

REQUEST TO AMEND A GRANT FROM THE TEXAS WATER DEVELOPMENT BOARD TO TEXAS AGRILIFE EXTENSION ON BEHALF OF THE EDWARDS AQUIFER RECOVERY IMPLEMENTATION PROGRAM

I. General Information

On September 2, 2009, Texas AgriLife Extension (“TAE”) of the Texas A&M University System submitted a grant request to the Texas Water Development Board (“TWDB”), on behalf of the Edwards Aquifer Recovery Implementation Program (“EARIP”), for \$504,375. The request covered the non-federal share of a Section 6 Habitat Conservation Planning Assistance grant (“Section 6 grant”) and the project management contributions of the Texas Commission on Environmental Quality (“TCEQ”), Texas Department of Agriculture (“TDA”), and Texas Parks and Wildlife Department (“TPWD”). The TWDB approved the request at its September meeting. TAE requests that the TWDB grant increase that award to include an additional \$416,156 to include five studies necessary for the timely completion of the EARIP process. This addition would raise the total amount of the award to \$920,531.

a. Brief Description of the Proposed Amendment

The 81st Legislature directed the TWDB to allocate out of the Water Assistance Fund No. 480 up to \$1,692,500 for grants and studies related to the Edwards Aquifer Recovery Implementation Program. Rider 22, page VI-55, Chapter 1424 (S.B. 1), Acts of the 81th Legislature, Regular Session, 2009 (the General Appropriations Act). The Legislature intended that this allocation include money for the non-federal share of a Section 6 Habitat Conservation Planning Assistance grant (“Section 6 grant”), the project management contributions of the TPWD, TDA, and TCEQ, the cost of peer review of scientific work as well any other non-project management costs necessary for the timely completion of the program document. The TWDB funded a proposal from TAE, acting on behalf of the EARIP for \$504,375 for: (1) the non-federal share of the Section 6 grant; and (2) the project management contributions of the three State agencies.

The requested amendment would fund five studies that the EARIP has determined are necessary to the successful completion of the EARIP process: (1) improvement of the in-stream flow model for the Comal and San Marcos systems; (2) evaluation of the feasibility strategies to maintain in-stream habitat during periods of low flow; (3) genetic divergence and variability in the endangered fountain darter; (4) effects of drought on habitat conditions of the endangered fountain darter; and (5) fountain darter movement during drought and normal spring flow. The proposals for each study are attached as Attachments 1-5. Task and Expense Budgets for the proposed amended grant are attached as Attachments 6 and 7.

b. Explanation of Why the Studies Are Necessary.¹

TASK 4. Evaluation of the feasibility strategies to maintain in-stream habitat during periods of low (\$146,788)

In-situ refugia (Intensive Management Areas or “IMAs”) may be a valuable tool to protect species and their habitat in the wild under severely reduced discharge conditions. IMAs may also be valuable tools in the adaptive management plan required for the HCP to create the ability to explore low and high flow responses of endangered species and their habitat. This proposed study will evaluate the feasibility and probability of success of IMAs to assist the EARIP in deciding what actions should be included in the HCP. The study would (1) evaluate the biological feasibility of IMAs; (2) determine the necessary environmental documentation and permitting that would be required; (3) develop conceptual engineering designs; and evaluate economic feasibility of IMAs. The study will be done by BIO-WEST, Inc.

Ed Oborny will be the principle investigator. Mr. Oborny is the Fisheries Section Leader and a Principal at BIO-WEST, Inc. He specializes in aquatic ecology, threatened and endangered species, water quality, biological modeling, and in-stream flow issues and concepts. Mr. Oborny has a M.S. in Wildlife and Fisheries Sciences from Texas A&M University. Mr. Oborny is the Project Manager and Principal Aquatic Resources Investigator for the multi-discipline flows and water quality study for Edwards Aquifer Authority that includes research into the population dynamics of the fountain darter, Texas wild rice and Comal Springs riffle beetle. He also participated in a study of the distribution of the endangered Comal Springs riffle beetle. Mr. Oborny is a member of the EARIP’s Science Subcommittee.

Task 5. Improvement of the in-stream flow model for the Comal and San Marcos systems (\$174,237)

Dr. Thomas Hardy, Texas State University, is completing a study for the EARIP of the effects of flow and other impacts on the federally-listed species in the San Marcos and Comal systems. This study uses in-stream flow models to identify the cause and effect relationships between changes in ecosystem function or processes on target components of an ecosystem. The study results will be based on existing models using existing data. The EARIP’s Science Subcommittee has recommended that modeling runs used in the actual development of the HCP be based on the updated bathymetric data and vegetative and canopy cover data. In addition, the Science Subcommittee recommended that the model be improved to include diel water quality and temperature module. The proposed study will accomplish these tasks, recalibrate the model and provided updated model runs to support the development of the HCP.

The project will be led by Dr. Thomas Hardy. Dr. Hardy is currently Chief Science Officer at Texas State University, River System Institute. He is the principal author on two

¹ Each study is treated as a new task. The original grant consisted of 3 studies. Hence the first study is referred to as Task 4.

studies on the impacts of instream flows on the fountain darter at Comal and San Marcos Springs and the Texas wild rice at Comal Springs. Dr. Hardy also served on the National Academy of Sciences' National Research Council's panel that reviewed the Texas Instream Flow Program in 2005.

Dr. Hardy holds a Ph.D. in Civil and Environmental Engineering and a M.S. in Aquatic Biology. He is a member and Certified Fisheries Scientist of the American Fisheries Society, the American Society of Civil Engineers, the American Society of Photogrammetry and Remote Sensing, the American Water Resources Association, the International Association for Hydraulic Research and the International Aquatic Modeling Group. He is on the Executive Committee of the International Aquatic Modeling Group, and a member of the Steering Committee of the Ecohydraulics Section of the International Association for Hydraulic Research.

Task 6. Genetic divergence and variability in the endangered fountain darter (\$43,623)

Refugia at the United States Fish and Wildlife Service's ("FWS's") National Fish Hatchery and Technical Center ("NFH&TC") may be an important element of the Habitat Conservation Plan ("HCP") as a safety net in the event that the assumptions. The FWS contingency plan (1996) calls for adequate numbers of darters to be removed from the wild to establish a genetically representative founding broodstock. Although numbers of breeding pairs are outlined in the contingency plan, these numbers are not based on the genetic needs of the species, but rather, on feasibility of animal care and housing at the NFH&TC. Genetic variability needs to be reflected in the NFH&TC population so that in the event of drought and future reintroduction, those darters introduced will have a better chance at maintaining enough variability and genetic flexibility to be able to respond to selective pressures. The proposed study will be used to ensure that adequate capacity is available at NFH&TC and to evaluate necessary protocols that must be developed in order to rely on the NFH&TC as a safety net in the HCP. This study is necessary to the successful completion of the EARIP as it will provide population genetics information which is missing for this species and to determine areas which need to be genetically preserved in the wild.

Dr. Catherine T. Phillips from the NFH&TC will be the principal investigator for the study.

Task 7. Effects of drought on habitat conditions of the endangered fountain darter (\$41,066)

This study will examine multiple aspects of fountain darter habitat including parasite load, turbidity, macrophyte type, associated macroinvertebrates, water quality, fountain darter gut content, darter body size and condition under current drought conditions through increases to normal levels of flow. The EARIP HCP will be designed to contribute to the recovery of the

federally-listed species. This study will provide low flow data for the fountain darter which has not been previously investigated and determine critical areas of habitat that need to be protected.

Dr. Catherine T. Phillips from the NFH&TC will be the principal investigator for the study.

Task 8. Fountain darter movement during drought and normal spring flow (\$10,442)

This study will use mark-recapture techniques to identify microhabitat selection of the fountain darter. By tracking fountain darter movement from a period of drought through normal spring flow and recovery, the EARIP will have a better picture of habitat needs during times of low flow.

Dr. Catherine T. Phillips from the NFH&TC will be the principal investigator for the study.

c. A description of suggested project-monitoring procedures

These studies will be managed by the Program Manager for the EARIP. He will review and approve payment of all invoices which will be submitted quarterly. The costs on each invoice will be broken by expense category and will be accompanied by a progress report showing the progress made for that quarter for each task. The Project Manager also will meet with contractors working on the project on a regular basis to monitor costs and progress on the work. The Project Manager will make regular reports to the EARIP on the project.

Progress on the project and budget will be tracked using Microsoft Project 2007 and Microsoft Excel software.

III. Written Assurances

The proposed studies do not duplicate previously completed or on-going research; implementation of research results will be diligently pursued; identification and involvement of potential users will be provided; and if the amendment is awarded.

Dated: October 1, 2009

Dr. Edward G. Smith
Director
Texas AgriLife Extension