4 PUTAH CREEK RESORT

4.1 Waste Water Systems

Ponds:
There are three evaporation ponds. Each pond has six arms with two misters each. The misters are placed at a high elevation with steep sloping hills and are driven by Century 15 hp motors. The ponds are configured so flow can be directed to the least full pond, either though gravity or pumps. There is a wind gauge to shut off the misters during high winds to reduce the potential for human contact. An overflow pipe was observed on the backside of the hill where flows in excess of pond capacity could be discharged into the ravine.

The wastewater retention ponds at Putah Creek are considered undersized for the current resort development. This conclusion is based on the presence of discrete overflow pipes, implementation of spray disposal fields, and reports of the ponds being overtopped. Spray disposal that is being performed should be ceased immediately because the wastewater that is being discharged is minimally treated (spraying occurs during peak usage), the wastewater is not disinfected, and the potential for human pathogenic contact is very high.

Lift Stations:
There are two lift stations for the 180 hookups.
LS 1: Equipment at this lift station includes two Baldor pumps (one is new), a float system for level control, alarms, and a 3" diameter galvanized steel force main. They reportedly run all day on weekends.

LS 2: There are only a few washrooms or houses connected to this lift station. The pump was replaced last year. There is also a float system for level control and an alarm for high water.

Each of the lift stations was found to be unacceptable for continued use. The lift stations would require, at a minimum, additional reliable pumping capacity, new instrumentation and controls, a functional alarm system, and standby power facilities in order to be adequate. In addition, the structures housing the pump stations are substandard. These conditions make these lift stations unreliable. Coupled with the location of many of the stations, the risk of failure leading to contamination of the lake is considered very high.

New lift stations should be constructed using new equipment and materials. The force mains should also be replaced. These new facilities should be located and sized in conformance with planned future uses of the resorts.

Collection Systems:
The condition of the collection system was discussed with staff.. Flooding is reported indicating the collection system is undersized for the flows experienced. Flooding is so significant at Putah Creek that the maintenance staff places temporary risers on the manholes throughout the rainy season to keep the manholes from overflowing.

Based on the age of the sanitary sewers, the materials and construction methods commonly used when the systems were built, and the lack of regular maintenance and repairs, it is anticipated that the sewers are in a generally deteriorated condition. Putah Creek does not have mapping showing the size, length, or alignment of the pipelines, manhole locations, or other important information.

Miscellaneous.
Numerous problems, such as exposed polyvinyl chloride pipe (susceptible to ultraviolet degradation and failure) and spray mister heads that should be replaced, were observed. Exposed electrical wiring represents a safety hazard and should be corrected immediately. Maintenance activities such as weed removal and clay-lining repairs should be performed at the ponds.

4.2 Potable Water Systems

Treatment Plant:
This water treatment facility is comprised of four Everfilt Model SM30 filters that are reportedly backwashed every five days. The system is designed to run through all of the filters in series. Chlorine and polymer are added to the water. A Hach chlorine analyzer and turbidimeters are provided. An alarm system to measure the chlorine and clarity levels was broken at the time of our visit. The alarm system does not monitor the pressure through the filters or any of the electrical components of the plant.

Storage Tanks:
One storage tank for 250 hookups. The tank is made of redwood and is reinforced with steel bands. It is approximately 15’ in diameter and 10’ in height. A Mueller valve is provided to control the flow of water into and out of the tank. Some movement of the reinforcing bands was observed. Leakage on the backside of the tank was also noted.

4.3 Roads/Parking Lots

Pavement Section:
The collector road between the entry and the store has significant patched areas and areas of fatigue failures. Other collector roads are in better shape, containing limited fatigue failures, with most distress related to weathering and aging of pavements. Secondary access roads are in relatively good condition, particularly in the campground area that is west of Knoxville Road.

For a 20-year design life, all areas of severe alligator cracking should be excavated and replaced with compacted aggregate base and a 1-inch thick asphalt patch to match the level of the existing roadway. Collector roads should then receive an asphalt concrete overlay that is 2 inches thick. Secondary roads should receive an asphalt concrete overlay that is 1.5 inches thick; this may be reduced to one inch thick in the campground area that is west of Knoxville Road.

Geometry:
The width of most collector roads is adequate. No areas of severe curvature or overly steep grades were noted. After receiving an overlay these roads should be striped and signed.. Most secondary roads are not wide enough to accommodate two-way traffic. In some areas there is the potential to create one-way loops, but in at least three areas this does not seem practical and the roads should be widened to accommodate 2-way traffic with end of road turnarounds. Although site grades will permit this work it will be necessary to remove some trailers, power poles and other facilities. The radius of curvature of one or two curves may also need to be increased to permit fire truck access. Widening and curve reduction will require surveys to determine the appropriate roadway geometry.

Other Considerations:
None noted.

4.4 Electrical Systems

Most concession buildings have individual PG&E meters and are served by an overhead high voltage distribution system with pole-mounted transformers owned by PG&E that runs through the marina. Some small concession buildings are sub-fed from larger buildings via a resort-owned distribution system. Electrical services ranged from poor to good. Internal wiring condition ranged from fair to good. Generally, the electrical systems are adequate for current use, but not adequate for long term use. Several code viloations were noted during the site inspection.

4.5 Boat Launch Facilities

The boat launch ramp at Putah Creek Resort is approximately 134 feet wide and extends 140 feet to Elev. 423.4', the lake level at the time of the assessment. The launch ramp has a two launching lane capacity as rated by the resort, but appears capable of having a six lane capacity per the California Boating and Waterways Guidelines. A single 25-foot long boarding float extends out from the center of the launch ramp. The average slope of the ramp is 16.7 percent. It consists of a 3½-inch thick nonreinforced concrete slab. There is a construction joint located midway down the ramp, running parallel with the water. Scoring is present on the concrete, but is worn. There are several cracks running parallel and perpendicular to the water. The ramp's southern end is experiencing cracking and undermining by the water. Slope protection has been

put in place, but appears to only be slowing the deteriorating process. There is an adequate turnaround area at the top of the ramp.

There was a single courtesy dock present at the time of the site visit. The dock is 20 feet long with an 11-foot access ramp. The dock is held in position through of anchor lines secured to the ramp. The dock is constructed of timber decking with a plastic carpet wearing surface. Cleats and rub strips are present along the perimeter. The dock is in fair condition.

It is recommended that the ramp be retained, but the repairs must be made to the cracking and erosion on the southern end. The larger surface cracks can be filed by the use of epoxy injection and there should be a cutoff wall constructed along the southern edge to prevent future erosion and concrete deterioration. The broken concrete at the southern edge should be replaced. Additional slope protection should be used along both edges of the ramp to prevent future undermining of the concrete. Curbs may be poured along the edges to define the boundaries of the ramp.

It is recommended that the courtesy dock not be retained for future use because of its age and deterioration.

4.6 Shoreline Developments

The shoreline developments are a mixture of various construction types, including wood (both treated and non-treated), shotcrete, masonry block, poured-in-place concrete, and gabion baskets. For the most part, the majority of the walls were determined to be at/very near failure due to material deterioration, significant cracking, out ward tilting, or foundation failure. A section of gabion wall and a masonry block wall, as described below, appear to be acceptable structures.

The lake perimeter along the campground, on the westerly side of Berryessa-Knoxville Road, has a series of poured-in-place concrete and treated/redwood walls, exhibiting various degrees of failure. The concrete walls have no foundations to provide lateral resistance. They are essentially only “stem walls”. The wood walls have significant amounts of material degradation.

The following is a listing of retaining structures that appear to be acceptable structures, having a reasonable design life, if properly maintained:

- Southeasterly of Unit No. 130: gabion wall
- Northeasterly of Unit No. 131: masonry block wall

4.7 Marinas and Fuel Systems

4.7.1 Dock Facilities

There are twelve berthing docks located at this resort with 128 available slips. All slips are comprised of a cable-secured, floating dock system, as are all docks on Lake Berryessa. There is a single fueling dock (Dock #1) and one courtesy dock located at the boat launch ramp. Docks #4, #7, #9 and #10 are covered. The slip size varies from 8'-0" wide to 14'-0" wide and is defined by adjacent fingerfloats. All fingerfloats are approximately 22'-0" feet in length. The general condition of the docks is that the decking boards are loose or need replacing in many locations and the buoyancy systems for the floats consists of non-encapsulated open-cell foam which have partially deteriorated.

The fuel dock is in fair to poor shape. The floating dock consists of concrete floats, supporting timber stringers. The decking consists of a 2-1/2" thick concrete slab. The main walkway to the fuel dock has timber decking. The floats are currently providing 12"-13" of freeboard. The fuel dock is held in position by wire cables secured to the deck and held fast at lake bottom by concrete ballast. Currently tied to the fuel pier is a five slip dock. This is in poor condition. The foam billet floats have deteriorated and the plywood decking is in bad condition.

The floats that have been in place for many years are deteriorating due to the environmental conditions.

Wire cables and concrete ballast at the ends of the last fingerfloats secure the docks. Adjustment for the dock position due to lake level is made possible by a winch located on the shore, running a wire cable secured to the first fingerfloats.

The fuel dock (Dock #1) and the attached berthing dock are both showing signs of deterioration and should not be retained for future use. The berthing dock is in poor condition and will only deteriorate with time. All of the remaining docks (#2 through #8) utilize non-encapsulated open-cell foam floats that are showing evidence of deterioration. The freeboard of these docks varies along the length of the finger floats and the walkway. Generally, the timber decking is in fair to poor condition with many of the fasteners loose or missing. The gangways accessing the floating docks from the shoreline are generally in poor condition. Due to the condition of all docks at this resort and the cost necessary to upgrade them to an acceptable level, it is recommended that none of the docks be retained for future use.

4.7.2 Fueling Services

There is one fuel dock here with a single dispenser located on the end of a Tee shaped dock. There is a double compartment storage tank on shore. The tank holds supreme unleaded and regular unleaded. There is a dispenser at the storage tank for ground vehicles. The tank is piped

to both dispensers. Each dispenser has a hose and service station type nozzle for each fuel. The dispenser at the dock is out of service.

The storage tank is located on shore adjacent to the grocery/deli store. This is a flat paved area. The storage tank is an above grade, horizontal, cylindrical double wall tank that sits on a concrete slab with a curb around it. The tank has two-4,000 gallon compartments. Tank appurtenances for each compartment include a primary vent, emergency vent, fill line, vapor recovery line, product dispensing pump, manhole and stick sampling hatch. Each compartment has a level gage. There is a ladder for access to the top of the tank. There is no leak detection monitoring system for the tank. There is no containment parking area for the tank truck and ground vehicles.

All of the tank piping is routed along the top of the tank toward the front of the tank where it comes down to ground level. Each tank compartment has a 3-inch fill line, 3-inch vapor line and 2-inch product dispensing line. The fill line has a coupler, gate valve and swing check valve. The vapor line has a coupler. The pump dispensing line contains an on/off solenoid valve, ball valve and 1 ½ inch branch line for the dock dispenser. All of this piping is located over a metal containment area within the concrete curbed area. The ground vehicle dispenser is located within this area, also. The containment area has an open drain, which drains, into the concrete curbed area, however this area does not have a drain.

The piping to the fueling dock is underground and is flexible double wall piping. The connection to this piping at the tank is made in the well. The piping to the dispenser on the dock has been removed. It was single wall galvanized pipe installed on the dock walkway. We were told that a flexible line broke at the dispenser a few years ago with a resulting fuel spill. The dispenser has been out of service since then.

4.8 Preliminary Environmental Assessement

A site visit was conducted to assess and photograph present site conditions. Ms. Melpo Petsas, resort manager, was interviewed regarding site history and operations. Results of the interview and site observations are presented in the following site observations table.

SITE OBSERVATIONS

General Observations	Remarks	Observed	Not
Current Use	Resort with motel, restaurant, store boat facilities and mobile homes	X	
Past Use			X
Structures	Numerous buildings, restrooms, kiosks, office, restaurant, store	X	
Terrain	Varied	X	
Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Hazardous chemical and petroleum products in connection with known use.			X
Aboveground storage tanks (ASTs)	Unleaded gasoline near store. approximately 4,000 gallon. Numerous small propane tanks around site	X	
Underground storage tanks (USTs)			X
Odors			X
Pools of Liquid			X
Drums	Four 55-gallon drums near AST	X	
Hazardous chemical and petroleum products in connection with unknown use.			X
Unidentified substance containers			X

SITE OBSERVATIONS (CONTINUED)

Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Chemical storage or agricultural chemical mixing areas			X
Asbestos, and lead based paints	Not assessed		
Polychlorinated biphenyls (PCBs)			X
Pits, Ponds, or Lagoons	Waste water ponds on hill above site.	X	
Stained soil or pavement			X
Stressed vegetation			X
Hazardous Waste Storage	Miscellaneous small quantities of paints, oils and grease in maintenance area.	X	
Solid Waste			X
Waste Water		X	
Process waste water			X
Wells	Groundwater monitoring wells near store/boat dock area	X	
Dry wells			X
Surface water	Waste water ponds on hill above site	X	
Storm basins/catch			X

SITE OBSERVATIONS (CONTINUED)

Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Storm drains			X
Drains and sumps			X
Septic system	Adjacent to motel.	X	
Loading and unloading areas			X
Burned or buried debris	Debris located on hill beneath the waste water ponds	X	

In summary, the environmental survey revealed recognized environmental conditions at the site. The site is currently undergoing groundwater testing/observations related to a leaking fuel storage tank near the store. Numerous groundwater monitoring wells were observed. In addition, small quantities of paints, oils, greases, were observed near the maintenance area.