

# Flint Hills National Wildlife Refuge

## Draft Comprehensive Conservation Plan and Environmental Assessment

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# *Executive Summary*

The Comprehensive Conservation Plan (CCP) for the Flint Hills National Wildlife Refuge (NWR) would serve as a management tool to be used by the Refuge staff and its partners in the preservation and restoration of the ecosystem's natural resources. In that regard, the Plan will guide management decisions over the next 15 years and set forth strategies for achieving Refuge goals and objectives within that time frame. The management actions presented within this document reflect the U.S. Fish and Wildlife Service (Service's) efforts to meet the goals of the Refuge Improvement Act of 1997.

The goals listed below will guide Refuge management:

- Goal 1:** To restore, enhance, and protect the natural diversity on the Flint Hills NWR including threatened and endangered species by appropriate management of habitat and wildlife resources on Refuge lands and by strengthening existing and establishing new cooperative efforts with public and private stakeholders.
- Goal 2:** To restore and maintain a hydrological system for the Neosho River drainage by managing for wetlands (Map #8), control of exotic species, and management of trust responsibilities for the maintenance of plant and animal communities.
- Goal 3:** Provide opportunities for wildlife-dependent public access and recreational opportunities to include compatible forms of hunting, fishing, wildlife observation, photography, interpretation, and educational activities.
- Goal 4:** To protect, manage, and interpret cultural resources on the Flint Hills NWR for the benefit of present and future generations.
- Goal 5:** To strengthen interagency and jurisdictional relationships in order to coordinate efforts with respect to the Refuge and surrounding area issues resulting in decisions benefitting fish and wildlife resources while at the same time avoiding duplication of effort.
- Goal 6:** Improve staffing, funding, and facilities that would result in long-term enhancement of habitat and wildlife resources in the area of ecological concern and support the achievement of the goals of this Plan and the goals of the National Wildlife Refuge System (System).

Objectives with measurable outcomes would guide the Refuge staff in a consistent direction toward the accomplishment of each goal beginning with short-term activities or strategies to occur within five years followed by implementation of long-term activities within 5 to 15 years. Completion of the following objectives depends upon funding and staffing from year to year:

1. Document existing flora and fauna of wetland, grassland, riparian, savanna, and wooded habitats through baseline surveys and monitor habitats affected by management activities.
2. Continue to protect populations of endangered and threatened species and maintain or improve their habitats on Refuge lands.
3. Manage waterfowl in accordance with the North American Waterfowl Management Plan focusing on target species including the mallard, pintail, wood duck, and gadwall.
4. Monitor population status of priority species of neotropical migratory birds, shorebirds, and other nongame migratory birds.
5. Determine population objectives of key resident wildlife species and monitor the status of these species.
6. Restore and maintain native species on Refuge lands to reestablish native habitat communities through appropriate land management techniques and monitor reestablishment of native species as a result of restoration efforts.
7. Reestablish native plants along the riparian areas of the Neosho River and its tributaries to benefit native aquatic and riparian communities of the Arkansas/Red Rivers Ecosystem and monitor reestablishment of native species as a result of restoration efforts.
8. Encourage research with universities and other institutions that would improve the biological database of the Refuge or contribute to habitat restoration and management activities that are compatible with Refuge goals and requirements of the Refuge Act. These activities would be reviewed periodically by the Service and other representatives to evaluate the effectiveness for Refuge needs.
9. Improve water management to maintain and enhance 4,500 acres of current wetlands and restore another 600 acres of wetlands. Monitor and document habitat components through annual biological surveys of two to three key components (birds, vegetation, water quality, invertebrates, and fish).
10. Develop and improve wildlife compatible recreational opportunities on Refuge lands that further the public's involvement and appreciation of the System. Through the completion and implementation of the Public Use Plan in tasks outlined in short-term and long-term phases, public use would increase 15 percent over the next five years and by 50 percent by the year 2015.

11. Develop and implement educational and interpretive programs to increase the public's understanding of the natural resources of the Refuge and issues within the Arkansas/Red Rivers Ecosystem. Develop educational or interpretive programs specific to the Flint Hills NWR and initiate Refuge participation in national educational programs. Host various special events to offer the public an opportunity to participate in Refuge activities.
12. Initiate a variety of innovative outreach strategies to strengthen the existing Refuge constituency and develop a broader base of public support in east-central Kansas. Create and develop one outreach product and/or publication to generate interest in the Refuge over the next five years. Increase community presentations, community involved habitat restoration projects, and Refuge staff representation at public events.
13. Work with the community to develop an organization or avenue for receipt of private funding to subsidize environmental education programs, habitat restoration projects, or other community based efforts benefitting wildlife habitats on Refuge lands by the year 2010.
14. Document, map, and monitor archaeological sites on current Refuge lands and future acquisitions through a baseline archaeological survey and monitor known sites for disturbance or deterioration. Incorporate information about the archaeology of the area into one Refuge educational or interpretive product or program by the year 2005.
15. Strengthen partnerships with the U.S. Army Corps of Engineers (Corps) and other private stakeholders within the community, Kansas Department of Wildlife and Parks, and other public agencies that are mutually beneficial and would ultimately benefit the fish and wildlife resources of the Refuge and surrounding lands.
16. Provide the personnel needed to accomplish the goals of this Plan through the addition of specific staff specialists and programs that encourage community volunteers.
17. Provide a safe, efficient, and productive work environment for Refuge employees and a safe infrastructure for Refuge visitors.

The goals and objectives of this Plan are the management framework providing direction and continuity in the Refuge programs over a short-term period (five years) and long-term period (5 to 15 years.) Strategies and management activities are suggested to progressively work toward achieving the specific objectives and can, over time, be modified to reflect a broader understanding or knowledge of an issue through research or experience, staff management styles, or resource specialties and regional funding priorities.

# *Vision*

Flint Hills NWR contains biologically significant habitats in the Neosho watershed within Kansas. This unique unit of the System plays a crucial role in the conservation of biodiversity and protects a significant number of species which depend on these habitats. The Refuge straddles the Neosho River and is important for terrestrial and aquatic species. During the past decade, many research efforts have focused on the unique habitats of the Refuge. Yet much remains to be learned at Flint Hills NWR and management of the biological resources protected by the Refuge. The area is dominated by complex resource management issues revolving around the flood control function of John Redmond Reservoir. Activities associated with agriculture, flood control, and public recreation have placed increasing demands on the landscape and identified the need for more responsible utilization of land and water resources that support the remaining native ecosystem components.

Flint Hills NWR must continue to protect habitat for the diverse array of native plants and animals that rely upon the resources of the Refuge for survival. The foreseeable future is one of protection and enhancement of the existing landscape and active research and management for a diversity of native species at every trophic level within all environments on the Refuge. With continually improving data gathering and analysis, better decisions can be made regarding natural resource conservation thus leading to the secure abundance and population recovery of rare and/or state and federally listed endangered species.

The Service envisions cooperative working relationships with other Federal and State agencies along with nongovernmental organizations (NGO)'s and the interested public to accomplish its complex mission. These progressive working relationships would result in the Refuge's improving role in protecting resources from negative impacts while still providing a wide range of wildlife-dependent opportunities and activities. Flint Hills NWR continues to contribute to the economic development and enhancement of the quality of human life in the Neosho River Valley. As local communities become more and more aware of this, the Refuge would increasingly be promoted as a regional tourist destination. Such attention must be channeled to focus on the mission and benefit of the System and the promotion of an increased understanding and support for the Service's efforts to protect native plants and animals and their associated habitats.

# *Introduction*

This CCP provides a description of the desired future conditions and long-range guidance for achieving the primary purpose for which Flint Hills NWR was established: to provide habitat for migratory birds and other wildlife. The Flint Hills NWR is one Refuge in a system that now encompasses over 92 million acres of public land and water and is the world's largest collection of land providing habitats for more than 5,000 species of birds, mammals, fish, amphibians, reptiles, and insects.

The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge Improvement Act of 1997). Established in 1903 by President Theodore Roosevelt, the System now includes 516 refuges and 38 wetland management districts in all 50 states and the U.S. territories. National wildlife refuges host a tremendous variety of plants and animals supported by a variety of habitats from arctic tundra and prairie grasslands to subtropical estuaries. Most national wildlife refuges are strategically located along major bird migration corridors. This ensures that waterfowl, raptors, and other migratory birds have publicly owned resting and feeding stops on their annual migrations.

The Service is the principal Federal agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats. The agency has specific trustee responsibilities for migratory birds, threatened and endangered species, anadromous fish, and certain marine mammals as well as the land and waters administered by the Service for the protection of these resources.

The following sections discuss the purpose of and need for the Flint Hills NWR CCP, the planning process used, and the general background of the Refuge. It also describes the geographic ecosystem the Refuge is located within and the legal context of the planning project.

## **Regional Setting**

The Flint Hills NWR lies in the broad, flat Neosho River Valley, historically a native tallgrass prairie region of natural scenic beauty. The Refuge is named for the gently rolling Flint Hills 30 miles to the west. These fossil studded limestone hills were formed when seas washed across the region 250 million years ago (Oblinger-Smith Corp., 1982).

The Refuge is readily accessible by turnpike and interstate highways, lying just eight miles south of I-35 in eastern Kansas. Large cities such as Wichita, Kansas City, and Topeka are within 100 miles of the Refuge. Nearly 1.5 million people live within a 100 mile radius (Map #1). Other refuges within the immediate area include the Marais des Cygnes NWR (approximately 90 miles to the east on the Kansas-Missouri border) and Quivira NWR (approximately 150 miles to the west in south-central Kansas).

## Refuge Purpose Statements

Each national wildlife refuge was established for a particular purpose. Formal establishment is usually based upon a statute or executive order specifically enumerating the purpose of the particular unit. However, refuges can also be established by the Service under the authorization offered in such laws as the Endangered Species Act of 1973 or the Fish and Wildlife Act of 1956. In these cases, lands are identified by the Service that have the right elements to contribute to the recovery of a species or the maintenance of habitat types. Oftentimes, the Service works in cooperation with private nonprofit organizations in efforts to acquire suitable lands.

Flint Hills NWR was established in 1966 and “. . .shall be administered by him (Secretary of the Interior) directly or in accordance with cooperative agreements . . . and in accordance with such rules and regulations for the conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon, . . .” 16 U.S.C. § 644 (Fish and Wildlife Coordination Act, 1958).

The Refuge Recreation Act (16 U.S.C. § 460-1) states that each refuge is:  
*“suitable for incidental fish and wildlife oriented recreational development, the protection of natural resources, and the conservation of endangered or threatened species.”*





# *Planning Perspectives and Considerations*

## Purpose of and Need for the Plan

The purpose of the CCP is to “provide long range guidance for the management of national wildlife refuges.” As such, all lands of the System are to be managed in accordance with an approved CCP that will guide management decisions and set forth strategies for achieving refuge purposes. The Refuge Improvement Act of 1997 requires all refuges to have a CCP and provides the following legislative mandates to guide the development of the CCP:

- Wildlife has first priority in the management of refuges.
- Recreation or other uses are allowed if they are compatible with wildlife conservation.
- Wildlife-dependent recreation activities such as hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation will be emphasized.

This CCP provides management direction to present and future Refuge Managers for the next 15 years. It describes all management activities that occur on the Refuge and provides management goals, measurable objectives, and management actions or strategies designed to enhance and protect existing habitats and restore degraded habitats for the benefit of wildlife including endangered species. The goals and objectives shall guide management toward the Refuge vision or the ecologically desirable outcome for Flint Hills NWR.

## Planning Process

This CCP establishes the goals, objectives, and management strategies for Flint Hills NWR. A CCP is guided by the established purposes of each refuge, the goals of the System, Service compatibility standards, and other Service policies, legal mandates, and laws directly related to refuge management. The Plan is in compliance with the requirements of the National Environmental Policy Act (NEPA). It addresses the National Wetlands Priority Conservation Plan, the North American Waterfowl Management Plan, conservation initiatives such as the Partners-in-Flight (PIF) Plan and private land initiatives, and the Service's ecosystem management plans.

The Plan is developed with specific activities to be implemented during a short time frame. Activities proposed for implementation over a longer term, 5 to 15 years, are sometimes stated broadly with the intent that a detailed step-down plan be developed. Step-down plans for a particular management program such as farming, public use, and prescribed fire include budgets, implementation, monitoring, and evaluation criteria.

This CCP will direct the preparation or revision of step-down management plans, affect performance standards for Refuge personnel, and justify budget approval for specific programs over the next 15 years.

The CCP and step-down plans provide the Refuge Manager a rationale and justification to guide management decisions affecting the Refuge's natural resources. The plans will be most useful if the Manager provides a detailed record of management actions and outcomes. It is the intent of the planning process that management actions developed in both the CCP and step-down plans be documented, reviewed, and evaluated within a reasonable time frame. To optimize the effectiveness of the plans, amendments need to be incorporated based on management outcomes and current Service policy.

Following the publication of a Notice of Intent in the Federal Register on October 2, 1998, a fact sheet was prepared and sent to a mailing list of citizens, interest groups, and agencies that have expressed interest in Refuge programs and issues. An open house was held at the Flint Hills NWR headquarters in Hartford, Kansas on November 5, 1998. In an ongoing effort to involve the local community and officials in the CCP process, the availability of the Draft CCP would be announced in the Federal Register by the Service. The Draft CCP would be sent to a current mailing list of citizens and interest groups and agencies previously expressing an interest in Refuge programs and issues.

As part of the process of developing a Final CCP, public meetings would be provided, if necessary, based on public response to this Draft CCP document. Any comments received from the public will be reviewed and considered throughout the CCP process. RMCI continually updates the mailing list based on responses from interested parties. The public comments will be included in the final document as an appendix.

## Planning Perspectives

This comprehensive planning effort would integrate three perspectives so that the management direction over the next 15 years would produce holistic management approaches for the Flint Hills NWR. The Plan includes:

1. A broad perspective for overall environmental contextual issues including endangered species, biological diversity, water issues, inter-jurisdictional cooperation, socio-economic considerations, etc.
2. A focused perspective for the System related policy issues which affect the Flint Hills NWR programs (compatibility, endangered species management, water rights, etc.).
3. A local perspective for Refuge related activities and strategies affecting management units (grasslands, endangered species, research, etc.).

An understanding of these three perspectives and the relationship between them lead to the formulation of an integral set of Refuge goals and objectives for the next 15 years.

## Expected Planning Outcomes

The planning effort should bring about the following outcomes which are all objectives of comprehensive conservation planning:

1. Ensure that management of Flint Hills NWR lands reflect the policies and goals of the System and the purposes for which the Refuge was established.
2. Ensure that Flint Hills NWR contributes to the conservation of biological diversity and to the structure and function of the ecosystem in which it is located.
3. Provide a clear statement of desired future conditions for Flint Hills NWR as it should be when the System and individual unit purposes are accomplished.
4. Provide a systematic process to aid decision making by identifying opportunities, issues, and concerns; collecting, organizing, and analyzing information; and developing and considering a range of management alternatives.
5. Provide a forum for determining the compatibility of uses on Flint Hills NWR.
6. Ensure Service programs, other agencies, and the public have opportunities to participate in management decision making for Flint Hills NWR.
7. Provide a uniform basis for budget requests for operational, maintenance, and capital development programs that accomplish Flint Hills NWR and system purposes.
8. Provide a basis for monitoring progress and evaluating Plan implementation on Flint Hills NWR.
9. Identify objectives and management strategies for Flint Hills NWR leading to their achievement.
10. Provide long-term continuity in the management of Flint Hills NWR.

## The Ecosystem Approach to Management

The Service has adopted an ecosystem approach to more effectively achieve its mission of fish and wildlife conservation for future generations. The ecosystem approach is defined as protecting or restoring the natural function, structure, and species composition of an ecosystem while recognizing that all components are interrelated.

Ecosystem management includes preservation of the natural biological diversity, ecosystem health, and sustainable levels of economic and recreational activity. This approach emphasizes the identification of goals that represent resource priorities on which all parts of the Service will collectively focus their efforts. These cross program partnerships within the Service and partnerships with outside entities assist in the identification of common resource goals and contribute to the accomplishment of those goals in an effective and timely manner.

The Service has defined 52 ecosystems within the United States, based primarily on watershed designations. In order to implement the ecosystem approach, the Service has established ecosystem teams consisting of members representing the various field stations and programs within the Service in any given area. The Refuge plays an integral role in the coordination of, and is an active participant in, projects identified by the ecosystem team as priority projects in order to accomplish the overall goals of the team. Management decisions incorporate pertinent biological and socio-economic parameters within the ecosystem (Map #2).

## The Arkansas/Red Rivers Ecosystem

Flint Hills NWR is part of the Arkansas/Red Rivers Ecosystem. This ecosystem contains approximately 245,000 square miles and extends from the Rocky Mountains to the bayous of Louisiana and contains all of Oklahoma and parts of seven other states. Flint Hills NWR is located in the north-central portion of this ecoregion. Threats to important fish and wildlife resources in this system include construction and operation of stream impoundments, improperly conducted livestock grazing, and further fragmentation of the prairie ecosystem. Opportunities exist to improve grazing regimes and work with Federal, State, and local agencies, as well as private organizations, to gain information and to better manage the declining resources in the Flint Hills NWR ecoregion. The Refuge plays an integral role in the participation and coordination of various projects identified by the ecosystem team as priority projects in order to accomplish the overall goal of the team.

Based upon a broad set of issues identifiable throughout the entire defined Ecosystem, the Service has developed a management goal and a set of sub-goals. The Ecosystem goal is "To protect, restore, and maintain viable levels of biotic diversity within the Arkansas Red/Rivers Ecosystem." Sub-goals of the plan include:

- P Recovering federal and state listed threatened and endangered species and their habitats and ensuring that species not currently listed are managed to avoid a future need to list them under the Endangered Species Act.
- P Maintaining migratory bird populations at healthy levels.
- P Reversing declining trends in quality and quantity of riparian/wetland habitats.
- P Restoring, maintaining, and enhancing the species composition, aerial extent, and spatial distribution of riparian/wetland habitats.
- P Protecting, restoring, and maintaining native fish and aquatic communities and to promote sport fisheries management where native fish and other aquatic organisms are not adversely affected.
- P Protecting, maintaining, and restoring upland terrestrial communities at the landscape level.
- P Interpreting the link between healthy, stable ecosystems and human/community health.
- P Protecting and enhancing water quality and quantity for aquatic, wetland, and riparian habitat.

To view the Arkansas/Red Rivers Ecosystem Plan, please refer to Appendix H.





## Refuge and Ecosystem Planning Issues and Opportunities

The following is a list of the major issues that confront the Flint Hills NWR programs. An issue is an area of concern or an opportunity identified through the planning process that requires more intensive management efforts or decisions to change the Service's approach to future management planning. Examples include Service initiatives, opportunities, management problems, threats to the resources, conflicts in uses, public concerns, and undesirable resource conditions. Issues are identified by input and feedback from sources within the Service, a variety of other government agencies, NGO's, and the public.

The issues identified in the planning process present various challenges for the Service and the Refuge staff. However, the process of resolving these issues provides several opportunities that further the mission of the Refuge and benefit the natural resources of the Arkansas/Red Rivers Ecosystem. The issues with associated challenges and opportunities are identified below:

### Issue 1. Habitat Management

The restoration and maintenance of native habitats on the Refuge is essential for effective wildlife management. Historic records, databases, and other information can be utilized to determine the natural conditions and processes that should be restored on the Refuge. This baseline assessment is essential for determining what habitat restoration actions should be conducted and as a method for gauging the success of habitat restoration and maintenance activities. Restoration may involve strategies such as prescribed burning, exotic species control, or hydrological restoration and maintenance. The intermittent flood hydrology of the Neosho River Basin above the John Redman Reservoir poses serious problems for all management activities on the Refuge. At high pool level, 95 percent of the Refuge may be flooded for extended periods of time. These flood events can result in damage to facilities, nature trails, roads, embankments, and water control structures. Flood events can also result in the extermination of desired vegetation types and add to the introduction of exotic species.

*Challenge:* Restoration and management efforts must take into account and prepare for the effects of flooding on the Refuge. Many conventional management and restoration techniques are not tolerant of the flooding conditions likely to be encountered. Techniques used in habitat management for the Refuge must be flood tolerant. Management efforts would rely more on the harnessing of natural processes and may therefore take longer to accomplish. Implementation of various land management practices include assisting area landowners to modify farming practices to reduce erosion and sedimentation and improve water quality.

*Opportunity:* Due to the seasonal abundance of water, increased ability exists to restore wetlands and conduct moist soils management for the benefit of wildlife.

## Issue 2. Public Use, Environmental Education, and Public Outreach

The Refuge has had a history of recreational public use and access for wildlife-dependent recreational activities such as fishing, hunting, and wildlife viewing. Increasing the quality of wildlife-dependent activities, as well as allowing for increased public use, is a major challenge, especially when considering the damage and disruptions caused by periodic flooding.

*Challenge:* Construction and maintenance of flood tolerant nature trails, viewing blinds, and other essential structures would require long-term commitment, effort, and a flexible approach.

*Opportunity:* Increasing environmental education, as well as public outreach, would be possible by utilizing the expanded visitor center and increased educational activities on and off the Refuge. Activities such as hiking, environmental interpretation, wildlife photography, and wildlife viewing could occur at increased levels on the Refuge. Compatibility determinations and documentation to determine appropriate locations and levels of public use activities would need to be continued.

The acquisition of an Outdoor Recreation Planner (ORP) position for the Refuge is seen as vital to the success of the environmental education and public outreach program.

## Issue 3. Cultural Resources Management

Flint Hills NWR has been inventoried systematically for archaeological sites. One of the sites identified is of national significance. Continued coordination with the appropriate State agencies is needed to ensure the protection of significant sites. Educational outreach and appropriate law enforcement are two possible strategies to improve cultural resources protection.

*Challenge:* Develop additional strategies and methods for protecting and preserving identified sites.

*Opportunity:* Provide interpretive information regarding cultural resources for the public in the form of pamphlets or the incorporation of interpretive information kiosks into current and future public access trails and areas.

## Issue 4. Interagency Coordination

Coordination with other agencies and institutions is essential for accomplishing Refuge goals and to ensure success of the management program. Proposed permanent increases in the John Redmond Reservoir pool elevations would cause inundation of some current public use facilities. Close coordination and negotiation with the Corps and other agencies would be needed to mitigate these impacts.

*Challenge:* To coordinate reservoir level manipulation in times of drought or increased rain events to benefit fish and wildlife resources. Proposed permanent increases in John Redmond Reservoir pool elevations may need to be mitigated.

*Opportunity:* Continued close cooperation with the Corps would allow for the continued manipulation of reservoir levels for the benefit of wildlife. Examples are the drawdown of the reservoir to allow for shorebird habitat and vegetation growth that would provide waterfowl forage when the reservoir is full.

## Issue 5. Staffing and Funding

Currently, the Refuge staff consists of eight permanent full-time employees. Additional staff is needed to ensure the accomplishment of the management plan goals. Acquisition of funding for proposed actions is one limiting factor in the accomplishment of Refuge goals.

*Challenge:* Acquiring funds to support proposed staffing increases.

*Opportunity:* The hiring of an ORP biologist, biological science technician, and maintenance worker are seen as needs to accomplish the goals of this Plan.

## Issue 6. Threatened and Endangered Species

Four threatened or endangered species are known to occur on the Refuge or within the Neosho River drainage. These species are the bald eagle, peregrine falcon, Neosho madtom fish, and the flat-floater mussel.

*Challenge:* Maintaining Refuge habitat, particularly in and along the Neosho River, free from disturbance or impact that allows the continued presence of healthy populations of these species.

## Issue 7. Farming

Farming practices on national wildlife refuges is a controversial practice. When the Refuge was established, approximately 14,000 acres were farmed. Since that time, the acreage has been reduced to approximately 4,000 acres. Currently, farming on the Refuge is used as a management tool for wildlife and to further accomplish Refuge objectives. Farmed acres will continue to be reduced as needed to accomplish management objectives.

*Challenge:* Farmed acres would be continually reduced as croplands are retired. These acres would be managed as wildlife habitat, i.e., wetlands, buffer strips, moist soil units, etc.

*Opportunity:* Farming would be used as a management tool to produce forage for wildlife and reduce depredation on neighboring lands.

## Issue 8. Land Acquisition

With the pending closure of the Kansas Army Ammunition Plant (KAAP) near Parsons, Kansas, the Service proposes to assume management of approximately 1,525 acres of native grassland and riparian habitat as a fee title transfer from the U.S. Army. In March of 1998, the Service sent a Letter of Interest to the General Services Administration (GSA) sighting the Service's interest in lands bordering Labette Creek and the main gate to the plant under Public Law 80-537. The Service intends on accepting land at which time it will become a unit of the System and be administered by the Flint Hills NWR in fee through a no-cost transfer from the U.S. Army.

The KAAP is located in extreme southeastern Kansas in north-central Labette County. The site is approximately three miles southeast of downtown Parsons, Kansas. The military installation is government-owned and contractor operated. The 1,525-acre proposed fee title transfer would include approximately 515 acres of native bluestem prairie grassland and 1,008 acres of mixed hardwood riparian forest. The habitat on the KAAP is situated on level to slightly rolling uplands between the Neosho River and Labette Creek. In addition to these perennial drainages, numerous unnamed, intermittent creeks drain the site primarily to the southwest and southeast. A slight north-south ridge bisects the installation and divides the two drainages. Elevations generally range from 850 to 900 feet above mean sea level (MSL).

*Challenge:* Detailed information has not been compiled concerning land-use changes in Labette County since the 1850's; however, the natural vegetation clearly has undergone dramatic changes. Conversion of large areas of native tallgrass prairie probably occurred before the turn of the century, and many formerly timbered areas probably have been cleared or selectively cut. In addition, suppression of wildfires that formerly kept woody vegetation in check has resulted in the establishment of tracts of forest and woodlands in upland areas that formerly were dominated by grassland vegetation.

*Opportunity:* With the KAAP closure and excess land, the Service is provided with a timely and unique opportunity to protect habitat of the southeastern prairie and floodplain forests within the Arkansas River watershed in southeastern Kansas. In 1974, the vegetation in the vicinity of the KAAP was mapped as predominantly bluestem prairie, with cross timber forests along portions of Labette Creek. In addition, broad floodplains along Labette Creek and the Neosho River supported a variety of wetland vegetation. Historically, and as they exist now on the KAAP, upland sites were dominated by tall and medium grasses and supported a rich variety of herbaceous plants. Woody species were scattered or absent. Broadleaf deciduous forest dominated by oaks and hickories occupied the slopes of creek and river valleys, occasionally extending onto the uplands. Floodplains comprised a mix of floodplain forests, low prairies, and freshwater marshes.

# ***Ecosystem and Refuge Resource Description***

The Flint Hills NWR lies in the broad, flat Neosho River Valley in east-central Kansas neighboring the native tallgrass prairie region of natural scenic beauty (Map #3). The Refuge is named for the gently rolling Flint Hills 30 miles to the west.

Flint Hills NWR, established in 1966, currently consists of 18,463 acres located at the upstream end of the John Redmond Reservoir. The land is owned by the Corps and is managed under a cooperative agreement. Refuge habitat consists of 4,572 acres of wetlands, 1,400 acres of open water, 599 acres of riparian wetlands on the Neosho River and associated creeks, 3,917 acres of croplands, 3,200 acres of grasslands, 2,400 acres of woodlands, 2,255 acres of brushlands, and 120 acres of administrative and recreational roadways.

The Refuge is managed primarily to benefit migrating and wintering waterfowl in the Central Flyway. Thousands of ducks and geese utilize the area during the spring and fall migrations and many winter on the Refuge. A variety of management practices are utilized on the Refuge to meet the needs of all wildlife, such as neotropical migrants, shorebirds, and native plant communities. Feeding and resting areas for migratory birds are provided through aggressive moist soil and cropland management programs. In addition, farming practices and prescribed burning are used to provide food and cover for waterfowl and resident species as well. Along with large numbers of migrating birds, the Refuge is also a haven for white-tailed deer, wild turkey, bobwhite quail, and an assortment of other mammals, birds, reptiles, and insects.

In addition to the lands managed by Flint Hills NWR, the Corps has licensed the Kansas Department of Wildlife and Parks to manage 1,472 acres adjacent to the Refuge. This land is known as the Otter Creek Game Management Area and is managed primarily for bobwhite quail, mourning dove, wild turkey, cottontail rabbit, squirrel, and white-tailed deer.

The 3.05 billion dollar Wolf Creek Nuclear Power Plant, located eight miles east of the Refuge, was commissioned for operation on September 3, 1985. The nuclear power plant has a cooling reservoir of 5,500 acres (Coffey County Lake) which has open water all year long. Wolf Creek has contracted with the Kansas Water Office for the majority of the storage capacity of John Redmond Reservoir. To transfer this water from John Redmond to Wolf Creek, two 36 inch pumps and pipelines are located below the base of the John Redmond Dam. Coffey County Lake is open to fishing but closed to hunting and is used extensively by waterfowl (USFWS, 1997).

## **Area of Ecological Concern**

Flint Hills NWR encompasses more than 18,000 acres in the floodplain of the Neosho River near the town of Hartford, Kansas (Map #3). With an average elevation of 1,050 feet above MSL, the Refuge straddles the Neosho River at the upper end of the John Redmond Reservoir in Lyon and Coffey Counties and the majority of the Refuge is in the flood pool of the Reservoir. Most of the surrounding land is characterized by gently rolling prairies now primarily agricultural land. The hydrology of the Neosho River and the John Redmond Reservoir profoundly effects management practices and most of the Refuge land uses. In addition, the land management practices conducted by the Refuge have an effect on the hydrology and natural resources within the Neosho River watershed. The broader area of ecological concern is the Neosho River basin. The Refuge was established under a cooperative management agreement with the Corps to provide habitat for migratory waterfowl in the Central Flyway. The major management objective for Flint Hills NWR focuses on protecting the unique Refuge habitats essential for the survival of the diverse species that utilize the Refuge.

## Vegetation

Refuge habitat consists of approximately 4,572 acres of wetlands, 1,400 acres of open water, 599 acres of riparian wetlands on the Neosho River and associated creeks, 3,917 acres of croplands, 3,200 acres of grasslands, 2,400 acres of woodlands, 2,255 acres of brushlands, and 120 acres of administrative and recreational roadways.

The Refuge provides habitat for a myriad of plant species. A summary of the more common species is contained in the table below:

<b>Vegetation of Flint Hills NWR</b>		
<b>Acres</b>	<b>Habitat Type</b>	<b>Common Species</b>
4,572	Wetlands	smartweed, common millet/barnyard grass, buttonbush, willow, sedge, cocklebur, and foxtail grass
599	Riparian	cottonwood, ash, sycamore, hackberry, locust, walnut, elm, and silver maple as well as bittersweet, greenbrier, dogwood, American plum, gooseberry, buckbrush, moonseed, dock, ragweed, nettle, and violets
3,200	Grasslands	big bluestem, little bluestem, Indian grass, switch grass, prairie cord grass, rice cutgrass, dropseed, and foxtail
2,255	Brushlands	buckbrush, greenbrier, dogwood, American plum, and wild grape
2,400	Woodlands	cottonwood, willow, ash, pecan, red oak, bur oak, silver maple, redbud, Osage orange, mulberry, American elm, Chinese elm, walnut, hackberry, and sycamore
3,917	Croplands	corn, milo, soybean, winter wheat, alfalfa, and sunflowers

(Oblinger-Smith Corp., 1982, USFWS, 1997)

For a complete list of plants found on the Refuge, please refer to Appendix A.

Traditionally, retired farm fields were targeted for native grass restoration. Several restoration sites were destroyed due to flood events since 1993. Only a few protected areas located on higher elevated sites would now be considered for native prairie restoration. Johnson grass and *Sericea Lespedeza*, both considered noxious weeds, have been difficult to control. Chemical application within a floodplain is a concern and, therefore, other methods of control are being explored, i.e., mechanical and biological control.





## Wildlife

Flint Hills NWR offers a diverse assortment of wildlife species. The various habitats present on the Refuge support a variety of species of mammals, birds, reptiles, amphibians, and fish. Mammals common to the Refuge are white-tailed deer, coyote, beaver, opossum, raccoon, bobcat, cottontail rabbit, fox squirrel, and other small mammals. River otters have also been reported on the Refuge since their reintroduction several years ago on the Cottonwood River upstream of the Neosho River (reference used to verify mammal scientific names, Burt and Grossenheider 1976).

Bird species commonly seen on the Refuge include an abundance of waterfowl such as Canada goose, snow goose, white-fronted goose, mallard, northern pintail, and blue-winged teal. Marsh and water birds on the Refuge include American white pelican, great (common) egret, snowy egret, great blue heron, little blue heron, green-backed heron, American bittern, least bittern, double-crested cormorant, and pied-billed grebe. Shorebirds, gulls, and terns seen on the Refuge include greater yellowlegs, dowitchers, ring-billed gull, Franklin's gull, and Forester's tern. Raptors include red-tailed hawk, northern harrier, Swainson's hawk, Cooper's hawk, great horned owl and sharp-shinned hawk. Other common birds are bobwhite quail, wild turkey, and eastern bluebird (references used to verify bird scientific names included DeGraaf, and Rappole 1995; Ehrlich et al. 1988; National Geographic Society, 1987; and Peterson, 1961).

Fish found on the Refuge include carp, channel catfish, white bass, crappie, and flathead catfish. It should be noted that the collection of wildlife inventory data is still ongoing and new species are found periodically. For an inventory of wildlife species, see Appendices B through E.

Waterfowl management has been the primary focus of many management strategies over the years. While the wildlife management perspective has broadened, waterfowl continues to be a major focus and the numbers of waterfowl give an indication of the intrinsic value of the Refuge. The table below includes the waterfowl counts from 1993 to 1997 and gives an indication of the vast numbers of birds that utilize the Refuge.

<b>Waterfowl Counts 1993-1997</b>				
<b>Year</b>	<b>Canada Geese</b>	<b>Snow Geese</b>	<b>White-fronted Geese</b>	<b>Ducks</b>
1997	1,400	21,305	2,800	33,535
1996	2,561	20,000	1,215	39,570
1995	3,000	9,100	4,000	48,750
1994	3,100	20,000	1,900	44,550
1993	2,500	31,000	650	16,400

(USFWS, 1997).

## Threatened and Endangered Species

Two federally listed endangered birds are known to occur on the Refuge, the bald eagle and the peregrine falcon. Peregrine falcons are observed passing through the area during spring and fall migrations. Bald eagles generally arrive in the late fall and spend the winter around the John Redmond Reservoir and surrounding areas. Eagle use on the Refuge is monitored from October through March and nesting attempts have been documented (USFWS, 1997).

In addition to the above mentioned species, the Neosho madtom is federally listed threatened and the flat-floater mussel is listed as state endangered and are known to occur within the Neosho River drainage and within the Refuge boundary. For a complete listing of threatened and endangered species, please refer to Appendix F.

## Exotic Species

The most prevalent problems on the Refuge are the State and county listed noxious weeds, Johnson grass and *Sericea Lespedeza*. The Refuge is mandated by State and county law to control the two species. Control efforts usually consist of mowing and farming. Because the Refuge lies in a floodplain, the use of pesticides and herbicides is restricted. An integrated pest management approach is taken utilizing farm management practices, prescribed burning, and chemical application. Biological controls are being investigated.

Another exotic species invasion which may become a problem in the future is the zebra mussel which causes numerous filter clogging problems as well as out-competing native species for food and habitat.

## Climate

The climate of Flint Hills NWR and the surrounding region is typical of the temperate continental climate. The average annual precipitation is 36.01 inches and temperatures range from below zero to above 100° F. The frost free season averages 188 days a year.

Precipitation is usually heaviest in late spring and early summer. Normally 75 percent of the precipitation occurs during the growing season. Annual snowfall averages about 14 inches with an average of 30 days with more than a trace of snowfall. Winds in the area are predominately from the south (USFWS, 1997).

## Geology

The Refuge lies in a physiographic region known as the Osage Cuestas (Oblinger-Smith Corp., 1982). The land forms in this area are of Pennsylvanian age shales, limestone, sandstone, chert, and conglomerates that were deposited in this area approximately 300 million years ago when Kansas was covered by swamps and shallow seas. The Shawnee group of the Virgilian series is the specific formation that the majority of the Refuge lies on. To the west of the Refuge in the Flint Hills region, the formations are of the Permian period, deposited approximately 250 million years ago. Portions of the sediments deposited in the alluvium along the Neosho River are eroded from this Permian formation (Oblinger-Smith Corp., 1982).

## Soils

Soils on the Refuge are predominately productive Class I, II, III, and IV soils of silty loam and silty clay loam (Map #4). While 27 different soil types exist on the Refuge, the majority of the soils fall into the Class II rating and are suited for cultivation, pasture, woodlands, or wildlife (Oblinger-Smith Corp., 1982).





## Water Management

Flint Hills NWR is located within the Neosho River and Eagle Creek flood pool of the John Redmond Reservoir which was constructed by the Corps as a flood control project. When the reservoir is at normal conservation pool, very little Refuge land is inundated. Water management on the Refuge is dependent on the relative abundance of water available. During abundant water periods, as much as 95 percent of the Refuge may be inundated by flooding from the rising pool level of John Redmond Reservoir. Floods of this severity are not uncommon (1973, 1985, 1986, 1993, 1995 and 1998). Most precipitation is received during the spring and some degree of flooding can be expected, while fall flooding of the Reservoir is less common. During drought periods, or other periods of low precipitation, pumping may be necessary to sustain wetlands and maintain wildlife habitat (USFWS, 1997).

Flint Hills NWR has two types of water rights. The Certificates of Appropriation allow for either pumping or natural flow diversion for recreational purposes which includes fish and wildlife. Eighteen Certificates are approved for the diversion of water from the natural flows of the Neosho River and its tributaries by low profile dikes. Ten additional Certificates cover the pumping of water from the Neosho River and its tributaries into constructed and natural wetlands (Map #5). One approved Permit remains for natural flows that has not yet been certified.

Approved Certificates of Appropriation, their type, and acre-feet authorized are listed in the following Table.

Water Rights - Flint Hills NWR - All Recreational Use (to include fish and wildlife.)

Water Unit	Certificate No.	Diversion Type	Acre-feet
<b>Bench Marsh Unit</b>			
Bench	38,287	Natural Flow	500
Lower Bench	39,580	Natural Flow	125
West Bench	<i>Permit</i> 42,848	Natural Flow	156
<b>Beschka Marsh</b>	38,280 38,282	Pump Natural Flow	73 150
<b>Boes Marsh</b>	21,939	Natural Flow	60
<b>Burgess Marsh</b>	38,278 38,279	Pump Natural Flow	206 300
<b>Coon Hamman - Indian Hills Unit</b>			
Coon Hamman --	17,606	Pump	19
<i>7 Pools Combined</i>	38,274	Natural Flow	80
Indian Hills --	17,601	Pump	205
	38,275	Natural Flow	330
<b>Goose Bend Marsh</b>	17,609 38,276	Pump Natural Flow	172 200
<b>Hammerton Marsh</b>	38,286 38,285	Pump Natural Flow	90 180
<b>Hartford Unit</b>			
Hartford/Maxwell (Pools 2&3)	39,581	Pump	476
Hartford (Pools 1&2)	38,283	Natural Flow	300
Maxwell MSU (Pool 3)	39,115	Natural Flow	270
<b>Lairds Pond</b>	13,712	Natural Flow	70
<b>Monypeny Pond</b>	5,336	Natural Flow	6
<b>Palin Slough</b>	38,273 38,271	Pump Natural Flow	25 25
<b>Pintail Marsh</b>	21,938	Natural Flow	110
<b>Rummel Marsh</b>	38,284 38,277	Pump Natural Flow	100 100
<b>Strawn Flats</b>	38,281	Natural Flow	110
<b>Troublesome Unit</b>			
Troublesome East	39,582	Pump	106
Troublesome	5,339	Natural Flow	30

## Cultural and Historic Resources Features

Archaeological survey investigations conducted on the Flint Hills NWR have identified numerous archaeological sites. The majority of these sites represent Middle Ceramic occupation presumed to date from 1,000 to 1,500 A.D. According to Thies (1981), the archaeological sites thus far discovered represent occupations ranging from the Paleo-Indian era up to and including the Historic era, or from approximately 12,000 B.C. to the earliest days of Euro-American settlement. Thies goes on to say it is probable that more sites exist in the areas which could not be adequately investigated during the 1979 and earlier surveys. One archaeological site of note, the Williamson Site, is listed in the National Register of Historic Places. Human remains have been discovered at that site. A number of the identified sites have been recommended for preservation and further study (Thies 1981). Coordination with the appropriate authorities would be required should any construction activities take place in the vicinity of the identified sites.

## Socio-economic Features

The Refuge is located in Lyon and Coffey Counties. The combined population of these counties, according to 1997 estimates, is 42,826. The population of Hartford is approximately 550. The socio-economic impacts of the Refuge on Lyon and Coffey Counties consists primarily of permitted public use, contributions of the staff, and supplies purchased within the counties for the Refuge.

In 1997, 53,565 visits were recorded at the Refuge. While many of the visits may be local or repeat visitors, the visitation rate represents considerable economic benefit to Lyon and Coffey Counties.

Lyon and Coffey Counties have significant agricultural resources. The percentage of land in farms for both counties average about 88 percent in 1992 and the combined farm acres for both counties was 839,027. In 1996 in both counties, an estimated 1,829 people were employed on farms as well as 285 agricultural service employees out of a combined total civilian labor force of 23,065. Approximately 9 percent of the labor force for the combined counties is involved in agriculture or agricultural services (IPPBR 1999). Cooperative farming agreements have resulted in the annual cultivation of almost 4,000 acres of Refuge land (Map #6).

## Public Use

Public use activities currently permitted at the Refuge include wildlife observation, hiking, photography, sight-seeing, boating, picnicking, camping, fishing, wild food gathering, and hunting (Map #7a and 7b). Fish bait collecting is allowed for personal use only and firewood cutting is also allowed with a special permit from the Refuge Manager. All State and Federal regulations are in effect on the Refuge (USFWS, 1997).

## Refuge Staffing

Current Refuge staff consists of the following 12 positions, 10 of which are full-time positions:

Refuge Manager	GS-14
Supervisor Refuge Operations Specialist	GS-12/13
Fish and Wildlife Biologist (Private Lands)	GS-7/9/11
Wildlife Biologist	GS-9/11
Administrative Support Assistant	GS-7
Bio-Science Tech	GS-8
Biological Aid	GS-3
Maintenance Mechanic	WG-9
Engineering Equipment Operator	WG-10
Fire Management Officer	GS-7/9
Range Technician	GS-4
Range Technician	GS-5

For a proposed full level staffing chart, please refer to Proposed Funding and Personnel section.

















# *Flint Hills NWR*

## *Management Program*

Flint Hills NWR was established to provide habitat for migratory birds, and in so doing, serves as an inviolate sanctuary providing habitats for many other species of wildlife and plants. This purpose is fundamental in determining the Refuge mission. Both the purpose and mission are the foundation of Refuge management, the direction of which is guided by general goals with specific objectives. The protection of natural resources and the conservation of endangered or threatened species is the first priority in Refuge management; public uses are secondary as long as the activities are compatible with wildlife conservation. As appropriate, opportunities for the development of wildlife-oriented recreational development are considered. Specific projects or strategies within each objective are identified as a means of attaining the Refuge vision.

### **Guide for present and future management direction**

The objectives and strategies presented are the Service's response to the issues and concerns expressed by the planning team and the public. These objectives and strategies reflect the Service's commitment to achieve the mandates of the National Wildlife Refuge System Improvement Act of 1997, the mission of the System, The Arkansas/Red Rivers Ecosystem Plan, the North American Waterfowl Management Plan, and the purpose, vision, and goals for Flint Hills NWR.

Objectives with measurable outcomes will guide the Refuge staff in a consistent direction toward the accomplishment of each goal beginning with short-term objectives and strategies to occur within five years followed by implementation of long-term strategies within 5 to 15 years. The time frame for implementing objectives may vary depending on funding, staff support, and Service directives. Due to the fact that the Flint Hills NWR CCP is a working document, modifications to the following objectives and strategies are anticipated. Where applicable, the Refuge Operating Needs System (RONS) project has been included with the associated strategy. For a complete listing of RONS projects, please refer to Appendix G.

## Biological Diversity, Land Protection, Wildlife, and Habitat Protection

**Goal 1:** To restore, enhance, and protect the natural diversity on the Flint Hills NWR including threatened and endangered species by appropriate management of habitat and wildlife resources on Refuge lands and by strengthening existing and establishing new cooperative efforts with public and private stakeholders.

**Objective 1:** Restore and maintain native grassland and riparian communities within the Refuge to meet the needs of native flora and fauna.

**Rationale for Objective:** Native tallgrass prairies have been reduced to less than 5 percent of the historic amount in North America. Riparian communities support diversity and have high wildlife values.

### Strategies

- ✓ Within two years following funding approval, develop a biological monitoring program managed by a Wildlife Biologist. The program would include conducting biological inventory studies and habitat surveys to gather baseline information to evaluate impacts of management decisions on the Refuge. Hire a GS-9/11 Wildlife Biologist in 2000 (RONS Projects).
- ✓ Strengthen existing and develop new cooperative efforts with Federal and State agencies, and private landowners regarding interrelationships between wildlife, livestock, hydrology, public use, and the ecosystem. Throughout the term of this Plan, the Refuge would provide technical assistance to landowners on land management issues.
- ✓ Maintain approximately a 200-foot wide buffer strip on each side of the Neosho River to preserve riparian habitat. Assess the need to increase the width of the buffer zone where terrain conditions and habitat needs require additional protection.
- ✓ Gradually reduce farmed acres to allow for the development of riparian zones, field buffer strips, wetlands, and prairie grassland and bottomland hardwood restoration. Approximately 75 acres of habitat would be restored annually.
- ✓ Utilize available management tools to control noxious weeds on the Refuge. These tools include but are not limited to biological, chemical, mechanical (farming, mowing), prescribed fire, and timber management.
- ✓ Within 10 years, restore 400 acres of native prairie sites that have been invaded by noxious weeds. Biological control would be the preferred method but chemical, mechanical, and burning methods as well as re-seeding may need to be utilized. (RONS Project)

**Objective 2:** Maintain and restore habitat for native wildlife including invertebrates, amphibians, reptiles, birds, mammals, and provide wintering grounds for waterfowl.

**Rationale for Objective:** While the Refuge has historically been managed primarily for the benefit of migratory waterfowl in the Central Flyway, the purposes of the Refuge state that the Refuge would be managed for the “conservation, maintenance, and management of wildlife resources.” In order to provide the life requirements for the native species that have historically inhabited the Refuge, habitat needs to be provided and maintained. Additionally, lesser known native species need to be researched to determine their possible presence and habitat needs.

### **Strategies**

- ✓ Monitor wildlife populations including neotropical migrants (i.e., passerine, shorebirds, marsh birds, and waterfowl), reptiles, amphibians, and mammals on a periodic basis.
- ✓ Provide food, habitat, and feeding areas for migratory and resident bird populations (i.e., shorebirds, marsh birds, waterfowl, and neotropical migrants) through crop production, wetland restoration, and moist soil and riparian area management.
- ✓ Promote research and conservation of lesser known native species, typically amphibians, reptiles, small mammals, invertebrates, and native vegetation. Address potential hazards from zebra mussels and other exotic invasions.
- ✓ Identify, protect, and maintain/restore sites where habitats of concern are found. These sites include but are not limited to wet meadows, oxbows, virgin/native prairie, and bottomland hardwoods.

**Objective 3:** Follow existing recovery plan objectives, manage, monitor, and study threatened, endangered, and candidate species such as the bald eagle, peregrine falcon, Neosho madtom, and flat-floater mussel, their habitat requirements, predator susceptibility, exotic species encroachment, and human induced impacts to prevent further decline and eventual loss.

**Rationale for Objective:** Any threatened or endangered species found on the Refuge should receive the consideration of habitat management decisions that enhance the survival of the species by providing appropriate protection to enhance the existing Refuge habitat for that species.

### **Strategies**

- ✓ Provide protected habitat free from disturbance (i.e., all terrain vehicles, hunting, aircraft, trampling, etc.) as required to protect sensitive species on a case-by-case basis through opportunistic management practices such as temporary or seasonal road closures.
- ✓ Support education about local endangered species for area schools and NGO's by conducting informative talks and promoting research of habitat requirements, population dynamics, and the problems endangered and threatened species face in the Ecosystem.

**Objective 4:** Utilize appropriate fire management strategies and tactics to maintain, protect, and/or restore Refuge habitats. Fire management would comprise approximately 10 percent of the total annual habitat management capabilities on the Refuge.

**Rationale for Objective:** Fire is a useful management tool for the restoration and maintenance of Refuge habitats.

**Strategies**

- ✓ Suppress wildfires, including trespass fires, in a safe, efficient, cost effective manner consistent with resources and values at risk. This will vary from aggressive initial attack to allowing fires to burn themselves out.
- ✓ Utilize minimum impact strategies and tactics to minimize environmental impacts in both wildfire suppression and prescribed fire operations.
- ✓ Prescribed fire will be used to modify vegetative communities for improved habitat for native flora and fauna, ecosystem function, and hazard fuel reduction.
- ✓ Cooperate with other agencies in wildfire suppression and prescribed fire operations.

## Hydrological Restoration and Water Quality

**Goal 2:** To restore and maintain a hydrological system for the Neosho River drainage by managing for wetlands (Map #8), control of exotic species, and management of trust responsibilities for the maintenance of plant and animal communities.

**Objective 1:** Restore a more natural hydrology to the reach of the Neosho River and its associated wetlands within the Refuge boundaries in order to benefit native aquatic and riparian plant and animal communities. Restore approximately 600 acres of habitat to more natural conditions.

**Rationale for Objective:** With the construction of the John Redmond Reservoir, native habitats have been lost as a result of man-made impacts. Restoration of those portions of habitat that can be restored to more natural conditions would benefit the native wildlife.

### Strategies

- ✓ Within five years, restore the hydrology of wetlands that were drained for farming, road construction, and other developments. Approximately 600 acres are to be restored to more natural conditions. (RONS Project)
- ✓ Continue to develop communication and cooperative efforts concerning ongoing projects within the area that affect channel morphology with the Natural Resource Conservation Service (NRCS) and the Corps.
- ✓ Update the comprehensive Water Management Plan to provide guidance for the management of existing and potential water rights for natural and man-made wetlands within the Refuge.
- ✓ Within 15 years, develop and maintain a total of approximately 3,500 acres as moist soil units.
- ✓ Conduct a long-term contaminant monitoring program on the Refuge using the September 1999 Contaminant Assessment Report (Appendix K) as a baseline.

**Objective 2:** Protect and conserve populations of aquatic species designated as endangered, threatened, or species of concern.

***Rationale for Objective:*** Any threatened or endangered species found on the Refuge should receive the consideration of habitat management decisions that enhance the survival of the species by providing appropriate protection and enhance the existing Refuge habitat for that species.

**Strategies**

- ✓ Develop cooperative management strategies with other Federal, State, and NGO's to support maintenance and restoration of habitats supporting (or potentially supporting) native communities with special emphasis on federal and state listed species.
- ✓ Assist in developing and revising recovery plans for listed species found on the Refuge.
- ✓ Promote a public outreach campaign that stresses the importance of restoring endangered species and their relationship to sound ecosystem management.

**Objective 3:** Develop and support ongoing resource management practices that emphasize the control of invasive species.

***Rationale for Objective:*** Due to the introduction of nonnative species, including state listed noxious weeds, native vegetation has been replaced by exotic species. Control of these species on the Refuge is a difficult task. Constant vigilance and control efforts are required to preserve habitats on the Refuge.

**Strategies**

- ✓ Control nonnative vegetation in riparian areas of the Neosho River and its tributaries through succession.
- ✓ Within five years, retire approximately 600 acres of cropland to allow for the development of buffer strips adjacent to riparian zones and wetlands.
- ✓ Continue to participate and cooperate with the U.S. Department of Agriculture (USDA) and other organizations in approved biological efforts to control exotic species. The Refuge would provide test study sites when practical.
- ✓ Utilize interactions with the public (media releases, public meetings, etc.) to disseminate information on the negative impacts that most nonnative species have on native species and the natural ecosystem as a whole.





## Public Use, Recreation, Wildlife Interpretation, and Education

**Goal 3:** Provide opportunities for wildlife-dependent public access and recreational opportunities to include compatible forms of hunting, fishing, wildlife observation, photography, interpretation, and educational activities.

**Objective 1:** Maintain and improve quality wildlife-dependent recreational opportunities on the Refuge.

**Rationale for Objective:** Wildlife-dependent recreation is a priority as mandated by the Wildlife Improvement Act of 1997.

### Strategies

- ✓ Within two years of funding approval, formulate and implement a comprehensive Public Use Plan. This Plan would address all forms of public use and access.
- ✓ Following funding approval, add a GS-5/7/9 ORP position to develop and conduct the Outdoor Recreation Program which would include off Refuge outreach programs. (RONS Project)
- ✓ Develop a visitor service center.

**Objective 2:** Provide compatible hunting and fishing opportunities.

**Rationale for Objective:** While hunting currently occurs on the Refuge, the value and quality of the activity could be improved through close cooperation with other agencies and through careful management of hunting access. Law enforcement would play a vital part in monitoring the hunting and other public use activities on the Refuge.

### Strategies

- ✓ Add one full-time law enforcement officer to be shared between Flint Hills NWR and Marais des Cygnes NWR. (RONS Project)
- ✓ Use local media and other public outreach tools to keep the public informed and to enhance hunting and fishing on the Refuge.
- ✓ Maintain the quality of the fishing and hunting opportunities on the Refuge by utilizing road closures and access restrictions.

**Objective 3:** Improve existing and/or develop new compatible recreational opportunities for wildlife viewing and photography at Flint Hills NWR to allow for increases in public use.

**Rationale for Objective:** Over the years, wildlife viewing and wildlife photography have become more popular with the public. To meet this increased demand, additional facilities and programs are needed.

**Strategies**

- ✓ Following funding approval, develop two viewing and photography blinds with access trails. The blinds would be flood tolerant and/or removable to avoid damage during the flood season. (RONS Project)
- ✓ Following funding approval, enhance three existing nature trails for public use. (RONS Project)
- ✓ Following funding approval, develop informational and interpretive signs on the Refuge. (RONS Project)
- ✓ Use local media and public outreach to inform the public about opportunities for wildlife viewing and photography at Flint Hills NWR.

**Objective 4:** Promote understanding of the Service's mission and the Refuge's role in wildlife conservation.

**Rationale for Objective:** Educational activities and public outreach are essential to inform and educate the public about recreational opportunities and public use on the Refuge.

**Strategies**

- ✓ Revise and expand brochures to inform and educate the public regarding the Service mission and the recreational and educational opportunities provided by the Refuge. (RONS Project)
- ✓ Conduct school and educational programs that include field activities throughout the year. (RONS Project)
- ✓ Host on-site events and participate in community events to promote the Refuge and the Service.

## Cultural Resources

**Goal 4:** To protect, manage, and interpret cultural resources on the Flint Hills NWR for the benefit of present and future generations.

**Objective 1:** Protect cultural resources on the Refuge in compliance with all applicable Federal mandates.

**Rationale for Objective:** The presence of cultural resources on the Refuge has been documented as required by Federal mandates.

### Strategies

- ✓ Verify locations of known cultural resources using GPS technologies.
- ✓ Sample inventory one-third of the Refuge to determine if additional cultural resources exist.
- ✓ Utilize standard law enforcement practices and strategies to protect identified and unidentified cultural resources.
- ✓ Re-vegetate cultural resource sites to stabilize the surface area while at the same time reduce the site's visibility.

**Objective 2:** Interpret the cultural resources of the Refuge and educate the Refuge visitor to foster appreciation and understanding of current and past cultures.

**Rationale for Objective:** As public use increases, increased efforts to educate the public and protect cultural resources would be needed.

### Strategies

- ✓ Within three years following funding approval, prepare an information pamphlet for distribution from the visitor center concerning the nature, value, and need for protection of cultural resources on the Refuge.
- ✓ Install interpretive panels to inform the public of the nature, value, and need for protection of cultural resources on the Refuge.

## Interagency Coordination and Relations

**Goal 5:** To strengthen interagency and jurisdictional relationships in order to coordinate efforts with respect to Refuge and surrounding area issues resulting in decisions benefitting fish and wildlife resources while at the same time avoiding duplication of effort.

**Objective 1:** Cultivate interagency, jurisdictional and community relationships to support the Refuge mission.

**Rationale for Objective:** Because the Refuge is on land owned by the Corps and managed under an agreement with the Corps, close cooperation with the Corps is essential. Additionally, numerous other groups and communities have interests in the operations of the Refuge.

### Strategies

- ✓ Continue to develop a close relationship with the Corps and other stakeholders that would define and implement policies and requirements that concern the Refuge.
- ✓ Develop a stronger relationship with local agencies, landowners, counties, and other stakeholders to influence land development adjacent to the Refuge in a way that would benefit wildlife.
- ✓ Develop a Refuge support group to improve community involvement.
- ✓ Work closely with the Corps to help mitigate impacts from proposed increased pool elevations.

## Improvement of Staffing, Funding, and Facilities

**Goal 6:** Improve staffing, funding, and facilities that would result in long-term enhancement of habitat and wildlife resources in the area of ecological concern and support the achievement of the goals of this Plan and the goals of the System.

**Objective 1:** Increase staffing to the proposed “Proposed Staffing Level” or its equivalent in order to provide the level of support needed to accomplish the goals of this Plan.

**Rationale for Objective:** In order to accomplish Refuge goals and objectives, additional staff would be required. Additionally, foreseeable increases in public use would be difficult to accommodate without additional staff.

### Strategies

- ✓ Add additional staff required to support the goals of this Plan.
- ✓ Utilize internal mechanisms such as RONS to justify and acquire the additional funding and personnel to accomplish Refuge goals within 15 years.
- ✓ Pursue agreements with other interested agencies and public partners to provide the needed personnel and funds to accomplish Refuge goals.

**Objective 2:** Improve facilities in order to provide the infrastructure needed to accomplish the goals of this Plan.

**Rationale for Objective:** Facilities provide the infrastructure that allows the accomplishment of all Refuge goals and activities. Periodic improvements, replacements, and additions are an integral part of the development of the Refuge.

### Strategies

- ✓ Construct an all steel storage building to store heavy equipment to better protect and preserve equipment and comply with current contaminant control regulations. (RONS Project)
- ✓ Construct a fire equipment storage facility. (RONS Project)
- ✓ Construct housing for seasonal fire fighting personnel. (RONS Project)
- ✓ Expand office space to accommodate additional staff.

# ***Legal, Policy, Administrative Guidelines, and Other Special Considerations***

This Section outlines current legal, administrative, and policy guidelines for the management of national wildlife refuges. It begins with the more general considerations such as laws and executive orders for the Service, and moves toward those guidelines that apply specifically to the Flint Hills NWR.

This unit also includes sections dealing with specially designated sites such as historical landmarks and archaeological sites, all of which carry with them specific direction by law and/or policy. In addition, consideration is given to guidance prompted by other formal and informal natural resource planning and research efforts.

All the legal, administrative, policy, and planning guidelines provide the framework within which management activities are proposed and developed. This guidance also provides the framework for the enhancement of cooperation between the Flint Hills NWR and other surrounding jurisdictions in the ecosystem.

## **Legal Mandates**

Administration of the refuges takes into account a myriad of bills passed by the United States Congress and signed into law by the President of the United States. These statutes are considered to be the law of the land as are executive orders promulgated by the President. The following is a list of most of the pertinent statutes establishing legal parameters and policy direction to the National Wildlife Refuge System. Included are those statutes and mandates pertaining to the management of the Flint Hills NWR.

For those laws that provide special guidance and have strong implications relevant to the Service or Flint Hills NWR, legal summaries are offered in Appendix I. Many of the summaries have been taken from *The Evolution of National Wildlife Law* (Bean 1985). For the bulk of applicable laws and other mandates, legal summaries are available upon request.

## Agency-Wide Policy Directions

**Fish and Wildlife Service Agency Mission** — Since the early 1900's, the Service mission and purpose has evolved, while holding on to a fundamental national commitment to threatened wildlife ranging from the endangered bison to migratory birds of all types. The earliest national wildlife refuges and preserves are examples of this. Pelican Island, the first refuge, was established in 1903 for the protection of colonial nesting birds such as the snowy egret and the endangered brown pelican. The National Bison Range was instituted for the endangered bison in 1906. Malheur National Wildlife Refuge was established in Oregon in 1908 to benefit all migratory birds with emphasis on colonial nesting species on Malheur Lake. It was not until the 1930's that the focus of refuge programs began to shift toward protection of migratory waterfowl (i.e., ducks and geese). As a result of drought conditions in the 1930's, waterfowl populations became severely depleted. The special emphasis of the Service (then called the Bureau of Sport Fisheries and Wildlife) during the next several decades was on the restoration of critically depleted migratory waterfowl populations.

The passage of the Endangered Species Act of 1973 refocused the activities of the Service as well as other governmental agencies. This Act mandated the conservation of threatened and endangered species of fish, wildlife, and plants both through Federal action and by encouraging the establishment of State programs. In the late 1970's, the Bureau of Sport Fisheries and Wildlife was renamed the U.S. Fish and Wildlife Service to broaden its scope of wildlife conservation responsibilities to include endangered species, as well as game and nongame species. A myriad of other conservation oriented laws followed, including the Fish and Wildlife Conservation Act of 1980, which emphasized the conservation of nongame species.

## National Wildlife Refuge System: Mission and Goals

The National Wildlife Refuge System is the only existing system of federally owned lands managed chiefly for the conservation of wildlife. The System mission is a derivative of the Service mission. This mission was most recently revised in October 1997 by passage of the National Wildlife Refuge System Improvement Act (P.L. 105-57). This Act followed up on Executive Order 12996 (April 1996) Management of Public Uses on National Wildlife Refuges to reflect the importance of conserving natural resources for the benefit of present and future generations of people.

This Act amends the National Wildlife Refuge System Administration Act of 1966 in a manner that provides for the Refuge System. It would ensure that the Refuge System is effectively managed as a national system of lands, waters, and interests for the protection and conservation of our nation's wildlife resources.

The Act gives guidance to the Secretary of the Interior in the overall management of the Refuge System. The Act's main components include a strong and singular conservation mission for the Refuge System, a requirement that the Secretary of the Interior maintain the biological integrity, diversity, and environmental health of the Refuge System, a new process for determining compatible uses of refuges, and a requirement for preparing comprehensive conservation plans. The Act states first and foremost that the mission of the National Wildlife Refuge System be focused singularly on wildlife conservation.

The Refuge Improvement Act is an overarching Act with both general and specific elements that provide long-term management direction for the Refuge System. It became law the day it was signed; however, pending development and approval of final rules and regulations, the Service has issued the following as interim policy guidance with respect to the Act's Sections:

### Sec. 1 Purpose

This Order provides guidance for implementing specific provisions of the National Wildlife Refuge System Improvement Act of 1997, pending development of new policies and regulations responsive to the Act.

### Sec. 2 Scope

This policy applies to management of the National Wildlife Refuge System.

### Sec. 3 Existing policy

Existing policy and directives for management of the National Wildlife Refuge System remain in force except for those which are in conflict with provisions in the Act, in which case the Act prevails.

### Sec. 4 Mission of the National Wildlife Refuge System

The mission of the National Wildlife Refuge System is:

*"To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans."*

#### Sec. 5 Administration of the National Wildlife Refuge System

- a. The term "refuge" means a designated area of land, water, or an interest in land or water within the Refuge System, but does not include Coordination Areas.
- b. Each refuge shall be managed to fulfill the mission of the Refuge System, as well as the specific purposes for which that refuge was established.
- c. Each refuge shall be managed in a manner that maintains the biological integrity, diversity and environmental health of the Refuge System.
- d. The status and trends of wildlife resources on each refuge shall be monitored.
- e. The purposes of each refuge are the purposes specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, refuge unit, or refuge sub-unit.
- f. Each refuge shall ensure effective coordination, interaction, and cooperation with neighboring landowners and appropriate State fish and wildlife agencies.
- g. Each refuge shall cooperate and collaborate with other Federal agencies and appropriate state fish and wildlife agencies in refuge acquisition and management.

#### Sec. 6 Public Uses

- a. When determined to be compatible, the following six wildlife-dependent recreational uses are the priority general public uses of the Refuge System: hunting, fishing, wildlife observation and photography, and environmental education and interpretation.
- b. Compatible priority public uses shall receive enhanced consideration over other public uses in refuge planning and management.
- c. Priority public uses are appropriate and legitimate uses of the Refuge System. Refuges are strongly encouraged to seek opportunities to permit these activities when ways can be found to ensure their compatibility. Reasonable efforts should be made to ensure that lack of funding is not an obstacle to permitting these uses through development of partnerships with the States, local communities, and private and nonprofit groups.
- d. The following general hierarchy between refuge activities and public uses would apply: Priority 1 - activities necessary to fulfill the refuge purposes and the Refuge System mission; Priority 2 - provide opportunities for wildlife-dependent recreational uses, when determined to be compatible. All other public uses would be a lower priority.
- e. In providing priority public uses, refuges shall emphasize opportunities for families to experience compatible wildlife-dependent recreation, particularly opportunities for parents and their children to safely engage in traditional outdoor activities, such as fishing and hunting.

#### Sec. 7 Compatibility

- a. Compatibility determinations prepared during the period between enactment of the National Wildlife Refuge System Improvement Act of 1997 (October 9, 1997) and issuance of a new compatibility policy would be made under the existing compatibility standards and process.

#### Sec. 8 Comprehensive Conservation Planning

- a. The Act provides that Comprehensive Conservation Plans shall be completed for all refuge units within 15 years from the date of enactment.

## Refuge Purpose Statements

Formal establishment of a unit of the National Wildlife Refuge System is usually based upon a specific statute or executive order specifically enumerating the purpose of the particular unit. However, refuges can also be established by the Service under the authorization offered in such laws as the Endangered Species Act of 1973 or the Fish and Wildlife Act of 1956. In these cases, lands are identified by the Service that have the right elements to contribute to the recovery of a species or the maintenance of habitat types. Often, the Service works in cooperation with private nonprofit organizations in efforts to acquire suitable lands.

Flint Hills NWR was established in 1966 and “. . .shall be administered by him (Secretary of the Interior) directly or in accordance with cooperative agreements . . . and in accordance with such rules and regulations for the conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon, . . .” 16 U.S.C. § 644 (Fish and Wildlife Coordination Act, 1958).

# *Plan Implementation*

Refuge objectives are intended to be accomplished over the next 15 years. Many of the management activities for Flint Hills NWR would require the development of step-down management plans. Implementation of new management activities would be phased in over time as described within the step-down plans and would be contingent upon funding, staffing, regional and national Service directives. This section identifies major resource projects or planning to be accomplished within 5 to 10 years, estimated initial costs, staffing and funding needs, partnership opportunities, and step-down management plans.

## Resource Projects

Listed below are a summary of major resource project needs addressing the goals and objectives of this Plan. Each project summary includes planning links to this CCP. This list only reflects the basic needs identified by the planning team based on available information and are subject to modification depending on future conditions, needs, and cost adjustments.

### Project 1. Riparian Habitat Restoration and Protection

Provide and maintain riparian habitats and increase the diversity of wildlife communities. Restoration management includes establishment of riparian buffer strips, control of exotic vegetation, and prescribed fire in some areas.

Planning Links: Goal 1, Objectives 1, 2, 3 and 4  
Goal 2, Objectives 1 and 3  
Goal 5, Objective 1  
Goal 7, Objective 1

### Project 2. Water Management

Develop and implement a Water Management Plan. The Plan would determine water needs to maintain wetlands acres and restore riparian habitats of the Neosho River, and estimate water rights needed for the beneficial use of fish and wildlife. The Plan would include water management strategies for the production of quality wetland habitat components, and inventory and monitoring strategies for evaluating the diversity of wetland communities.

Planning Links: Goal 2, Objectives 1 and 2  
Goal 3, Objective 3  
Goal 5, Objective 1  
Goal 7, Objective 1

### Project 3. Wetland Restoration and Management

Restore and maintain wetland habitats to more natural conditions. Restoration management includes retiring cropland and constructing and restoring wetlands to benefit wildlife resources.

Planning Links: Goal 1, Objectives 1, 2, and 3  
Goal 2, Objectives 1, 2, and 3  
Goal 5, Objective 1

### Project 4. Grassland Management

Restore 400 acres of native prairie sites that have been invaded by noxious weeds. Restoration management would include biological control, chemical control, mechanical control, burning and re-seeding. Identify, protect and / or restore remaining tracts of true native prairie grasslands.

Planning Links: Goal 1, Objectives 1, 2, 3, and 4  
Goal 2, Objective 3  
Goal 5, Objective 1  
Goal 7, Objective 1

### Project 5. Outdoor Recreation Improvement

Improve the outdoor recreation component of the Refuge by adding an Outdoor Recreation Planner to the Refuge staff. Outdoor recreation improvements would include adding or improving trails, wildlife viewing and photography blinds, development of informational pamphlets, and increased public education and outreach.

Planning Links: Goal 1, Objective 3  
Goal 3, Objectives 1, 2, 3, and 4  
Goal 4, Objective 2  
Goal 5, Objective 1  
Goal 6, Objective 1  
Goal 7, Objective 1

### Project 6. Public Use Plan and Visitor Services

Develop a Public Use Plan which emphasizes visitor services at the headquarters and increased opportunities for wildlife related recreation activities.

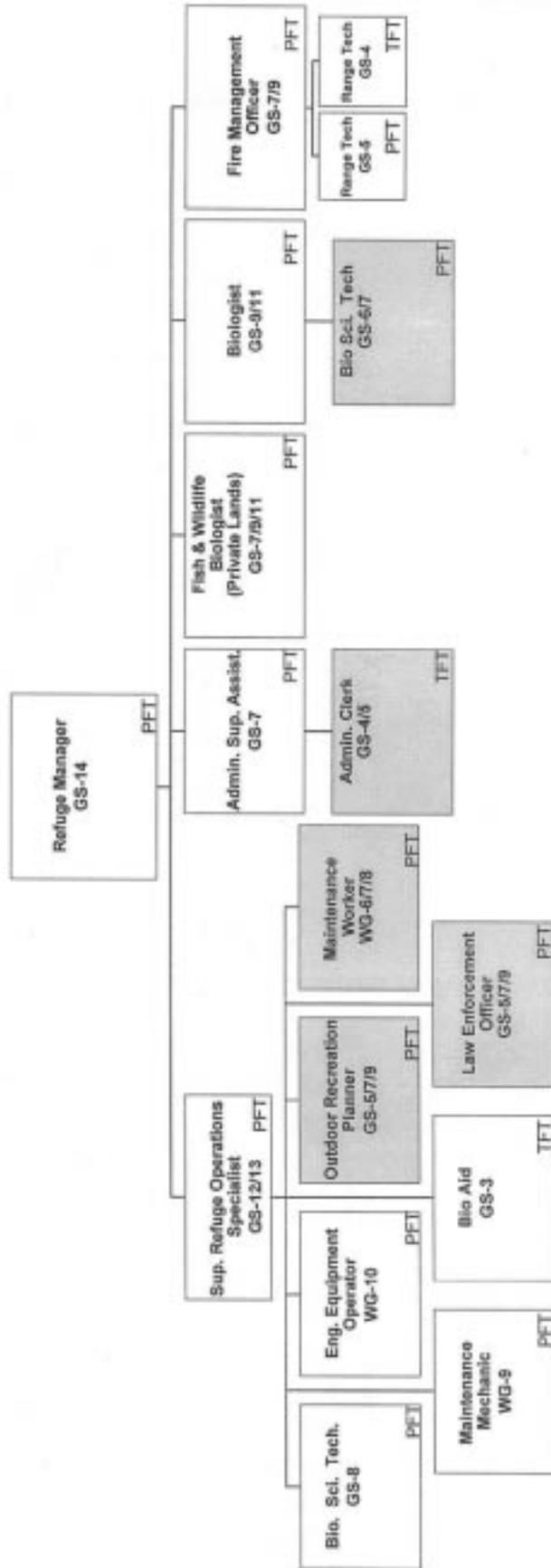
Planning Links: Goal 1, Objective 3  
Goal 3, Objectives 1, 2, 3, and 4  
Goal 4, Objective 2  
Goal 5, Objective 1  
Goal 6, Objective 1  
Goal 7, Objective 1

# Flint Hills NWR

## Proposed Full Staffing

Shaded Box Denotes Proposed Staff additions

PFT = Permanent Full-time  
 TFT = Temporary Full-time



### Current base funding and other funds

Total annual budget for the Refuge varies depending on the Service priorities for the resource projects each year and the national and regional allocation of RONS and Maintenance Management System (MMS) funds.

The following is a general breakdown of the annual operation budget of the Refuge (amount \$K):

<b>Annual Operations Budget (amount \$K)</b>						
<b>Year</b>	<b>1261*</b>	<b>1262*</b>	<b>8260*</b>	<b>9100*</b> <b>9251*</b>	<b>1121*</b>	<b>Total</b>
1999	320.69	86.0	86.69	97.70	230.0	\$821.08
1998	301.23	70.0	118.00	49.80	216.3	\$755.33
1997	302.25	25.0	286.49	62.58	207.0	\$883.32
1996	286.85	65.0	74.08	26.60	180.0	\$632.53

\*Description of funding categories:

1261 funds include annual fixed costs: salaries, utilities, gasoline, diesel, equipment repair, mandatory training/travel.

1262 funds includes routine maintenance and vehicle replacement, maintenance on refuge facilities, and infrastructure.

8260 funds are from receipt of sales from the farming program and can be used to fund Refuge operations.

9100 and 9251 are funds used for fire preparedness.

1121 monies fund the Private Lands Program.

### Partnership Opportunities

Many opportunities exist to partner with county, State and Federal agencies, NGO's, private landowners, and conservation groups such as PIF, Ducks Unlimited, The Nature Conservancy, Wild Turkey Federation, and Quail Unlimited to combine efforts on resource issues or projects that would mutually benefit all with the greatest benefits to the area's natural resources. The benefits of the following partnerships or relationships are emphasized:

- P Establishing relationships through partners for fish and wildlife programs, private landowners, and conservation organizations could result in the development of conservation agreements or other options for land protection, habitat enhancement and restoration, and opportunities for continuity of management.
- P Strengthening partnerships with Kansas Wildlife and Parks and local law enforcement agencies could lead to sharing of volunteers to conduct activities associated with public use on the Refuge wetlands, enhancing biological programs and management strategies of habitats and wildlife populations on adjoining lands, sharing research opportunities and information that would mutually benefit management of adjoining resource areas, coordinating water management to enhance wetland habitats, improving wildlife-oriented recreation opportunities through joint efforts, and coordinating efforts for more efficient law enforcement coverage.
- P Partnerships or joint efforts with the Corps, Kansas Department of Wildlife and Parks, Kansas Water Office, and Neosho Basin Advisory Committee, the timing and amount of water flows could be maximized for beneficial use on riparian, wetland, and aquatic communities of the Neosho adjacent to the Refuge. Improved relationships with area water users and the Corps would provide better communication on water issues. A coordinated effort for the protection of water rights and efficient use of this limited resource would benefit all users.

## Step-Down Management Planning

The following is a list of step-down management plans that include mandatory plans, programmatic plans, and special use plans. Often these plans would require compatibility determinations, environmental assessments, or other supporting justification before they can be implemented. The preparation and execution of these plans is dependent on funding and the availability of staff or technical support.

## Completed Plans and Other Documents

**Station Safety Plan:** describes actions and improvements necessary to make station facilities and operations comply with Federal occupational health and safety standards and other applicable regulations.

**Fire Management Plan:** determines the best use of prescribed fire in managing and enhancing the Refuge habitats and addresses wildfire preparedness and suppression. Plan was last updated in 1997.

**Sign Plan:** provides a record of all signs installed throughout the Refuge and guidelines for sign replacement.

**Hunting Plan:** addresses specific aspects of the Refuge hunting program defining the species to be hunted, season structure, hunting methods, and applicable Refuge specific hunting regulations. Completed between 1980-1984.

**Migratory Bird Disease Contingency Plan:** describes strategies to be implemented during migratory bird disease outbreaks. Completed between 1980-1984. Needs to be reviewed and updated.

**Integrated Pest Management Plan:** describes biological, mechanical, or chemical methods for the most effective eradication and control of exotic weeds and woody vegetation and specific pests including those damaging crops without impacting the natural resources of the area.

## Plans and Documents to be Developed in the Future

**Public Use Management Plan:** addresses specific wildlife related public recreation issues and needs.

**Refuge Inventory and Monitoring Plan:** describes specific wildlife inventory activities and techniques to be conducted to monitor wildlife populations including specific species population objectives, census/survey methods, data analysis, and reporting requirements.

**Habitat Management Plan:** describes the most appropriate management strategies for habitat protection, enhancement and restoration, emphasizes specific habitats and areas for management activities, provides monitoring methods and evaluation criteria.

**Cultural Resources Management Plan:** identifies areas with significant sites and develops methods for the management of these resources. The Cultural Resources Management (CRM) Plan also identifies areas with high potential of significant resources and provides the manager with information to make better decisions regarding development or management activities. A comprehensive cultural resource inventory is a prerequisite to the development of the CRM plan as land management activities including public access could impact unidentified or unevaluated resources.

**Water Use Plan:** describes annual water management strategies including quantities of water delivered, place of use and timing, and habitat objectives.

**Prescribed Fire Environmental Assessments:** an Environmental Assessment is planned to assess the environmental impacts of prescribed fire as a management tool in restoring and enhancing grassland habitats on the Flint Hills NWR. The primary objective of the environmental assessment is to determine the effects of prescribed fire on human and wildlife populations. A Finding of No Significant Impact would determine fire to have no significant environmental effects. If prescribed fire is not deemed a major Federal action significantly affecting the quality of human environment within the meaning of section 102 (2) © of the National Environmental Policy Act of 1969, no formal environmental statement would be recommended.

## Wilderness Review

This Refuge does not conform to the definition of a wilderness, as described in the Wilderness Act of 1964. The Refuge is an overlay of Corps property and is managed under a cooperative agreement with the Corps. Additionally, the Refuge is fragmented by numerous county roads and heavily impacted by man-made flooding events from the Reservoir that inundate as much as 95 percent of the Refuge. Acquisition of additional lands in the vicinity of the KAAP near Parsons, Kansas, may eventually provide sufficient opportunities for exploring wilderness designation.

## Refuge Program Monitoring and Evaluation

Where possible, the CCP identifies and incorporates monitoring and evaluation activities as strategies under the objectives developed for Flint Hills NWR. Each Refuge program has specific guidelines described in the appropriate step-down plan. Step-down plans include approaches and methods to monitoring management activities and specific criteria to evaluate the outcomes of the activities. As new information becomes available through baseline data, research, or outcomes of management projects the existing Refuge programs would be adjusted. Step-down plans including the monitoring and evaluation sections would require periodic review, program evaluation, and adjustments as necessary.

## Monitoring and Evaluation of the CCP

For this Plan to be a useful working document for present and future Refuge managers, documentation and accountability must be a priority. The most effective implementation of the CCP would require periodic review, evaluation, and the addition of information as necessary to keep the document as current as the Refuge programs that evolve.