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As a manager in the Environmental Resource Management Division of the City's Watershed Protection Department, I had the honor and responsibility of leading the first comprehensive long-term studies of the biology, ecology, and groundwater systems of Barton Creek. Staff biologists, geologists and engineers collaborated, seeking to document and understand the impacts of urbanization and make recommendations for protecting the still pristine system for the future. We began in 1990 investigating impacts to Barton Creek in terms of algal growth and water chemistry from the headwaters to the mouth of Barton Creek. We studied tributaries to the creek, and sediment quality throughout the watershed. The effort expanded to include studies of groundwater, water quality assessments of springs and wells in the Contributing Zone and the Edwards Aquifer, including Barton Springs.

Staff collaborated with the Barton Springs Edwards Aquifer Conservation District in studies to identify groundwater flow paths. We began bio-assessment studies to determine the effects of non-point source pollution on aquatic organisms in the creek, to report on population inventories of the Barton Springs Salamander, and to inventory the flora and fauna of Barton Springs Pool. Modeling of the watershed was conducted to better understand hydrology and future impacts under varying development scenarios. The studies culminated in The Barton Creek Report in 1997, with results generally describing a system still pristine in many respects but with springs, surface water, sediment and biology locally impacted in developed areas by effluent irrigation, by stormwater runoff and by hydrological impacts of development. Threats to the system were predicted to increase absent further protective efforts. The report findings were presented to the Austin City Council, along with policy recommendations for the future.

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The first two recommendations of the 1997 Barton Creek Report were 1) conservation easement acquisition to offset the bulk of the watershed outside of the City's jurisdiction and 2) expansion of wilderness areas to provide water quality buffers and offset projected future development. In 1998, City Council proposed a bond election to begin these efforts - a program of conservation easements and acquisitions in all watersheds in the Barton Springs Zone. This bond election was the beginning of a program that now includes over 30,000 acres of protected land.

Data collected during the study on the Barton Springs Salamander populations and water quality conditions in the watershed were critical information provided to the USFWS for their consideration of threats to the Barton Springs Salamander. In 1997, the service determined that primary threats to the salamander were degradation of water quality and quantity due to urban expansion over the Barton Springs watershed and the salamander was listed as a Federally protected endangered species.

Additional findings and recommendations of the study have informed many of the City's efforts, such as 1) the proposal (and adoption) of improved effluent irrigation guidelines to the State, 2) consideration of natural flow patterns in regulations and decision-making and 3) the improvement of flood and water quality control structures to promote infiltration and reduce erosion. Finally, the general understanding of the Barton Creek system informed our work as we faced new threats to the system, and identified pavement sealants as the source of PAH contamination in Barton Creek and Barton Springs. As a result of our work, the City banned pavement sealants in 2005 with extreme reductions in PAH contaminations in Barton Springs and Lady Bird Lake soon followed.

