Storm Water Monitoring in Upper Bull Creek

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The City of Austin Water Quality Monitoring (WQM) Section of the Watershed Protection and Development Review Department has operated a full range flow monitoring station with an automatic sampler since March 2007. The station is located on the upper portion of the main stem of Bull Creek. This report summarizes the activities associated with this station for 2008.

The equipment installed at this monitoring station includes two ISCO 4230 bubbler meters to records water depth, two ISCO 3700 automatic samplers, two cell phone modems for remote communications, a tipping-bucket rain gauge and a solar panels and batteries as a power supply.

Depth of water and rainfall are continuously recorded and are downloaded, via cell modems, to a central WQM computer for further processing and storage. When the probability of rainfall is high, WQM staff prepares the samplers to collect water quality samples. The samplers are actuated automatically by the meters at a predetermined depth and subsequent samples are collected based on preconfigured program using either time or cumulative flow. WQM staff may remotely change the program, both actuation depth or sample spacing, based on experience and changing weather condition.

Water quality samples are analyzed at the LCRA laboratory for chemical oxygen demand, total organic carbon, ammonia, total Kjeldahl nitrogen, nitrate plus nitrite, total and dissolved phosphorus, total suspended solids, volatile suspended solids, and total metals (Cd, Cu, Pb, Zn). Discrete samples are mathematically combined to generate an event mean concentration (EMC) for the runoff event.

2008 Summary

2008 was a very dry year and monitoring results reflect this. As of December 10th, only 13.67 inches of rain had fallen in the contributing watershed, compared to roughly 33 inches in a normal year. Minimal base flow was maintained at the site through May 2008 although no rainfall event generated an identifiable, distinct hydrograph that could be called storm flow. (Note: Meter malfunctions in the early part of the year rendered some flow data unusable but post-rain staff inspections confirmed no runoff.) After June 2008 no sustained base flow has been observed. There were two short periods of flow (07JUL08 to 10JUL08 and 26AUG08 to 03SEP08) but it would be difficult to consider this true base flow.

No water quality samples were collected in 2008 due to the lack of flow.