

Appendix A: Goals, Objectives, Strategies and Implementation

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The purpose of this appendix is to make it easier for the reader to understand the preferred alternative and what will be required to implement it. U.S. Fish and Wildlife Service policy directs that certain elements be included in a Comprehensive Conservation Plan. Most of those elements are included in the Final Comprehensive Conservation Plan/Environmental Impact Statement. Elements dealing with the implementation of the plan, not included in the Final CCP/EIS, are included in this appendix. Also included are the goals, objectives and strategies common to all alternatives and those specific to Alternative E that we plan to pursue over the next 15 years. If these are projects within the Refuge Operations Needs System (RONS) that contribute to an objective, they are listed as well. Appendix K contains a list of the priority RONS projects. Following publication of the Record of Decision for the Final EIS, a stand-alone CCP will be developed. The CCP will include sections from the EIS, including Chapter 1, the selected alternative from Chapter 2, Chapters 3, 5, 6 and the appendices.

1. Goals, Objectives and Strategies

1.1. Wildlife Conservation Goals

Goal 1. Canada Geese

Provide enough food for wintering Canada Geese to support 6.4 million goose-use-days annually, in support of the Mississippi Valley Population Canada Goose Management Plan.

1.1 Objective

Provide enough food for wintering Canada Geese to support 6.4 million goose-use-days.

Strategy:

Contributing RONS projects: 02006, 020007, 02008, 02009

1. Maintain 4,300 acres of cropland in agricultural production (see Figure 9 on page 44). Manage 450 acres of moist-soil units. Continue fall mowing around selected ponds. Maintain seasonal closure to boating on the east end of Crab Orchard Lake.

Goal 2. Forest, Early Successional and Grassland Birds

Maintain or enhance populations of forest, early successional and grassland birds, with emphasis on priority species, as identified in Partners in Flight Physiographic Area Bird Conservation Plans.

2.1 Objective

Manage two portions of the Refuge as large forest blocks to benefit area-sensitive forest birds. The first area (about 13,000 acres) extends from the southern end of Grassy Bay east to Caney Creek, and south including the wilderness area. The second area (about 1,700 acres) extends from the federal prison north and includes the Crab Orchard Creek bottomlands. This will include about 490 acres of reforestation of open habitat to consolidate large blocks of forest habitat.

Strategy:

Contributing RONS projects: 02001, 97001, 97009, 97008, 98027

1. Reforest about 290 acres of crop fields, 130 acres of fallow fields, and 90 acres of perennial grasslands. This may include site preparation, planting a cover crop, planting tree seedlings, and weed control treatments.

2.2 Objective

Accelerate succession of all (about 3,300 acres) pine plantations to native hardwood forest.

Strategies:

Contributing RONS projects: 97001, 97008, 02001, 98027

1. Thin pine plantations to promote establishment and growth of native hardwoods. In some cases, remove pine overstory to release young hardwoods. Most silvicultural treatments will be conducted under contract by commercial timber harvesting firms. Conduct prescribed burning during the dormant season (November through March) on a 3- to 5-year cycle to enhance habitat conditions and promote desirable hardwood regeneration.

2.3 Objective

Manage forest land to favor oak-hickory forest types on suitable sites with all age classes from seedling stage to old-growth represented. Manage native, shade-tolerant tree species (such as sugar maple) to prevent wide-spread succession to climax forest cover types.

Strategies

1. Write and implement a *Habitat Management Plan* following policy in the Fish and Wildlife Service Manual (620 FW 1).
2. Apply appropriate silvicultural treatments to manage forest health, species composition, and age structure. Treatments may include non-commercial forest stand improvement treatments (girdling, cutting, and/or applying herbicide to individual stems), commercial timber cutting (thinnings, improvement cuttings, and regeneration cuttings) and prescribed burning. Forest stand improvement treatments may occur in any forest type (up to 25,000 acres). Commercial timber cutting may occur in any forest type outside the Crab Orchard Wilderness and research natural areas (up to 19,700 acres). Commercial harvest operations are not likely to take place on more than 400 acres annually on average, half of which would be considered regeneration cuttings. Our preferred regeneration technique is the shelterwood method. More specifically, the shelterwood method with reserves would be used in hardwood (and pine) stands where some hardwoods would be left standing following the final removal cutting. Prescribed fire may be applied in upland forest (up to 23,000 acres of hardwood and pine types), but not in bottomland forest.
3. Reforest available open sites located outside of the two large forest blocks (described in the Forest, Early Successional and Grassland Birds Goal section under Alternative B on page 41) by planting native hardwoods, with preference given to oaks and hickories, to reduce forest fragmentation. Examples of such sites would be small agricultural fields (or portions thereof) no longer being farmed, abandoned industrial areas, abandoned rights-of-way (roads, powerlines, and pipelines), and remediated contaminant areas.
4. Control exotic, invasive plants through integrated pest management practices.

2.4 Objective

Maintain about 300 acres in early successional habitat.

Strategies:

Contributing RON projects: 02005, 97001.

1. Use prescribed fire or mechanical treatment (mowing, discing) to disturb about 200 acres every 3 to 5 years. Add about 100 acres of 30-foot-wide borders of native warm-season grasses in row crop fields in the open portion of the Refuge.

2.5 Objective

Maintain 260 acres of native, warm-season grassland to benefit area sensitive grassland birds.

Strategies:

Contributing RON projects: 02008, 97001.

1. Prescribed burn all native warm-season grasslands on a 2- to 3-year cycle to favor grassland vegetation and control undesirable plants. Apply mechanical or herbicide treatments to control vegetation, when needed.

2.6 Objective

Maintain 1,000 acres of pasture, 700 acres of hay fields, and about 1,600 acres of clover fields with increased emphasis on habitat quality for grassland birds.

Strategies:

Contributing RON projects: 02008, 02002, 97001, 02007, 02009.

1. Remove 124 acres of linear forest habitat and 8 miles of hedge rows. Install fences to create paddocks within pastures to enable greater control of grazing intensity. Convert fescue pastures to other cool-season and native warm-season grasses by preparing the site and reseeding. The typical Refuge pasture would become three or four paddocks with a paddock of cool-season grass and two or three paddocks of native warm-season grasses. Cattle would enter the cool-season grass paddock in the spring switch to the warm season grasses in the summer, and move back to the cool season grass in the fall. The native warm season grass will provide the grassland birds with nesting, migration, and winter habitat. Vegetation structure will be managed by the amount of grazing applied to each paddock. Most of the pasture grass would not require fall mowing and would be taller than 6

inches during the winter. All mowing of hay fields, pastures, and clover fields will take place after August 1.

Goal 3. Ducks, Shorebirds, and Other Waterbirds

Maintain or enhance populations of ducks, shorebirds, and other waterbirds, with emphasis on priority species, as identified in the North American Waterfowl Management Plan, U.S. Shorebird Conservation Plan, and North American Waterbird Conservation Plan.

3.1 Objective

Provide 450 to 500 acres of moist-soil habitat during fall, winter, and spring for migrating shorebirds, waterfowl, and other waterbirds.

Strategies:

Contributing RONS projects: 02006, 97001.

1. Construct 50 to 70 acres of new moist-soil habitat. Maintain dikes and water control structures. Manipulate water levels and vegetation to encourage production of waterfowl foods.

Goal 4. Threatened and Endangered Species

Maintain or enhance populations of federal and, where compatible, state threatened and endangered species that occur at or near Crab Orchard National Wildlife Refuge.

4.1 Objective

Assure that federally listed species, state-listed species and federally proposed species and their habitats are protected.

Strategies:

1. No disturbance of bald eagles will take place during critical periods within protective zones as described in the 1983 Northern States Bald Eagle Recovery Plan, Appendix E. Management Guidelines for Breeding Areas. Areas are designated closed through signing and brochures.
2. Forest management activities, such as thinning and prescribed burning, will require close coordination with U.S. Fish and Wildlife Service, Ecological Services personnel. These activities may require standard surveys to determine whether Indiana bats are present in a given forest unit and/or forest management activities may be scheduled outside of the season when Indiana bats are likely to use Refuge forests.

Goal 5. Resident Fish and Wildlife

Maintain or enhance resident fish and wildlife populations consistent with management activities for federal trust resources in cooperation with the Illinois DNR.

5.1 Objective

Manage Refuge fisheries with emphasis on mixed-species, warmwater sport fishing.

Strategy:

1. Continue cooperative management of Refuge fisheries with Illinois DNR. Continue managing fish populations and habitat through activities such as: setting length and creel limits, seasonal closures of spawning bed areas, habitat enhancements, annual surveys, and fish stocking.

5.2 Objective

Manage Refuge resident wildlife populations at levels that allow opportunities for sport hunting of game species.

Strategies:

1. Continue managing the Refuge agriculture program with methods that benefit resident game species, such as: leave 25 percent of the corn crop unharvested, plant winter wheat in soy bean fields each fall, use low tillage planting techniques, keep fields in clover 2 years out of the 5-year rotation, delay mowing until after August 1, and use no insecticides.
2. Incorporate beneficial practices such as those suggested in the Northern Bobwhite Conservation Initiative: convert cool-season to warm-season grasses and burn and thin pine plantations.
3. Allow controlled hunting for turkey and deer in the restricted use portion of the Refuge.

Goal 6. Water Quality

Provide and manage for quality of water in streams and lakes at Crab Orchard National Wildlife Refuge.

6.1 Objective

Improve the quality of water within the watershed of the Refuge.

Strategies:

1. Cooperate with Illinois Environmental Protection Agency to monitor water quality. Identify landowners and land uses in the

watershed. Provide educational and technical assistance to landowners with particularly sensitive riparian areas. Work with municipalities and developers to enhance on-site storm water retention.

2. Work with farmers to establish buffer strips and keep livestock away from streams and ponds. Continue using current soil and water protection measures in the Refuge farm program: use no insecticides, use only Service-approved herbicides, use minimum tillage practices, and use winter cover crops.
3. Continue cleanup of contaminated sites. Ensure Refuge industrial operations conform to prescribed environmental standards.

Goal 7. Wilderness:

Protect the ecological integrity, preserve the wilderness character, restore natural conditions to the extent practicable, and provide opportunities for solitude and primitive recreation within the Crab Orchard Wilderness.

7.1 Objective

Recommend the designation of two parcels (120 acres) as Wilderness within 2 years of approval of the CCP

Strategy

1. Prepare and submit a Wilderness Study Report. Service wilderness policy is currently under revision. The direction of the new policy will be followed when it is adopted.

7.2 Objective

Revise and implement the Crab Orchard Wilderness Management Plan within 5 years of approval of the CCP

Strategy

1. Prepare and implement a Wilderness Management Plan. Service wilderness policy is currently under revision. The direction of the new policy will be followed when it is adopted.

7.3 Objective

Restore native hardwood forest on 325 acres of pine and pine-hardwood forest in the Crab Orchard Wilderness within 15 years of approval of the CCP.

Strategies

1. Thin the pine plantations (229 acres) and pine-hardwood stands (96 acres) in the Wilderness to promote establishment and growth of native hardwoods. Thinning would be conducted in several phases over a 10- to 15-year period to mimic the natural process of succession where pines are gradually replaced by hardwoods. Individual pines would be killed by cutting, girdling or injecting herbicide. No trees would be removed from the site. Treatments would be conducted so that the results would appear natural as much as possible. However, trees along heavily used trails may need to be felled to avoid personal injury to visitors, in which case this zone may appear unnatural for several years. Eventual removal of all the non-native pines would restore the natural vegetative cover of the area and enhance wilderness characteristics.
2. Prescribed burn the pine and pine-hardwood stands during the dormant season (November through March) on a 3- to 5-year cycle to enhance habitat conditions and promote desirable hardwood regeneration. Control lines would be established by hand tools where necessary, using natural firebreaks as much as possible.

7.4 Objective

Control or eradicate invasive species (especially autumn-olive, multiflora rose, Amur honeysuckle, white poplar, and Oriental bittersweet) over the 15-year life of the CCP.

Strategy

1. Prepare and implement an Integrated Pest Management Plan following guidance developed by the Service's "Promises Invasive Species Team."

7.5 Objective

Explore ways to increase cooperation with the U.S. Forest Service on management of the Crab Orchard Wilderness and the adjoining Panther Den Wilderness within 2 years of approval of the CCP.

Strategy

1. Contact the Forest Supervisor of the Shawnee National Forest and discuss ways our agencies could work together in managing the adjoining wildernesses.

7.6 Objective

Provide opportunities for primitive recreation, such as hiking, hunting, nature study and wild food collection, over the 15-year life of the CCP.

Strategies

1. Continue current primitive recreational opportunities.
2. Strategy: Prepare and distribute a wilderness brochure and conduct interpretive programs to inform the public about primitive recreational opportunities available.

7.7 Objective

Within 5 years of approval of the CCP, determine an appropriate level of opportunities to offer equestrians based on an evaluation of the current level and extent of horseback riding use and its effects on the Wilderness.

Strategy

1. Evaluate the current, unauthorized River to River route. Cooperate with partners to plan, construct, and maintain an authorized River to River trail route through the Refuge.

1.2. Recreation/Public Use Goals

Goal 8. Hunting, Fishing, Wildlife Observation and Photography, Interpretation and Environmental Education:

Hunters, anglers, viewers and photographers of wildlife, general visitors and students will enjoy high quality experiences through a variety of opportunities that promote an understanding and appreciation of natural and cultural resources and their management.

8.1 Objective

Increase the quality of hunting opportunities to a level where 75 percent of hunters experience uncrowded conditions, no conflicts with other users, a reasonable harvest opportunity, and satisfaction with their overall experience. Instill a sense of awareness among hunters of the Refuge as a component of the National Wildlife Refuge System and of hunting as a wildlife management tool.

Strategies:

1. In the public hunting area of the Refuge, continue the policy of providing hunting opportunities based on state hunting seasons and state and federal regulations.
2. In the restricted use area of the Refuge, maintain hunting opportunities, by permit, during shotgun deer and spring shotgun turkey seasons. Areas with high concentrations of waterfowl may occasionally be closed during the restricted use area shotgun hunts. Maintain shotgun deer season hunting opportunities for youth and persons with disabilities and, within 3 years of the plan's approval, provide these groups with opportunities for spring shotgun turkey season hunting when populations warrant.
3. Administer goose hunts in the controlled area through an agreement with a partner organization.
4. Over the life of the plan, promote ethical hunting behavior and increase hunter adherence to federal and state regulations through effective informational brochures and signs. Increase the visibility of Refuge law enforcement.
5. Over the life of the plan, enhance public understanding of Refuge hunting opportunities, ethical behaviors, the role of hunting in wildlife management, and the Refuge as a component of the National Wildlife Refuge System by increasing the quality of maps, signs, and brochures.

8.2 Objective

Increase the quality of fishing opportunities to a level where 75 percent of anglers experience uncrowded conditions, no conflicts with other users, a reasonable harvest opportunity, and satisfaction with their overall experience. At least 75 percent of anglers understand the issues, strategies, and policies involved in Refuge fisheries management and conservation.

Strategies:

1. In the public fishing areas, continue the policy of providing fishing opportunities based on state and federal regulations.

2. Continue to allow tournaments and fish-offs on the Refuge. Continue current policies on limited closures of Refuge waters east of Wolf Creek Road.
3. Continue to provide bank and boat fishing opportunities in accordance with state and federal regulations. Maintain Refuge boat ramps, fishing piers, and parking facilities. Study the feasibility for and construct accessible fishing facilities at Little Grassy and Devils Kitchen lakes within 4 years of the plan's approval.
4. Over the life of the plan, promote Refuge fishing opportunities and encourage conservation practices, such as catch-and-release fishing, through the development and maintenance of high-quality maps, signs, brochures and the Refuge web page.
5. Ensure that the fishing public clearly understands fish consumption advisories for Crab Orchard Lake through signs and brochures.
6. Over the life of the plan, provide insight to anglers regarding Refuge strategies, issues, and policies for fisheries management and conservation by redesigning and developing more effective informational signs and brochures. Increase angler awareness of the Refuge as a component of the National Wildlife Refuge System by improving the quality and content of maps, signs, and brochures.

8.3 Objective

Ensure that viewing and photography opportunities meet the needs of 95 percent of Refuge visitors. Establish and maintain viewing and photography opportunities for all major Refuge habitat types and optimum seasons.

Strategies:

1. Within 2 years of the plan's approval, develop an annual observation/photography fact sheet for the Refuge that will include a calendar of established tours, programs, and events; information on identified and recommended viewing and photography areas; guidelines to enhance viewing enjoy-

ment; and a Refuge map delineating trails, blinds, platforms, and identified viewing areas.

2. Continue popular, established programs and tours like the October Discovery Auto Tours, January Eagle Tours, and Spring Wildflower Walks that enhance visitor experience, bring visitors in closer proximity to resources, and provide optimum seasonal opportunities for observation and photography and continually evaluate these programs for effectiveness.
3. Within 2 years of the plan's approval, improve the existing photography/observation blinds and platforms by adding camouflage as needed to enhance viewing opportunities. Evaluate location of existing blinds and platforms and move as needed. Position interpretive and identification panels in or near blinds and platforms to promote understanding and appreciation of Refuge resources. Enhance panels to promote awareness of the Refuge as a component of the National Wildlife Refuge System.
4. Within 5 years of the plan's approval, evaluate need for and add additional blinds/platforms, including interpretive and identification panels, where and if needed to ensure observation and photography opportunities in all major Refuge habitat types. Maintain all identified viewing and photography sites.
5. Over the life of the plan and in cooperation with other partners, encourage utilization of the Refuge for birding and other wildlife observation through development of infor-



Visitor using a spotting scope, Crab Orchard NWR

mational materials, programs, trails, tours, and special events. Promote the Refuge as a site for quality wildlife observation and photography through participation in selected community and regional birding, nature, and photography festivals and events.

6. Within 8 years of the plan's approval, identify and create a Refuge birding trail that may include enhancement and coordination of existing trails, viewing areas and signs, and creation of a birding trail brochure and map.
7. Over the life of the plan, expand the Refuge web site to promote wildlife observation and photography. Include updates on Refuge and area sightings of rare birds and other wildlife; profiles of selected seasonally-occurring and resident species; suggested optimal viewing times and locations; and current Refuge programs, facilities, tours, and other opportunities for observation and photography.

8.4 Objective

Increase the effectiveness of the Refuge interpretive program so that 70 percent of visitors gain a better understanding of three primary concepts: (1) the value and unique purposes of the Refuge, (2) the Refuge as a component of the national network of refuges, and (3) the significance and mission of the National Wildlife Refuge System. Heighten awareness of conservation and stewardship concepts. Encourage visitors to adopt ethical behaviors and to take positive actions that support Refuge goals and the Refuge System mission.

Strategies:

1. Within 3 years of the plan's approval, develop the interpretation portion of the Visitor Services Plan outlining a comprehensive, multifaceted approach emphasizing selected themes and key Refuge resources. Themes will be selected based on importance to Refuge and System goals and relevance to surrounding communities. All interpretive materials, tours, and programs will focus on one or more of these Refuge themes, along with the three basic concepts of the Refuge and Refuge System. Refuge interpretive themes may be in a storyline form that includes three or more themes. Themes may include: Exploring the Diversity of Wildlife, Understanding the Past, Protecting the Balance, and Communicating Visitor Opportunities.
2. Within 4 years of the plan's approval, renovate and replace damaged and outdated interpretive and information panels on Refuge kiosks, wayside exhibits, trails, ramps, structures and other facilities. Ensure all panels comply with Service standards.
3. In cooperation with Refuge volunteers and other partners, conduct a variety of high quality interpretive programs annually. Continue popular and established interpretive programs and special events, such as the Families Understanding Nature program and National Wildlife Refuge Week. Ensure interpretive programming remains current and dynamic by continually creating new programs, incorporating new ideas, updating information, and revitalizing ongoing programs. Focus each interpretive program on one or more Refuge themes.
4. Over the life of the plan and in cooperation with Friends of Crab Orchard National Wildlife Refuge and other partners, revise Refuge interpretive brochures, handouts, and other written materials as needed to improve consistency and to meet Service standards.
5. Within 1 year of the plan's approval, create a custom audiovisual program that provides visitors with orientation information about the Refuge. Ensure this program and a variety of other wildlife-related audiovisual programs are made available for viewing at the Visitor Center and for use in interpretive programs.
6. Within 3 years of the plan's approval, establish and maintain an interpretive auto tour route, using existing roads, that will facilitate opportunities for wildlife and cultural resource observation and provide visitors with an overview of the Refuge, its resources, and its management. Include identified stations with interpretive panels and corresponding, radio-broadcasted interpretive messages.

8.5 Objective

Increase the effectiveness of the Refuge environmental education program so that 75 percent of participants gain a better understanding and appreciation of the resources, purposes, and value of the Refuge and the Refuge System. Heighten awareness of conservation and stewardship concepts and encourage participants to take positive actions on the Refuge and in their community that support Refuge goals and the Refuge System mission.

Strategies:

1. Within 2 years of the plan's approval, develop the environmental education portion of the Visitor Services Plan, outlining a comprehensive, curriculum-based approach structured to be compatible with state learning standards and national environmental education guidelines. Emphasize key Refuge resources, the Refuge, the National Wildlife Refuge System, and selected Refuge themes. These themes will be based on importance to Refuge and System goals and relevance to surrounding communities. All environmental education materials, facilities, and programs will focus on one or more of these Refuge themes, along with the basic concepts of the Refuge and the Refuge System. Refuge themes may be in a storyline form that includes three or more themes. Themes may include: exploring the diversity of wildlife, understanding the past, protecting the balance, and communicating visitor opportunities.
2. Within 3 years of the plan's approval and in cooperation with Friends of Crab Orchard National Wildlife Refuge and other partners, create an array of environmental education kits, each focusing on one or more aspects of Refuge themes. Educational kits will include interactive materials and a detailed instructional and activity guide designed with a clear, consistent format and coordinated with state learning standards. Develop and maintain a multi-faceted environmental education resource library, available for use by educators and in Refuge educational programs, comprised of books, videos, posters, audio tapes, written materials, and environmental education kits.
3. Within 4 years of the plan's approval and in cooperation with other partners, establish an environmental education complex that incorporates an outdoor amphitheater with educational displays, a set of associated trails, the Refuge Visitor Center, and an educator's trail specifically designed to facilitate environmental education activities and function as an outdoor classroom.
4. Within 4 years of the plan's approval and in cooperation with other partners, create an Educator's Guide to Crab Orchard National Wildlife Refuge that provides an orientation, guidelines, grade-level and state learning standards information, maps, and site-specific activities that focus on one or more Refuge themes. Incorporate input from area educators to ensure the Refuge guide meets area teachers' needs.
5. In cooperation with other partners, conduct or host annual teacher workshops that encourage area educators to incorporate environmental education into their curriculum and to utilize Refuge materials, staff, and resources, both in the classroom and during field trips.
6. Continue currently-offered environmental education programs done by request, including on-site and off-site programs, special educational events, group camp programs, and special interest group programs. Over the life of the plan, expand the environmental education program to include additional on-site and off-site programs, special educational events, group camp programs, and special interest group programs. Develop pre- and post-visit activities in addition to on-site activities.
7. Over the life of the plan, establish partnerships with selected local schools, agencies, and nonprofit organizations to more effectively develop and expand environmental education programs. Involve volunteers in educational programs and explore the potential for environmental education interns through Southern Illinois University and John A. Logan College. Explore the potential for creating a grant program to help area schools with field trip expenses.

8. Conduct an annual review of the Refuge environmental education program. Invite feedback from area educators. Revise as necessary.

Goal 9. Customer Service:

Visitors of all abilities will feel welcome and enjoy a safe visit to an area that they recognize as a national wildlife refuge.

9.1 Objective

Improve Refuge signs, kiosks, and facilities so that 90 percent of visitors feel welcome and secure, enjoy their visit, and recognize the area as a national wildlife refuge.

Strategies:

1. Within 3 years of the plan's approval, revise information on existing kiosks, trailhead and other identification markers, boundary signs, and other such signs as necessary to meet Service standards.
2. Within 5 years of the plan's approval, create and install additional kiosks where needed at Refuge access points to ensure that all visitors are greeted and informed that they are entering a national wildlife refuge.
3. Verify annually that visitors are welcomed and treated courteously by staff and volunteers. Confirm customer service standards during employee and volunteer orientations. Provide visitors with opportunities for feedback through suggestion cards, verbal reports, written mail, and e-mail through the Refuge web page. Address customer service issues promptly and professionally according to Service standards.
4. Within 2 years of the plan's approval, develop a Refuge brochure with detailed information on accessible facilities, trails, programs, and recreational opportunities at the Refuge.
5. Conduct semi-annual safety inspections of all Refuge facilities and reaffirm compliance with Service standards.
6. Maintain recognizable, consistent signs that clearly identify public hunting areas. Increase awareness among non-hunting visitors of hunting areas and seasons through effective signs and brochures.
7. Respond to notification of safety problems and unsafe situations promptly and in accordance with Service standards.

Increase visibility of Refuge law enforcement, particularly during periods of heavy visitation.

Goal 10. Outreach:

Visitors, cooperators, tenants, and local residents will understand Refuge goals, issues and activities. Service personnel will understand the expectations and concerns of the general public by being receptive to their feedback.

10.1. Objective

The positive attitude toward Refuge management will increase among visitors, cooperators, tenants, and local residents throughout the life of this plan.

Strategies:

1. Issue press releases, hold Refuge open houses and hold regularly scheduled forums.
2. Within 2 years of this plan's approval, create and maintain a "listening log" of written and oral input from the public submitted to the Refuge. Review this log quarterly and address voiced community concerns.
3. Provide annual reports on the "State of the Refuge." Distribute these reports upon request at the Visitor Center and by mail and post the current year's report on the Refuge website.
4. Continue to permit selected annual and special events that are sponsored by nonprofit organizations, provided they do not damage Refuge resources or interfere with wildlife-dependent recreation.

Goal 11. Volunteers and Support Groups:

Volunteers and Refuge support groups will be stewardship partners and strong advocates for the Refuge.

11.1 Objective

Improve Refuge support for volunteer and Friends of Crab Orchard activities to a point where at least 95 percent of volunteers and Friends members feel like valued contributors to the success of Refuge programs and endeavors.

Strategies:

1. Continue to manage volunteer and support programs in accordance with Service guidelines detailed in "A Guidebook for Working with Volunteers." Maintain an active liaison with support groups and partners.
2. Provide in-depth initial training to Refuge volunteers that will enable them to effectively and efficiently complete projects and responsibilities. Encourage involvement in diverse volunteer activities that match volunteer interests.
3. Continue demonstrating Refuge appreciation for volunteer contributions and Friends support annually through a Volunteer Appreciation Banquet. Present awards for service hours in accordance with Service guidelines.

Goal 12. Other Land- and Water-based Recreation:

Visitors will enjoy high quality, land- and water-based activities that fulfill the recreation purpose of the Refuge when the Refuge was established.

12.1 Objective

Improve the quality of boat launches, marinas, beaches, picnic areas, and campground to industry standards within the life of the CCP.

Strategies:

1. Maintain picnicking at the Refuge recreational areas of Greenbriar, Wolf Creek, Harmony Trail, Playport Marina, and the Visitor Center. Develop a day use area at the current Images Marina site, and relocate picnic facilities from Cambria Neck to the site. Explore the option of concession-operated picnic shelters at Little Grassy and Crab Orchard campgrounds.
2. Explore the potential for a bicycle route within the restricted use area of the Refuge. The route would run mainly along old railroad beds.
3. Continue current policies on swimming at Devils Kitchen, Little Grassy and Crab Orchard lakes. Prohibit scuba diving.
4. Within 10 years of the plan's approval, upgrade boat ramps and associated parking at Devils Kitchen, Little Grassy and Crab Orchard lakes.

5. Continue current zoning on Crab Orchard Lake with additional no wake zones (see Figure 11 on page 53). Gas motors would be prohibited in the most southeastern arm of Devils Kitchen Lake, from the mouth of Grassy Creek south to the Refuge boundary, and in ponds within the public use area.
6. Horseback use on the Refuge would be confined to a designated River to River Trail (see Figure 13 on page 55) and erosion due to trail use would be actively controlled through maintenance and/or seasonal closures.
7. Camping at Devils Kitchen would be reduced to primitive sites only. Crab Orchard and Little Grassy campgrounds would be upgraded to standards comparable to others in the area.
8. Within 2 years of the plan's approval, consolidate Playport and Images marinas on Crab Orchard Lake. Images marina slips will be moved to Playport marina. Within 5 years of the plan's approval, remove the building at Images Marina and develop the area into a large access area to the lake with a comfort station.
9. After 2 years of the completion of the CCP, the Crab Orchard Boat & Yacht Club will be converted to a concession.

Goal 13. Protection:

Protect the integrity of Refuge biological and cultural resources and the health and safety of visitors, industrial workers, farmers, and Service staff.

13.1 Objective

Refuge lands and waters are safe for fish, wildlife, plants, and people.

Strategy:

1. Work with USEPA, Illinois EPA, Departments of Interior and Justice, and responsible parties to remediate contaminated sites. Where contamination is left in place, or where there is potential for undiscovered contamination that may pose a risk from exposure, institutional controls may be formulated. An institutional control plan would be written by the CERCLA staff and made available to Refuge management for implementation.

13.2 Objective

Visitors will feel safe on the Refuge and illegal harvest of fish and wildlife will be reduced.

Strategy:

1. Maintain full-time law enforcement staff.

13.3 Objective

Manage or eliminate invasive species on the Refuge.

Strategy:

1. Write and implement an Integrated Pest Management (IPM) Plan following guidance developed by the Service's "Promises Invasive Species Team." The IPM plan will address target species, control methods, mapping and monitoring.

13.4 Objective

Protect the cultural, historic, and pre-historic resources of federally-owned lands within the Refuge.

Strategy:

1. Implement the Cultural Resource Management Plan for Cultural Resources within the Crab Orchard National Wildlife Refuge (Godfrey and Stubbs 2001).
2. Ensure archeological and cultural values are described, identified, and taken into consideration prior to implementing undertakings. Notify the Regional Historic Preservation Officer early in project planning or upon receipt of a request for permitted activities.
3. Develop a step-down plan for surveying lands to identify archeological resources and for developing a preservation program.
4. Complete accessioning, cataloging, inventorying, and preserving the museum collection at the Refuge in accordance with "Survey of Collections at Crab Orchard NWR" by Mayda S. Jensen.

13.5 Objective

Meet Service policy guidelines ("Administration and Enforcement Procedures for Conservation Easement") for 12 conservation easements by 2007, for all easements by 2010

1. Complete legal surveys on 50 percent (12 tracts) of all conservation easements by 2007 through contracted services. Complete contracted surveys on the remaining tracts by 2010.
2. Conduct annual inspections of all conservation easements.
3. Develop land use plans for 50 percent (12 tracts) of the conservation easements and restore grassland and wetland habitats on 25 percent of these tracts by 2009.
4. Hire a permanent 6-month law enforcement officer to conduct annual inspections, develop land use plans, and restore wetland and grassland habitat projects.

Goal 14. Agriculture:

Provide opportunities for agricultural uses on Refuge lands that help attain wildlife conservation goals.

14.1 Objective

Continue farming operations on about 4,400 acres of row crops with greater emphasis on conservation practices.

Strategy:

1. Maintain infrastructure (roads, fences) in support of agricultural operations. Drop small, less profitable fields (less than 5 acres) from row cropping and convert to other cover (about 15 fields totaling 52 acres). Identify and drop farmed wetlands from the farm program. Permit cooperators to harvest corn remaining in the field in the spring. Emphasize Johnsongrass control. Prohibit mowing of clover in the crop rotation until after August 1. Enlist technical support from Natural Resource Conservation Service and University of Illinois Extension.

14.2 Objective

Continue farming operations on about 700 acres of hay fields with greater emphasis on conservation practices.

Strategy:

1. Prohibit mowing of hay until after August 1. Maintain an updated rate charge for hay.

14.3 Objective

Enhance nesting habitat for grassland birds while maintaining or increasing the value for grazing on about 1,000 acres of pastures.

Strategy:

1. Convert fescue pastures to other cool-season grasses and native warm season grasses with higher wildlife value. Divide existing pastures into three or four paddocks with a paddock of cool season grass and two or three paddocks of native warm season grasses. Rotate grazing cattle among the paddocks during the season. Enlist technical oversight from Natural Resource Conservation Service and University of Illinois Extension.

Goal 15. Industrial Goal

Provide an industrial complex and attendant utility and transportation infrastructure, which conforms to prescribed safety, health, environmental and maintenance standards, that is utilized by compatible tenants.

15.1 Objective

Consolidate the areas occupied by industry.

Strategies:

1. Update Industrial Policy. Maintain the current infrastructure to support existing facilities.
2. Remove buildings that are no longer suitable for occupancy for reasons of contamination, safety or lack of structural integrity and restore to natural habitats.

2. Plan Implementation

2.1. New and Existing Projects

This CCP outlines an ambitious course of action for the future management of Crab Orchard National Wildlife Refuge. It will require considerable staff commitment as well as funding commitment to actively manage the wildlife habitats and add and improve public use facilities. The Refuge will continually need appropriate operational and maintenance funding to implement the objectives in this plan.

A full listing of unfunded Refuge projects and operational needs can be found in Appendix K. In the appendix, the highest priority Refuge projects are described briefly.

2.2. Staffing

Reforestation, aggressive control of invasive species, an increase in the number of acres managed as moist soil units, and improvements to the open land

units will require additional staff and operating funds. A person with expertise in agriculture and invasive species will be added to the biological program staff. Also, a person with expertise in Geographic Information Systems will be needed to assist the biological staff with mapping and record keeping for invasive species control and other habitat work. A seasonal tractor operator will need to be hired to help accomplish the habitat work. To improve the quality of services, the Refuge will add a position in the visitor information center to assist with administrative duties.

The completion of the consolidation of the former Playport and Images Marinas will require moving the remainder of the docks from the Images area, removal of the concession building and construction of a boat ramp.

Meeting the goals and objectives of this plan will require a 15 percent increase in the Refuge's current operations and maintenance budget.

2.3. Partnership Opportunities

Partnerships have become an essential element for the successful accomplishment of Crab Orchard NWR goals, objectives and strategies. The objectives outlined in this CCP need the support and the partnerships of federal, state and local agencies, non-governmental organizations and individual citizens. This broad-based approach to managing Refuge resources extends beyond social and political boundaries and requires a foundation of support from many organizations and people. The Refuge will continue to seek creative partnership opportunities to achieve its vision for the future.

Southern Illinois Hunting and Fishing Days, Inc. is a non-profit organization that partners with the Refuge to promote hunting and fishing in the area. The Refuge initiated this program in the early 1980s. SI Hunting and Fishing Days assumed the lead for this activity in the early 1990s. Several thousand people now attend this annual weekend event, which is held at John A. Logan College.

Take Pride in America has been organized and worked with the Refuge since 1988. Take Pride in America has built courtesy docks for boat landings at all three lakes. Take Pride in America organized the construction of bass-rearing ponds and maintains Hogan's Point (Take Pride Point) for fish-offs.

The Crab Orchard Waterfowl Association has provided funds for the construction of moist soil units on the Refuge. Quail Unlimited has provided native grass seed for Refuge prairie restoration.

Touch of Nature, the Friends of Crab Orchard NWR and the Refuge's Visitor Services Program have partnered to provide environmental education opportunities for local schools.

With the help of the following partners, the Refuge is able to provide one of the most successful Kids Fishing Derbys in the area:

- # University of Illinois Cooperative Extension Service
- # Illinois DNR
- # Southern Illinois National Hunting and Fishing Days
- # Timberline Fisheries
- # Zimmer Radio Group
- # WalMart
- # Silkworm Inc.
- # Marion Pepsi-Cola
- # Crab Orchard Boat & Yacht Club

The Refuge has many dedicated friends and volunteers that assist with a variety of tasks. The Friends of Crab Orchard National Wildlife Refuge, John A. Logan College, University of Southern Illinois, Southern Illinois Audubon Society, Williamson County Tourism, and Marion U.S. Penitentiary are just a few of the organizations that contribute time to the Refuge. We expect to maintain and enhance these partnerships in the future.

2.4. Step-down Management Plans

Step-down management plans describe the specific strategies and implementation schedules for meeting general goals and objectives identified in the CCP. Table 1 shows the step-down management plans we intend to prepare. We have completed two management plans that will be adopted/included under the CCP.

The Natural Resource Damage Assessment (NRDA) Restoration Plan was approved July 21, 1997. The NRDA Restoration Plan describes activities proposed to compensate for lost resources and the services they provide that resulted from PCB contamination on part of the Refuge. Restoration activities included in the plan include reforestation, shoreline and riparian restoration, grassland restoration, public education/outreach, and land acquisition.

The Fire Management Plan, approved January 16, 2002, provides direction and establishes procedures to guide various wildland fire program activities. The Fire Management Plan covers historical

and ecological role of fire, fire management objectives, preparedness, suppression, fire management actions and responses, fire impacts, use of prescribed fire, and fire management restrictions.

2.5. Monitoring and Evaluation

Monitoring is critical to successful implementation of this plan. Monitoring is necessary to evaluate the progress toward objectives and to determine if conditions are changing.

Accomplishment of the objectives described in this CCP will be monitored annually by the Refuge Manager's supervisor. Successful performance will be tied to the accomplishment of objectives that are scheduled for that year. The public will be informed about the activities of the Refuge staff through an "Annual Report" that will be mailed to all persons on the Refuge mailing list, published on the Refuge's Web site, and its availability will be announced through news releases to the media. The annual report will be published each year in February.

The techniques and details for monitoring related to specific objectives will be specified in the Inventory and Monitoring Step Down Plan.

Substantial changes are likely to occur within the Service and the community during the next 15 years. This plan and its objectives will be examined at least every 5 years to determine if any modifications are necessary to meet the changing conditions.

2.6. Plan Review and Revision

The CCP for the Refuge is meant to provide guidance to refuge managers and staff over the next 15 years. However, the CCP is also a dynamic and flexible document and several of the strategies contained in this plan are subject to natural, uncontrollable events such as windstorms and droughts. Likewise, many of the strategies are dependent upon Service funding for staff and projects. Because of these factors, the recommendations in the CCP will be reviewed periodically and, if necessary, revised to meet new circumstances. If any revisions are major, the review and revision will include the public.

Table 1: Step-down Management Plans, Crab Orchard NWR

Title	Service Manual Reference
Occupational Safety and Health	Parts 240-249
Safety Program	240 FW 1-9
Safety Operations	241 FW 1-9
Industrial Hygiene	242 FW 1-13
Hazardous Materials Operations	242 FW 6
Contaminant Institutional Control	
Law Enforcement	Parts 440-459
Pollution Control	Parts 560-569
Policy and Responsibilities	560 FW 1
Pollution Prevention	560 FW 2
Compliance Requirements	Part 561
Clean Water Act	561 FW 3
RCRA – Hazardous Waste	561 FW 6
Pesticide Use and Disposal	Part 562
Pest Management	562 FW 1
External Threats to FWS Facilities	Part 563
Air Quality Protection	563 FW 2
National Wildlife Refuge System (NWRS) Uses	Part 603
NWRS Uses (Appropriate Refuge Uses)	603 FW 1
Priority Wildlife-dependent Recreation	Part 605
Hunting	605 FW 2
Fishing	605 FW 3
Wildlife Observation	605 FW 4
Wildlife Photography	605 FW 5
Environmental Education	605 FW 6
Interpretation	605 FW 7
Visitor Services	
Wilderness Management	Part 610
Special Area Management	Part 611
Research Natural Areas	611 FW 1
National Trails	611 FW 4
Minerals Management	Part 612
Minerals and Mining	612 FW 1
Oil and Gas	612 FW 2
Archeological Resources Inventory	Sec. 110 NHPA; sec. 14 ARPA
Habitat Management Planning	Part 620
Natural Resources Damage Assessment Restoration	
Fire Management	Part 621
Population Management	Part 701
Inventory and Monitoring	701 FW 2

Table 1: Step-down Management Plans, Crab Orchard NWR (Continued)

Title	Service Manual Reference
Propagation and Stocking	701 FW 3
Marking and Banding	701 FW 4
Disease Prevention and Control	701 FW 7
Trapping	701 FW 11
Fishery Resources Management	Part 710
Industrial Operations Management	

