

City of San Luis West - Wastewater Treatment Plant
Aquifer Protection Permit No. P-100790
Place ID 1097, LTF109319
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:

City of San Luis
PO Box 3750, San Luis, AZ 85349

III. Facility Description:

The permittee is authorized to operate the San Luis West Wastewater Treatment Plant (WWTP) with a maximum average monthly flow of 3.0 million gallons per day M(GD) upon construction of the new membrane bioreactor (MBR) treatment train. The Existing WWTP is rated at 1.5 MGD. ADEQ has graded this facility as a Grade 4 wastewater treatment plant (WWTP). 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 operator¹" and ensures an onsite operator visits the facility "daily".

Existing WWTP – 1.5 MGD:

The Existing 1.5 MGD WWTP process consists of headworks with eight static screens, four Sequencing Batch Reactors (SBRs), a chlorine disinfection, and an effluent pump station. The sludge is digested using four sludge digesters and is dewatered using fifteen (15) PVC-lined sludge drying beds. The dewatered sludge is disposed of at a state approved landfill or according to federal, state, or local regulations. The effluent is discharged to the concrete lined Wellton/Mohawk Salinity Bypass Canal located approximately 0.9 miles west of the WWTP.

Interim WWTP – 1.0 MGD:

The Interim Phase is rated at 1.0 MGD. SBR #4 will be retrofitted with a Migrating Biofilm Carriers (MBC) process. The Interim 1.0 MGD WWTP utilizes four of the existing static screens,

¹Seven days a week. In the absence of the operator in direct responsible charge, the operator in charge of the facility is certified for the applicable class of facility and at a grade no lower than one grade below the grade of the facility.

SBR #4 with a pre-aeration zone that continuously receives preliminary treated influent. A pump in the SBR tank delivers activated sludge to an MBC skid with two hydro-cyclones and a static screen. The MBC skid screens the MBC media and drops it back into the SBR, while the screened activated sludge is wasted and pumped to the sludge holding tank. The sludge will then be dewatered through fifteen (15) existing sludge drying beds. The effluent will continue to be disinfected and discharged to the concrete lined Wellton/Mohawk Salinity Bypass Canal located approximately 0.9 miles west of the WWTP. During the Interim Phase, any excess flow over 1.0 MGD will be diverted to San Luis East WWTP from the offsite lift station. SBR #3 and #4 will be used, while the MBC skid is installed and the biology on the MBC media is established. Once the media is established, SBR #3 will be taken offline so that it can be modified for the Upgraded WWTP described below. While in the interim phase, existing SBR #1, and #2 will be taken offline and modified for the 3.0 MGD Plant. The Interim phase is anticipated to be in operation approximately a year, but no longer than 1.5 years, while the improvements are made for Upgraded WWTP.

Upgraded WWTP – 3.0 MGD:

The Upgraded WWTP train is rated at 3.0 MGD. The four existing SBR tanks and two aerobic digesters will be modified and repurposed to be utilized as an equalization basin, Modified Ludzack Ettinger (MLE) process basins and membrane bioreactor basin for Upgraded WWTP. The Upgraded WWTP train includes headworks consisting of two open flow concrete channels equipped with two 6-mm mechanical screens, two grit vortex removal systems with grit pump and classifier, and two 2-mm fine screens, a flow splitter box, an equalization basin, Mixed Liquor Suspended Solids (MLSS) return influent channel, and three trains consisting of anoxic basin, aeration basin, and a membrane bioreactor basin with submerged membrane cassettes, effluent pump station and in-line disinfection system. Under normal operating conditions, the tertiary treated effluent from MBR basin directly flows to effluent line downstream of the effluent pump station; the effluent pump station will be in operation only when effluent is required to pump. In-line disinfection is provided using liquid sodium hypochlorite prior to discharge. The anoxic basins are equipped with submersible mixers, aeration basins are equipped with fine-bubble diffusers, and MBR basins are provided with air scour. Blowers are provided for aeration in the equalization basin, aeration basins, and MBR basin.

The existing aerobic digesters will be operated as sludge holding tanks. Waste activated sludge is stored in two sludge holding tanks and dewatered through screw press. The sludge is then discharged to existing fifteen (15) PVC-lined sludge drying beds. The screenings and any dried sludge shall be hauled off site for management and disposal at a state approved facility.

IV. Amendment Description:

The purpose of this amendment is to increase the design flow to 3.0 MGD and modify the existing treatment technology.

- The facility will have an Interim WWTP with a design flow of 1 MGD to modify the existing tanks for 3.0 MGD. For Interim WWTP, the existing SBR tank will be retrofitted with miGRATE process and iDENSE will be added to handle the flow. Interim WWTP will be utilized during the construction of the 3.0 MGD plant.
- The facility will be modifying the four existing SBR tanks to an equalization tank, an anoxic tank, an aeration tank and membrane bioreactor for 3.0 MGD MBR train. The train will include following modified or new units:
 - New headworks with 6 mm screens, grit chamber and 2-mm fine screen
 - Equalization basin, converted from existing SBR
 - Anoxic tank, aeration tank and membrane bioreactor
 - New screw press for dewatering of sludge

The permit category for this amendment was determined to be a “Significant Amendment” as per A.A.C. R18-9-A211(B)(4).

V. Regulatory Status:

This application was received on December 5, 2025.

VI. Best Available Demonstrated Control Technology (BADCT):

New 3.0 MGD WWTP and Interim 1.0 MGD WWTP 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 facility shall meet the performance requirement for industrial pre-treatment as per A.A.C. R18-9-B204(B)(6)(b).

New 3.0 MGD WWTP and Interim 1.0 MGD WWTP shall be designed not to exceed a maximum seepage rate of 550 gpd per acre for all containment structures within the treatment works.

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

To ensure that site operations do not result in violation of Aquifer Water Quality Standards at the POC, representative samples of the effluent shall be collected at the point of discharge from the effluent pump station. For Existing WWTP and Interim WWTP, the effluent samples shall be monitored daily for fecal coliform and pH, monthly for BOD and TSS, quarterly for metals, and semi-annually for volatile and semi-volatile organic compounds. For New WWTP, the effluent samples shall be monitored daily for fecal coliform, monthly for total nitrogen, quarterly for metals, and semi-annually for volatile and semi-volatile organic compounds.

The depth to groundwater is approximately 55 feet below ground surface (bgs) and the groundwater flow direction is to the south. Groundwater monitoring is required at POC Well #2. To ensure that Aquifer Water Quality Standards will be met at the POC in the aquifer, representative samples of the groundwater shall be collected from MW#2, and are sampled quarterly for *E. coli*, total nitrogen, nitrate-nitrite as N, nitrate as N, nitrite as N, total Kjeldahl nitrogen (TKN), and metals, semi-annually for volatile and semi-volatile organic compounds.

