

Biography – Trent Martin

Trent Martin is a Program Manager for the Harris County Watershed Protection Group. Prior to serving in this role, Mr. Martin worked for three years enforcing environmental law in Harris County. Mr. Martin has a B.S. in Marine Fisheries from Texas A&M @ Galveston and a M.Ag. from Texas A&M in Wildlife & Fisheries Science. His activities in this field include wetland restoration, aquatic habitat assessments, and water quality monitoring.

Abstract

Harris County performed an Illicit Discharge Elimination Project (IDEP) in 2005/2006. The IDEP was developed and implemented by HC staff to investigate whether elimination of illicit discharges to urban waterways would measurably reduce instream bacteria indicator levels, and to determine the approximate cost associated with eliminating illicit discharges. Brickhouse Gully and Vogel Creek were selected by HC for this study because of the high levels of bacteria associated with them.

Brickhouse Gully (Stream Segment 1017A) is a highly urbanized tributary of White Oak Bayou (Stream Segment 1017). Typical low flow in Brickhouse Gully is in the order of 3 to 5 cubic feet per second (cfs). It was estimated that 20–30% of the low flow was wastewater treatment plant (WWTP) effluent. The sampling site was located at the upstream intersection of Brickhouse Gully and U.S. Highway 290.

Vogel Creek is an improved earthen tributary of White Oak Bayou. HCSWQS measured a dry weather flow rate of 1.76 cfs. It appears that in dry weather the flow in Vogel Creek is predominantly WWTP effluent. The sampling site was at the intersection of Vogel Creek and Breen Drive.

The study involved determining a baseline assessment of bacteria levels in the subject streams, followed by sampling of dry weather discharges, identification of those with high bacteria concentrations and an attempt at elimination of sources. The streams were then assessed to determine if there was a difference in water quality following elimination of bacteria sources.

A wide variety of the dry weather discharges were found, including water main leaks, lawn irrigation, air conditioner condensate, groundwater, wash water, and sanitary sewer leaks. Sanitary sewer discharges were a small proportion of total dry weather discharges.

Estimates of bacteria loadings from dry weather discharges show that dry weather discharges were a major contributor to instream bacteria level in Brickhouse Gully, but relatively minor for Vogel Creek.

Statistical tests comparing mean instream bacteria levels in Brickhouse Gully and Vogel Creek before and after the attempt to eliminate high bacteria sources showed a statistical difference in Brickhouse Gully but did not show a statistical difference on Vogel Creek. Whether or not a statistically significant reduction occurred, the bacteria levels after the elimination attempts were still well in excess of criteria.

Efforts to eliminate dry weather discharges with high bacteria sources should first be focused on streams without substantial dry weather WWTP effluent flow. In this study, the elimination of dry weather sources on Brickhouse Gully, with less than 30% WWTP effluent during dry weather, appeared somewhat successful although the stream standard is still exceeded, whereas reduction efforts in Vogel Creek, with a higher proportion of WWTP effluent, did not appear successful.