San Diego State University Mission Valley Wastewater Learning Lab

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Introduction

Background:
In efforts to expand research space and opportunities for SDSU students, a proposed decentralized wastewater treatment system (DEWATS) will allow for students to conduct research projects in wastewater treatment engineering.

Motivation:
A learning lab will add another element to the learning experience of future engineers in water and wastewater treatment. SDSU can upgrade to a Carnegie classified “R1” rating through more research spaces.

Goals:
The focus of this project is to design a modular wastewater system for a proposed learning lab on the new campus that will allow for undergraduate, masters, and PhD students to have a hands-on experience to conduct wastewater research.

Alternative Effluent Uses

❖ Urine diversion toilets will separate the urine and solids to account for all potential studies.
❖ A challenge tank will be incorporated into the design to allow for experimental types of influent.
❖ Modular sections are implemented in the design where students can design their own treatment experiments using wastewater from any point in the treatment train.

❖ Taking urine from a dual plumbing system to explore struvite recovery, bio-electrochemical systems, anaerobic digestion, composition of solids, nutrient recovery, photodegradation of DEWATS effluent and more.

❖ The effluent will meet the State Water Resources Control Board Order WQ 2014-0153-DWQ (General Waste Discharge Requirements for Small Domestic Wastewater Treatment Systems).
❖ Disinfected with a stream of chlorine to comply with recycled water requirements.
❖ Effluent will be suitable for irrigation on-campus landscapes.
❖ The treated water will discharge into a 5,000-gallon cistern below the lab awaiting distribution to the University’s purple pipe irrigation system.

Figure 1: Proposed Learning Lab Interior

Figure 2: Schematic of Proposed Wastewater Treatment Plant