



August 30, 2019

Mr. Adam Zerrenner  
United States Fish and Wildlife Service  
Austin Ecological Services Field Office  
107011 Burnet Road, Suite 200  
Austin, Texas 78758

**RE: Response to comment on the Recovery Plan for *Zizania texana* (Texas wild-rice), *Etheostoma fonticola* (fountain darter), and *Typhlomolge rathbuni* (Texas blind salamander)**

Dear Mr. Zerrenner:

The Edwards Aquifer Habitat Conservation Plan (EAHCP) is a regional partnership of state and local agencies working to protect and enhance habitat and populations of *Zizania texana* (Texas wild-rice), *Etheostoma fonticola* (fountain darter), and *Typhlomolge rathbuni* (Texas blind salamander) along with eight other endangered, threatened, or petitioned species. The EAHCP protects these species through conservation measures aimed at ensuring springflows and restoring and conserving habitat, as well as, monitoring biological and water quality conditions, performing applied research, and maintaining off-site refugium in partnership with the U.S. Fish and Wildlife Service (USFWS). The sections to follow describe work performed through this regional partnership of Permittees (the Edwards Aquifer Authority [EAA], the City of New Braunfels, the City of San Marcos, Texas State University, and the City of San Antonio acting by and through its San Antonio Water System [SAWS] Board of Trustees) included in the Incidental Take Permit TE-63663A-1 (ITP). The costs of implementing the EAHCP for the 15-year ITP total \$261,907,955.

The work performed under the EAHCP is based on the consensus of regional committees. Stakeholders work in partnership to enhance the habitat and balance the needs of threatened and endangered species with the needs of Edwards water users in the region. It is recommended that the USFWS consider the distribution and frequency of the environmental monitoring network already in place as part of the EAHCP in finalizing delisting criteria for Texas wild-rice, fountain darter, and the Texas blind salamander.

## Background

The EAHCP is the primary document that establishes the cooperative effort to protect the water of the San Antonio Segment of the Edwards Aquifer (Aquifer) both for people in the region and the threatened and endangered species that inhabit the Aquifer, and aquatic spring environments whose water largely emanates from the Aquifer. This effort began when regional stakeholders and the USFWS initiated the Edwards Aquifer Recovery Implementation Program (EARIP) in 2006. The Texas Legislature mandated

participation in the process by the EAA, Texas Commission on Environmental Quality, Texas Department of Agriculture, Texas Parks & Wildlife Department (TPWD), and Texas Water Development Board. The EARIP planning group led to the creation of the process known as the EAHCP Program, which has now been fully transitioned from the EARIP. The EAHCP was completed in November 2012 and led to the approval of the ITP TE-63663A-1 under the federal Endangered Species Act of 1973. The ITP was issued in February 2013 by the USFWS to be effective in March 2013 through March 2028.

### Springflow Protection

Four conservation measures are outlined in the EAHCP to maintain springflows in the San Marcos and Comal springs during certain drought conditions providing habitat for Texas wild-rice, fountain darters, and Texas blind salamanders. These four conservation measures are (1) Stage V Critical Period Management, (2) Voluntary Irrigation Suspension Program Option (VISPO), (3) Regional Water Conservation Program (RWCP), and (4) Aquifer Storage and Recovery (ASR). Stage V Critical Period Management limits Aquifer withdrawals by reducing permitted withdrawal amounts in the San Antonio Pool when the 10-day rolling average of daily groundwater levels in the San Antonio Pool (J-17) drops below 625 feet (ft) mean sea level (msl) or when either the 10-day rolling daily average springflow at Comal Springs is 45 cubic feet per second (cfs) or 40 cfs based on a 3-day rolling daily average; and in the Uvalde Pool when the 10-day rolling average of daily groundwater levels in the Uvalde Pool (J-27) drops below 840 ft msl. The VISPO incentivizes suspending up to 41,795 acre-feet (ac-ft) of Aquifer withdrawals annually when the groundwater level in the San Antonio Pool (J-17) is at or below 635 ft msl on October 1 of the preceding year. RWCP programs contracted for 10,000 ac-ft of groundwater to remain unpumped through conservation efforts to reduce leaks in water supply systems and the purchase of low-flow toilets for participating Aquifer users. Finally, the ASR program incentivizes groundwater permit holders to lease their groundwater to the EAA for storage in an underground reservoir administered through SAWS to store 126,000 ac-ft of Aquifer water for recovery by SAWS during certain drought conditions in exchange for SAWS' agreement to forbear withdrawing Aquifer water. Management of the ASR for springflow protection purposes is triggered when the 10-day rolling average of groundwater levels in the San Antonio Pool (J-17) is below 630 ft msl and the 10-year rolling average of Aquifer recharge is at or below 500,000 ac-ft. The incentives for these four springflow protection conservation measures account for more than 70 percent of our program's budget over the 15-year ITP.

### Habitat Restoration

The EAHCP allocates \$12,380,000 toward planting Texas wild-rice, removing non-native vegetation and animals, planting aquatic and riparian native vegetation, management of floating vegetation, and litter removal to restore habitat for EAHCP Covered Species in the San Marcos and Comal rivers. The effect of these efforts on Covered Species habitat and population abundance are documented through the EAHCP's biological monitoring efforts and in the EAHCP Annual Reports.

## Biological and Water Quality Monitoring

The EAHCP allocates \$9,000,000 over 15-years toward biological and water quality monitoring. Biological and water quality monitoring occur each year for the geographic area covered by the ITP in the Comal and San Marcos rivers to monitor changes in habitat conditions and abundance of ITP Covered Species.

The biological monitoring program consists of surveys conducted at least twice annually employing a range of sampling strategies to describe the species and their environment. The program includes full system sampling of Texas wild-rice in the San Marcos River in August of each year, full system aquatic vegetation mapping of the San Marcos and Comal rivers once every five years, aquatic vegetation mapping of Long-Term Biological Goal reaches twice per year, continuous thermistor temperature monitoring, water quality sampling, fish tissue sampling in odd years, discharge measurements, and twice per year sampling of fountain darter, invertebrates and salamanders. Additional critical period monitoring occurs when flows in the San Marcos River are less than 120 cfs at USGS 08170500 and less than 130 cfs in the Comal River at USGS 08169000.

Full system sampling of Texas wild-rice in 2018 found 10,230 square meters of this endangered species in the San Marcos River. The total area of Texas wild-rice mapped in 2018 was 86 percent of the area defined for downlisting in the 1996 Recovery Plan<sup>1</sup>. The abundance of Texas wild-rice, its range, and its ability to expand and persist during low flow conditions is greater than anticipated prior to EAHCP implementation. The depth of water in persistent Texas wild-rice stands has been measured annually since 2000. These data indicate that Texas wild-rice persist during low flow periods, in areas where water levels are less than one foot.

The EAHCP defines an array of native macrophytes preferred by the fountain darter and establishes area goals for long-term biological goal reaches, as well as restoration reaches, in both the San Marcos and Comal rivers. The 2018 full system aquatic vegetation mapping illustrates the progress made by EAHCP efforts to remove non-native species and plant native aquatic vegetation that will allow Texas wild-rice to flourish in addition to offering habitat to fountain darter. These results were recently documented in the EAA's quarterly magazine (News Drop, Summer 2019<sup>2</sup>).

Thermistors record water temperature every 10 minutes at 11 locations in the San Marcos River and 13 in the Comal River system. Thermistors collect water temperature at two upper and two lower water column locations in both Spring Lake in the San Marcos system and in Landa Lake in the Comal system.

Additional water quality monitoring is performed to collect real-time and stormwater conditions at multiple locations throughout the San Marcos and Comal rivers in addition to the water quality monitoring done concurrent with biological monitoring, real-time monitoring for dissolved oxygen, pH, conductivity, and temperature at four locations in the Comal River and four locations in the San Marcos River. Sediment, stormwater,

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<sup>1</sup> USFWS. 1996. *San Marcos & Comal Springs & Associated Aquatic Ecosystems (Revised) Recovery Plan*. Available online at [https://ecos.fws.gov/docs/recovery\\_plan/960214.pdf](https://ecos.fws.gov/docs/recovery_plan/960214.pdf). Accessed August 21, 2019.

<sup>2</sup> EAA. 2019. News Drop Magazine A Quarterly Publication Summer 2019. Available online at <https://user-gzm76pf.cld.bz/NEWSDROP-SUMMER-20193>. Accessed August 21, 2019.

passive diffusion, and polar organic chemical integrative samplers are also set to monitor changes to water quality that may impact habitat conditions and abundance.

### Applied Research

The EAHCP allocated \$4,750,000 toward applied research to understand the ecology of the aquatic ecosystems, to provide scientifically-rigorous information to support the success of our Biological Goals and Objectives, support refugia operations, and develop the fountain darter Ecological Model.

### Refugia

Two refugia facilities were completed this year in a partnership between the USFWS and EAHCP. The \$18,876,267 contract between the EAHCP and USFWS established two geographically different locations where captive stocks of Texas wild-rice, fountain darter, and Texas blind salamanders will be maintained. Research on these species, as well as the *Heterelmis comalensis* (Comal Springs riffle beetle), *Stygopamus comalensis* (Comal Springs dryopid beetle), *Stygobromus pecki* (Peck's Cave amphipod), *Haideoporus texanus* (Edwards Aquifer diving beetle), *Lirceolus smithii* (Texas troglobitic water slater), *Eurycea nana* (San Marcos salamander), and *Eurycea sp.* (Comal Springs salamander); is being performed under this contract with the USFWS. Research activities have been initiated to understand the life history of these species, their reproduction in captivity, methods to track, or micro-chip species, and salvage techniques to collect and transport species from their natural habitats to the two constructed off-site refugia sites.

The activities described in this letter are documented in EAHCP annual reports delivered to the USFWS in March each year for compliance with the ITP. The EAHCP program administrators can provide these most recent data to the USFWS electronically to support efforts to finalize recovery plan amendments for Texas wild-rice, fountain darter, and Texas blind salamander. Please contact the EAHCP Program Manager, Scott Storment (sstorment@edwardsaquifer.org or 210-477-8527), directly to request electronic files of the data collected as part of the EAHCP.

Respectfully,



Scott D. Storment  
EAHCP Program Manager

