



4-A\1.25

February 9, 2016

Mr. Edmund L. Oborny
BIO-WEST, INC.
1812 Central Commerce Court
Round Rock, TX 78664

Re: Second Amendment to Contract No. 13-637-HCP for Predictive Ecological Model for the Comal and San Marcos Ecosystems Project

Dear Mr. Oborny:

The purpose of this letter is to amend Contract No. 13-637-HCP for Predictive Ecological Model for the Comal and San Marcos Ecosystems Project, originally dated May 14, 2013, ("Contract") between BIO-WEST, INC. ("Consultant"), and the Edwards Aquifer Authority ("EAA"). This amendment is made pursuant to Sections 2.2 and 13.1 of the Contract. The purpose of this second amendment is to add definitive tasks and additional funding to the budget for Year 3, Task 1. This amendment will become effective February 10, 2016, and will continue until December 31, 2016.

The following Articles and/or Sections are hereby amended and restated by underlined text indicating language added to the Contract and strike-through text indicating language deleted from the Contract as a result of this second amendment, as follows:

ARTICLE III, Compensation, Section 3.1:

Section 3.1. Fees and Expenses. The EAA agrees to pay the Consultant for its services rendered, costs, and expenses incurred under this Contract which are reasonably consistent with the Scope of Work, Budget Estimate, and Labor Categories and Hourly Rate Chart, but in no event shall compensation to the Consultant for work under this Contract exceed ~~nine hundred thirty thousand, three hundred fifty~~ one million, fifty-five thousand, three hundred fifty dollars and zero cents (\$~~930,350.00~~ \$1,055,350). The Consultant will be responsible for the payment of all of its other and additional costs and expenses. The Consultant may not exceed the contractual amount. The Consultant is not authorized to spend any additional funds without prior written approval from the EAA. The EAA will not be held responsible for any unauthorized work performed or funds spent by the Consultant.

EXHIBIT A, SCOPE OF WORK

YEAR 3 (June 1, 2015 – December 31, 2016)

Task 1. EAHCP Ecological Model Development, Calibration, and Validation

~~Following completion of Year 2 activities, the Contractor will carry out its detailed Year 3 scope of work as approved by the Science and Implementing Committees.~~

Task 1.a The Consultant will establish multiple enclosures at appropriate sites within the Old Channel study reach of the Comal River and the City Park study reach of the San Marcos River that restrict the movement of Fountain Darters. Sites will be chosen that are representative of habitats commonly inhabited by Fountain Darters while avoiding such complications as complex substrates that have been observed to reduce the recovery success of marked individuals. Fountain Darters will be captured from the immediate area of the enclosures, and marked using visible implant elastomer ("VIE"). The enclosures will be stocked with marked Fountain Darters the number of which will be based on densities observed during previous biological monitoring for habitats similar in composition. A census of each enclosure will be conducted every other month through August using large dipnets to attempt exhaustive resampling. An additional census will be conducted throughout the year at night using special lights to fluoresce the VIE marking material in a less disruptive fashion. Thermistors will be placed within each enclosure to continuously record water temperature. Standard parameter water quality measurements will also be collected during each census. Data will be analyzed to make estimates of apparent survival, and potentially other population parameters of interest for which the data may be suited. These estimates will be used to adapt the parameterization of the EcoModel to more explicitly define a mortality mechanism in the wild. In addition, a portion of the data will be used to test the predictive ability of the model.

Task 1.b The Consultant will conduct random sampling throughout the Comal and San Marcos Springs ecosystems the subject of the EAHCP to allow for statistically appropriate methods to be used in prediction of system wide effects. The Consultant will sample 25 randomly selected sites in each ecosystem to provide these data.

Site Selection and Sampling Methods for Task 1a and Task 1b

Sites will be selected in each ecosystem using GIS technology and transferred to handheld GPS units for site identification in the field. Dropnets, enclosing 1 m², will be used to conduct the sampling. At each sample site, the dropnet will be cleared with a dipnet of matching size by sweeping with a dipnet of the same size. All fish captured will be enumerated and their length recorded. Standard habitat and water quality parameters will be recorded at each sample site as well, and all resulting data will be securely stored in a database. Relevant data will be extracted as input parameters for the EcoModel, along with consideration of estimates of their error, and will be compared between model predictions and empirical data to evaluate similarities and differences in inferences suggested by the two sampling methods.

EXHIBIT B PROJECT BUDGET

YEAR 1

TASK	ESTIMATED COST
Task 1. Literature Review	\$ 12,500.
Task 2. Data Acquisition	\$ 3,500.
Task 3.1 U.S. Army Corps of Engineers Model Modification	\$ 55,000.
Task 3.2 Fountain Darter Response/Dynamics Model	\$ 47,500.
Task 3.3 Wild Rice Parameters	\$ 7,500.
Task 3.4 Gill Parasite and Non-Native Snails Response/Dynamics	\$ 4,500.
Task 4. Recommendations and Future Work	\$ 5,000.
Task 5. Draft and Final Reports	\$ 10,500.
Task 6. Meetings and Presentations	\$ 11,500.
Task 7. Deliverables	\$ 12,500.
YEAR 1 SUBTOTAL	\$170,000.

YEAR 2

TASK	ESTIMATED COST
Task 1. Project Management and Meetings	\$ 37,765.
Task 2. Literature Review	\$ 16,580.
Task 3. Fountain Darter Modeling	\$154,755.
Task 4. Aquatic Vegetation Modeling	\$138,520.
Task 5. Draft and Final Interim Status Reports	\$ 57,730.
Task 6. Recommendations and Future Work	No Cost
Task 7. Deliverables	No Cost
YEAR 2 SUBTOTAL	\$405,350.

YEAR 3

TASK	ESTIMATED COST
Task 1. EAHCP Ecological Model Development, Calibration, and Validation	\$330,000 <u>455,000.</u>
Task 2. EAHCP Ecological Model Training and User Guide	\$ 25,000.
Task 3. Deliverables	No Cost
YEAR 3 SUBTOTAL	\$355,000 <u>480,000.</u>

TOTAL PROJECT COSTS	\$930,350 <u>1,055,350.</u>
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Mr. Edmund L. Oborny
February 9, 2016 - Page 4

Other than as amended by this letter, in all other respects, the Contract, as previously amended by the letter dated May 14, 2014, from Roland Ruiz, General Manager of the EAA to Edmund L. Oborny, Vice-President of the Consultant, remains in full force and effect.

If you are in agreement with the terms of this second amendment to the Contract, please sign below and return one copy of this letter to the EAA.

Sincerely,

Roland Ruiz
General Manager

APPROVED AND ACCEPTED:
BIO-WEST, INC.

Edmund L. Oborny, Jr.
Vice-President

Date