

**Arizona Water Protection Fund
Application Cover Page
FY 2019**

Title of Project: Paria Beach Riparian Restoration at Glen Canyon National Recreation Area, Lees Ferry, AZ															
Type of Project: <input checked="" type="checkbox"/> Capital or Other <input type="checkbox"/> Water Conservation <input type="checkbox"/> Research	Stream Type: <input checked="" type="checkbox"/> Perennial <input type="checkbox"/> Intermittent <input type="checkbox"/> Ephemeral														
Your level of commitment to maintenance of project benefits and capital improvements: <input type="checkbox"/> < 5 years <input type="checkbox"/> 5-10 years <input type="checkbox"/> 11-15 years <input checked="" type="checkbox"/> 16-20 years															
Applicant Information: Name/Organization: Grand Canyon Wildlands Council Address 1: 316 E. Birch Ave. Address 2: City: Flagstaff State: Arizona ZIP Code: 86001 Phone: 928-556-9306 Fax: Tax ID No.: XXXXXXXXXX															
Inside an AMA: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, which AMA: <input type="checkbox"/> Phoenix <input type="checkbox"/> Tucson <input type="checkbox"/> Prescott <input type="checkbox"/> Pinal <input type="checkbox"/> Santa Cruz															
Contact Person: Name: Kelly Burke Title: Executive Director Phone: 928-556-9306 Fax: e-mail: kelly@grandcanyonwildlands.org															
Any Previous AWP Fund Grants: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, please provide Grant #(s): 99-074WPF, 99-075WPF, 11-181WPF															
Arizona Water Protection Fund Grant Amount Requested: \$252,221.00 If the application is funded, will the Grantee intend to request an advance: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Matching Funds Obtained and Secured: <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Applicant/Agency/Organization:</th> <th style="text-align: right; border-bottom: 1px solid black;">Amount (\$):</th> </tr> </thead> <tbody> <tr> <td>1. Applicant</td> <td style="text-align: right;">48,950.00</td> </tr> <tr> <td>2. Glen Canyon NRA/NPS</td> <td style="text-align: right;">13,500.00</td> </tr> <tr> <td>3. Arizona Wilderness Coalition</td> <td style="text-align: right;">34,044</td> </tr> <tr> <td>4. Arizona Raft Adventures</td> <td style="text-align: right;">4,000.</td> </tr> <tr> <td>5. Grand Canyon River Guides</td> <td style="text-align: right;">900.</td> </tr> <tr> <td style="text-align: right;">Total:</td> <td style="text-align: right;">101,394.00</td> </tr> </tbody> </table>	Applicant/Agency/Organization:	Amount (\$):	1. Applicant	48,950.00	2. Glen Canyon NRA/NPS	13,500.00	3. Arizona Wilderness Coalition	34,044	4. Arizona Raft Adventures	4,000.	5. Grand Canyon River Guides	900.	Total:	101,394.00
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Has your legal counsel or contracting authority reviewed and accepted the Grant Award Contract General Provisions? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A															
Signature of the undersigned certifies understanding and compliance with all terms, conditions and specifications in the attached application. Additionally, signature certifies that all information provided by the applicant is true and accurate. The undersigned acknowledges that intentional presentation of any false or fraudulent information, or knowingly concealing a material fact regarding this application is subject to criminal penalties as provided in A.R.S. Title 13. The Arizona Water Protection Fund Commission may approve Grant Awards with modifications to scope items, methodology, schedule, final products and/or budget.															
Kelly Burke	Executive Director (928) 556-9306														
Typed Name of Applicant or Applicant's Authorized Representative	Title and Telephone Number														
Signature	Date Signed														

2) Executive Summary (1 page only)

We propose to assist Glen Canyon National Recreation Area (GLCA) of the National Park Service (NPS) achieve its conservation mission along the Colorado River in Glen Canyon by undertaking riparian restoration and monitoring at Paria Beach in the Lees Ferry area (Colorado River Mile 1R). The Colorado River riparian zone in lowermost Glen Canyon and the Lees Ferry area has been severely modified by the construction and operations of Glen Canyon Dam since 1963, which has reduced flood frequency and sediment transport. Ecological stabilization of the riparian zone of this previously flood-scoured reach permitted extensive colonization of lower riparian zone by non-native phreatophytes, particularly tamarisk (*Tamarix* spp.). Reduced flow fluctuations since 1991 have allowed increased establishment and growth of tamarisk in this reach, and cover exceeds 50 percent. The recent arrival of the non-native tamarisk leaf beetle (Chrysomelidae: *Diorhabda elongata*) has left a dense stand of defoliated, dying, and dead trees. Restoration of native *Salix gooddingii* and other native phreatophytes is needed to provide habitat for fish and wildlife in the recreation area.

The NPS, with Grand Canyon Wildlands Council (GCWC, the Grantee) as principal cooperator and Fred Phillips Consulting, undertook similar tamarisk control and native revegetation of 10 acres at Lees Ferry, Arizona from 2002-2005. GCWC and NPS partnered at Hidden Slough (Mile -6.5R). These highly successful restoration sites are among the only stretches of the Colorado River in GLCA that are now strongly dominated by native vegetation.

Prior to the arrival of the tamarisk leaf beetle, the Paria Beach was the site of long-term avifaunal monitoring, and the site was used as a control against which to measure change at the Lees Ferry and Hidden Slough restoration sites. However, with the arrival of the leaf beetle, the Paria Beach is now highly degraded and, due to the high intensity recreational use of the site, it warrants restoration attention.

While Colorado River restoration has been very successful thus far, we request support from AWPf to quantitatively and qualitatively evaluate the tamarisk removal and revegetation at Paria Beach, complete tamarisk control, undertake native phreatophyte revegetation, conduct the monitoring program, and assist the NPS develop and conduct outreach. Thus, GCWC requests **\$252,221** in support from AWPf over three years for Paria Beach habitat restoration. This project will assist GLCA in further implementing its Colorado River Riparian Revegetation Plan. The project can be utilized to inform riparian revegetation in many other settings in the Southwest where tamarisk removal involves large stands that are heavily impacted by tamarisk leaf beetle.

3) Project Overview

Background

Wetland and riparian habitats are rare throughout the middle and lower elevations of the arid Southwest, yet provide essential habitat for a large proportion of the region's wildlife, avian and invertebrate species. Less than 0.5% of the Southwest region is occupied by riparian and wetland habitat, but that habitat supports more than one third of the region's floral and avifaunal diversity (Stevens and Ayers 2002). Little of Arizona's historic wetlands remain and a vast proportion of its native riparian habitat has been destroyed (Brinson et al. 1981, Knopf et al. 1988).

Revegetation of riparian habitats has been recognized by all land managing agencies as an important effort to support and revive the region's riparian ecological integrity. To that end, several substantial riparian revegetation projects have been conducted along the Colorado River.

GLCA was established as an NPS unit on October 27, 1972 "...to provide for public outdoor recreation use and enjoyment of Lake Powell and lands adjacent thereto... and to preserve scenic, scientific, and historic features contributing to public enjoyment of the area" (NPS 1979). GLCA recreational opportunities include river running, boating, sport fishing, backcountry hiking, and wildlife viewing. Its canyons provide habitat for more than 400 species of plants, birds, fish, mammals, and herptofauna including Northern Leopard frog (*Rana pipiens*), four endangered fish species, protected bald and golden eagles (*Haliaeetus leucocephalus* and *Aquila chrysaetos*, respectively), and peregrine falcon (*Falco peregrinus*). GLCA has an annual visitation exceeding 3.5 million visitors each year, and protecting natural resources there is a high priority for the NPS.

Prior to the construction of Glen Canyon Dam in 1963, high springtime flows scoured the river banks, restricting perennial native plant species to upper riparian terraces (Turner and Karpiscak 1980). The construction and operation of the dam reduced flood frequency and sediment transport, and allowed non-native riparian tamarisk and other plant species to colonize the riparian zone of the Colorado River downstream from Glen Canyon Dam in Glen Canyon National Recreation Area. Restoration of GLCA riparian shorelines is important to the NPS mission there, and the NPS has developed a ecological assessment of restoration priorities downstream from Glen Canyon Dam, with several sites identified as high priority for restoration.

To initiate restoration of the Colorado River riparian zone in GLCA, GCWC and the NPS jointly undertook a 4.5 ha (10 ac) riparian restoration project at Lees Ferry, Arizona in 2002 (Stevens et al. 2015). This project was funded by the Arizona Water Protection Fund (AWPF) and was designed to determine whether tamarisk could be removed from Colorado River banks below Glen Canyon Dam, and to learn about the rate and success of native riparian species plantings. The site provides a very successful example of riparian ecosystem revegetation: within eight years after tamarisk removal no new tamarisk established on the site and four years after irrigation was halted more than 50 percent of the planted shrubs and trees survived, some reaching heights exceeding 10 m. After only two growing seasons, avian species diversity and abundance equaled pre-treatment levels (Stevens 2005), and after four years bird diversity was twice that of the pre-treatment condition Stevens et al. 2015). Not surprisingly, many upper

terrace plantings of phreatophyte trees failed, demonstrating that tree plantings of cottonwood and willow should be conducted at stage elevations less than 2 m (6 ft) above the approximate 566 m³/s (20,000 cfs) stage. However, the project clearly demonstrates that native riparian vegetation can be successfully established in place of tamarisk in the Glen Canyon reach. Like Lees Ferry, the Paria Beach is readily accessible by road.

Goals

- Goal 1 – Further the mission of the GCWC through active collaboration with land management agencies (www.GrandCanyonWildlands.org).
- Goal 2 – Restore natural shoreline configuration, native riparian vegetation, and natural habitats along the Colorado River downstream from Glen Canyon Dam.
- Goal 3 – Conduct restoration activities in a fashion fully consistent with the NPS mission, and in accord with NPS management policies, practices, and public education.

Objectives

- Objective 1 – Assist GLCA staff ensure the sufficiency of GLCA riparian restoration guidance.
- Objective 2 – Assemble, compile, and assess historic information to guide planning.
- Objective 3 – Develop a prioritized restoration, maintenance, and monitoring plan for the site.
- Objective 4 – Implement the restoration, maintenance, and monitoring plans.
- Objective 5 - Subject to the desires of GLCA, achieve effective on site education and outreach, complemented by communications consistent with the NPS mission.
- Objective 6 – Submit a final report and make a presentation to AWPf on the entire project.

Statement of Problem/Causes

Prior to the construction of Glen Canyon Dam in 1963, large annual springtime floods scoured the channel between Glen Canyon Dam and Lees Ferry, preventing establishment of perennial lower riparian zone vegetation (Carothers et al. 1979, Topping et al. 2003). These floods scoured and deposited sediment, flushed salts from the soils, and helped disperse the seeds of native vegetation that were adapted to flooding. Pre-dam middle and upper riparian zone terraces supported native phreatophytes, including Goodding's willow (*Salix gooddingii*), coyote willow (*Salix exigua*), arrowweed (*Pluchea sericea*), seep willow (*Baccharis emoryi* and *B. salicifolia*), rare Fremont cottonwood (*Populus fremontii*), and common reed (*Phragmites australis*). Pre-dam upper riparian zone terraces supported hackberry (*Celtis laevigata*), snowberry (*Symphoricarpos* sp.), scrub oak (*Quercus turbinella*), prince's plume (*Stanleya pinnata*), Apache plume (*Fallugia paradoxa*), inkweed/seepweed (*Suaeda moquinii*), rabbitbrush (*Chrysothamnus nauseosus*), and saltbush (*Atriplex canescens* and other species), as well as non-native tamarisk (*Tamarix* spp.; Carothers et al. 1979, Turner and Karpiscak 1980, Webb 1996). Tamarisk was first detected in GLCA at Lees Ferry in the 1920's and became widely established on upper riparian terraces from prior to 1938 through 1963 (Clover and Jotter 1944, Turner and

Karpiscak 1980, Johnson 1991). Construction of Glen Canyon Dam in 1963 drastically altered the river ecosystem, and stabilized riparian conditions allowed a profuse growth of riparian vegetation, including large monotypic stands of tamarisk, to develop in the lower riparian zone along the water's edge.

Tamarisk colonized and dominated the GLCA lower riparian zone due to its prolific seed production through the growing season, rapid growth rate, and its tolerance of flooding, fire, salinity, and drought stresses (summarized in Mortenson et al., 2011). However, coarsened post-dam riparian soils now largely preclude tamarisk establishment along the river except in years with May-June floods (Stevens 1989, Stevens et al. 2002). Although tamarisk does provide habitat, shade and erosion control, it has an overly dense canopy structure and relatively low stature in contrast to native riparian trees like Goodding's willow. Also, the growth of tamarisk in dense monocultures precludes establishment of native riparian plant species. Therefore, although it provides some habitat for riparian insects and vertebrates (particularly neotropical migrant birds -- Brown and Trossett 1989), the quality of that habitat is relatively low (Engel-Wilson and Ohmart 1978, Hunter et al. 1988, Ohmart et al. 1988, Zavaleta 2000).

The Paria Beach formerly supported rich invertebrate, avian, and herpetofaunal populations and is one of the most intensively visited sites along the Colorado River, often receiving more than several hundred visitors per day. However, the wildlife habitat and recreational experience quality there has been greatly diminished due to the highly degraded state of its riparian vegetation due in large part to rapid defoliation by the tamarisk leaf beetle (*Diorhabda* spp.). Improved riparian management of Glen and Grand Canyons is likely to improve bird and wildlife habitat, and also visitor recreational experience.

Statement of Solutions/Hypotheses

As the GCWC-GLCA Lees Ferry riparian restoration project demonstrated, riparian restoration requires control of tamarisk, and revegetation with consideration of geomorphology, irrigation, and protection from beaver herbivory. Successful removal of tamarisk and establishment of the irrigation network at the Hidden Slough site demonstrated our ability to conduct riparian restoration at remote sites, where we learned that gravity driven irrigation was most effective. The Paria Beach, like Lees Ferry, is an easily-accessed site. Therefore, site access will be conducted by vehicles and will not require boat transport. These restoration efforts are important not only to the rehabilitation of a site itself, but also to provide a seed source for native phreatophytes to enhance further colonization of the shorelines.

As described in the 2008 NPS Glen Canyon Riparian Revegetation Plan, a suite of sites have been prioritized for riparian restoration including NEPA compliance, site assessment and design, tamarisk removal, nursery propagation of willows and other phreatophytes, native species plantings, gravity irrigation installation as needed, weeding, watering, irrigation maintenance, and site monitoring. The hypothesis is that native riparian trees and other plant species can be established and provide seed sources and a functional corridor of riparian/wildlife habitat for the Glen Canyon and Marble Canyon reaches of the Colorado River corridor, while providing high

quality visitor experiences suitable to the mission of GLCA. This hypothesis is based in part on the continued impacts of leaf beetle on tamarisk regrowth, allowing riparian restoration to be accomplished without the application of herbicide.

The proposed work here is in accord with GLCA's mission, authority, and commitment to long-term riparian zone and vegetation management, and is based, in part on the GLCA Colorado River Riparian Revegetation Plan developed with the assistance of GCWC in 2008. That plan helps inform site selection priorities.

Statement of Project Years of Benefit

This restoration project is designed to be completed in three years, with benefits to wildlife beginning within 2 years of tamarisk control and initiation of revegetation. The changes undertaken at the site are likely to be permanent improvements, as was observed at both the Lees Ferry and Hidden Slough restoration sites. Both of those sites were strongly dominated by tamarisk. In addition to the benefits achieved at the individual site, these restoration efforts should result in addition to the length of the restored riparian corridor habitat, plus native phreatophyte seed production, serving as a seed source both downstream (through hydrochory) and upstream (through anemochory – wind dispersal) throughout lowermost GLCA and upper Grand Canyon. In addition, the degraded condition of the Paria Beach site will be greatly enhanced for many decades to come, providing for much-improved visitor experience at the site. Such actions support the NPS mission in this reach.

Project Location & Environmental Contaminant Information FY 2019

Project Location Information			
1. County: <u>Coconino</u>	2. Section(s): <u>23,24</u>	3. Township: <u>40N</u>	4. Range: <u>7E</u>
<p>5. Watershed: <u>Upper Colorado River</u></p> <p>6. 8 or 10 Digit Hydrologic Unit Code (HUC): <u>15010001</u></p> <p>7. Name of USGS Topographic Map where project area is located: <u>Lees Ferry</u></p> <p>8. State Legislative District: <u>7</u></p> <p style="margin-left: 20px;">(Information available at: http://azredistricting.org/districtlocator/)</p> <p>9. Land ownership of project area: <u>National Park Service</u></p> <p>10. Current land use of project area: <u>Glen Canyon National Recreation Area</u></p> <p>11. Size of project area (in acres): <u>5 acres DIRECT</u></p> <p>12. Stream Name: <u>Paria River/Colorado River confluence</u></p> <p>13. Length of stream through project area: <u>0.5 miles</u></p> <p>14. Miles of stream benefited: <u>8 miles</u></p> <p>15. Acres of riparian habitat: <u>4 acres</u> will be:</p> <div style="margin-left: 350px;"> <input checked="" type="checkbox"/> Enhanced <input type="checkbox"/> Maintained <input checked="" type="checkbox"/> Restored <input type="checkbox"/> Created </div>			
<p>16. General description and/or delineation for the area of impact of the project within the watershed. <u>The area of impact of the project is upriver and downriver of the confluence of the Paria River and the mainstem Colorado River -- in the Lees Ferry area of the Glen Canyon Reach, of the Colorado River below Glen Canyon Dam.</u></p>			
<p>17. Provide directions to the project site from the nearest city or town. List any special access requirements: <u>From Page, AZ travel southwest on highway 89 and turn right (north) on highway 89A to Marble Canyon and Lees Ferry. Turn right on road to Lees Ferry and drive down to turn right on paved road to parking area at Paria Beach.</u></p>			
Environmental Contaminant Location Information			
<p>1. Does your project site contain known environmental contaminants? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO If yes, please identify the contaminant(s) and enclose data about the location and levels of contaminants: <u>n/a</u></p> <p>2. Are there known environmental contaminants in the project vicinity? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO If yes, please identify the contaminant(s) and enclose data about the location and levels of contaminants: <u>n/a</u></p> <p>3. Are you asking for Arizona Water Protection Fund monies to identify whether or not environmental contaminants are present? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p>			

5) Scope of Work

Task 1: Obtain Permits, Authorizations, Clearances and Agreements.

Task Purpose/objective: Compliance with all local, state, and federal permit requirements and laws.

Task Description: Obtain permits, clearances, authorizations and agreements. Grantee shall obtain and submit to the Project Manager all necessary permits, authorizations, clearances and agreements required to complete the tasks listed in the Scope of Work. The requirements shall be met before any ground disturbing work is performed and shall include, if necessary:

- National Environmental Policy Act (NEPA) Environmental Assessment (EA), Finding of No Significant Impact (FONSI), and Decision Record (DR).
- May include burn permit, AGFD, and USFWS permits, depending on implementation plan.
- Endangered Species Act (ESA) consultations.
- Subcontractor agreements.
- Copy of Cooperative Agreement between NPS and Grand Canyon Wildlands Council.
- Grantee shall submit to the Project Manager all documentation necessary to obtain a State Historic Preservation Office (SHPO) clearance, including an archeological survey. Upon receipt of the documentation, the Project Manager shall forward the documentation to SHPO for its review. SHPO clearance shall be obtained prior to initiation of any ground disturbing work.

Deliverable Description: Progress and Final Reports on acquisition of permits and compliance, containing:

- 1.1) Copies of all permits, clearances, authorizations and agreements necessary for project implementation and operation and maintenance activities, including NEPA and ESA documentation;
- 1.2) Copies of sub-contractor agreements;
- 1.3) Copy of GLCA-GCWC Cooperative Agreement;
- 1.4) Copy of SHPO clearance, including archaeological survey;
- 1.5) Copy of construction requirements and consultations.

Deliverable Due Date: 1 November 2019

AWPF Reimbursable Cost: \$15,656

Task 2: Compilation and Assessment of Background Information.

Purpose/objective: To draw together results to date on site mapping and manipulation, historic map photo assessment, and review invertebrate, herpetofauna, bird, and mammal history and distribution in the study reach. To develop/provide relevant background information and high resolution maps for restoration design, maintenance, restoration, and monitoring of Paria Beach.

Task Description: The grantee will acquire land survey data for Paria Beach from the USGS and will produce 0.5 m contour site maps for monitoring comparison and site design planning. The Grantee will review historic photos from 1973, 1984, 1992, 2002, 2005 to assess habitat configuration through time at Paria Beach to inform restoration design plans. The grantee shall compile and review relevant historical information on the distribution and history of wetland and riparian invertebrates, herpetofaunae, birds, and mammals in the study reach. The information

compiled on herpetofauna bird, mammal, and invertebrate data will be used to inform the wildlife monitoring plan for Paria Beach, using the Lees Ferry restoration site as a scientific control.

Deliverable Description: A report including the following:

- 2.1) Paria Beach topographic and vegetation maps;
- 2.2) Historic aerial photo analysis report for Paria Beach;
- 2.3) Review of distribution changes, habitat configuration, and habitat requirements for invertebrates, herpetofauna, avifauna, and mammals in the study reach.

Deliverable Due Date: 1 August 2019

AWPF Reimbursable Cost: \$13,860

Task 3: Develop restoration, maintenance, and monitoring plans for the site.

Purpose/objective: To develop plans for implementation tasks.

Task Description: Grantee shall develop plans for:

- 3.1) Paria Beach restoration, irrigation, and maintenance plan;
- 3.2) Paria Beach vegetation monitoring plan;
- 3.3) Paria Beach wildlife monitoring plan;
- 3.4) Photo monitoring plan.

Deliverable Description: Preparation of plans for tamarisk control, site restoration, native phreatophyte revegetation, and monitoring.

Deliverable Due Date: 1 November 2019

AWPF Reimbursable Cost: \$25,148

Task 4: Monitor Paria Beach Vegetation and Invertebrate, Herpetofaunal, Bird, and Mammal Populations

Purpose/objective: To implement the monitoring plan. Data gathered will be used to document the pre-treatment conditions, evaluate project success, and assess potential applicability of these techniques elsewhere in GLCA by the NPS.

Task Description: Monitoring will be conducted through photo-monitoring, and measurement of planting success and plant survival; as well as invertebrate and vertebrate presence and distribution. The Grantee will establish upstream and downstream photo points on the site from the surrounding uplands. The photopoints will be georeferenced and clearly marked, and site photographs will be rematched on a quarterly basis from 2019-2022. Revegetation monitoring will be conducted by documenting growth and any mortality of planted phreatophytes at the beginning and end of each growing season. Monitoring will be conducted on the wetland/riparian invertebrates and terrestrial vertebrates at Paria Beach and at the Lees Ferry control site, using the techniques described in the Supplemental plan descriptions below. The Grantee will initiate monitoring of wetland and riparian wildlife at Paria Beach and Lees Ferry during the growing season prior to treatment. Quarterly trips are planned during the growing season (spring, summer, and fall) for invertebrates and herpetofauna, 2 trips/yr are planned for mammals (spring and fall), and avian monitoring will take place monthly from April-June, and quarterly thereafter (6 trips/yr). This process will provide the NPS with a monitoring program to compare the wildlife at the treated site with existing conditions at the Lees Ferry restoration control site.

Deliverable Description: Reports on vegetation and wildlife monitoring, including information management.

Deliverable Due Date: Quarterly reports beginning 1 July 2019 and Annual reports 31 January 2020, 2021.

AWPF Reimbursable Cost: \$47,009

Task 5: Paria Beach Restoration Plan Implementation, Including Tamarisk Removal and materials disposal and Methods Refinement, Native Plant Pole Planting and Seeding, Irrigation installation, and Site Maintenance.

Purpose/objective:

The purpose of this task is to implement the project plan (Task 3, above), including removal of tamarisk, establishment of an irrigation system, site revegetation with native stock, and site maintenance. This suite of activities and practices worked well at Lees Ferry and Hidden Slough restoration sites (Stevens et al. 2015).

Task Description:

5.1) Tamarisk Removal: Using the implementation plan, the Grantee will initiate site restoration by clearing the dead and dying tamarisk from the site. We will use volunteer labor to cut, stack, chip, and remove or burn the tamarisk slash. Disposal of slash will be at the discretion of the NPS, and the cut slash may be transported to an NPS staging area, or burned on site. Based on our efforts at Hidden Slough upstream, we anticipate that cutting and slash piling on 1.5 ha (4 ac) of tamarisk will require 12 crew two weeks. Transport of the slash may require 2 weeks of time, unless the NPS permits the slash to be burned on site, by an approved fire crew.

5.2) Irrigation: The irrigation system will be installed and tested during the winter of 2019-2020. irrigated with two 3800 L (1000 gal) water tanks installed and camouflaged on the upper terraces. Water lines will be 1" diameter and smaller diameter feeder lines from the irrigation tanks to each planted phreatophyte. A submersible pump will be used to pipe Colorado River water up to the tanks for gravity driven irrigation back into the river bank.

5.3) Revegetation: Beginning in February 2020, the site will be revegetated with native, local stock of Goodding's willow, Box elder (*Acer negundo*), with minor cover of Fremont cottonwood on the lower terraces, and seed-planting of four-wing saltbush (*Atriplex canescens*) and inkweed (*Sueda torreyana*) on the upper terraces. Stock will be collected in the Lees Ferry area to ensure local genetic adaptation is maximized, and will be propagated at the NPS Page Arizona nursery. Plant stock will be transported to Lees Ferry for planting in February 2020. Trees will be planted on 8 m (25' centers) on the lower terraces (within 2 m of the normal high water line stage elevation), and individually fenced with 4' hogwire to protect the plantings from beaver depredation. Each plant will be separately numbered for monitoring purposes. The upper terraces will be liberally seeded with locally collected saltbush and inkweed seeds during rainy periods in both winter and summer of 2020 and 2021.

5.4) Site maintenance will be conducted semiweekly during the 2020 and 2021 growing seasons, and weekly during the winter months. All plants will be checked for the adequacy of the

water lines and fencing, and any necessary adjustments will be made. In addition the site will be weeded as needed, including ongoing removal of tamarisk resprouts (if any) and trash will be removed. Vandalism will be photo-documented and reported to the NPS.

Deliverable Description: Quarterly and annual implementation progress reports on tamarisk removal, installation of the irrigation system, revegetation, and site maintenance will be submitted to AWPf.

Deliverable Due Date: Quarterly reports will be submitted on 1 March, 1 July, 1 October, with annual monitoring reports due on 31 January in 2019-2022.

AWPF Reimbursable Cost: \$106,134

Task 6 Public Outreach: Subject to the desires of GLCA, achieve effective on site, online, and public education and outreach complemented by communications consistent with the NPS mission.

Purpose/objective: The Paria Beach receives intensive public visitation, and providing educational outreach on the importance of the site and the value of and need for riparian restoration and river conservation to river runners, anglers, and tourists will help the NPS achieve its mission of educating the public. In addition, the NPS will be apprised of the needs associated with this heavily used site, including maintaining a public restroom, parking lot maintenance, and litter cleanup and management.

Task Description: The Grantee will implement the education and outreach plan that will include NPS-approved signage on the significance of the site and its restoration. An existing public bathroom facility at the site will be evaluated to determine the need for repair or replacement. The NPS will be responsible for payment and maintenance or reconstruction of that facility and any access infrastructure, if warranted. Pending discussion with NPS, outreach materials and information will be developed for on site, online and public presentation.

Deliverable Due Date: Quarterly reports will be submitted on 1 March, 1 July, 1 October, with annual monitoring reports due on 31 January in 2019-2022.

AWPF Reimbursable Cost: \$25,725

Task 7: Final Report

Purpose/objective: A final report on the overall project will be presented, both to inform AWPf as to project success, and to help guide the next steps of riparian restoration in GLCA. The report will include an evaluation of restoration and monitoring techniques, and how they may contribute to riparian restoration of the next prioritized sites in the reach.

Task Description: The Grantee will prepare and submit a comprehensive final report consistent with the Final Report Guidelines in AWPf Policies and Application Guidelines Manual.

Deliverable description: The final report will include a summary of tasks, methods used, outcomes, analyses of project data, and suggestions for future changes needed on the project site, as well as an evaluation of the project's success measured against the objectives.

Deliverable due date: 28 February 2022

AWPF Fixed Cost: \$18,690

Cost Proposal for GCWC Glen Canyon NRA PARIA BEACH RESTORATION 2019-2022

Task	Type of Cost	Item	Job Classification	Qty	Unit	Unit Cost	Total
1. Obtain Permits, Authorizations, Clearances and Agreements							
Direct Labor Costs	Salary	Apply for and obtain permits	Project Scientist	80	hour	\$85	\$6,800
			Project Coordinator	80	hour	\$65	\$5,200
			Field Coordinator	20	hour	\$45	\$900
Other Direct Costs	Office charges	Postage, paper, phone		1	all	\$500	\$500
	Travel/vehicle rental and gas	3 round trips from Flagstaff to Page		6	day	\$125.00	\$750
		1 round trips from Flagstaff to Prescott		1	day	\$125.00	\$125
	Per diem	3 round trips from Flagstaff to Page		10	days	\$35	\$350
	Lodging			3	night	\$100	\$300
<i>Subtotal</i>	<i>all</i>	<i>all</i>	<i>all</i>	<i>all</i>	<i>all</i>	<i>all</i>	<i>\$14,925</i>
Administrative costs 5%	Administrative overhead (5%)	all	all	all	all	all	\$731
Total Task 1 Cost	all	all	all	all	all	all	\$15,656
2 Compilation and Assessment of Background Information							
Outside Services	Salary	Multi-layered GIS Map	GIS map services	60	hour	\$75	\$4,500
Direct Labor Costs	Salary	Historical and vegetation map and photo assessment	Project Scientist	40	hour	\$85	\$3,400
		Compile existing historical & monitoring data - Report	Project Scientist	20	hour	\$85	\$1,700
		Report	Project Coordinator	40	hour	\$65	\$2,600
	Office charges	Postage, paper, phone, printing		1	all	\$1,000	\$1,000
<i>Subtotal</i>	<i>All</i>	<i>All</i>	<i>All</i>	<i>All</i>	<i>All</i>	<i>All</i>	<i>\$13,200</i>
Administrative costs	Administrative costs 5%	All	All	All	All	All	\$660
Total Task 2 Cost	All	All	All	All	All	All	\$13,860
Task 3. Prepare Plans							
Direct Labor Costs	Salary	Plan preparation	Project Coordinator	80	hour	\$65	\$5,200
		Plan preparation	Project Scientist	160	hour	\$85	\$13,600
		Plan preparation	Field Coordinator	80	hour	\$45	\$3,600
		Report Production	Project Reporting Manager	30	hour	\$35	\$1,050
Other Direct Costs	Office charges	Postage, paper, phone		1	all	\$500	\$500
<i>Subtotal</i>	<i>All</i>	<i>All</i>	<i>All</i>	<i>All</i>	<i>All</i>	<i>All</i>	<i>\$23,950</i>
Administrative costs	Administrative costs 5%	All	All	All	All	All	\$1,198
Total Task 3 Cost	All	All	All	All	All	All	\$25,148
Task 4. Monitor Wildlife.							
Direct Labor Costs	Salary	Conduct monitoring	Project Scientist	40	day	\$400	\$16,000
		Field biologist	Field biologist	26	day	\$200	\$5,200
		Reporting	Project Scientist	80	hour	\$85	\$6,800
		Reporting	Project Coordinator	50	hour	\$65	\$3,250

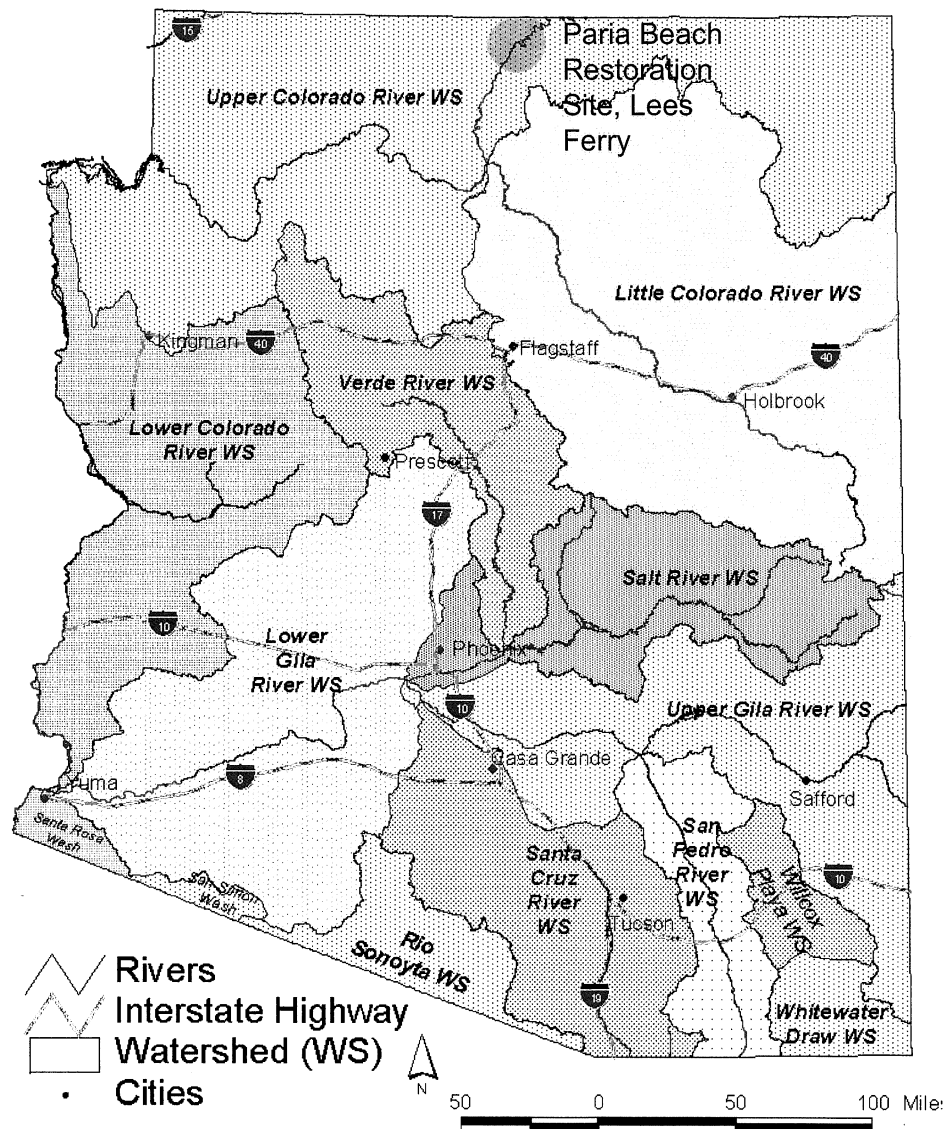
		Report Production	Project Reporting Manager	40	hour	\$35	\$1,400
Other Direct Costs	Travel	Per diem	Project Scientist	80	day	\$35	\$2,800
		Per diem	Field biologist	52	day	\$35	\$1,820
		Travel, vehicle rental, gas		40	day	\$125.00	\$5,000
		Equipment, traps, bait, specimen containers, binoculars		1	each	\$2,000	\$2,000
	Office charges	Postage, paper, phone		1	all	\$500	\$500
Subtotal	All	All	All	All	All	All	\$44,770
Administrative costs	Administrative costs 5%						\$2,239
Total Task 4 Cost	All	All	All	All	All	All	\$47,009
Task 5. Paria Beach Restoration Implementation and Maintenance.							
Direct Labor Costs	Salary						
		Field Workers, 4 per@\$150/d (Pole planting, seed collection, and seed planting)	Field Assistant	40	day	\$150	\$6,000
		Field worker, 2 per@\$150 (weeding and trash pick up)	Field Assisstant	24	day	\$150	\$3,600
		Field Workers, 3 per@\$150/d (Irrigation works installation and removal)	Field Assisstant	9	day	\$750	\$6,750
		Progress Reports (3)	Project Scientist	40	hour	\$85	\$3,400
		Progress Reports (3)	Project Coordinator	40	hour	\$65	\$2,600
		Progress Reports (3)	Project Reporting Manager	25	hour	\$35	\$875
Outside Services	Salary	Supervise and conduct implementation, irrigation, planting, weeding, trash pick up	Field Coordinator	48	day	\$400	\$19,200
		Tamarisk removal, field work (subcontracted, bid)	contract labor - Field Crew	1	each	\$12,000	\$12,000
		Burn crew (subcontracted) 4 crew x 4 days	contract labor - Field Crew	1	each	\$3,200	\$3,200
		Backhoe operator	contract labor	56	hour	\$100	\$5,600
Other Direct Costs	Various	Per Diem		110	person/day	\$35	\$3,850
		Horizontal grinder rental		1	week	\$16,000	\$16,000
		Fuel and fluids for grinder and saws		1710	gal	\$3	\$5,130
		Travel, vehicle rental, gas		15	day	\$125.00	\$1,875
		Equipment, water auger, loppers, hand saws, chain saws, chains, grinder, 12-volt battery, files, and motor maintenance, hogwire, hard hats, gloves, eye/ear protection		1	each	\$8,500	\$8,500
		irrigation materials and tanks		1	each	\$2,000	\$2,000
	Office charges	Postage, paper, phone		1	all	\$500	\$500
Subtotal	All	All	All	All	All	All	\$101,080
Administrative costs	Administrative costs 5%						\$5,054
Total Task 5 Cost	All	All	All	All	All	All	\$106,134

Task 6. Public Outreach.							
Direct Labor Costs	Salary	Create outreach materials	Project Coordinator	100	hour	\$65	\$6,500
		Public and professional presentations, publications	Project Scientist	40	hour	\$85	\$3,400
Outside Services		Outreach material production	Outreach Associate	40	hour	\$25	\$1,000
		Volunteer outreach and promotion, logistics	Field Coordinator	100	hour	\$45	\$4,500
		Volunteer outreach and promotion, logistics	Field Assistant	200	hour	\$25	\$5,000
		Materials graphics	Graphics Designer	40	hour	\$50	\$2,000
Other Direct Costs	Various	Per diem		10	person/day	\$35	\$350
		Vehicle rental, gas		10	day	\$125	\$1,250
	Office charges	Postage, paper, phone, printing		1	all	\$500	\$500
<i>Subtotal</i>	<i>All</i>	<i>All</i>	<i>All</i>	<i>All</i>	<i>All</i>	<i>All</i>	<i>\$24,500</i>
Administrative costs	Administrative costs 5%						\$1,225
Total Task 7 Cost	All	All	All	All	All	All	\$25,725
Task 7. Final Report							
Direct Labor Costs	Salary	Draft and final report preparation and presentation	Project Scientist	100	hour	\$85	\$8,500
		Draft and final report preparation	Project Coordinator	100	hour	\$65	\$6,500
Outside Services		Draft and final report preparation	Field Coordinator	40	hour	\$45	\$1,800
		Final Report production	Report Manager	20	hour	\$25	\$500
							\$0
	Office charges	Postage, paper, phone, printing		1	all	\$500	\$500
<i>Subtotal</i>	<i>All</i>	<i>All</i>	<i>All</i>	<i>All</i>	<i>All</i>	<i>All</i>	<i>\$17,800</i>
Administrative costs	Administrative costs 5%						\$890
Total Task 10 Cost	All	All	All	All	All	All	\$18,690
TOTAL PROJECT COST	All	All	All	All	All	All	\$252,221

Matching

Hidden Slough and Leopard Frog Marsh Restoration Project					
Detailed Budget Breakdown		Applicant: \$37,319			
Matching Funds					
1: Obtain Permits, Authorizations, Clearances and Agreements					
		<i>Qty</i>	<i>Unit</i>	<i>Unit Cost</i>	<i>Total</i>
Outside services:					
	GLCA Biologist	30	hr	48	1440
	GLCA Chief Scientist	20	hr	62	1240
	GLCA Env. Protection Spec.	30	hr	48	1440
	GLCA Chief of Planning & Co	20	hr	51	1020
	GLCA Archeologist	20	hr	48	960
Administrative:	AWC	1	task amount	25% (30%-5%)	225
Administrative:	GCWC	1	task amount	25% (30%-5%)	3506
					9831
2: Compilation, Evaluation, Assessment, Review					
Outside services:	GLCA Biologist	15	hr	48	720
Administrative:	GCWC	1	task amount	25% (30%-5%)	3300
					4020
3: Prepare Plans					
Outside services:	GLCA Biologist	30	hr	48	1440
Administrative:	GCWC	1	task amount	25% (30%-5%)	4825
Administrative:	AWC	1	task amount	25% (30%-5%)	1162
					7427
4. Monitor Wildlife					
Outside services:	GLCA Biologist	20	hr	48	960
	GLCA Chief Scientist	5	hr	62	310
Administrative:	AWC	1	task amount	25% (30%-5%)	1650
Administrative:	GCWC	1	task amount	25% (30%-5%)	9693
					12613
5.Paria Restoration, Implementation and Maintenance					
Outside services:					
	GLCA Biologist	40	hr	48	1920
	GLCA Biological Science Tech	40	hr	28	1120
	Volunteers	2012	hr	11	22132
	AZRA Vehicles and operators	8	trip	500	4000
Administrative:	AWC	1	task amount	25% (30%-5%)	5675
Administrative:	GCWC	1	task amount	25% (30%-5%)	20251
					55098
6. Public Outreach					
Outside services:					
	GLCA Biologist	10	hr	45	450
	GCRG ED	30	hr	30	900
Administrative:	AWC	1	task amount	25% (30%-5%)	2625
Administrative:	GCWC	1	task amount	25% (30%-5%)	3500
					7475
7. Final Report					
	GLCA Biologist	10	hr	48	480
Administrative:	AWC	1	task amount	25% (30%-5%)	575
Administrative:	GCWC	1	task amount	25% (30%-5%)	3875
					\$4,930
					101394
			Total matching funds		

Arizona Watershed Map FY 2019



Title of Project: Paria Beach Riparian Restoration in GLen Canyon National Recreation Area, Lees Ferry, Arizona

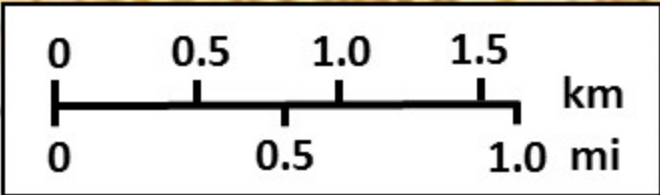
Location (include UTM's & Township/Range/Section): UTM Zone 12, Easting =446093, Northing: 4079042, T=0400N, R=0070E, S=023, 024
(Location must include at least one Section delineation for large scale projects)



**Glen Canyon
National Recreation Area**



Paria Beach



Grand Canyon National Park

Paria Beach restoration area

Colorado River

Colorado Riv

SITE PHOTOS, PARIA BEACH RESTORATION



9) Supplemental Information

Key Personnel

Project Coordinator: Kelly J. Burke is the Director of the Grand Canyon Wildlands Council. Starting as a volunteer in March 1996, then as consultant and eventually staff, she cofounded and directed the organization. She coordinates the programs, outreach, and fundraising for the Wildlands Council, as well as participates in the regional ecological assessments and analyses. She received a B.A. with honors in Geology/Art History from the University of California, Santa Barbara and an M.S. in Structural Geology from Northern Arizona University. Ms. Burke has 14 years experience in geological mapping including six years of research trips down the Colorado River in Grand Canyon.

Brian Stultz is Arizona Wilderness Coalition's (AWC's) experienced Stewardship Director, an Arizona native and a U.S Military Veteran. Mr. Stultz, advanced from a volunteer to the full-time "Wild Stew" program director. As director for Wild Stew, Brian is the Project Manager for each volunteer and paid-crew project, and responsible for expanding longer-term restoration projects, for growing the Veterans in Wilderness program, and for most volunteer recruitment, training and education. He is a Prescott College graduate with a Bachelor of Arts in Adventure Education and Environmental Studies, with extensive research and field experience. Mr. Stultz's research has included work on the Prescott National Forest, Great Basin National Park, and in Estero Santa Cruz, Mexico. He has conducted fire ecology monitoring projects, which included research design, data collection, and spatial analysis of plant communities (with the use of GIS) in several different ecosystems. He has an extensive background in professional tree care to include the removal of hazard trees within residential areas and providing professional guidance on creating Firewise communities, knowledge he gained through his employment as a professional firefighter.

Mr. Stultz has successfully hosted and directed over 92 stewardship trips including AWC's first Veterans in Wilderness project in 2015, where he coordinated with local and statewide veterans' groups to offer service opportunities and retreat to veterans in the southwest. Brian has co-authored a funded proposal to the National Fish and Wildlife Foundation to improve wildlife habitat and riparian health, leading to the temporary hire of a conservation crew to plant native vegetation in the Hassayampa River Canyon. He has built connections with BLM recreation staff through Arthur Carhart National Wilderness Training Center conferences and other venues, expanding AWC's reach to complete project work on BLM lands. Brian has further grown AWC's Individual Stewards program to encompass BLM wilderness, training and recruiting a committed volunteer to steward Aravaipa Canyon Wilderness under the direction of BLM's wilderness manager for the area.

Lonnie Pilkington serves as Natural Resources Program Manager at Glen Canyon National Recreation Area and Rainbow Bridge National Monument. Since 1999, he has spent much of his time engaging the next generation in native plant restoration efforts on National Park Service lands. Lonnie enjoys facilitating partnerships who share the common goal of connecting youth to the great outdoors. Lonnie received his Bachelor of Business Administration in Management

from West Texas A&M University, and a Master of Science in Rangeland Ecosystem Science from Colorado State University.

Dr. Lawrence E. Stevens is the Senior Ecologist for Grand Canyon Wildlands Council, as well as the Curator of Ecology and Conservation at the Museum of Northern Arizona.. He received his undergraduate degree from Prescott College (1974) and his MS (1985) and Ph.D (1989) from Northern Arizona University in Flagstaff, Arizona. He is an avid natural historian and river runner, and has spent the past 40 years engaged in ecological research on rivers in the American Southwest. His studies have focused on native and non-native plant-herbivore interactions in riparian habitats, as well as linkage between riparian and aquatic components of aridlands fluvial ecosystems, particularly the Colorado River in the Grand Canyon. Dr. Stevens was the project lead for Grand Canyon Wildlands Council for the Lees Ferry and Hidden Slough restoration projects in Glen Canyon National Recreation Area, and tamarisk ecology and dendrochronology projects in Grand Canyon National Park. Dr. Stevens will oversee information compilation and planning, and will assist with site restoration planning and implementation.

Description of Monitoring/Sampling Plans

Paria Beach Wildlife Monitoring Plan (Task 3) will involve plan development and the following monitoring activities at Paria Beach and the Lees Ferry restoration sites. Monitoring will be reported on a quarterly basis, as described in Task 4.

- The Grantee will monitor the pre-treatment and post-treatment condition and responses of invertebrates and vertebrates. Monitoring invertebrates in spring and fall by: a) placement of a Malaise trap for 24 hr, b) UV light trapping for 2 hr/night for one night/site in springtime and fall, c) diurnal spot sampling with aerial sweep netting, including sampling of tamarisk leaf beetle density, and d) placement of 10 colored pan traps at 2 m intervals in both the lower and middle riparian zones at each site, each containing 50 ml of soapy water. Invertebrate specimens will be identified to the lowest taxonomic level, enumerated, and prepared for curation at the Museum of Northern Arizona in Flagstaff, with vouchers provided to the NPS if so requested. Monitoring of diurnal and nocturnal herpetofauna on 3 timed, 100 m walks on a 5 m-wide belt through the project area at each of the four sites. Herpetofauna will be monitored nocturnally as well on the sites. All species will be identified to species (captured and released if necessary) and enumerated. Weather conditions and comments will be recorded for each monitoring run, Avifauna will be monitored monthly from April-June, and seasonally thereafter at each site. Avifaunal monitoring will involve on 3 timed, 100 m walks on a 10 m-wide belt through the project area at each of the four sites. All species will be identified to species and enumerated. Weather conditions and comments will be recorded for each monitoring run. Mammals will be monitored using 100 oat-baited Sherman live traps placed at 5 m intervals on three 100 m transects parallel to the river twice annually in pre-treatment

year 1 and post –treatment Year 3. All animals captured will be identified, sexed, weighed, and their reproductive condition will be noted

- The Grantee will monitor site conditions following the implementation plan to document vegetation recovery of the site. The Grantee will document the extent of resprouting of tamarisk following removal and treatment, tamarisk die-back related to beetle kill, and any tamarisk recolonization (none is expected, as none occurred at the Lees Ferry or Hidden Slough restoration sites). Planted phreatophyte growth (stem length increase) and survival of 50 randomly selected, marked native plants of each replanted species will be monitored at the beginning and end of the growing season. The revegetation monitoring also will document the general health and appearance of each plant measured. In addition, the grantee will conduct and report the visually-estimated percent aquatic, ground-, shrub-, and tree-cover of each plant species in each discrete habitat to describe the structure of the recovering vegetation.
- The Grantee also will document any natural changes or recreation impacts or threats to the site. Photographic monitoring will be conducted according to the protocols of AWPF, from several fixed points during each monitoring run. Data will be managed in Excel or Access format for rapid reporting, archival, and report submission to AWPF.

Paria Beach Maintenance Plan (Tasks 3, cont'd): The site maintenance plan (Task 3) and implementation (Task 5) will describe and implement several maintenance elements. The site maintenance plan will be informed by the site monitoring plan, and will emphasize: 1) the staffing and timing of maintenance activities; 2) the timing of removal of any surviving or recolonizing non-native tamarisk, 3) any site recontouring or adjustment to the watering schedule; 4) the timing, transport, and disposal, reuse, or storage of irrigation materials; 5) replacement of native plantings; and 6) other site maintenance activities. Maintenance also will entail examination of the condition of the beaver fencing and the irrigation lines, and potential vandalism, and will be conducted twice weekly during the growing season (15 Mar-15 Oct), and biweekly thereafter, or as needed. The plan also will include recommendation to GLCA about the timing and maintenance of long-term site and information management.

Description of Revegetation/Restoration Plans or Research Designs

Task 3 (part): The Paria Beach Restoration Plan will focus on: 1) manual removal of remaining tamarisk stems, with resprout mortality facilitated by tamarisk leaf beetle attack; 2) removal of other fire hazards; 3) seeding the middle riparian zone terrace with *Sueda* and saltbush, and pole planting Goodding's willow, Box elder, and limited Fremont cottonwood in the lower riparian zone; and installation of temporary irrigation works, which will be removed after the project is completed. This plan will be developed using a 0.5 m contour site base map,

and may include manual recontouring of unstable points near ephemeral tributary mouths. The plan will include definition of metrics of success.

Task 3.6. Glen Canyon Restoration Outreach/Education Plan: The outreach plan will include description of the target audiences (general public, river rafters, anglers, scientific community, etc.) in relation to NPS information strategies. The plan will consider: a) the assemblage of restoration information, b) the timing of information release, and c) how to reach the various audiences most effectively. The plan may consider: regular information updates (information sheets or a poster at Paria Beach); public presentations on-site, in local schools, or to the visiting public; new releases; and scientific publication of the results (e.g., Stevens et al. 2015). The Paria Beach restoration site is a day-use picnic site, and information will be made available on-site at or near the existing historic signage, if the NPS so wishes. The outreach plan will include recommended timing of activities and metrics of success.

Existing Plans, Reports, Information Relevant to the Project

Restoration planning and implementation in the Glen Canyon reach of the Colorado River is based on the enabling legislation of Glen Canyon National Recreation Area (1972), which is “... to provide for public outdoor recreation use and enjoyment of Lake Powell and lands adjacent thereto... and to preserve scenic, scientific, and historic features contributing to public enjoyment of the area.” Other relevant legislation influencing riparian restoration in this reach includes: the Antiquities Act of 1907, the body of laws regulating water storage and release from Glen Canyon Dam (known as “the Law of the River” and beginning with the Colorado River Compact of 1922), the Endangered Species Act (1972, as amended), the Grand Canyon Protection Act (1992), and the 2006 NPS Management Guidelines and updated Code of Federal Regulations. Collectively, this federal and state legal guidance provides for riparian restoration along the Colorado River in GLCA. In addition, GLCA has produced a General Management Plan and specific management plans for the Glen Canyon Reach. Of most relevance to the restoration actions proposed here is “The Colorado River Riparian Revegetation Plan” (November, 2008), a plan that describes the background and justification for restoration of the reach..

The GLCA recently developed an additional reach-wide plan to guide river corridor restoration, but without funding for Paria Beach (Spence 2018, unpublished). The plan has the following objectives for this reach of the Colorado River as follows: 1) control exotic plants affected by dam operations, including tamarisk and other highly invasive species; 2) develop an adaptive monitoring plan to monitor success of restoration efforts, working in coordination with the U.S. Geological Survey, Grand Canyon National Park, and Tribal and NGO partners; 3) develop native plant materials for replanting through existing GLCA programs; 4) restore, protect, and monitor desirable habitat by replanting native plant species to priority sites along the river corridor, including native species of interest to tribes, with protection of plantings from herbivory by beavers; 5) manage vegetation to assist with cultural site protection if necessary; and 6) coordinate NPS research and administrative use permits and necessary compliance activities.

Where possible, and limited by agency staffing and funding, GLCA will provide support monitoring design and studies on plant materials for propagation, in accord with this plan, in addition to cultural and physical sciences.

Grand Canyon Wildlands Council, Inc. has, since 1998, been a leading advocate for science-based conservation of the Grand Canyon ecoregion. Based in Flagstaff, Arizona, the mission of GCWC is to protect and restore native species and natural ecosystems throughout the 35,000 square kilometers of the Grand Canyon drainage basin. GCWC works towards these goals by collaborating with agencies, tribes, ngos and private citizens to facilitate thoughtful natural resources stewardship.

Thus the proposal presented here is in full accord with the mission and objectives of GLCA and GCWC, and funding support for the project will improve wildlife habitat, public enjoyment of the restored Colorado River sandbar habitat, and fulfill agency and the GCWC mission.

References cited are available on request.

STATE HISTORIC PRESERVATION OFFICE

Review Form

In accordance with the State Historic Preservation Act (SHPO), A.R.S. 41-861 *et seq.*, effective July 24, 1982, each State agency must consider the potential of activities or projects to impact significant cultural resources. Also, each State agency is required to consult with the State Historic Preservation Officer with regard to those activities or projects that may impact cultural resources. Therefore, it is understood that **recipients of state funds are required to comply with this law** throughout the project period. All projects that affect the ground-surface that are funded by AWPf require SHPO clearance, **including those on private and federal lands.**

The State Historic Preservation Office (SHPO) must review each grant application recommended for funding in order to determine the effect, if any, a proposed project may have on archaeological or cultural resources. To assist the SHPO in this review, the following information **MUST** be submitted with each application for funding assistance:

- A completed copy of this form, and
 - A United States Geological Survey (USGS) 7.5 minute map
 - A copy of the cultural resources survey report if a survey of the property has been conducted, and
 - A copy of any comments of the land managing agency/landowner (i.e., state, federal, county, municipal) on potential impacts of the project on historic properties.
- NOTE: If a federal agency is involved, the agency must consult with SHPO pursuant to the National Historic Preservation Act (NHPA); a state agency must consult with SHPO pursuant to the State Historic Preservation Act (SHPA),
- OR**
- A copy of SHPO comments if the survey report has already been reviewed by SHPO.

Please answer the following questions:

1. Grant Program: Capital
2. Project Title: Paria Beach Riparian Restoration in Glen Canyon National Recreation Area, Lees Ferry, Arizona
3. Applicant Name and Address: Grand Canyon Wildlands Council, 316 E. Birch Ave., Flagstaff, AZ 86001
4. Current Land Owner/Manager(s): National Park Service
5. Project Location, including Township, Range, Section: 23, 24, 40N, 7E
6. Total Project Area in Acres (or total miles if trail): 5 acres
7. Does the proposed project have the potential to disturb the surface and/or subsurface of the ground?
☒ YES ☐ NO
8. Please provide a brief description of the proposed project and specifically identify any surface or subsurface impacts that are expected: Project consists of 1) cutting and removing tamarisk and possible surficial burning, 2) pole planting and seeding of native species, watering and weeding, 3) monitoring and maintenance. Surface or subsurface impacts may be inserting pole plantings and hand removal of small tamarisk.

9. Describe the condition of the current ground surface within the entire project boundary area (for example, is the ground in a natural undisturbed condition, or has it been bladed, paved, graded, etc.). Estimate horizontal and vertical extent of existing disturbance. Also, attach photographs of project area to document condition: The current ground surface varies with much of the site surface beach sand and sandy terraces, at lower elevations these are within the disturbance area of Paria River floods and Colorado River flows, thick layer of tamarisk debris under the tree cover. There are some erosional cuts formed where hillslope drainage crosses the vegetated area, a foot trail area of disturbed/hardened ground, and a bouldery area of debris flow material.

10. Are there any known prehistoric and/or historic archaeological sites in or near the project area? ☒ YES
☐ NO

11. Has the project area been previously surveyed for cultural resources by a qualified archaeologist? ☒ YES
☐ NO ☐ UNKNOWN

If YES, submit a copy of the survey report. Please attach any comments on the survey report made by the managing agency and/or SHPO See: Fairley, H.C. and S co-authors, 1994, The Grand Canyon river corridor survey project - archeological survey along the Colorado River between Glen Canyon Dam and Squaw Valley Canyon, U.S. Bureau of Reclamation Glen Canyon Environmental Study, NPS Cooperative Agreement No. 94A-40-07920, Flagstaff.

12. Are there any buildings or structures (including mines, bridges, dams, canals, etc.), which are 50-years or older in or adjacent to the project area? ☐ YES ☒ NO

If YES, complete an Arizona Historic Property Inventory Form for each building or structure, attach it to this form and submit it with your application.

13. Is your project area within or near a historic district? ☒ YES ☐ NO

If YES, name of the district: Lees Ferry

Please sign on the line below certifying all information provided for this application is accurate to the best of your knowledge.

Kelly Burke 9/6/2018
Applicant Signature /Date

Kelly Burke
Applicant Printed Name

FOR SHPO USE ONLY

SHPO Finding:

- ☐ Funding this project will not affect historic properties.
☐ Survey necessary – further GRANTS/SHPO consultation required (*grant funds will not be released until consultation has been completed*)
☐ Cultural resources present – further GRANTS/SHPO consultation required (*grant funds will not be released until consultation has been completed*)

SHPO Comments:

For State Historic Preservation Office:

Date:



United States Department of the Interior

NATIONAL PARK SERVICE
Glen Canyon National Recreation Area
Rainbow Bridge National Monument
P.O. Box 1507
Page, Arizona 86040
(928) 608-6200



IN REPLY REFER TO:

September 6th, 2018

Arizona Water Protection Fund Commission
c/o Department of Water Resources
3550 N. Central Avenue
Phoenix, AZ 85012

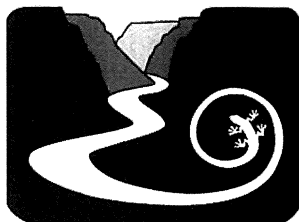
Dear Commissioners:

This letter is in support of the grant proposal entitled ***Paria Beach Riparian Restoration in Glen Canyon National Recreation Area, Lees Ferry, AZ*** submitted by the Grand Canyon Wildlands Council. This project will help the National Park Service implement the Colorado River Riparian Revegetation Plan for preserving and enhancing native plant communities and wildlife habitat within the Colorado River corridor in Glen Canyon National Recreation Area.

The staff at Glen Canyon National Recreation Area is committed to helping with the project and looks forward to working with the Arizona Water Protection Fund and the Grand Canyon Wildlands Council to complete this important project on lands administered by Glen Canyon National Recreation Area. We intend to complete a cooperative agreement with Grand Canyon Wildlands Council as part of Task 1 as written in the Scope of Work for the project and we are pleased to give access to the project site to Grand Canyon Wildlands Council. Water from the adjacent Colorado River will be used to establish and maintain riparian plant assemblages. If you have any questions please feel free to contact Lonnie Pilkington at 928-608-6269.

Sincerely,

Kenneth Hyde
Chief of Science and Resource Management



AZRA DISCOVERY

GRAND CANYON RAFTING

Arizona Water Protection Fund
Arizona Department of Water Resources
3550 N. Central Ave.
Phoenix, AZ 85012

Dear Commissioners,

I am writing both personally, and as the owner of Arizona Raft Adventures, L.L.C. (a Grand Canyon National Park concessioner), in support of Grand Canyon Wildlands Council's proposal to restore native riparian habitat at the Paria Beach. Every year we take 2000 people down the Colorado River in Grand Canyon on the premier multi day rafting adventure of a lifetime. We are deeply committed to conservation and to the quality of the river experience in this amazing place where we are so fortunate to run a thriving business and service to the public.

As the tamarisk beetle has invaded and denuded tamarisk trees all through the Canyon, our passengers are now seeing shoreline stands of the dark gray mostly dead trees in place of the bright green of healthy riparian forests. The songbirds and other small wildlife have all too rapidly lost vast reaches of habitat. The work to replace these degraded stands of tamarisk with native riparian trees is greatly needed.

We have partnered in conservation activities with Grand Canyon Wildlands Council for many years, know the staff personally and greatly respect their expertise and capability. We've seen first hand the wonderful results of the previous AWPf-funded restoration project at Lees Ferry where our trips launch. Over the past nearly 2 decades the cottonwoods and willows of that site have grown taller and taller, now adding lushness to a scenic first view of Lees Ferry and the River, as well as shade for visitors, an opportunity for them to learn about restoration, and native habitat for wildlife.

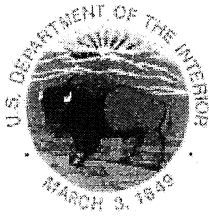
AzRA is committed to tangibly supporting the restoration work at Paria Beach by providing trucks and drivers for hauling trailers and equipment to and from the work site from Flagstaff as well as volunteer transportation, promoting the project to potential volunteers, and conducting project outreach developed by GCWC and NPS to our river passengers throughout the project duration and beyond.

This proposed restoration effort will directly benefit our local business. Thank you for the opportunity to support GCWC's proposal

Sincerely,

Fred Thevenin
Owner/Operator
Arizona Raft Adventures

Arizona Raft Adventures & Grand Canyon Discovery



United States Department of the Interior

NATIONAL PARK SERVICE
Glen Canyon National Recreation Area
Rainbow Bridge National Monument
P.O. Box 1507
Page, Arizona 86040
(928) 608-6200



IN REPLY REFER TO:

September 6th, 2018

Arizona Water Protection Fund Commission
c/o Department of Water Resources
3550 N. Central Avenue
Phoenix, AZ 85012

Dear Commissioners:

This letter is in support of the grant proposal entitled *Paria Beach Riparian Restoration in Glen Canyon National Recreation Area, Lees Ferry, AZ* submitted by the Grand Canyon Wildlands Council. This project will help the National Park Service implement the Colorado River Riparian Revegetation Plan for preserving and enhancing native plant communities and wildlife habitat within the Colorado River corridor in Glen Canyon National Recreation Area.

The staff at Glen Canyon National Recreation Area is committed to helping with the project and looks forward to working with the Arizona Water Protection Fund and the Grand Canyon Wildlands Council to complete this important project on lands administered by Glen Canyon National Recreation Area. We intend to complete a cooperative agreement with Grand Canyon Wildlands Council as part of Task 1 as written in the Scope of Work for the project and we are pleased to give access to the project site to Grand Canyon Wildlands Council. Water from the adjacent Colorado River will be used to establish and maintain riparian plant assemblages. If you have any questions please feel free to contact Lonnie Pilkington at 928-608-6269.

Sincerely,

Brin C. Hyman acting

Kenneth Hyde
Chief of Science and Resource Management



ARIZONA WILDERNESS COALITION

Working Together to Protect Arizona's Wild Lands and Waters

Arizona Water Protection Fund

Arizona Department of Water Resources

3550 N. Central Ave.

Phoenix, AZ 85012

September 6, 2018

Dear Commissioners,

Arizona Wilderness Coalition (AWC) is writing in full support of Grand Canyon Wildlands Council's proposal for Paria Beach habitat restoration planning, tamarisk control, and replanting with native riparian species.

Founded in 1979, AWC is a statewide organization whose mission is to permanently protect and restore wildlands and waters in Arizona for the enjoyment of all citizens while ensuring that Arizona's native plants and animals have a lasting home in wild nature. AWC's award-winning Stewardship program has a very successful track record of engaging communities through the extensive use of volunteers from across the state. Our Stewardship volunteers have improved thousands of acres of wilderness and habitat areas throughout Arizona. Specifically, one of our more recent projects included extensive work at Arnett Creek in reducing invasive tamarisk and oleander vegetation. Our volunteers, in partnership with a host of other nonprofit groups, treated nearly 3,000 tamarisk and removed nearly 1,300 pounds of oleander bushes.

AWC has committed to enter a contract agreement with GCWC for the services of our Stewardship Director Brian Stultz, who will be field coordinator and key personnel on the Paria Beach restoration project. We are also contributing matching funds equal to our administrative costs less the AWPf allowed 5% for our subcontract amount.

We have partnered in conservation activities with Grand Canyon Wildlands Council for many years, know the staff personally and greatly respect their expertise and capability. We look forward to providing support and assistance in this important restoration project.