

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

Game Branch / HPC Project Number:	13-402
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PROJECT INFORMATION

Project Title: Mesquite Bosque Restoration	
Region and Game Management Unit: Region IV/ Unit 41	
Local Habitat Partnership Committee (LHPC): • Southwest Arizona	Was the project presented to the LHPC? YES[] NO[X] <i>Will present later this year.</i>
Has this project been submitted in previous years? YES[] NO[X] If Yes, was it funded? YES[] NO[] → Funded HPC Project #(s):	
Project Type: Habitat Restoration	
Brief Project Summary: Region IV proposes to construct multiple check dams along minor washes at selected restoration sites and seed velvet and honey mesquite and other native species to stimulate restoration and growth of native vegetation. A check dam is a semi-permeable structure made of stone or other materials that is used to slow the velocity of concentrated water flows to saturate the surrounding soil and help stimulate the growth of vegetation. Artificially created depressions will also be constructed along minor washes to be used with the proposed check dams. The depressions will provide additional growing area for mesquite trees because of their ability to temporarily accumulate water that has been slowed and diverted by a strategically placed check dam. Each site will rely on natural precipitation events and mostly on passive management. Monitoring will be conducted to evaluate its success and determine what factors were favorable and harmful.	

Big Game Wildlife Species to Benefit: Mule Deer

Implementation Schedule (Month/Day/Year): <u>Project Start Date:</u> March 1, 2014 <u>Project End Date:</u> March 31, 2014	Environmental Compliance: NEPA Completed: Yes[X] No[] N/A[] Projected Completion Date: <u>7/25/13</u> State Historic Preservation Office - Archaeological Clearance: Yes[X] No[] N/A[] Projected Completion Date: <u>7/25/13</u> Arizona Game and Fish Department EA Checklist: N/A[] To be Completed by: <u>Tab Bommarito, AGFD</u> Projected Completion Date: <u>March 2014</u>
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PROJECT FUNDING

Special Big Game License Tag Funds Requested:	\$ 4,150.00
Cost Share or Matching Funds:	\$ 2124.00
Total Project Costs:	\$ 6,274.00

PARTICIPANT INFORMATION

Applicant (please print): AGFD Region IV	Address: 9140 E 28 th Street Yuma, AZ 85365	E-mail: tbommarito@azgfd.gov
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Telephone: 928-341-4069		Date: 8/22/13
AGFD Contact and Phone No. (If applicant is not AGFD personnel):		
Project has been coordinated with: The Bureau of Land Management		

NEED STATEMENT – PROBLEM ANALYSIS:

Within the American Southwest, Mesquite (*Prosopis spp.*) bosques, or forests, is an ecologically important type of riparian habitat that is one the most productive and biologically diverse in both plant and animal species. However, within the past 100 years human activity has resulted in an estimated decline of 40 to 90% of riparian habitat, making them one of the region’s most endangered ecosystems. Mesquite forests provide valuable habitat for many game species such as mule deer. Forested vegetation occupies <2% of the total land area in the arid regions of Arizona; it also supports approximately 80% of all vertebrate species at some stage of their life.

Found primarily within the Sonoran biotic community, mesquite forests are large (e.g. 1 km long by 200 m wide along the Gila River), but are small in comparison to pre-settlement forests which averaged widths of 5 to 10 km and extended for hundreds of kilometers along the lower reaches of the Colorado, Gila, Magdalena, Salt, San Miguel, San Pedro, Santa Cruze, and other rivers. Mesquite forests also covered more area than other riparian types. Along the San Pedro River, they covered 60% of the 7,600 ha, and 56% of 637 ha on the Gila River.

Implementing the proposed project will help Department personnel determine if the placement of check dams and depressions along washes is effective in restoring mesquite bosques. If successful the Department will be able to replicate this low cost and low maintenance project elsewhere providing food and cover for mule deer as well as a host of other species.

PROJECT OBJECTIVES: The purpose of this project is the restoration and improvement of mesquite forests within southwest Arizona to help support mule deer.

Secondary Objectives:

- a) Identification of optimal distances between check dams.
- b) Establishment and protection of mesquite trees.
- c) Long term monitoring and review of restoration efforts.

PROJECT DESCRIPTION AND STRATEGIES:

The purpose of this project is the restoration and improvement of mesquite forests within southwest Arizona. Region IV proposes to construct multiple check dams (Figure 1) along minor washes at selected restoration sites and seed velvet and honey mesquite and other native species to stimulate restoration and growth of native vegetation. Stone of various sizes would be collected locally and transported by pickup truck on existing roads and trails to selected sites where they will be used to construct several check dams. A check dam is a semi-permeable structure made of stone or other materials that is used to slow the velocity of concentrated water flows to saturate the surrounding soil and help stimulate the growth of vegetation. Artificially created depressions (Figure 2) will also be

constructed along minor washes to be used with the proposed check dams. At each restoration site a depression approximately 20 square-feet in size would be created on both sides of the wash totaling 40 sq-feet. The depressions will provide additional growing area for mesquite trees because of their ability to temporarily accumulate water that has been slowed and diverted by a strategically placed check dam. Each site will rely on natural precipitation events and mostly on passive management. Monitoring will be conducted to evaluate its success and determine what factors were favorable and harmful.

Methods

Site Selection

The proposed restoration sites (Map 1 and 2; Figure 3-6) were selected because the area provides washes with natural depressions that allow optimal placement of check dams and soil that already supports the growth of diverse vegetation including mesquite. The natural depressions will temporarily accumulate water with the aid of check dams following natural precipitation events.

Dam Construction

Check dams will be made approximately two to three-feet high of stone that has a diameter of two to 15-inches. The center of the dam will be six-inches lower than its edges to create a weir effect that helps channel flows away from the banks preventing erosion. The stones will be secured in place against flash floods by overlaying wire fencing and staking it into the ground.

Depression Creation

A bobcat track loader or similar vehicle will be used to excavate a depression approximately 20 sq-feet in size with a target depth level with the bottom of the adjacent wash. Excavated soil will be used to construct a berm around the perimeter of the depression to keep water within the wash.

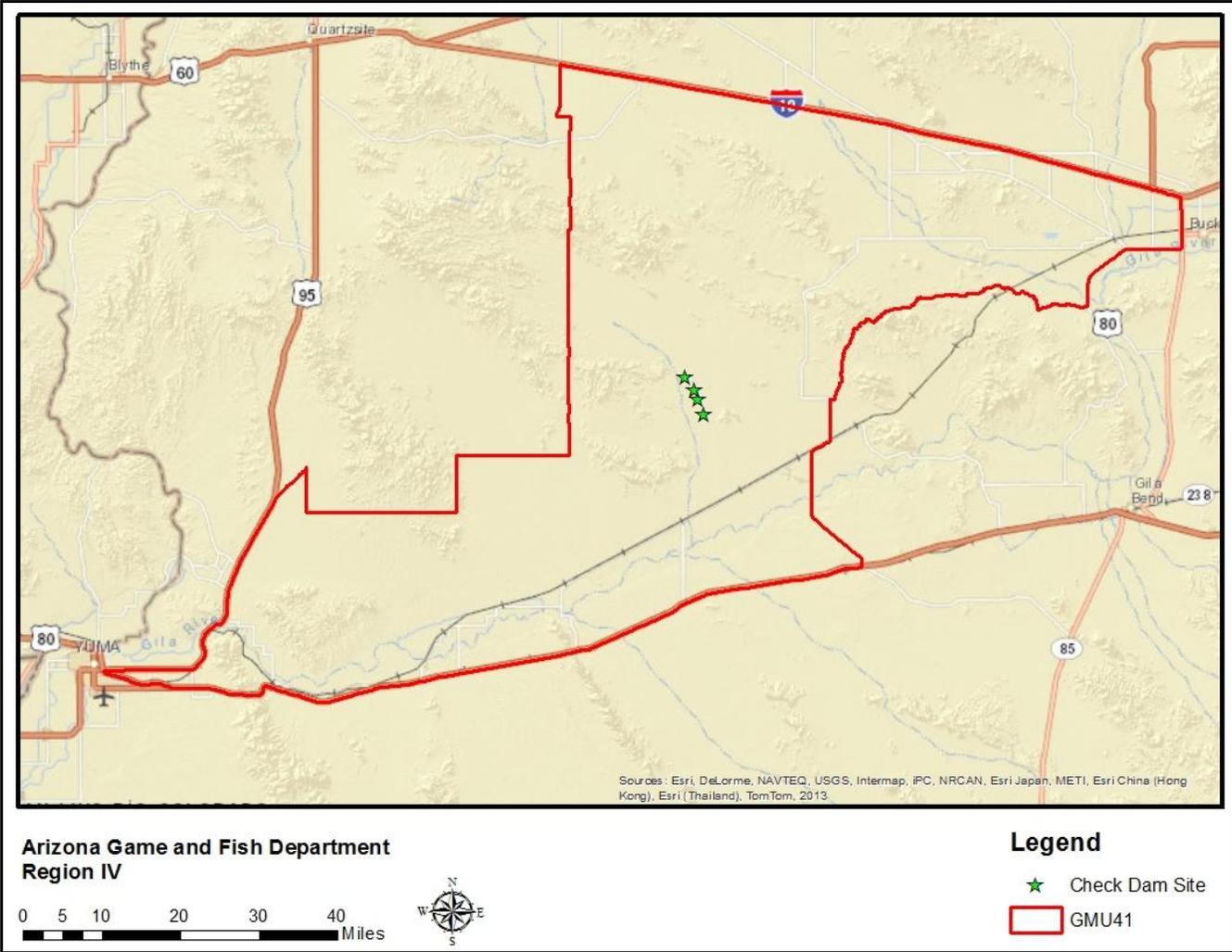
Seeding

Seeds from native velvet and honey mesquite and other native vegetation will be planted in random locations along the washes and within each depression approximately six-inches below the surface using digging shovels.

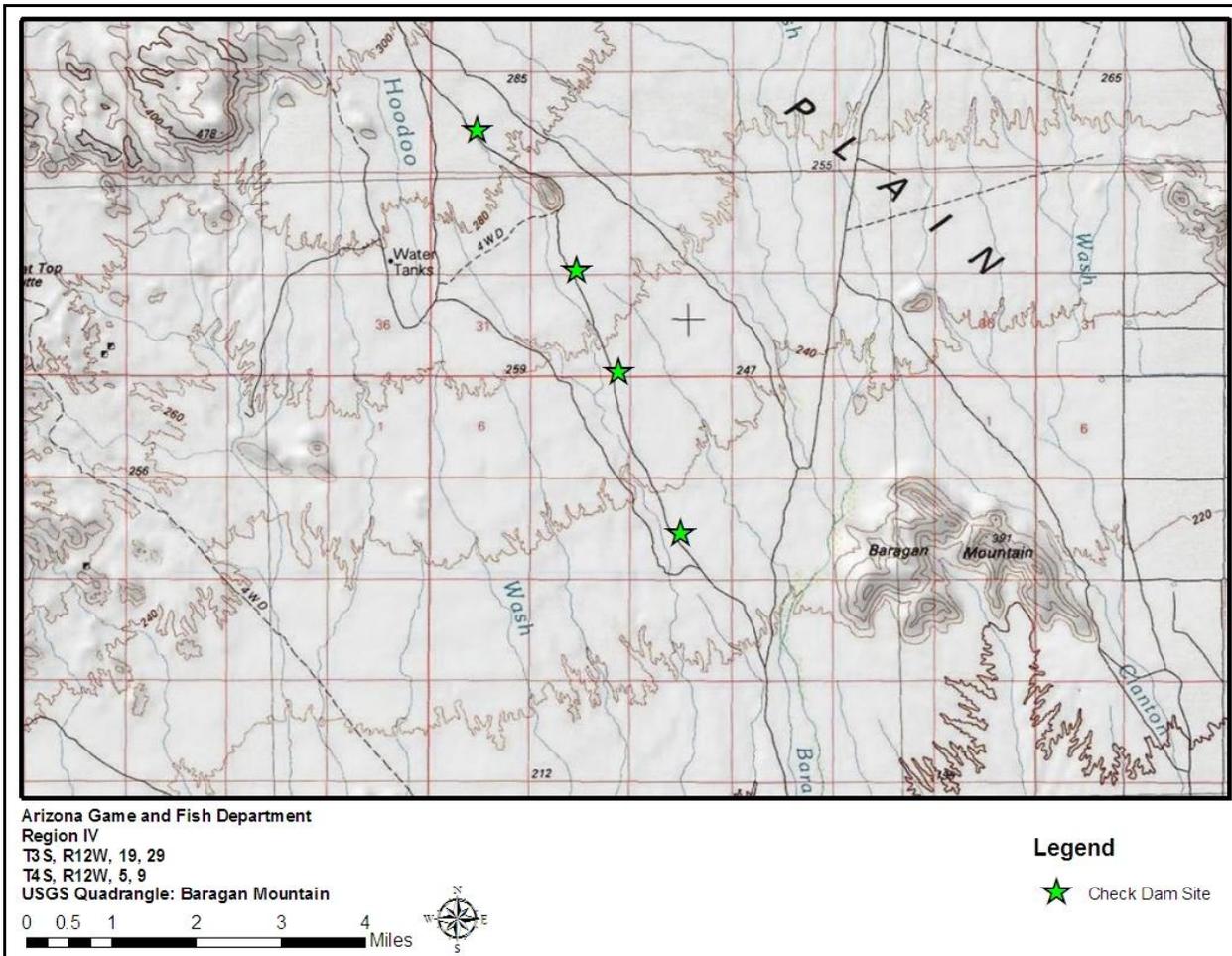
Monitoring

Tree growth monitoring will take place on treatment areas to determine the effectiveness of planting procedures and overall ecosystem recovery. Prior to seeding 5-10 permanent photo points will be established at each location at which pictures will be taken prior to restoration. Photos will be re-taken every year during post-restoration to visually document restoration progress.

PROJECT LOCATION: Selected restoration sites are located in Yuma County within the Palomas Plain on land managed by the Bureau of Land Management.



Map 1: Location of proposed restoration sites within Game Management Unit 41.



Map 2: Location of proposed restoration sites within the Palomas Plain.

*Palomas Plain, Yuma County, Arizona,
 T. 3 S., R. 12 W., 19, 29
 T. 4S., R 12 W., 5, 9*

Site	Zone	Easting	Northing
1	12s	0266512	3664494
2	12s	0265571	3667066
3	12s	0264949	3668684
4	12s	0263416	3670944

LAND OWNERSHIP AT THE PROJECT SITE(S):

(if the project area is private property, please state specifically and provide the landowner’s name)

- Bureau of Land Management

IF PRIVATE PROPERTY, IS THERE A COOPERATIVE BIG GAME STEWARDSHIP or LANDOWNER AGREEMENT BETWEEN THE LANDOWNER AND THE DEPARTMENT?

YES[] NO[] N/A[X]

HABITAT DESCRIPTION: The proposed project is located within the lower Sonoran Desert, one of the driest and hottest locations in North America. The interior portion of the desert is characterized by broad flat sandy valleys and low mountain ranges composed predominately of barren rock. The open valleys are dominated by species such as creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). Desert washes support bosques of mesquite (*Prosopis* spp.), ironwood (*Olneya tesota*), paloverde (*Parkinsonia* spp.), and other tree species. Saguaro and other cacti can also be found in areas that provide optimal growing conditions. Within the Palomas Plain the restoration sites sit at an elevation of approximately 280 feet while the surrounding area is dominated by creosote bush, brittlebush (*Encelia farinosa*), ironwood, paloverde, and saguaros.

ITEMIZED USE OF FUNDS:

Special Big Game License Tag Funds

Category	Total Cost	Cost Share
Personnel		
Wildlife Specialist (\$20/hour x 40 hours)	800	800
Wildlife Manager (\$25/hour x 40 hours)	1000	1000
Volunteers	Uncertain	Uncertain
Sub-total	1800	1800
Permitting		
ADWR – 4 Permits	4,000	
Sub-total	4,000	
Mileage		
AGFD vehicles (\$0.60/mile x 540 miles)	324	324
Sub-total	324	324
Other Expenses		
Fencing	100	
Blender	50	
Sub-total	150	
TOTAL	\$6274.00	\$2124.00
REQUESTED		\$4150.00

Cost Share or Matching Funds (for volunteer labor rates please refer to the worksheet below)

See above for information on cost share funds. *Department personnel time and vehicle cost is categorized as cost share and not requested funds.*

LIST COOPERATORS AND DESCRIBE POTENTIAL PARTICIPATION:

The project has been coordinated with the Bureau of Land Management. A Nation Wide Permit 27 application is awaiting approval by the US Army Corps of Engineers. Regional personnel will be contacting local sportsmen group for volunteer participation.

WOULD IMPLEMENTATION OF THIS PROJECT ASSIST IN PROVIDING, MAINTAINING, OR FACILITATING RECREATIONAL ACCESS?

YES[] NO[] N/A[X]

PROJECT MONITORING PLAN: Tree growth monitoring will take place at each location to determine the effectiveness of planting procedures and overall ecosystem recovery. Prior to seeding 5-10 permanent photo points will be established at each location at which pictures will be taken prior to restoration. Photos will be re-taken every year during post-restoration to visually document restoration progress.

PROJECT MAINTENANCE: This project is intended to rely mostly on passive management, but Region IV will perform any needed maintenance.

PROJECT COMPLETION REPORT TO BE FILED BY: Tab Bommarito, Region IV Habitat Specialist

WATER DEVELOPMENT PROJECTS (*please use the worksheet below*): Not applicable

TREE CLEARING/REMOVAL PROJECTS (*please use the worksheet below*): Not applicable

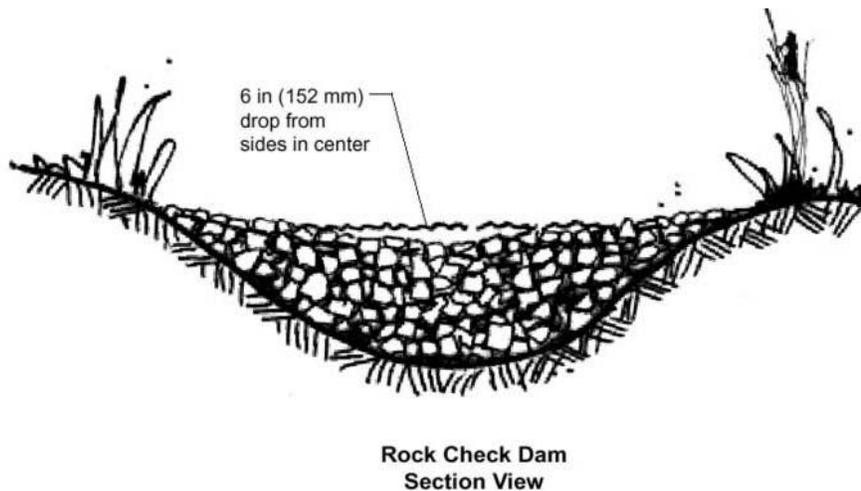


Figure 1. Graphical view of a rock check dam.

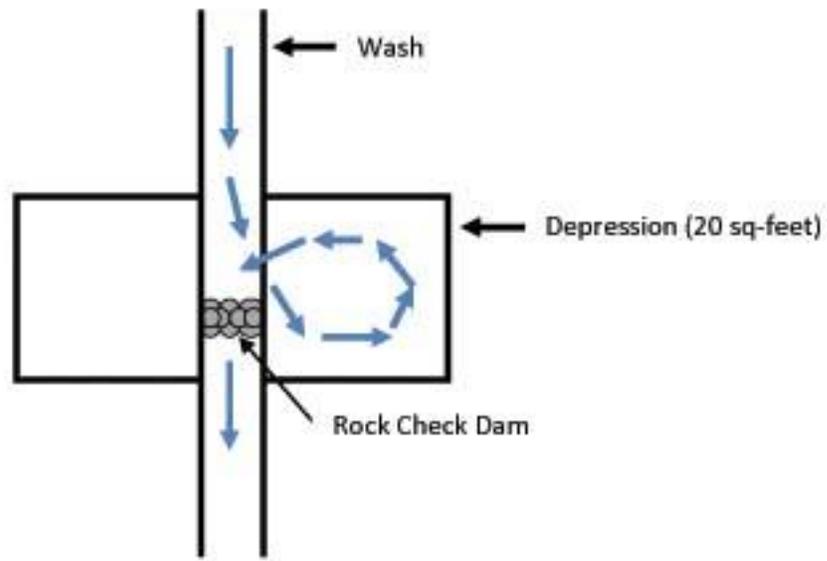


Figure 2. Overhead view of how a rock check dam and depression will function.



Figure 3. Location of Site 1.



Figure 4. Location of site 2.



Figure 5. Location of site 3.



Figure 6. Location of site 4.