

Filtration

Almost everything's recycled at Fallbrook



From top: filtered effluent approved for all reuses except potable. Silverthorn Nursery grows prize cactus plants with recycled water. Hydro-Clear® filter at Fallbrook.

Hydro-Clear® filter produces reclaimed water to keep Southern California landscape green and growing. Biosolids reused, too.

Jerry Loomis turns on the valve and watches reclaimed water shower over a plot of prize golden barrel cactus he's growing at his Silverthorn Ranch nursery in Fallbrook, CA.

"It's not so much that it's cheaper than potable," he says of the water. "It's that we require a steady supply, and that's what the Fallbrook Sanitary District gives us."

Silverthorn and the Good Earth Nursery are among several satisfied users of Fallbrook's reclaimed

wastewater, which passes through a Hydro-Clear® pulsed bed sand filter supplied by Zimpro Environmental, Inc. The water, meeting California's rigorous Title 22 standards, is also reused by nearby Camp Pendleton Marine Corps Base for fire fighting and golf course irrigation, by the California Dept. of Transportation for highway median irrigation, and for watering of high school athletic fields.

80 percent.

"We're reclaiming and recycling 80 percent of our flow," says Fallbrook District Superintendent Mike Page. "It's outstanding quality water."

It wasn't always this way.

In the past, effluent from Fallbrook was discharged to the Pacific Ocean through an 18.5 mile long pipeline.

Then in 1989, an \$8.5 million project expanded capacity and upgraded wastewater treatment at this community of 22,000 people located northeast of San Diego. Everything – from headworks to aeration system to secondary clarifiers – was reworked. Tertiary filtration was added, and daily capacity was enlarged to 2.7 million gallons.

Now, flow enters the plant through a bar rake and grit chamber and passes to the primary clarifiers. Following that, screw pumps lift the wastewater to rectangular aeration tanks equipped with fine bubble diffusers. After settling in the secondary clarifiers, the flow goes to the reclaimed water pumping station and equalization basin.

It enters the Hydro-Clear filters through a flocculation tank, passes through the filter's fine-grain sand media, and then is chlorinated and pumped to the reclaimed water users.

Pulsed bed.

The Hydro-Clear filter is a four-celled model CA-18, each cell having 162 square feet. The filtering media is 10 inches deep. A unique compartmentalized under-drain permits efficient "pulsing" of the filter bed to keep the media surface clear, and prolong runs between back-washes. A Chemical Clean® system enables operators to automatically remove grease and oil from the filter bed.



The filtered effluent meets the state standards for turbidity (less than two NTUs), and is acceptable for unlimited use except drinking water.

Sludge from the primary, secondary and tertiary processes is converted to biosolids through a unique process and distributed as compost. First, the material is aerobically digested, then dewatered on belt filter presses. Then it is "vermicomposted" by earth worms, and sold as a soil amendment under the brand name "Vermigro."

Says Page, "recycling and returning things to nature is really catching on here."

In the near future, Fallbrook expects to be selling reclaimed water to avocado and strawberry farms. "Ultimately," says Page, "all of the agricultural areas south of the treatment plant will use reclaimed water."

Clockwise from upper left: Fallbrook secondary clarifier. Recycled water used for treatment plant watering. Fallbrook staff (Brent Brady, Mitch Pierson, Joel Holt, Ray Weyls, David Deem, David Huntamer). Mike Page. Pipe gallery for filter. (Staff photos by Mike Page).

Data:

Plant: Water reclamation facility.

Capacity: 2.7 million gal/d (7.1 m³/min).

Processes: Headworks, primary, activated sludge, tertiary, disinfection, odor control. Sludge aerobically digested, dewatered, vermicomposted and sold.

Zimpro system: Hydro-Clear® pulsed bed sand filter. Model CA-18, four cells. 648 square feet (60 m²) total filtering area.

Startup: 1989

Results: Filtered effluent meets California Title 22 standards for reuse. Production 1,500 acre feet/yr (210 m³/h).

Uses: Nurseries; golf course, highway median and athletic field irrigation; fire protection; dust control.

Owner: Fallbrook Sanitary District.

Acting General Managers: Virginia Grossman, Michael P. Page.

District Superintendent: Michael P. Page.

Operations Supervisor: Joel Holt

Lead Operator: Mitch Pierson

Design engineer: HYA Consulting Engineers, Pasadena, CA.

Zimpro representative: MISCO Southwest, Santa Ana, CA.

SI units: 1 acre foot = 1,233 m³
2.7 mgd = 7.1 m³/min
648 ft² = 60 m²