

# APPENDICES

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Cypress Creek NWR  
Comprehensive Management Plan



**APPENDIX A - PUBLIC COMMENTS AND RESPONSES**

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Cypress Creek NWR  
Comprehensive Management Plan



## PUBLIC COMMENTS AND RESPONSES

Following is a summary of comments received concerning the Cypress Creek National Wildlife Refuge Comprehensive Management Plan during the public comment periods. Of the responses received, some letters were lengthy but all issues and concerns are addressed here.

Some comments were statements which required no response, others are answered here or with changes in the final Plan, and some issues are beyond the scope of this Plan. These issues are being addressed in other ways.

*Responses to these concerns are in italics.*

### *NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)*

- ❖ the Plan should be subject to NEPA compliance and accompanied by an Environmental Impact Statement.
- ❖ the Plan should take into consideration the quality of the environment and public health.
- ❖ before the Plan is finalized, there should be more opportunity for public comment with the main issues and concerns publicized.
- ❖ Refuge specific projects in the Plan should be subjected to NEPA analysis.
- ❖ before any Corps of Engineers hydrology study recommendations are implemented, NEPA compliance should apply.

*The Comprehensive Management Plan is subject to NEPA compliance and will be accompanied by an Environmental Assessment. The Environmental Assessment serves as the basis for determining whether implementation of the Comprehensive Management Plan would constitute a major Federal action significantly affecting the quality of the human environment. If a positive finding is made, an EIS is required. If a negative finding is made, a FONSI (Finding of No Significant Impact) is prepared and signed.*

*The Final Environmental Assessment and decision (signed by the Fish and Wildlife Service Regional Director) will be made available to the public for a 30 day review. The Comprehensive Management Plan will not be approved or implemented until the NEPA process is complete.*

*Additional "step-down" NEPA analysis will be required after the Plan is approved. Major projects proposed in the CMP such as the Wetlands Center and major public use sites will be subject to NEPA analysis prior to construction.*

*This Plan and its Environmental Assessment do not address Corps of Engineers programs and projects, but they as a federal agency, are subject to NEPA compliance.*

## **LAND USE AND DEVELOPMENT**

- ❖ wetlands should be restored on Refuge lands but should not be allowed to flood private land.

*The Plan does not allow for flooding of private land.*

- ❖ there should be minimal land maintenance and large blocks of forest should be established.

*The Plan does identify areas to be reforested, including the 1,000 acre Hogue Woods block. The only land maintenance conducted on reforested land is noxious weed control.*

- ❖ large sediment basins should be considered as a means of preventing sediments from entering Buttonland Swamp. Corps of Engineers hydrology study recommendations should be carefully scrutinized.

*Large sediment basins are beyond the scope of the Plan but are being considered under the Corps study. Corps recommendations will be reviewed by Joint Venture Partners, the Citizens Committee to Save the Cache River, and the public.*

- ❖ there is a need for a variety of habitats for the many species of migratory birds using the Refuge.

*The Plan will provide these habitat needs.*

- ❖ there should be no logging on the Refuge.

*Logging is done on National Wildlife Refuges. However, the Plan does not propose any logging.*

- ❖ consideration should be given to removal of Big Creek Ditch levees so flood waters can enter the floodplain in areas now managed as moist soil units at the Frank Bellrose Waterfowl Reserve.

*This is an issue of much discussion among the Joint Venture Partners. Values relative to moist soil unit management (primarily waterfowl use) and flood water dispersal (sedimentation) are at issue. The Fish and Wildlife Service will pursue removal of a portion of levee to assess the impact. Other studies are underway relative to this issue. The Plan does not address this specific issue.*

- ❖ could the proposed Juncker moist soil unit interfere with future stream or floodplain restoration of Cypress Creek?

*When hydrologic restoration of Cypress Creek is undertaken, the Juncker area will cease to be used as a moist soil unit.*

- ❖ Refuge habitat restoration proposed in the Plan will benefit the entire Cache Watershed.
- ❖ Cypress Creek has the potential for developing a wide variety of wetlands habitats for a broad spectrum of waterfowl species, wading and neotropical birds, and resident wildlife species.

### **FARMING USE**

- ❖ land that was removed from agriculture adjacent to Buttonland Swamp is now being farmed; it should not be.

*Agreed. Land adjacent to Buttonland Swamp is being removed from agricultural use at the end of 1996 and will be restored to forest and wetlands.*

- ❖ there should be no farming or pesticide use on the Refuge. Agriculture lands should immediately be reforested or left to natural succession.

*Short-time agricultural use is sometimes granted as part of land acquisition. The Refuge Environmental Assessment commits to 10% of the acquired land to remain in agriculture for wildlife. The Plan does not change this. The Refuge does not use nor does the Plan call for pesticide use for insect control.*

- ❖ farming should not be conducted on highly erodible land nor adjacent to riparian corridors.

*Agreed. The Plan does not allow for farming on highly erodible land nor adjacent to riparian corridors.*

- ❖ as per the 10% of land to be farmed mentioned in the Refuge Environmental Assessment, this land should be identified in the Plan.

*The Plan does identify some of the area to remain in agriculture but not the entire 10%, as land acquisition is less than 30% completed.*

- ❖ the map entitled Restoration Plan - Long Range vision does not show agricultural land remaining within the Refuge boundary. Why?

*The Service is committed to keeping 10% of the area in crop production.*

- ❖ agriculture is being disregarded in the Plan.

## **HUNTING**

- ❖ one-half of the Refuge land should be closed to hunting in fairness to the non-hunting public.
- ❖ hunting should be allowed and is a compatible use of the Refuge.

*Hunting is a compatible use with certain restrictions. Refuge establishment does permit hunting. The Plan does identify hunting as a compatible use with certain restrictions. The Bellrose Public Access Area is not open for duck hunting.*

- ❖ hunting should be used as a "tool" to reduce depredations to crops on private lands.

*The Plan does allow for this.*

- ❖ goose hunting should be encouraged to keep large concentrations of geese from building up in any one place, especially at the Frank Bellrose Waterfowl Reserve.

*The Refuge hunting plan does allow for hunting of geese at the Bellrose Waterfowl Reserve, after the duck season ends.*

### **PUBLIC USE AND DEVELOPMENT**

- ❖ the environmental program proposed in the Plan is well thought out with a site specific curriculum and issue oriented focus.
- ❖ the public awareness and involvement should be a high priority. Are the Plan objectives in priority order?

*The Plan does recognize the value of public education. The Plan objectives are not in any priority order.*

- ❖ the Wetlands Education Center and headquarters would be a real asset to the community and should be strongly supported by everyone.

*Agreed. The Plan does recognize this.*

- ❖ the wetlands education center should be constructed near Eagle Pond, an existing natural feature, on land already owned by the Refuge.

*A feasibility study did evaluate 13 sites including a site near Eagle Pond. The site at Easter Slough was the preferred site but further evaluation is possible up until funding is approved.*

- ❖ the cartop canoe access site should be more accurately described as a small boat access site.
- ❖ the Plan should identify the Tamms public access site as needing more work done, such as walkways and a ramp at the river.

*Agreed. These changes were made in the Plan.*

- ❖ disability access has not been addressed in the Plan, especially access to the more sensitive areas.

*The Service is committed to meeting all requirements of the Americans With Disabilities Act at all Fish and Wildlife Service facilities. This is a design issue to be addressed when specifications for each site are developed.*

- ❖ public outreach efforts should be expanded as the Plan does.
- ❖ tourism is important for the future of this region and the Plan needs to recognize this.

## GENERAL

- ❖ the Plan refers to the Citizens Committee, the correct title should be the Citizens Committee to Save the Cache River.

*Agreed. These changes were made in the Plan.*

- ❖ road closure (north) proposed in the Plan should be removed from consideration. This is a county issue, not a Refuge Plan issue.

*Agreed. This recommendation was dropped from the Plan.*

- ❖ the Plan proposes wetlands development. Of concern are mosquitoes and disease, such as malaria, that was present years ago.

*This issue is beyond the scope of the Plan but will be pursued through public health and environmental protection agencies. There are other large swamp projects throughout the United States and malaria does not appear to be a problem. This is probably because no reservoir exists for transmission of the disease from one person to another.*

- ❖ cherrybark oak is listed in the Plan as an upland species; cherrybark oak is a bottomland species.
- ❖ the Plan's emphasis on partnerships and partnership planning is impressive.

- ❖ what will be the impact of the current Corps of Engineers study of the hydrology of the Cache River and how will that dovetail with the Plan?

*The Corps study is still in progress and will take time to complete. At this point it is difficult to predict the results of that study. However, there is coordination between the corps and the Joint Venture partners.*

- ❖ it is possible that over time, conflicts or disputes may occur among members of the Joint Venture partnership. The Plan does not address conflict resolution. How will this be handled?

*Conflict resolution is something that should be addressed in the Joint Venture Memorandum of agreement.*

- ❖ does the Plan purpose to keep Cypress Creek open?

*Yes. The law mandates that the Service maintain open drainage.*

- ❖ the Joint Venture Memorandum of Agreement should be included in the Plan.

*This document is incorporated by reference as noted in the Bibliography Section.*

- ❖ what assurances do we have that we will not be forced to move?

*The Service will purchase land only from willing sellers at a fair market price.*

- ❖ the Plan does not discuss trails for all terrain vehicles or horseback riding.

*These uses are incompatible with habitat restoration goals and are not permitted on the Refuge.*

- ❖ as more land is acquired by the Service, more deer leave the Refuge to eat the crops of local farmers.

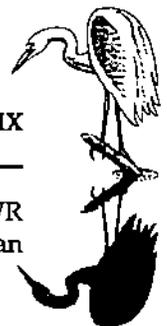
- ❖ the Department of Defense should not be a partner in the Refuge.

- ❖ the Refuge is a Ramsar site of international significance and this should be emphasized in the Plan.
- ❖ the Plan should be implemented and is impressive because of the emphasis on environmental education and stewardship opportunities.
- ❖ habitat restoration and awareness programs should move ahead quickly.
- ❖ the Plan is good, in that when implemented, it will provide an economic base for tourism growth.
- ❖ the Plan proposes to spend too much public money on facilities and there is no opportunity for industrial development.
- ❖ public comment has been disregarded ever since Refuge establishment.
- ❖ Plan implementation is needed to meet Refuge objectives of the North American Waterfowl Management Plan and to meet Service responsibilities of the endangered Species Act, the Emergency Wetlands Act of 1986, and the Fish and Wildlife Service Act of 1956.

**APPENDIX B - PUBLIC USE MANAGEMENT DELIVERY MATRIX**

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Cypress Creek NWR  
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## PUBLIC USE MANAGEMENT DELIVERY MATRIX

The delivery matrix is a cognitive map to communicate central themes. Six themes have been identified with associated sub-themes. These relate to the Refuge goals, objectives and site-specific resources. Related messages, visitor experiences and media are included in a delivery matrix (Table 1-6). The matrix provides justification for proposed facilities/media. Terms used in the matrix are defined below:

- Storyline:* A series of broad terms that are site-specific and firmly grounded in what is being done to restore, protect, and/or enhance native wildlife and plant communities on the Refuge.
- Theme:* A statement that relates to the goals and objectives of the Comprehensive Management Plan.
- Subtheme:* A statement that further defines the theme.
- Message:* A statement that describes concepts/messages of the subtheme.
- Experience:* A statement that describes what the interpreter media/facilities should accomplish.
- Audience:* A word that describes the primary target group.
- Media:* Services, facilities, and media related to the goals and used to convey the message.

The delivery matrix for the six central project themes is provided on the following pages.

**TABLE 1**

**Theme I:** Understanding the Past (Natural & Cultural History of the Cache)

**Sub-theme:** People are dependent on the Cache River Wetlands. The area has served people throughout time. Its history demonstrates how people are connected to the land and how they have changed the landscape

<i>MESSAGE</i>	<i>EXPERIENCE</i>	<i>AUDIENCE</i>	<i>MEDIA</i>
<i>Settlers of the Cache</i> - The first settlers arrived in the late 1700's and began the process of draining and clearing the land.	To understand why people were attracted to the area and the challenges that existed to make a living off the land.	All	<p><i>Brochures:</i> Refuge/Cache River Wetlands</p> <p><i>Interpretive Trails:</i> Poole Tract, Stubblefield Tract</p> <p><i>Exhibit:</i> Wetland Education Ctr. Phase I</p> <p><i>Events:</i> Annual Frontier Feast</p>
<i>Changes in the Land</i> - By 1940's farmsteads were becoming more prevalent and logging had become a major industry; geology & land features were changed. (Post Creek Cut-off and drainage Great Floods, Loss of Wetlands)	To understand how people change the land and the impacts it had on plant and animal communities, geology, hydrology, and water quality.	All	<p><i>Brochures:</i> Refuge/Cache River Wetlands</p> <p><i>Interpretive Trails:</i></p> <p><i>Exhibits:</i> Oral History Interviews/Stories</p> <p><i>Events:</i> Cache Riverways/Communities Celebrations</p> <p><i>Overlooks:</i> Harris Tract, Willingham Tract</p> <p><i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area (Post Creek Cut-off)</p>
<i>Citizen Involvement</i> - Over the last 90 years, over 230,000 acres of wetlands were lost; citizens organized to stop drainage of swamps and destruction of wildlife habitat.	To understand how people have learn from the past to take action and stop the destruction of the Cache River Wetlands.	All	<p><i>Brochures:</i> Refuge/Cache River Wetlands, Citizens Committee to Save the Cache</p> <p><i>Interpretive Trails:</i></p> <p><i>Exhibits:</i> Wetland Education Ctr Phase I</p> <p><i>Events:</i></p> <p><i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area</p>

**TABLE 2**

**Theme II:** Experiencing Illinois' "Bayou" - Unique and Dynamic Plant Communities of the Cache

**Subtheme:** Unique Natural Communities within the Refuge and the Cache River Wetlands are more reminiscent of a Louisiana Bayou than a swamp located in a state better known for its prairies.

<i>MESSAGE</i>	<i>EXPERIENCE</i>	<i>AUDIENCE</i>	<i>MEDIA</i>
<i>Largest Remaining Wetland in the State</i> - The area includes some the oldest living things east of the Mississippi River and several state champion trees.	To create an awareness of the age and longevity of this resource.	All	<p><i>Brochures:</i> Refuge/Cache River Wetlands,</p> <p><i>Interpretive Trails:</i> Canoe/Old Channel Unit</p> <p><i>Exhibits:</i> Wetland Education Ctr., Oral History Interviews/Stories</p> <p><i>Events:</i> National River Days, Canoe Tours/Cache River Days</p> <p><i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area</p>
<i>Junction of Four</i> - The convergence of 4 overlapping physiographic regions; Gulf Coastal Plain, Ozark Plateau, Central Lowlands, Interior Low Plateaus is a rare geologic phenomenon.	To understand the diversity of plants are enhance and influenced by the climate and topography of the area; these factors contribute to the unique ecological community found within the Refuge.	All	<p><i>Brochures:</i> Refuge/Cache River Wetlands,</p> <p><i>Interpretive Trails:</i></p> <p><i>Exhibits:</i> Wayside/Office, Wetland Education Ctr. Phase I</p> <p><i>Events:</i> Cache River Days</p> <p><i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area</p>
<i>Ecological Jewels</i> - The Refuge and the Cache River SNA contain high quality remnant native communities which include bottomland hardwood, cypress/tupelo swamps, herbaceous wetlands, springs/seeps and stands of giant cane.	To create an awareness of remnant native landscapes, their sensitivity and how they are different from each other (topography, soil, plant and wildlife species).	All	<p><i>Brochures:</i> Refuge/Cache River Wetlands</p> <p><i>Interpretive Trails:</i> Hogue Woods, Bellrose</p> <p><i>Observation Deck:</i> Boardwalk/Pool Tract</p> <p><i>Exhibits:</i> Wetlands Education Ctr. Phase I</p> <p><i>Events:</i> Cache River Days</p> <p><i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area</p>

**TABLE 3**

**Theme III: Exploring the Diversity of Wildlife - A Haven for Wildlife**

**Subtheme:** The Refuge and associated Cache River Wetlands highlights a diversity of waterfowl, shorebirds, wading birds, songbirds, reptiles, amphibians, and mammals that provides wildlife-oriented experiences for visitors.

<i>MESSAGE</i>	<i>EXPERIENCE</i>	<i>AUDIENCE</i>	<i>MEDIA</i>
<i>Wildlife</i> - The Refuge and Cache River Wetlands contains some of the most diversified wildlife habitat in Illinois.	To create an appreciation for the 47 species of mammals in the area and the diversity of insects, fish, birds, and other animals within the Refuge.	All	<p><i>Brochures:</i> Refuge/Cache River Wetlands, Birds of Cache River Wetlands</p> <p><i>Interpretive Trails:</i> Canoe/Old Channel Unit</p> <p><i>Observation Deck:</i> Boardwalk/Poole Tract, Willingham Tract</p> <p><i>Exhibits:</i></p> <p><i>Events:</i> Cache River Days, Canoe Tours</p> <p><i>Educational Trunks:</i> Cache River Wetlands Wildlife</p> <p><i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area</p>
<i>Waterfowl: A Trust Species</i> - The Refuge is included as a component of the North American Waterfowl Management Plan; it is located in the Mississippi Flyway and provides excellent habitat for a diversity of birds using the flyway.	To create an awareness of the hundreds of thousands of waterfowl and other birds that migrate through the area during the spring and fall.	All	<p><i>Brochures:</i> Birds of Cache River Wetlands</p> <p><i>Interpretive Trails:</i></p> <p><i>Observation Deck:</i> Bellrose, Willingham Tract, M. Ernhart Tract</p> <p><i>Exhibits:</i></p> <p><i>Events:</i> Cache River Days</p> <p><i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area</p>

**TABLE 3 (CONT.)**

**Theme III: Exploring the Diversity of Wildlife - A Haven for Wildlife**

**Subtheme:** The Refuge and associated Cache River Wetlands highlights a diversity waterfowl, shorebirds, wading birds, songbirds, reptiles, amphibians, and mammals that provides wildlife-oriented experiences for visitors.

<i>MESSAGE</i>	<i>EXPERIENCE</i>	<i>AUDIENCE</i>	<i>MEDIA</i>
<p><i>Wetland Indicators</i> - Many reptiles &amp; amphibians have adapted to the area over a long period of time. (Reptiles and amphibians - frogs and toads)</p>	<p>To create an awareness of the 19 species of frogs and toads that exist in the Cache River Wetlands and snakes that are common to the area.</p>	<p>All</p>	<p><i>Brochures:</i> Reptiles &amp; Amphibians</p> <p><i>Interpretive Trails:</i> Canoe Trails</p> <p><i>Interpretive Programs:</i> Guided Hikes</p> <p><i>Observation Deck:</i> Boardwalk/Poole Tract, M. Ernhart Tract</p> <p><i>Exhibits:</i></p> <p><i>Events:</i> Cache River Days</p> <p><i>Auto Tour/Wayside Exhibits:</i></p>
<p><i>Neotropical Migrants</i> - Sightings within the Cache and Cypress Creek wetlands indicate the most diverse assemblage of neotropical migrants in the Midwest.</p>	<p>To create an understanding of neotropical songbirds and an awareness of the birdwatching "hotspots" within the Refuge &amp; Cache River Wetlands.</p>	<p>Adults</p> <p>Organized Groups</p> <p>Special Interest Groups</p>	<p><i>Brochures:</i> Birds of the Cache River Wetlands</p> <p><i>Interpretive Trails:</i> Hogue Woods, Canoe Trail/Old Channel Unit</p> <p><i>Observation Deck:</i> Boardwalk/Poole Tract, M. Ernhart Tract</p> <p><i>Exhibits:</i></p> <p><i>Events:</i> Cache River Days</p> <p><i>Auto Tour/Wayside Exhibits:</i></p>
<p><i>Endangered Species</i> - One-third of all state listed species exist in the Cache River Watershed; the Refuge provides a safe haven for some of these species.</p>	<p>To understand the value of the Refuge and State Natural Areas for the protection of threatened/ endangered species.</p>	<p>All</p>	<p><i>Brochures:</i> CRW - Wildlife Checklist</p> <p><i>Observation Deck:</i> Poole Boardwalk;</p> <p><i>Interpretive Trails:</i> Hogue Woods, Canoe Trail</p>

**TABLE 4**

**Theme IV: Protecting a Fragile System (Resource Issues)**

**Subtheme:** The area is an internationally significant site that is threatened by land uses within the watershed; economically sustainable solutions to these issues lies with environmentally literate citizens and their actions.

<i>MESSAGE</i>	<i>EXPERIENCE</i>	<i>AUDIENCE</i>	<i>MEDIA</i>
<p><i>Watershed Issues</i> - The area is threatened by a number of resource threats which include erosion / siltation, non-point source pollution, &amp; open dumping.</p>	<p>To understand that resource threats exist and that there are workable and economic sustainable solutions.</p>	<p>All</p>	<p><i>Brochures:</i> Refuge/Cache River Wetlands</p> <p><i>Interpretive Trails:</i></p> <p><i>Observation Deck:</i> Bellrose, Willingham Tract</p> <p><i>Exhibits:</i></p> <p><i>EE Program:</i> Site-specific Units</p> <p><i>Events:</i> Cache River Days</p> <p><i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area</p>
<p><i>Watershed Stewardship</i> - Human actions and lifestyle choices are not just local in effect; citizen stewardship is more efficient in protecting the resource on a long-term basis.</p>	<p>To understand the importance of sound landowner stewardship within the watershed &amp; practices and programs that will benefit wildlife and their habitat on private land. Service Programs: USFWS Private Lands Program</p>	<p>All</p>	<p><i>Brochures:</i> Refuge/Cache River Wetlands</p> <p><i>Volunteer Opportunities:</i> Stewardship Saturday, Friends membership</p> <p><i>Interpretive Trails:</i></p> <p><i>Observation Deck:</i> Bellrose, Willingham Tract</p> <p><i>Exhibits:</i> Oral History of the Cache</p> <p><i>EE Sites:</i> Hogue Woods</p> <p><i>EE Program:</i> Shawnee College Outdoor EE Ctr.</p> <p><i>Events:</i> Cache River Days</p> <p><i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area</p>

**TABLE 5**

**Theme V: Restoring the Balance (Resource Management and Protection)**

**Sub-theme:** Sound land management practices are needed to maintain and restore wildlife and wildland resources while accommodating compatible human use.

<i>MESSAGE</i>	<i>EXPERIENCE</i>	<i>AUDIENCE</i>	<i>MEDIA</i>
<i>Why Does the Refuge Exist?</i> - the Refuge is an important component of the North American Waterfowl Management Plan and includes 7 primary purposes.	To understand the Refuge purposes of managing & restoring bottomland hardwood forests and woodland habitat for migratory and resident wildlife.	All	<i>Brochures:</i> Refuge/Cache River Wetlands <i>Interpretive Trails:</i> <i>Observation Deck:</i> Bellrose, Willingham Tract <i>Exhibits:</i> Wetland Education Ctr Phase I <i>Events:</i> Cache River Days <i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area
<i>Dynamic Partnering</i> - The Refuge strives to combine resources with other groups or agencies to advance the goals and objectives of the Refuge and the Joint Venture.	To understand the Joint Venture approach of working with local communities, agencies, & organizations to maintain & enhance the resource.	All	<i>Brochures:</i> Refuge/Cache River Wetlands <i>Interpretive Trails:</i> <i>Volunteer Opportunities:</i> Internships, Stewardship Saturdays <i>Observation Deck:</i> Bellrose, Willingham Tract <i>Exhibits/Kiosk:</i> Boyd Seed Tree Orchard <i>Events:</i> Cache River Days
<i>Restoration &amp; Reforestation</i> - Through restoration & reforestation, Refuge staff is putting back the habitat to bring back the wildlife.	To understand the value of and actions to protect & restore natural communities on lands within the Refuge boundary.	All	<i>Brochures:</i> Refuge/Cache River Wetlands <i>Interpretive Trails:</i> <i>Volunteer Opportunities:</i> Internships, Stewardship Saturdays <i>Observation Deck:</i> Bellrose, Willingham Tract <i>Exhibits/Kiosk:</i> Boyd Seed Tree Orchard <i>Events:</i> Cache River Days <i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area
<i>Moist-Soil Management</i> - Water regimes are controlled on some areas to replicate woodland function and productivity over a large area.	Moist-soil management provides a variety of resources for ducks and other wildlife throughout the year.	Adults and Individual Special Interest Groups	<i>Outdoor Classroom:</i> Bellrose <i>Observation Deck:</i> Bellrose <i>Event:</i> Van Tours <i>Interpretive Programs:</i> Birdwatching (a.m.), Duck Banding, Weeds or Wild Food <i>Volunteer Opportunities:</i> Stewardship Saturday

**TABLE 6**

**Theme VI:** Communicating Educational/Recreational Opportunities within the Cache River Wetlands

**Subtheme:** The diversity and features of the area provide many opportunities to explore, hike, hunt, fish, canoe, and learn about wildlife, plants, and the human connection to the Cache River Wetlands.

<i>MESSAGE</i>	<i>EXPERIENCE</i>	<i>AUDIENCE</i>	<i>MEDIA</i>
<i>Environmental Education</i> - EE is a crucial component of Refuge and includes objectives to build awareness, knowledge, and skills to change attitudes and promote responsible environmental behavior.	To create an appreciation for the Cache River Wetlands & actively involve participants in exploration & resource issues investigation.	Students, Adults, and Organized Groups	<i>Brochures:</i> Exploring the CRW <i>Outdoor Classrooms:</i> Boyd, Rolwing, Bellrose <i>Volunteer Opportunities:</i>
<i>Wildlife-dependent Recreation</i> -The unique environment and diversity of wildlife attracts and offers people a fun and relaxing experience within the Cache River Wetlands.	To increase awareness of wildlife watching, hiking, hunting, fishing, and other recreational opportunities they can enjoy on the Refuge.	All	<i>Interpretive Programs:</i> Wildlife Watching (early a.m. or evening) <i>Events:</i> Cache River Days Facility Development
<i>Interpretive Programming</i> - Special public events and programs provide visitors with a guided first-hand experience within the Cache River Wetlands.	To increase awareness and understanding of annual events, and specialized programs that are offered to the Public.	All	<i>Brochures/Publications:</i> Annual Calendar of Events, News Releases/ PSA's <i>Guided Tours:</i> Van and Canoes

APPENDIX C - COMPATIBILITY DETERMINATION

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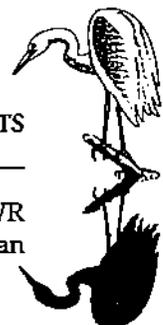
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**APPENDIX D - PROJECT WORKSHEETS**

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Cypress Creek NWR  
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*Project Description* Project includes reforestation of 350 acres per year for five years, primarily at north end of Refuge. In a five-year period, restore 1,750 acres of land to native hardwoods on both upland and bottomland sites. Use planting stock indigenous to the area. Project includes site preparation, machine or hand planting, and weed control. Planting techniques will vary depending upon success rates of previous restoration efforts in similar conditions.

*Project Justification* Restoration of converted crop lands is to provide large blocks of native habitat for wildlife in support of Refuge purpose and watershed and ecosystem plans.

*Community/Partner Interest* The Nature Conservancy, IDNR, SIU Research Consortium, National Biological Survey, North America Tree Trust.

*Project Design Criteria* Individual units will be evaluated prior to planting to determine tree species, spacing and special requirements.

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$ 560,000
	Indirect Cost	\$ 644,000
	Total Project Cost	\$1,204,000
	Maintenance Cost	\$ 2,300
	Date of Estimate:	08/96

*Funding Opportunities* \_\_\_\_\_ ISTEAs \_\_\_\_\_ State Trails \_\_\_\_\_

<i>Partnership Review &amp; Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		_____	
			TNC	
	Reviewed	Date	Approved	Date
_____		_____		
State DNR		Refuge Manager		

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Forest Restoration - 1997	\$300	350	\$105,000
		Forest Restoration - 1998	\$300	350	\$105,000
		Forest Restoration - 1999	\$300	350	\$105,000
		Forest Restoration - 2000	\$350	350	\$122,500
		Forest Restoration - 2001	\$350	350	\$122,500
		<b>Subtotal (Direct Cost)</b>			<b>\$560,000</b>

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design		
	Construction Management		
	Project Management/Administration	15%	\$ 84,000
	<b>Subtotal (Indirect Cost)</b>		
	<b>TOTAL COST</b>		<b>\$644,000</b>

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost *
	Contract / In-House			
	Mowing/Brush Hogging (Years 1, 2 & 3)	x	2 Times/Year	\$5000 \$ 2,000
	Administration	x	15%	\$ 300
	<b>Total</b>			<b>\$ 2,300</b>

\* Average cost over 5 years

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[ ]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* This project includes the annual restoration of 100 acres of wetlands during the 5 year period of 1997 through 2001.

*Project Justification* To meet Refuge goals and objectives and to provide habitat for wetland dependent waterfowl and other species.

*Community/Partner Interest* TNC  
Citizens Committee to Save the Cache River

*Project Design Criteria* Focus on prior covered wetlands

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$ 30,000
	Indirect Cost	\$ 0
	Total Project Cost	\$ 30,000
	Maintenance Cost	\$ 0
	Date of Estimate:	9/96

*Funding Opportunities* \_\_\_\_\_ ISTE A \_\_\_\_\_ State Trails \_\_\_\_\_

<i>Partnership Review &amp; Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____	_____	TNC	_____
	Reviewed	Date	Approved	Date
	State DNR	_____	Refuge Manager	_____

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
	1.	Natural Wetland Restoration	\$300	100 acres	\$30,000
Subtotal (Direct Cost)					\$30,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design		\$ 0
	Construction Management		\$ 0
	Project Management		\$ 0
	Subtotal (Indirect Cost)		\$ 0
	<b>TOTAL COST</b>		<b>\$ 0</b>

<i>Annual Maintenance Cost</i>	Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost
Not Applicable				

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[ ]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* Throughout the Refuge there are opportunities to recreate some of the unique micro-ecosystems such as the canebrakes which once flourished in the Cache. Additionally, small springs and seeps are scattered throughout the Refuge which have been covered or are threatened to be silted in by flood waters.

*Project Justification* Springs and seeps help regulate water levels during drought periods. Canebrakes provide unique habitat for species such as the Swainsons' warbler.

*Community/Partner Interest* Audubon Society  
TNC

*Project Design Criteria* Care must be taken when collecting rhizomes not to disturb existing canebrakes. In addition care should be taken when restoring springs or seeps so as not to disturb the State endangered dusky salamander.

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$ 6,800
	Indirect Cost	\$ 0
	Total Project Cost	\$ 6,800
	Maintenance Cost	\$ 250
	Date of Estimate:	9/96

*Funding Opportunities* \_\_\_\_\_ ISTE A \_\_\_\_\_ State Trails \_\_\_\_\_

<i>Partnership Review &amp; Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		TNC	
	Reviewed	Date	Approved	Date
	State DNR		Refuge Manager	

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Restoration of unique habitats such as springs, seeps & canebrakes	\$200/AC	34	\$6,800
<b>Subtotal (Direct Cost)</b>					<b>\$ 6,800</b>

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design		\$ 0
	Construction Management		\$ 0
	Project Management		\$ 0
	Subtotal (Indirect Cost)		\$ 0
	<b>TOTAL COST</b>		<b>\$ 6,800</b>

<i>Annual Maintenance Cost</i>	Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost *		
		Back Hoe Seeps (Year 3)	X	5 annually	200	\$ 200
		Administration	X	15%		\$ 50
		<b>Total</b>				<b>\$ 250</b>

\* Average cost over 5 years

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[ ]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description*      The proposed boat access near Mounds will include a concrete boat ramp, parking lot and signage. Also, the site will provide access to a regional bike trail proposed for the Cache, Mississippi & Ohio Rivers levees.

*Project Justification*      The project is at the southern tip of the refuge and will provide boat and bicycle access to the lower Cache area. Activities will include fishing, canoeing, wildlife observation and research.

*Community/Partner Interest*      City of Mounds  
 Illinois Department of Natural Resources

*Project Design Criteria*

*Funds Summary*      Direct Cost      \$73,550  
*Detail on Page 2*      Indirect Cost      \$18,400  
                                  Total Project Cost      \$91,950  
                                  Maintenance Cost      \$ 3,300  
                                  Date of Estimate:      03/96

*Funding Opportunities*      \_\_\_\_\_ ISTEAs      \_\_\_\_\_ State Trails       OSLAD

<i>Partnership Review &amp; Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		TNC	_____
	Reviewed	Date	Approved	Date
	_____		Refuge Manager	_____
	State DNR			

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Site Prep			\$ 5,000
		Concrete Ramp	\$8/SF	960	\$ 7,700
		Gravel Parking	\$1,000/car	10	\$10,000
		Toilets	\$12,000/EA	1	\$12,000
		Signs (Highway) & Kiosk	\$1,200/EA	1	\$ 1,200
		Post & Rail	\$15/LF	644	\$ 9,660
		Short Trail	\$5/LF	150	\$ 750
		Bike Trail Head/Kiosk	\$15,000/LS		\$61,310
		Contingency		20%	\$12,250
		Subtotal (Direct Cost)			\$73,550

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 7,350
	Construction Management	5%	\$ 3,700
	Project Management	10% (overall)	\$ 7,350
	Subtotal (Indirect Cost)		\$18,400
	<b>TOTAL COST</b>		<b>\$91,950</b>

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
	Trash Pick-Up	x	Bi-Weekly	\$ 25 \$ 650
	Parking Lot	x	Bi-Monthly	\$100 \$ 600
	Restroom Pump-Out	x	Bi-Annually	\$ 75 \$ 75
	Litter Clean-Up *	x	Bi-Monthly	\$ 60 \$ 360
	Mowing/Brush Hogging	x	3 Times/Year	\$100 \$ 300
	Administration	x	15%	\$ 300
	<b>Total</b>			<b>\$ 3,300</b>

\* Indicates potential volunteer or other labor source

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[ ]	[ ]	_____
Corps Section 404	[x]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[x]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* Boat access near Tamms to include parking lot, boat ramp, fishing dock, signage, vault toilet.

*Project Justification*

*Community/Partner Interest* Illinois Department of Natural Resources  
City of Tamms

*Project Design Criteria* Follow IDNR requirements. This project may be a community project with little or no funding from U. S. Fish and Wildlife Service

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$49,150
	Indirect Cost	\$12,250
	Total Project Cost	\$61,400
	Maintenance Cost	\$ 3,100
	Date of Estimate:	03/96

*Funding Opportunities* \_\_\_\_\_ ISTE A \_\_\_\_\_ State Trails \_\_\_\_\_ x \_\_\_\_\_ Tamms \_\_\_\_\_ x \_\_\_\_\_ IDNR

<i>Partnership Review &amp; Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		_____	
			TNC	
	Reviewed	Date	Approved	Date
_____		_____		
State DNR		Refuge Manager		

Cost Estimate:

Direct Cost	No.	Description	Unit Cost	Quantity	Total Cost
		Gravel Parking/Ramp	\$4.50/SY	2,300	\$10,350
		Toilet/Sidewalk	\$12,000/EA	1	\$12,000
		Bollards	\$150/EA	8	\$ 1,200
		Culvert	\$600/EA	1	\$ 600
		Kiosk	\$1,200/EA	1	\$ 1,200
		Canoe Guide/Steps	\$4,000/EA	1	\$ 4,000
		Trail	\$1/LF	5,000	\$ 5,000
		Dock/Platform	\$3,000/EA	1	\$ 3,000
		Contingency		15%	\$ 6,400
		Subtotal (Direct Cost)			\$49,150

Indirect Cost	Description	Rate	Total Cost
	Design	10%	\$ 4,900
	Construction Management	5%	\$ 2,450
	Project Management	10% (overall)	\$ 4,900
	Subtotal (Indirect Cost)		\$12,250
	<b>TOTAL COST</b>		<b>\$61,400</b>

Annual Maintenance Cost	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
	Trash Pick-Up	x	Bi-Weekly	\$ 25 \$ 650
	Parking Lot	x	Quarterly	\$150 \$ 600
	Restroom Pump-Out	x	Bi-Annually	\$ 75 \$ 150
	Litter Clean-Up *	x	Bi-Monthly	\$100 \$ 600
	Mowing/Brush Hogging	x	3 Times/Year	\$250 \$ 750
	Administration	x	15%	\$ 400
	Total			\$ 3,100

\* Indicates potential volunteer or other labor source

Regulatory Clearances	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[ ]	_____
NPDES Permit	[x]	[ ]	_____
E.S. Section 7 Consultation	[x]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[x]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[x]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description*

The Cache River Wetlands Center development involves the construction of a 23,000 sf visitor center (on the west side of Easter Slough off of Shawnee College Road), wetland boardwalks, exterior revegetation, and the provision of an environmental education program. The wetlands center will include three wings: a public wing which will house a gift shop, theater and a large exhibit and observation space; an administration wing which will house offices, conference and work rooms and a library; and a research wing which will house a greenhouse, GIS work space and a multi-use room.

*Project Justification*

Project will benefit the local economy, educate the public about the environmental importance of the Cache River, and unique ecosystem of the watershed. The visitor center will also strengthen the partnership and help provide opportunities for expanded partnerships.

*Community/Partner Interest*

Citizens Committee to Save the Cache River  
The Nature Conservancy  
Ducks Unlimited  
Illinois Department of Natural Resources  
Southern Illinois University-Carbondale

*Project Design Criteria*

See feasibility study

*Funds Summary  
Detail on Page 2*

Direct Cost	\$10,810,000
Indirect Cost	\$ 3,873,500
Total Project Cost	\$14,593,500
Maintenance Cost	\$ 75,000
Date of Estimate:	03/96

*Funding Opportunities*

\_\_\_\_\_ ISTE A \_\_\_\_\_ State Trails \_\_\_\_\_

*Partnership Review & Approvals*

Submitted By:	Date	Reviewed	Date
_____	_____	TNC	_____
Reviewed	Date	Approved	Date
_____	_____	Refuge Manager	_____
State DNR			

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Wetlands Center Building	\$289/SF	23,000/SF	\$ 6,650,000
		Wetlands Center Site	\$59,140/AC	46.5/AC	\$ 2,750,000
		Contingency		15%	\$ 1,410,000
		Subtotal (Direct Cost)			\$10,810,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 1,081,000
	Construction Management	10%	\$ 1,081,000
	Project Management	15%	\$ 1,621,000
	Subtotal (Indirect Cost)		\$ 3,783,500
	<b>TOTAL COST</b>		<b>\$14,593,500</b>

*Annual Maintenance Cost*

	Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost
Maintenance (1 full-time)	x			\$ 25,000
Supplies/Contracts	x			\$ 50,000
Total				\$ 75,000

*Regulatory Clearances*

	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[ ]	_____
NPDES Permit	[x]	[ ]	_____
E.S. Section 7 Consultation	[x]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[x]	[ ]	_____
Waste Water Disposal	[x]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[x]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* The proposed facility is an outdoor interpretive and learning site on the Shawnee campus. As primarily an educational site the project will include demonstration features showing restoration techniques, test plots, pond construction and prairie restoration, and support facilities will include trails, signs, amphitheater, and equipment storage.

*Project Justification* A joint venture to aid the college in teaching students about the unique features of the Cache and restoration efforts going on in the refuge.

*Community/Partner Interest* Shawnee College

*Project Design Criteria*

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$41,250
	Indirect Cost	\$ 9,000
	Total Project Cost	\$50,250
	Maintenance Cost	\$ 900
	Date of Estimate:	03/96

*Funding Opportunities* \_\_\_\_\_ ISTE A \_\_\_\_\_ State Trails  Wildlife Forever

*Partnership Review & Approvals* Submitted By: \_\_\_\_\_ Date \_\_\_\_\_ Reviewed \_\_\_\_\_ Date \_\_\_\_\_

TNC

Reviewed \_\_\_\_\_ Date \_\_\_\_\_ Approved \_\_\_\_\_ Date \_\_\_\_\_

State DNR

Refuge Manager

**CMP Project Worksheet SHAWNEE COLLEGE OUTDOOR LEARNING SITE A7**

Station Name: Cypress Creek NWR

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Trail	\$4/LF	2,000	\$ 8,000
		Pond Construction	\$10,000/LS	1	\$10,000
		Prairie	\$1,000/AC	3 AC	\$ 3,000
		Cane Restoration	\$2,000/LS	1	\$ 2,000
		Trail Head	\$4,000/EA	1	\$ 4,000
		Test Plot Signs	\$2,000/LS	1	\$ 2,000
		Exotic Vegetation Removal	\$2,500/LS	1	\$ 2,500
		Amphitheater	\$6,000/LS	1	\$ 6,000
		Contingency/Unscheduled Items		10%	\$ 3,750
		Subtotal (Direct Cost)			\$41,250

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 2,800
	Project Management	15%	\$ 6,200
	Subtotal (Indirect Cost)		\$ 9,000
	<b>TOTAL COST</b>		<b>\$50,250</b>

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
	Mowing/Brush Hogging	x	4 Times/Year	\$200 \$ 800
	Administration	x	15%	\$ 100
	Total			\$ 900

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[ ]	_____
NPDES Permit	[x]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[x]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

# BELLROSE PUBLIC ACCESS & OUTDOOR CLASSROOM

**CMP Project Worksheet**

**A8**

**Station Name:** Cypress Creek NWR

Page 1 of 2

*Project Description*      The primary function of the Bellrose Public Access Area will be to accommodate organized groups and students. It is one of four designated outdoor classrooms proposed for the Refuge. Facilities will include a group shelter with tables and benches, information kiosk, boardwalk, trail, parking area and toilet facilities. Goose hunting is a secondary activity to prevent buildup of large flocks of geese. The area will function as a duck sanctuary and be closed to duck hunting throughout the fall season.

*Project Justification*      The site was chosen as an outdoor classroom because it contains diverse plant communities, excellent wildlife observation and it can demonstrate waterfowl management techniques such as moist soil management.

*Community/Partner Interest*      Ducks Unlimited

*Project Design Criteria*

<i>Funds Summary</i>	Direct Cost	\$141,800
<i>Detail on Page 2</i>	Indirect Cost	\$ 30,450
	Total Project Cost	\$172,250
	Maintenance Cost	\$ 7,800
	Date of Estimate:	08/96

*Funding Opportunities*

_____ ISTEAs _____	_____ State Trails _____	_____	_____
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*Partnership Review & Approvals*

	Submitted By: _____	Date _____	Reviewed _____	Date _____
			TNC	
	Reviewed _____	Date _____	Approved _____	Date _____
	State DNR		Refuge Manager	

## BELLROSE PUBLIC ACCESS & OUTDOOR CLASSROOM

**CMP Project Worksheet**

**A8**

**Station Name:** Cypress Creek NWR

Page 2 of .

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Parking (EE) (Oil Chip)	\$8.00/SY	500	\$ 4,000
		Parking (Hunter)	\$4.50/SY	300	\$ 1,350
		Hunter Access Sign	\$1,200/EA	1	\$ 1,200
		Shelter 22' x 32'	\$35,000/EA	1	\$ 35,000
		Boardwalk w/Screen	\$60/LF	600	\$ 36,000
		Interpretive Signs	\$1,000/EA	6	\$ 6,000
		Blind	\$12,000/LS	1	\$ 12,000
		Oil Chip Road	\$4,400/1 Mile	1.5	\$ 6,600
		Toilets	\$12,000/EA	2	\$ 24,000
		Contingency/unscheduled items		20%	\$ 23,650
		<b>Subtotal (Direct Cost)</b>			<b>\$149,800</b>

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 14,200
	Construction Management	5%	\$ 7,100
	Project Management	10% (overall)	\$ 9,150
	<b>Subtotal (Indirect Cost)</b>		<b>\$ 30,450</b>
	<b>TOTAL COST</b>		<b>\$172,250</b>

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
	Road	x	Annually	\$4,000 \$ 4,000
	Trash Pick-Up	x	Bi-Weekly	\$ 25 \$ 650
	Parking Lot	x	Quarterly	\$ 150 \$ 600
	Restroom Pump-Out	x	Bi-Annually	\$ 75 \$ 150
	Litter Clean-Up *	x	Bi-Monthly	\$ 100 \$ 600
	Mowing/Brush Hogging	x	3 Times/Year	\$ 250 \$ 750
	Administration	x	15%	\$ 1,000
	<b>Total</b>			<b>\$ 7,800</b>

\* Indicates potential volunteer or other labor source

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[ ]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[x]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[x]	[ ]	_____

*Project Description* As lands are acquired management and maintenance needs increase. New construction and agricultural equipment is required to construct and maintain facilities to prepare fields for planting, dig out and restore springs and control weeds.

*Project Justification*

*Community/Partner Interest* Equipment and equipment maintenance and storage is shared with the major land managing partners such as TNC and IDNR

*Project Design Criteria* NA

*Funds Summary*  
*Detail on Page 2*

Direct Cost	\$342,200
Indirect Cost	\$ 34,220
Total Project Cost	\$376,420
Maintenance Cost	\$ 10,000
Date of Estimate:	07/96

*Funding Opportunities*

_____	ISTEA	_____	State Trails	_____	_____
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*Partnership Review & Approvals*

Submitted By:	_____	Date	_____	Reviewed	_____	Date	_____
				TNC			
Reviewed	_____	Date	_____	Approved	_____	Date	_____
State DNR				Refuge Manager			

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
	1.	7800 John Deer Tractor W/Batwing Mower & Offset Disk			\$ 70,000
	2.	D5C LGP III Caterpillar Tractor			\$ 78,800
	3.	446B Backhoe Loader			\$ 93,400
	4.	Dump Truck w/LowBoy Trailer			\$100,000
		Subtotal (Direct Cost)			\$342,200

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design Construction Management Project Management/Administration	10%	\$ 34,220
	Subtotal (Indirect Cost)		
	<b>TOTAL COST</b>		<b>\$376,420</b>

<i>Annual Maintenance Cost</i>	Labor/Source Contract / In-House	Quantity	Unit Cost	Annual Cost
	Equipment Maintenance/ Repair	x	(3%)	\$10,000
	Total			\$10,000

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[ ]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[ ]	[ ]	_____
Corps Section 404	[ ]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* Located at opposite end of lower Cache Slough from the proposed Mounds boat launch. This facility is a small canoe access and associated development and maintenance of a 6 mile canoe trail.

*Project Justification* Excellent canoeing opportunities exist in the lower Cache Slough area. Access and trail marking will open up the area to wildlife observation and fishing.

*Community/Partner Interest*

*Project Design Criteria* Follow IDNR design requirements

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$33,650
	Indirect Cost	\$ 8,375
	Total Project Cost	\$42,025
	Maintenance Cost	\$ 2,200
	Date of Estimate:	09/96

*Funding Opportunities*

\_\_\_\_\_ ISTE A \_\_\_\_\_ State Trails \_\_\_\_\_

*Partnership Review & Approvals*

Submitted By:	Date	Reviewed	Date
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TNC

Reviewed	Date	Approved	Date
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State DNR

Refuge Manager

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Site preparation	LS		\$ 5,000
		Canoe Ramp	\$6,500/EA	1	\$ 6,500
		Parking (6 Cars)	\$1,000/car	6	\$ 6,000
		Sign	\$1,200/EA	1	\$ 1,200
		Access Drive (Oil Chip)	\$10/CY	500	\$ 5,000
		Post & Rail	\$15/LF	370/LF	\$ 5,550
		Landscape Planting			
		Contingency		15%	\$ 4,400
		Subtotal (Direct Cost)			\$33,650

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 3,350
	Construction Management	5%	\$ 1,675
	Project Management	10% (overall)	\$ 3,350
	Subtotal (Indirect Cost)		\$ 8,375
	TOTAL COST		\$42,025

<i>Annual Maintenance Cost</i>		Labor Source	Unit	Annual	Annual
		Contract / In-House	Quantity	Cost	Cost
	Trash Pick-Up	x	Bi-Weekly	\$ 20	\$ 520
	Parking Lot	x	Quarterly	\$100	\$ 400
	Litter Clean-Up *	x	Bi-Monthly	\$ 60	\$ 360
	Mowing/Brush Hogging	x	3 Times/Year	\$200	\$ 600
	Administration	x	15%		\$ 300
	Total				\$ 2,200

\* Indicates potential volunteer or other labor source

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[ ]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[ ]	[ ]	_____
Corps Section 404	[ ]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

**BOYD SEED ORCHARD &  
OUTDOOR CLASSROOM**

**CMP Project Worksheet**

**A11**

**Station Name:** Cypress Creek NWR

Page 1 of 2

*Project Description*      Development of interpretive elements at Seed Orchard depicting restoration efforts at CCNWR. A gathering area, trail, signs, equipment storage toilets and a shelter will support environmental education efforts focused on the productions of seed for large scale ecosystem restoration.

*Project Justification*      Seed Orchard is the primary site for seed propagation and offers unique educational opportunities for restoration efforts.

*Community/Partner Interest*      The Nature Conservancy

*Project Design Criteria*      Standard interpretive signage for the joint venture.

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$215,000
	Indirect Cost	\$ 43,000
	Total Project Cost	\$258,000
	Maintenance Cost	\$ 2,500
	Date of Estimate:	03/96

*Funding Opportunities*      \_\_\_\_\_ ISTEAs \_\_\_\_\_ State Trails      \_\_\_\_\_

<i>Partnership Review &amp; Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____	_____	_____	_____
			TNC	
	Reviewed	Date	Approved	Date
	_____	_____	_____	
	State DNR		Refuge Manager	

## BOYD SEED ORCHARD & OUTDOOR CLASSROOM

**CMP Project Worksheet**

**A11**

**Station Name:** Cypress Creek NWR

Page 2 of

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Parking (5 car & 1 bus)	\$1000/Car	7	\$ 7,000
		Interpretive Trail	\$4.00/LF	5,000	\$ 20,000
		Signage (Main)	\$1,200/EA	1	\$ 1,200
		Signage (Interpretive)	\$400/EA	10	\$ 4,000
		Toilets	\$12,000/EA	1	\$ 12,000
		Irrigation System	\$5,000/Acre	15	\$ 75,000
		Shelter	\$60/SF	1000	\$ 60,000
		Contingency		20%	\$ 35,800
		Subtotal (Direct Cost)			\$215,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 21,500
	Construction Management	5%	\$ 10,750
	Project Management	5% (overall)	\$ 10,750
	Subtotal (Indirect Cost)		\$ 43,000
	<b>TOTAL COST</b>		<b>\$258,000</b>

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
	Trash Pick-Up	x	Bi-Weekly	\$ 15 \$ 390
	Parking Lot	x	Quarterly	\$100 \$ 400
	Restroom Pump-Out	x	Bi-Annually	\$ 75 \$ 150
	Litter Clean-Up *	x	Bi-Monthly	\$100 \$ 600
	Mowing/Brush Hogging	x	3 Times/Year	\$250 \$ 750
	Administration	x	15%	\$ 230
	Total			\$ 2,500

\* Indicates potential volunteer or other labor source

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[ ]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[ ]	[ ]	_____
Corps Section 404	[ ]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description*

New lands aquired (7,500 acres) will require perimeter posting with Refuge boundary signs at 1/4 mile or less intervals. Roadway traffic control signs will also be required at new public use sites. Highway signs will be installed according to a Refuge Sign Plan.

Brochures and maps will be generated for visitor facilities and will need periodic updating and printing.

*Project Justification*

Refuge signs, brochures and maps are an essential part of directing access on the Refuge and reducing trespassing on private land.

*Community/Partner Interest*

State Highway Department, Joint Venture Partners and Tourism Group with brochure development and printing

*Project Design Criteria*

*Funds Summary  
Detail on Page 2*

Direct Cost	\$63,000
Indirect Cost	\$ 9,500
Total Project Cost	\$72,500
Maintenance Cost	\$ 350
Date of Estimate:	09/96

*Funding Opportunities*

\_\_\_\_\_ ISTE A \_\_\_\_\_ State Trails \_\_\_\_\_

*Partnership Review & Approvals*

Submitted By:	Date	Reviewed	Date
_____	_____	TNC	_____
Reviewed	Date	Approved	Date
_____	_____	Refuge Manager	_____
State DNR			

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Boundary Signs	\$35/EA	800	\$28,000
		Traffic Control Signs	\$50/EA	100	\$ 5,000
		Highway Signs	\$1500/EA	10	\$15,000
		Visitor Brochure	\$10,000/LS	1	\$10,000
		Visitor Maps	\$5,000/LS	1	\$ 5,000
		Subtotal (Direct Cost)			\$63,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design		
	Construction Management		
	Project Management/Administration	15%	\$ 9,500
	Subtotal (Indirect Cost)		\$ 9,500
	TOTAL COST		\$72,500

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
	Replace Signs	x	10/Year	\$35 \$ 350

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[ ]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* This project summarizes a five-year forest reforestation program for the Refuge in which 1,750 acres of land will be planted.

*Project Justification* Forest reforestation is one of the top priorities of the Refuge and one of the primary reasons the Refuge was established.

*Community/Partner Interest* TNC

*Project Design Criteria* Native trees are to be used.

<i>Funds Summary</i>	Direct Cost	\$700,000
<i>Detail on Page 2</i>	Indirect Cost	\$105,000
	Total Project Cost	\$805,000
	Maintenance Cost	\$ 2,300
	Date of Estimate:	09/96

*Funding Opportunities* \_\_\_\_\_ ISTEAs \_\_\_\_\_ State Trails \_\_\_\_\_

<i>Partnership Review &amp; Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____	_____	TNC	_____
	Reviewed	Date	Approved	Date
	State DNR	_____	Refuge Manager	_____

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Forest Restoration - 2002	\$400	350	\$140,000
		Forest Restoration - 2003	\$400	350	\$140,000
		Forest Restoration - 2004	\$400	350	\$140,000
		Forest Restoration - 2005	\$400	350	\$140,000
		Forest Restoration - 2006	\$400	350	\$140,000
		<b>Subtotal (Direct Cost)</b>			<b>\$700,000</b>

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design		
	Construction Management		
	Project Management/Administration	15%	\$105,000
	<b>Subtotal (Indirect Cost)</b>		
	<b>TOTAL COST</b>		<b>\$805,000</b>

<i>Annual Maintenance Cost</i>		Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost *
	Mowing/Brush Hogging (Years 1, 2 & 3)	x	2 Times/Year	\$5000	\$ 2,000
	Administration	x	15%		\$ 300
	<b>Total</b>				<b>\$ 2,300</b>
	* Average cost over 5 years				

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[ ]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* This project includes the annual restoration of 100 acres of wetlands during the 5 year period of 1997 through 2001.

*Project Justification* To meet Refuge goals and objectives and to provide habitat for wetland dependent waterfowl and other species.

*Community/Partner Interest* TNC  
Citizens Committee to save the Cache River

*Project Design Criteria* Focus on prior covered wetlands

<i>Funds Summary</i>	Direct Cost	\$ 40,000
<i>Detail on Page 2</i>	Indirect Cost	\$ 0
	Total Project Cost	\$ 40,000
	Maintenance Cost	\$ 0
	Date of Estimate:	9/96

*Funding Opportunities* \_\_\_\_\_ ISTEA \_\_\_\_\_ State Trails \_\_\_\_\_

<i>Partnership Review &amp; Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____	_____	_____	_____
		TNC		
	Reviewed	Date	Approved	Date
	_____	_____	_____	_____
	State DNR		Refuge Manager	

**CMP Project Worksheet WETLAND RESTORATION (2002-2006)**

**B**

Station Name: Cypress Creek NWR

Page 2 of 4

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
	1.	Natural Wetland Restoration	\$400	100 acres	\$40,000
Subtotal (Direct Cost)					\$40,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design		\$ 0
	Construction Management		\$ 0
	Project Management		\$ 0
	Subtotal (Indirect Cost)		\$ 0
	<b>TOTAL COST</b>		<b>\$ 0</b>

<i>Annual Maintenance Cost</i>	Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost
Not Applicable				

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[ ]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* Throughout the refuge there are opportunities to recreate some of the unique micro-ecosystems such as the cane brakes which once flourished in the Cache. Additionally, small springs and seeps are scattered throughout the refuge which have been covered or are threatened to be silted in by flood waters.

*Project Justification* Springs and seeps help regulate water levels during drought periods. Canebrakes provide unique habitat for species such as the Swainsons warbler.

*Community/Partner Interest* Audubon Society  
TNC

*Project Design Criteria* Care must be taken when collecting rhizomes not to disturb existing canebrakes. In addition care should be taken when restoring springs or seeps not to disturb the state endangered dusky salamander.

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$ 10,200
	Indirect Cost	\$ 0
	Total Project Cost	\$ 10,200
	Maintenance Cost	\$ 450
	Date of Estimate:	9/96

*Funding Opportunities* \_\_\_\_\_ ISTE A \_\_\_\_\_ State Trails \_\_\_\_\_

<i>Partnership Review &amp; Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		TNC	
	Reviewed	Date	Approved	Date
	State DNR		Refuge Manager	

**CMP Project Works**      **UNIQUE NATIONAL COMMUNITIES RESTORATION**      **B3**

Station Name: Cypress Creek NWR

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Restoration of unique habitats such as springs, seeps & cane brakes	\$300/AC	34	\$10,200
Subtotal (Direct Cost)					\$ 10,200

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design		\$ 0
	Construction Management		\$ 0
	Project Management		\$ 0
	Subtotal (Indirect Cost)		\$ 0
	<b>TOTAL COST</b>		<b>\$ 10,200</b>

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost *	
	Contract / In-House				
	Back Hoe Seeps (years 6 and 9)	x	5 annually	200	\$ 400
	Administration	x	15%		\$ 50
	Total				\$ 450
	*Average cost over 5 years				

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[ ]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* Construct 330 acres of additional moist soil units at Juncker, Boyd, Greenburg and Delta lands parcels. Units will have low dikes and dewatering capabilities.  
(The Juncker Unit will be managed as a moist soil unit only until some time in the future when Cypress Creek is restored to its original channel).

*Project Justification* As a specialized form of wetland restoration, moist soil management will emulate wetland functions and productivity that occurred naturally within the Cache River ecosystem for the primary benefit to migratory waterfowl and shorebirds.

*Community/Partner Interest* Ducks Unlimited

*Project Design Criteria* Design so that at least 25% of area can be flooded by October 15. Provide at least 150 acres of 330 in mudflat-type habitat for spring shorebirds by partial drawdown capabilities.

*Funds Summary Detail on Page 2*

Direct Cost	\$ 860,000
Indirect Cost	\$ 302,000
Total Project Cost	\$1,162,150
Maintenance Cost	\$ 5,610
Date of Estimate:	09/96

*Funding Opportunities* \_\_\_\_\_ ISTE A \_\_\_\_\_ State Trails \_\_\_\_\_

*Partnership Review & Approvals*

Submitted By:	Date	Reviewed	Date
_____	_____	TNC	_____
Reviewed	Date	Approved	Date
State DNR	_____	Refuge Manager	_____

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Juncker	\$2000/AC	100	\$ 200,000
		Boyd	\$2000/AC	80	\$ 160,000
		Greenburg	\$2000/AC	80	\$ 160,000
		Delta Lands	\$2000/AC	70	\$ 140,000
		Brushy Moist Soil Unit	\$2000/AC	100	\$ 200,000
		Subtotal (Direct Cost)			\$ 860,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design & Hydrology Study	15%	\$ 132,000
	Construction Management	5%	\$ 64,500
	Project Management	10% (overall)	\$ 105,650
	Subtotal (Indirect Cost)		\$ 302,150
	<b>TOTAL COST</b>		<b>\$1,162,150</b>

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
	Mowing, Replant, Reshaping	x	330 Acres	\$10 \$ 3,300
	Diesel Fuel for Pumping	x	330 Acres	\$7 \$ 2,310
	Total			\$ 5,610

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[ ]	_____
NPDES Permit	[x]	[ ]	_____
E.S. Section 7 Consultation	[x]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[x]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[x]	[ ]	_____
Water Quality Section 401	[x]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

# HOGUE WOODS PUBLIC ACCESS & OUTDOOR CLASSROOM

**CMP Project Worksheet**

**B5**

**Station Name:** Cypress Creek NWR

Page 1 of 2

*Project Description*      This project is located in the north central portion of the refuge. It is a popular spot for hunters and is somewhat remote. The site has already received replanting of seedlings. Project facilities for this site include restrooms (concrete block), access road, school bus access lot, information sign, gravel parking lot, trail (develop), and gate.

*Project Justification*      Heavily used by hunters. Has many unique characteristics for education.

*Community/Partner Interest*      Potential hunting organizations and educational institutions

*Project Design Criteria*      Standard signage, trail head, parking, and concrete block toilet design

<i>Funds Summary</i>	Direct Cost	\$74,400
<i>Detail on Page 2</i>	Indirect Cost	\$18,625
	Total Project Cost	\$93,025
	Maintenance Cost	\$ 3,350
	Date of Estimate:	09/96

*Funding Opportunities*

<u>      </u> ISTEA	<u>      </u> State Trails	<u>  ✓  </u> Hunting Organizations
---------------------	----------------------------	------------------------------------

<i>Partnership Review &amp; Approvals</i>	Submitted By: _____	Date _____	Reviewed _____	Date _____
			TNC	
	Reviewed _____	Date _____	Approved _____	Date _____
	State DNR		Refuge Manager	

## HOGUE WOODS PUBLIC ACCESS & OUTDOOR CLASSROOM

**CMP Project Worksheet**

**B5**

Station Name: Cypress Creek NWR

Page 2 of

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Restroom	\$12,000/EA	2	\$24,000
		Gravel Access Road	\$4.50/SY	3,000	\$13,500
		Gravel Parking	\$1,000/CAR	12	\$12,000
		Trail Development	\$4/LF	2,500	\$10,000
		Gate	\$2,500/EA	1	\$ 2,500
		Contingency/Unscheduled Items		20%	\$12,400
		Subtotal (Direct Cost)			\$74,400

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 7,450
	Construction Management	5%	\$ 3,725
	Project Management	10% (overall)	\$ 7,450
	Subtotal (Indirect Cost)		\$13,625
	<b>TOTAL COST</b>		<b>\$93,025</b>

*Annual Maintenance Cost*

	Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost
Trash Pick-Up	x	Bi-Weekly	\$ 25	\$ 650
Parking Lot	x	Quarterly	\$150	\$ 600
Restroom Pump-Out	x	Bi-Annually	\$150	\$ 300
Litter Clean-Up *	x	Bi-Monthly	\$100	\$ 600
Mowing/Brush Hogging	x	3 Times/Year	\$250	\$ 750
Administration	x	15%		\$ 450
<b>Total</b>				<b>\$ 3,350</b>

\* Indicates potential volunteer or other labor source

*Regulatory Clearances*

	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x] [ ]	_____	
NPDES Permit	[x] [ ]	_____	
E.S. Section 7 Consultation	[ ] [ ]	_____	
Cultural Resources	[x] [ ]	_____	
Corps Section 404	[x] [ ]	_____	
Waste Water Disposal	[ ] [ ]	_____	
Dam Permit	[ ] [ ]	_____	
Water Quality Section 401	[ ] [ ]	_____	
Road Closure Approval	[x] [ ]	_____	

*Project Description* The Hogue Woods and James Tracts have old county roads which are unused. A formal road closure process should be pursued.

*Project Justification* Roads are in need of repair and have erosion problems.

*Community/Partner Interest* County

*Project Design Criteria* None

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$10,200
	Indirect Cost	\$ 1,050
	Total Project Cost	\$11,250
	Maintenance Cost (One Year)	\$ 1,100
	Date of Estimate:	09/96

*Funding Opportunities* \_\_\_\_\_ ISTE A \_\_\_\_\_ State Trails \_\_\_\_\_

<i>Partnership Review &amp; Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		_____	
			TNC	
	Reviewed	Date	Approved	Date
_____		_____		
State DNR		Refuge Manager		

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Remove/Revegetate North	\$2/SY	1,000	\$ 2,000
		Gates	\$1,500/EA	1	\$ 1,500
		Grading	\$5/CY	1,000	\$ 5,000
		Contingency		20%	\$ 1,700
		Subtotal (Direct Cost)			\$10,200

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Construction Management	5%	\$ 500
	Project Management	5% (overall)	\$ 550
	Subtotal (Indirect Cost)		\$ 1,050
	<b>TOTAL COST</b>		<b>\$11,250</b>

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
	One-year projected	x		\$ 1,100

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[ ]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[ ]	[ ]	_____
Corps Section 404	[ ]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[ ]	[ ]	_____
Road Closure Approval	[x]	[ ]	_____

*Project Description* To develop five small (5-acre) hunter accesses throughout the Refuge. Locations include Greenberg, Stuckey, Brushy, Hileman, and Thomure.

*Project Justification* Project is used currently by hunters. Will provide a more controlled access to a remote area of the refuge.

*Community/Partner Interest*

*Project Design Criteria* Typical primitive access with standard hunter sign-in and informational kiosk.

<i>Funds Summary</i>	Direct Cost	\$40,800
<i>Detail on Page 2</i>	Indirect Cost	\$ 4,100
	Total Project Cost	\$44,900
	Maintenance Cost	\$ 1,325
	Date of Estimate:	08/96

*Funding Opportunities* \_\_\_\_\_ ISTEAs \_\_\_\_\_ State Trails \_\_\_\_\_

<i>Partnership Review &amp; Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		_____	
			TNC	
	Reviewed	Date	Approved	Date
	_____		_____	
	State DNR		Refuge Manager	

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Hunter Access	\$5,000	5	\$25,000
		Kiosk	\$1,200	5	\$ 6,000
		Entrance Sign	\$ 600	5	\$ 3,000
		Contingency/Unscheduled Items		10%	\$ 6,800
		Subtotal (Direct Cost)			\$40,800

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Project Management	10%	\$ 4,100
	Subtotal (Indirect Cost)		\$ 4,100
	<b>TOTAL COST</b>		<b>\$ 44,900</b>

<i>Annual Maintenance Cost</i>		Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost
	Trash Pick-Up	x	Bi-Weekly	\$ 25	\$ 150
	Parking Lot	x	Quarterly	\$100	\$ 400
	Litter Clean-Up *	x	Bi-Annually	\$ 75	\$ 300
	Mowing/Brush Hogging	x	3 Times/Year	\$100	\$ 300
	Administration	x	15%		\$ 175
	Total				\$ 1,325

\* Indicates potential volunteer or other labor source

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[ ]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[x]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

Project Description

This project is located at the northernmost end of the refuge and contains unique cypress swamps. The project will provide a mid-level public access point to a remote portion of the refuge. The project will include the following program developments:

- Foot Trail/Boardwalk
- Parking Lot (10 Cars and 1 Bus)
- Trail Head Sign
- Restrooms
- Interpretive Signs
- Observation Blind

Project Justification

This is a very unique portion of the refuge, containing a true cypress swamp. The project area will provide access for environmental education, hunters and bird watchers.

Community/Partner Interest

Project Design Criteria

This project shall follow typical standards for a multi-use access site with signage, trail head, parking, and restroom design.

Funds Summary  
Detail on Page 2

Direct Cost	\$81,850
Indirect Cost	\$21,700
Total Project Cost	\$103,550
Maintenance Cost	\$3,150
Date of Estimate:	9/96

Funding Opportunities

ISTEA     State Trails     OSLAD     Foundation

Partnership Review & Approvals

Submitted By:	Date	Reviewed	Date
_____		_____	
		TNC	
Reviewed	Date	Approved	Date
_____		_____	
State DNR		Refuge Manager	

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Trail Development	\$4/LF	5,000	\$ 20,000
		Boardwalk	\$50/LF	400	\$ 20,000
		Parking Lot (Gravel)	\$1000/CAR	12	\$ 12,000
		Wood Signs	\$1200/EA	1	\$ 1,200
		Interpretive Sign	\$600/EA	5	\$ 3,000
		Restroom (Unisex)	\$12,000/EA	1	\$ 12,000
		Contingency/Unscheduled Items		10%	\$ 13,650
		Subtotal (Direct Cost)			\$ 81,850

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 8,200
	Construction Management	5%	\$ 4,100
	Project Management	10 (overall)	\$ 9,400
	Subtotal (Indirect Cost)		\$ 21,700
	<b>TOTAL COST</b>		<b>\$103,550</b>

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
	Trash Pick-Up	x	Bi-Weekly	\$ 25 \$650
	Parking Lot	x	Quarterly	\$ 150 \$600
	Restroom Pump-Out	x	Bi-Annually	\$ 75 \$150
	Litter Clean-Up *	x	Bi-Monthly	\$ 100 \$600
	Mowing/Brush Hogging	x	3 Times/Year	\$ 250 \$750
	Administration	x	15%	\$ 400
	Total			\$3,150

\* Indicates potential volunteer or other labor source

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[ ]	_____
NPDES Permit	[x]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[x]	[ ]	_____
Waste Water Disposal	[x]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

**CMP Project Worksheet CULTURAL RESOURCES SITE SURVEYS/PLANS B9**

Station Name: Cypress Creek NWR

*Project Description* Several step-down activities need to take place related to cultural resource investigations. Archaeologic clearances are needed for all development sites. Historic structures such as the Churchill House, Stubblefield House and Rolwing Cabin will need further evaluation and study for protection and/or secondary uses.

*Project Justification* Policy requires informal decisions based on site-specific surveys and evaluations.

*Community/Partner Interest* SIU architectural/engineering evaluation. Possible design school project. Possible use by community residents as gift shop or restaurant as house is near Bellrose tract.

*Project Design Criteria* Following FWS policy and guidances per Regional Cultural Resource Officer.

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$ 85,000
	Indirect Cost	\$ 24,250
	Total Project Cost	\$109,250
	Date of Estimate:	09/96

<i>Funding Opportunities</i>	_____	ISTEA	_____	State Trails	_____	_____
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<i>Partnership Review &amp; Approvals</i>	Submitted By:	_____	Date	_____	Reviewed	_____	Date	_____
					TNC			
	Reviewed	_____	Date	_____	Approved	_____	Date	_____
	State DNR	_____			Refuge Manager	_____		

**CMP Project Worksheet CULTURAL RESOURCES SITE SURVEYS/PLANS**

**B9**

Station Name: Cypress Creek NWR

Page 1 of 2

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Churchill House Study	\$10,000	1	\$ 10,000
		Stubblefield Log House	\$ 5,000	1	\$ 5,000
		Greer Log Barn	\$ 5,000	1	\$ 5,000
		Rolwing Log Cabin	\$ 5,000	1	\$ 5,000
		Arch. Clearances	\$ 5,000	12	\$ 60,000
		Subtotal Direct Cost			\$ 85,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design/Strategic Plan		\$ 10,000
	Project Management	15%	\$ 14,250
	Subtotal (Indirect Cost)		\$ 24,250
	<b>TOTAL COST</b>		<b>\$109,250</b>

*Annual Maintenance Cost*

Not Applicable

*Regulatory Clearances*

	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[ ]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[ ]	[ ]	_____
Corps Section 404	[ ]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* This project involves a mix of moist soil development and reforestation with environmental education facilities. As an intermediate level of development, the Brushy site will include perimeter access, walking trails, moist soil management, reforestation, and typical public use facilities, including parking for 10 cars and 1 bus.

*Project Justification* Central location and prominent visibility for a primary roadway, as well as prime acquisition target.

*Community/Partner Interest*

*Project Design Criteria* To establish a uniform image, the project should contain standard design details for the Cache Wetlands, but also contain identity with the National Wildlife Refuge System through signs and brochures.

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$139,800
	Indirect Cost	\$ 37,000
	Total Project Cost	\$176,800
	Maintenance Cost	\$ 7,500
	Date of Estimate:	09/96

*Funding Opportunities* \_\_\_\_\_ ISTEA \_\_\_\_\_ State Trails \_\_\_\_\_  EMP

<i>Partnership Review &amp; Approvals</i>	Submitted By: _____	Date _____	Reviewed _____	Date _____
			TNC	
	Reviewed _____	Date _____	Approved _____	Date _____
	State DNR _____		Refuge Manager _____	

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Trail	\$4/LF	16,000	\$ 64,000
		Access Road/Parking (Gravel)	\$1,000/CAR	12	\$ 12,000
		Sign (Interpretive)	\$600/EA	10	\$ 6,000
		Gate for Parking	\$2,500/EA	1	\$ 2,500
		Observation Blind	\$8,000/EA	1	\$ 8,000
		Kiosk	\$5,000/EA	N/A	Maintenance
		Toilet	\$12,000	1	\$ 12,000
		Contingency/Unscheduled Items		20%	\$ 23,300
		Subtotal (Direct Cost)			\$139,800

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 14,000
	Construction Management	5%	\$ 7,000
	Project Management	10% (overall)	\$ 16,000
	Subtotal (Indirect Cost)		\$ 37,000
	<b>TOTAL COST</b>		<b>\$176,800</b>

<i>Annual Maintenance Cost</i>	Labor Source		Quantity	Unit Cost	Annual Cost
	Contract	In-House			
		x	Weekly \$50	\$2,600	
	x		Bi-Weekly	\$ 25	\$ 650
		x	Quarterly	\$ 300	\$ 1,200
		x	Monthly	\$ 50	\$ 600
		x	Bi-Monthly	\$ 100	\$ 600
		x	3 Times/Year	\$ 300	\$ 900
		x	15%		\$ 1,000
			Total		\$ 7,500

\* Indicates potential volunteer or other labor source

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[ ]	_____
NPDES Permit	[x]	[ ]	_____
E.S. Section 7 Consultation	[x]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[x]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* This project will provide valuable information on how the land was used by collecting 1st-hand knowledge from long-term residents of the area. The product will be a valuable component of the exhibitry in the Wetland Visitor Center.

*Project Justification* The product will provide a valuable record of past traditions, changes in the land, and perspectives regarding the Cache River Wetlands.

*Community/Partner Interest*

*Project Design Criteria*

*Funds Summary*  
*Detail on Page 2*

Direct Cost	\$13,200
Indirect Cost	\$ 0
Total Project Cost	\$13,200
Maintenance Cost	\$ 0
Date of Estimate:	09/97

*Funding Opportunities*

\_\_\_\_\_ ISTE A \_\_\_\_\_ State Trails \_\_\_\_\_

*Partnership Review & Approvals*

Submitted By:	Date	Reviewed	Date
_____	_____	TNC	_____
Reviewed	Date	Approved	Date
_____	_____	_____	_____
State DNR		Refuge Manager	

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Contract to collect and record interviews with area residents			\$13,200

Subtotal (Direct Cost) \$13,200

<i>Indirect Cost</i>	Description	Rate	Total Cost
	TOTAL COST		\$13,200

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[ ]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[ ]	[ ]	_____
Corps Section 404	[ ]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* This project identifies a budget to annually reforest 350 acres of land between 2007 and 2011.

*Project Justification* Reforestation is one of the highest priorities for the Refuge.

*Community/Partner Interest*

*Project Design Criteria*

<i>Funds Summary</i>	Direct Cost	\$787,500
<i>Detail on Page 2</i>	Indirect Cost	\$118,125
	Total Project Cost	\$905,625
	Maintenance Cost	\$ 2,300
	Date of Estimate:	09/96

*Funding Opportunities* \_\_\_\_\_ ISTEAs \_\_\_\_\_ State Trails \_\_\_\_\_

*Partnership Review & Approvals* Submitted By: \_\_\_\_\_ Date \_\_\_\_\_ Reviewed \_\_\_\_\_ Date \_\_\_\_\_

TNC

Reviewed \_\_\_\_\_ Date \_\_\_\_\_ Approved \_\_\_\_\_ Date \_\_\_\_\_

State DNR

Refuge Manager

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Forest Restoration - 2007	\$450	350	\$157,500
		Forest Restoration - 2008	\$450	350	\$157,500
		Forest Restoration - 2009	\$450	350	\$157,500
		Forest Restoration - 2010	\$450	350	\$157,500
		Forest Restoration - 2011	\$450	350	\$157,500
		Subtotal (Direct Cost)			\$787,500

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design		
	Construction Management		
	Project Management/Administration	15%	\$118,125
	Subtotal (Indirect Cost)		
	<b>TOTAL COST</b>		<b>\$905,625</b>

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost *
	Contract / In-House			
	Mowing/Brush Hogging x	2 Times/Year	\$5000	\$ 2,000
	(Years 1, 2 & 3)			
	Administration x	15%		\$ 300
	Total			\$ 2,300

\* Average cost over 5 years

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[ ]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[ ]	[ ]	_____
Corps Section 404	[ ]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* Hydrologic study and construction of stream meanders at Easter Slough and Big Creek.. This project also includes the annual restoration of 100 acres of wetlands during the 5 year period of 2007 through 2011.

*Project Justification* Demonstration projects to reconstruct old stream meanders which have been channelized. To meet refuge goals and objectives to provide habitat for wetland dependent and other species.

*Community/Partner Interest* The Nature Conservancy  
Possible use of Environmental Management Program (EMP) funds through the U. S. Army Corps of Engineers

*Project Design Criteria* Must not impact non-refuge properties

<i>Funds Summary</i> <i>Detail on Page 2</i>	Direct Cost	\$2,262,700
	Indirect Cost	\$ 420,000
	Total Project Cost	\$2,682,700
	Maintenance Cost	\$ 10,000
	Date of Estimate:	03/96

*Funding Opportunities* \_\_\_\_\_ ISTE A \_\_\_\_\_ State Trails \_\_\_\_\_ EMP \_\_\_\_\_

<i>Partnership Review &amp; Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		TNC	_____
	Reviewed	Date	Approved	Date
	_____		Refuge Manager	_____
	State DNR			

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Hydraulic Study	\$7,000/LS	1	\$ 7,000
		Bank Stabilizations	\$1,000,000/LS	1	\$1,000,000
		Channel Reconstruction	\$1,000,000/LS	1	\$1,000,000
		Natural Wetland Restoration	\$500	100	\$ 50,000
		Contingency		10%	\$ 205,700
		Subtotal (Direct Cost)			\$2,262,700

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design/Stream Restoration		\$ 200,000
	Construction Management/Stream Restoration	5%	\$ 100,000
	Project Management/Stream Restoration	5%(overall)	\$ 120,000
	Subtotal (Indirect Cost)		\$ 420,000
	<b>TOTAL COST</b>		<b>\$2,682,700</b>

<i>Annual Maintenance Cost</i>	Description	Annual Cost
	5-Year Management Review of Stream Restortion	\$ 10,000

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[ ]	_____
NPDES Permit	[x]	[ ]	_____
E.S. Section 7 Consultation	[x]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[x]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[x]	[ ]	_____
Water Quality Section 401	[x]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* Throughout the Refuge there are opportunities to recreate some of the unique micro-ecosystems such as the canebrakes which once flourished in the Cache. Additionally, small springs and seeps are scattered throughout the refuge which have been covered or are threatened to be silted in by flood waters.

*Project Justification* Springs and seeps help regulate water levels during drought periods. Canebrakes provide unique habitat for species such as the Swainsons warbler.

*Community/Partner Interest* Audubon Society  
TNC

*Project Design Criteria* Care must be taken when collecting rhizomes not to disturb existing canebrakes. In addition care should be taken when restoring springs or seeps not to disturb the state endangered dusky salamander.

<i>Funds Summary</i>	Direct Cost	\$13,200
<i>Detail on Page 2</i>	Indirect Cost	\$ 0
	Total Project Cost	\$13,200
	Maintenance Cost	\$ 450
	Date of Estimate:	9/96

*Funding Opportunities* \_\_\_\_\_ ISTE A \_\_\_\_\_ State Trails \_\_\_\_\_

*Partnership Review & Approvals*

Submitted By:	Date	Reviewed	Date
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\_\_\_\_\_ TNC

Reviewed	Date	Approved	Date
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\_\_\_\_\_ State DNR \_\_\_\_\_ Refuge Manager

**CMP Project Works**      **UNIQUE NATIONAL COMMUNITIES RESTORATION**      **C3**

Station Name: Cypress Creek NWR

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Restoration of unique habitats such as canebrakes, springs and seeps.	\$400/AC	33/AC	\$13,200
Subtotal (Direct Cost)					\$ 13,200

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Total Cost		\$ 13,200

<i>Annual Maintenance Cost</i>	Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost *
	Back Hoe	x	Every 3rd Year	\$1,000 \$ 400
	Administration		15%	\$ 50
	Total			\$ 450

\* Average cost over 5 years.

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[ ]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* Two bicycle trails are proposed for Cypress Creek. Currently, the Tunnel Hill bicycle trail stops in Karnak. This project would link the Tunnel Hill trail to the proposed Wetlands Center, a distance of 6 miles. This project would be limited primarily to county roads, except where meeting the visitor center.

*Project Justification* This project will physically link the Refuge to local communities providing scenic, nonmotorized wildlife viewing opportunities.

*Community/Partner Interest* Several local communities and tourism groups could support bicycle proposal.

*Project Design Criteria* Must meet AASHTO standards

<i>Funds Summary</i>	Direct Cost (20% participation)	\$ 836,000
<i>Detail on Page 2</i>	Indirect Cost	\$ 194,550
	Total Project Cost	\$1,030,550
	Maintenance Cost	\$ 1,035
	Date of Estimate:	03/96

*Funding Opportunities*  ISTEA  State Trails

<i>Partnership Review &amp; Approvals</i>	Submitted By: _____	Date _____	Reviewed _____	Date _____
			TNC	
	Reviewed _____	Date _____	Approved _____	Date _____
	State DNR		Refuge Manager	

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Road Shoulder Widening (6')	\$60,000/MILE	6	\$ 360,000
		Bike Trail on Refuge (8' Wide)	\$80,000/MILE	2	\$ 160,000
		Bike Trail on lower Cache Levee	\$40,000/MILE	6	\$ 240,000
		Contingency		10%	\$ 76,000
		Subtotal (Direct Cost)			\$ 836,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 83,600
	Construction Management	5%	\$ 41,800
	Project Management	10% (overall)	\$ 96,150
	Subtotal (Indirect Cost)		\$ 194,550
	<b>TOTAL COST</b>		<b>\$1,030,550</b>

*Annual Maintenance Cost*

	Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost
Litter Clean-Up (Refuge)*	x	Bi-Monthly	\$100	\$ 600
Mowing/Brush Hogging	x	3 Times/Year	\$100	\$ 300
Administration	x			\$ 135
Total				\$ 1,035

\* Indicates potential volunteer or other labor source

*Regulatory Clearances*

	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[ ]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[x]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* The Phase Two Visitor Center development involves the construction of the maintenance facility.

*Project Justification* See feasibility study for visitor center

*Community/Partner Interest* Citizens Committee to Save the Cache River  
The Nature Conservancy  
Ducks Unlimited  
Illinois Department of Natural Resources  
Southern Illinois University-Edwardsville

*Project Design Criteria* See feasibility study

<i>Funds Summary</i>	Direct Cost	\$1,627,000
<i>Detail on Page 2</i>	Indirect Cost	\$ 488,000
	Total Project Cost	\$2,115,000
	Maintenance Cost	\$ 75,000
	Date of Estimate:	03/96

<i>Funding Opportunities</i>	_____	ISTEA	_____	State Trails	_____	_____	_____
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<i>Partnership Review &amp; Approvals</i>	Submitted By:	_____	Date	_____	Reviewed	_____	Date	_____
		_____			TNC	_____		
	Reviewed	_____	Date	_____	Approved	_____	Date	_____
		State DNR	_____			Refuge Manager	_____	

**Cost Estimate:**

<i>Direct Cost</i> (1996 Dollars)	No.	Description	Unit Cost	Quantity	Total Cost
		Maintenance Building			\$ 500,000
		Maintenance Site			\$ 979,000
		Contingency		10%	\$ 148,000
		Subtotal (Direct Cost)			\$1,627,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 162,700
	Construction Management	10%	\$ 162,700
	Project Management	10%	\$ 162,700
	Subtotal (Indirect Cost)		\$ 488,000
	<b>TOTAL COST</b>		<b>\$ 2,115,000</b>

*Annual Maintenance Cost*

	Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost
Maintenance Staff (1 full-time average)	x	1	\$25,000	\$25,000
Materials			\$50,000	\$50,000
<b>TOTAL</b>				<b>\$75,000</b>

*Regulatory Clearances*

	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[ ]	_____
NPDES Permit	[x]	[ ]	_____
E.S. Section 7 Consultation	[x]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[x]	[ ]	_____
Waste Water Disposal	[x]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[x]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* This project involves upgrading a road to the interpretive cabin feature. Minor improvements will also be necessary for parking and accessibility.

*Project Justification* Build new oil and chip roadway to Rolwing cabin in accordance with the goal to reduce erosion from gravel roads and to provide enhanced educational opportunities at the Refuge.

*Community/Partner Interest*

*Project Design Criteria* Oil and chip roadway

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$ 86,300
	Indirect Cost	\$ 17,850
	Total Project Cost	\$104,150
	Maintenance Cost	\$ 760
	Date of Estimate:	09/96

*Funding Opportunities* \_\_\_\_\_ ISTE A \_\_\_\_\_ State Trails \_\_\_\_\_  IHPA

<i>Partnership Review &amp; Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		_____	
			TNC	
	Reviewed	Date	Approved	Date
_____		_____		
State DNR		Refuge Manager		

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Oil and Chip Road	\$8/SY	8,800	\$ 70,400
		Interpretive Sign	\$1,500/EA	1	\$ 1,500
		Contingency/Unscheduled Items		20%	\$ 14,400
		Subtotal (Direct Cost)			\$ 86,300

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 8,600
	Construction Management	5%	\$ 4,300
	Project Management	5% (overall)	\$ 4,950
	Subtotal (Indirect Cost)		\$ 17,850
	<b>TOTAL COST</b>		<b>\$104,150</b>

*Annual Maintenance Cost*

	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
Trash Pick-Up	x	Monthly	\$ 10	\$ 120
Litter Clean-Up *	x	Quarterly	\$ 60	\$ 240
Mowing/Brush Hogging	x	3 Times/Year	\$100	\$ 300
Administration	x	15%		\$ 100
Total				\$ 760

\* Indicates potential volunteer or other labor source

*Regulatory Clearances*

	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[ ]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[ ]	[ ]	_____
Corps Section 404	[ ]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* This project contains three overlooks that are in the northernmost portion of the Refuge. The project includes overlooks for the Harris Tract, Rose Tract, and Goins Tract. Facilities for these overlooks include the following:

- Willingham: Overlook, Parking and Sign
- Harris Tract: Overlook, Parking Lot, Sign
- Rose Tract: Overlook, Parking Lot, Sign
- Goins Tract: Overlook, Parking Lot, Sign, Interpretive Trail (100 Acres)

*Project Justification* This project will provide a unique opportunity for visitors to see a large portion of the Refuge from one location, as well as interpretive and hiking opportunities.

*Community/Partner Interest* Citizens Committee to Save the Cache River

*Project Design Criteria* This project shall conform to the typical standards of a multi-use access site for signage, trail head, and parking.

<i>Funds Summary</i>	Direct Cost	\$29,250
<i>Detail on Page 2</i>	Indirect Cost	\$ 6,075
	Total Project Cost	\$35,325
	Maintenance Cost	\$ 3,840
	Date of Estimate:	09/96

*Funding Opportunities*  ISTEA  State Trails  OSLAD

<i>Partnership Review &amp; Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		TNC	_____
	Reviewed	Date	Approved	Date
	_____		Refuge Manager	_____
	State DNR			

Cost Estimate:

Direct Cost	No.	Description	Unit Cost	Quantity	Total Cost
		Parking Lot (Willingham)	\$4.50/SY	500	\$ 2,250
		Sign (Willingham)	\$1,200/EA	1	\$ 1,200
		Parking Lot (Harris)	\$4.50/SY	500	\$ 2,250
		Sign (Harris)	\$1,200/EA	1	\$ 1,200
		Parking Lot (Rose)	\$4.50 SY	500	\$ 2,250
		Sign (Rose)	\$1,200/EA	1	\$ 1,200
		Parking Lot (Goins)	\$4.50/SY	500	\$ 2,250
		Interpretive Sign (Goins)	\$200/EA	20	\$ 4,000
		Trail (Goins)	\$1/LF	10,000	\$10,000
		Contingency		10%	
		Subtotal (Direct Cost)			\$29,250

Indirect Cost	Description	Rate	Total Cost
	Design	10%	\$ 2,925
	Construction Management	5%	\$ 1,450
	Project Management	5% (overall)	\$ 1,700
	Subtotal (Indirect Cost)		\$ 6,075
	TOTAL COST		\$ 35,325

Annual Maintenance Cost	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
	Trash Pick-Up	x	Bi-Weekly	\$ 40 \$ 1,040
	Parking Lot	x	Quarterly	\$200 \$ 800
	Litter Clean-Up *	x	Bi-Monthly	\$100 \$ 600
	Mowing/Brush Hogging	x	3 Times/Year	\$300 \$ 900
	Administration	x	15%	\$500
	Total			\$ 3,840

\* Indicates potential volunteer or other labor source

Regulatory Clearances	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[ ]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[ ]	[ ]	_____
Corps Section 404	[x]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

*Project Description* This project includes the designation of an auto tour route for the Refuge and other public lands. The tour route will include signage, pull-offs, improvements, and a message repeater system which informs motorists of Refuge points of interest.

*Project Justification* The project will provide a unique way to visit the Refuge that minimally impacts the resource.

*Community/Partner Interest* County Roads Commission  
IDOT

*Project Design Criteria* The project will conform to standard signage program and requirements by road authorities.

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$103,000
	Indirect Cost	\$ 20,000
	Total Project Cost	\$123,000
	Maintenance Cost	\$ 1,945
	Date of Estimate:	5/96

*Funding Opportunities*  ISTEA  State Trails

<i>Partnership Review &amp; Approvals</i>	Submitted By:	Date	Reviewed	Date
			TNC	
	Reviewed	Date	Approved	Date
	State DNR		Refuge Manager	

**Cost Estimate:**

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Signs	\$500/EA	20	\$ 10,000
		Gravel Pull-Offs (additional to other projects)	\$2800/EA	5	\$ 14,000
		Highway Gateway Sign	\$25,000/EA	2	\$ 50,000
		Message Repeater System	\$20,000/EA	1	\$ 20,000
		Contingency		10%	\$ 9,000
		Subtotal (Direct Cost)			\$103,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 10,000
	Construction Management	5%	\$ 5,000
	Project Management	5%	\$ 5,000
	Subtotal (Indirect Cost)		\$ 20,000
	<b>TOTAL COST</b>		<b>\$123,000</b>

<i>Annual Maintenance Cost</i>	Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost
	x	Monthly	\$ 60	\$ 720
	(not associated with other projects)			
	x	3 Times/Yr	\$300	\$ 900
	x	20%		\$ 395
		Total		\$ 1,945

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[ ]	[ ]	_____
NPDES Permit	[ ]	[ ]	_____
E.S. Section 7 Consultation	[ ]	[ ]	_____
Cultural Resources	[x]	[ ]	_____
Corps Section 404	[ ]	[ ]	_____
Waste Water Disposal	[ ]	[ ]	_____
Dam Permit	[ ]	[ ]	_____
Water Quality Section 401	[ ]	[ ]	_____
Road Closure Approval	[ ]	[ ]	_____

# ENVIRONMENTAL ASSESSMENT

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Cypress Creek NWR  
Comprehensive Management Plan



## **Finding of No Significant Impact**

### **Cypress Creek National Wildlife Refuge Comprehensive Management Plan**

An Environmental Assessment has been prepared to publicly disclose the possible environmental consequences that implementation of the Cypress Creek Comprehensive Management Plan (CMP) could have on the quality of the environment, as required by the National Environmental Policy Act of 1969 (NEPA). The EA presented and evaluated two alternatives, a "No Action" alternative 1 (maintain the status quo) and an "Action" alternative 2 (implement the Cypress Creek CMP).

The alternative selected for implementation is Alternative 2, implement the Cypress Creek CMP and establish Refuge management direction pursuant to the goals, objectives and strategies contained in the CMP.

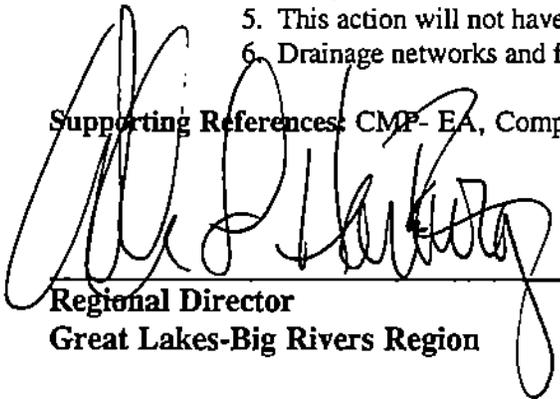
**Background:** In 1991 the U. S. Fish and Wildlife Service (Service), Illinois Department of Natural Resources, The Nature Conservancy and Ducks Unlimited joined forces to create a unique 60,000 acre federal/state/private conservation partnership for watershed protection and ecosystem restoration. The Cypress Creek National Wildlife Refuge, a major component within this partnership, has acquired and now manages over 13,000 acres of its proposed 35,320 acres. The purpose of the Cypress Creek Comprehensive Management Plan is to guide management activities of the staff and the physical development of the Refuge by identifying appropriate habitats, programs and facilities which fulfill the purposes for which the Refuge was established. The CMP also communicates the Service's contribution to the joint venture partnership and to the Southernmost Illinois region.

This Finding of No Significant Impact (FONSI) and supporting EA will be made available to the public for 30 days from the date below. During this 30-day period the FONSI will not be final, nor will the Service implement the selected alternative. a final decision will be made on whether to carry out the alternative selected at the conclusion of the 30-day period.

For the following reasons and based on the information contained in the Environmental Assessment, we have determined that **Alternative 2** is not a major federal action which would significantly affect the quality of the human environment, within the meaning of Section 102(2)(c) of NEPA.

- Reasons:**
1. The Refuge will add economic diversity and stability to the local area as visitor use increases.
  2. Acquisition of lands has been and will continue to be from willing sellers only.
  3. Annual Revenue sharing payments are made to the counties to help off-set potential impacts to the tax base.
  4. Cultural resource surveys are planned based on the CMP cultural resource Overview Study and recommendations in the CMP.
  5. This action will not have an adverse impact on threatened and endangered species.
  6. Drainage networks and floodplains will not be affected.

**Supporting References:** CMP- EA, Comprehensive Management Plan, Establishing EA, 1990

  
\_\_\_\_\_  
**Regional Director**  
**Great Lakes-Big Rivers Region**

Date

4-14-97

Comprehensive Management Planning  
Statement of Environmental Compliance

Project: **Cypress Creek National Wildlife Refuge**  
Location: Alexander, Johnson, Polaski, and Union Counties, Illinois

NEPA (Circle One)

Categorical Exclusion

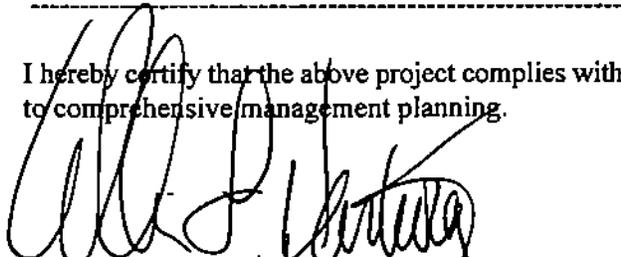
EA - FONSI (Final Environmental Assessment)

EIS - ROD

*The U.S. Fish and Wildlife Service is determined to be in compliance with the following, as determined by the signifying official.*

	Signature	Date
E.O. 12372 -Intergovernmental Review of Federal Programs	<u>M. W. Waples</u>	<u>4.1.97</u>
E.O. 11988 -Floodplain Management	<u>M. W. Waples</u>	<u>4.1.97</u>
E.O. 11990 -Wetland Protection	<u>M. W. Waples</u>	<u>4.1.97</u>
Endangered Species Act, Section 7	<u>M. W. Waples</u>	<u>3.4.97</u>
The National Historic Preservation Act of 1966, as amended; Executive Order 11593 (Protection and Enhancement of the Cultural Environment); and 36 Code of Federal Regulations, Part 800 (Protection of Historic Properties.)	<u>J. E. L.</u>	<u>4-8-97</u>

I hereby certify that the above project complies with all requirements of law, rules or regulations applicable to comprehensive management planning.

  
Regional Director

4-14-97  
Date

UNITED STATES FISH AND WILDLIFE SERVICE

ENVIRONMENTAL ACTION STATEMENT  
(REGION 3)

Within the spirit and intent of the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA) and other statutes, orders, and policies that protect fish and wildlife resources, I have established the following administrative record and have determined that the action of (describe): Implementation of the Comprehensive Management Plan for Cypress Creek National Wildlife Refuge in Alexander, Johnson, Pulaski, and Union Counties, Illinois:

- is a categorical exclusion as provided by 516 DM 2 Appendix 1 and 516 DM 6, Appendix 1. No further NEPA documentation will therefore be made. Reference \_\_\_\_\_

-XX- is found not to have significant environmental effects as determined by the attached environmental assessment and finding of no significant impact.

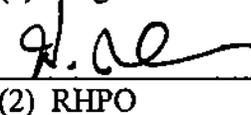
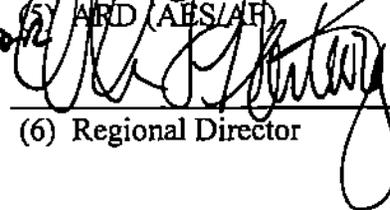
- is found to have significant effects and, therefore, further consideration of this action will require a notice of intent to be published in the Federal Register announcing the decision to prepare an EIS.

- is not approved because of unacceptable environmental damage, or violation of Fish and Wildlife Service mandates, policy, regulations, or procedures.

- is an emergency action within the context of 40 CFR 1506.11. Only those actions necessary to control the immediate impacts of the emergency will be taken. Other related actions remain subject to NEPA review.

Other supporting documents (list):

Signature Approval

	4.1.97		4/8/97
(1) Originator	Date	(4) ARD (ARW)	Date
	4-8-97		4.10.97
(2) RHPO	Date	(5) ARD (ABS/AF)	Date
	4/9/97		4-14-97
(3) REC	Date	(6) Regional Director	Date

**Environmental Assessment  
for the  
Cypress Creek National Wildlife Refuge**

**Comprehensive Management Plan**

January 1997

**Abstract**

*The U.S. Fish and Wildlife Service is proposing implementation of the Comprehensive Management Plan for the Cypress Creek National Wildlife Refuge in Alexander, Johnson, Pulaski and Union counties in Illinois. This Environmental Assessment considers the biological, environmental and socioeconomic effects implementing the CMP will have on the most significant issues and concerns identified during the planning process.*

The purpose of the Plan is to:

- Provide partners and local communities with a clear vision and statement of the desired Refuge in 15 years.
- Ensure that management of the Refuge reflects the policies and goals of the National Wildlife Refuge System
- Ensure that Refuge management is consistent with federal, state, county and partner plans and studies.
- Provide Refuge staff with guidance and priorities for budget requests and for the consistent development, operation and management of the Refuge over the next 15 years.

**Responsible Agency and Official:** William Hartwig, Regional Director  
U. S. Fish and Wildlife Service  
Henry Whipple Federal Building  
1 Federal Drive  
Fort Snelling, Minnesota 55111-4056

**Contacts for additional information about this project:**

Gerald H. Updike, Refuge Manager  
Cypress Creek National Wildlife Refuge  
Route 1, Box 53D  
Ullin, IL 62992  
618-634-2231

Mike Marxen, Project Manager  
U.S. Fish and Wildlife Service  
1 Federal Drive  
Fort Snelling, MN 55111-4056  
612-725-3306

## **I. Purpose and Need for the Proposed Action**

Located within the Cache River Wetlands, the Cypress Creek National Wildlife Refuge (Refuge) is part of the New Madrid Wetlands Project of the Lower Mississippi Valley Joint Venture of the North American Waterfowl Management Plan. In 1990, an Environmental Assessment (1990 EA) was completed for the establishment of the Refuge; this document addressed biological, environmental and socioeconomic effects related to creating a National Wildlife Refuge in southern Illinois. It defined the purpose of the Refuge (reference CMP - Chapter 1) and authorized land management practices, hunting and other public use opportunities, land acquisition, and the biological program. The impacts of nine alternatives were examined and evaluated and are referenced in Chapter 2 of the establishing 1990 EA. As a result, it was determined that the establishment of the Refuge would not significantly affect the quality of the human environment within the meaning of Section 102 (2) © of the National Environmental Policy Act of 1969 (NEPA).

In 1995 the Refuge began preparing a Comprehensive Management Plan (CMP) for Cypress Creek National Wildlife Refuge. The CMP is directly linked to the establishing 1990 EA but, more specifically outlines the management of wildlife and habitat and the development of public use facilities and programs at the Refuge for the next 15 years. The plan provides a comprehensive framework for future management; it identifies management strategies as well as locations and priorities for habitat and public use development. Thirty projects are described, including their purpose, the type of development or restoration, the estimated costs and approximate locations. The CMP does not have site plans and exact locations for facilities, therefore the analysis of environmental impacts associated with implementation of the CMP is addressed at the conceptual planning level. Additional compliance with NEPA will be done when site specific plans are completed for each of the major projects such as the proposed wetlands visitor center and major access sites.

### **Categorical Exclusions**

Certain management activities contained in the CMP are "Categorically Excluded". This means that these are classes of actions which do not individually or cumulatively have a significant effect on the human environment. The following activities normally do not require the completion of an Environmental Assessment: environmental education and interpretation programs (which do not involve construction); research, inventory and information collection activities; operation, routine maintenance of existing facilities; the construction of new small structures such as fences, small water control structures, planting of vegetation, construction of small berms and dikes and the development of limited access for maintenance and management purposes; prescribed burning; fire management activities; reintroduction of native species, minor changes in amounts or types of public use on Fish and Wildlife Service owned lands; and the issuance of management plans when minor changes or effects are anticipated.

## **Decision Framework**

The Regional Director for the Great Lakes-Big Rivers Region of the U. S. Fish and Wildlife Service will use the Environmental Assessment to select one of two alternatives and determine whether the alternative selected will have significant environmental impacts requiring preparation of an environmental impact statement. Specifically, analysis and findings described in the CMP and in this EA will help the Regional Director decide whether to continue with current management at the Refuge (status quo) or whether to adopt the actions described in the Cypress Creek National Wildlife Refuge Comprehensive Management Plan.

It is recommended that the reader refer to the Comprehensive Management Plan for Cypress Creek National Wildlife Refuge when reviewing this Environmental Assessment. The most relevant information in the CMP is contained in Chapter 4 - Goals, Objectives, Strategies/Projects; Chapter 5 - Public Use; and Appendix D - Project Worksheets.

A Comprehensive Management Plan is needed to address current management issues and propose a plan of action which the Fish and Wildlife Service and its partners can use to achieve a future vision for the Refuge. .

## **Description of the Proposed Action**

The proposed action is to adopt and implement the Comprehensive Management Plan for Cypress Creek National Wildlife Refuge. The CMP will serve as a management tool to be used by Refuge staff and its partners in guiding the preservation and restoration and public use of the Refuge. The document will guide management decisions and activities on the Refuge over the next 15 years. U. S. Fish and Wildlife Service staff, Cache River Wetlands partners and interested citizens contributed to the development of the CMP.

## **Authority, Legal Compliance, and Compatibility**

The National Wildlife Refuge System includes federal lands managed primarily to provide habitat for a diversity of wildlife species. National wildlife refuges are established under many different authorities and funding sources for a variety of purposes. The purpose(s) for which a particular refuge is established are specified in the authorizing document for that refuge. These purposes guide the establishment, design, and management of the Refuge. *Cypress Creek National Wildlife Refuge, 35,320 acres delineated, was authorized June 1990 under the Emergency Wetlands Resources Act of 1986 (16U.S.C. 3901 b, 100 Stat.3583, PL 99-645) for the primary purpose of wetland protection and restoration.*

Authority delegated by Congress, federal regulations/guidelines, executive orders and several management plans guide the operation and the management of the Refuge and provide the framework for the Fish and Wildlife Service's proposed action. Three broadly applicable laws include -- the Refuge Recreation Act of 1962, the National Wildlife Refuge System

Administration Act of 1966 and the Endangered Species Act of 1973. Other laws and authorities considered in approving the use of refuge lands for various activities include the Migratory Bird Treaty Act of 1918, the National Environmental Policy Act of 1969, the National Historic Preservation Act, the Archeological Resource Protection Act of 1979, Executive Order 11988 (Floodplain Management) and Executive Order 11990 (Protection of Wetlands), and Executive Order 12996 (Public Use and Education).

### **Scoping of the Issues**

Scoping is the process of identifying opportunities and issues related to a proposed action. The Fish and Wildlife Service publicly announced it was preparing a plan for the Cypress Creek National Wildlife Refuge in October 1995. Throughout the planning process, the Service coordinated with federal, state, local agencies and organizations that had demonstrated an interest in Refuge activities. Coordination also involved:

- Sending out News Releases
- Forming a Multi-Interest Planning Team
- Conducting Sessions with Focus Groups
- Holding Public Meetings

For additional detail on these activities see Chapter 2 of the CMP .

### **Issues and Concerns**

From public involvement activities, the Service received several comments that identified issues and concerns people had related to management of the Refuge. These "scoping" issues have been considered in the CMP decision-making process and several have been directly integrated into the Comprehensive Management Plan.

This Environmental Assessment informs the public of the impact the proposed action (implementing the CMP) will have on each of the nine major issues. All issues are described in the CMP and many of the goals and strategies contained in the CMP relate to one or more of the issues. The nine major issues are listed below:

1. Habitat Loss and Fragmentation
2. The Challenge of large scale "Ecosystem" Restoration
3. Watershed Issues: Erosion and Sedimentation
4. Coordination of Activities and Projects with Others
5. The Need for Adequate Refuge Staffing and Funding
6. Local Citizen Support and Education
7. Compatible Public Use
8. Public Health, Safety and Accessibility
9. Economic Benefits to the Local Area

In addition, several other comments and concerns were raised by individuals during the planning process. These include animal damage to farm crops, noxious weed control, insect-borne diseases, local business impacts, on-refuge farming, hunting concerns, agricultural chemical use and NEPA compliance. All comments received during the planning process have been documented and responses have been prepared. Specific responses are found in Appendix A of the CMP.

## **II. Description of Alternatives**

The Fish and Wildlife Service considered a range of alternatives primarily within the context of an "alternatives workshop" with the nineteen member, multi-organization planning team. Some of these alternatives were eliminated from detailed study. The alternatives eliminated are identified below with an explanation of why they were not considered. The best ideas/alternatives that came out of the workshops were incorporated into the CMP, which contains the "preferred" or "action" alternative.

### **1. Alternatives Eliminated from Consideration**

a.) **"Care-taker" Status Alternative** - Refuge staff, funding, and management activities would be reduced to a level whereby the only Fish and Wildlife Service presence would be land ownership.

This alternative is not compatible with the purposes for which the Refuge was established; the conservation of wetlands to maintain public benefits and to help fulfill international migratory bird treaty obligations. Wetlands and forest protection and restoration activities would cease. The Fish and Wildlife Service would cease to be a Joint Venture Partner in the Cache River Wetlands. Legal responsibilities of land ownership of the Refuge, which currently includes 14,000 acres, would not be met. Public recreation and interpretation programs would be terminated and the Refuge closed to public use. Protection functions - law enforcement, fire suppression, cultural resources monitoring - would be terminated. Commitments made to the community and support groups would be broken.

b) **Extensive Outreach/ Stewardship in the Watershed Alternative** - Refuge staff and funding would be directed to extensive off-Refuge lands stewardship efforts with private landowners.

This alternative is being met by other partners, primarily Natural Resources Conservation Service, who already have existing landowner programs. Also, The Nature Conservancy has established a working relationship with the Cache Watershed Planning Committee made up of local citizens. The Illinois Department of Natural Resources has foresters and biologists to assist private landowners with habitat improvement plans. Under this

alternative, the Fish and Wildlife Service would not be available to meet legal mandates and obligations on existing Refuge- owned lands.

**c) Major Hydrological Restoration Alternative** - High priority would be placed on restoring creeks and rivers to their original configurations.

Although highly desirable and a concept agreed to for the future, this alternative is not practical in the short time of 15 years. A long term process to achieve this alternative is: studies to determine means to accomplish this restoration, land acquisition or easements where construction would be necessary, and determinations as to how landowners and towns will not be adversely affected. This Comprehensive Management Plan does address restorations that can take place within the existing land ownership without adversely affecting adjacent landowners.

**d) Intensive Use Alternative** - Refuge lands would be fully open to public use with no restrictions. Intensive farming of acquired lands would continue. Hunting would occur over the entire Refuge.

This alternative is not compatible with the purposes for which the Refuge was established. It conflicts with the conservation of wetlands to maintain public benefits and does not fulfill international migratory bird treaty obligations. This alternative would result in over use of sensitive habitat areas, thereby adversely affecting the sites that the Refuge was established to protect.

To protect duck populations during migration it is necessary to close certain "sensitive" areas to hunting. Duck hunting is prohibited at the Frank Bellrose Waterfowl Reserve and will also be restricted at other duck concentration areas as the Refuge is acquired and developed. Goose hunting, however is permitted on the Frank Bellrose Waterfowl Reserve to reduce competition for duck food. The goose hunting decision is in keeping with the Mississippi Flyway Canada Goose Management Plan objectives. These management decisions have been made based on sound waterfowl management biology with the Illinois DNR..

## 2. Alternatives Considered

This section describes two alternatives considered by the Fish and Wildlife Service and detailed in this EA:

Alternative 1 - No Action Alternative, and

Alternative 2 - Proposed Action Alternative to implement the Cypress Creek National Wildlife Refuge Comprehensive Management Plan.

### **Alternative 1: No Action**

This alternative reflects the status quo, essentially allowing current conditions and trends of management, public use, and land use to continue. No substantial increases in funds or staff would be required. The Service would not carry out many of the recommendations in the CMP. Public use opportunities, facilities, and access would remain the same, at minimal development.

### **Alternative 2: Implement the Refuge Comprehensive Management Plan**

The Fish and Wildlife Service action would be to implement the 15 year CMP and establish an overall management direction consistent with the goals, objectives and strategies contained in Chapter 4 of the CMP.

Under this alternative, the Refuge is envisioned as a major contributing member in a coalition of partners actively working together to protect and restore a 60,000 acre (the Refuge would be 35,000 acres) complex of diverse habitat types for people to enjoy.

Comparison of Alternatives

(By the Year 2011)

Issues and Concerns	Alternative #1 No Action	Alternative #2-Preferred Implement CMP
1. Habitat Loss and Fragmentation	Acquire & Protect 17,500 Acres	Acquire & Protect 22,000 Acres
2. Habitat/Ecosystem Restoration	Forest Restoration: 200 Acres per year	Forest Restoration: 350 Acres per year
3. Watershed Issues	Maintain Coordination Restore 1 basin per year	Expand Coordination Restore 3 basins per year
4. Coordination of Activities	Maintain Coordination Maintain Current Partners	Expand Coordination Increase Partnerships
5. Adequate Staffing and Funding	Maintain Existing Staff at 6	Increase staff to 14 FWS and 5 partner staff
6. Local Support & Education	Maintain 5 Access & Educ. Sites	Develop and Maintain 16 Access and Education Sites
7. Compatible Public Use	Visitor Use Concentrated on Existing Access Sites	Visitor Use Dispersed to compatible sites with sensitive areas protected.
8. Public Health, Safety and Accessibility	Basic Maintenance to maximize safety. Limited Accessibility	Increased Maintenance and all public facilities will be Accessible
9. Economic Benefits to Area	Refuge Visitation: 30,000 per year	Refuge Visitation: 125-200,000 per year.

### **III. Affected Environment**

A description of the affected environment can be found in the establishing 1990 EA and in Chapters 1 and 3 of the Comprehensive Management Plan for Cypress Creek National Wildlife Refuge.

#### **Cultural Resources**

Concurrent with the development of the Comprehensive Management Plan, the Refuge contracted with a private consultant for the preparation of a Cultural Resource Overview Study of archeological and historic resources in and around the Refuge. The study provides information on the frequency and locations of known and undiscovered sites, as well as criteria to evaluate these resources. The findings and recommendations of this study have been integrated into the CMP to reduce potential impacts and assure compliance with the National Historic Preservation Act. Locations of some development projects were adjusted during the planning process based on the findings of this study.

### **IV. Environmental Consequences**

This chapter evaluates the two alternatives on their impacts to the nine environmental issues/concerns. Alternative 1, "No Action", is the status quo alternative where current conditions and trends of management, public use, and land ownership and use are projected into the foreseeable future. Alternative 2, "the Action Alternative" focuses on anticipated environmental impacts or changes when the Comprehensive Management Plan is fully implemented (by the year 2011). These can be compared to conditions under Alternative 1. Reference CMP - Chapter 4 for specific strategies and projects.

For the purpose of this analysis, the nine issues or major areas of public interest are discussed for each alternative.

#### **Alternative 1 - No Action**

##### **1. Habitat Loss and Fragmentation**

A major purpose of the Refuge is to offset the loss and fragmentation of bottomland forest habitat in the Cache River Basin. Logging and major drainage projects have disrupted many of the functions of the wetland ecosystem and reduced populations or displaced much of its wildlife. Remnants of the ecosystem have been designated as a National Natural Landmark, as a National Wildlife Refuge, as a wetlands of international importance, and as state scientific and natural areas. Acquisition of approximately 60,000 acres is proposed by the Joint venture partners to

) protect and restore state and federally listed species, unique natural communities, and cultural resources.

The Refuge portion or contribution to the conservation effort will ultimately be 35,320 acres. Land is being purchased on a willing-seller basis until that goal is reached. The current Refuge acreage is 14,500 acres or 42% of its total goal. Under the No Action alternative, the Refuge would grow by about 3000 acres to an estimated 17,500 acres in the 15 year planning time-frame (200 acres/year).

The relatively slow growth of the Refuge would result in small increases in wetland and upland habitats. Less land would exist under federal ownership for the protection of threatened and endangered species, natural and cultural resources.

The carrying capacity for waterfowl would remain low due to the lack of protection of critical habitats and the myriad of hydrological changes that negatively impact the area. No Action would result in minimal change to waterfowl production since there would not be an appreciable increase in nesting, resting, or feeding habitats. The Cache River corridor within the Refuge purchase boundary currently supports 25,000 geese and ducks; historically this area supported much greater numbers of waterfowl, as well as, neotropical migrant songbirds. Neotropical bird populations would remain low reflecting extensive forest fragmentation.

## ) **2. Habitat/Ecosystem Restoration**

Within the purchase boundary of the Refuge, there are remnants of, and potential for, five major natural communities. These areas include upland forest, marsh or herbaceous wetlands, swamps, floodplain woods and lakes or deep water habitats.

Under the No Action alternative, forest habitat restoration would continue at 200 acres each year. Restoration of natural wetlands and unique natural areas (springs, cane breaks, etc) would generally not occur.

## **3. Watershed Issues: Erosion and Sedimentation**

The success of the Refuge habitat restoration effort is dependent upon the soil and water conservation practices that are carried out in the surrounding watershed.

Under the No Action alternative, the Refuge staff will continue relatively passive involvement in watershed issues and activities. Staff time will be focussed on maintaining and restoring Refuge lands with limited environmental education and outreach related to watershed issues.

Existing partnerships with The Nature Conservancy, Illinois Department of Natural Resources and Ducks Unlimited would continue which would provide a Refuge connection to the larger watershed. However, no new partnerships would be formed that could increase the Refuge and

) Fish and Wildlife Service presence in the watershed. The private lands program and cooperative farming program would continue at their present "minimal" level.

#### **4. Coordination of Activities and Projects**

Coordination of Refuge activities and projects with other agencies and interest groups has been identified as an important means of leveraging funds and creating greater efficiencies in operation and maintenance of lands and programs.

Under the No Action alternative, current levels of coordination would continue primarily between the Joint Venture partners and through the established Refuge Advisory Committee. Limited Refuge projects proposed under this alternative would not require any greater coordination. Expanded coordination with communities, schools, and other agencies would be limited. The Refuge presence in the local communities would be maintained but not expanded.

#### **5. Adequate Staffing and Funding**

) Managing the Refuge means providing staff and capital resources to effectively manage and control activities. Active management programs including fire protection, cooperative farming, water management, restoration, education, recreation, cooperative wildlife surveys, and cultural resource monitoring require adequate staff and funds.

The current staff level is six. Under the No Action alternative the staff level will be maintained. As lands are added to the Refuge, most of the staff time will be dedicated to restoring and maintaining habitat. This will result in limited recreation opportunities and limited economic benefits to local communities. Access will be limited to five existing gravel parking areas and one boat access at Tamms.

Without a Comprehensive Management Plan, it would be more difficult to obtain additional funding that is commensurate with requirements of development and management programs.

#### **6. Local Citizen Support, Education and Community Identity**

Current levels of outreach are good and in keeping with an enthusiastic staff who are establishing a new National Wildlife Refuge. Over time, as the Refuge grows, the staff will have to focus its efforts on landscape restoration and management. This will prevent the Refuge from expanding its coordination and outreach efforts/opportunities in the areas of research, education and watershed stewardship. Over the long-term, this would translate into reduced funding and reduced partnerships because of reduced public support.

) Without the additional facility development proposed by the CMP, the Refuge would not be able to provide sufficient recreational access on its lands to generate long-term public support. Local

communities and tourism groups could not actively promote and identify their relationship with the Refuge. The education vision would not be fulfilled. Staff would continue to assist with ongoing training but no specific Cache River Wetlands workshops will be conducted. No site specific curriculum, minimal teacher training and no volunteer training would be conducted.

## **7. Compatible Public Use**

There is both a strong interest to increase recreational opportunities and a desire to maintain visitor activities at locations and levels that are compatible with the natural resources of the Cache River Wetlands.

Under the No Action alternative, public access on the Refuge would be limited. Boat access sites would not be added. Other than one state owned boat access, there are no facilities on the Refuge to launch a small boat or canoe. A centralized information point is non-existent since each agency provides information at their respective administrative offices.

The natural resources may benefit from reduced public use. Disturbance to wildlife would be very minimal and habitat would not be displaced for access and education facilities. However, visitor use of the Cache River Wetlands is growing as more people become aware of the opportunities to hunt, fish and observe wildlife in a unique cypress swamp setting. This would continue to concentrate use on state access sites and lands which would have a negative impact on the natural resources those areas were established to protect. The expectation has been that the Refuge would provide access opportunities to disperse visitor use over a much larger area, thereby reducing impacts to the few and smaller State Natural Areas. This expectation and management technique would not be realized under the No Action alternative.

## **8. Public Health, Safety and Accessibility**

Under the No Action alternative, the Refuge would maintain facilities and equipment in a manner that maximizes safety. Abandoned wells, cisterns and septic systems would be filled and all unneeded buildings and fences on newly acquired parcels would be removed. The Refuge would maintain a program of road repairs and boundary posting.

The few visitor facilities under the No Action alternative would be made accessible, however, much of the Refuge would be unimproved and not accessible to the disabled public.

## **9. Economic Benefits to the Local Community**

Visitor use of the Refuge would increase over time as more people become aware of the Refuge. The small number of access points and no Wetlands Visitor Center would limit future visitation. Current annual visitation is approximately 6,000. Under the No Action alternative, the estimated visitation in 15 years would be around 30,000 visitors per year. Economic benefits to

the local community would remain low.

## **Alternative 2 - Implement the Comprehensive Management Plan** (Preferred Alternative)

### **1. Habitat Loss and Fragmentation**

If Refuge goals are completed as outlined in the CMP, native plant communities will be restored thus affording protection and enhancement of animal populations that can utilize those habitats. Much of the converted land presently being used for agriculture on a limited basis (due to seasonal flooding) will be restored to bottomland forest habitat. Reforestation of an additional 4,000 acres of this habitat type will be an important first step in restoring the Cache; fragmentation will be reduced with the creation of large unbroken tracts of timber. The contribution to wetland habitat goals of the New Madrid Wetland Project will amount to nearly 10% of the total of that plan. The Refuge projected to be 22,000 acres, which is 2/3 of the total land in the purchase boundary, will provide a suitable protection and restoration land base along the Cache River. The casual visitor to the Refuge will be able to witness the return of the areas important flora and fauna. Swamp and forested wetland habitats will increase wood duck recruitment by as much as 15%. The Refuge will become established as an important staging area for 50,000 to 100,000 waterfowl and other migratory birds due to its strategic location and abundance of specialized habitats. Cultural resources will be afforded protection due to less land disturbance.

### **2. Habitat/Ecosystem Restoration**

The Refuge will insure protection, restoration, and management of wetlands and upland and bottomland forests to sustain resident and migratory wildlife and to provide a place for important floral species of the region. Optimum aquatic ecosystems that influence use by wintering bald eagles and waterfowl will be maintained. Nine hundred acres of wetlands and the establishment of an additional 330 acres of herbaceous wetlands (moist soil) will provide habitat critical for shorebirds, waterfowl, wading birds, as well as state and federally listed wildlife species. Transition zones from lowland to upland habitats will be created by the reforestation of an additional 5,250 acres. The Refuge will implement reforestation for stream bank stabilization and continue the cooperative farming program to maintain land before reforestation takes place. The conversion of agricultural land to reconstructed native habitats is expected to have a net positive effect on physical and biological resources by reducing soil erosion, reducing the use of chemicals and increasing biodiversity.

### **3. Watershed Issues: Erosion and Sedimentation**

A major off-site challenge facing the Refuge is erosion and sedimentation and their effects on existing wetlands and water quality of the Cache River. Erosion, and resulting sedimentation,

originate primarily from stream and channel bank failure and down cutting, cropland, pasture, and road ditches. Sediment settles in the Cache River and existing wetlands. This off-site problem impacts Refuge management and jeopardizes habitat restoration. The Refuge staff will take a proactive role in technical committees and planning efforts as identified in the Cache River Watershed Resource Plan. The Refuge will restore wetlands on private lands (a minimum of three annually) in connection with the Service's private lands program.

#### **4. Coordination of Activities and Projects**

Restore migratory bird populations in the area to those that occurred in the 1970's. Reverse population declines of state and federally listed threatened and endangered species by erecting structures to enhance nesting activities. Coordinate and support inventory projects that will identify the presence of endangered species. Establish weekly surveys of waterfowl and raptors as a measure of success of various management programs. Continue to monitor water quality of the Cache River system to determine applicability of conditions that will result in usage by rare and endangered mussel species that now occur in the nearby Mississippi and Ohio Rivers. The Cache River supports a diverse fish community including 87 documented game and non-game species. The Refuge will enhance these communities and minimize adverse impacts caused by "off site" actions. A reduction in silt load will be the most readily apparent change in the initial recovery period. Emphasis will also be placed on restoring natural springs to improve water quality in the area.

#### **5. Adequate Staffing and Funding**

The Refuge needs adequate staff and capital resources to effectively manage activities within the boundaries and to participate in programs including fire protection, cooperative farming, water regulation, hunting, public outreach, cooperative wildlife surveys, and cultural resource monitoring. With implementation of the CMP, including land acquisition, additional development of public use facilities, reforestation and wetland restoration, and construction of a wetland education center will take place. Refuge staff and funding will increase to adequately develop and maintain these projects and to provide high quality public service. Guided public access, information, and educational opportunities will become available as demand increases. Funding and staffing will be sought to achieve Refuge goals and objectives. Needs and staff positions will be fulfilled by the Service with support from other partner agencies/organizations.

#### **6. Local Citizen Support, Education and Community Identity**

The Refuge will provide a lead role in providing information on wildlife, land stewardship, natural/cultural history, and education programs. Increased outreach efforts and education programs will provide opportunities for people to experience the Cache and develop a better understanding of their dependence on the natural environment and the management techniques employed to protect and restore natural systems. Facilities to enhance outdoor experiences

throughout the Refuge will include bicycling and hiking trails, boardwalks and observation platforms, boat access sites on the Lower Cache River (2), parking and public access sites (10), and outdoor classrooms (4). The Wetland Visitor Center will attract and orient visitors to the numerous opportunities to enjoy the Cache River Wetlands and other attractions in southern Illinois. Special annual events, guided tours and educational field trips and outings with organized groups will be offered throughout the area. A year-round educational program will emphasize the area's cultural history, natural resources, wildlife, resource issues, and management employed on the area. Programs and facilities will provide a diversity of opportunities to access the Refuge and increase awareness and appreciation of the Cache River Wetlands regionally and nationally.

## **7. Compatible Public Use**

The Cache River Wetlands provides diverse habitats and opportunities for recreation and education. With the growing interest for quality outdoor experiences, the Refuge will meet the need through interpretive programs, wildlife-dependent recreation and education that are compatible with establishment criteria for the Refuge. Activities will include hunting, fishing, wildlife watching, hiking, nature photography, canoeing, and the use of a wetlands education center. These activities will increase visitor use, understanding and support for the natural resource. An integrated trail system will be created and functional within the 15 year vision period. Recreational use will be enhanced by constructing parking lots and boat launches at strategic points along with other facilities such as, outdoor classrooms, signs, group shelters, and viewing platforms to accommodate additional needs of visitors. The Refuge staff will encourage public use of wetlands for outdoor recreation and enjoyment and manage them to accommodate uses during applicable seasons. Support facilities and accesses have been sited throughout the Refuge to disperse visitors and reduce visitation near ecologically-fragile sites. The facilities have also been sited so as to avoid and minimize impacts to wetlands, endangered species and other sensitive resources to the greatest extent possible.

## **8. Public Health, Safety, and Accessibility**

Refuge staff will maintain facilities and equipment in a manner that maximizes safety, efficiency, and aesthetics. As land is acquired, wells, cisterns and septic tanks will be filled. Buildings and fences will be removed and boundaries will be posted on newly acquired parcels. Access within the Refuge will be enhanced by trails, observation platforms, orientation signage, and parking areas. These support facilities will accommodate visitors and meet requirements of the American Disability Act (ADA).

## **9. Economic Benefits to the Local Area**

Tourism and travel is a major sector of Illinois' economy. This trend is evident in southern Illinois with popular activities of hiking, camping, fishing, and hunting. The unique natural features of the Cache River Wetlands, highlighted by a wetland education center and increased

recreational opportunities will attract travelers interested in bird watching, canoeing, hunting, fishing, hiking, education, habitat restoration, and scientific study. New economic ventures such as lodging and camping facilities, food service, and canoe/boat rentals are a few of the services that will be provided by the local community. The transition from a predominately agricultural based economy to one of community to conservation, recreation, and agriculture will provide economic diversity. The Refuge will contribute to the local economy by attracting visitors and increasing employment opportunities within the Cache River Watershed. Social and economic impacts associated with the Selected Alternative include a reduction of agricultural output and employment due to the conversion of agricultural land to reconstructed native habitats, displacement of resident and non-resident tenant farmers, a reduction in County tax revenues. Positive impacts include a long-term increase in spending in the local economy by Refuge visitors and a long-term increase in state tax revenues in Southern Illinois.

## V. List of Preparers

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