



*Amending resort disposal practices  
to protect California's Shasta Lake*

# Safe Gray Water Disposal Practices

By Dennis Hallahan

**T**he largest reservoir in California, Shasta Lake, is a haven for recreational activity. The entire lake, along with the resorts and marinas along its shores, is a part of the Shasta-Trinity National Recreation Area administered by the U.S. Forest Service (USFS).

Prior to September 2006, houseboats and marinas were allowed to discharge gray water, including wash water, directly into the lake. As the number of visitors using houseboats and the resorts on the lake increased, there became a need to improve disposal practices in order to protect the sensitive environment around the lake and preserve water quality.

**Regulations**

The USFS introduced a regulation change in response to the state of California Regional Water Quality Control Board (CRWQCB) Resolution No. 5-01-211. The resolution authorized the executive officer to enter into a memorandum of understanding with the USFS to eliminate the discharge of gray water

from houseboats into Shasta Lake. It also required the marinas to provide temporary storage and holding of the gray water—either to be hauled for disposal off site or, as an alternative to expensive offsite hauling, disposed of in onsite drainfields.

The Shasta County Environmental Health Department, in conjunction with the USFS, then developed new guidelines for sewage disposal, including collectively containing the gray water and black water from the houseboats and disposing of it on site using drainfields. The requirements include 200-ft setbacks for drainfield location to protect the surface water. They also require that these onsite septic systems be located on less than a 30% slope. Due to varying soil conditions in the area, soils must pass a percolation test

**A new California regulation required that gray water no longer be discharged from houseboats on Shasta Lake; marinas are now required to provide temporary storage for it, as well as haul it off site or dispose of it in onsite drainfields.**





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and rate at 60 to 120 minutes per inch before a system will be approved.

In addition to obtaining Shasta County approval for construction, each marina has to submit a report of waste discharge to the CRWQCB, which provides approval of waste discharge requirements (WDRs). The WDRs provide site-specific authorization for use and establish monitoring and reporting requirements.

A number of different types of treatment and system designs are currently being used in the area, including chamber drainfield systems. The type of system selected for each marina installation varies based on the location, slope and soils.

#### Lakeside Solutions

Systems have been installed around the lake, including one at Jones Valley Marina and another gray water disposal system at Sugarloaf Marina—both near Redding, Calif. The

“The type of system selected for each marina installation varies based on the location, slope and soils.”



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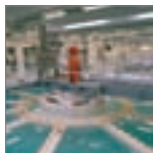
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USFS owns the land, which is leased by Shasta Lake Resorts, LP, which owns and operates Jones Valley and Sugarloaf resorts.

The Jones Valley Resort system was designed to treat and dispose of up to 10,400 gal of wastewater per day. It includes 19,000 gal of septic tank capacity (a combination of existing and new concrete tanks) and 10,000 gal of surge capacity. Duplex pumps in a separate pump chamber send effluent to the disposal field via a 1,000-ft-long, 2-in.-diameter force main. The disposal field incorporates 1,700 ln ft of Infiltrator Quick4 Equalizer 36 chambers. At the disposal field, a splitter box diverts the flow to two zones of leach lines. Individual leach line lengths are either 50 ft or 100 ft. A series of D-boxes diverts the appropriate flow to each leach line.

"The mountainous terrain around Shasta

Lake makes it difficult to find suitable locations for leach line disposal fields," said Randy Ranken, project engineer with PACE Eng., Redding. "Bedrock is usually at shallow depth, and slopes are steep. At Jones Valley Resort, we managed to find a location that will work, but access to it is very difficult—by tracked equipment only. Thus, the use of Infiltrator chambers greatly simplified construction of this project."

The Sugarloaf system includes three connected, 5,000-gal concrete septic tanks—the last of which includes a slide rail Orenco effluent filter. The effluent then flows by gravity to an existing 10,000-gal tank that includes a duplex pump system and a flowmeter. A four-way concrete splitter box is elevated approximately 100 ft above the pumps. The splitter box sends the effluent via gravity to four different distribution boxes with a total of 1,600 ft of leach line that includes Quick4 Equalizer 36 chambers.

"Sugarloaf is located in a developed area with good, deep soils, but the size of the parcel and nearby water supply wells limited space available for leach lines," Ranken said. "The [chambers] allowed us to maximize the use of the available space."

### Monitoring & Maintenance

Each resort is responsible for maintaining and monitoring its system. The CRWQCB requires a comprehensive inspection and monitoring program that ranges from monthly inspection of the disposal field, to quarterly sampling and testing of groundwater and nearby lake surface water, to annual inspection of the septic tanks. Inspection and monitoring results are submitted to the CRWQCB in monthly monitoring reports. [www.usfs.gov](http://www.usfs.gov)

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Different types of treatment and systems are being used in the area, including chamber drainfield systems. The system selection depended on location of the marina, slope and soils.