



## NUTRIENT MONITORING IN THE COLORADO RIVER, TEXAS

Nicole Lutz<sup>a</sup> and Kartik Venkataraman<sup>b</sup>

<sup>a</sup> *Department of Biology, California State University – East Bay, Hayward, CA 94542*

<sup>b</sup> *Department of Engineering and Computer Science, Tarleton State University,  
Stephenville, TX 76402*

Timberlake Biological Field Station (TBFS) is located on the banks of a segment of the Colorado River designated as ecologically significant by the Texas Parks and Wildlife Service. This designation is given due to the biological function served by the river as well as its aesthetic value and high quality of aquatic life sustained here. Elevated levels of nutrients such as nitrogen have been detected in this segment in the past few decades during routine sampling by the Texas Commission on Environmental Quality (TCEQ); excessive levels of these nutrients can be detrimental to the health of the stream. Potential sources of nutrients include agriculture (pecan and wheat crops) and Concentrated Animal Feed Operations (CAFOs) around the area and upstream of TBFS. The objectives of this study are, therefore, to conduct long-term monitoring of water quality in the ecologically significant segment of the Colorado River accessible from TBFS, with particular emphasis on levels of total nitrogen (TN) and total phosphorous (TP). Over the course of the REU program, water (grab) samples were collected at various locations at TBFS for analysis of TN and TP as well as to record indicators of stream health such as dissolved oxygen (DO) and pH during sampling. Additionally, TN levels at different sampling locations maintained by the TCEQ were compiled from their surface water quality database for the period 2000-2019 for reference and comparison. The results of our study indicate that TN and TP levels at TBFS were well within the TCEQ screening levels of 2.28 mg/L and 0.69 mg/L for these two variables, respectively, despite nearby TCEQ monitoring stations exceeding the TN limit earlier this year. DO and pH levels recorded at various times of the day were within the TCEQ criteria as well. It is likely that abnormally-high flows, close to 100-times the median historical flows for the same period of the year may have had a dilution on the nutrients. However, trends from TCEQ monitoring stations nearby warrant long-term monitoring, particularly with regards to TN.

DEPARTMENT OF BIOLOGICAL SCIENCES

Box T-0100, Stephenville, TX 76402 | Office (254) 968-9159 | Fax (254) 968-9157 | [www.tarleton.edu/biology](http://www.tarleton.edu/biology)