

*Full moon over East Canal*  
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# *Appendix C*

## *Implementation*

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## C.1 Overview

Implementation of the Preferred Alternative (Alternative 2) of the Comprehensive Conservation Plan (CCP) will require increased staffing and funding levels to successfully accomplish the planned actions, which will depend upon additional Congressional allocations, partnerships, and grants. There are no guarantees that additional federal funds will be made available to implement any of these projects. We will seek to develop innovative and committed partnerships with a variety of public and private entities. The identified activities and projects will be implemented as funds become available.

This Refuge has one of the largest infrastructures in the National Wildlife Refuge System, with approximately 200 miles of public roads; 2,000 miles of waterways/dikes; 5 dams; 1,000 water control structures; 6 automated fish screens; 27 administrative, 7 quarters, and 25 visitor services facilities; 4 historic building sites; and a large fleet of heavy/light vehicles and equipment. This extensive infrastructure requires a high degree of routine maintenance/repair to efficiently and effectively support the various Refuge programs and maintain tens of thousands of acres of wetlands, 30 miles of rivers/creeks, and 16,000 acres of irrigated meadow. At the current staffing level, a vast majority of routine maintenance/repair needs are addressed reactively. Additional staff and/or funding are needed to proactively address the maintenance/repair backlog and move this Refuge forward to its full ecological potential and ensure biological integrity.

The CCP proposes activities and projects to be implemented over the next 15 years. Many of these projects are included in the Refuge Operational Needs System (RONS-new staff), or Service Asset Maintenance and Management System (SAMMS-deferred maintenance projects), which are used to request funding from Congress. Currently, a very large backlog of maintenance needs exists for the Refuge. In 2011, the deferred maintenance backlog for the Refuge was approximately \$48 million, with more projects needing to be added annually. An attempt to reduce this backlog needs to be addressed and is included here in the analysis of staffing and funding needs. Prioritized staffing needs identified in the RONS will be necessary to implement the CCP to meet Refuge goals, objectives, and legal mandates.

Annual revenue-sharing payments, associated with the Refuge in Harney County, may continue. Total payments made in 2011 were \$75,842.00 to Harney County.

Inventory and monitoring activities will be conducted on new and existing projects and activities to document changes across time, habitat conditions, and responses to management practices. The adaptive management process will be employed to address new information that may show the need for management adjustments, confirm existing strategies, or identify additional information needs. Based on the best information available at the time, the Refuge with feedback from partners and interested parties will make decisions for future management actions.

As with the sharing/learning aspects of adaptive management, the Refuge recognizes the importance for transparency of decision making. The Refuge is committed to bringing together interested parties to assist with evaluation of available information and consultation about management options and their implications prior to course-changing decisions being made. This process does not diminish the Refuge's legal authority to make decisions but, rather, serves to enhance the decision-making process by enabling the Refuge to approach issues from multiple perspectives, thereby finding creative solutions to complex challenges.

## C.2 Costs to Implement the CCP

The following sections detail both one-time and recurring costs for needed projects, by alternative. One-time costs reflect the initial costs associated with a project, whether it is purchase of equipment, contracting services, construction, a research project, etc. Recurring costs reflect the future operational and maintenance costs associated with the project. The following tables primarily document projects with a physically visible, trackable, “on-the-ground” component, such as structures, habitat restoration, research, and monitoring and surveys. The scope and costs for “administrative” activities such as memoranda of understanding (MOUs), reporting, and establishment of partnerships are difficult to estimate in advance and thus are not accounted for in the tables below.

### C.2.1 One-time Costs

One-time costs are project costs that have a start-up cost associated with them, such as purchasing a new vehicle for wildlife and habitat monitoring, or designing and installing an interpretive sign. Some are full project costs for projects that can be completed in 3 years or less. One-time costs can include the cost of temporary or term salary associated with a short-term project. Salary for existing and new positions, and operational costs, are reflected in operational (or recurring) costs.

Funds for one-time costs will be sought through increases in Refuge base funding, special project funds, and grants. Projects listed in Table C-2 show one-time costs, such as those associated with building and facility needs including offices, public use facilities, road improvements, and new signs. One-time costs are also associated with projects such as habitat restoration, invasive plant and animal control, and research. New research projects, because of their short-term nature, are considered one-time projects and include costs of contracting services or hiring temporary staff for the short-term project. Some project costs are taken from RONS or SAMMS proposals; others are not yet in any project database and their costs have been estimated, particularly if the scope of the project is unknown at this time due to lack of baseline data.

### C.2.2 Annual Operational (Recurring) Costs

Operational costs reflect Refuge spending of base funds allocated each year. These are also known as recurring costs and are usually associated with day-to-day operations and projects that last longer than 3 years. Operational costs use base funding in Service fund code 1260.

Table C-1 highlights the current and proposed staff needed to accomplish the activities forecast in the CCP.

Table C-2 highlights projected one-time and recurring costs for new or expanded visitor service opportunities and facilities, aquatic and terrestrial habitat restoration, conservation activities, and inventory and monitoring needs. This table includes such things as implementation and operational expenditures such as supplies, materials, utilities, and maintenance costs.

**Maintenance Costs:** The maintenance need over the next 15 years is defined as funds needed to repair or replace buildings, equipment, and facilities. Maintenance includes preventative maintenance; cyclic maintenance; repairs; replacement of parts, components, or items of equipment; adjustments, lubrication, and cleaning (non-janitorial) of equipment; painting; resurfacing;

rehabilitation; special safety inspections; and other actions that ensure continuing service and prevent breakdown. Maintenance costs include the maintenance “backlog”—maintenance needs that have come due but are as yet unfunded, as well as the increased maintenance need associated with new facilities, infrastructure needing updating or rehabilitation, moving to a carbon negative status, and employing facility greening measures.

The facilities associated with the Refuge that require maintenance include trails, interpretive panels, regulatory signs, roads, water delivery system, and structures. Major equipment includes airboats, vehicles, heavy equipment, firefighting equipment, all-terrain vehicles (ATVs), and utility terrain vehicle UTVs.

**Staffing:** Table C-1 illustrates the differing staffing costs by alternative. The Alternative 1 column shows the current estimated expenditure on the Refuge, in FY 2011 dollars. The Alternative 2 (Preferred Alternative) and Alternative 3 columns reflect costs associated with increased staffing needs.

**Table C-1. Current and Proposed Staffing per Alternative**

Current Staff Positions	Series and Grade <sup>1</sup>	Annual Salary Cost	Alt 1	Alt 2	Alt 3
Wildlife Refuge Manager	GS-0485-14	138,330	138,330	138,330	138,330
Wildlife Refuge Manager	GS-0485-13	132,270	132,270	132,270	132,270
Wildlife Biologist	GS-0486-12	97,660	97,660	97,660	97,660
Fish Biologist	GS-0482-11	93,000	93,000	93,000	93,000
Archaeologist	GS-0193-11	96,410	96,410	96,410	96,410
Ecologist	GS-0408-11	87,240	87,240	87,240	87,240
Park Ranger	GS-0025-11	93,150	93,150	93,150	93,150
Fire Management Officer	GS-0401-11	94,290	94,290	94,290	94,290
Park Ranger (LEO)	GL-0025-9	88,660	88,660	88,660	88,660
Prescribed Fire Specialist	GS-0455-9	40,000	40,000	40,000	40,000
Administrative Officer	GS-0341-9	71,680	71,680	71,680	71,680
Supervisory Range Technician	GS-0462-8	71,740	71,740	71,740	71,740
Office Assistant	GS-0303-6	49,340	49,340	49,340	49,340
Forestry Technician	GS-0462-5	50,270	50,270	50,270	50,270
Range Technician	GS-0455-5	14,930	14,930	14,930	14,930
Biological Technician (fisheries)	GS-0404-4	27,000	27,000	27,000	27,000
Forestry Aide Fire	GS-0462-3	13,910	13,910	13,910	13,910
Range Technician	GS-0455-3	15,410	15,410	15,410	15,410
Supervisory Engineering Equipment Operator	WS-5716-9	97,480	97,480	97,480	97,480
Engineering Equipment Operator	WG-5716-10	77,860	77,860	77,860	77,860
Engineering Equipment Operator	WG-5716-10	78,640	78,640	78,640	78,640
Engineering Equipment Operator	WG-5716-10	78,680	78,680	78,680	78,680
Maintenance Mechanic	WG-4749-9	70,600	70,600	70,600	70,600
Engineering Equipment Operator	WG-5716-8	61,910	61,910	61,910	61,910
<b>Total Annual Cost for Current Staff</b>		<b>1,740,460</b>	<b>1,740,460</b>	<b>1,740,460</b>	<b>1,740,460</b>

<b>Proposed Staff Positions in the Refuge Operational Needs System (RONS) + Project # and 2008 Ultimate Organizational Chart</b>	<b>Series and Grade</b>	<b>Annual Salary Cost</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>
Geographic Information System Specialist, FY08-5019	GS-0150-11	104,480		104,482	104,480
Natural Resource Specialist, FY08-5005	GS-0401-11	104,480		104,482	104,480
Private Lands Biologist, FY08-5016	GS-0401-11	104,480		104,482	104,480
Refuge Operations Specialist, FY08-5013	GS-0485-9	86,360		86,360	86,360
Park Ranger (Volunteer Coordinator), FY08-5008	GS-0025-9	86,360		86,360	86,360
Park Ranger (Interpretive), FY10-1303	GS-0025-7	70,600		70,600	70,600
Range Technician, FY08-5004	GS-0455-7	70,600		70,600	70,600
Hydrological Technician, FY08-5007	GS-1317-7	70,600		70,600	70,600
Biological Technician (Habitat), FY08-5018	GS-0404-6	63,530		63,530	63,530
Biological Technician (Facilities), FY08-5015	GS-0404-6	63,530		63,530	63,530
Maintenance Mechanic, FY08-5009	WS-4749-10	121,970		121,970	121,970
Engineering Equipment Operator, FY08-5017	WG-5716-8	82,190		82,190	82,190
Engineering Equipment Operator, FY08-5003	WG-5716-8	82,190		82,190	82,190
Maintenance Mechanic, FY08-5006	WG-4749-8	82,190		82,190	82,190
Maintenance Worker, FY08-5011	WG-4749-6	70,490		70,490	70,490
Park Ranger (Law Enforcement), FY10-2173	GL-0025-11	80,370		80,370	80,370
Park Ranger (Law Enforcement), FY10-2174	GL-0025-9	68,640			68,640
<b>Total Annual Cost for Proposed Staff</b>				<b>1,344,420</b>	<b>1,413,060</b>
<b>Grand Totals</b>				<b>3,106,280</b>	<b>3,174,920</b>

GS/GL: General Schedule, Federal Employee, WG/WS: Wage Grade Scale, Federal Employee

Costs are based on FY 2011 Full-Time Equivalent (FTE) utilization plan for the Refuge and the Office of Personnel Management (OPM) General Schedule FY 2011 plus 40 percent benefits. For the proposed positions, the cost is the grade level at step one plus 40 percent for benefits.

Table C-1 illustrates an increase of 16.0 FTE staff positions over the current staffing level for Alternative 2 (Preferred Alternative). At the current staffing level, action items that need immediate attention can be addressed, but the Refuge does not have the capacity to be proactive in addressing items before they reach the critical threshold. To have the Refuge reach its full potential, it needs additional staff to move its operational level from reactive to proactive.

The **Geographic Information System (GIS) Specialist** position is needed to improve and build the capacity of the aquatic health and habitat management programs by coordinating the development of needed resource geospatial databases, including design, data collection, data storage, and resource data implementation. The GIS information will enable the Refuge to effectively track climate change, improve inventory and monitoring data, communicate geospatial information, and enhance decision making. Geospatial information is critical to effectively implementing the actions outlined in this plan. RONS Project No. FY08-5019

The **Natural Resources Specialist** position is needed to develop and implement CCP step-down management plans, compatibility determinations, habitat management plans, environmental

assessments, environmental management system protocols, and other strategic habitat conservation plans. RONS Project No. FY08-5005

The **Private Lands Biologist** position is needed to develop the necessary private landowner relationships to address the variety of natural resources issues impacting Harney County, such as watershed connectivity, aquatic health, fish passage/screening, and migratory bird habitat conservation. RONS Project No. FY08-5016

The **Refuge Operations Specialist** is needed to conduct environmental compliance, safety programs, permitting, infrastructure “greening” activities, sustainable practices, RONS input, SAMMS input, database management, and facility maintenance/repair planning activities. RONS Project No. FY08-5013

**Park Rangers (4)** are needed for the following:

1. The **Park Ranger** will serve as the much-needed volunteer coordinator. He/she will recruit, coordinate, orient, train, and support volunteers for a variety of Refuge programs such as visitor services, maintenance, administration, and fish/wildlife management. This position is critical for the Refuge to continue moving forward with citizen science opportunities for inventory/monitoring, visitor contact/bookstore operations, special events assistance, and visitor services programming. RONS Project No. FY08-5008
2. The **Park Ranger** will assist the visitor services manager in providing high-quality wildlife-dependent recreational programming for the visiting public, schools, special events, and organized groups. The position would also assist with visitor services program assessment, social media development, docent training, and event planning. RONS Project No. FY10-1303
3. The **Park Ranger, Law Enforcement Officer** will assist in protecting wildlife, lands, facilities, employees, and the general public. This position will serve as the liaison for canoe/kayak tours of Malheur Lake. RONS Project No. FY10-2173
4. The **Park Ranger, Law Enforcement Officer** will assist in protecting wildlife, lands, facilities, employees, and the general public. RONS Project No. FY10-2174

The **Range Technician** will assist with livestock-related issues, field and geospatial data collection, plant community monitoring and enhancement, the development of cooperative land management agreements, invasive species control, boundary fence inspection and repair, and coordinating with the haying/grazing program permittees. RONS Project No. FY08-5004

**Biological Technicians (2)** are needed for the following:

1. The **Biological Technician** will be responsible for mowing the hundreds of miles of dike tops and road ways and removing beaver/muskrat debris from water control structures and dams. RONS Project No. FY08-5015
2. The **Biological Technician** will assist with aquatic health and fisheries programs, biological inventory and monitoring programs, and other habitat-management activities. RONS Project No. FY08-5018

The **Hydrological Technician** will collect the necessary water flow data to protect Refuge water rights, enabling the Refuge to accurately meet legal requirements critical to protecting water rights. RONS Project No. FY08-5007

**Engineering Equipment Operators (2)** will be responsible for:

1. The **Engineering Equipment Operator** will meet the needs of an increased maintenance program by assisting with the maintenance/repair of the water delivery system, roads, dikes, and habitat enhancement projects. RONS Project No. FY08-5017
2. The **Engineering Equipment Operator** will meet the needs of an increased maintenance program by assisting with the maintenance/repair of the water delivery system, roads, dikes, and habitat enhancement projects. RONS Project No. FY08-5003

**Maintenance Mechanics (2)** will be responsible for:

1. The **Maintenance Mechanic, Work Leader** will supervise facility maintenance to ensure the necessary level of coordination, administration, and workforce planning is in place for an efficient and effective maintenance program. RONS Project No. FY08-5009
2. The **Maintenance Mechanic** will maintain/repair facilities' infrastructure. RONS Project No. FY08-5004

The **Maintenance Worker** will assist with the maintenance of facilities and infrastructure, health and safety program, groundskeeping, and trail and sign maintenance. RONS Project No. FY08-5011

### **C.2.3 Partnership Opportunities**

Partnerships are critically important to the implementation of this plan, which is reflected in Chapter 2's goals, objectives, and strategies. The Refuge's ecological significance, reputation for being a leader in field research, and location facilitate many opportunities for partnerships. Current and past partners include federal and state agencies, tribes, non-governmental organizations, volunteers, and individuals.

Coordinated partnership efforts will focus on habitat restoration, land protection, environmental education, fish and wildlife monitoring, outreach, and quality wildlife-dependent recreation. Refuge staff will work to strengthen existing partnerships and will actively look for new partnerships to assist in achieving the goals, objectives, and strategies in this CCP/WSP/Environmental Impact Statement (EIS).

This is a general list of partners we have established working relationships with through past efforts or in the formulation of this collaborative CCP. These partners support this plan's vision and have committed to working with the Refuge to implement the plan's prescribed actions and activities to ensure programmatic integrity for biological, visitor services, sustainable practices, and cultural resource programs. For a complete list of CCP collaborators and partners, see Appendix I.

- Burns Paiute Tribe
- Audubon Society of Portland and other Audubon chapters
- Malheur Wildlife Associates

- Bureau of Land Management
- Ducks Unlimited
- Eastern Oregon Agriculture Research Station
- Harney County Chamber of Commerce
- Harney County Historical Society
- Harney County Soil and Water Conservation District
- Harney County Watershed Council
- High Desert Partnership
- Intermountain Joint Venture
- The Nature Conservancy
- Natural Resources Conservation Service
- Oregon Defenders of Wildlife
- Oregon Department of Fish and Wildlife
- Oregon Joint Venture
- Oregon Natural Desert Association
- Private landowners
- U.S. Geological Survey
- U.S. Forest Service
- U.S. Army Corps of Engineers
- Universities (University of Wisconsin-River Falls, University of Minnesota, Oregon State University, and Iowa State University)
- Wetlands Conservancy
- Private citizens

**Table C-2. Budget Summary for Implementation and Inventory and Monitoring (I&M) Activities (Wildlife and Habitat, Sustainable Practices Programs)**

Objective	Program	Strategy	Project/Methodology	Recurrence Interval	Recurring Cost	One-time Cost	Priority <sup>1</sup>	Alt 1	Alt 2	Alt 3
<b>Goal 1. Lacustrine</b>										
1a	Aquatic: I&M	Conduct baseline inventories of aquatic vertebrates/invertebrates to guide future management actions	Fish assemblage and Tui Chub production (includes riverine) (each 3 years)	3	3,000		VH	500	x	x
			Macroinvertebrate assemblage			16,000	VH	200	x	x
			Native mussel distribution	1	500		M	300	x	x
			Immigration, emigration, mortality, spawning, and juvenile rearing (see RONS)	3		500,000	VH	500	x	x
	Aquatic: Research	Surveys, inventories, and assessments pre- and post-carp control aquatic habitats	Water quality monitoring (turbidity, etc.)	1	3,000	1,000	VH	1,500	x	x
			Carp population dynamics (age and growth)			125,000	VH	10,000	x	x
		Research carp population dynamics and movements	Carp mark and recapture			50,000	VH		x	x
			Carp telemetry	Initial 5	48,000	54,000	VH	24,000	78,000	78,000
	Aquatic: Management Action	Conduct research to investigate and implement aggressive control strategies	Statistical analysis and model construction			206,000	VH	-	x	x
			Rotenone			200,000	M			
			Attractants, repellents			47,000	H	12,000	35,000	35,000
			Barriers, traps, and screens			300,000	VH	-	x	x
			Harvesting			900,000	H	-	x	x
	Aquatic: Habit	Enhance emergent	Wind breaks and carp	1	21,400	5,000	VH	-	x	x

Objective	Program	Strategy	Project/Methodology	Recurrence interval	Recurring Cost	One-time Cost	Priority <sup>1</sup>	Alt 1	Alt 2	Alt 3
	Management	vegetation within the lake system	exclosures to promote colonization/expansion of emergent/submergent vegetation							
		Understand relationships among water chemistry, lake levels, and habitat/migratory bird responses in lakes	Development of lacustrine section of State-and-Transition Model	1	3,200		VH	-	x	x
		Develop a model to predict habitat response to carp control	Establishment of an Aquatic Health Assessment and Implementation Plan for the Malheur Wetlands; collaboration with Oregon State University (OSU), Harney County Soil and Water Conservation District (HCSWCD), Ducks Unlimited (DU)			422,000	VH	-	x	x
	Habitat: I&M	Lacustrine emergent trend (cost covered in telemetry)		1	-	-	H	-	x	x
		Lacustrine submergent trend		1	800		H	-	x	x
	Habitat: Management	Use Integrated Pest Management (IPM) strategies including chemical, mechanical, horticultural, and biological control agents to control/eradicate invasive plants (see Appendix G)		1	25,000		M	-	x	x
	Wildlife: I&M	Conduct baseline/ongoing inventories of wildlife to guide future management actions	Waterfowl production survey (also includes 4a, 4b, 4c, and 4d)	1	900	3,000	H	x	x	x
			Colonial waterbird production survey	1	300	600	H	x	x	x
			Muskrat lodge count	1	1,000		L		x	x

Objective	Program	Strategy	Project/Methodology	Recurrence Interval	Recurring Cost	One-time Cost	Priority <sup>1</sup>	Alt 1	Alt 2	Alt 3	
<b>Goal 2. Riverine</b>											
2a	Aquatic: I&M	Inventory fish, mussels, and aquatic invertebrates on each reach of river and creeks.		5	30,000		VH		x	x	
		Water temperature/quality monitoring		2	800	1,000	VH				
	Aquatic: Management	Screens, barriers, fish wheel, weirs, passage, and traps		each	10,000	800,000	VH	-	x	x	
		Initiate small in-stream rehabilitation pilot projects in tributaries or reaches of the Blitzen River in response to assessment results		each		500,000	L in 2, H in 3		x	x	
		Dikes, water control structures, and roads		1	500,000	500,000	VH	x	x	x	
	Habitat: I&M	Wetland/riverine rehabilitation plan and associated studies and National Environmental Policy Act (NEPA)	Assorted studies, inventories, pilot projects, and studies identified by Utah State Report				3,000,000	L in 2, H in 3		x	x
			Floodplain topography (Lidar, other methods)				1,000,000	L in 2, H in 3	-	x	x
			Cultural resources inventory and mitigation				2,000,000	L in 2, H in 3		x	x
	Wildlife: I&M	Furbearer survey		5	500	2,000	L		x	x	
	Administration	Adjudicate riverine water rights, continued gauging of flows (water supply, potential climate change, channel and floodplain change)		1		5,000	VH	x	x	x	
<b>Goal 3. Woody Riparian</b>											
3a	Habitat: I&M	Woody riparian trend (validation monitoring of objective)		5	500		M		x	x	
		Active planting or seeding appropriate native species	Propagating and planting shrub species	each	2,000	30,000	M		x	x	

Objective	Program	Strategy	Project/Methodology	Recurrence interval	Recurring Cost	One-time Cost	Priority <sup>1</sup>	Alt 1	Alt 2	Alt 3
	Habitat: Management	Exclude livestock from riparian habitats	Construct/ maintain 4-strand fence	1	5,000	40,000	VH	x	x	x
		Promote riparian shrub health	Use of disturbance (fire) (~5% of habitat total)			22,000	H		x	x
		Permanently exclude grazing from streamside corridors	Construct fence	1	1,500	60,000	VH	x	x	x
		Manipulate soil moisture in riparian areas outside of the naturally occurring floodplain	Maintain irrigation infrastructure (folded into costs in 4a)				H			
		Use IPM strategies including chemical, mechanical, horticultural, and biological control agents to control/eradicate invasive plants (see Appendix G) (200 acre/year @ \$80.00/acre)		1	16,000		H	x	x	x
	Wildlife: I&M	Woodland bird survey (equipment costs covered in other survey costs)		1	400		M		x	x
<b>Goal 4. Wet Meadow</b>										
4a	Habitat: I&M	Wet meadow trend (validation monitoring of objective)		1	36,000		H		x	x
	Habitat: Research	Plant community-specific research and associated wildlife response		1	36,000		H		x	x
	Habitat: Management	Water delivery and management through maintenance or enhancement of infrastructure (e.g., delivery ditches, water control structures)		1	350,000		H	x	x	x
		Modify dikes, ditches, and other infrastructure as needed to reclaim acres lost to cattail encroachment (e.g., Northwest big sagebrush field).			250,000	M		x	x	
		Use IPM strategies including chemical, mechanical, horticultural, and biological control agents to control/eradicate		1	350,000		H	x	x	x

Objective	Program	Strategy	Project/Methodology	Recurrence interval	Recurring Cost	One-time Cost	Priority <sup>1</sup>	Alt 1	Alt 2	Alt 3
		invasive plants								
		Prescribed fire, discing, herbicides, and mowing to reduce extensive emergent cover	1	10,000		H		x	x	
	Wildlife: I&M	Migratory bird survey (includes 4b–j as well)	1	10,000		H	x	x	x	
		Passerine bird survey (includes 4b, 4d–i as well)	1	10,000		H	x	x	x	
		Waterfowl/waterbird production survey (includes 4b–c as well)	1	10,000		H	x	x	x	
<b>Goal 4. Emergent Marsh</b>										
4b	Habitat: I&M	Emergent marsh trend		1	2,000		H		x	x
	Habitat: Research	Experiment with grazing as a tool in monotypic stands of emergent cover to set back succession			Covered in 4a research		H		x	x
	Habitat: Management	Prescribed fire to remove extensive emergent cover	2	192,000		M	x	x	x	
		Discing to remove extensive emergent cover	1	400		M		x	x	
		Mowing to remove extensive emergent cover	1	400		M		x	x	
		Herbicide applications to control emergent plants	5	45,000		M	x	x	x	
		Flood up and drawdowns (water level management)		Covered in 4a Management		H				
Use IPM strategies including chemical, mechanical, horticultural, and biological control agents to control/eradicate invasive plants (see Appendix G)	4	20,000		M	x	x	x			
<b>Goal 4. Palustrine Open Water/Emergent</b>										
4c	Habitat: I&M	Palustrine Open Water/Emergent Trend		1	400		H		x	x
	Habitat: Management	Water delivery and management through maintenance or enhancement of infrastructure (e.g., delivery ditches, water control structures). Needs associated with spotted frog refugia			Covered in 4a Management		H	x	x	x

Objective	Program	Strategy	Project/Methodology	Recurrence interval	Recurring Cost	One-time Cost	Priority <sup>1</sup>	Alt 1	Alt 2	Alt 3
		will be addressed in identified areas (e.g., East Canal, Five Mile Spring within West Canal, etc.)								
		Prescribed fire to remove extensive emergent cover		5	3,600		M	x	x	x
		Discing to remove extensive emergent cover		1	400		M	x	x	x
		Mowing to remove extensive emergent cover		1	400		M	x	x	x
		Flood up and drawdowns (water level management)			Covered in 4a Management		H			
		Use IPM strategies including chemical, mechanical, horticultural, and biological control agents to control/eradicate invasive plants (see Appendix G)			Covered in 4a Management		M			
<b>Goal 4. Dry Meadow</b>										
4d	Habitat: I&M	Dry meadow trend		1	400		M	x	x	x
	Habitat: Management	Use agricultural practices (e.g., haying, grazing, etc.) to maintain/enhance fields			Covered in 4a Management		M			
		Use burning regimes where feasible		3	12,000		M	x	x	x
		Use IPM strategies including chemical, mechanical, horticultural, and biological control agents to control/eradicate invasive plants (see Appendix G)			Covered in 4a Management		M			
	Wildlife: I&M	Grassland breeding bird survey		1	600		H		x	x
<b>Goal 4. Salt Desert Scrub</b>										
4e	Habitat: I&M	Salt desert scrub trend		1	400		L		x	x
	Habitat: Management	Protect existing sensitive sites with microbiotic crusts		1	10,000		M	x	x	x
		Use of prescribed fire depending on site-specific factors		5	20,000		L		x	x

Objective	Program	Strategy	Project/Methodology	Recurrence Interval	Recurring Cost	One-time Cost	Priority <sup>1</sup>	Alt 1	Alt 2	Alt 3
		Use IPM strategies including chemical, mechanical, horticultural, and biological control agents to control/eradicate invasive plants (see Appendix G)			Covered in 4a Management		L			
	Wildlife: I&M	Passerine breeding bird survey (includes 4f-h)		1	700		M		x	x
<b>Goal 4. Sagebrush Lowlands</b>										
4f	Habitat: I&M	Sagebrush lowland trend		1	400		M		x	x
	Habitat: Management	Prescribed fire				15,000	M		x	x
		Use IPM strategies including chemical, mechanical, horticultural, and biological control agents to control/eradicate invasive plants (see Appendix G)			Covered in 4a Management		M			
<b>Goal 4. Sagebrush Steppe</b>										
4g	Habitat: I&M	Sagebrush steppe trend		1	400		M		x	x
	Habitat: Management	Add diversity to crested wheatgrass monocultures using best science practices (i.e., Krumbo Unit research from Eastern Oregon Agricultural Research Station)		?	?	?	M	x	x	x
		Use IPM strategies including chemical, mechanical, horticultural, and biological control agents to control/eradicate invasive plants (see Appendix G)			Covered in 4a Management		L			
<b>Goal 4. Dune</b>										
4h	Habitat: I&M	Dune trend		1	400		L		x	x
	Habitat: Management	Protect dune areas from disturbance			Covered in 4e Management		M			
		Use IPM strategies (chemical, mechanical, horticultural, and /or biological control) for invasive plants (Appendix G)			Covered in 4a Management		L			

Objective	Program	Strategy	Project/Methodology	Recurrence Interval	Recurring Cost	One-time Cost	Priority <sup>1</sup>	Alt 1	Alt 2	Alt 3
<b>Goal 4. Playa</b>										
4i	Habitat: I&M	Playa trend		1	200		L		x	x
	Habitat: Management	Use IPM strategies including chemical, mechanical, horticultural, and biological control agents to control/eradicate invasive plants (see Appendix G)			Covered in 4a Management		L			
	Wildlife: I&M	Shorebird breeding survey		1	400		H	x	x	x
<b>Goal 4. Crop Land</b>										
4j	Habitat: I&M	Crop land trend		1	200		L		x	x
	Habitat: Management	Use IPM strategies including chemical, mechanical, horticultural, and biological control agents to control/eradicate invasive plants (see Appendix G)			Covered in 4a Management		L			
<b>Goal 5. Cold and Hot Springs</b>										
5a	Aquatic: I&M	Spotted frog population			Covered in 1a		VH	x	x	x
	Aquatic: Research	Carp control			Covered in Goals 1 and 2		VH		x	x
	Aquatic: Management	Aquatic assemblages		5	30,000		H		x	x
	Habitat: I&M	Cold and hot spring trends		1	400		M		x	x
	Habitat: Management	Use IPM strategies including chemical, mechanical, horticultural, and biological control agents to control/eradicate invasive species (see Appendix G)		1	1,000		VH	x	x	x
	Administration	Adjudicate ground water rights		1		5,000	VH		x	x
<b>Goal 5. Cliff, Rimrock, and Lava Flows</b>										
	Habitat:	Continued use of existing Refuge gravel/rock pits. Upon					L	x	x	x

Objective	Program	Strategy	Project/Methodology	Recurrence Interval	Recurring Cost	One-time Cost	Priority <sup>1</sup>	Alt 1	Alt 2	Alt 3
5b	Management	closure of gravel rock pits remediation will occur								
	Administration	Continue to restrict access to rimrock areas for the benefit of wildlife		1	100		L	x	x	x
	Wildlife: I&M	Raptor wintering and nesting surveys		1	400		M	x	x	x
<b>Goal 13. Assessments of Hydrological Features</b>										
13 b		Water allocation (water budget, habitat use, and availability surveys)		1	5,000	100,000	VH		x	x
<b>Goal 13. Scientific Assessments</b>										
13 e		Assess avian predation on carp				200,000	VH		x	x
		Assess carp control study areas pre- and post-treatment		each study		30,000	VH	x	x	x
<b>Goal 14. Sustainability</b>										
14 a		Establish Refuge program benchmarks for sustainability-based practices				25,000	H		x	x
		Provide staff training for the implementation of sustainability-based principles and practices		1	1,000		H		x	x
		Complete energy audits, carbon footprint audits, and biomass-based carbon sequestration assessments		5	25,000	250,000	H		x	x
		Use GIS technologies for benchmarking and tracking Environmental Management Plan parameters and climate change across program areas		1	5,000	50,000	H		x	x
		Integrate sustainability-based initiatives into all partnerships and other external stakeholder activities		1	1,000		H		x	x
		Integrate training for social justice/equity, community development, and cultural resource and partnership performance standards with all sustainability-based initiatives		1	1,000		H		x	x

Objective	Program	Strategy	Project/Methodology	Recurrence interval	Recurring Cost	One-time Cost	Priority <sup>1</sup>	Alt 1	Alt 2	Alt 3
		Refit and right-size facilities and infrastructure for energy efficiency and production		1	35,000	2,000,000	H		x	x

**Priority Rankings:**

**Very High (VH):** these actions are very critical and must be completed in the first 5 years of the plan in order to move other elements of the plan forward. Funding will be directed to complete VH priority actions first and foremost.

**High (H):** these actions are critical and must be completed in the first 5 years of the plan in order to move other elements of the plan forward. Funding will be directed to complete H priority actions as funding levels allow.

**Medium (M):** these actions will be accomplished as time and funds allow.

**Low (L):** these actions will be accomplished as time and funds allow.

**Alternatives Column**

x = project is included in the alternative.

- = project is not included in the alternative (thus, cost = 0).

**Note:** An empty space in the recurring cost column means that there would be no recurring costs. A number in this column means that the cost would recur at the amount specified at the interval identified. An empty space in the one-time cost column means that there would be no one-time costs. A number in this column means that a one-time cost at the amount specified would need to occur at some point over the lifetime of the CCP (15 years).

If there is numeric information in the column for Alt 1 and only an x in the columns for Alt 2 and 3, the number in the column for Alt 1 refers to the one-time cost that has already been spent. The one-time cost would be 0 for Alt 2 and 3, but the recurring costs and recurrence interval would be the same across all alternatives. If there is numeric information in each column, this is the one-time cost that would vary across alternatives (again, some money has already been spent). The recurring costs and intervals would be the same across all alternatives.

**Table C-3 Budget Summary for Implementation and Inventory and Monitoring Activities (Visitor Services and Cultural Resources Programs)**

Proposed Activity or Project	Cost/Unit	# of Units Alt 1	# of Units Alt 2	# of Units Alt 3	One-time Expense Alt 1 (\$)	One-time Expense Alt 2 (\$)	One-time Expense Alt 3 (\$)	Recurring Expense Alt 1 (\$/year)	Recurring Expense Alt 2 (\$/year)	Recurring Expense Alt 3 (\$/year)
<b>Goal 6. Welcome and Orient Visitors</b>										
<b>Objective 6a. Provide welcome and orientation to visitors</b>										
Update existing panels and develop new panels at new locations	\$15,000	4	8	7	\$60,000	\$120,000	\$105,000	\$500	\$500	\$500
Maintain existing and develop new vault toilets	\$25,000	0	1	0	\$0	\$25,000	\$0	\$3,500	\$5,000	\$3,500
Maintain existing and develop accessible picnic tables, trash cans, and shelters	ADA – \$4,500, non-ADA – \$1,500	0	1 ADA, 2 non	1 ADA, 1 non	\$0	\$7,500	\$6,000	\$5,000	\$5,000	\$5,000
Build enlarged visitor contact station and gift shop	\$250,000	--	1	1	\$0	\$250,000	\$250,000	\$0	\$10,000	\$10,000
Rehabilitate museum facility (temperature and humidity control, accessibility) (see interpretation for interpretive panels)	\$25,000-\$75,000	--	1	--	\$0	\$50,000	\$50,000	\$0	\$0	\$0
Establish seasonal contact station at P Ranch	\$10,000-\$100,000	0	1	0	\$0	\$45,000	\$45,000	\$0	\$3,000	\$3,000
Develop modern media welcome and outreach materials, maintain website, etc.	\$10,000				\$0	\$0	\$0	\$1,000	\$1,000	\$1,000
<b>Objective 6b. Address transportation issues</b>										
Raise and surface Center Patrol Road (CPR)	\$1,200,000	1	1	0.5	0	\$1,500,000	\$600,000		\$100,000	\$100,000
Develop additional vehicle pull-offs	\$10,000-\$25,000	0	3	0	\$0	\$52,500	\$0	\$0	\$0	\$0
Improve East Canal for vehicle access	\$30,000	0	3	0	\$0	\$90,000	\$0	\$0	\$0	\$0

Proposed Activity or Project	Cost/Unit	# of Units Alt 1	# of Units Alt 2	# of Units Alt 3	One-time Expense Alt 1 (\$)	One-time Expense Alt 2 (\$)	One-time Expense Alt 3 (\$)	Recurring Expense Alt 1 (\$/year)	Recurring Expense Alt 2 (\$/year)	Recurring Expense Alt 3 (\$/year)
Improve public vehicle access at Boat Landing Road, including vehicle pull-offs	\$30,000	0	1.5	1.5	\$0	\$45,000	\$45,000	\$0	\$0	\$0
Maintain Krumbo Lane									\$10,000	\$10,000
Develop parking areas to assist with public use programs	\$50,000		3	3	\$0	\$150,000	\$150,000	\$0	\$0	\$0
Overall road maintenance (public roads, vehicle pull-offs, parking areas)								\$0	\$20,000	\$20,000
<b>Goal 7. Wildlife Observation, Photography, Interpretations</b>										
<b>Objective 7a. Provide wildlife observation and photography opportunities</b>										
Docent tours on lake	\$100,000	\$0	1	1	\$0	\$100,000	\$100,000	\$0	\$15,000	\$15,000
Other land-based docent-led tours monthly plus special events (advertise, train, provide)	\$50,000	0	1	1	\$0	\$50,000	\$50,000	\$0	\$5,000	\$5,000
Provide new non-ADA trails (also see fishing compatibility determination [CD] for fishing trails - not included here), and develop new trail signage (spur trail)	\$6,000	9	12	10	0	\$72,000	\$60,000	\$0	\$2,000	\$1,000
Provide new ADA trails at Sodhouse, Benson Pond, P Ranch, (also see fishing CD - not included here)	\$75,000	0	3	2	\$0	\$225,000	\$150,000	\$0	\$2,000	\$1,000
Construct viewing overlook at Krumbo Reservoir	\$40,000	0	1	0	\$0	\$40,000	\$0	\$0	\$1,000	\$0
Construct elevated viewing platforms	\$55,000	0	4	2	\$0	\$220,000	\$110,000	\$0	\$4,000	\$4,000
Provide photography blinds	\$10,000	0	3	1	\$0	\$30,000	\$10,000	\$0	\$1,000	\$1,000
Administration and management					\$0	\$0	\$0	\$20,000	\$20,000	\$20,000
<b>Objective 7b. Provide birding opportunities</b>										
Maintenance (habitats)		0	6	4				\$1,000	\$1,000	\$1,000
<b>Objective 7c. Provide interpretive opportunities</b>										

Proposed Activity or Project	Cost/Unit	# of Units Alt 1	# of Units Alt 2	# of Units Alt 3	One-time Expense Alt 1 (\$)	One-time Expense Alt 2 (\$)	One-time Expense Alt 3 (\$)	Recurring Expense Alt 1 (\$/year)	Recurring Expense Alt 2 (\$/year)	Recurring Expense Alt 3 (\$/year)
Develop new interpretive panels	\$10,000	0	3--6	3--6	\$0	\$45,000	\$45,000	\$1,000	\$1,000	\$1,000
Administration and management (local events, public presentations, media)					\$0	\$0	\$0	\$35,000	\$35,000	\$35,000
<b>Objective 7d. Provide environmental education programs</b>										
Build outdoor shelter at Refuge headquarters (HQ) (sun and wind protection)	\$80,000		1	1	\$0	\$80,000	\$80,000	\$1,000	\$1,000	\$1,000
Provide outdoor learning area at Refuge HQ	\$25,000		1	1	\$0	\$25,000	\$25,000	\$1,000	\$1,000	\$1,000
Administration and management (curriculum development, initiatives, special events, coordination)	\$5,000				\$0	\$0	\$0	\$7,000	\$14,000	\$14,000
Equipment and materials	\$10,000				\$0	\$0	\$0	\$1,500	\$2,000	\$2,000
<b>Goal 8. Provide Hunting and Fishing Opportunities</b>										
<b>Objective 8a. Provide upland game hunting opportunities</b>										
Administration and management (programmatic, law enforcement, information)					\$0	\$0	\$0	\$2,000	\$2,000	\$2,000
Maintenance (covered under waterfowl hunting CD)					\$0	\$0	\$0	\$0	\$0	\$0
<b>Objective 8b. Provide waterfowl hunting opportunities</b>										
Improve Saddle Butte access road (covers upland game use too)	\$130,000	0	1	1	\$0	\$130,000	\$130,000	\$0	\$0	\$0
Open new ADA boat launch and parking area on Malheur Lake (end of Boat Landing Road)	\$150,000	0	1	1	\$0	\$150,000	\$150,000	\$0	\$0	\$0
Develop new publications and signage for hunt program	\$2,000	0	1	1	\$0	\$2,000	\$2,000	\$1,000	\$1,000	\$1,000

Proposed Activity or Project	Cost/Unit	# of Units Alt 1	# of Units Alt 2	# of Units Alt 3	One-time Expense Alt 1 (\$)	One-time Expense Alt 2 (\$)	One-time Expense Alt 3 (\$)	Recurring Expense Alt 1 (\$/year)	Recurring Expense Alt 2 (\$/year)	Recurring Expense Alt 3 (\$/year)
Staff administration and management (programmatic, law enforcement, information)					\$0	\$0	\$0	\$5,000	\$5,000	\$5,000
Facility maintenance					\$0	\$0	\$0	\$2,000	\$2,000	\$2,000
<b>Objective 8c. Provide stream fishing opportunities</b>										
Develop fishing brochure	\$5,000				\$1,500	\$1,500	\$1,500	\$2,000	\$2,000	\$2,000
South Fishing Loop: Build 2-3 new pedestrian crossings and complete development of loop trail	\$275,000	0	1	0	\$0	\$275,000	\$0	\$0	\$0	\$0
Lower Blitzen: Open new seasonal bank fishing (trail with 2 bridges and parking) (portion will be ADA-accessible)	\$275,000	0	1	1	\$0	\$275,000	\$275,000	\$0	\$0	\$0
Develop outdoor fishing information kiosks	\$10,000	0	6	6	\$0	\$60,000	\$60,000	\$0	\$0	\$0
Replace Krumbo floating platform/other maintenance of Krumbo facilities	\$35,000	1	1	1	0	\$35,000	\$35,000	\$2,000	\$2,000	\$2,000
Fishing program administration and management (programmatic, law enforcement, information)								\$6,000	\$6,000	\$6,000
<b>Goal 11. Identify and Protect Prehistoric and Historic Resources that are Eligible or Listed on the National Register of Historic Places</b>										
<b>Objective 11a. Increase management efforts for eligible historic sites</b>										
Stabilization and restoration of historic structures at Sodhouse Ranch		8	8	8	\$300,000	\$300,000	\$300,000	\$5,000	\$5,000	\$5,000
Stabilization and restoration of the historic structures at P Ranch		3	3	3	\$0	\$150,000	\$150,000	\$2,000	\$2,000	\$2,000
Stabilization and restoration of the sod structure at Barnes Springs		1	1	1	\$0	\$35,000	\$35,000	\$500	\$500	\$500

Proposed Activity or Project	Cost/Unit	# of Units Alt 1	# of Units Alt 2	# of Units Alt 3	One-time Expense Alt 1 (\$)	One-time Expense Alt 2 (\$)	One-time Expense Alt 3 (\$)	Recurring Expense Alt 1 (\$/year)	Recurring Expense Alt 2 (\$/year)	Recurring Expense Alt 3 (\$/year)
Stabilization and restoration of the historic structures at Double-O Ranch		3	3	3	\$0	\$100,000	\$100,000	\$2,000	\$2,000	\$2,000
Maintain Civilian Conservation Corps buildings at Refuge HQ and Buena Vista Station and Benson Pond		8	8	8	\$0	\$60,000	\$60,000	\$5,000	\$5,000	\$5,000
<b>Goal 12. Manage the Refuge's Paleontological Resources for their Educational and Scientific Values</b>										
<b>Objective 12b. Provide interpretation of paleontological resources</b>										
Develop interpretive and educational materials for paleontological resources	\$15,000	2	2	2	\$30,000	\$30,000	\$30,000	\$0	\$0	\$0
					\$675,000	\$675,000	\$675,000	\$14,500	\$14,500	\$14,500