



General Filter

# AERALATER®

Packaged Iron and Manganese Removal



# WESTECH®

# AERALATER<sup>®</sup> Packaged Iron and Manganese Removal

For more than 50 years and with over 500 installations, the AERALATER package plant has proven itself as the groundwater package system of choice. The AERALATER is a completely self-contained treatment plant that combines aeration, detention, and filtration in a single unitized package. It provides economical and dependable performance in treating groundwater supplies.



## Applications

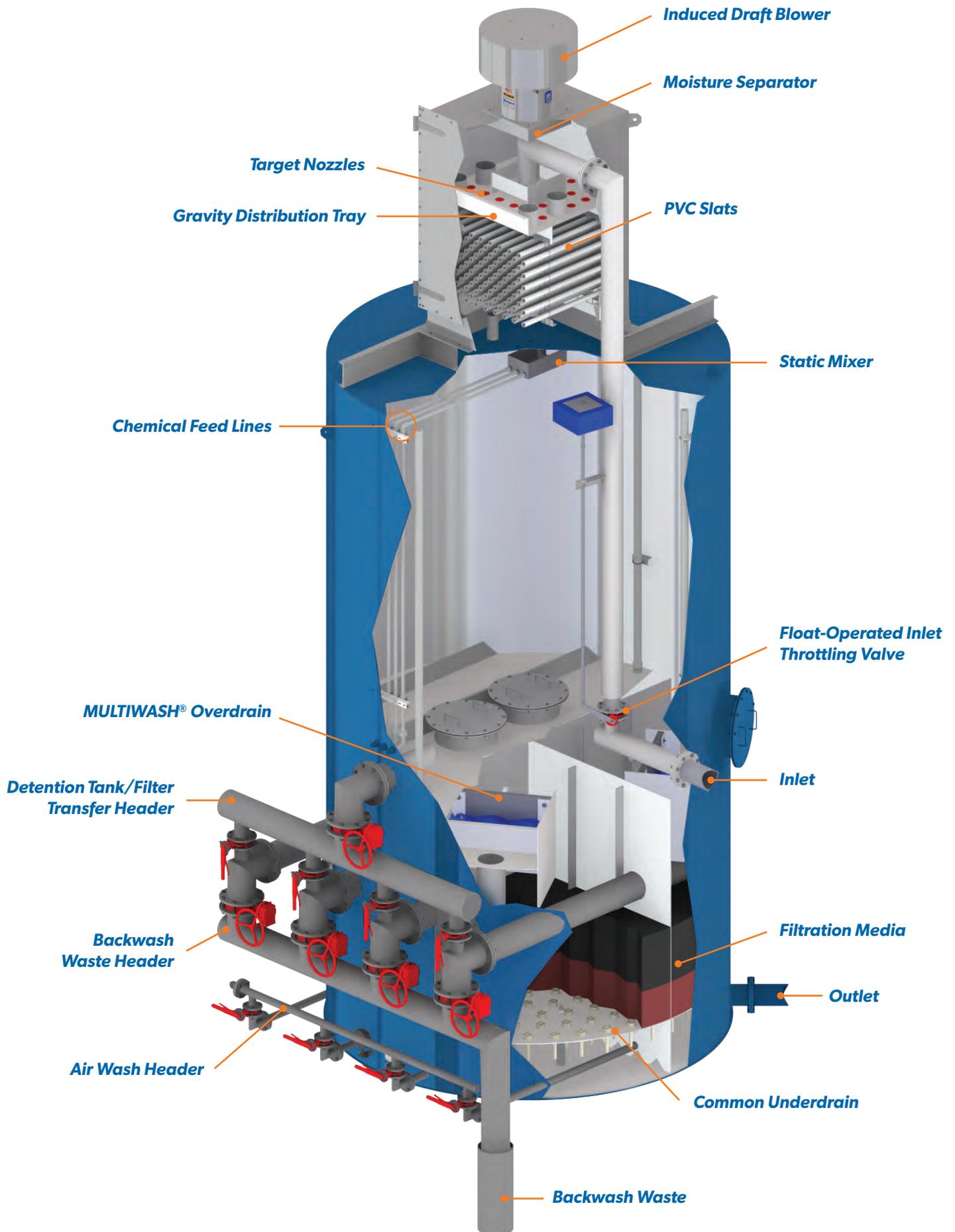
- **Iron removal**
- **Manganese removal**
- **Arsenic removal**
- **Removal of carbon dioxide, hydrogen sulfide, and other dissolved gases**
- **Radon removal**
- **VOC removal**
- **Odor removal**

AERALATER package plants can be designed for outdoor or partial indoor installation. Units can be designed with the aeration or detention section penetrating the building roof. This helps save building size and cost.



## Benefits

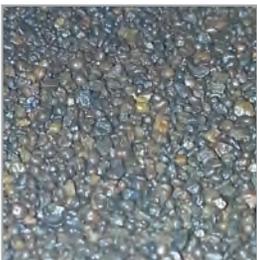
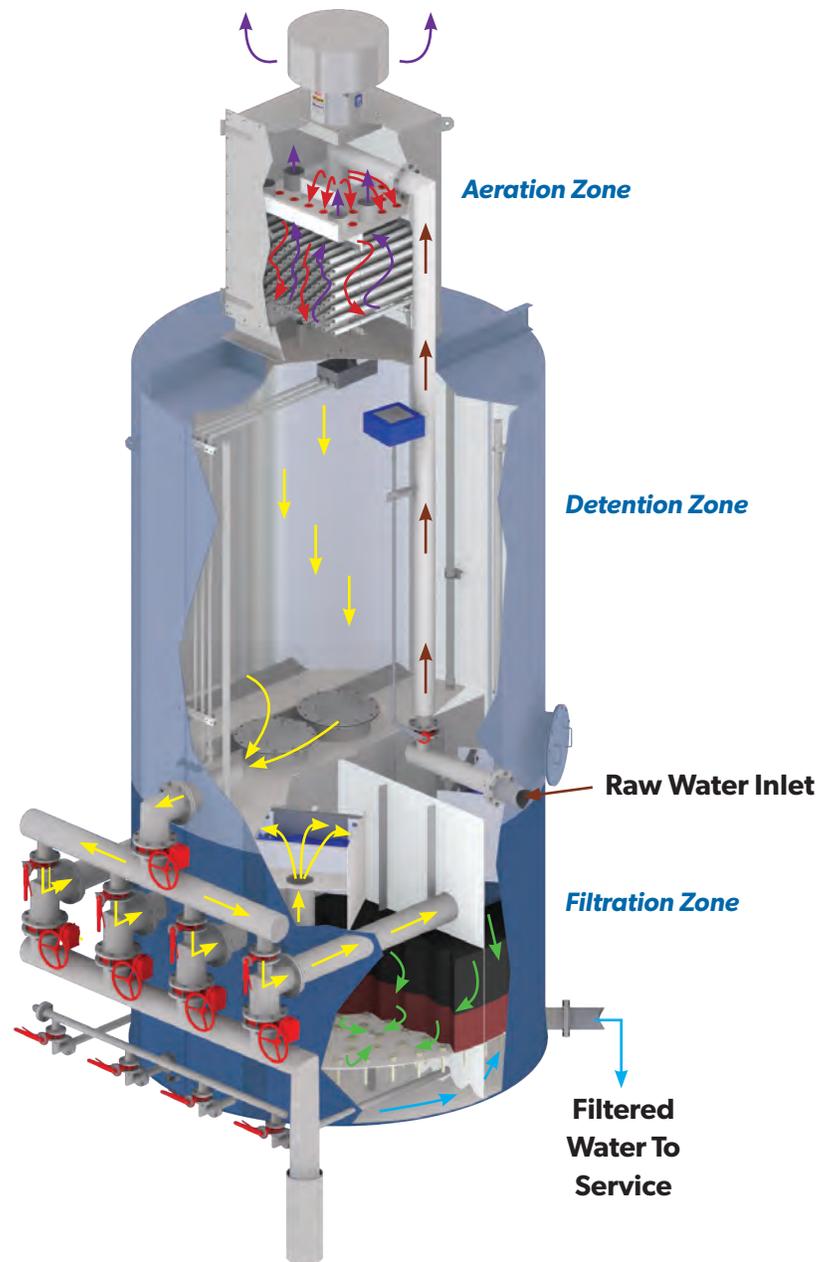
- **Small footprint**
- **Complete package treatment system**
- **Self-backwashing MULTICELL<sup>®</sup> design eliminates need for backwash pumps**
- **Standardized units with multiple options**
- **Corrosion resistant components**
- **Low installation cost**
- **Economical operating cost**
- **Simple and convenient operation**



# Aeration, Detention and Filtration

## Simple, Efficient Operations

- ↑ Water enters the AERALATER and passes through an inlet float-operated throttling valve to maintain a desired water level in the detention tank.
- ↑ Water flows across the gravity-fed distribution tray, through the low headloss target nozzles, and cascades down through the aerator, splashing off the PVC slat internals.
- ↑ Air is intermixed with raw water to oxidize iron and strip out dissolved gases and volatile compounds.
- ↑ Water enters the detention section where flocculation is promoted. Chlorine or permanganate may be added to enhance the oxidation process. Water containing the oxidized iron and manganese is then distributed to the filter cells through a simple piping arrangement.
- ↑ Water flows through the filter media and underdrain nozzles into the common underdrain.
- ↑ The filtered water exits through a common outlet connection. Finished water is transferred to an elevated storage tower by a high-service pump or is gravity fed to ground storage.



## Manganese ANTHRA/SAND™

Manganese ANTHRA/SAND media is a conditioned filter media formed by adding a special manganese oxide coating to granular media. Manganese ANTHRA/SAND media is available in a variety of different media grain sizes. This media size variability allows broader design flexibility. Along with our extensive experience with iron and manganese removal processes, WesTech will ensure that the right media will be selected to fit your project needs.

# Backwash

## Backwash Without Additional Pumps

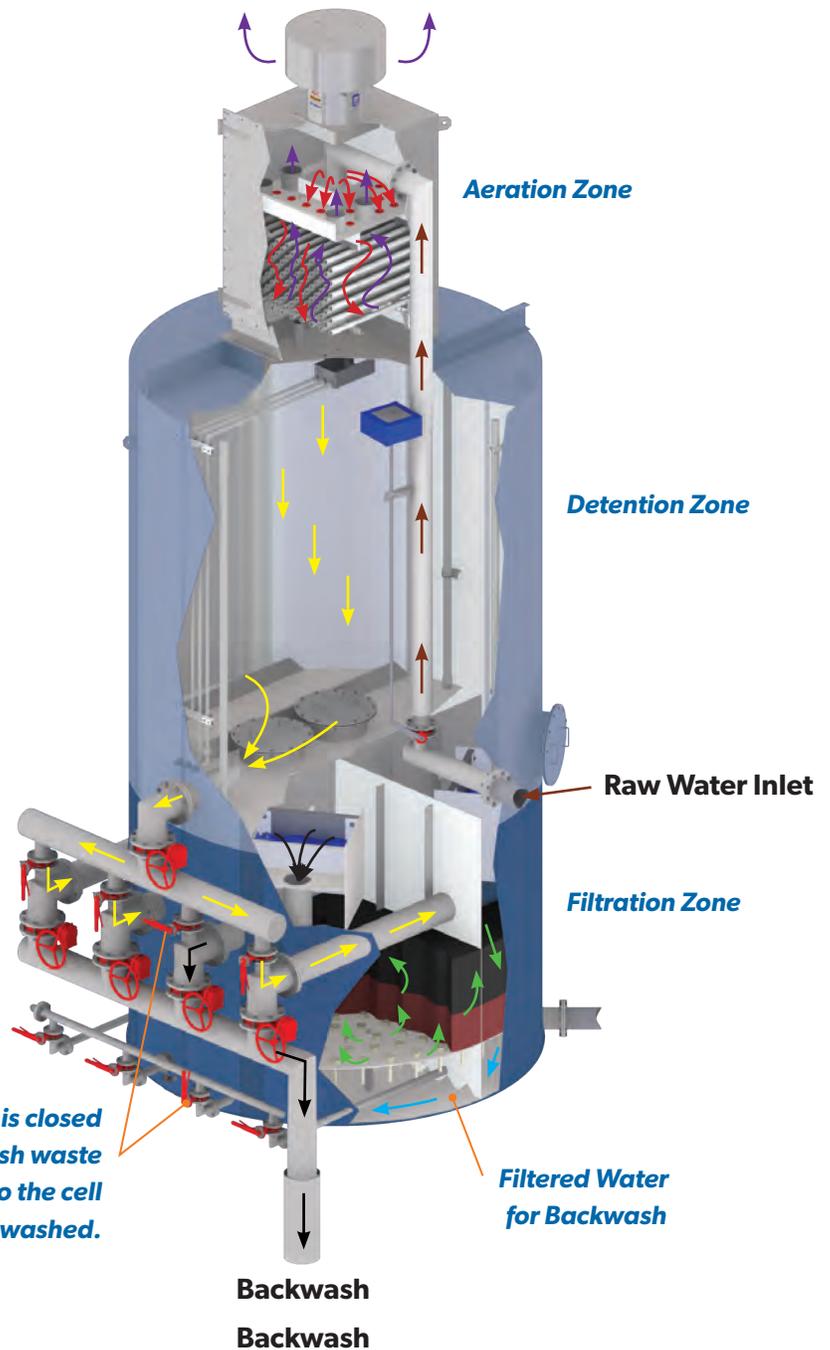
Backwashing starts by stopping the effluent flow so that the filtered water can be used for the backwash process. The inlet valve is closed and the backwash waste valve is opened to the cell being backwashed. The airwash blower starts and the cell airwash valve is opened to initiate the MULTIWASH cycle.

↑ Water for backwashing comes from the in-service cells, flowing through the common underdrain, up through the cell being backwashed, expanding and cleaning the media. Solids and backwash water are captured by the MULTIWASH trough and flow out the backwash waste header.

↑ The backwash rate is measured by a weir board in the backwash waste sump and is controlled by a backwash rate set valve. When the backwash is completed, the air valve is closed to purge air from the underdrain. Then the backwash waste valve is closed and the inlet valve is opened to return the cell to operation. The remaining cells are then backwashed using the same procedure.

**Note:** Manual actuators are depicted in this graphic for clarity.

**The inlet valve is closed and the backwash waste valve is opened to the cell being backwashed.**



## MULTIWASH

MULTIWASH simultaneous air and water backwash is easily incorporated into any AERALATER unit and is designed to increase filter cleaning efficiency and extend filter run lengths. MULTIWASH low-profile, media-retaining baffles are constructed of stainless steel and are a positive barrier against media loss during sustained-space simultaneous air and water backwash.

# The Solution in a Building

## Type II AERALATER

With more than 500 installations, the most popular AERALATER design is the Type II. The Type II is commonly installed in buildings with the detention section extending through the roof, saving on building size and cost. For colder climates, a pump-down feature automatically lowers the water level below the roofline during shutdown periods. Consequently, the Type II does not need to be insulated.



All AERALATER units are provided with a control cabinet for operation of the well pumps and high-service pumps based on the water level in the storage tank. The panel also operates the aerator blower and chemical feeders, based on the operation of the well pumps. When desired, control systems are provided to automatically step the AERALATER through a backwash and return it to service.



## Type II Features

- Provides 30 minutes of detention after aeration
- Commonly applied for flows of 64 to 700 GPM
- Multiple units can be used for higher flow capacities

## Factory Fabricated

Type II units arrive at the jobsite mostly prefabricated. This minimizes the amount of onsite work which saves on overall job costs. While many AERALATER units are constructed of painted steel, aluminum is a popular option due to its corrosion resistance and elimination of paint.

## AERALATER® Type II Selection

Flow Range (GPM)	Filter Dia.	Inlet	Outlet
64 - 85	6'-0"	3"	3"
86 - 115	7'-0"	4"	4"
116 - 150	8'-0"	4"	4"
151 - 190	9'-0"	6"	6"
191 - 235	10'-0"	6"	6"
236 - 285	11'-0"	6"	6"
286 - 340	12'-0"	6"	6"
341 - 400	13'-0"	8"	8"
401 - 510	14'-9"	8"	8"
511 - 600	16'-0"	8"	8"
601 - 700	17'-3"	10"	10"

# Stand Alone

## Type III AERALATER

The Type III AERALATER reduces building size by providing a control room within the unit. It is located directly below the detention zone with the filter cells arranged around its perimeter.

The control room can be easily connected to a building by a hallway. With the Type III design, the only building required is to house the pumps and chemical feed system.

Water enters the unit through a pipe in the middle of the control room that extends up into the aeration section. Aerated water drops into the detention tank, and then exits through four filter cell inlet connections at the bottom of the detention tank. The standard detention time is about half that of a Type II design.

Filter cells use the same media as the Type II design. The filtered water is collected in the underdrain. The four underdrains are interconnected by transfer piping, maintaining the MULTICELL concept.

Backwashing is completed the same as with a Type II. All filter operating valves are located in the control room. They are pneumatically actuated because of the limited space.



## Type III Features

- Reduces building size by providing a control room within the unit
- Ideal for flows from 530 to 1000 GPM
- Multiple units are provided for higher flow capacities

## AERALATER® Type III Selection

Flow Range (GPM)	Detention Tank Dia.	Filter Dia.	Inlet Pipe	Outlet Pipe
530 - 612	11'-0"	20'-0"	8"	8"
613 - 725	13'-0"	22'-33"	10"	10"
726 - 870	14'-0"	24'-3"	10"	10"
871 - 1,000	15'-0"	26'-0"	10"	10"



## Pilot Plant

Several pilot plants are available to test different water sources. A pilot plant can easily and economically determine performance characteristics. It is also useful to verify chemical and backwash requirements.



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Represented by:

**WESTECH**<sup>®</sup> Tel: 801.265.1000  
westech-inc.com  
info@westech-inc.com  
Salt Lake City, Utah, USA

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