Webinar: Commercial-Scale Greywater Systems: Case Studies from Orenco Systems and ReWater

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Moderator:
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Greywater Action

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ReWater Systems

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Presented by:
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ReWater Systems

www.rewater.com
Only two types of filters are known to work with “untreated” greywater.

**Polyester Felt Bag**

**Sand**
Yellow shows flow during greywater irrigation.
Commercial Filters

**Sized to Suit Project**
- Anticipated maximum daily “surge”.

**Two-Chamber Surge Tank**
- First chamber settles heavier solids.
- Second chamber is pumped through filter.

**Pump Sized Correctly**
- Volume for irrigation.
- Pressure for friction losses and irrigation.

**Sand Filter Large Enough for Flow Rate**
Greywater Tank Pre-filter

✓ Aluminum Stand
✓ Aluminum Cage
✓ Large Micron Bag
Greywater Backed by Rain LEED Irrigation System
NOTE: SHOWN IN GREYWATER IRRIGATION MODE

ENLARGED GREYWATER FILTRATION SYSTEM BY REWATER
(SIMILAR - NOT AS-BUILT)
ReWater’s Controllers

Perform Irrigation Functions
- Up to 21 valves.
- 4 independently operating programs.
- Water budgeting.
- Supplements with potable after midnight, if desired.

Perform Filtration Functions
- Dosing spreads greywater, strips tubing ID, purges emitters
- Backwashes filter vessel, quick annual maintenance
- Controls pumps chosen for the typography and landscape

120 VAC and 230 VAC
Valves
Like sprinkler valves but they work with low PSI and sticky greywater

Piping & Tubing
Buried > 2” deep in soil with ReWater’s emitters

THE KEY: ReWater’s Underground Drip Emitters

• The only emitter approved by any manufacturer for untreated greywater.
• Proven to defeat clogging via large orifices.
• Proven to defeat root intrusion with an air-gap.
1. Scaling lines ID of tubing
2. Flow strips the scaling
3. Scales pass through large orifice
4. Soil breaks down scaling into nutrients
5. Roots uptake nutrients
Sustainability Case Study: The Summit

Jeff Pringle
Orenco Systems, Inc.
The Summit – Boy Scouts of America
Case Study – Boy Scouts of America

- 117 shower facilities
- Reuse for toilet flushing at centrally located bath houses
- Rainwater makeup
- Potable water makeup
New River Gorge National River

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Activities
Activities
CONSOL Energy Bridge
Neighborhood Shower Facility
Neighborhood
Project Goals

• Create a model for sustainability and environmental stewardship.

• Create a site that would be a “net zero energy” and “net zero carbon footprint environment

• Protect the New River by eliminating any direct discharge of treated wastewater
Key Features

- Cogeneration using photovoltaic, wind turbines and Fuel Cells
- Geothermal wells with ground coupled heat pumps
- Radiant cooling/heating with displacement ventilation air supply
- Solar hot water
- Low flow fixtures and composting toilets
- Low-flow, pull-chain, ambient temperature showers
- Low energy Blackwater system to disperse treated effluent
- *Low energy Greywater system used to flush toilets*
Greywater System Requirements

- Capable of treating 2,000 gpd per 24 hour period
- Minimal PVC. Preferable materials are fiberglass and HDPE
- Capable of using gravity only to divert flow to blackwater system, with no human interaction
- System to occupy as little ground space as possible
- 117 units required
- Capable of cycling from a non-use condition to full treatment use in 24 hours or less
- Energy efficient
## Greywater Treatment Requirements

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<th>Avg</th>
<th>Max</th>
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<tbody>
<tr>
<td>cBOD5</td>
<td>10 mg/L</td>
<td>25 mg/L</td>
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<tr>
<td>Total Suspended Solids</td>
<td>10 mg/L</td>
<td>30 mg/L</td>
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<tr>
<td>Turbidity</td>
<td>10 NTU</td>
<td>20 NTU</td>
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<tr>
<td>E. coli</td>
<td>14 MPN/100 mL</td>
<td>240 MPN/100 mL</td>
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<tr>
<td>pH</td>
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AdvanTex Treatment System

• Packed Bed Filter
• Attached Growth
Case Study – Boy Scouts of America

- AX20-RT configuration
- Reuse for toilet flushing
- UV Disinfection
Case Study – Boy Scouts of America

• RT’s Installed 2012
Case Study – Boy Scouts of America

• AX-Max units
• Pre-manufactured
• Single unit to treat and disperse water back to building
National Jamboree 2013
Solutions for Decentralized Wastewater Treatment

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Thank you!