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Qualified Wastewater System Design and Consultation
"#1 Consultant in the #2 Business"

November 18, 2018

Terra Vi Lodge Yosemite Wastewater Management

The proposed wastewater system for the project will conform to both California State and Tuolumne County regulations and policies. The wastewater system design will employ sound and proven design principles while trying to minimize any adverse impact on the environment. Wastewater system reliability has been one of the foremost considerations in the design. The wastewater system layout provides special considerations for the remaining trees that have survived recent wildfires and tree killing insect infestations.

Wastewater System Overview:

The wastewater from the primary and second phase development will be divided between (6) discrete wastewater systems sized for up to 8,000 gallons per day of sewage loading each. Dividing the total wastewater volume into smaller packages helps to improve wastewater handling efficiency. Wastewater system reliability will be provided through redundant mechanical wastewater system components. The 100% future replacement leach system area has been planned for, and the area has been set aside.

Food Service Wastewater Treatment:

The food service wastewater treatment system will include a technologically advanced treatment system that has been proven to be very effective for food service waste. The microprocessor controlled treatment system will provide remote telemetry to a qualified service provider for 24 hour wastewater treatment monitoring.

Water Conservation through Thoughtful Wastewater System Design:

Food facility operations will conserve water by utilizing single service utensils. Using single service utensils uses at least 3 times less water for washing and sanitization activities. Graywater reclamation is proposed for beneficial reuse. There is up to a 24,000 gallon per day potential reuse for subsurface landscape irrigation.

Every gallon of water saved or reused is a gallon reduction in the groundwater supply burden.



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Wastewater System Sizing & Design Criteria

The wastewater system sizing is based on full time maximum facility use and occupancy. System size specifications include phase I and phase II development. The sources for daily wastewater loading include guest rooms/cabins, conference facility occupancy, retail floor space, staff/employees, guest only food service, and a public market food service (sandwiches and coffee). The guest room wastewater is domestic strength wastewater and is treated as such. The food facility wastewater is high strength and requires advanced treatment before being dispersed in a leach system. The food facility wastewater will be combined with the wastewater from conference center occupancy, retail floor space, and staff/employees in the treatment process.

Guest Room & Cabin Wastewater System

The guest room & cabin wastewater is divided into individual systems that treats and disperses the wastewater from 50 rooms for (5) 50 room wastewater systems. The guest room occupancy is (4) persons per room. The 2016 California Plumbing Code specifies 30gpd/guest or 120gpd/room or up to 6,000gpd/50 rooms.

The leach system sizing assuming a .6gpd/ft² application rate requires 1,429 linear feet of leach trench per 50 room wastewater system for soil absorption. The application rate was derived from previous on-site soil profile testing. The leach system size will require pressure dosing for dispersal. Pumping for pressure dosing will be provided by a duplex pumping system for reliability.

The 2016 CPC septic tank sizing criteria for the 6,000gpd wastewater loading is used. The 2016 CPC specifies guest room graywater generation as 25gpd/guest or a potential for 5,000 gallons of graywater for reclamation and reuse. The graywater tank will not exceed 5,000 gallons to meet the 24 hour maximum turnover requirement per the 2016 CPC. Any surplus graywater not demanded for reclamation and reuse will passively flow into the septic tank for treatment and processing with the blackwater.

Food Facility and Miscellaneous Wastewater Sources

Staff/employees, conference center, retail floor space, and food facility (hotel kitchen & public market food service) will all utilize a common wastewater system. The wastewater system includes advanced treatment to deal with the high strength wastewater generated from food service.

Wastewater daily volumes are derived from the 2016 CPC and include the following:

30 Staff & Employees	= 600gpd	
250 Person Conference Occupancy	= 1,250gpd	
3,000ft ² Retail Floor Space	= 300gpd	
Food Facility (2) Meals/Day/Guest	= 3,840gpd	
Food Facility Waste for Conference, (1) Meal/Attendee	= 500gpd	
Market Food Service (assumed maximum 500 customers served/day)	= <u>1,000gpd</u>	
Total Daily Loading for the Wastewater System	= 7,490gpd	Say 8,000gpd

The waste stream begins with all wastewater generated in the food facility and market entering a grease interceptor sized per the 2016 CPC. Wastewater from grease interceptor combines with the all of the other

wastewater sources in the septic tank for primary treatment. The septic tank is sized per the treatment system manufacturer's requirements. The primarily treated wastewater then flows into a moving bed biofilm reactor (MBBR) sized by the manufacturer for maximum daily flows, and to significantly reduce wastewater strength. Wastewater exits the MBBR and then enters a recirculating textile packed bed bio-filter sized by the manufacturer for final effluent treatment before dispersal in the leach system. The effluent then enters the duplex pumping system.

The leach system will be pressure dosed. The assumed application rate is .6gpd/ft² for soil absorption and is based on the soil profile testing that has been previously performed. The leach system will require 1,905 linear feet of leach line.