

Section 2 – Implementation

The ARKWIPP plan up to this point (Section 1 - Background) has outlined the background of the ARKWIPP planning process, the general nature of the problem, important governmental actions, the site-specific problem in the study area, the natural resource impacts to water and wildlife habitat, recommended restoration approaches, and costs associated with those control and revegetation actions.

Section 2 – Implementation lays out a specific “path forward” for implementing the Plan, including a specific set of five actions to facilitate success.

The five actions include:

- 1. Develop Ways to Work with Landowners**
- 2. Develop and Provide Education, Outreach, and Volunteerism Programs**
- 3. Determine Research Needs**
- 4. Determine and Develop Long-Term Funding Mechanisms**
- 5. Determine and Develop a Long-Term Sustainability Program**

Develop Ways to Work with Landowners

ARKWIPP’s main objective is to restore riparian lands within the Arkansas watershed that have been degraded by woody invasive plants, principally tamarisk and Russian olive. To successfully implement these restoration actions, the property rights of each landowner must be respected to ensure that 1) efforts coordinate with the landowner’s specific objectives for the land and that 2) the landowner is included in restoration decision-making. Landownership includes public (federal, state, county, and local communities), legal subdivisions of the state (e.g., sanitation districts, drainage districts), private landowners, non-profits (e.g., The Nature Conservancy), commercial, and industry (e.g., Railroad and utility easements).

Because noxious weed control and riparian restoration are not normal components of most of these landowner activities, assistance is often needed to identify funding opportunities, apply for grants, and to administer grants. There is not precedence for who should be the lead for each situation; however, the following provides some general guidance for the ARKWWIPP partners.

- For private agricultural producers, the soil and water conservation districts are the most appropriate organizations to manage many of these grants, especially those grants from the USDA. The USDA Natural Resource Conservation Service (NRCS) and the Colorado Association of Conservation Districts website, www.ag.state.co.us/ccdd, is a good resource to assist these local districts in becoming significant partners with landowners and restoration activities.

- Counties and non-profits (e.g., The Nature Conservancy) can assist in acquiring grants for all entities, even for work on federal lands through some grant programs (e.g., National Fish and Wildlife Foundation).
- Each entity can pursue its own grant opportunities for the land that it manages.

Action #1

The ARKWIPP Technical Advisory Team and county weed managers along with the Colorado Association of Conservation Districts, USDA Natural Resource Conservation Service (NRCS), local Resource Conservation and Development (RC&D) representatives, Colorado State University (CSU) Extension, Colorado Division of Wildlife, United States Bureau of Reclamation (USBR), major federal and state landowners, The Nature Conservancy and the Tamarisk Coalition should develop the following:

1. Develop a GIS dataset of landownership for the riparian corridor impacted by the target invasive species.
2. Develop a communication system that informs county weed managers of all projects being conducted in their vicinity.
3. Post the ARKWIPP mapping project on the www.arkwipp.org website to assist landowners with identifying their tamarisk infestation levels.
4. Develop an interactive database for landowners that will determine proper control and revegetation methods for restoration. Because control and restoration methods are very site specific a contact list of agencies that would provide on-site analysis for landowners will be developed.

A concern of the ARKWIPP partners is that without coordination between all these entities, there will be undue competition for the same funds; entities will not be aware of all of the funding resources available; and/or there will be inefficiency in using funds that are acquired. To resolve this concern, the following is recommended:

5. Establish a simple clearinghouse system to inform all parties of grant opportunities. A list of grant opportunities (Appendix K) will be placed on the www.arkwipp.org and Tamarisk Coalition website, www.tamariskcoalition.org in the summer of 2008.
6. Create a prioritization system that could be used to screen grants and appropriate locations for restoration work. An example is provided in Appendix J, Example of a project prioritization system.

Develop and Provide Education, Outreach, and Volunteerism Programs

Gaining public support requires providing factual information that describes the problem and the solutions being initiated. Important information for the public understanding includes all aspects of the tamarisk and Russian olive problem; control approaches that will be used with significant emphasis on the biological

control component; how things will look differently over the next ten years; revegetation, biomass removal, monitoring, and long-term maintenance. *The overarching theme is RESTORATION not just tamarisk or Russian olive control.*

Action #2

Outreach expertise from counties, private landowners, major State and Federal landowners, Colorado State Forest Service, National Park Service, Colorado State Parks, The Nature Conservancy, CSU Extension, Denver Botanic Garden, USDA NRCS, Tamarisk Coalition and the ARKWIPP Technical Advisory Team should be used to develop materials appropriate for community and visitors to the areas.

1. The developed education and resource materials will be housed on the www.arkwipp.org website and will be accessible for reproduction by ARKWIPP partners as well as any interested entities. The website will be utilized as a resource tool for landowners and managers and it will enable others the ability to track the progress of the Plan as it is implemented. Key elements of the website may include:
 - A. The Problem: Why Tamarisk is a Problem, No-action Alternatives, and Frequently Asked Questions.
 - B. Problem Solutions: Control Methods, Biological Control, Biomass Potential, Riparian Restoration, Long-Term Management, and Success Stories.
 - C. Strategic Plans: Colorado and Other States.
 - D. Resource Materials and Links.
 - E. Funding: List of Funding Agencies and Organizations.
 - F. Manage Your Problem: Landowners database for sorting individual land use and infestation levels to determine proper control and restoration methods and resources for land managers on developing Weed Management Plans.
 - G. Tamarisk Maps
 - a. ARKWIPP mapping project.
 - b. Federal Emergency Management Agency Flood Plain Map of the Arkansas Basin.
 - c. Colorado State Forest Service Wild Land Fire Map of Arkansas Basin.
 - d. USDA NRCS Soil Survey Map of the Arkansas Basin.
 - H. Tamarisk and Russian Olive Research.
 - I. Education resources.
 - a. Brochures
 - b. Fact Sheets
 - c. Templates for a visual display
 - J. Forum to ask questions and share information
 - K. Current Events.
 - L. Volunteer Opportunities and Programs.
 - M. Who We Are and Contact Information.

2. Develop brochures for distribution through the visitor centers, Colorado State Parks, Division of Wildlife, wildlife refuges, USDA NRCS, Colorado State University Extension, etc.
 - A. A "Frequently Asked Questions" brochure that will help locals and visitors understand the following:
 - a. What tamarisk is, where it came from, why it is a problem, and tamarisk control methods.
 - b. How biological control works, what to expect, monitoring of changes, etc..
 - c. What will replace the tamarisk, how the process will affect wildlife.
 - d. Who will implement these projects and how will they be funded.
 - B. Fact sheets on tamarisk ecology, biological, control, herbicide usage and safety, etc.
3. Display boards with historical photos can be utilized to compare present day conditions to the past to give a perspective on the problem.
4. River guide training on the issue and provision of education cards similar to "Leave No Trace" laminated waterproof cards.
5. Information booths at local events, festivals, etc.
6. Presentations to service groups such as Lions, Rotary, and Chamber of Commerce, schools and other organizations.
7. Demonstration sites that can be used for tours.

[Note: The ARKWIPP Technical Advisory Team and the Tamarisk Coalition are developing many of these components with support from others. This information will be available in summer 2008.]

Volunteer Program - An important aspect of education is gaining public support for tamarisk and Russian olive control and restoration to improve the ecosystem of the ARKWIPP study area. One way of achieving this is through volunteer programs. A number of groups within the area have done some excellent work using volunteers for riparian restoration. These include: Colorado Volunteer Day, Colorado Range Riders, Volunteers for Outdoor Colorado, The Nature Conservancy, Colorado State Parks, and Colorado State Forest Service. By participating in these programs, people gain first-hand experience and an appreciation of ecosystem restoration. The volunteer education effort would include information concerning how and where to get involved as an individual or as an organization.

8. The groups identified above should work together to:
 - A. Develop a volunteer "lessons learned" pamphlet that can be used by others to develop their own volunteer program (a starter "cookbook").
 - B. Identify good volunteer projects.
 - C. Pool resources for volunteer projects.

Determine Research Needs

There are a number of research activities that can improve the success, effectiveness, and efficiency of restoration for the Arkansas River watershed. The unique nature of the watershed also offers special opportunities to better understand tamarisk and Russian olive impacts to water resources and wildlife habitat as well as restoration responses. By intertwining restoration with research there is greater appeal to some funding sources to provide grants (e.g., federal legislation under P.L. 109-320, the Salt Cedar and Russian Olive Demonstration Act). The following are current research interests at the university and federal research levels.

- The University of Denver (DU) has developed a “Best Management Practices” handbook for tamarisk control and will complete a similar handbook for revegetation in the summer of 2008.
- DU has an active riparian restoration program for undergraduate and graduate students that includes field work to develop practical solutions.
- Colorado State University is devoting time and funding for tamarisk research efforts and have a number of active research projects in the ARKWIPP project area.
- Bureau of Reclamation scientists in Denver are developing more effective measures to improve revegetation success.

Action #3

The Southeastern Colorado Water Conservancy District has agreed to initiate the facilitation of a working group to establish collaborative partnership with educational institutions to identify specific research needs for the area, to utilize their research skills, and to ensure information sharing within the watershed.

The working group may include, but not be limited to representatives from: ARKWIPP Technical Advisory Team, Pueblo Community College, Otero Junior College, Lamar Community College, Trinidad State Junior College, Colorado State University in Pueblo and Fort Collins, University of Denver, Colorado College, University of Colorado – Colorado Springs, Pikes Peak Community College, county weed management departments, CSU Extension, major federal and state landowners, Colorado State Parks, National Park Service, Colorado State Forest Service, USDA NRCS, Colorado Division of Wildlife, The Nature Conservancy, Arkansas Valley Audubon Society, Upper Arkansas Weed Management Cooperative, Denver Botanic Garden, Colorado Association of Conservation Districts, USBR, US Fish and Wildlife, Environmental Protection Agency (EPA), Colorado State Department of Agriculture, United States Corps of Engineers (USACE), and the Tamarisk Coalition.

Determine and Develop Long-Term Funding Mechanisms

The partners in ARKWIPP should work together to continue to support and leverage existing projects to gain additional funding resources. An example would be funding derived from federal legislation PL 109-320. The key to successful implementation on any of the proposed restoration strategies, education, research, outreach, etc., is funding to sustain the activity.

Action #4

An active Grants and Projects Committee will be established to focus on grant opportunities and to communicate progress for active projects. A list of grant opportunities (Appendix K) that are available for tamarisk related issues is available on the www.arkwipp.org and Tamarisk Coalition www.tamariskcoalition.org websites. For further information the reader is encouraged to visit the funding sources website and contact the funding source directly.

Suggested participating entities should include: The ARKWIPP Technical Advisory Team and county weed managers along with the Colorado Association of Conservation Districts, USDA NRCS, local Resource Conservation and Development representatives, major federal and state landowners, Tamarisk Coalition, CSU Extension, USBR, Colorado Water Conservation Board, EPA, USACE, Colorado Department of Local Affairs, and The Nature Conservancy.

Determine and Develop a Long-Term Sustainability Program

Long-term sustainability of the restored riparian lands is a function of a good monitoring and maintenance program. To reiterate from previous discussions, “monitoring” is the act of observing changes that are occurring with, or without, remediation actions. The purpose of monitoring is to provide information for making informed decisions to ensure maintenance efforts will remain, remediate, and improve the ecological processes of the watershed. For tamarisk and Russian olive restoration these measures are important for effective control on a long-term basis and to ensure that the desired outcomes of revegetation and prevention of other noxious weed infestations are successful.

The questions that must be addressed for the entire Arkansas River watershed is: ***Who should perform monitoring and maintenance? Do they have the legal responsibility for these actions? Do they have the necessary funding to carry out these responsibilities?***

Action #5

It is clear that if resources are spent only on control and revegetation with no cohesive approach to long-term monitoring and maintenance, the potential for successful riparian restorations are limited. Therefore, the following recommendation is made to establish a workable long-term monitoring and maintenance program:

1. The Southeastern Colorado Water Conservancy District has agreed to initiate the facilitation of a working group to formulate a set of solutions and policies for long-term monitoring and maintenance for the entire Arkansas River watershed. It is recommended that the working group be co-chaired by the Colorado Department of Agriculture and the Colorado Department of Natural Resources. These two agencies are appropriate to lead this effort because their main responsibilities are to protect Colorado's natural resources and work closely with the agricultural community.
2. The working group may include, but not be limited to, representatives from: county weed management departments (the areas within the watershed with most of the infestations), State representatives to the House and Senate, CSU Cooperative Extension, Bureau of Land Management, Colorado State Parks, National Park Service, US Forest Service, Colorado State Forest Service, canal and ditch companies, USDA Natural Resource Conservation Service, Colorado Department of Local Affairs, Colorado Water Conservation Board, Pueblo Community College, Otero Junior College, Lamar Community College, Colorado State University in Pueblo and Fort Collins, University of Denver, Colorado College, University of Colorado – Colorado Springs, Pikes Peak Community College Colorado Division of Wildlife, The Nature Conservancy, Arkansas Valley Audubon Society, Colorado Association of Conservation Districts, the Southeastern Colorado Water Conservancy District, Purgatoire River Water Conservancy District, Lower Arkansas Valley Water Conservancy District, Upper Arkansas Water Conservancy District, USACE, USBR, and the Tamarisk Coalition.
3. Within 12 months a consensus plan should be produced to implement a long-term monitoring and maintenance program describing the technical, political, and financial steps for tamarisk control implementation and responsible entities.

This will not be an easy task, but it is a critical element for successful riparian restoration and should be dealt with seriously. When a workable long-term monitoring and maintenance program for the Arkansas River watershed is successfully formulated, this will signify a landmark effort.

Table 5 provides a summary of all the action items that have been developed, responsibilities for carrying out the action or organizing a working group to complete the action, and a schedule for accomplishing the action.

Table 5: Actions, Lead Responsibility, and Time Line

Action	Lead Responsibility	Time-Line
#1 Working with	The ARKWIPP Technical Advisory Team, county weed	July – Decemb

Landowners	managers, USDA Natural Resource Conservation Service, and major federal and state landowners.	er 2008
#2 Education, Outreach and Volunteerism	Outreach expertise from counties, Tamarisk Coalition and the ARKWIPP Technical Advisory Team.	July 2008 – July 2009
#3 Research Needs	The Southeastern Colorado Water Conservancy District has agreed to initiate the facilitation of a working group.	July – December 2008
#4 Long-Term Funding Mechanisms	The ARKWIPP Technical Advisory Team, Sangre de Cristo RC&D and Southeast Colorado RC&D to organize Grants and Projects Committee.	July – December 2008
#5 Long-term Sustainability	The Southeastern Colorado Water Conservancy District has agreed to initiate the facilitation of a working group.	July 2008 – July 2009