

PATAGONIA LAKE STATE PARK WASTEWATER TREATMENT PLANT

Aquifer Protection Permit No. P-100624

Place ID 996, LTF No. 110553

SIGNIFICANT AMENDMENT

I. Introduction:

The Arizona Department of Environmental Quality (ADEQ) proposes to issue an Aquifer Protection Permit (APP) for the subject facility that covers the life of the facility, including operational, closure, and post-closure periods unless suspended or revoked pursuant to Arizona Administrative Code (A.A.C.) R18-9-A213. The requirements contained in this permit will allow the permittee to comply with the two key requirements of the Aquifer Protection Program: 1) meet Aquifer Water Quality Standards (AWQS) at the Point of Compliance (POC); and 2) demonstrate Best Available Demonstrated Control Technology (BADCT). BADCT's purpose is to employ engineering controls, processes, operating methods or other alternatives, including site-specific characteristics (i.e., the local subsurface geology), to reduce discharge of pollutants to the greatest degree achievable before they reach the aquifer or to prevent pollutants from reaching the aquifer.

II. Permittee & Facility Location:

Name of Permittee:	Arizona State Parks Board
Permittee Address:	1110 W. Washington Street, Suite 100 Phoenix, Arizona 85007
Facility Name and Location:	Patagonia Lake State Park Wastewater Treatment Plant (WWTP) 400 Patagonia Lake Rd Nogales, Arizona 85621 Santa Cruz County

III. Facility Description:

The permittee is authorized to operate the Patagonia Lake State Park Wastewater Treatment Plant (WWTP), with a maximum average monthly flow of 24,900 gallons per day (gpd). ADEQ has graded this facility as a Grade 2 wastewater treatment plant. The facility shall have an operator in direct responsible charge who is certified for the class and grade of the facility and is available to the "onsite representative" and ensures an onsite operator visits the facility "weekly".

Wastewater is pumped from two lower package lift stations (Boat Ramp Area Lift Station #2, consisting of two 6.5-hp (120-gpm) pumps and Day-Use Area Lift Station #3) to the Ranger Station Lift Station #1, consisting of two 11-hp (124-gpm) pumps. A fourth, smaller lift station, located on the West side of the North Pond, serves the Park's maintenance shop. Wastewater from the lift stations enters the WWTP through the 2-mm perforated plate mechanical fine screen (130 gpm), raw wastewater passes through the 4-inch influent electromagnetic flow meter, then flows directly to a 1,360-gallon equalization chamber. Two 0.5-hp (44-gpm) transfer pumps deliver, screened influent to a two-stage Membrane Biological Reactor (MBR) package plant which includes a 2,400-gallon anoxic tank with a factory installed tank mounted lightening mixer, followed by a 4,000-gallon integrated aeration chamber with six 1.2-mm fine bubble diffusers and a 10 hp-blower. After biological treatment, mixed liquors are pumped from the aeration chamber to the duplex hollow fiber ultrafiltration unit using a 100-gpm 0.5-hp forward activated sludge

(FAS) variable frequency drive (VFD) pump. A vacuum is applied across the ultrafiltration membranes by a 14-gpm positive displacement rotary lobe permeate pump, pulling water through the membranes to the clear well chamber. The permeate is pumped to this attached clear well effluent reservoir used for regular flushing and maintenance of the membrane filters. Effluent is discharged from the clear well to two ultraviolet (UV) disinfection systems each equipped with two bulbs (maximum capacity of 75 gpm). A UV recirculation pump is in place in the event effluent needs to be returned to the clear well chamber after passing through the UV. Disinfected effluent is routed to the northern and southern bentonite clay-lined effluent holding/evaporation ponds, which each provide an effluent storage capacity of approximately a million gallons. In an emergency, the facility has the option to discharge treated effluent to the nearby dry wash located west of the South Effluent Holding/Evaporation Pond, a tributary to Patagonia Lake, in accordance with Arizona Pollutant Discharge Elimination System (AZPDES) Permit No. AZ0026620. This discharge is intermittent, operator-initiated, and non-routine, and requires manual mobilization of a temporary pumping system. The lined effluent holding/evaporation ponds offer substantial capacity for buffering and equalization.

Return activated sludge is sent back to either the anoxic tank or wasted by a pump to a 1,770-gallon sludge holding tank with two 12-inch fine bubble disc aeration diffusers, and a 0.5-hp progressive cavity pump for sludge wasting. The level transmitter monitors the level of solids in the chamber. The sludge chamber is pumped and hauled offsite through a contract hauler. The sludge storage chamber has a 3-in flange and ball valve (normally closed) and a spill containment area for easy pumping and hauling procedures at the plant. The WWTP power is provided with on-site 277/480V 3-Phase as an incoming service with a backup diesel generator for stand-by power. The screenings and sludge shall be hauled off site for management and disposal at a state approved facility.

The site includes the following permitted discharging facilities:

Table 1: DISCHARGING FACILITIES		
Facility	Latitude (North)	Longitude (West)
Patagonia Lake State Park WWTP (packaged MBR system)	31° 29' 25.1"	110° 51' 24.3"
Dry Wash (AZPDES outfall)	31° 29' 19.1"	110° 51' 24.9"
Lift Station #1 (Ranger Station)	31° 29' 35.8"	110° 51' 17.3"
Lift Station #2 (Boat Launch Area)	31° 29' 44.7"	110° 51' 20.2"
Lift Station #3 (Day-Use Area)	31° 29' 37.1"	110° 51' 26.9"
List Station #4 (Maintenance Shop)	31° 29' 22.3"	110° 51' 23.2"
North Effluent Holding/Evaporation Pond	31° 29' 21.8"	110° 51' 23.9"
South Effluent Holding/Evaporation Pond	31° 29' 20.1"	110° 51' 23.5"

IV. Amendment Description:

The purpose of this amendment is to repurpose the two-existing bentonite-clay lined facultative lagoons (northern and southern former lagoons) as lined effluent holding and evaporation basins following clean closure verification. Treated effluent is proposed to be managed primarily through discharge to the lined basins for on-site containment and evaporation. In an emergency, the facility has the option to discharge treated effluent to the nearby dry wash located west of the treatment facility site, a tributary to Patagonia Lake, in accordance with Arizona Pollutant Discharge Elimination System (AZPDES) Permit No. AZ0026620.

Additionally, the applicant requested to replace the discharge monitoring parameter of Fecal Coliform with *E. Coli* and modify monitoring frequency for *E. coli* at discharge sampling point

for consistency between this permit and AZPDES permit. This proposed alignment in monitoring frequency will ensure continued protection of public health and the environment.

V. Best Available Demonstrated Control Technology (BADCT):

The treatment facility shall be designed, constructed, operated, and maintained to meet the treatment performance criteria for new facilities as specified in A.A.C. R18-9-B204. The treatment facility shall not exceed a maximum seepage rate of 550 gallons per day per acre for all containment structures within the treatment works.

VI. Compliance with Aquifer Water Quality Standards (AWQS):

Monitoring and Reporting Requirements

The permittee shall monitor the effluent according to Section 4.2, Table 6: ROUTINE FLOW MONITORING and Table 7: ROUTINE DISCHARGE MONITORING. Representative samples of the effluent shall be collected downstream of the UV disinfection units.

Groundwater monitoring is not required under the terms of the permit.

Point of Compliance (POC)

The Points of Compliance (POCs) have been established at the following locations:

Table 2: POINT(S) OF COMPLIANCE				
POC #	POC Location	ADWR Registration Number	Latitude (North)	Longitude (West)
1 (Conceptual)	Downstream of the WWTP and within 750 feet of the edge of the Pollutant Management Area (PMA)	No Well	31° 29' 25.5"	110° 51' 24.4"

The depth to groundwater is 20 feet below the ground surface, and the direction of groundwater flow is towards the north/northeast.

Groundwater monitoring is not required at the point of compliance wells. POC #1 well is a conceptual well, monitoring is not required except as a contingency action. The director may require an amendment of this permit to install a monitoring well if there is cause or concern that groundwater quality may be impacted at the POC. The Director may amend this permit to designate additional points of compliance if information on groundwater gradients or groundwater usage indicates the need.