

Austin Parks Foundation

Restoration and Rehabilitation of the Barton Springs Pool Bypass Tunnel

Project Description:

The Barton Springs Pool Master Plan was adopted by the City of Austin in 2009 with a goal of preserving the unique natural setting of the pool and its surrounds. The need to restore and rehabilitate the pool's bypass tunnel was identified as one of the most urgent, important projects in the Master Plan. The bypass tunnel is in a deteriorated condition with cracks and leaks in the wall between the pool and tunnel. Further cracking or movement of unstable segments of the tunnel could cause failure of the tunnel. Failure of the tunnel would have significant environmental consequences. The tunnel is immediately adjacent to populations of the endangered Barton Springs Salamander and rare Austin Blind Salamander. The environs of Barton Springs are the only known habitat for these salamanders. Furthermore, the current condition of the tunnel results in significant increases in pollutants from urban runoff into the pool when not diverted, as indicated by City of Austin surface water quality monitoring and pool samples.

To address these concerns, the Austin Parks Foundation shall use SEP Funds for the following activities:

- engineering design, materials and construction activities to replace the bypass tunnel inlet grate; and
- engineering design, materials and construction activities of the bypass tunnel outlet gate/valve ("valve").

Specifically, the Austin Parks Foundation shall first prevent tunnel failure through the installation of a bypass tunnel outlet valve with a motorized assist to expedite opening and closing at the downstream end of the tunnel. The valve will control water level in the tunnel to increase stability of the tunnel before replacement and repair occurs. When closed, the tunnel will hold water to weight down the tunnel infrastructure. When opened, the tunnel will allow passage of bypassed creek water downstream. Installation of a water level controlling valve at the bypass tunnel outlet will stabilize the tunnel until all tunnel structural repairs can be made. Ensuring stability of the bypass until it can be repaired requires keeping at least three feet of water depth inside the culvert, a level that could be controlled with the valve.

For the second phase of the project, the Austin Parks Foundation shall replace the tunnel inlet grate with a bar or grate pattern that optimizes passage of debris to allow the full capacity of the tunnel to be utilized. The current, less optimal structure, readily clogs with debris and expedites creek water overflow into the pool. Restoration of the bypass tunnel will result in stabilization of the structure and prevent side slope failure and erosion.

Environmental Benefit:

This project prevents the elevation of water pollutants within Barton Springs Pool as would happen under two scenarios: 1) if the bypass failed and 2) when the existing inlet grate becomes clogged. Pollutants would flow from Barton Creek into the pool under either scenario. The United States Geological Survey reports Barton Creek monthly flow ranges from a monthly low of two cubic feet/second ("cfs") to a monthly high of 66 cfs, with an average month being 46 cfs (as measured at Loop 360). Using the 2008 TCEQ Surface Water Quality Monitoring assessment, *E. coli* in the assessment unit upstream from the pool averaged 22.18 colony forming units ("cfu")/100 ml. By diverting stream flow through the bypass tunnel, it will prevent > 10,000 cfu/day of *E. coli* from flowing through the pool. Due to diversion, other pollutants in urban runoff in Barton Creek will also be reduced in the pool.

Preventing the elevation of pollutants in the pool provides for safer recreational use of the pool as well as preventing the potential degradation of aquatic habitat of the endangered Barton Springs Salamander. Repairing the bypass culvert is critical to ensuring good habitat for the endangered Barton Springs Salamander (*E. sosorum*) and the rare Austin Blind Salamander. Currently, Eliza Spring (near Barton Springs) harbors the most robust population of the Barton Springs Salamander because it has the best habitat. Restoring a shallow, stream-like environment in Eliza Spring, and the resulting dramatic and persistent increase in salamander abundance, recently illustrated the importance of maintaining a more natural flow regime. The quality of habitat in Eliza Spring is dependent on the unimpeded outflow of water from the spring. Previous human alteration of the spring outlet eliminated the natural surface channel.

Today, the outflow stream routes water through an underground pipe that empties into the bypass tunnel. The longer it takes to begin and complete repair of the bypass, the more potential there is that salamander habitat in Eliza Spring would degrade.

Overall, this SEP will benefit the water quality of the Barton Springs ecosystem that is a premier and rare example of Texas Hill Country, Edwards Escarpment plant and aquatic animal communities.

Eligible Areas and Counties:

This project may receive contributions from the following:

Colorado River Basin and Edwards Major Aquifer including Bastrop, Blanco, Burnet, Caldwell, Fayette, Hays, Lee, Llano, Travis, and Williamson Counties.

Minimum Contribution Amount:

\$1.00