

Seasonal Monitoring of Water Quality and Wastewater Effluent Discharges along the Lower Rio Grande, Texas

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ABSTRACT

This study is part of the Lower Rio Grande Water Quality Initiative (LRGWQI), a binational effort to restore and protect water quality in the Lower Rio Grande below Falcon Reservoir. The primary objective of this study is to monitor the seasonal variation in the water quality of discharge effluents from municipal wastewater and industrial wastewater treatment plants flowing downstream into the Lower Rio Grande River. Sample collection and field measurements were conducted following standard methods prepared by the Texas Commission of Environmental Quality (TCEQ). Water samples were collected from 9 waste-water treatment plants and 1 municipal water treatment plant during two sampling events. Parameters for the in-situ water quality study included pH, temperature, turbidity, dissolved oxygen (DO), conductivity, chlorides, chlorophyll-a and nutrients such as total ammonia-N, total N-Kjeldahl, total nitrate/nitrite-N, orthophosphate, total phosphate. The results indicated that the total phosphate concentration decreased in the second sampling event but there was an overall increase in total nitrogen concentration. However, in both seasonal events, nutrient concentrations exceeded the maximum contaminant levels of 10 mg/L and 1 mg/L, for total nitrogen and total phosphate concentrations respectively, at the La Joya Outfall discharge, Rio Grande City, Roma, and Brownsville waste water treatment plants. The information gained from this project could help identify the problem areas in the Lower Valley regions and help regulatory bodies take necessary action to prevent further contamination into the river.