
PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project

Restore Crab Lake And Adjacent Reaches Of Crab Creek.

BPA project number: 20071

Contract renewal date (mm/yyyy): Multiple actions?

Business name of agency, institution or organization requesting funding

Ducks Unlimited, Inc.

Business acronym (if appropriate) DU

Proposal contact person or principal investigator:

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NPPC Program Measure Number(s) which this project addresses

11.3E.1

FWS/NMFS Biological Opinion Number(s) which this project addresses

Other planning document references

This project is supported by all of the affected landowners, local community leaders, Ducks Unlimited, and several state and federal agencies. A watershed assessment that includes the project area has not been completed. However, this project is supported by the Conservation Districts Water Quality Partnership, a partnership between the following soil and water conservation districts: Moses Lake, Othello, Upper Grant and Warden.

Short description

Restore Crab Lake and adjacent reaches of Crab Creek. Crab Lake was drained and Crab Creek altered for agricultural purposes early this century. This project will restore historic habitat conditions.

Target species

This project will restore important habitat for many species of waterfowl, shorebirds, neo-tropical migrants and wading birds. Resident fish species will benefit from wetland, riparian and in-stream restoration activities.

Section 2. Sorting and evaluation

Subbasin
Crab

Evaluation Process Sort

CBFWA caucus	Special evaluation process	ISRP project type
Mark one or more caucus	If your project fits either of these processes, mark one or both	Mark one or more categories
<input type="checkbox"/> Anadromous fish <input checked="" type="checkbox"/> Resident fish <input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Multi-year (milestone-based evaluation) <input checked="" type="checkbox"/> Watershed project evaluation	<input type="checkbox"/> Watershed councils/model watersheds <input type="checkbox"/> Information dissemination <input type="checkbox"/> Operation & maintenance <input checked="" type="checkbox"/> New construction <input type="checkbox"/> Research & monitoring <input checked="" type="checkbox"/> Implementation & management <input type="checkbox"/> Wildlife habitat acquisitions

Section 3. Relationships to other Bonneville projects

Umbrella / sub-proposal relationships. List umbrella project first.

Project #	Project title/description

Other dependent or critically-related projects

Project #	Project title/description	Nature of relationship

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Restore Crab Lake	a	Acquire landowner easements
		b	Install fish-friendly water control structures in wetland drainage ditches
2	Restore Crab Creek	c	Restore natural meandering channel where appropriate
		d	Acquire landowner easements
3	Restore productive wetland habitat	e	Manage wetland and water control structures to produce productive seasonal and semi-permanent wetland habitat
4	Restore productive riparian habitat	f	Restore riparian plant community by planting native riparian species along Crab Creek
5	Restore in-stream habitat for fish	g	Install in-stream structures in Crab Creek where appropriate to enhance conditions for native fish species.

Objective schedules and costs

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
1	4/1999	9/2000		X	86.00%
2	4/1999	9/2000		X	9.00%
3	9/2000	9/2002	Restore productive wetland habitat		1.00%
4	2/2000	2/2002	Restore productive riparian habitat	X	3.00%
5	5/2000	10/2000	Restore in-stream habitat for fish	X	1.00%
				Total	100.00%

Schedule constraints

This project is contingent upon acceptance of these properties into the Wetlands Reserve Program. This acceptance is expected during 1999.

Completion date

Federal fiscal year 2000

Section 5. Budget

FY99 project budget (BPA obligated): \$0

FY2000 budget by line item

Item	Note	% of total	FY2000
Personnel		%0	
Fringe benefits		%0	
Supplies, materials, non-expendable property	Materials for water control structures, trees, shrubs	%30	110,000
Operations & maintenance		%0	
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		%0	
NEPA costs		%1	5,000
Construction-related support	Topographic surveys, engineering support, contingencies	%14	50,000
PIT tags	# of tags:	%0	
Travel		%0	
Indirect costs		%0	
Subcontractor	Installation of structures, trees, dirtwork	%55	200,000
Other		%0	
TOTAL BPA FY2000 BUDGET REQUEST			\$365,000

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount (\$)
Natural Resources Conservation Service	Land Acquisition (Wetland Reserve Program) and Construction Practices	%76	1,295,000
Ducks Unlimited	Engineering, Construction Management and Construction Practices	%3	50,000

		%0	
		%0	
Total project cost (including BPA portion)			\$1,710,000

Outyear costs

	FY2001	FY02	FY03	FY04
Total budget	\$0	\$0	\$0	\$0

Section 6. References

Watershed?	Reference
<input type="checkbox"/>	December, 1995, Intermountain West Joint Venture Implementation Plan
<input type="checkbox"/>	Ducks Unlimited, June 1, 1994, Ducks Unlimited Continental Conservation Plan, Parts I-III
<input type="checkbox"/>	
<input type="checkbox"/>	

PART II - NARRATIVE

Section 7. Abstract

This project will restore Crab Lake and adjacent reaches of Crab Creek. Historically, Crab Lake was a 2,000 acre semi-permanent marsh located near the community of Wilson Creek, Washington. Early this century, the lake was drained for agricultural purposes. Nearby reaches of Crab Creek were channelized and riparian habitat cleared. Twelve individual landowners have come together to support and implement a plan to restore this marsh and adjacent reaches of Crab Creek. The project scope includes a 12 mile reach of Crab Creek that will be enhanced and restored. In the middle of this project area, Crab Lake will be restored and managed to provide productive seasonal and semi-permanent wetland habitat, providing benefits to dozens of species of wetland associated wildlife. Three fish-friendly water control structures will be installed in drainage ditches and used to manage wetland habitat to produce a diverse, productive mix of habitat types benefitting multiple wildlife species. Riparian vegetation will be restored along Crab Creek. In-stream work will be implemented to benefit native fish species. Monitoring of habitat conditions and wildlife response will be conducted to assist in making future management decisions. Restoration practices will be completed by September 2000.

Section 8. Project description

a. Technical and/or scientific background

The project area is a twelve-mile reach of Crab Creek in Grant County, Washington. The specific project area is the entire reach of Crab Creek between Brook Lake and a point one mile downstream of the Lincoln County line. Crab Lake itself extends approximately five miles upstream from the community of Wilson Creek. Crab Lake was drained early this century for agricultural purposes. A historical marker documenting this fact is located along Highway 28 near Stratford, Washington. Early settlers found the highly organic soils in Crab Lake to be very productive agricultural lands. Lands along Crab Creek both upstream and downstream of the original lake were also cleared for agricultural purposes. Over the years, the constant exposure of these soils to the atmosphere has increased the rate of oxidation and, apparently, resulted in significant subsidence occurring within the historic lake margins. As the lands within the project area sink, the effectiveness of the drainage system has decreased. This occurrence, coupled with recent years of above average precipitation, has created conditions in the project area that have all but prevented any successful agricultural activities.

The landowners have been left with few options. One option would be to attempt to increase the capacity of the drainage system. A second option would be to restore these lands to wetlands and riparian habitats. All twelve private landowners involved have agreed to strongly consider the option of restoring this area to wetlands and associated habitats. The landowners are very interested in providing restored habitat for wildlife and promoting the concept of developing an economic return from this project based on wildlife dependent recreational opportunities. Significant local support for this project has been demonstrated.

b. Rationale and significance to Regional Programs

This project furthers the goals of the Intermountain West Joint Venture Implementation Plan (IWJVIP) and Ducks Unlimited's Continental Conservation Plan (CCP). The IWJVIP was developed as part of the North American Waterfowl Management Plan, an international agreement developed in 1986 that recognized the need to restore and protect wetlands and associated habitats in order to recover and perpetuate populations of waterfowl and other wetland wildlife. The IWJVIP sets goals for sufficient habitat restoration and protection to support specific population levels for many species of waterfowl and other wetland birds. The implementation of this project will provide habitat to assist in meeting these goals.

The CCP was developed by Ducks Unlimited as a comprehensive review of continental wetland ecosystems and waterfowl populations. The purpose of this plan is to guide DU's conservation programs in the future. The CCP identified specific habitat needs in the Columbia Basin. Specifically, this plan recommended the restoration of shallow wetlands and riparian areas that provide essential nutrients to migrating and wintering waterfowl. The loss of these habitats has coincided with a growing abundance of waste grain in the area, especially corn. While these waste grains provide an abundant food source for waterfowl at specific times of the year, they do not meet the entire nutritional needs of waterfowl during their life cycle. The restoration of natural, diverse wetland

habitats will provide these additional, important nutritional needs, especially during spring migration.

c. Relationships to other projects

This project is directly linked to other efforts undertaken by Ducks Unlimited, Natural Resources Conservation Service, U.S. Bureau of Land Management (BLM), Washington Department of Fish and Wildlife (WDFW), and the U.S. Fish and Wildlife Service (FWS). The Wetlands Reserve Program (WRP), offered by the Natural Resources Conservation Service (NRCS), is a nationwide effort to restore wetlands and associated habitats on agricultural lands. Through WRP, easements will be acquired from all involved landowners. These easements will allow the permanent restoration and management of the project area. NRCS rates this project as a very high priority. All of the above mentioned partners have been actively promoting and implementing habitat restoration projects in the entire Crab Creek watershed. Many projects have been completed on lands owned and managed by BLM, FWS, and WDFW. This project will significantly complement these completed projects. Ducks Unlimited, working with the project partners, expects to develop additional restoration projects in the Crab Creek watershed in future years. These future projects will complement and further the restoration goals of this proposal.

d. Project history (for ongoing projects)

This is not an on-going project.

e. Proposal objectives

Objective (1) of this proposal is to restore Crab Lake. This objective will be accomplished by acquiring necessary easements from involved landowners and installing water control structures in wetland drainage ditches to restore hydrology. Two low level dikes with water control structures may be incorporated into the design to provide enhanced water control capability. The exact nature of the water control structures and dikes will be determined after a topographic survey of the project site has been completed. All landowners and agencies involved in the project, with all available soils, hydrological and topographical information available, will jointly determine and agree to the specific structural features that will allow hydrological restoration. Objective (2) of this proposal is to restore Crab Creek. Approximately 9 miles of Crab Creek will be restored and enhanced by physically altering the existing channel in appropriate locations to restore a naturally meandering channel (sinuosity). In addition, dikes adjacent to the stream channel may be removed where appropriate. Objective (3) is to restore productive wetland habitat. In eastern Washington, wetlands occur in many various types and sizes. Large, permanent wetlands and impoundments are fairly abundant. Seasonal wetlands occur much less frequently in this landscape. These highly productive systems, often called moist soil wetlands when managers have the ability to manipulate water levels, are dependent on the periodic draw down of water levels to promote the germination and

growth of seasonal wetland plants. Extensive stands of these plants in a shallow water environment provide the basis for an abundant food source used by numerous species of wetland wildlife. During spring, shallow, seasonal wetlands provide the high protein invertebrate diet required by migrating waterfowl as they prepare for the upcoming breeding season.

Upon implementation of this project and installation of structural measures in Crab Lake, water levels will be managed to produce desired water depths and vegetative communities. Water management strategy will be to provide significant areas of semi-permanent and seasonal wetland habitats. Seasonal wetland habitats will provide shallow water zones during the late fall through early summer period. Semi-permanent wetland areas will provide deeper water habitats during the late fall through early summer period and shallow water during the summer and early fall period. Periodic drawdown of wetlands will: encourage germination and proliferation of emergent marsh plants, maintain the wetland community in an early successional and highly productive state, and be used to manage populations of non-native fish species. Objective (4) is to restore productive riparian habitat. This objective will be accomplished by planting native riparian brush and tree species along Crab Creek. Objective (5) is to restore in-stream habitat for fish. Structural features will be added where appropriate to create enhanced micro-habitats within Crab Creek. These features will improve habitat conditions for native, resident fish species

f. Methods

This project will be carried out using the best available science on wetland and riparian restoration techniques and management. A team of project partners, consisting of Ducks Unlimited, the landowners, Natural Resources Conservation Service, U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation and Washington Department of Fish and Wildlife, will complete final project planning efforts. One of the objectives of the project is to restore a diverse and productive mix of wetland habitats within the historic boundary of Crab Lake. Soils and hydrological data will be gathered and used to design structural measures to restore hydrology within the basin. These structures must be designed to produce all water management goals, including the ability to safely pass high flood flows without contributing to flooding problems on neighboring lands or downstream in the community of Wilson Creek. DU engineers have extensive experience in designing and implementing this type of project. Examples include projects in the Yakima River floodplain on Satus Wildlife Area and Toppenish National Wildlife Refuge in the Toppenish Creek floodplain. These structures will also have the ability to completely draw down the restored wetland habitat. This feature will be essential for management purposes, including the control of undesirable non-native fish species.

A second objective is to restore portions of Crab Creek that have been channelized and diked. Using the best available science and the experience of all the project partners, this segment of the project will restore natural sinuosity to the stream by restoring old stream channels and removing segments of adjacent dikes. This work will enhance the

likelihood of successful riparian restoration and improve in-stream habitat for native fish species.

A third objective of the project is to restore and manage productive wetland habitats in Crab Lake. This objective is dependent on future management decisions and manipulations of wetland habitats. The best available science for wetland management will be incorporated into the management plan for this project. Extensive research has been conducted on wetland management techniques, including the concept of moist soil management. Water management will be the main tool used by project managers to manipulate water levels and plant communities. Water management is highly effective, relatively simple, and requires minimal amounts of maintenance and management. Successful application of water management will result in plant communities and water depths that provide abundant food and cover for numerous species of wetland wildlife. Other tools that may be used in future management decisions include: mowing, disking, grazing, burning, and aquatic herbicide application. These tools will be used when necessary to manipulate plant communities, retard succession, and promote diverse communities of productive, native plants.

A fourth objective of the project is to restore riparian habitat. All of the project partners have extensive experience in riparian restoration. Seedlings and cuttings from native woody species will be planted along Crab Creek within the project area. These plantings will be managed for a 1 to 2 year period to ensure a high survival rate. Future plantings may be incorporated into the management plan as needed.

A final objective is to restore in-stream habitat diversity within Crab Creek. A team of experts from the project partners will devise a plan to incorporate various structural additions to Crab Creek. These structures may include such things as stumps and large boulders. The goal of this strategy is to add diverse, micro-habitats to the stream to benefit in-stream species, such as native, resident fish.

g. Facilities and equipment

Ducks Unlimited has all of the necessary equipment to undertake the design and construction management of this project. DU engineers are equipped with four wheel drive trucks, ATV's, and GPS and Total Station survey equipment. DU also has the in-house equipment necessary to produce topographic maps and engineered plans. DU will sub-contract the installation of all water control structures, dirt moving, and other practices. DU will provide all construction management and project inspection services. No special equipment will need to be acquired to implement this project.

h. Budget

Supplies, materials, non-expendable property: \$110,000 This budget item includes \$75,000 for materials necessary for the water control structures and \$35,000 in materials needed for riparian restoration, including trees and tree protectors. Cost estimates for water control structures came from estimates by DU engineers.

NEPA costs: \$5,000 This budget item is a request for funds needed to comply with NEPA requirements, including biological reports, public meetings and environmental documentation.

Construction related support: \$50,000 This amount includes \$20,000 to produce the necessary topographical study of the project area, \$10,000 for additional engineering work and \$20,000 to cover any project contingencies. These estimates were provided by DU engineers.

Subcontractor: \$200,000 This budget request covers the following items: \$10,000 for mobilization, \$25,000 for planting native trees and shrubs, \$75,000 for installing water control structures, and \$90,000 for dirt moving activities (clearing, grubbing, levee construction, finish work). These estimates were provided by DU engineers.

Partners Contributions: Ducks Unlimited and Natural Resources Conservation Service (NRCS) will provide an additional \$225,000 for engineering costs and implementation of restoration practices. NRCS will also provide approximately \$1,075,000 for acquisition of perpetual wetland easements on the project area. DU expects to secure additional partnerships before restoration work commences. DU also expects to expand this project to incorporate additional restoration work on Crab Creek in future years.

Section 9. Key personnel

Key personnel working for Ducks Unlimited on this project include:

Andrew Engilis – Program Manager, Pacific Northwest/Hawaii

Steve Donovan – Regional Biologist

Ivan Lines – Wetland Reserve Program Coordinator

Steve Liske – Regional Engineer

Brian Heck – Regional Engineer

Section 10. Information/technology transfer

This project will serve as an excellent example of large scale wetland and riparian habitat restoration on private land. DU and NRCS will use this project to promote additional interest among private landowners in habitat restoration activities, especially the Wetland Reserve Program. This site will be used to conduct tours with interested individuals and agency representatives to demonstrate wetland management strategies and results. DU will promote this project as an example of partnership efforts in various publications, including: brochures, newsletters, and the DU magazine.

Congratulations!