

FOR A SUSTAINABLE WATER CULTURE

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

March 2nd, 2016

Moderator:

Presenters:

Laura Allen Greywater Action Steve Bilson ReWater Systems Jeff Pringle Orenco Systems

ReWater® Irrigation

Presented by: Stephen Wm. Bilson ReWater Systems



www.rewater.com

Greywater Filters



Only two types of filters are known to work with "untreated" greywater

Polyester Felt Bag

Sand











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.

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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

ReWater's Controllers

Performs Irrigation Functions





4 independently operating programs.



Water budgeting.

F-	Supp
	after

lements with potable midnight, if desired.

Performs Filtration Functions

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Dosing spreads greywater, strips tubing ID, purges emitters

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Backwashes filter vessel, quick annual maintenance



Controls pumps chosen for the typography and landscape

120 VAC and 230 VAC







Irrigation

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 <u>any</u> manufacturer for untreated greywater.
- Proven to defeat clogging via large orifices.
- Proven to defeat root intrusion with an air-gap.

REWATER















Sustainability Case Study: The Summit

Jeff Pringle Orenco Systems, Inc.

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2/1/2016 #1

The Summit – Boy Scouts of America

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2/1/2016 #2

Case Study – Boy Scouts of America

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

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Location

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New River Gorge National River

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Activities

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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

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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

	Avg	Max
cBOD5	10 mg/L	25 mg/L
Total Suspended Solids	10 mg/L	30 mg/L
Turbidity	10 NTU	20 NTU
E. coli	14 MPN/100 mL	240 MPN/100 mL
pН	6.5-8.5	

AdvanTex Treatment System

Packed Bed FilterAttached 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

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Case Study – Boy Scouts of America

- **AX-Max units** \mathbf{O}
- Pre-manufactured \mathbf{O}
- Single unit to treat and \mathbf{O} disperse water back to building

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National Jamboree 2013

Solutions for Decentralized Wastewater Treatment

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Thank you!

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