



EAHCP STEWARD

News from the Edwards Aquifer Habitat Conservation Plan - April 2020



Best Laid Plans

Sessom Creek Sediment Study Signals Need for Stormwater Solutions

Dr. Benjamin Schwartz is pictured above.

It was only a few decades ago that traffic flow and easements for drainage, water, sewer and other utilities would garner the lion's share of focus when urban planners designed a city neighborhood. For the most part, that paradigm worked well for residents who established homesteads in these areas. But, the unintended consequences of not including plans for stormwater runoff began to cause warning bells to sound for those entrusted with preserving the waterways and aquifers in their jurisdiction. Those warning bells were the precursor for the development of federal stormwater guidelines and regulations developed in the early 1990s.

Such is the story of the Sessom Creek watershed.

Sessom Creek Watershed Study - Continued

“It is unfortunate, but the Sessom Creek watershed contains almost no stormwater infrastructure. It is that basic fact that drove the type of results we observed in the two-year study we conducted to quantify the pollutants found in the watershed’s sediment,” said Dr. Benjamin Schwartz, Associate Professor and Director of Edwards Aquifer Research and Data Center at Texas State University. “The problem is that the water which runs off with rain in the Sessom watershed carries large amounts of eroded sediment and urban pollutants directly into the San Marcos River at the site of endangered species habitat. The unfiltered runoff can degrade the water quality in that part of the river which does not help protect the species.”

The Sessom Creek watershed is one of four sub-watersheds within the Upper San Marcos River watershed and is entirely positioned within the City of San Marcos. It is situated on the Edwards Aquifer transition zone between the recharge and confined zones of the Edwards Aquifer.



The vast majority of the Sessom Creek watershed, 87 percent, is developed for urban use. Only 12 percent is made up of forest and other plant-filled areas. The watershed is primarily a hilly topography with more than 59 percent of the land areas on steep slopes. Soils are predominantly clayey loam which is susceptible to generating high levels of stormwater runoff.

The Sessom Creek sediment study, beginning in March, 2018 and ending in December 2019, was funded by the EAHCP and conducted by a team of biologists from Texas State University and engineers from the Texas A&M AgriLife Research group.

“We were fortunate to have done a smaller study on Sessom Creek in the recent past,” Schwartz noted. “Knowing how the watershed functioned, so to speak, during storm events allowed us to change our sampling protocols to improve the quality of findings for this study. We increased the frequency of sampling at the start of a storm event and then spread out sampling when the rain tapered off. That sampling regime gave us good information on what the first flush of water produced when a storm started. You have to keep in mind that the creeks in the watershed are essentially dry until it rains.”

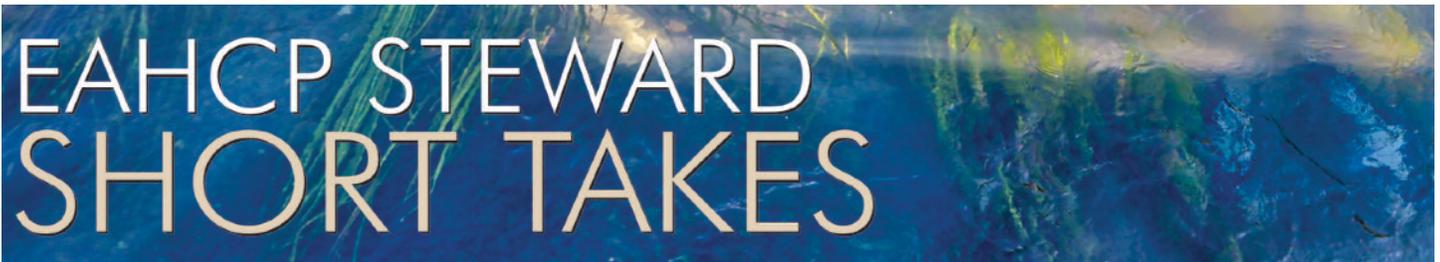
Over a 14-month period, the research team collected more than 300 stormwater samples during and after 12 storm events of varying intensities. An automated sampler was used to collect time-based stormwater runoff samples during each of the storm events when water levels at the Sessom Creek sampling point exceeded 0.16 feet above non-storm event flow conditions. Historic observations have shown that the watershed produces rapid response runoff events in a very short duration.

Sessom Creek Watershed Study - Continued

In addition to the water quality sampling, the team also tracked the amount and rate of rainfall that occurred during the storm events. Hourly rainfall estimates from National Oceanographic and Atmospheric Administration were generated by a multiple radar multiple sensor process which yielded a single, hourly average precipitation value representing the whole watershed. The team also incorporated rainfall reporting from a weather station located near the center of the watershed. That station reported rainfall amounts each minute.

The Sessom Creek sediment study findings detailed the concentrations and loads of nonpoint source pollutants, which included suspended sediment, phosphorus and nitrogen nutrients and bacteria. Samples from every storm included high levels of bacteria, total suspended solids and nutrients. Additionally, researchers measured the flow velocity of the stormwater to understand the level of creek bed scouring that added to the levels of sediment being deposited in the San Marcos River after rain events.

“This study didn’t produce any major surprises, but we were able to provide excellent data which should help guide the City of San Marcos and EAHCP in identifying sound stormwater mitigation measures in the future,” Schwartz explained. “The actual Habitat Conservation Plan document recognizes the need for some sort of corrective measures in the watershed, however, there was little quantifiable research to start from and that’s why this particular study was important to undertake. Now, the EAHCP team can more precisely develop effective management practices and projects to reduce the detrimental effects of stormwaters on the San Marcos River and enhance the aquatic ecosystem health as well as river recreation.” 



Science Committee Meeting Canceled

Out of a preponderance of precaution and a desire to prevent the needless spread of the COVID-19, the EAA has prohibited out-of-town business travel and gatherings through April 2020. The April 29th EAHCP Science Committee meeting scheduled to be held in San Marcos is canceled.

COVID-19 Update

In light of COVID-19 pandemic and local government guidelines, the EAA offices are still practicing social distancing measures and implementing telecommuting and virtual workforce through Friday, May 1, 2020. If you have any questions, please contact EAHCP staff at eahcp@edwardsaquifer.org.

Annual Report Interactive Map

An interactive story map summarizing the 2019 EAHCP Annual Report is now available to view. Please visit the EAHCP website or [this link](#) to access this story map.

San Marcos Salamander Study Update

A noticeable number of egg clutches were deposited by salamanders species within the EAHCP's Refugia program during the last month. Texas blind salamander females at San Marcos Aquatic Resource Center (SMARC) deposited three clutches of eggs at the end of March, one of 25 eggs, the second of 52 eggs, and the third of 11 eggs. All clutches were fertilized and are developing. Most recently, another clutch of 35 Texas blind salamander eggs was deposited on April 2nd. A San Marcos salamander female deposited a clutch of eggs at Uvalde National Fish Hatchery on March 27, 2020 and all 25 of the eggs are developing. One clutch of Comal Springs salamanders eggs was also deposited this month at SMARC.

Within the EAHCP Refugia research program, two additional clutches of San Marcos salamander eggs were laid at the beginning of March from salamanders in the reproduction experiment. The research study is assessing the use of hormone applications to facilitate reproduction output in the San Marcos salamander. These two clutches were deposited within 14 days of hormone application. The picture below (top left) is of a female San Marcos salamander depositing eggs at SMARC (image courtesy of SMARC refugia staff).

