. Designed for a flow rate of 350 gpm, the plant construction cost of \$640,500 was financed with a State grant of \$488,500 and a local cost of approximately \$152,000.

#### PROCESS

The treatment process includes a 350 gpm Dualator® VI package treatment system and two (2) ion exchange softeners supplied by Tonka Equipment Company. As shown on the process schematic, the water supply is received from two groundwater wells (350 gpm each). The Dualator® VI package treatment equipment provides conventional aeration, detention, and filtration in a single unit. The aeration process allows maximum air/water interface to support the oxidation process while liberating undesirable dissolved gases such as carbon dioxide and hydrogen sulfide. Following aeration, an integral basin is utilized for 30 minutes detention prior to filtration. During this period, the iron and manganese are converted to an insoluble form, creating precipitates which can be removed in the subsequent filtration process.



After detention, water flows by gravity to the four (4) cell filtration section (33.18 sq. ft./cell). The filter section is rated at 2.65 gallons per minute of flow per square foot of filter area (2.65 gpm/sq. ft.). The now stabilized water flows through the filter media to common-bottom underdrain collection. Filtered water is then piped to the plant's high-service pumps for delivery to the ion exchange softeners.

The primary function of the softeners is to exchange the sodium ions of the exchange resin for the hardness-causing calcium and magnesium ions found in the water supply. The softener provided consists of a pressure vessel containing 43" of ion exchange resin supported in an underdrain system. The water enters the top of the softener at a hydraulic loading rate of 4.4 gpm/sq. ft. and is distributed over the surface of the ion exchange bed. The hardness-causing minerals are removed by the exchange action of the resin. Finished water then passes through the underdrain collector, is blended with filtered but unsoftened water, and then disinfected (chlorinated) and sent to either elevated storage or to the distribution system.

## PERFORMANCE

The raw water analysis summarized below reflects moderate to high concentrations of iron, low to moderate levels of manganese, and high hardness due to the presence of calcium and magnesium. The treatment process has been highly efficient in delivering high-quality drinking water as shown below:

	Raw Water	Finished Water
IRON (Fe)	1.8 mg/l	.2 mg/l
MANGANESE (as Mn)	.08 mg/l	.035 mg/l
Total Hardness (as CaCO3)	490 mg/l	90 mg/l

**FOR ADDITIONAL DETAILS, CONTACT:**

Tonka Equipment Company



# TONKA EQUIPMENT COMPANY

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