



TONKA EQUIPMENT COMPANY

Project Profile

LOS LUNAS, NEW MEXICO WATER TREATMENT PLANT



APPLICATION:

Arsenic Removal

PROJECT HISTORY:

Like many Southwestern communities, Los Lunas, NM, found itself out of compliance with the new US EPA standard for arsenic in drinking water regulation, and in need of a treatment solution. The city chose Tonka Equipment Company to help develop an arsenic removal process to meet their specific goals and unique requirements.

TREATMENT PROCESS:

The method of arsenic co-precipitation with iron, followed by media filtration, was employed for arsenic removal. This process is one that Tonka has used on many full-scale municipal projects across the US. In this process the arsenic adsorbs to oxidized iron in the water, which agglomerates into filterable solids. In some parts of the country, this occurs naturally while removing iron from the water; however, in this case, there was no naturally occurring iron in the well water of Los Lunas, so it needed to be added in the form of ferric chloride.

The specific arsenic levels of Los Lunas are such that it is possible to treat a percentage of the raw water, while bypassing the remaining and blending to a finished water quality goal that is below the maximum contaminant limit (MCL) of 10 parts per billion. To accomplish this it is important to treat the arsenic to very low levels so as not to risk exceeding the MCL.

A pilot study verified that the addition of ferric chloride, sodium hypochlorite for arsenic oxidation, and hydrochloric acid for pH depression would successfully remove arsenic to less than one part per billion. A higher hydraulic loading rate through the media filter was also verified through pilot testing, which, along with the ability to bypass water, significantly decreased the size of the equipment.

TONKA PROCESS EQUIPMENT:

Four (4) Horizontal Pressure Filters Featuring Tonka's Simul-Wash™ Backwash Process

In total, four water treatment plants were constructed at Los Lunas, ranging between 875 and 1,500 gpm of production capacity. Horizontal pressure filters with Tonka IMAR™ media were provided to treat two thirds of the flow with the co-precipitation process, while the remaining one third of raw water bypassed the system. Each filter consists of four completely isolated cells, allowing for one or more to be taken out of service while the remaining cells operate under pressure.



Water conservation was critical to the community and played an integral role in equipment selection. The filters are backwashed employing Tonka’s unique Simul-Wash™ process, which combines air and water simultaneously, at sub-fluidization rates, to provide the most effective means of backwashing granular filter media.¹ The Simul-Wash™ backwash troughs enable 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 backwash methods. It is estimated that the city will save more than 13,000,000 gallons of water per year using Simul-Wash™.



PERFORMANCE:

The treatment process has been highly effective in bringing the water treatment for Los Lunas into compliance with the US EPA standard for arsenic in drinking water and in providing quality water for the community.

Contaminant	Raw Water	Finished Water
Arsenic (µg/L)	15-24	< 5

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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