

Environmental Assessment

North American Wetland Conservation Act

Pump House

Clarence Cannon National Wildlife Refuge

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Abstract:

Clarence Cannon National Wildlife Refuge (refuge) was established in 1964 to provide an inviolate sanctuary for migratory birds; conserve, manage, and restore fish, wildlife and plants resources and their habitat; provide for fish and wildlife-oriented recreation; and to conserve wetlands. The refuge lies within the floodplain of the Mississippi River, pool 25, and is surrounded by a main levee. Moist soil units within the main levee require intensive management by pumping water in and out of the refuge via Bryants Creek. Management of these units is necessary to provide breeding and migrating birds with quality habitat and food essential for their survival.

The existing foundation to the pump house was constructed in 1968 and is currently in need of replacement before the structure fails. The proposed project will include the construction of new water management infrastructure near the existing pump house. All components necessary to move water for management purposes, including culverts, check valves, power drives, pumps, etc. will be replaced. Upon completion of the project, the existing pump house will be removed.

In addition to the work at the pump house, moist soil units 5, 3, and 9 will be rehabilitated to create one unit. Currently these units are separated from each other by interior levees allowing for independent water manipulation. The project will combine these three units into one, MSU 539. This work will provide a more diverse and less fragmented wetland environment, increasing habitat for wetland dependent species.

This Environmental Assessment (EA) has been prepared to analyze the alternatives available for the replacement of the pump house and the rehabilitation of wetlands within the refuge.

Section I: PURPOSE AND NEED FOR ACTION

Purpose for Taking Action:

The purpose of this EA is to evaluate alternatives for maintaining habitat management capabilities and rehabilitating wetlands within the refuge. This EA will consider three possible alternatives including a no action alternative.

Need for Taking Action:

The integrity of the existing pump house structure became a concern after two flood events in 2008 and 2013. Numerous leaks in and around the foundation, as well as the continued deterioration of check valves and culverts has compromised the integrity of the structure. The pump house is nearly a half-century old and in need of rehabilitation and/or replacement.

Wetlands within the refuge are fragmented. The proposed project will benefit wetland dependent species which require large, contiguous wetland habitats, such as the American bittern which prefers wetlands greater than 24 acres in size. Reduced fragmentation will provide a greater diversity of water depths within a single unit and reduce travel lanes between units which are used by amphibians and reptiles. Travel lanes expose frogs and turtles to predation.

Decision to be Made:

The Regional Director, U.S. Fish and Wildlife Service, Bloomington, Minnesota, needs to make two decisions. (1) Decide which alternative will benefit the resources long-term; and (2) determine if the project is a major Federal action having a significant effect on the environment thus requiring preparation of an Environmental Impact Statement.

Issues Raised During Project Planning:

Wildlife Disturbance and Habitat Damage – Construction of any kind will cause disturbance to wildlife in and around the work site. The construction of a second pump house will initially add to the footprint on the landscape. These impacts will only be temporary allowing for continued water management of the moist soil units during construction. Upon completion of the new pump house, the aged structure will be removed and the levee restored.

Wildlife disturbance and habitat damage in relation to the work to degrade the interior levees will also occur. However impacts will be temporary and any loss of habitat during construction will be negated with the increase of wetland acres upon completion of the project.

Cultural Resources – Cultural resource surveys and subsequent reports have been completed on the refuge in the past. Such records date back to 1977, 1978, 1992, 1999 and 2007. Nowhere in these reports have cultural resources been identified at the locations proposed for construction. Therefore the work would have no effect on cultural resources on the refuge.

Effect on Local Economy - Utilization of local contractors and hired labor during construction of the pump house should have a positive impact on the local economy. Work to remove the interior levees will be completed by refuge maintenance personnel, as outlined in the North American Wetland Conservation Act agreement with Ducks Unlimited.

Background:

In the 1920's, the main levee surrounding the refuge was constructed. This levee has effectively separated the floodplain wetlands within the refuge from historic pulses of floodwaters from both the watershed and the Mississippi River. Floodplain wetlands within the refuge are managed to mimic natural hydrology. Water is supplied to these wetlands via the original pump house which was constructed in 1968. Moist soil units within the levee have been modified since 1968. The size, shape, and diversity of wetlands have been changed to meet the refuge goals of providing an inviolate sanctuary for migratory birds; conserving, managing, and restoring fish, wildlife and plants resources and their habitats; providing for fish and wildlife-oriented recreation; and conserving wetlands.

The condition of the near half century old pump house continues to degrade with each flood event. Without action, the structure will fail resulting in a major breach in the main levee with floodwaters devastating the interior infrastructure and wetlands.

The Comprehensive Conservation Plan and subsequent Habitat Management Plan for the refuge recognized the importance of this area for breeding and migrating wetland dependent species. The removal of the interior levees to form a large, contiguous wetland will improve wetland functions and wildlife habitat.

Key concerns have been identified in a U.S. Army Corps of Engineers' Value Engineering Study for a proposed Habitat Rehabilitation and Enhancement Project at the refuge. The study identified the environmental desirability, sustainability and compatibility of pump house replacement and levee degradation. The study also identified the operation and maintenance considerations necessary to meet refuge objectives.

An approved North American Wetland Conservation Act grant completed in partnership with Ducks Unlimited has provided substantial funding to complete construction of the pump house. The refuge's share of the agreement involves work to degrade the interior levees.

Section II: ALTERNATIVES INCLUDING THE PROPOSED ACTION

Alternatives Not Considered for Detailed Analysis:

Removal of the pump house with no breach in the levee – This alternative was not considered for detailed analysis because it would eliminate the refuge’s ability to manage floodplain wetlands. Any floodwaters entering the refuge would remain for extended periods resulting in the loss of productivity in wetlands, thus altering breeding and migratory bird uses considerably.

Any action in relation to the reconstruction of interior levees under this alternative is immaterial, since moist soil management would be irrevocably altered.

Removal of the pump house with a breach in the levee to allow seasonal flooding – Prior to the construction of levees up and down the Mississippi River, seasonal floodwaters ebbed and flowed across the low areas and islands within the floodplain. With the presence of these levees, the floodwaters from melting snow and rains are confined to the main river channel causing the once gradual pulses of the river to rise faster and take longer to recede.

Allowing natural flow in and out of the refuge would make it harder to manage productive moist soil habitats. The area would likely revert to floodplain forest and/or scrub shrub communities, altering breeding and migratory bird uses. Therefore work, or lack thereof, on the interior levees would have little impact.

Alternative A: Maintain Existing Conditions (No Action Alternative)

This alternative is a less favorable alternative due to the condition of the existing structure and equipment. Lack of attention would result in the catastrophic failure of the structure and the main levee, thus devastating the interior infrastructure and wetlands.

A no action alternative for the removal of the interior levees in moist soil units 5, 3 and 9 would have very little impact. The units would still function as they currently do and the landscape would remain fragmented, thus providing the same limited habitat

Alternative B: Construct New Pump House and Rehabilitate Moist Soil Units 5, 3, and 9 (Preferred Alternative)

The Service, in cooperation with Ducks Unlimited, proposes to construct a new pump house and rehabilitate floodplain wetlands as part of the North American Wetland Conservation Act, Conservation in the Confluence, Phase III project. The construction of a new pump house would ensure continued and improved management of water levels on moist soil units at the Clarence Cannon National Wildlife Refuge. Effective management of moist soils provides high quality natural food resources for migratory birds, helping to meet one of the Refuge’s primary purposes.

The removal of interior levees between moist soil units 5, 3, and 9 would provide wetland dependent wildlife, including breeding and migrating birds, with less fragmented habitat.

The benefits of the preferred alternative out-weigh any short-term impacts to wildlife since the work would ensure the continued management of priority wetland habitats.

Alternative C: Complete Stopgap Measures on the Existing Pump House and Partial Rehabilitation of Moist Soil Units.

Stopgap measures to repair the existing pump house and rehabilitate moist soil units will only provide short-term benefits and result in considerable cost due to the multitude of repairs needing to be addressed. Even with stopgap measures, the loss of pumping capabilities is likely to occur within the next 5 to 10 years as the present structure will likely fail. A failure could be catastrophic with a blow-out of the levee, with resulting floodwaters devastating the interior infrastructure and wetlands.

Partial removal of interior levees would have minor positive impacts on habitat quality. Habitats would remain fragmented and wildlife uses would remain about the same.

Section III: AFFECTED ENVIRONMENT

Clarence Cannon National Wildlife Refuge is located in Pike County, Missouri approximately one-mile east of the town of Annada. The pump house is located on the south side of the refuge along Bryants Creek. Moist soil units 5, 3 and 9 are located on the southwest corner. The refuge is managed as an inviolate sanctuary for migratory birds.

The majority of the refuge is surrounded by a large levee which necessitates pumping water in and out of the refuge to manipulate wetland hydrology and function. The pump house foundation and some of its components (i.e. culverts, screw valves, etc.) are original, dating back to 1968. Approximately 2,100 acres of moist soil is managed for wetland dependent wildlife.

Moist soil units 5, 3 and 9 are currently separate units allowing for individual water level management. The interior levees separating one unit from the other provide travel lanes for access in and around the units and the refuge. The proposed removal of the interior levees will increase overall wetland acres when earthen material is excavated to the surrounding wetland elevations, thus reducing fragmentation across the wetland landscape.

Moist soil management on the refuge is accomplished by pumping water from Bryants Creek into a system of main ditches which snake past each water control structure, referred to as a stop-log structure with a culvert and half-round riser. The stop-logs stacked in the half-round riser allow the water to flow in or out of the unit to the level of the logs. This method of management has been practiced for many years and allows for easy and efficient management of water levels.

The cycle of management typically involves flooding of units for the fall shorebird/waterfowl migration. Water remains within the units until spring when water levels are drawn down to facilitate the growth of desirable wetland vegetation such as millet, smartweed and other high quality food plants in the summer. Benefits to wildlife are provided throughout the year. For

example, in the fall these areas provide resting and feeding areas for migrating waterfowl, wading birds, marshbirds, etc. In the spring, returning migrants continue to benefit from these resting and feeding areas, while also finding important pair bond pools. During the summer, not all water is removed from the managed wetlands, thus allowing for nesting species, such as wood ducks, dickcissels, marsh wrens, king rails and others to nest and raise their young. Resident species including frogs, turtles, crayfish, muskrats, river otters, and others are provided permanent habitat allowing them to thrive.

Public use on the refuge includes wildlife viewing, photography, environmental education and interpretation. Hunting is only permitted during managed hunts four days out of the year. Fishing is permitted from boat only in Byants Creek.

Section IV: ENVIRONMENTAL CONSEQUENCES

Alternative A: Maintain Existing Conditions (No Action)

This Alternative could result in significant changes to the physical, biological or cultural resources on the refuge if the structure were to fail. With increased flood frequencies and the presence of major leaks in and around the foundation of the pump house, it's only a matter of time before such a failure occurs. Major impacts will occur in the direct path of the breach, while secondary impacts will occur across the refuge.

There will be no changes to the physical, biological or cultural resources on the refuge as a result of leaving interior levees between moist soil units 5, 3 and 9. Therefore, only concerns in relation to the pump house will be discussed here.

Temporary Disturbance

No temporary disturbances would occur under this alternative. If the foundation of the pump house and/or the levee were to fail, disturbance would be immediate and catastrophic to infrastructure, natural resources and wildlife.

Permanent Changes to Wildlife Habitat

With a levee failure, major scouring of the Pump House Road, with eroded materials displaced to surrounding lower elevations, would occur. Filling of ditches and moist soil units with eroded materials would substantially reduce wildlife habitats. Trees in the Green Tree Reservoir 7 located west of the main ditch could be uprooted by the force of the water. Depending on the time of year, such as the nesting period, levee failure would have immediate impacts to the wildlife on the refuge.

Cultural Resources

Recorded archaeological sites located on the refuge are found no closer than a mile from the pump house. No impacts to cultural resources would occur under this alternative.

Aesthetic Concerns

There would be no aesthetic concerns provided the structure remained intact. If it were to fail, silt and gravel from the levee and nearby roads would be displaced and deposited across the landscape filling wetlands and ditches.

Reduced Hunting Opportunities

Only two managed deer hunts are conducted on the refuge. In the event of a structural failure, the impact to hunting may be the loss and/or displacement of the target species.

Cumulative Impacts

Failure of the structure would result in adverse cumulative impacts including the loss of infrastructure within the levee resulting in negative impacts to natural resources, wildlife, and wetland management capabilities.

Alternative B: Construct New Pump House and Rehabilitate Moist Soil Units 5, 3, and 9 (Preferred Alternative)

The Environmental Consequences of this Alternative will be temporary. Work to construct a new pump house will result in only temporary changes to the physical, biological or cultural resources on the refuge. The removal of interior levees will be permanent, but will be offset by improved wetland habitat.

Temporary Disturbance

Work to construct the new pump house and to remove interior levees will include the use of heavy equipment, resulting in temporary disturbance to soils and vegetation in the work area. The removal of the levee will have greater effects as earthen material will either be spread into old borrow areas and/or removed to repair existing roads and levees. These temporary impacts will be mitigated when the disturbed areas are replanted with desirable vegetation to help stabilize and restore the sites, and when improved water management capabilities are applied, resulting in increased and higher quality wetland habitats on the refuge.

Water management capabilities will be minimally impacted during construction since the old structure will remain in operation until the completion of the new facility. Temporary disturbance to habitats on the refuge would be minimal to non-existent.

There are no Federally threatened or endangered plant or animal species located in the affected areas. Construction activities are tentatively scheduled to commence during the spring of 2015.

Permanent Changes to Wildlife Habitat

Within the footprint of the new pump house, habitat will be permanently affected. The loss, however, will be offset by the removal of the old structure once work on the new structure is complete. No additional loss or impacts to habitat will result from the project. Additionally, throughout the construction of the new pump house, water management activities will continue which should have no impact to the wildlife habitat across the refuge.

Work to remove interior levees between moist soil units 5, 3 and 9 will result in a permanent change to wildlife habitat. The earthen material making up the levees will either be returned to old borrow ditches and/or used to repair other levees and roads on the refuge. The resulting change to the habitat will be positive due to the increase in total wetland acres and the reduction of fragmentation across the refuge.

Cultural Resources

No archeological sites have been identified in the area of the proposed pump house or where levee removals will take place on the refuge. No impacts to cultural resources would occur under this alternative.

Aesthetic Concerns

During construction of the pump house and the removal of interior levees, the presence of heavy equipment on site would reduce the aesthetic attributes of the natural environment in the project area. Very little, if any, long term impacts on aesthetics would occur.

Reduced Hunting Opportunities

No change in hunting opportunities would occur as a result of the project. Construction work will be stopped to allow for the hunters to participate in the two managed deer hunts scheduled annually on the refuge.

Cumulative Impacts

The cumulative impacts of the project would overall be positive. The management capabilities of the refuge would be maintained and wetland acres will be increased.

Alternative C: Complete Stopgap Measures on the Existing Pump House and Partial Rehabilitation of Moist Soil Units

Temporary disturbance to the physical, biological and cultural resources on the refuge would be similar to Alternative B.

Section V: LIST OF PREPARERS

This EA was prepared by Candace Chambers, Wildlife Refuge Specialist, Great River and Clarence Cannon National Wildlife Refuges, Annada, Missouri.

Section VI: COMPLIANCE, CONSULTATION AND COORDINATION WITH OTHERS

Parties Contacted During the Planning Process

U.S. Army Corps of Engineers
Missouri Department of Conservation

Coordination With Others

A public comment period was initiated on February 26, 2014 for a 30 day period by issuing a news release to newspapers in the vicinity of the Refuge. Copies of the EA were e-mailed directly to the U.S. Army Corps of Engineers, Missouri Department of Conservation, and Missouri Department of Natural Resources.

Pertinent Laws, Executive Orders and Regulations

1. National Wildlife Refuge Improvement Act of 1977.
2. Section 106 of the National Historic Preservation Act
3. Endangered Species Act of 1973

Section VII: References

National Wildlife Refuge Improvement Act of 1997 (P.L. 105-57)