Dual Parallel Lateral (DPL) Underdrain vs. Traditional Nozzles:

Learn how the right selection can help your water filtration

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B.S. in Mechanical Engineering

Master in Business Administration

De Nora is the global electrochemical process leader and the partner of choice for water technologies in potable water and wastewater applications for municipal and industrial markets

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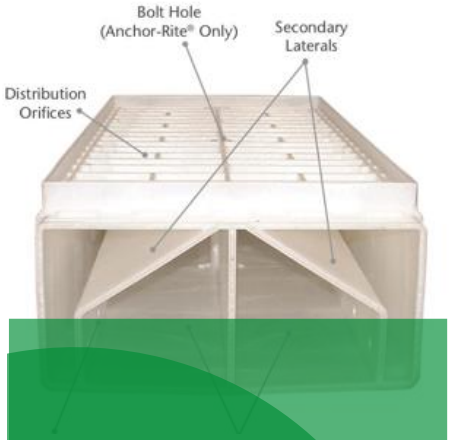
Traditional Nozzles vs. Dual Parallel Lateral (DPL) Underdrain

Agenda

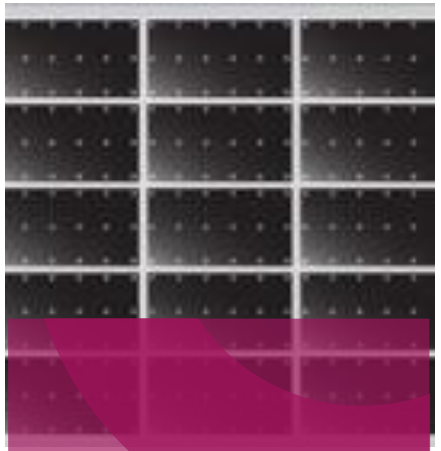
Introduction

Potable Water Treatment Process

Underdrain option:
Nozzle

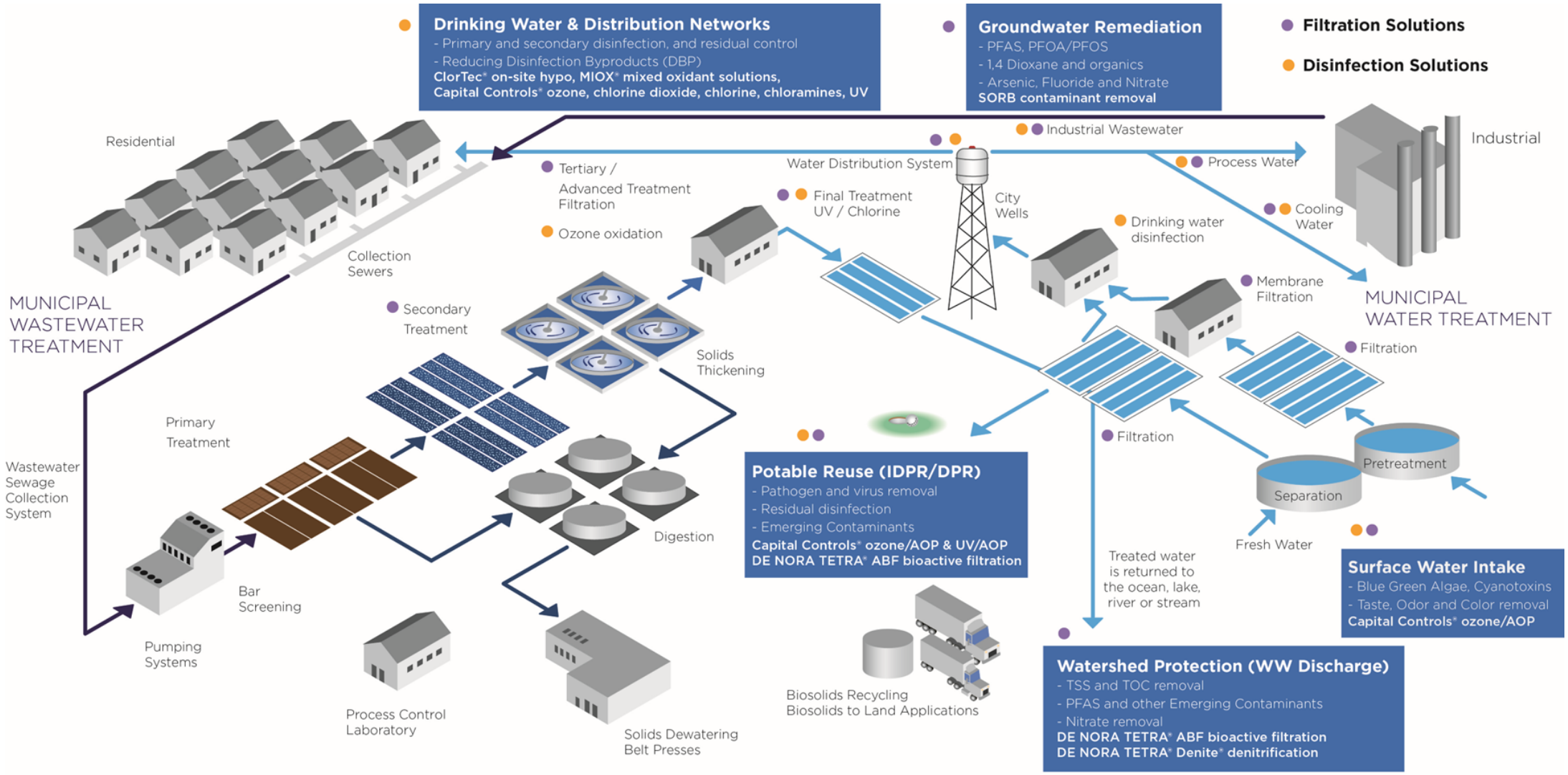


Underdrain option:
Dual parallel lateral

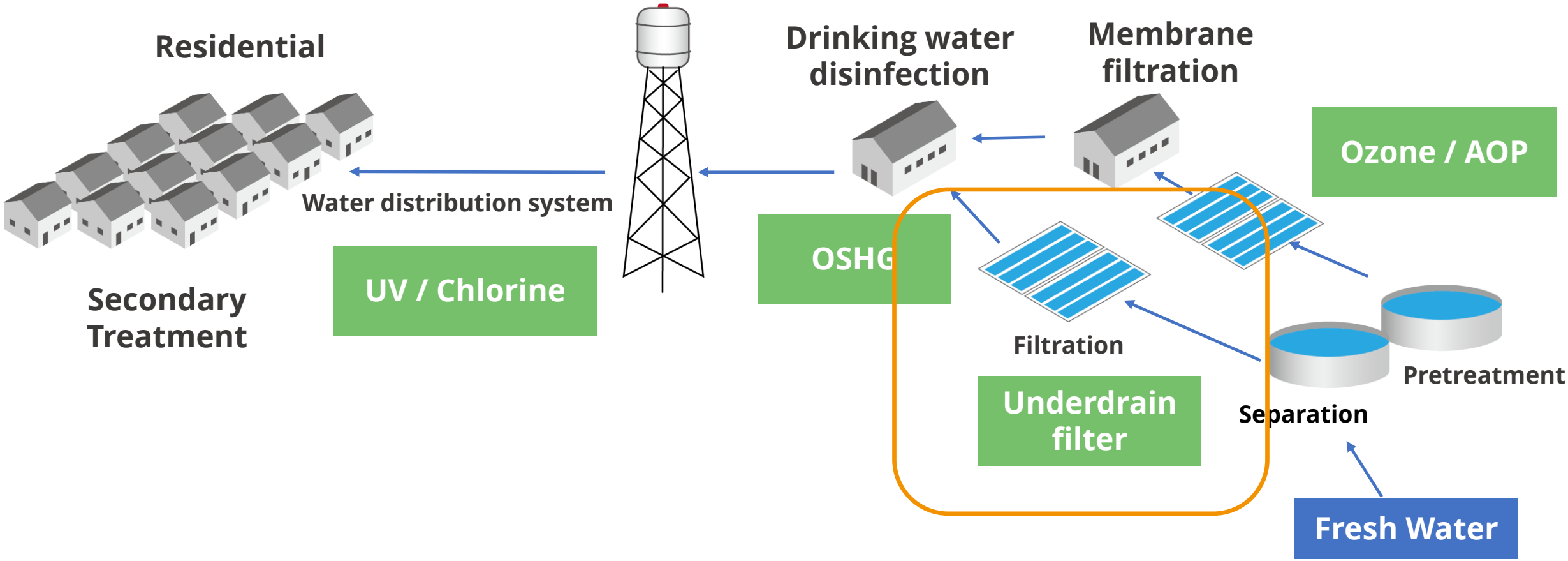


In the Field

De Nora knows water treatment



How De Nora fits in Municipal Water Treatment



High-performing, Low maintenance, and long-lasting…

Reliable filtration is a crucial part of the process to meet the regulatory compliance of municipalities

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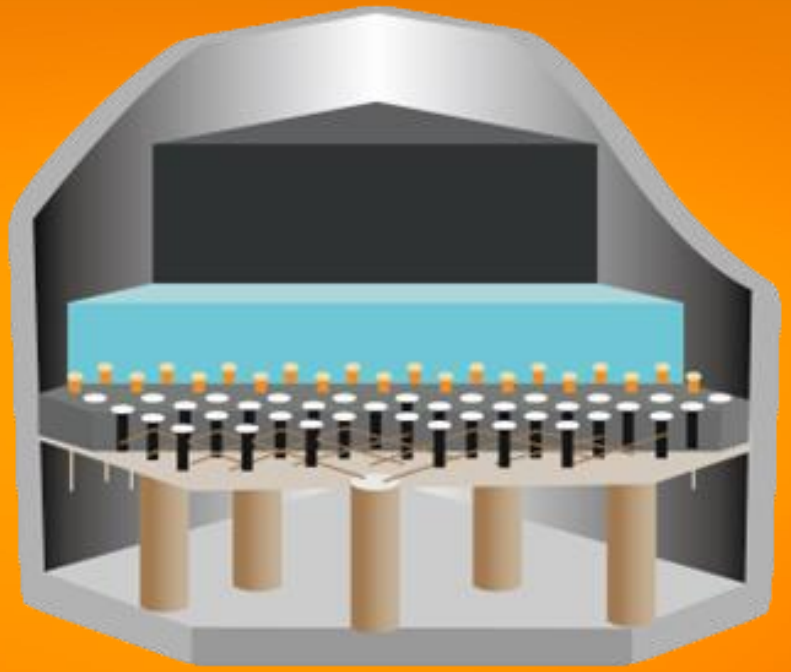
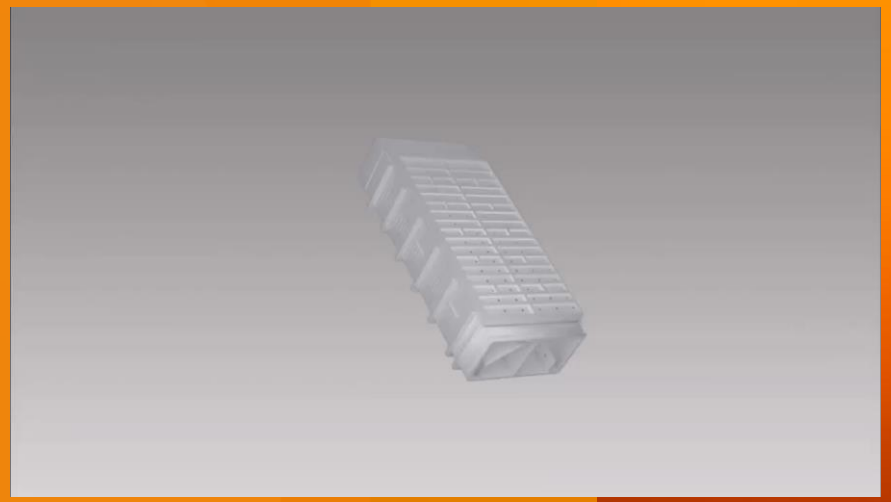
Nozzles vs. Dual Parallel Lateral Underdrain

A head-to-head comparison



- The heart of filtration is the underdrain.
- Discover which is the best option for your utility.

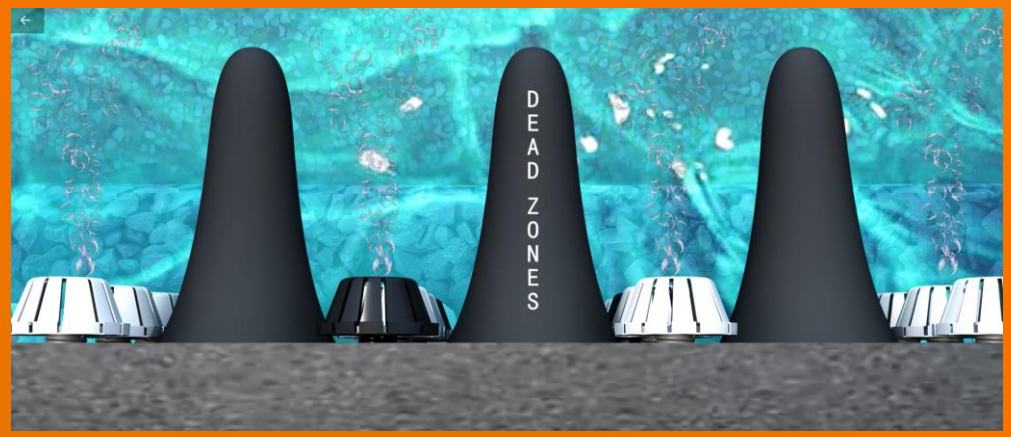


Nozzle design

Lacks backwash efficiency

Impacted by the dead zones between nozzles, microorganisms can grow more easily.

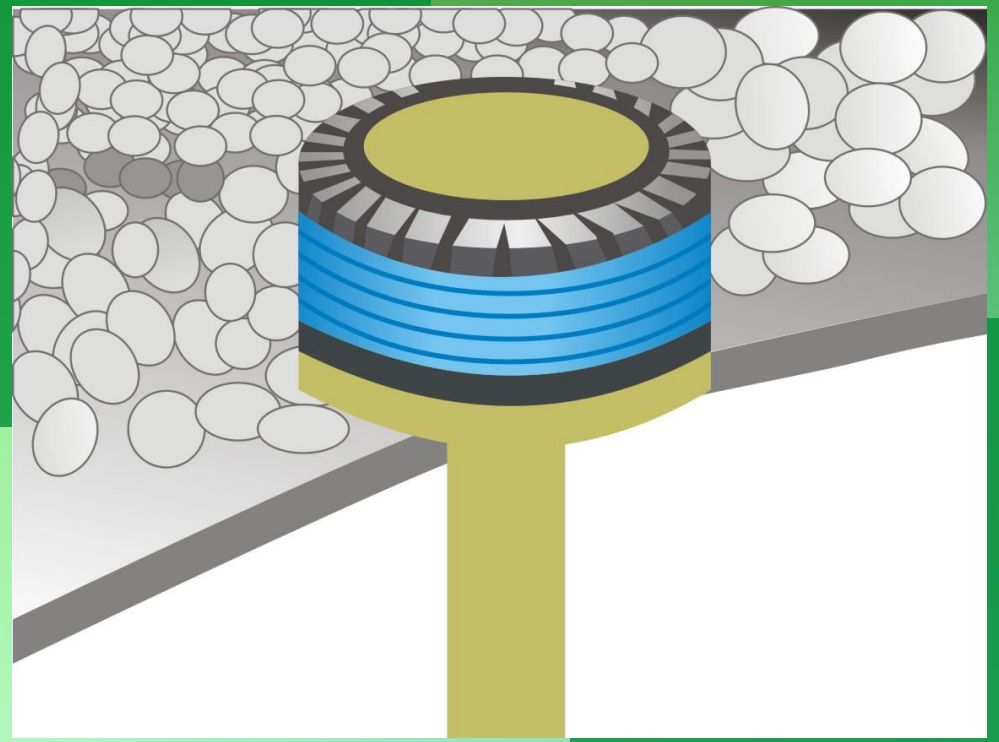
- More frequent backwashes
- More water usage
- Higher electrical consumption
- Increased costs



Nozzle design

Requires a gravel layer

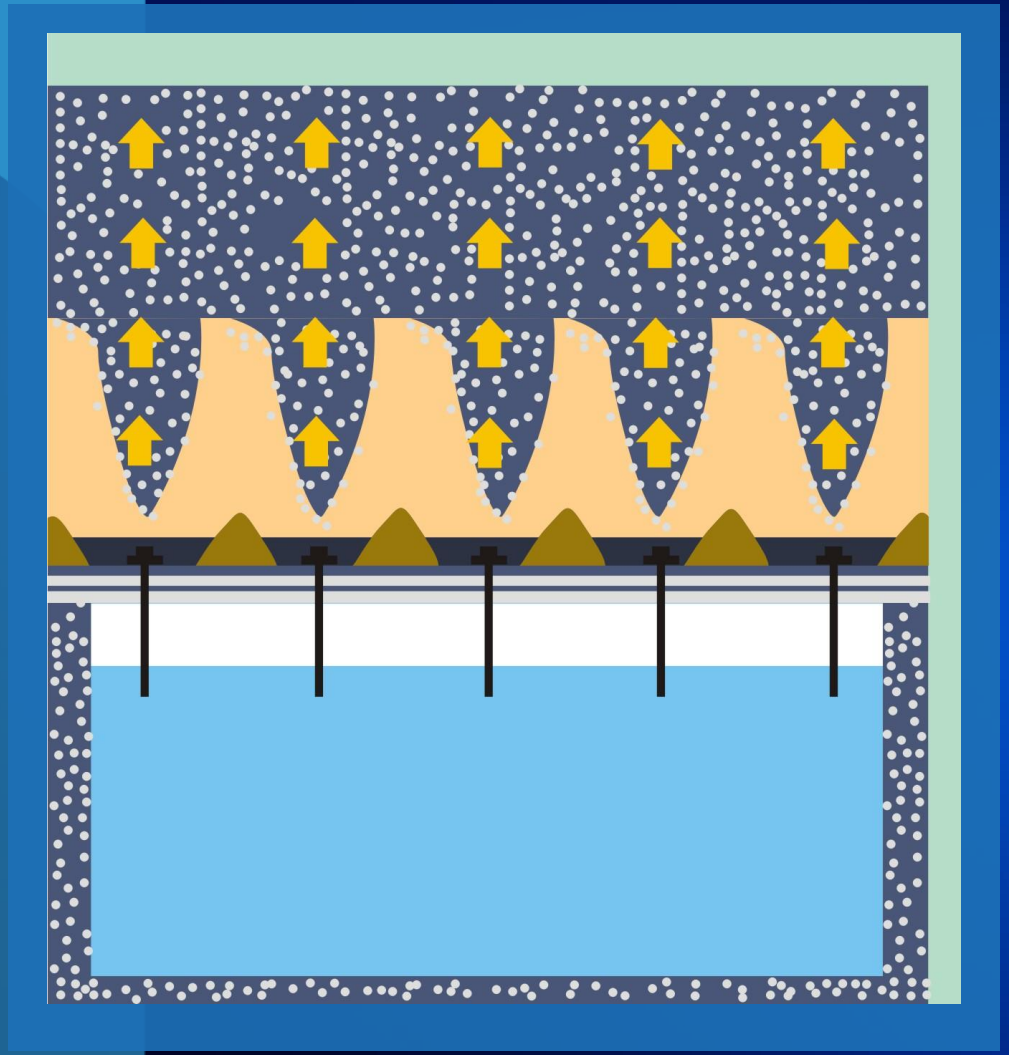
A gravel layer separates the nozzle from the media above. If the nozzle should fall, it can cause you to lose gravel and media. As a result, there is the added cost of constructing a deeper filter.



Nozzle design

Needs a deeper filter depth

Nozzle bottoms include a false floor with deep plenum for backwashing and gravel support. This increases construction cost.

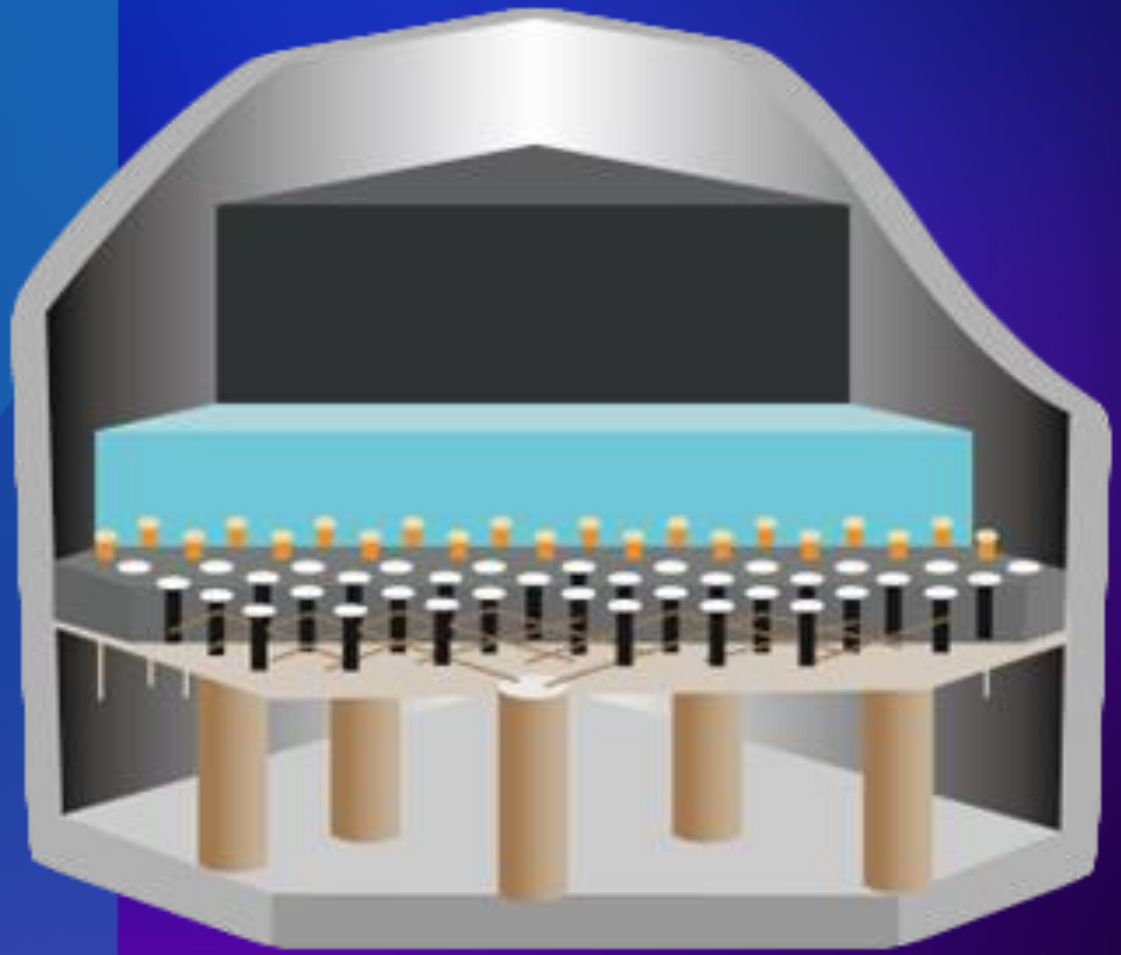


Nozzle design

Prone to cracking at floor level

Over time, sand seepage and water can cause a build up of algae in the false floor that's been created.

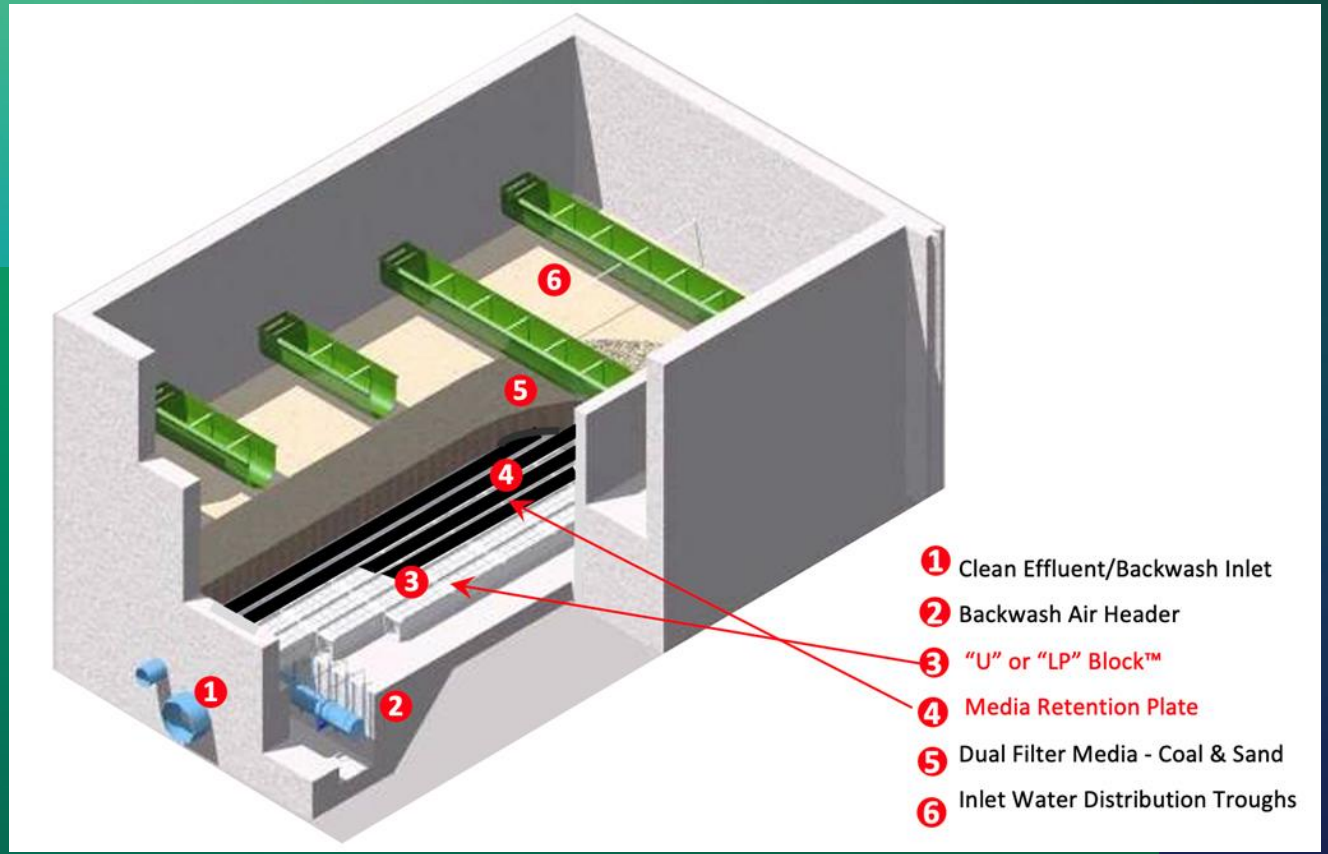
- **Poor performance**
- **Premature filter replacement**
- **Downtime**



Introducing DE NORA TETRA® LP Blocks™

With 300+ installations worldwide, De Nora DPL addresses the foundational challenges of nozzle design.

- Higher performing
- Low maintenance
- Reduced lifecycle cost



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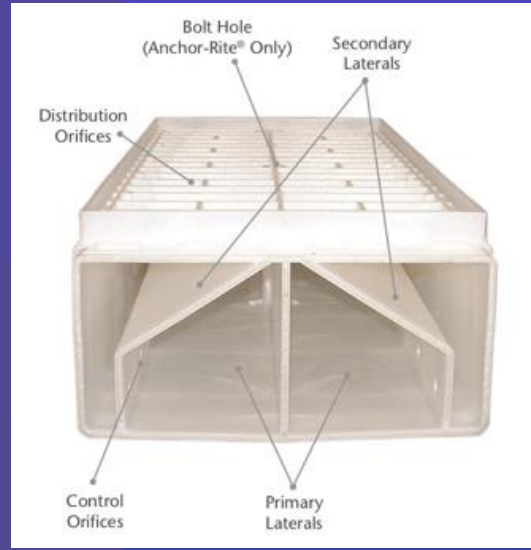
Dual parallel lateral design

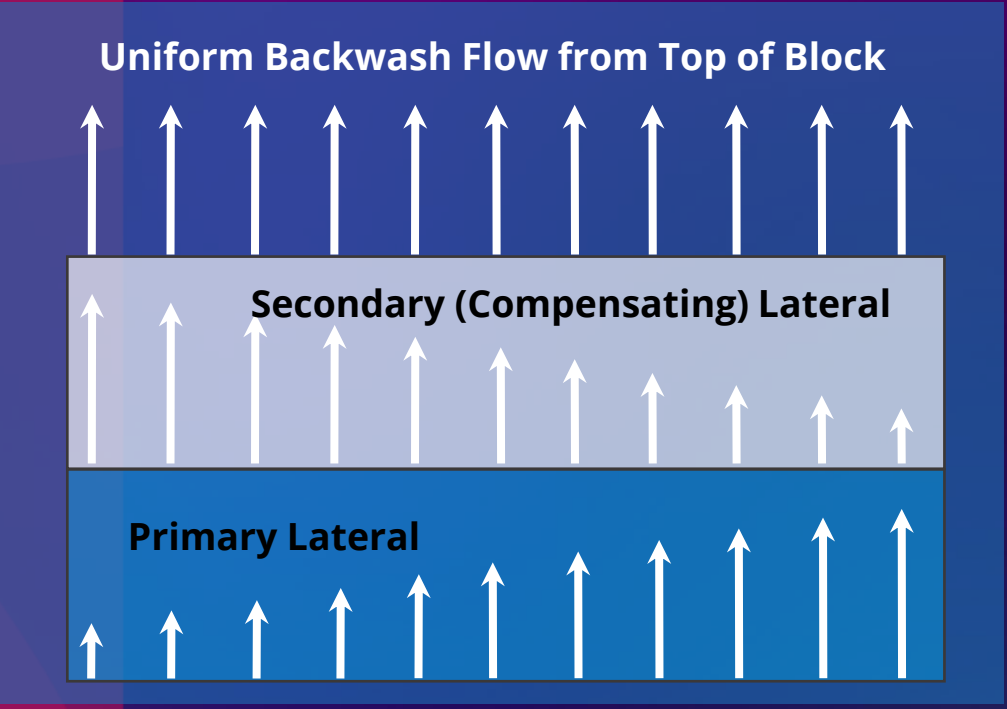
How it works

The DPL offers elegant simplicity

- Primary lateral with one row of orifices for water, three rows for air
- Secondary lateral with recessed distribution orifices on the top

- Better performance
- Easier maintenance
- Reduced lifecycle costs





Dual parallel lateral design

Never any dead zones

The DPL has been designed with even air/backwash distribution. This ensures there is no wasted space.

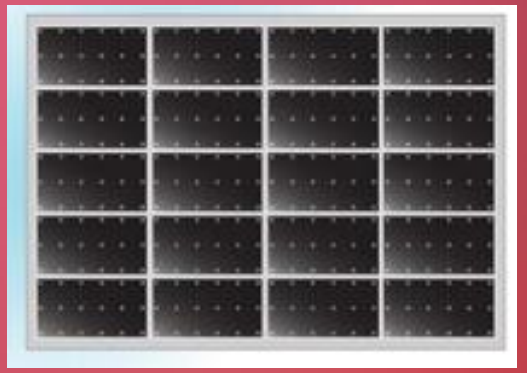
- Better performance
- Easier maintenance
- Reduced lifecycle costs

Dual parallel lateral design

Installation is easier

Because there are fewer parts, less concrete and less grout, installing the system takes less time and saves cost too.

Wider profile requires less parts:



DE NORA TETRA

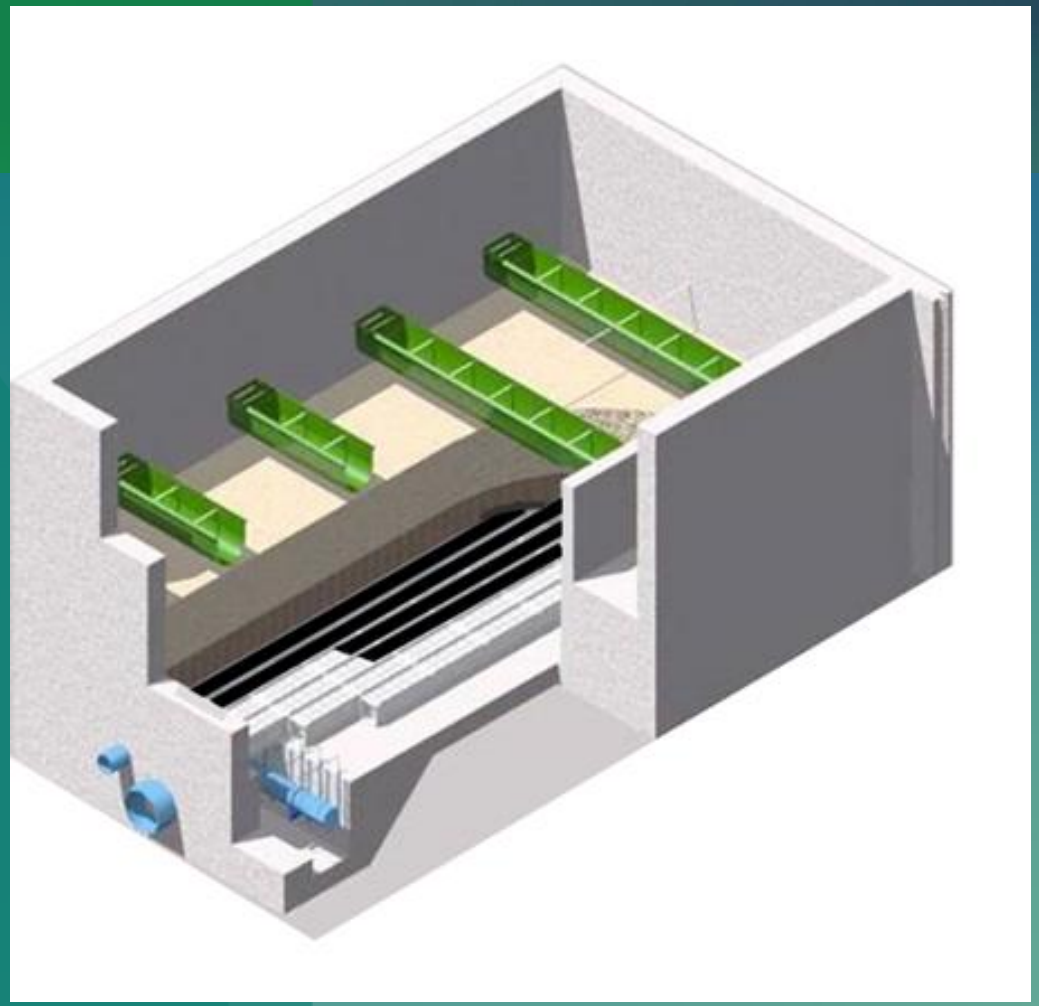
LP Block
38 Lateral Rows
366 Total Block
38 End Plates
228 O-rings

Lower profile requires less concrete:

Dual parallel lateral design

Features a shorter filter

- Requires less concrete to build
- Offers more height for air/water backwashing
- Provides better media cleaning



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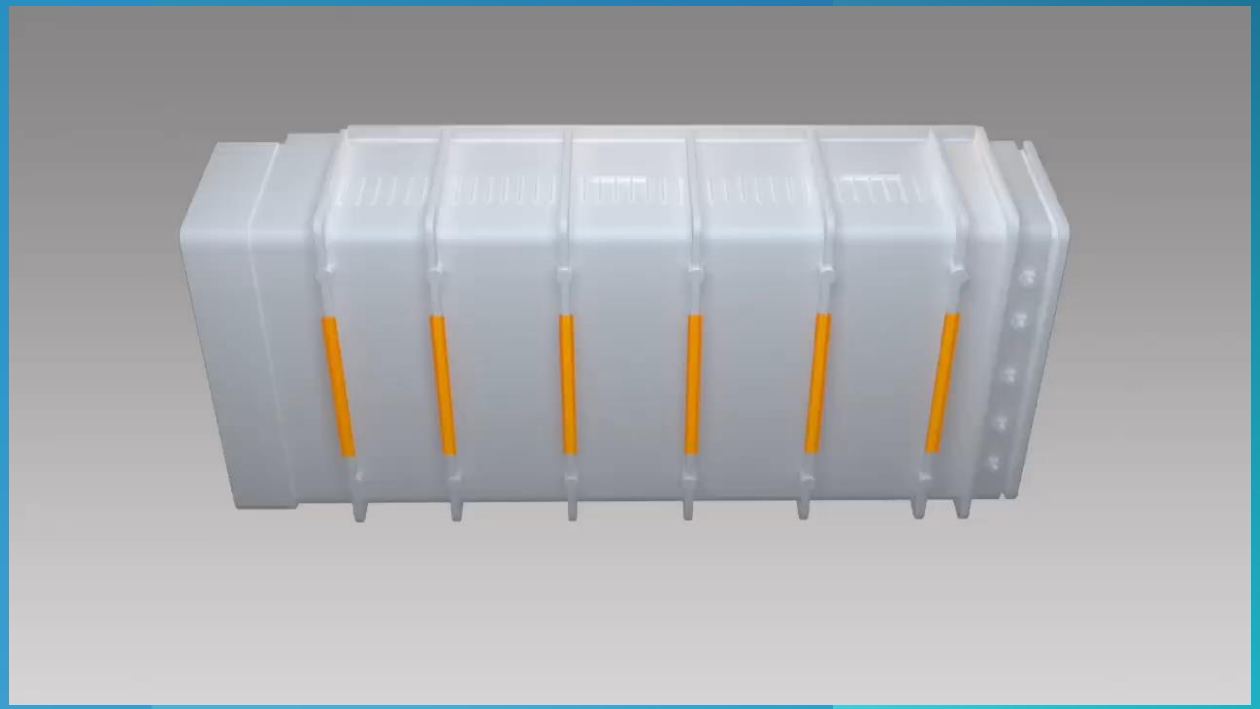
Dual parallel lateral design

Less likely to uplift

GroutGrip™ and Anchor-Rite® features provide added protection to resist uplift.



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DPL Benefits from comparison

Nozzles:

- Prone to clogging and breaking
- Dead zone impacts backwash efficiency
- Installation takes longer
- Gravel is always required with a deeper filter
- Nozzle bottoms include a false floor
- Nozzle floor prone to cracking
- Short/medium life cycle

DPL underdrains:

- Dual parallel lateral design for uniform air/backwash distribution
- No dead zone for better efficiency
- Easier installation with no moving parts, fewer parts and less grout
- Shorter filter design for lower CAPEX
- Uplifting resistance
- Long lifecycle

DPL underdrain value to potable water plants:

Higher-Performing

Lower Maintenance

Reduced lifecycle cost

In the field

Hoa Khanh Tay
Drinking Water Plant, Vietnam

Purpose

Treat the surface water from Dau Tieng Lake to meet the quality standard with the least maintenance

Capacity - 40,000m³/day for Phase II

Solution

DE NORA TETRA LP Underdrain

Number of Filters - 4 **Total Filter Area – 240 m²**

Customer selected LP underdrain due to easy maintenance, reliable performance and reduced lifecycle cost.

More and more water plants in Vietnam shift to select Underdrain instead of nozzles for capacity >5,000 m³/day

In the field

Balara Drinking Water Plants
Manila, Philippines

Problem

Regional population growth and increasing water quality regulations required plant upgrades to accommodate operation at higher flow rates

Solution

19 new underdrain blocks
DE NORA TETRA LP Block with GroutGrip

Highlight

More effective backwash
Meet Philippine standards of potable water
Operating for over 10 years, optimized durability cost

De Nora Engineering
Experience and Expertise

60 years of treating the world's water

More than 80 combined years of process expertise in designing filter systems

Strong knowledge of equipment and processes upstream and downstream of filter systems

Extensive experience replacing other filter designs by converting nozzle, stainless steel folded plate, and other types of underdrains to DE NORA TETRA underdrain

De Nora global aftermarket support

Offices in SE Asia

Q&A Session

Contact Our Filtration Experts for your water treatment requirement

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