

**ARIZONA GAME AND FISH DEPARTMENT
HABITAT PARTNERSHIP PROGRAM
HABITAT ENHANCEMENT AND WILDLIFE MANAGEMENT PROPOSAL**

| PROJECT INFORMATION | |
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| Project Title: Development of Water Level Sensor and Transmitter | Project No. 10-403 |
| Region/GMU: Region IV | HPC: SW Arizona |
| Project Type: Development and purchase of water measuring systems for wildlife waters | |
| Project Description: An engineering firm will be contracted to develop a compact, robust water depth measuring system that can be installed in remote water developments. It will measure water depth by sensing pressure, then transmit the information via satellite to a website. It will be self-contained, using a battery recharged with a solar panel, and should be visually unobtrusive. The development cost should include a minimum of 3 units for testing. | |
| Wildlife Species to Benefit: Primarily bighorn sheep, but potentially all game and many non-game species. | |
| Possible Funding Partners: | |
| Implementation Schedule: Beginning: January 2011 Completed: September 2011 | NEPA Compliance: (if applicable) Completed: Yes ___ No ___ Projected Completion Date: |
| PROJECT FUNDING | |
| SBG Funds Requested: \$ 21100 | |
| Cost Share Funds: \$ | |
| Total Project Costs: \$ 21100 | |
| PARTICIPANT INFORMATION | |
| Applicant: Bob Henry (please print) Telephone: 928-341-4048 | Address: 9140 E 28 th St, Yuma, AZ, 85365 |
| AGFD Contact and Phone No. (If applicant is not AGFD personnel) | |
| Coordinated with: USFWS, Kofa National Wildlife Refuge | Date: August, 2010 |
| Applicant's signature: | Date: August 31, 2010 |

SEND COMPLETED APPLICATIONS TO:
AZ Game and Fish Department
Attn: Game Branch
5000 W. Carefree Highway
Phoenix, AZ 85086
rgregory@azgfd.gov

WAS PROJECT PRESENTED TO THE LOCAL HPC? YES _____ NO X

HAS PROJECT BEEN SUBMITTED IN PREVIOUS YEARS? IF SO WAS IT FUNDED? No

NEED STATEMENT/PROBLEM ANALYSIS:

Game and Fish field personnel monitor water levels of hundreds of water developments in order to insure availability of drinking water to wildlife at all times. A huge amount of time and money is expended on this effort. Some of these waters are in remote areas that cannot be driven to, as they are high in the mountains, in wilderness, or on military ranges, and are difficult to access, especially when the need is greatest during the extreme heat of summer. Some can be monitored using fixed-wing aircraft flybys, but estimation of water levels can be nearly impossible due to shade covers and shadows. As a result, many of these waters are inadequately monitored and sometimes will inadvertently be allowed to go dry, resulting in the loss of animals.

Modern technology should offer us a more reliable way of monitoring remote water levels. Discussions with engineers indicate that a system for remotely measuring the depth of water in a tinaja or catchment using a pressure sensor, then broadcasting that measurement at intervals to a satellite, is both feasible and practical. However, there is no off-the-shelf system available that meets our needs of operating away from an electric source, transmitting data from inaccessible locations, and is robust enough to survive moving, rock-laden water. A system will have to be engineered from existing components, and tested in the lab and field.

PROJECT OBJECTIVES:

Develop and test a self-contained water depth sensor and transmitter system that can be deployed in remote wildlife waters.

PROJECT STRATEGIES:

1. Contract an engineering firm to do the initial development and construction of a prototype system.
2. Install and test 3 units during a summer season in 3 typical remote water developments in the southwest desert of Arizona.

PROJECT LOCATION: Testing will be done in bighorn sheep waters on the Kofa National Wildlife Refuge.

LAND OWNERSHIP AT PROJECT SITE (Please state specifically if PRIVATE PROPERTY and provide landowner's name): USFWS or BLM.

IF PRIVATE PROPERTY, IS THERE A STEWARDSHIP AGREEMENT BETWEEN THE LANDOWNER AND THE DEPARTMENT? N.A.

HABITAT DESCRIPTION: The water developments used for initial testing will be located in Sonoran desertscrub habitat of southwest Arizona. If successful, the systems could be deployed throughout Arizona.

ITEMIZED USE OF FUNDS: Research and development costs, paid to an engineering firm, are estimated to be \$15000. Units, once developed, are estimated to cost a maximum of \$2000 each and 3 units will be purchased for testing. Satellite uplink time should cost about \$5 per month per unit. A 6 month test period should cost \$5 x 6 months x 3 units = \$100.

| | |
|-------------------|---------|
| R&D = | \$15000 |
| 3 units @\$2000 = | \$6000 |
| Satellite time = | \$100 |
| | |
| Total = | \$21100 |

LIST COOPERATORS AND DESCRIBE POTENTIAL PARTICIPATION:

USFWS, Kofa National Wildlife Refuge – support and manpower to install the systems
Yuma Valley Rod and Gun Club – support and manpower to install the systems

PROJECT MONITORING PLAN:

The systems will be monitored at least weekly during the test period and periodically as long as they continue to operate. The units should be built to last 10+ years and will be monitored as long as they provide useful information.

PROJECT MAINTENANCE:

Once installed, there should be minimal maintenance needed. Repair or replacement will be done when the need arises and will be accomplished by regional personnel.

PROJECT COMPLETION REPORT TO BE FILED BY:

July 2012

WATER DEVELOPMENT PROJECTS (see attached worksheet):

TREE SHEARING (AGRA-AXE, PUSH) PROJECTS (see attached worksheet):