



# Quick4® Chambers Installed in Several Onsite Septic Systems on Lake Shasta

Change in regulation requires proper disposal of grey water in order to protect sensitive environment.

## Project

Quick4 EQ36 chambers installed in marina septic systems on Lake Shasta in order to comply with new regulations.

## Installation Date

2006-2007

## Contractor/Installer

Holiday Harbor, Packer's Bay,  
Sugarloaf Marinas  
Rusty Gravatt  
Lakehead, CA

Jones Valley Marina  
Glenn Hammond  
Axner Excavating  
Redding, CA

## Project Manager

Holiday Harbor Marina  
Bob Ekin  
Lawrence & Associates  
Redding, CA

## Engineers

Holiday Harbor Marina  
Don Lampe  
Lampe Engineering  
Chico, CA

Packer's Bay Marina  
Vestra Engineering  
Redding, CA

Sugarloaf and Jones Valley Marinas  
Pace Civil, Inc.  
Redding, CA

## Government Agencies

Shasta County Environmental  
Health Department  
Redding, CA

California Regional Water Quality  
Control Board  
Central Valley Region 5,  
Redding Office, Redding, CA

Lake Shasta is the largest reservoir in California. The entire lake including the resorts and marinas along its shores are all part of the Shasta-Trinity National Recreation Area administered by the US Forest Service. Prior to September 2006, houseboats and marinas were allowed to discharge grey water directly into the lake. As the number of visitors on the lake increased there became a need to improve disposal practice in order to protect the sensitive environment and preserve water quality.

The US Forest Service introduced a regulation change in response to the State of California Regional Water Quality Control Board (RWQCB) Resolution No. 5-01-211. The Resolution authorized the Executive Officer to enter into a Memorandum of Understanding with the US Forest Service to eliminate the discharge of grey water from houseboats into Shasta Lake. It also required the marinas to provide temporary storage and holding of the grey water which was to either be later hauled off site for disposal, or as an alternative to expensive onsite hauling, disposed of in onsite drainfields.

The Shasta County Environmental Health Department in conjunction with the US Forest Service developed new guidelines for sewage disposal, which include 200-foot setbacks for drainfield location on less than a 30% slope. Due to varying soil conditions, soils must pass a percolation test and rate at 60-120 minutes per inch before a system will be approved. Each marina is also required to submit a Report of Waste Discharge to the RWQCB who provides approval of Waste Discharge Requirements (WDRs). The WDRs provide site specific authorization for use and establish monitoring and reporting requirements.

The onsite septic system at Holiday Harbor Marina is designed to treat and dispose of up to 7,580 gallons per day (gpd) of effluent flows from the marina. Effluent from the dockside pumpout systems is piped to an existing onshore storage tank, transferred to a tank truck and transported to the drainfield. The system includes two, 10,000-gallon septic tanks with an Orenco® 18 inch Bio-Tube Pump Vault which pressure doses to a five-way Orenco Hydrosplitter. These are followed by 2072 feet of Quick4® Equalizer® 36 leaching chambers from Infiltrator® Systems Inc. The chambers are installed in five drainfields ranging from 336 to 568 linear feet and including 34, four-inch inspection ports with access valve boxes to the surface.

The wastewater disposal system at the Holiday Flotels Inc. Resort at Packer's Bay Marina includes two, 3000-gallon septic tanks with the first tank incorporating an Orenco effluent filter and the second tank including duplex pumps also from Orenco. The wastewater then flows through a flow meter to a 10-way pressurized hydro-splitter, which disperses it to a drainfield with 624 feet of Infiltrator Quick4 Equalizer 36 chambers.

At the Jones Valley Resort in Redding, the system was designed to treat and dispose of up to 10,400 gpd. It includes 19,000 gallons of septic tank capacity (a combination of existing and new concrete tanks) and 10,000 gallons of surge capacity. Duplex pumps in a separate pump chamber send effluent to the disposal field via a 1,000-foot long, 2-inch diameter force main. The disposal field incorporates 1700 linear feet of Infiltrator Quick4 Equalizer 36 chambers. At the disposal field, a splitter box diverts the flow to two zones of leach lines varying in either 50 or 100 feet in length. A series of d-boxes diverts the appropriate flow to each leach line.

Also in Redding, the Sugarloaf Marina system includes three, connected, 5000-gallon 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 gallon tank that includes a duplex pump system and a flow meter. A four-way concrete splitter box sends the effluent via gravity to 4 different distribution boxes with a total of 1600 feet of leach line including Infiltrator Quick4 Equalizer 36 chambers.

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. Overall, the resulting drainfield installations helped to reduce the cost for treatment in order to comply with the revised regulations. This is due to the elimination of septage hauling and increased capacity of the onsite systems to handle peak flows and future growth. Additional projects are currently in the planning process around the lake as a result of the success of these initial marina septic system installations.



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