

## Chapter 2. Alternatives, Goals, Objectives, and Strategies

### 2.1 Considerations in Alternative Design

In drafting the alternatives for this long term conservation plan, the Service reviewed and considered a variety of resource, social, economic, and organizational aspects important for managing the Refuge. These background conditions are described more fully in Chapters 3, 4, 5, and 6. As is appropriate for a National Wildlife Refuge, resource considerations were fundamental in designing alternatives. House Report 105-106 accompanying the National Wildlife Refuge System Improvement Act of 1997 states "...the fundamental mission of our System is wildlife conservation: wildlife and wildlife conservation must come first."

The team reviewed scientific reports and studies to better understand ecosystem trends and the latest scientific recommendations for species and habitats.

The Service met with staff from local, State, and Federal agencies and elected officials to ascertain priorities and problems as perceived by others. Refuge staff met with Refuge users, nonprofit groups, and community organizations to ensure that their comments and ideas were considered during CCP development. Details of public involvement can be found in Appendix A.

### 2.2 Alternatives Considered but Not Developed

Federal agencies have been at work since the fall of 2005 to revise a 2004 Federal Columbia River Power System biological opinion that U.S. District Court Judge James Redden declared invalid. Part of the new proposed action under that effort may involve "summer spill" to promote fish passage. In 2005, a court injunction directed the Corps to spill water at several Columbia and Snake River dams "in excess of that required for station service" June 20-August 31 at several Snake River dams and "all flow above 50,000 cubic feet per second" from July 1– August 31 at the McNary Dam. In practice, this meant that the reservoir level was dropped to near the minimum operating level of 335 msl (mean sea level) at McNary Dam, dramatically lowering flooded wetland acres on McNary Refuge.

The final biological opinion may contain a provision to make summer spill an annual event. This could dramatically change summer habitats and recreational opportunities on McNary Refuge. However, an alternative taking summer spill into account was not developed, because it is unknown at this time if such a strategy will become part of normal dam and fish management along the Columbia River.

The planning team considered the appropriateness of providing opportunities for various nonwildlife dependent recreational activities suggested during scoping including field dog trials, geocaching, hang gliding, paragliding, rock climbing, motorized and nonmotorized off-road use, waterskiing, camping, beach use, and personal watercraft. Based on policy guidance in the Service's Appropriate Refuge Uses Policy 603 FW 1 (2006), these uses were determined not appropriate, and are documented on FWS Form 3-2319 in Appendix K.

## 2.3 Alternative Descriptions

A summary table is presented on the following pages. This table summarizes the key differences between the alternatives. Following the summary table, detailed descriptions of the goals, objectives, and strategies for each alternative are presented. Maps 3, 4, 5, and 6, which follow the alternatives descriptions, display the four alternatives at McNary Refuge. Maps 7, 8, 9, and 10 display the four alternatives at Umatilla Refuge.

### A. Features Common to all Alternatives

All alternatives contain some common features. These are presented below to reduce the length and redundancy of the individual alternative descriptions.

#### **Implementation Subject to Funding Availability:**

Under each alternative, actions will be implemented over a period of 15 years as funding becomes available. Project priorities are in Appendix D.

**Actions will be implemented over a period of 15 years as funding becomes available. Implementation priorities are designated in Appendix D.**

**Refuge Fire Management:** Fire Management Plans, and accompanying NEPA documents and Endangered Species Act consultations, were finalized for both Refuges in 2001. Fire management actions will continue to be guided by the direction set forth in the plans.

**Tribal Coordination:** Regular communication with Native American Tribes who have an interest in the Refuge will be common to all alternatives. The Confederated Tribes of the Umatilla Indian Reservation (consisting of the Cayuse, Umatilla, and Walla Tribes) are the major local Tribes the Refuges will coordinate and consult with on a regular basis regarding issues of shared interest. However, other Tribes with special interests, especially relating to the traditionally shared resource corridors along the Columbia River and near the confluence of the Columbia and Snake Rivers, will also be included in consultations affecting those resources. These traditionally local Tribes include the Yakama, Nez Perce, Colville (Palouse), and the Wanapum. Currently, the Service seeks assistance from Tribes in both Native American Graves Protection and Repatriation Act (NAGPRA) and National Historic Preservation Act (NHPA) related issues.

**State Coordination:** Similarly, under all alternatives, the Service will continue to maintain regular discussions with the Washington and Oregon Departments of Fish and Wildlife. Key topics for discussion will be the Columbia Basin Winter Waterfowl Management Plan, colonial nesting birds, wildlife monitoring, big game management, hunting and fishing seasons and regulations, and endangered species management.

**Volunteer Opportunities and Partnerships:** Volunteer opportunities and partnerships occur in all alternatives. These are recognized as key components of the successful management of public lands and vital to implementation of Refuge programs, plans, and projects, especially in times of declining budgets.

**Refuge Revenue Sharing Payment:** Annual payments to Counties under the Refuge Revenue Sharing Program will continue according to the established formula and subject to payments authorized by Congress. Total payments made to local Counties in 2005 are listed in Appendix D.

**Maintenance and Updating of Existing Facilities:** Periodic maintenance and updating of Refuge buildings and facilities will be necessary regardless of the alternative selected. Periodic updating of facilities is necessary for safety and accessibility and to support staff and management needs and is incorporated in the Service Asset Management System.

**Management of Minor Recreational Uses:** Minor recreational activities are occasionally pursued on the Refuge. Such recreational activities not specifically addressed in this document may be allowed on Refuge lands if the Refuge Manager first finds they do not conflict with wildlife or habitat objectives.

**Participation in Planning and Review of Regional Development Activities:** The Service will actively participate in planning and studies for ongoing and future industrial and urban development, contamination, and other potential concerns that may adversely affect Refuge and wildlife resources, and habitats. The Service will cultivate working relationships with pertinent county, State, and Federal agencies to stay abreast of current and potential developments; and will utilize outreach and education as needed to raise awareness of Refuge resources and dependence on the local environment.

**Maintain Existing Waterfowl Sanctuary in Support of Mid-Columbia Basin Planning Efforts:** Waterfowl sanctuary is an area that is closed to hunting and significant disturbance from other public uses to provide important resting and/or feeding areas for waterfowl during the hunting season. Security, indicated partly by the acres of sanctuary area provided during hunting season, was listed as a key ecological attribute supporting waterfowl. There is public support for maintaining “large concentrations” of waterfowl, as they have been important for hunting and viewing users. However, Refuge sanctuary must be considered within the wider scope of Pacific Flyway and/or Region-wide area closures and numbers of birds wintering in the Lower Columbia Basin. Defining the role and extent of such sanctuary areas is a major component of the Wintering Waterfowl Redistribution Plan for the Columbia Basin of Oregon and Washington (Lloyd 1983). It is presently being re-written and updated through a partnership that includes WADFW, ODFW, Yakama Nation, the Corps, and the Service. Therefore, except for very minor changes at McCormack Unit proposed in this CCP, McNary and Umatilla Refuges will continue to manage waterfowl sanctuary in accordance with open and closed areas called for in the 1983 Wintering Waterfowl Plan and existing Refuge closed/open zones, and will make adjustments as needed, in consultation with the partnership agencies.

**Vegetation Inventory and Condition Ranking.** By the summer of 2007, the Service will complete a vegetation inventory begun during the summer of 2005. Ground-truthing from randomly-selected sites will be used to complete an inventory map to the Alliance level for all vegetation polygons and to rank habitat conditions according to criteria outlined in Appendix F Condition Classes for Shrub Steppe and Riparian Habitats. Further refinement of the condition classes may occur.

**Section 106 Compliance.** All ground-disturbing projects will undergo a review under Section 106 of the National Historic Preservation Act.

## ***B. Alternative Descriptions Summary***

### **Alternative 1: Emphasize Migratory Waterfowl Management and Consumptive Public Uses**

Under Alternative 1, the Refuges would focus on providing migratory waterfowl with high quality, easily accessible food, by expanding both crop production and wetland food plants. Secure and adequately sized resting areas will be provided to ensure the health of overwintering and migrating waterfowl. Hunting and fishing would be emphasized, with improvement to facilities and increased opportunities through habitat improvements. A Washington State pheasant augmentation/release program would be phased out and camping would be discontinued at Madame Dorion Park. Other public uses would continue at approximately their current levels of service.

### **Alternative 2: Emphasize Migratory Birds, Special Status Species, and Wildlife-Dependent Public Uses (Preferred Alternative)**

Under Alternative 2, the Refuges would manage its resources for all migratory birds and to enhance populations of targeted special status species and their habitats. Habitats for migratory waterfowl, shorebirds, threatened and endangered species, and other native wildlife would be improved. The Refuges would emphasize control and reduction of weeds and improvement of riparian, shrub-steppe, island, and cliff habitats. Wildlife-dependent public use would be emphasized with opportunities for hunting, fishing, wildlife observation, photography, interpretation and environmental education maintained or improved from present conditions. A Washington State pheasant augmentation/release program would be phased out in two years and camping would be discontinued at Madame Dorion Park. Disturbance to island resources would be reduced through closure of all beach use and implementation of a no-wake zone within 100 feet of Refuge islands.

### **Alternative 3: Emphasize Native Species Diversity and Non-Consumptive Public Uses**

Under Alternative 3 the Refuges would focus on allowing management that mimics natural processes to maintain or enhance native fish, wildlife and plant diversity. Improving existing island, riverine and shrub-steppe habitat and restoring degraded habitat to more native conditions would be emphasized. Fewer acres would be managed in croplands. The Refuges would contribute to recovery of threatened, endangered or rare species such as salmon, steelhead and long-billed curlews. Hunting and fishing opportunities would be available at most sites, however, pheasant and fish stocking would be eliminated and fewer acres would be managed to provide waterfowl food. Opportunities for wildlife-dependent nonconsumptive uses would be improved and expanded. Camping would be discontinued at Madame Dorion Park. All island areas would be closed to public access, including beach use, and a no-wake zone within 100 feet of Refuge islands would be implemented during summer.

### **Alternative 4: Continue Current Management**

Alternative 4 is the no change alternative required by the National Environmental Policy Act (NEPA). The Refuges would continue programs at current levels as described in Chapters 3, 4, 5, and 6. Specifically, the Refuges would maintain, and where feasible, restore habitat for waterfowl, migratory birds, and State and federally-listed species. Existing public uses, including hunting, fishing, wildlife observation and photography, interpretation, environmental education, horseback riding, camping, boating, and limited beach use would continue.

Table 2-1. Summary of CCP Actions, By Alternative

Key Themes/Issues	Alternative 1 Emphasize Migratory Waterfowl and Consumptive Public Uses	Alternative 2 (Preferred Alternative) Emphasize Migratory Birds, Special Status Species, and Wildlife-Dependent Public Uses	Alternative 3 Emphasize Native Biodiversity and Non-Consumptive Public Uses	Alternative 4 Continue Current Management <b>(No-action Alternative)</b>
<b>Waterfowl</b>				
<b>Croplands:</b>				
Total Acreage Share to Refuges	2,400 acres 25%	2,100 acres 25%	1,850 acres 25%	2,100 acres 25%
Grain Availability over Season and During Emergency Weather Conditions	390 acres scheduled for mid winter (post-hunting season) knockdown. 70 acres for late season knockdown. Emergency knockdown under severe weather conditions.	Most knockdown late Jan-mid Feb (no scheduled late season knockdown and no provisions for emergency knockdown)		
<b>Moist Soil Management:</b>				
Total Acreage Floodup for Early Migrants	406 acres 30 acres flooded by 9/15	366 acres 30 acres flooded by 9/15	Decrease acreage All flooded 10/25 or later	356 acres All flooded 10/25 or later
<b>Shorebirds</b>				
<b>Foraging Area:</b>				
Mudflats on Columbia River Alternate Foraging Sites	Same as Alt. 3 and 4	20 acre increase for migration. Alternate sites at moist soil units.	No change to existing mudflat acres. No alternate sites provided.	
Curlew Upland Habitats	Existing suitable habitat maintained	Existing habitat maintained and suitable nesting and foraging habitat increased by 25% on inactive former croplands.	Existing suitable habitat maintained	
<b>Threatened, Endangered, and Sensitive Species</b>				
<b>Salmon Rearing Habitats</b>	None	Protect and where feasible enhance backwaters and side-channel habitats.	Some backwater areas used for salmon rearing.	
<b>Inventory for Rare Species not Monitored by Other Agencies</b>	No inventory conducted	Undertake inventory. Specific habitat or population management strategies determined in step down plan.	Minimal inventory conducted	
<b>Wetland and Deepwater Habitats</b>				
<b>Shallow Marsh Management:</b>				
Open Water Areas Created	96 acres/year < 20%	67 acres/year < 20%	0 acres Reduced	33 acres/year Variable (30-50%)
Elimination of Carp	Eliminated at 4 wetlands	Eliminated at 2 wetlands	No effort to reduce carp.	
<b>Riparian Habitats</b>				
<b>Nesting Habitats Improved</b>	0 acres/year	62 acres/year	5 acres/year improved	5 acres/year improved
<b>Cottonwood Developed</b>	0 acres/year	5 acres/year	0 acres/year	0 acres/year

		Alternative 1	Alternative 2	Alternative 3	Alternative 4
<i>Islands and Cliffs</i>					
<b>Waterbird Populations and Coordination</b>	Habitat maintained to support a diversity of island-nesting birds and colonies. Continued coordination with partners on research, monitoring, and management of the Refuge's colonies of salmonid-smolt eating birds.				
<b>Reduce Disturbance to Island Wildlife to Protect Nesting and Breeding Areas</b>	Same as Alt. 4	Existing island closures to be enforced. No beach use. No-wake zone within 100-feet of islands on Refuge waters.	Islands mostly closed in summer but some trespass issues. Crescent Island is open for waterfowl hunt.		
<b>Protection of Rocky Habitats</b>	No mining, collection or extractive activities permitted on any natural Refuge rocky features. Baseline inventory of plant and wildlife resources (Alts 1, 2, and 3 only). Protection for raptor nesting sites and limit public uses to Big Six uses.				
<b>Shrub-Steppe Habitats</b>					
<b>Existing Habitats Improved</b>	64 acres/year	192 acres/year	288 acres/year	64 acres/year	
<b>Restoration of Roads, Mining Sites, and Inactive Croplands</b>	100 acres	350 acres	600 acres	0 acres	
<b>Protection from Fire and Ground Disturbance</b>	No emphasis	Active measures taken with partners, public, and contractors to reduce fire damage and soil disturbances.	Frequent fires burn about 1,000 acres annually.		
<b>Wildlife Observation, Photography, Interpretation, and Trails</b>					
<b>McNary Opportunities</b>	No changes to current trails, viewing, and interpretive opportunities.	Trail/interpretive improvements at Headquarters and Wallula Units.	Trail and interpretive improvements at Headquarters Unit.	Existing trails, viewing and interpretive signs at McNary Headquarters Unit maintained.	
<b>Umatilla Hwy 14 Interpretive Overlooks</b>	No change	Improved and expanded	No change	Interpretive signs at several overlooks on Hwy. 14	
<b>Umatilla Heritage Trail</b>	Consider Heritage trail realignment.	Add benches, blind, sun shades, and potential side trails to Heritage Trail; consider realignment.	Add interpretive area at check station.	County Heritage Trail traverses Refuge. Portions of trail unsafe during hunt season.	
<b>Hunting</b>					
<b>Waterfowl Hunt Types</b>	Reservation fee hunting, posts/free roam, and youth hunts.				
<b>Waterfowl Hunt Areas</b>	25,952 acres	25,739 acres	25,698 acres	25,905 acres	
<b>Sanctuary Areas</b>	Alt 4 minus Col. River shoreline at McCormack	Alt 1 plus East McCormack Slough	Alt 4 plus East McCormack Slough	Existing areas (44% of Umatilla, 24% of McNary)	
<b>Upland Bird Areas</b>	All open units. Hunting improved at Peninsula (eliminating mowing at former goose blinds).	Hunting improved at Peninsula (eliminating mowing at former goose blinds).	Upland game bird hunting provided on all open units.		
<b>Upland Bird Hunt Schedule</b>	Hunt days and times standardized				
<b>Upland Permits (McCormack)</b>	Permits reduced to 15 on opening two weekends.				
<b>Pheasant Releases (McNary)</b>	Pheasant augmentation phased out in 2 years (Service policy prohibits nonnative stocking).				
<b>Deer Hunt (McCormack)</b>	Doe hunting emphasis to reduce population and address vegetation impacts issue.				
					State pheasant releases Hunt open at current level.

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
<b>Fishing</b>				
<b>Diversity of Fishing Opportunities</b>	Maintain diverse opportunities, including State seasonal stocking of rainbow trout at Quarry Pond for youth and family fishing. Improve parking facilities and access.	Same as Alt. 2	Same as Alt. 3	Plentiful walk-in and boat fishing opportunities. Stocking for family fishing at one pond.
<b>Tournament Fishing</b>	Work in partnership with States and others to develop standard tournament permit conditions. No tournament access within 1/2 mile of pelican nest colonies.	Same as Alt. 2	Same as Alt. 3	Several tournaments on both Refuges
<b>Fishing Outreach and Information</b>	Develop fishing brochure or tear sheets. Install kiosks at two on-Refuge and two off-Refuge boat launches.	Large numbers of anglers and boaters using Refuges but little Refuge information is disseminated to this user group.	Large numbers of anglers and boaters using Refuges but little Refuge information is disseminated to this user group.	
<b>Environmental Education</b>				
<b>Number of Students Served</b>	McNary: 1,500-3,000 Umatilla: 0	McNary: 1,500 – 3,000 Umatilla: 100-500	McNary: 1,500-3,000 Umatilla: 50	McNary: 1,500-3,000 Umatilla: 50
<b>Teacher Led Program</b>	Some emphasis	At least 75% of the classes teacher-led.	Some emphasis.	Some emphasis.
<b>EE Facilities at McNary</b>	Continue EE program at McNary Environmental Education Center at Burbank Slough.			
<b>EE Facilities at Umatilla</b>	None	Field study sites integrated into East McCormack Slough	None	None
<b>Non-Wildlife Dependent Uses</b>				
<b>Horseback Riding</b>	Same as Alt. 4	Improve signing, outreach, and interpretive materials. Riders allowed on public roads and horseback designated trails.	Riding allowed on public roads and designated trails. Limited information/facilities.	Riding allowed on public roads and designated trails. Limited information/facilities.
<b>Camping at Madame Dorion Park</b>	Madame Dorion Park available for day use for Big Six uses. Eliminate camping.	Maintain existing rest area facilities.	Camping permitted under temporary coop agreement	Camping permitted under temporary coop agreement
<b>Swimming and Beach Use</b>	Same as Alt. 4.	Island beaches closed to all use.	Beach use permitted on designated portions of Umatilla Islands in summer. Heavy beach use on Strawberry Island.	Beach use permitted on designated portions of Umatilla Islands in summer. Heavy beach use on Strawberry Island.
<b>Law Enforcement</b>				
<b>Illegal Shooting and Dumping</b>	Reduce dumping at Burbank Sloughs Unit by 80%. Eliminate target shooting.		Illegal shooting and dumping occurs .	Illegal shooting and dumping occurs .
<b>Cultural Resources</b>				
<b>Monitoring and Protection</b>	Increased with greater survey effort, enforcement, training, and consultation with Tribes.		Enforcement, consultation and project review per NHPA.	Enforcement, consultation and project review per NHPA.
<b>Interpretation Programs</b>	Develop interpretive materials in partnership with Tribes and historical societies.		No active interpretation	No active interpretation
<b>Bank Stabilization</b>	Seek funding to stabilize eroding banks to protect buried cultural resources		No funding for bank stabilization sought.	No funding for bank stabilization sought.

## 2.4 Goals, Objectives, and Strategies

Goals and objectives are the unifying elements of successful refuge management. They identify and focus management priorities, resolve issues, and link to refuge purposes, Service policy, and the Refuge System Mission.

A CCP describes management actions that help bring a refuge closer to its vision. A vision broadly reflects the refuge purposes, the Refuge System mission and goals, other statutory requirements, and larger-scale plans as appropriate. Goals then define general targets in support of the vision, followed by objectives that direct effort into incremental and measurable steps toward achieving those goals. Finally, strategies identify specific tools and actions to accomplish objectives (USDI 2002).

In the development of this CCP, the Service has prepared an environmental assessment. The environmental assessment evaluates alternative sets of management actions derived from a variety of management goals, objectives and implementation strategies.

The goals for McNary and Umatilla Refuges over the next fifteen years under the CCP are presented on the following pages. Each goal is followed by the objectives that pertain to that goal. Some objectives pertain to multiple goals and have simply been placed in the most reasonable spot. Similarly, some strategies pertain to multiple objectives.

The goal order does **not** imply any priority in this CCP. Priority actions are assigned in Appendix D.

**Readers, please note the following:**

- The objective statement as written is the objective statement that applies to the Service is Preferred Alternative, Alternative 2.
- Bolded text in the objective statement indicates specific items that vary in the other alternatives. How those items vary is displayed in the short table under each objective statement; as applicable, each other alternative shows substitute text for the bolded item or items.
- If an objective is not in a particular alternative, a blank is used to indicate that this objective is not addressed in that alternative.

Finally, below each objective statement are the strategies that could be employed in order to accomplish the objectives. Again, note the following:

- Check marks alongside each strategy show which alternatives include that strategy.
- If a column for a particular alternative does not include a check mark for a listed strategy, it means that strategy will not be used in that alternative.





**GOAL 1: Manage high quality food and sanctuary to support large concentrations of migratory waterfowl.**

<b>Objective 1a: Provide Crops for Waterfowl</b>				
<b>Maintain 600 acres at McNary and 1,500 at Umatilla (2,100 total acres of Refuge land)</b> for the production of crops on both Refuges, with a minimum of 400 acres to a maximum of 580 acres to be grown as grain (corn preferred) and left standing to benefit trust species of waterfowl (mainly mallard, northern pintail, Canada geese, and greater white-fronted geese). In addition, provide a minimum of 1,000 acres in green feed for waterfowl use during winter.				
<b>Alternatives</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
<i>Objective is modified by replacing bolded type above with the text in this row.</i>	Increase crop acreage to 2,400 acres	Maintain 2,100 acres	Reduce acreage to <1,850 acres	Maintain 2,100 acres
<b>Strategies Applied to Achieve Objective</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Plant crops on an additional 300 acres of cropland at Umatilla (100 acres) and McNary (200 acres) Refuges; use inactive agricultural lands currently in fallow, weedy condition. (There will be no conversion of existing grassland/shrub-steppe).	✓			
Conduct cooperative farming in accordance with guidelines, best practices and acreages outlined in the existing McNary and Umatilla Cropland Management Plan; and maintain Organic Farming Program on Whitcomb Island and McCormack Units of Umatilla Refuge.	✓	✓	✓	✓
Consider force account farming to increase net food availability if and when appropriate. To do so, increase Refuge funding \$100,000 annually for force account equipment, supplies and staffing and submit funding requests (RONS) for \$300,000 to develop new irrigation circles.	✓	✓		
Develop partnership programs to provide incentives and funding to private landowners to provide standing corn and other grains off-Refuge.	✓	✓		
<b>Rationale:</b> Upland food availability, including the amount of land in corn and available as green feed, was identified as a key ecological attribute for waterfowl by the CCP team. Approximately 2,100 acres of Refuge lands are currently farmed under cooperative agreements. Under the Cropland Management Plans for Umatilla and McNary Refuges (USDI, 1996; USDI, 1999), croplands are managed for the benefit of waterfowl, but many other species benefit (i.e. bald eagles which rely on Refuge waterfowl concentrations). Refuge crop shares are generally 25% of what is grown and are limited to 1)				

cereal grains, preferably corn, to meet the high energy demands of migrating and wintering waterfowl, and 2) green winter forage and cover crops which provide for Canada goose populations. In addition, harvested areas provide foods for waterfowl, including waste grains and green forage such as alfalfa and grasses. Opportunities to provide natural foods on the Refuges are limited, especially for the large concentrations of waterfowl (peaks of nearly 250,000 to 500,000 birds for both Refuges combined). The 2003 Wildlife and Habitat Management Review of McNary and Umatilla Refuges recommended providing additional corn for wintering waterfowl. Increasing corn is limited by costs of installing irrigation systems, operation of the Organic Farming Program at Whitcomb Island, the need to rotate crops, and use of negotiated cooperative agreements with farming cooperators versus force account. Substantial increases in funding to both develop and maintain force account irrigation circles for corn would provide the best scenario for corn production. Partnerships and incentives to area farmers to grow grains is another possibility. In addition, 300 acres of fallow agricultural land could be redeveloped and cropped to meet the demand for standing corn for waterfowl. These 300 reactivated cropland acres could be developed as follows: a 40-acre new irrigation circle at McCormack Unit, and a 60-acre new irrigation circle at Paterson on Umatilla Refuge; and at McNary, 60 acres of dryland wheat at Peninsula, 77 acres of dryland or reactivation of irrigation at Field 9 on Humorist Road, 37 acres irrigation system reactivation at Kohler, and 72 acres of irrigation system reactivation on Field 4, and former irrigated cropland on the southside of Wallula.

**Objective 1b: Extend Timeperiod Grain is Made Available to Birds.**

Extend time period grain is made available to waterfowl and provide grains during emergency weather conditions. Provide for mid and extended late-season nutritional needs of migrating and wintering waterfowl, especially mallard, northern pintail and greater white-fronted geese, by scheduling “knockdown” of 460 acres of available agricultural grain crops.

Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
Objective as written above applies to alternatives (✓)	✓	✓		
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Expand knockdown dates both earlier and later in the season: <ul style="list-style-type: none"> <li>• <u>Post-hunting season</u> (approximately January 18 – March 1): 390 acres total for both Refuges, staged knockdown over this time period, if possible.</li> <li>• <u>Late season</u> (week of March 1): 35 acres at Umatilla and 35 acres at McNary</li> </ul>	✓	✓		
Coordinate with cooperators and/or increase force account crop knockdowns to achieve the schedule listed above.	✓	✓		
Allow for emergency knockdown during the hunting season if severe weather causes a documented need. This action may require closure of hunting due to baiting regulations; therefore coordinate with law enforcement and the public. Severe weather is snow or ice covering of most local fields and or weather below 0 degrees F for an extended time leading to generally inaccessible food supply on surrounding farms and agricultural fields.	✓	✓		

**Rationale:** Traditionally, Refuges reserved the standing crop to be knocked down during severe winter weather and/or immediately after the close of hunting season in late January to mid February. McNary staff have noted that in years when they were “late” (February-March) in knocking down the corn crop, more white-fronted geese (early spring migrants) were attracted. White-fronted geese have increased significantly in recent years, presumably in response to this late food availability. Providing grain crops in a scheduled, staged way throughout the season will help provide for fall and spring migrants as well as the wintering population. However, under this schedule the majority (85%) of standing crop is still kept for late January–post hunting–knockdown. Refuge managers have documented extreme winter weather events leading to area fields being covered with ice and snow; in such times Refuge corn fields have been mowed to supply the nutritional need for a large percentage of Columbia Basin wintering waterfowl and have likely prevented die-off events.

**Objective 1c: Increase Size and Availability of Moist Soil Areas**

**Add 10 acres** to the existing 356 acres of managed moist soil units for both Refuges (5 acres each), and increase efforts to provide high production of natural foods favored by mallards and northern pintails, such as smartweed (*Polygonum* spp.), wild millet (*Echinochloa* spp.) and swamp timothy

(Crypsis schoenoides). Provide early flood-up, by September 15, on 30 acres of existing moist soil units (10 acres at Umatilla/5 acres at McNary) to support early migrants such as northern pintail.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Alternative is modified by replacing bolded type above with the text in this row.</i>	Add 40 acres to	Add 10 acres to	Subtract 8 acres from	Maintain current acreage of
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Flood units in fall and follow with a late spring drawdown, properly timed to maximize germination and growth of the desired species.	✓	✓	✓	✓
Utilize disking at Umatilla’s McCormack Slough to set back taller persistent wetland vegetation, and to provide a seed bed for preferred moist soil annual vegetation.	✓	✓		
Where water and precise water control is available, utilize summer irrigations to keep vegetation actively growing (timed to minimize standing water since mosquito larvae production period is 5-7 days).	✓	✓		
Develop 10-40 acres of new moist soil units from the following potential areas: McNary - Unit 3, Two Rivers, and Peninsula units; and Umatilla - Boardman, and Paterson units. Utilize irrigation water and manage piping/pumps as needed.	✓	✓		
Coordinate irrigations and new moist soil development with local mosquito control districts (see West Nile Virus Contingency Plans for both Refuges).	✓	✓	✓	✓
Annually provide water for early flood up (by September 15) of 30 acres of moist soil from the following units: McNary-Dudley wetlands, Wallula Units wetlands; Umatilla - Kathy’s Pond; and any new sites to be developed (see above objective 4a).	✓	✓		
Coordinate timing and treatment of early fall flood-ups with the mosquito control districts at both Refuges to reduce risks of mosquito-borne diseases (see West Nile Virus Contingency Plan).	✓	✓		
Terminate flood up at Dudley Ponds 1 and 2 and at Wallula South 1.			✓	
<p><b>Rationale:</b> Wetland food availability was identified as a key ecological attribute supporting waterfowl. Moist soil wetlands use annual water control regimes to promote production of annual plants preferred by waterfowl, such as wild millet, smartweeds, swamp timothy and goosefoot. Typically this includes a spring drawdown, one to two summer irrigations, and a fall/winter flood-up. These wetlands also provide a variety of water depths that support a wide variety of waterbird species including shorebirds and wading birds and serve as important feeding areas for young waterfowl brood.</p> <p>Although not considered typical moist soil management units (due to a lack of direct water control), some Refuge areas are already being managed for moist soil plant production. These include several wetlands at McNary’s Wallula Unit, and shoreline areas at Umatilla’s McCormack Unit. Expanses within McCormack Slough of Umatilla Refuge have been excavated to elevations that fall between the annual minimum and maximum water levels of the slough, as dictated by John Day Dam forebay operations. Under the influence of this operation, these sites are inundated with shallow water from November through June and are exposed as saturated or moist soils from July to October, thus performing as a seasonal wetland that is highly suitable for moist soil plant production. Disking has been used at these sites to eliminate development of tall persistent vegetation such as bulrush, and to promote establishment of annuals as soon as the flats become exposed about early July. Managed moist soil areas on the slough are used heavily by waterfowl, particularly northern pintail, green-winged teal, and mallards. There has also been much use by shorebirds and wading birds in the spring season.</p> <p>New moist soil areas could be developed and/or managed for moist soil including: small wetlands associated with irrigation water at the Dudley wetlands at McNary and additional sites at Umatilla’s McCormack Unit near Hunt Blinds 1,</p>				

2, 5, 28, 31, 32, 33, 36, and 37, and shorelines at hunt blinds 7 and 30.

The North American Waterfowl Management Plan (2004) lists the long-term trend for northern pintail populations as declining. The Refuges could distribute the benefits of moist soil management to a greater diversity of waterfowl, including northern pintail, by providing earlier fall flood-up of units. Pintail generally arrive earliest of the waterfowl, with peak concentrations sometimes occurring in September. The Refuges have limited ability to control the timing of flood-up at some of the moist soil units. McNary’s Dudley wetlands and other irrigation-dependent wetlands generally have irrigation water through mid-October, and could provide excellent smartweed beds to early migrants if managed and flooded early. In the past, mosquito breeding and the potential for mosquito-borne diseases (such as West Nile Virus) has limited the use of early flood ups. With close coordination and cooperation with the local mosquito control districts, early flood-up of moist soil wetlands could be accomplished.

**Objective 1d: Relocate Sanctuary Area within McCormack Unit**

Improve resting and feeding opportunities for migratory birds and wintering waterfowl and increase opportunities for wildlife observation on the eastern portion of McCormack Slough at Umatilla Refuge by closing the area to hunting, eliminating foot traffic and access to the wetlands, and restricting public use and access to the auto tour route and selected public viewing or overlook sites. Move the current waterfowl and upland game bird hunting opportunity on the eastern portion of McCormack Slough to a new area within current sanctuary along river shoreline on the north side of the unit.

Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Close all public access to the east portion of McCormack Slough except at designated viewing and interpretive sites, and designated trails and roads (see Objective 9d and 9e).		✓	✓	
Sign perimeter of new sanctuary area to inform public of area closure and make changes to Refuge brochures and hunting tear sheets.		✓	✓	
Open new designated site along river shoreline for waterfowl and upland bird hunting and sign as needed (see Objective 10a)	✓	✓		

**Rationale:** The East McCormack Slough is an ideal area for sanctuary and use by waterfowl away from the buffeting winds on the river. Its high quality wetlands and intensively managed foraging areas are used by large numbers of waterfowl and other wildlife. The area is also currently heavily used, both as a hunt area and also (and at the same time) by birdwatchers, photographers and general wildlife observation. Managing the East McCormack Slough with fewer disturbances would help to greatly improve the quality of Objectives 9d and 9e, and better separate hunting from the visiting public using the tour route and Heritage Trail. All three of these objectives, if implemented together, would complement and benefit one another. If any one of them was implemented alone, it would be less valuable as a resource to the public. The loss of waterfowl and upland bird hunting in the East McCormack Slough would be replaced with a new hunt area located along the river shoreline with nearly an equal amount of hunting opportunities and overall land area. Hunting quality at the new site would likely be the same or better than that provided in the east slough since an interior sanctuary wetland could be expected to increase overall bird distribution and hunting success (similar to the situation at McNary Refuge with Units 3 (sanctuary) and 2 (hunted). Intensively managed sites in the east slough would also provide opportunity to expand desired habitats for various species other than waterfowl, such as shorebirds, wading birds, and other water birds. Hikers, birders, and photographers would lose direct and close access to the wetlands; but the auto tour route and carefully placed designated observation sites and decks would still provide for quality wildlife observation visits.

**GOAL 2: Provide secure and productive foraging and nesting habitats for a diversity of shorebirds.**



<b>Objective 2a: Increase Available Delta Mudflat</b>				
Increase the acres of mudflat available for migratory shorebird foraging by 20 acres during peak migration periods at McNary Refuge’s Walla Walla Delta to benefit shorebird species such as black-necked stilt, American avocet, long-billed dowitcher, dunlin, and Wilson’s phalarope.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>		✓		
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Coordinate with the Corps for draw downs of McNary Reservoir to 336–337 mean sea level (msl) mid-July to October and mid-March to late April migration peaks, to expose an additional 20 acres of mudflats for shorebirds at the Walla Walla Delta		✓		
Monitor and control expansion of invasives and other upland plants onto mudflats: increase chemical and mechanical treatments to maintain and/or increase mudflat habitat.		✓		
Increase use of signing, education, and law enforcement to eliminate illegal trespass onto Delta.		✓		
<p><b>Rationale:</b> Foraging habitat and security were both identified as key ecological attributes for shorebirds by the CCP team. The Intermountain West Regional Shorebird Conservation Plan (Oring 2004) lists black-necked stilt, American avocet, dunlin, long-billed dowitcher, and Wilson’s phalarope as “critically important” species. The Walla Walla Delta is a major shorebird migration feeding area for these and other shorebird species, with documented annual populations numbering up to 8,600, representing nearly 40 species (International Shorebird Surveys, Manomet Center for Conservation Sciences). Careful management of this area would help enhance and increase the habitat value of this site, supporting goals of the U.S. Shorebird Conservation Plan (Brown et al. 2001). Spring and fall drawdowns of the McNary Pool would create more exposed mudflat during the shorebird migration. Vegetation, including purple loosestrife, phragmites, and false indigo, is encroaching onto Delta mudflats. Available biocontrols for purple loosestrife may be limited by reservoir fluctuations and wintertime inundation. Public use planning can help eliminate illegal uses and trespass.</p>				

<b>Objective 2b: Provide Alternate Shorebird Foraging Areas</b>				
Annually provide 10 acres of alternative shorebird foraging areas within moist soil units at McNary (Wallula Unit 8 acres) and Umatilla (McCormack Unit 2 acres) during the peak of the migration period (August/September) and/or when the Walla Walla Delta is unavailable to shorebirds due to high reservoir levels (e.g., during boat race week). Objective will benefit up to 40 species of shorebirds documented to use the Delta, including species identified as “critically important” such as black-necked stilt, American avocet, long-billed dowitcher, and Wilson’s phalarope.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>		✓		

Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Determine best time periods for providing alternative foraging sites based on the Corps' projected reservoir levels and peak migration periods. Annually select and prepare 10 acres of moist soil units needing treatment (i.e., disking and invasive plant removal) and flood/drawdown these units just prior to projected periods of high reservoir levels. Potential sites at McNary include Wallula and Dudley ponds; and at Umatilla, McCormack Slough and Kathy's Pond.		✓		
After disking and where water control is available, flood to a maximum depth of one-to-three inches over the disked area for approximately one week; allowing water to drop naturally and provide habitat.		✓		
<p><b>Rationale:</b> Large populations of migratory shorebirds often find themselves without adequate foraging habitat when the Corps suddenly increases and maintains reservoir levels for an extended period. Examples include boat race week and 2 to 4 day increases for special shipping/barging requests. Alternative foraging sites nearby could be valuable during these time periods. The availability of alternate sites was identified in a literature review as a key consideration for managing shorebird populations effectively (Prindle 2004). Properly timed draw downs, disking treatments, and/or irrigations of existing moist soil units would help provide more habitats for shorebirds on the Refuges if the Delta becomes unavailable. Potential locations for this include the Wallula moist soil units adjacent to Walla Walla Delta, and the McCormack Slough and Kathy's Pond area at Umatilla. These alternative mudflat-shorebird foraging sites will have the side benefit of providing irrigation for the surrounding moist soil vegetation that remains untreated. Weedy areas and canary grass portions needing a treatment (disking) will be chosen, not good moist soil sections. Remaining moist soil plants will be allowed to continue to grow productively, and could produce larger seed heads irrigated. Many shorebird experts have recognized the importance of providing alternate sites, especially along river systems (EDAW 2004). The timing will have to be precise to provide habitat during the projected high water periods, requiring close Corps dam reservoir coordination. Irrigations will also have to be conducted with shallow water and short time periods to prevent mosquito breeding. Under current operations, the Delta should continue to expand in area, and if properly managed, may someday qualify as a Western Hemisphere Shorebird Reserve Network Regional Site (supporting greater than 20,000 shorebirds per year).</p>				

<b>Objective 2c: Maintain or Increase Long-billed Curlew Habitat</b>				
Maintain long-billed curlew nesting and foraging habitat, and increase existing curlew nesting habitat by 25% on appropriate sites at each Refuge to benefit this species.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Alternative is modified by replacing bolded type above with the text in this row.</i>	Maintain	✓	✓ Increase by 25%	Maintain
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Continue to identify and quantify existing curlew nesting and foraging areas to determine location and amount of habitat on the Refuges.	✓	✓	✓	✓
After habitat has been identified and quantified; increase existing acreage at each Refuge by 25% by restoring inactive, formerly cultivated lands to curlew foraging and nesting habitat, specifically: McNary Fields #9 and #4; the Kohler Field; and at Umatilla, areas south of the Callow overlook and edges of field circle 5 and the surrounding grassland.		✓	✓	
Restore both formerly cultivated agricultural lands (above) and convert existing cropland in Umatilla field circle #5 to native shortgrass habitat favorable to curlews.			✓	
Focus management in curlew use areas toward maintaining and restoring native shortgrass habitats; use planting, burning, and mowing methods.		✓	✓	
Monitor populations and/or nest success using transects or other standardized techniques.	✓	✓	✓	✓

When conducting restoration efforts under objectives 7a and 7c, avoid planting shrubs in curlew focal areas.		✓	✓	
<p><b>Rationale:</b> The U.S. Shorebird Conservation Plan’s list of High Priority Shorebirds (USFWS 2004) lists the long-billed curlew as a “globally highly imperiled” species in need off protection measures. Long-billed curlews have been assigned the highest score (5 on scale of 1-5) for conservation efforts under criteria established by the Intermountain West Regional Shorebird Plan (Oring et al. 2004). The Intermountain West Region is considered an area of critical importance (compared to other regions globally) for their conservation. The Umatilla Refuge and surrounding lands serve as a key breeding area for long-billed curlews. An accurate estimate of the curlew’s current population on the Refuges is not available, but range-wide survey efforts completed in 2004 showed populations on Umatilla Refuge to be higher than all other sites surveyed that year. There is likely an opportunity to expand the population. Areas that have been known to be used by curlews at Umatilla include: McCormack Slough, uplands south of McCormack Slough, Kathy’s Pond, Whitcomb Islands, and agricultural field #5 near the auto tour route on McCormack Unit. McNary has only limited curlew habitat with small numbers at the following locations: Dudley Wetlands, Kohler Unit, and Wallula South Unit. Because curlews tend to avoid habitats with dense vegetation cover (both vertical height and horizontal density), the Refuges could manage for short vegetation during the curlew nesting season (mid-March to mid-May). Curlews favor areas with a mosaic of shortgrass and downy brome, typically within one mile of a water source (Pampush 1980; Pampush and Anthony 1993).</p>				

<b>Objective 2d: Conduct Shorebird Studies</b>				
Conduct or facilitate completion of research studies to better understand shorebird ecology and management at both Refuges to benefit high priority species including the long-billed curlew, solitary sandpiper, western sandpiper, short-billed dowitcher, Wilson’s phalarope, Wilson’s plover, sanderling, and dunlin.				
<b>Alternatives</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
<i>Objective as written above applies to alternatives (✓)</i>		✓		
<b>Strategies Applied to Achieve Objective</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Evaluate existing literature and consult with experts regarding macroinvertebrate prey items for the shorebird species breeding and migrating at the Refuge. Conduct inventory of macroinvertebrates at the primary and alternate foraging sites to determine and compare species present, densities, etc.		✓		
Correlate 1990-present reservoir levels (Corps) with shorebird abundance data (Manomet Center for Conservation Sciences), with a focus on the peak migration periods and presence of high priority species.		✓		
Assess connectivity between known shorebird migration sites in the lower and mid-Columbia basins.		✓		
<p><b>Rationale:</b> The U.S. Shorebird Conservation Plan’s list of High Priority Shorebirds (USFWS 2004) lists the American golden plover, solitary sandpiper, western sandpiper, short-billed dowitcher, Wilson’s phalarope, Wilson’s plover, sanderling, and dunlin as a “high concern” species in need off protection measures. All of these species use Walla Walla Delta and other Refuge sites during migration. More data is needed to document forage base underpinning the shorebird populations using Refuge habitats, especially the Walla Walla Delta. A greater understanding of the ecology of shorebirds there would help support goals in the Intermountain West Regional Shorebird Plan (Oring et al. 2004) and would help the Refuges to establish baseline information on shorebird use and ecology at these sites.</p>				



**GOAL 3: Contribute to the recovery of endangered, threatened, and sensitive species by protecting, maintaining or increasing suitable habitats.**

<b>Objective 3a: Salmon Backwater Enhancements</b>				
Protect, and where feasible restore or enhance backwater sloughs, side channel connections, shallow water marshes, or embayments that support juvenile salmon to benefit federally listed species/stocks, including Snake River Chinook, sockeye, and steelhead; Mid-Columbia steelhead; and Upper Columbia Chinook and steelhead.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective applies as written above to alternatives (✓)</i>		✓	✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Assess the biological benefits (both waterfowl and fisheries) of restoring side-channel fish habitats at Burbank Sloughs and Casey Pond at McNary Refuge; and Patterson Unit of Umatilla Refuge; and coordinate with State/Federal/Tribal fishery biologists.		✓	✓	
If deemed likely to provide biological benefits to listed salmon, prepare technical feasibility report and funding requests for salmon backwater enhancement projects.		✓	✓	
Evaluate and develop strategies to maintain and/or enhance connectivity between Columbia River and backwater slough areas.		✓	✓	
<p><b>Rationale:</b> Seven federally-listed species/stocks of anadromous fish, including Snake River Chinook, sockeye, and steelhead; Mid Columbia steelhead; Bull trout, and Upper Columbia Chinook and steelhead spend portions of their life history either on, or adjacent to, Refuge waters and shorelines on the Snake, Columbia, and Walla Walla Rivers. The Hanford Reach contains the last major mainstem spawning habitat in the Columbia River System for fall Chinook salmon, and up to 80% of the total run of adult fall Chinook salmon returning to the Columbia River spawn in the Hanford Reach (Dauble and Watson 1990). The Casey Pond area at McNary Refuges, and other shorelines and embayments on both Refuges, serve as nurseries for young developing fall Chinook (Easterbrooks, 200). Conserving and restoring salmon and steelhead populations is an important regional goal, not only for their own sake, but also because of their cultural, historical, and ecological value. Salmon are an important food source for numerous other wildlife species. Sixty-seven wildlife species of the Pacific Northwest, including many known to inhabit the Refuges, have been shown to have a “strong” or “recurrent” relationship with salmon (Cedarholm et al. 2000). Protection and/or restoration of these shallow habitats may also benefit waterfowl as embayments and backwater areas are less common now than historically. A previous project proposal to Bonneville Power Administration for a restoration project at Peninsula received high scores but went unfunded. Paterson Slough also constitutes one of the larger embayments on the Middle Columbia.</p>				

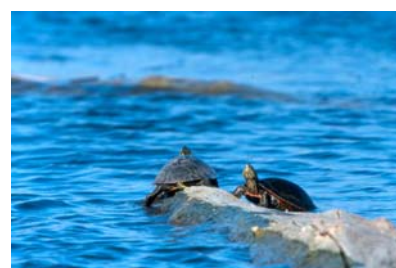
<b>Objective 3b: Conduct Inventory and Establish Habitat/Population Management Strategies for Certain Rare Species</b>
Identify potential habitat areas and conduct a targeted inventory (primarily focused on determining presence/absence and indication of breeding) for the following species or species groups. If species are present, document population information. After determining species status, determine which, if any, habitat or population management strategies should be undertaken for the benefit of rare species. This determination may be made in a step-down plan. <ul style="list-style-type: none"> <li>• Washington ground squirrel (OR–Endangered. WA–candidate. Federal–Candidate).</li> <li>• Burrowing owl (WA–Candidate. Federal–Species of Concern).</li> </ul>



<ul style="list-style-type: none"> <li>• Peregrine falcon (OR–Endangered. Federal–Species of Concern).</li> <li>• Golden eagle (WA–Candidate. Federal–No Status).</li> <li>• Swainson’s hawk (OR–Sensitive. Federal–No Status)</li> <li>• Ferruginous hawk (WA–Threatened. Federal–No Status).</li> <li>• Native Amphibians and reptiles (Varied status).</li> <li>• Bats (Varied status).</li> </ul>				
<b>Alternatives</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
<i>Objective applies as written above to alternatives (✓)</i>		✓	✓	
<b>Strategies Applied to Achieve Objective</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Follow established and current protocols for surveys of rare species/species groups. When and where possible, participate in regional partnership efforts and conform to recommended timeframes.		✓	✓	
Alert Heritage programs and key State biologists of any new or expanded locations as well as the results of any negative searches.		✓	✓	
<p><b>Rationale:</b> Rare species were selected for inventory work primarily due to their sensitive status (threatened, endangered, etc) and because they may occur on either Refuge, thus possibly providing opportunities for habitat restoration or enhancement that could help to further their recovery. Specific information is summarized below.</p> <ul style="list-style-type: none"> <li>• <b>Washington ground squirrel.</b> McNary Refuge and the Oregon portion of Umatilla Refuge lie within the historic range of the Washington ground squirrel. The species is likely extirpated from the Refuge and its historical occurrence is unknown, however, the Refuges could possibly provide habitat for any proposed future re-introductions.</li> <li>• <b>Burrowing owl.</b> This species has seen a dramatic loss of habitat in the local area due to conversion to agriculture or urban development. Burrowing owls are known to nest on Umatilla Refuge, but data on colony locations is limited and data on population size is non-existent.</li> <li>• <b>Peregrine falcon.</b> At least one pair is known to nest on or near McNary Refuge at the Stateline Unit. Both Refuges provide foraging habitat.</li> <li>• <b>Golden eagle.</b> Golden eagles are reported to have nested in the cliff habitat on the Stateline Unit of McNary Refuge.</li> <li>• <b>Swainson’s hawk.</b> This species nests in the local area and has historically nested at McNary Refuge, but current status on Refuges is unknown.</li> <li>• <b>Ferruginous hawk.</b> Nests locally, though status is unknown on Refuges. Basalt cliffs on McNary’s Stateline Unit may provide nesting habitat.</li> <li>• <b>Native amphibians and reptiles.</b> Little information exists on the occurrence and abundance of native amphibians and reptiles both historically and/or following creation of the Refuges. Paralleling a global decline by at least a third of the world’s amphibians (Stuart et al. 2004), many of the Refuges’ native amphibian populations thought to be present at Refuge establishment appear to be dwindling or absent. The causes of declines at the Refuges (and elsewhere for other amphibians) are not fully known but may be related to loss of habitat, changes in hydrology, habitat fragmentation, introduction of nonnative predatory fish and bullfrogs into historic habitats, drought, mortality on roads, environmental contaminants, disease, and other factors (McAllister et al. 1999). The Refuges need to improve their knowledge of potential and occupied habitats for native amphibians and may be able to play a role in reestablishment of declining populations.</li> <li>• <b>Bats.</b> Virtually no information exists on bats occurring on either Refuge. Further information would help to understand Refuge species richness and diversity.</li> </ul> <p>We did not include here other species such as the bald eagle, American white pelican, and salmonids, for the following reasons. <b>Bald eagle:</b> the Corps already collects winter population information on bald eagles at McNary Refuge. The Refuges also tally bald eagles observed during aerial waterfowl surveys and contributes data to the annual Oregon Winter Eagle Survey. <b>American white pelican:</b> Population numbers are “rough” but data is collected by researchers as part of their work on the piscivorous fish research. American white pelican counts are estimated by researchers from aquatic and aerial counts. Once additional information is available on each of these species or groups population status on the Refuges, the staff can better determine appropriate habitat or population management objectives and strategies. Such detail may best be developed in a step down Habitat Management Plan. <b>Salmonids:</b> Endangered salmon stocks and other Columbia River System salmon are regularly monitored and/or studied by the WADFW, Corps, Tribes, Service, and NOAA Fisheries. Data is available for use by the Refuge.</p>				

<b>Objective 3c: Conduct Baseline Inventory for Small Mammals</b>				
Conduct a one-week long baseline inventory in approximately six shrub-steppe priority areas to collect initial data on the presence, abundance, and diversity of small mammals.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective applies as written above to alternatives (✓) or the alternative is modified by replacing bolded type above with the text in this row.</i>	minimal	✓	✓	minimal
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Map Quincy and Warden soil types, and an overlay with areas of less-disturbed vegetation cover likely to be suitable for the Washington ground squirrel, to prioritize search areas for this species.		✓	✓	
Select other areas for survey based on State records and historic reports.		✓	✓	
Alert Heritage programs and key State biologists of any new or expanded locations as well as the results of any negative searches.		✓	✓	
<p><b>Rationale:</b> Small mammals are very important as a food source to higher level predators, including several migratory birds of interest, such as the golden eagle and Swainson’s hawk. In addition, structures made by some burrowing small mammals are important for use as nest sites for the burrowing owl. There is a need for the Refuges to have a greater understanding of the diversity of small mammal species inhabiting Refuge habitats, their relative abundances, and locations of highest habitat value, as Refuge data is lacking in this area. An abundance rating for certain small mammals was provided in the McNary Habitat Management Assessment baseline inventory (WADFG 1980). Some of the data presented in that report originated in the Columbia River System inventory. The Washington ground squirrel, listed as endangered by the State of Oregon, is currently thought to be restricted to three populations in Oregon and Washington. Suitable soil types may exist on the Refuges. Restoration of shrub-steppe and grassland habitats as described in shrub-steppe objectives should also aid in supporting native small mammals.</p>				

**GOAL 4: Provide a diversity of high-quality wetland habitats for the benefit of migratory birds and other wetland plants and animals.**



<b>Objective 4a: Increase Amount of High Quality Shallow Marsh</b>				
Conduct needed management on 350 acres at Umatilla Refuge and 650 acres at McNary Refuge, resulting in an increase in acreage of high quality shallow marsh available for use by waterfowl and other waterbirds. High quality marsh will consist of open shallow marsh habitat with less than a 50% cover of tall persistent emergent vegetation (bulrush, cattail) at full pool level, with persistent emergent vegetation patches smaller than 10 acres, and no unbroken shoreline patches longer than 300 yards. In addition, in managed areas, no more than 20% of plant cover in the wetland emergent plant zone shall be comprised of the following non-native invasive wetland plants: purple loosestrife, phragmites, cocklebur, Russian olive, and false indigo. Conduct needed management at the rate of about 67 acres per year over the life of the CCP.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified by replacing bolded type above with the text in this row.</i>	1,438 acres	1,000 acres		500 acres

Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Mechanically re-open areas that have become vegetated with persistent emergent vegetation in order to set back succession and maintain open, shallow water areas. Mechanically remove longer term mineral and organic deposits that lead to filling and wetland loss.	✓ Up to 200 acres treated annually	✓		✓
Utilize mowing, disking and burning for elimination of vegetation mats and organic material.	✓	✓		✓
Utilize surface excavation and shoreline recontouring where appropriate to open marshes.	✓	✓		✓
Develop and implement an IPM plan (use mechanical, cultural, biological, hydro management and chemical methods) to aggressively reduce the presence of the five nonnative plants in the wetland emergent plant zone.	✓	✓	✓	
Inventory plant communities and annually monitor effectiveness of treatments. Control any reinvasion by nonnatives; and plant native emergents as needed.	✓	✓	✓	
Partner with counties for education/weed control along Refuge borders and reduce sources.	✓	✓	✓	
Increase annual funding by \$100,000 to address costs of monitoring, biological controls, equipment and chemicals used under an Integrated Pest Management Plan.	✓	✓	✓	
<p><b>Rationale:</b> Both Refuges were established to mitigate losses of habitat, including wetlands, caused by dam building in the Columbia River. Providing a diversity of wetlands is vital to the purposes of both Refuges. Yet because of the numerous dams along the length of the Columbia River, and the specific dam and lock operations encompassing river sections within the Refuges, the natural fluvial processes of a free-flowing riverine system have been eliminated. Refuge waters, which are now human-managed and relatively constant-elevation reservoirs, alternately support lacustrine and palustrine systems, but lack necessary disturbance mechanisms to provide and maintain the cyclical aging and renewal processes of wetlands over time. Non-persistent wetlands and mud flats, for example, are vital to a variety of migratory birds and other wetland animals. Both habitat types are mostly non-existent on the Refuges because of the absence of natural disturbance mechanisms. By increasing the number of acres of open shallow marsh through artificial means such as mechanical operations or prescribed fire, the Refuges will mimic natural processes and provide a diversity of successional stages that increase overall biodiversity and prevent wetland loss over time. Species benefiting by such actions could include shorebirds, wading birds, rails, waterfowl and muskrats. Invasive plants (primarily purple loosestrife, phragmites, cocklebur, Russian olive, and false indigo) are widespread in the emergent plant zone of most wetlands on both Refuges and may currently be as high as 30-50% of plant cover in certain areas. Altered plant and animal community composition was identified by the CCP team as a very high stress to wetland systems. Invasive plants limit native plant production and cause impacts to food, nesting, and cover for wildlife. Invasives in wetlands reduce waterfowl food availability during the migration and wintering periods. Limiting invasive species will help the Refuge to comply with county and state ordinances. However, the task is immense, and the Refuge currently does not have either the staff or funding to contain the expansion of invasives, let alone reduce infested acreage. In addition to the expense of new equipment, staff, biological controls, chemicals and monitoring, there would be the recurring expense of reestablishing native vegetation on controlled sites. In addition, within the 15 year timeframe of the CCP, new invasive plants may establish and become the next “problem plant.”</p>				

**Objective 4b: Maintain and Improve Aquatic Bed Habitats.**

Manage wetlands to increase submerged aquatic vegetation cover by eliminating rough fish (carp and bullhead). By the end of 15 years maintain carp-free conditions in at least 2 of these wetlands-McNary Headquarters Wetland Units 2,3, or 4; and Umatilla’s McCormack Slough, Sasquatch, and Figure Eight-and determine the most effective control methods to reduce carp numbers from present levels in areas open to the Columbia River (Casey Pond, Burbank Sloughs and Paterson). Objective will benefit migratory waterfowl (mallard, pintail, lesser scaup, tundra swan) as well as waterbirds (pied-bill grebe) and other native aquatic species.

Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified by replacing bolded type above with the text in this row.</i>	4 wetlands	✓		
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Conduct initial inventory for submerged plants within two years after CCP is finalized; and monitor every five years after that.	✓	✓		
Obtain bathymetric data for Burbank Slough and Peninsula wetlands on McNary Refuge and Paterson and Whitcomb Sloughs on Umatilla Refuge.	✓	✓		
Eradicate carp and bullhead at one or more of the following wetland locations: McNary Headquarters Wetland Units 2, 3, or 4; and at Umatilla wetlands (McCormack Slough, Sasquatch and Figure Eight Ponds) by the end of 15 years. Draw down these wetland areas and if needed utilize rotenone to kill carp and bullhead populations. For effective use of rotenone, and facilitation of equipment needs, burn residual vegetation when appropriate. Coordinate with WDFW and ODFW on rotenone projects, funding initiatives, and partnerships.	✓	✓		
Experiment with water draw downs in advance (work with the Corps on schedule) to determine how low water can get, and make any needed changes in water control structures to facilitate carp removal and growth of submergent vegetation used by waterfowl.	✓	✓		
Consider permitting commercial carp and bullhead fishing in areas open to the Columbia River (Casey Pond, Burbank Sloughs, and Paterson).	✓	✓		
<p><b>Rationale:</b> Umatilla and McNary Refuges have significant wetland resources that provide habitat for wildlife. However, outside of their extensive use by waterfowl and other migratory birds, little is known about submerged vegetation and other aquatic species inhabiting Refuge wetlands. Carp, which are widespread in permanently flooded wetland habitats on the Refuge, are thought to represent a high threat to the functioning of the wetland system, due to their impacts on submergent vegetation and water quality. Carp uproot and eliminate submerged vegetation, increase turbidity (see stress source analysis), and decrease the overall abundance and diversity of the invertebrate community (Miller 2006). Treatments using the natural plant chemical rotenone are expensive, but can be more effective if the amount of water to be treated is minimal and carp and bullhead are concentrated in a small area. Past rotenone treatments have generally been effective, but reintroduction and infestation have occurred at varying rates. This may have occurred because adequate water draw downs did not occur, and/or, all connected pools/sloughs were not treated at the same time. Partnering with experienced State fishery program managers should increase success rates.</p>				



**GOAL 5:** Provide high quality riparian habitats for the benefit of nesting and migrating birds, fish, riparian plants, and other riparian wildlife

**Objective 5a: Improve Condition of Riparian Habitat for Nesting Native Passerines**  
 Conduct needed management on at least 30% (463 acres at each Refuge or 926 total acres) of the total 3,082 acres of priority riparian habitat on both Refuges over the next fifteen years to improve nesting success for native riparian passerines such as the Lazuli bunting, yellow warbler, and yellow breasted chat, and other riparian species identified as Partners In Flight focal species. Needed

management is defined as that combination of treatments and re-treatments which successfully improve the overall condition rating, resulting in a rise into the next highest condition class (poor, fair, good). Conduct needed management at the rate of about 62 new acres per year over the life of the CCP. See condition definition ratings in Appendix F.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified by replacing bolded type above with the text in this row.</i>		62 acres /year	5 acres /year	5 acres /year
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Develop Integrated Pest Management Plan within 1 year of CCP completion and address control of invasives in riparian understory (reed canarygrass, poison hemlock, and false indigo).		✓	✓	
Enhance nesting opportunities within riparian areas by decreasing invasives using weed control techniques (chemical, mechanical, biocontrols) on 5-62 acres of riparian habitat per year.		✓	✓	✓
Enhance shrub and tree layers within existing blocks of habitat by selective planting of native shrubs and cuttings on 5-62 acres of per year.		✓	✓	✓
Monitor species richness, abundance, and productivity by expanding McNary's MAPS station (Monitoring Avian Productivity and Survival) to include the Walla Walla Delta, and adding point counts and nest searches. Track changes in species richness, abundance, and productivity over time, aiming for a 10% increase in species richness and; 20% increase in passerine productivity from 2005 levels.		✓		
Reduce browse damage to trees and shrubs by using fencing, the hunt program, and tree guards.		✓		
Construct one enclosure in each key riparian area and monitor effects on the herbivory.		✓		
<b>Rationale:</b> Refuge riparian habitats are threatened and/or degraded by the presence and dominance of invasive weeds; lack of native shrub components, herbivory by large deer herds (Umatilla), and altered hydrology. Restoration and enhancement efforts are needed to improve overall habitat conditions for migratory birds. Photographs dating from the early 1900s suggest that cottonwood dominated riparian was not common, and willow dominated riparian shrub communities were present along narrow corridors of the river. Therefore, under Alternative 3, there would be a more pronounced focus on restoration of the willow habitats of historic conditions. Ninety-seven native bird species are highly associated with riparian habitat (Altman and Holmes 2000) and six of these are "focal species." Data from the MAPS station at Wallula show the Lazuli bunting, yellow warbler, and yellow breasted chat (three of the focal species) present, but as uncommon nesters on McNary Refuge.				

<b>Objective 5b: Enhanced Cottonwood Recruitment:</b>				
Promote enhanced recruitment (at least 300 stems/acre) and development of cottonwood stands on 5 acres per year at each Refuge.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>		✓		
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Select sites and use managed pool and wetland water levels in concert with soil disturbance (disking) to promote more favorable conditions to induce germination of available cottonwood seed source on exposed soils.		✓		
Request that dam operations make short duration increases in pool levels during the summer to irrigate and enhance young cottonwood survival and recruitment at sites.		✓		

Provide weed control in newly developing cottonwood riparian sites using techniques/treatments identified in the IPM Plan.		✓		
Undertake supplemental plantings of cottonwoods in riparian areas to increase tree diversity and density.		✓		
<p><b>Rationale:</b> As the dominant native overstory tree species of mainstem and low elevation tributary riparian zones, cottonwood is recognized as a “keystone” species in riparian areas. These stands provide important nesting and migrating habitat for migratory birds. Reliable cottonwood recruitment is necessary for the perpetuation of cottonwood dominated riparian stands. The altered water regime of the Columbia River was identified by the CCP team as a high source of stress, leading to low or altered recruitment of native plants and an altered plant community composition in most Refuge riparian zones. Major losses to riparian vegetation and ecological function have occurred in response to regulated flows in river systems (Jamieson and Braatne 2001). Cottonwood recruitment may be improved, however, by using managed pool/wetland levels which mimic natural timing of cottonwood seed dispersal and germination (Jamieson and Braatne 2001). Managers have noted extensive cottonwood regeneration after soil disturbance in managed moist soil units at the Wallula Unit and within reservoir dominated embayments at Patterson and McCormack. Recruitment density of about 300 stems per acre would achieve approximately 12’ by 12’ spacing at the mature stage, assuming no mortality (Ashrein/ Clarrs). The cottonwood species that is currently regenerating most naturally in the system is the plains cottonwood (<i>Populus deltoides</i>). However, when constructing restoration and planting using cuttings/rootstock, the Refuges will try to use the native black cottonwood (<i>Populus balsamifera</i> spp. <i>tricarpa</i>).</p>				

**GOAL 6: Protect the integrity of the biological resources of the river islands.**



<b>Objective 6a: Maintain Waterbird Populations</b>				
Manage river island habitats at Umatilla and McNary Refuge’s to benefit a diversity of nesting birds (ducks, geese, songbirds and shorebirds) and waterbird colonies( gulls, terns, herons, and cormorants) at their current population levels.				
<b>Alternatives</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Objective as written above applies to alternatives (✓)	✓	✓	✓	✓
<b>Strategies Applied to Achieve Objective</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Increase law enforcement patrols, news releases, and signage to protect island nesting birds from disturbance.	✓	✓	✓	✓
Manage island substrate and vegetation to ensure that a diversity of nesting habitats for colonial waterbirds are available.		✓	✓	
Monitor size of nesting and waterbird colonies, including Canada geese, mallard, American white pelican, Forster’s tern, Caspian tern, and great blue herons; and identify potential threats to production.		✓	✓	
Increase coordination with various agencies, scientists, and others studying island resources, and assist their efforts by seeking funding, issuing special use permits, helping design study protocols, and monitoring research progress.	✓	✓	✓	
In response to Endangered Species Act requirements for federally listed salmon stocks, consider a range of options to limit piscivorous waterbird depredation, if scientifically sound data demonstrate a critical need to limit depredation due to significant impacts on salmon survival. If controls are deemed appropriate, a written step-down plan and the National Environmental Policy Act documentation shall be developed with evaluation of the effects to fish and waterbird populations. Actions shall be planned and implemented using a multi-agency approach and multiple funding sources.	✓	✓	✓	

Continue to monitor, measure, and document rates of erosion of all islands.	✓	✓	✓	
<p><b>Rationale:</b> Canada geese nest on all Refuge islands, as do lesser numbers of mallards and other migratory birds. The American white pelican colony (listed as endangered by the State of Washington) at McNary Refuge’s Badger Island is the only successful breeding colony in the State. Foundation Island provides nesting habitat for great blue heron, double-crested cormorant, and black-crowned night heron colonies. Piscivorous colonial nesting birds, especially Caspian terns, have been identified as having negative effects on salmon smolt survival (USFWS 2005). Double-crested cormorants can consume relatively large numbers of salmonids at certain times of the year. Caspian terns nesting on McNary’s Crescent Island number only about 500 pairs, however, as much as 70% of their diet consists of salmon or steelhead smolts (Antolos et al. 2005 and Collis et al. 2004). This colony inhabits only a small area of Crescent Island and will likely not grow larger as it is surrounded by a gull colony and vegetation. Nesting gull colonies, mainly ring-billed and California gulls have increased significantly in the last 20 years. Forster’s terns have declined as a nesting species, while great egrets have recently expanded into the area. As conditions continue to change in the larger Basin-wide area due to prey species, human recreation/disturbance, management of water/hydropower, and animal and human population changes, waterbird populations will continue to change and provide a good barometer of island integrity. Erosion of Refuge islands has been documented in the past; however, more recent changes in reservoir elevations and pool operations have likely reduced the rate. Any erosion that does occur means remaining island acreage becomes more important to wildlife. It is important to monitor measure and document changes in island erosion rates.</p>				

<b>Objective 6b: Limit Island Disturbance</b>				
<p>Limit disturbance to island habitats, wildlife, and other island resources by enforcing existing and new island closures as follows:</p> <ul style="list-style-type: none"> <li>• Strawberry Islands: Existing total closure of Strawberry Islands to public use, including beach areas, will be enforced.</li> <li>• McNary Islands: Existing total closures of Foundation and Badger islands will be enforced. However, Crescent Island will continue to be open to waterfowl hunting.</li> <li>• Umatilla Islands: Total closure of all Umatilla Islands to all public use, including closing the islands to existing seasonal beach use and implementing a no-wake zone.</li> </ul>				
<b>Alternatives</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
<i>Objective as written above applies to alternatives (✓)</i>		✓	✓	
<b>Strategies Applied to Achieve Objective</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Increase public education and outreach to notify and inform public about the sensitivity of biological resources on the islands and the need for closures to protect birds.		✓	✓	
Improve and increase island signs as needed.	✓	✓	✓	
Implement a no-wake zone within 100 feet of islands on Refuge managed waters (Umatilla). Prohibit fishing tournament access within ½ mile of pelican nest colonies.		✓	✓	
Increase law enforcement patrols, enforce beach closures, and deter use in unauthorized areas.		✓	✓	
<p><b>Rationale:</b> The river islands on McNary and Umatilla Refuges support breeding habitat for several groups of species, including colonial waterbirds, shorebirds, geese, ducks, swallows and deer. Wildlife seek out the islands for breeding habitat because of the islands’ relative isolation, security, and general lack of mammalian predators. Security was identified as a key ecological attribute supporting the islands’ wildlife communities. The islands also have important cultural resources; especially Strawberry Island which contains a site in the National Register of Historic Places. Because of these unique traits, recreational disturbance and recreation-induced habitat modification such as accidental fire, has long been a concern. Human use causes direct impact on the beaches themselves, including direct displacement of geese, shorebirds, and bank nesting swallows from potential foraging and nesting habitat. Garbage and human waste present ongoing problems. Island closures are necessary to protect biological and cultural resources from adverse modification. Umatilla Island previously open to seasonal beach use would be closed to protect archeological resources and habitat and wildlife resources. Of particular concern is the potential of human-induced fire on the islands, which would threaten the heron rookeries on Big Sand Dune Island, and important sagebrush habitat used by nesting geese on Blaylock Island.</p>				

**GOAL 7: Conserve and restore the plants, animals and shrub-steppe community representative of historic Columbia Basin habitats.**



<b>Objective 7a: Improve Shrub-Steppe Condition</b>				
<p>Conduct needed management on <b>30%</b> of the 9,605 acres (2,000 acres at Umatilla and 881 acres at McNary for a total of 2,881 acres) encompassed by the fifteen priority shrub-steppe interest areas (see Appendix F). Needed management is defined as that combination of treatments and re-treatments which successfully improve the overall condition rating resulting in a rise into the next highest condition class (poor, fair, good). Conduct needed management at the rate of about 192 new acres per year over the life of the CCP. See the definitions and habitat condition class ratings in Appendix F.</p>				
<b>Alternatives</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Objective as written above applies to alternatives (✓) <u>or</u> the alternative is modified by replacing <b>bolded type</b> above with the text in this row.	Improve conditions on 10 %	Improve conditions on 30%	Improve conditions on 45%	Improve conditions on 10%
<b>Strategies Applied to Achieve Objective</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Each year, improve native plant cover and distribution within one of the fifteen blocks by active planting or seeding appropriate native species. Consider needs of long-billed curlew, burrowing owl and other shrub-steppe inhabitants.	✓	✓	✓	✓
Conduct follow up treatments for weeds and/or additional plantings on each managed block as needed.	✓	✓	✓	✓
Conduct chemical weed control to reduce cheatgrass and other targeted weeds annually.	✓	✓	✓	✓
Initiate integrated pest management by writing an IPM step-down plan by 2008.	✓	✓	✓	
<p><b>Rationale:</b> An estimated 10.4 million acres of shrub-steppe habitat occurred in the state of Washington at the time of European settlement (Dobler et al. 1996). By the late 1980s only about 40% remained. Locally, Benton and Walla Walla Counties had 48% and 33% of the original shrub-steppe habitat remaining, respectively (Dobler et al. 1996). Both Refuges total more than 10,000 acres of shrub-steppe habitat in various conditions. Most shrub-steppe areas on the Refuges are threatened and/or remain in a degraded condition due to invasive plants, wildfire, and poor native plant recruitment/recovery. Fifteen of the larger blocks of shrub-steppe habitat totaling 9,605 acres were selected (Table 4-2) for the focus of shrub-steppe restoration and enhancement activities based on their size and connectivity on-and-off the Refuges. Though these acreages are relatively small, restoration efforts may provide valuable habitat for some shrub-steppe dependent species.</p>				

<b>Objective 7b: Protect and Restore Burrowing Owls</b>
<p>Pending the results of inventories listed above in 3b, <b>protect and restore</b> suitable habitats for the benefit of burrowing owls. At a minimum, we will maintain one viable colony at the McCormack Unit of Umatilla Refuge.</p>



Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified by replacing bolded type above with the text in this row.</i>	Protect only	✓	✓	Protect only
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Investigate the possibility of transplanting ground squirrels in appropriate areas on both Refuges		✓	✓	
Experiment with the creation of artificial burrows adjacent to existing nesting areas		✓	✓	
Identify historic sites that may have been occupied by colonies on the Refuges.		✓	✓	
Restrict public access to known and historic breeding sites.		✓	✓	
Prepare materials and messages for public outreach and education efforts to raise awareness of burrowing owls and the threats posed by urban development, including shooting/poisoning/control of burrowing mammals.		✓	✓	
<b>Rationale:</b> Burrowing owls are declining within the states of Oregon and Washington and may be at risk on the Refuges. Small numbers have historically nested on the Refuges, but there has not been an extensive inventory.				

<b>Objective 7c: Protect Shrub-Steppe Habitats</b>				
Over the life of the CCP, protect and/or maintain the 9,605 acres (2,796 at McNary and 6,809 at Umatilla) encompassed by the fifteen priority shrub-steppe interest areas for both Refuges (see Appendix F), by minimizing ground disturbance, <b>reducing fire starts</b> , and implementing emergency stabilization and rehabilitation of wildfire impacts.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified by replacing bolded type above with the text in this row.</i>	Current fires starts and response time	✓	✓	Current fires starts and response time
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Incorporate standards and procedures for maintenance and management activities to minimize activities that disturb soil surfaces.		✓	✓	
Increase fire crew availability and readiness for initial attack by maintaining three fire engine crews at McNary and one at Umatilla.		✓	✓	
Reduce likelihood of fire ignitions from recreational activities in priority shrub-steppe areas through education, interpretation, and careful planning of recreational facilities.		✓	✓	
Increase coordination and cooperation with rural fire districts and expand mutual aide agreements. Provide education and assistance to rural fire district staffs.		✓	✓	
Coordinate with railroad companies to alter train operations, if possible, to reduce fire ignitions. Investigate and document fire starts and seek compensation from railroads for restoration needs where ignitions can be tied to train operations.		✓	✓	
Implement emergency stabilization and rehabilitation actions following wildfires; including soil stabilization, cultural resource protection, nonnative invasive species control, native grass/shrub seeding and planting, and effectiveness monitoring	✓	✓	✓	

Continue to inventory and control nonnative invasive plant species (cheatgrass, starthistle, knapweed) based on IPM plans and procedures.	✓	✓	✓	
<p><b>Rationale:</b> Remaining shrub-steppe habitats are threatened and/or remain in a degraded condition due to an extensive history of wildfires, poor native plant recruitment/recovery following fires, and ground disturbance activities (roads, trails, heavy equipment). Limiting/eliminating ground disturbing activities and reducing fire starts and/or decreasing fire sizes by through fire suppression and aggressive initial attacks, would benefit habitats. Fire regime is one of the key ecological attributes affecting the viability of the shrub-steppe system. A less intense and less frequent fire regime was present historically. The current more intense and frequent fires create a cycle of habitat modification and degradation that needs to be reversed and better post-fire rehabilitation and stabilization project planning and on-the-ground success instituted.</p>				

**Objective 7d. Bitterbrush Management**

Over the life of the CCP, maintain existing stands of shrub-steppe habitat containing bitterbrush as a key shrub component on the Umatilla Refuge; and increase acreage by planting bitterbrush in **50 acres** of shrub-steppe to achieve at least a 30% bitterbrush component.

Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified with the text in this row.</i>	maintain as resources permit	50 acres	100 acres	maintain as resources permit
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Review, consult with experts, and if necessary, initiate research studies to explore local causes of bitterbrush decadence and death at Umatilla Refuge.		✓	✓	
Increase the rate of reduction of the deer herd at Umatilla Refuge, McCormack Unit (see Objective 10d).		✓	✓	
Over the life the CCP, plant 50-100 acres of bitterbrush in appropriate areas of shrub-steppe to obtain a minimum 30% bitterbrush shrub component at Umatilla; avoiding areas known or potentially inhabited by Long-billed curlew.		✓	✓	

**Rationale:** Shrub-steppe habitats on Umatilla Refuge, and to a lesser extent on McNary Refuges, have historically contained areas of high density bitterbrush. Bitterbrush has been declining at an alarming rate in recent years; possibly from fires, altered hydrology, herbivory by deer, and/or all three. Herbivory was identified as a moderate stress on shrub-steppe habitats as a whole, but it disproportionately affects bitterbrush. Reductions in fire ignitions and fire damage can benefit bitterbrush and are covered in Objective 7c. At this time, the Refuge does not have a strategy for addressing altered hydrology. Restoring bitterbrush to these areas would increase the overall plant diversity and integrity that is characteristic of good quality Lower Columbia Basin shrub-steppe. Restoring bitterbrush as a natural component of the historical assemblage of plants present on the Refuges' shrub-steppe habitat, would also be consistent with the Service's 2001 policy on Biological Integrity, Diversity, and Environmental Health (601 FW 3). However, the Refuges will avoid concentrating bitterbrush plantings in curlew focal areas because curlews tend to avoid dense shrubs. Pampush (1981) found that nest density was negatively correlated with vegetation height and vertical density, and areas with bitterbrush and dense forbs were avoided by curlews.

**Objective 7e. Restore Shrub-Steppe Habitats by Decreasing Roads and Development**

Restore native shrub-steppe habitats on suitable lands such as those occupied by unnecessary roads, waste sites, gravel pits and cropland no longer suitable or needed for crop production for waterfowl. Restore **350 acres** total (175 acres for each Refuge) during the life of the CCP.

Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified by replacing bolded type above with the text in this row.</i>	100	350	600	

Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Close all remaining unnecessary and unauthorized roads or trails in the Burbank Sloughs and the Peninsula Unit of McNary, and Paterson units at Umatilla, as well as other Refuge sites as needed. Restore 25 acres of shrub-steppe on these areas. Also see Objective 9i.	✓	✓	✓	
Restore to native shrub-steppe habitat 75 acres of former mining and gravel sites adjacent to Humorist Road at McNary, and other minor sites as needed. Remove large rock piles, level all areas, and restore native shrub-steppe habitat by controlling nonnative plants (i.e. cheatgrass and kochia) prior to seeding areas with site-appropriate native grass seed or planting native shrubs.	✓	✓	✓	
Restore native shrub-steppe plant communities on 250 acres of fallow croplands which are not needed or are unsuitable for crop production as identified on the vegetation map.		✓	✓	
Restore native shrub-steppe plant communities on up to 250 acres of existing cropland if agricultural acreage is reduced. Restoration of cropland should be completed in the same year that the land is taken out of production, in order to take advantage of weed free fields and the availability of fall irrigation.			✓	
Use chemical weed control treatments and fall native grass seed drilling when possible.	✓	✓	✓	
Use site monitoring, multiyear follow-up treatments, and selective planting of shrubs and forbs in all restoration treatments.		✓	✓	
Consider needs of high priority wildlife species including: burrowing owl, long-billed curlew, and ground squirrels in site plans.	✓	✓	✓	✓
<p><b>Rationale:</b> Shrub-steppe habitats can be restored on many areas, including areas those occupied by unnecessary and unauthorized roads, especially in the Burbank Sloughs and Peninsula Units. The existing spider-like web of trails is the result of illegal and/or unfettered public access over many years of management with little enforcement presence. Once access is restricted to designated roads, all unnecessary roads can be restored to shrub-steppe habitat. It is estimated that 25 acres of roads, trails, and waste sites could be closed and restored. In addition, there are approximately 250 acres of abandoned former agricultural lands in a weedy condition are absent of native grasses or shrubs. These lands can also be restored using chemical weed control, fall native grass drilling, and selective plantings of shrubs and forbs. In addition, if agricultural land dedicated to production of crops for wildlife is reduced under Alternative 3 of this plan; an additional 250 acres of existing cropland will become available for restoration. Restoration of croplands should be completed the same year lands are taken out of production, to take advantage of weed free fields and the availability of fall irrigation. Former gravel and rock operations off of Hansen Loop Road at McNary account for another 75 acres of land for potential shrub-steppe restoration. Because much of the restoration will occur on smaller habitat fragments, it is important to carefully consider the needs of high priority wildlife species including: burrowing owl, long-billed curlew, and ground squirrels in all site plans prior to initiating restoration projects.</p>				

<b>Objective 7f: Increase Shrub-Steppe Connectivity</b>				
Increase connectivity of Refuge priority shrub-steppe areas to off-Refuge shrub-steppe lands adjacent to or near the State Line and Juniper Canyon Units on McNary Refuge.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓).</i>			✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Work with neighboring private landowners within the Wallula Gap area to pursue cooperative plans and/or incentive programs for maintaining or improving shrub-steppe habitats. Also see Objective 8c.			✓	
Explore use of cost share and volunteer agreements, projects, grants, easements and other innovative tools to encourage restoration and/or maintenance of surrounding lands. Also see Objective 8c.			✓	

Explore use of cooperative agreements/memorandums of understanding with the Bureau of Land Management, Lewis and Clark College and Oregon Department of Lands for projects and coordinated management efforts to improve habitat. Also see Objective 8c.			✓	
<p><b>Rationale:</b> Habitat fragmentation was identified as a medium stress to the shrub-steppe system on the Refuge, which stems from a variety of threats, including transportation and development, agricultural conversion, and an altered fire regime. The most promising areas, in which greater connectivity could be achieved, are the shrub-steppe habitats within the Wallula Gap area, which represents one of the most extensive areas of good quality habitat in close proximity to the Refuge. This checkerboard pattern of ownership, however, will need a cooperative effort by various landowners and government entities to effectively protect and restore this area. Unique resources such as the peregrine falcon, prairie falcon, and golden eagle use areas extend over many ownerships. Large portions of land owned and managed by the Bureau of Land Management and Lewis and Clark College may lend itself to joint projects and coordinated management efforts to improve habitat. Cost share and volunteer agreements/projects, grants, easements and other innovative tools used to encourage restoration and/or maintenance of surrounding lands could be effective in protecting habitat on a larger landscape scale needed by several species. Also see Objective 7c.</p>				

**GOAL 8: Protect and maintain the ecological integrity of talus, outcropping, and cliff habitats for natural levels of species diversity.**

<b>Objective 8a: Maintain Intact Rock Structures</b>				
Protect and maintain all cliffs, talus slopes, and outcroppings in intact structural condition to benefit cliff nesting birds (peregrine falcon, prairie falcon, and white-throated swift) and other unique species (common night snake, and rattlesnake hibernacula).				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
Objective as written above applies to alternatives (✓)	✓	✓	✓	✓
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Prevent illegal mining or extractive activities on the Refuges' natural rocky features and basalt columns, including collection for home landscaping, through proper signing and education. Photograph/document significant areas most threatened by illegal activities.	✓	✓	✓	✓
Provide adequate sanctuary for raptor nesting sites, and limit public uses to the Big Six uses only, in areas without significant nesting bird populations.	✓	✓	✓	✓
<p><b>Rationale:</b> Maintaining the size and composition of rocky habitats was identified as a key ecological attribute of the cliff/rimrock/talus and outcroppings target as indicated by cliff dominance (high cliffs), the variety of rock features and the amount of talus with larger rocks and deeper masses. The Refuges have received requests for rip-rap and basalt columns, increasingly being used in home landscaping, with at least one incidence of theft/vandalism occurring at a neighboring Refuge. Signing, law enforcement and education may help prevent illegal activities and theft. The rock outcroppings represent a small portion of Refuge lands, but they provide habitat for cliff nesting birds (peregrine and prairie falcons, white-throated swift, and golden eagle) and other unique species (common night snake, rattlesnake hibernacula, big-horned sheep, and mule deer).</p>				

<b>Objective 8b: Conduct Baseline Inventory of Rocky Habitats</b>				
Conduct baseline inventory of plant and wildlife resources inhabiting rocky habitats, with particular emphasis on Stateline and Juniper Canyon Units at McNary Refuge and Crow Butte and Ridge Units at Umatilla Refuge. Inventories should focus on determining the presence and abundance of birds, bats, reptiles, amphibians, rare plants of any key functional areas such as nest sites or hibernaculum.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
Objective as written above applies to alternatives (✓)	✓	✓	✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Pursue cooperative funding and partner contributions for the inventory.	✓	✓	✓	

Survey and mark the boundary of the Stateline and Juniper Canyon Units at McNary and fence cattle out of protected areas.	✓	✓	✓	
<p><b>Rationale:</b> The wildlife and plant resources utilizing the Refuges’ rocky habitats have not been systematically inventoried. Experts present during the wildlife and habitat management review stated that the Juniper Canyon/Stateline cliffs and talus areas are known to provide habitat for big herds of mule deer, prairie falcons, white-throated swift, common night snake, big-horned sheep, black-tailed jackrabbit, and golden eagle. In addition, there is a known peregrine falcon eyrie on McNary Refuge, as well as a rattlesnake hibernaculum at Paterson Unit (there may be a hibernaculum at Wallula too). There is the potential for several species of bats and various reptile, and amphibian species to be present as well. An inventory is needed. It is also important to mark the boundary since the zigzag ownership pattern makes it difficult to discern property lines, and to fence cattle out of protect resources.</p>				

<b>Objective 8c: Develop Corridor Management Plan</b>				
<p>In partnership with neighboring landowners and other partners, develop a management plan along the Stateline/Juniper Canyon corridor of McNary Refuge to protect resources and prevent the degradation of biological resources due to misuse or overuse. Plan should specifically focus on:</p> <ul style="list-style-type: none"> <li>• Cooperative wildfire management</li> <li>• Coordination on public uses and access</li> <li>• Coordination on habitat management issues and opportunities</li> <li>• Coordination on wildlife protection</li> </ul>				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>			✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Invite the following partners to participate in the corridor plan: all adjacent landowners, Lewis and Clark College, the Ice Age Institute, Smith Farms, the Bureau of Land Management, ODFW, WDFW, Washington Department of Transportation (WDOT), and Union Pacific Railroad.			✓	
Seek funding from diverse sources (Partners for Fish and Wildlife Program, etc.) and add one term position to aid in the partnership planning effort.			✓	
Work with WDOT to encourage designating the Highway 730 corridor a scenic byway.			✓	
Identify types, magnitudes, and locations of existing public uses and their relation to wildlife resources.			✓	
Discourage the expansion or development of new recreational sites and facilities until more information is gathered about existing biological resources.			✓	
Increase cooperative law enforcement efforts aimed at illegal uses such as trespass grazing, All Terrain Vehicles, and target practice and increase signage and informational efforts			✓	
With partners, address recreational uses including hiking, rock climbing and other uses potentially detrimental to wildlife. As needed, enact use zoning, area closures and/or regulate seasons of use in response to wildlife and habitat data gained in Objective 7B.			✓	
<p><b>Rationale:</b> The unique native wildlife and plant resources found on the Refuges’ rocky habitats will be best conserved and protected if a larger area-wide conservation plan can be adopted. A plan that involves all landowners in a corridor-wide conservation approach has the potential to restore the rich native diversity of plants and animals. Funding for projects will also benefit from involving a number of partners and publics. Since all the unique native wildlife and plant resources found on the Refuges’ rocky habitats have not been inventoried, it is appropriate to delay development or expansion of any public uses until the resources and sites are known. Currently, the Refuge managed area is open to the big six uses, but because of the severe terrain and lack of parking, access sites, and trails, public use is very light. However there is demand for more hiking trails for wildlife observation, so it is imperative to conduct baseline inventories soon.</p>				

**GOAL 9: Visitors and local residents enjoy, value, learn about, and support the Refuges.**



<b>Objective 9a: Expand and Enhance Viewing Opportunities and Trail at McNary Headquarters Unit</b>				
Enhance and improve wildlife viewing, interpretive, and trail opportunities and facilities at McNary Refuge’s Headquarters Unit.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above alternatives (✓)</i>		✓	✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Improve the current wildlife viewing trail by developing a safe pathway or boardwalk parallel to Lake Road, or creating a new loop trail that allows visitors to begin and end their walk at the Education Center.		✓	✓	
Provide a spur off the north side of the Wetland 4 leading to a new overlook/interpretive point and continuing on to connect to the Walla Walla District Library.		✓	✓	
Develop a new kiosk/overlook on the north side of the Headquarters overlooking Wetland 4.		✓	✓	
Evaluate connection to Hood Park hiking trail via a proposed underpass at SR 124 if WDOT constructs a new cloverleaf access from State Highway 12		✓	✓	
Expand bird list to an all wildlife species list and make available at the Education Center.		✓	✓	
Enhance viewing opportunities along the south, west and northwest shorelines of Unit 4 by opening vegetation (i.e. reduce the density of emergent vegetation).		✓	✓	
<p><b>Rationale:</b> The McNary Headquarters Unit is the most heavily used unit at McNary Refuge for wildlife viewing, photography, and interpretation, and is the center point of the Refuge’s Environmental Education program. The current wildlife viewing trail serves all these uses, providing a relatively flat two-mile nature walk through native shrub-steppe habitat, along the shores of two wetlands, and near the edge of Refuge agricultural fields. However, the trail could be much improved with certain modifications. Most pressing is the completion of a loop offering a safe return along Lake Road (currently users who wish to loop back to the headquarters must share the narrow Lake Road crossing with cars and trucks). A boardwalk could be constructed parallel to the roadway or through the east side of the slough. Users have also requested enhancement of viewing areas along the south side of the slough, which can be provided by opening the dense vegetation along the shoreline area. There is an intriguing potential to connect the McNary Headquarters trail directly to the Corp’s Hood Park nature trail and possibly a regional bike trail system through the creation of a SR-124 underpass as part of a WDOT highway 12 improvement project. Doing so could conceivably attract new visitors to the Refuge system; however, impacts need to be evaluated. Local connectivity of the Refuge with the town would be enhanced by connecting the north end of the trail to the library via a new spur.</p>				

<b>Objective 9b: Promote Bird Watching at the Wallula Unit</b>				
Provide new bird watching opportunities and facilities at the Wallula Unit of McNary Refuge with a focus on expanding visitors’ awareness of riparian passerine birds and their habitats.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>		✓		

Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Sign and develop the Wallula South Wetland 3 trail for bird watching use. Improve and expand trail from existing parking area using the old road bed and new dike; add foot bridge. The area currently has holes in the old roadbed and other obstacles making it user “unfriendly.”		✓		
Develop interpretive signs for the area focusing on passerine birds and riparian habitat.		✓		
Sign the Horse Trail on north side of Wallula Unit for use by birdwatchers.		✓		
Develop a brochure for a new “birding-canoe” trail along the Walla Walla River. Brochure should describe the birds that can be observed along the route. Partner for an off-Refuge canoe trail connection to either Pierce Campground or upstream to Nine Mile Ranch for canoe put-in, and to the existing boat launch at Madame Dorion for take-out.		✓		
<p><b>Rationale:</b> The Wallula Unit is currently open for public use but is not promoted by the Refuge for one of its prime assets—riparian bird habitat. Encouraging existing Refuge wildlife viewers (who primarily utilize McNary Headquarters Unit) to use the trails in the Wallula Unit for birding, will expand Refuge visitor awareness of migratory passerine birds and their habitats and diversify visitor experiences. Similarly, defining and advertising a canoe trail along the lower Walla Walla River would expand visitor awareness of safe boating opportunities and enhance users’ ability to sight and enjoy riparian and aquatic birds and other wildlife.</p>				

Objective 9c: Expand Interpretive Overlooks along Highway 14				
Develop (expand upon) interpretive overlooks along Highway 14 overlooking the Columbia River Islands on Umatilla Refuge.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>		✓		
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Identify sites and develop interpretive themes with assistance from the Service’s Branch of Visitor Services and Communications.		✓		
Improve Refuge boundary signage where it parallels or is adjacent to State Highway 14.		✓		
Work with the State of Washington and the railroads to plan and fund safe pull-offs with identification signs along State Highway 14.		✓		
Expand, improve, and pave parking lots at overlooks as necessary using Refuge Roads funding.		✓		
<p><b>Rationale:</b> The drive along State Highway 14 on the Washington side of Umatilla Refuge affords the best overlook of Umatilla Refuge and one of the few broad vistas of shorelines and islands along the Mid-Columbia River. Much of the Refuge boundary along Highway 14 is an ideal location for emphasizing interpretation. Interpretive panels are currently installed at one overlook site but there are opportunities to designate additional sites, especially overlooking the picturesque Blalock Islands. Parking, highway turnoffs, and signing all need improvement.</p>				

Objective 9d: Enhance Viewing Opportunities at the McCormack Unit				
Enhance and expand wildlife viewing, interpretation, and trail opportunities on the McCormack Unit of Umatilla Refuge.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	

Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Add improvements such as benches and sun shades along the Morrow County Columbia River Heritage Trail.		✓	✓	
Establish a photography/wildlife viewing blind along the Heritage Trail at a site adjacent to the East McCormack Slough in consultation with professional wildlife photographers.		✓	✓	
Realign last ¼ mile of auto tour route and restore and open up adjacent wetland unit to provide more open water and close up views of wetland and wildlife.		✓		
<p>Improve Heritage Trail alignment and trailhead locations to minimize trail user conflicts between hunting and auto tour routes; and provide better access to trails from a centralized parking area. Trailhead parking would be located at current hunter check station parking lot with three possible realignments of the trail. Update Refuge brochure after any realignment.</p> <ul style="list-style-type: none"> <li>• Shift Morrow County is Columbia River Heritage Trail south along the south ridge road and connect the trail to current hunter check parking area; eliminate crossing the wetlands. Under this proposal the fill material and bridge added to cross the wetland would be removed.</li> <li>• Combine 1 above, by shifting the Columbia River Heritage Trail south along the south ridge road, connecting the trail to the current hunter check-in parking areas and eliminating crossing the wetlands; plus construct a .2 mile loop trail on the north side of East McCormack Slough connecting the current hunter check-in parking area with the existing auto tour route.</li> <li>• Connect to the current Heritage Trail and auto tour route from the hunter check-in parking lot via a bridge and/or boardwalk area making a .2 -mile loop trail; but no realignment of current Heritage Trail or removal of the bridge.</li> </ul>	✓	✓	✓	
Explore potential for adding side trails off Heritage Trail; however not in the proposed closed area of east McCormack Slough.		✓	✓	
<p><b>Rationale:</b> The McCormack Unit is the focal point for Umatilla Refuge wildlife viewing activities. The improvements listed above will enhance the visitor viewing experience, increase visitor access to interpretive and informational material, and provide better opportunities for wildlife photography and other nonconsumptive uses from designated sites. These activities will complement Objectives 9e (nearby facility consolidation and improvement) and Objective 1d (designation as sanctuary on the East McCormack Slough). To reduce waterfowl hunter/wildlife observer/auto tour route user conflicts, the Heritage Trail could be realigned to be adjacent to Ridge Road above the slough. Although this would limit user conflicts, it would lessen opportunities for viewing wetland birds at close proximity. The preferred option is to build a boardwalk along Patterson Ferry Road from the hunter check station parking lot to the current trailhead but have seasonal closures on the trail. This is the preferred alternative because it brings trail users closer to the sloughs and improves wildlife viewing and photography opportunities.</p>				

Objective 9e: Consolidate McCormack Unit Visitor Facilities				
Develop a consolidated visitor contact site that includes the hunter check station; trailhead facilities; visitor orientation; information interpretive panels; and a new Refuge manager's office at Umatilla Refuge's McCormack Unit.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
Objective as written above applies to alternatives (✓)	✓	✓		
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Replace and move a new Refuge manager's office to the McCormack Slough check station site.	✓	✓		
Create small interpretive area at contact station at or near the new manager's office.	✓	✓		



Create outdoor visitor orientation/interpretive panels and/or kiosk; and have parking area serve as trailhead for Heritage Trail.		✓		
<p><b>Rationale:</b> The Refuge manager’s office is currently located on the Columbia River shoreline on the McCormack Unit. The area is closed to public access and well away from McCormack Slough where most Refuge visitors spend time. Moving the manager’s office to the hunter check station location will provide the public with greater opportunities to ask questions of the manager, will provide the manager a better understanding of visitors and their use needs and patterns, would provide greater program visibility, and will promote visitor compliance with Refuge regulations.</p>				

<b>Objective 9f: Improve Horseback Riders’ Awareness of Refuge Riding Areas and Policies</b>				
Horseback riders should be aware of and understand the reasoning behind horseback riding restrictions at both Refuges.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>		✓	✓	✓
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Assess usage of trails by horseback riders		✓	✓	✓
Develop new signs and/or improve existing signs, brochures, or kiosks to inform users that horseback riding on the Refuges is limited to public roads and horseback riding trails and to explain the reasons for restricting riding to these areas (non-Big Six use, nonnative seeds are spread by hoof and through manure).		✓	✓	
Work with local horseback riding clubs to improve relationships, develop partnerships, and promote the “Adopt a Trail” program.		✓	✓	
Increase patrols and continue using law enforcement to educate and/or cite offenders.		✓	✓	✓
Use Friends Newsletters to get the message out to the riding public (Friends Group members have a large positive impact in spreading the Refuge message).		✓	✓	✓
<p><b>Rationale:</b> Horseback riding is popular with local and surrounding riding clubs and horse owners. Currently, horseback riding is allowed on existing roads and two designated trails. Use is seasonal, mostly during the fall and spring. This contingency has historically been very supportive of the Refuge and has advocated an “Adopt a Trail” program. This objective should be attainable by implementing the stated strategies under the checked alternatives.</p>				

<b>Objective 9g: Manage Madame Dorion Park as a Day-use Only Site.</b>				
Limit public uses at McNary Refuge’s Madame Dorion Park to day use only with an emphasis on the Big Six uses and eliminate public camping.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified with the text in this row.</i>	✓	✓	✓	Continue to operate campsite
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
After publication of this CCP and in coordination with and review by the Corps, Walla Walla County, and owners of the campsite and park at the Pierce Happy Valley Campsite, close the campsite at Madame Dorion Park and change use to a day use area only.	✓	✓	✓	
<p><b>Rationale:</b> The January 2000 Cooperative Agreement with the Corps specified that the Madame Dorion Park and campground were to be operated and maintained for the term of the agreement; it also included a provision that the Service should address future management and operation issues by completing a CCP within 5 years of the effective date of the Agreement. During the CCP review, the team focused on the presence of an alternative, privately-owned campground (Pierce Happy Valley) in close proximity to the Refuge, just 4 miles upstream. This well maintained fee camping site provides enhanced services over the government-operated campground. The team believes the public is better served by converting Madame Dorion Park to a day use only site, reducing law enforcement issues associated with camping, and</p>				

allowing the Refuge to promote Big Six uses such as wildlife viewing and photography at Madame Dorion Park site. Existing boat launch and rest area facilities would be maintained.

<b>Objective 9h: Eliminate Illegal Shooting</b>				
Eliminate illegal target shooting at gravel pits at McNary's Juniper Canyon and Peninsula Units.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	✓
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Install Refuge unit entrance signs on each unit and clearly sign illegal target shooting areas with "No Target Shooting" signs.	✓	✓	✓	✓
Clean up debris in target shooting areas, especially at Juniper Canyon.	✓	✓	✓	✓
Increase patrols and use law enforcement to educate and deter illegal usage.	✓	✓	✓	✓
Coordinate with the Refuges' Friends Group, the Richland Rod and Gun Club, and other news outlets to get the message out to the public.	✓	✓	✓	✓
<b>Rationale:</b> As an illegal activity that causes disturbance, trash issues, and safety concerns, it needs to be eliminated.				

<b>Objective 9i: Drastically Reduce Dumping at the Burbank Sloughs and Peninsula Units and Involve the Burbank Community and Other Refuge Users in Maintaining a Clean Environment</b>				
Reduce the tonnage of dumped material at the Burbank Sloughs and Peninsula Units of McNary Refuge to < 1 ton/year, within 5 years, to increase value of habitat and reduce pollutants at sites.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified by replacing bolded type above with the text in this row.</i>	✓	✓	✓	5 tons/year dumped currently
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Increase present efforts to involve and inform the Burbank community and other Refuge users about to reducing dumping. Begin outreach during initial cleanup project so the that area is less likely to revert to its former condition: consider workshops, posters, direct letters, contests, school and youth involvement.	✓	✓	✓	
Research title history to accurately establish boundary at the Burbank Sloughs and Peninsula Units. Survey and post the boundary.	✓	✓	✓	
Define and mark access points and routes, closing and restoring other unauthorized routes and access points. Develop one or two main entrance points and sign them appropriately as entrances of a National Wildlife Refuge unit. (Also see Objective 7e)	✓	✓	✓	
Increase law enforcement, signing, and education, to cut down on illegal activity, especially dumping.	✓	✓	✓	
Increase both law enforcement patrols and regular (scheduled) staff presence on the site by all Refuge staff and/or volunteer representatives.	✓	✓	✓	
<b>Rationale:</b> With its complex shoreline fronting the Columbia River behind the small community of Burbank, the Burbank Sloughs and Peninsula Units possess a great deal of wildlife habitat potential and represent the Refuge's finest potential bank fishing areas. Currently, the area is severely degraded and resources have not been available to improve the site. With its varied topography and dense riparian habitat, it has traditionally attracted a variety of illegal uses, including dumping, methamphetamine labs, illegal road cutting, off road vehicle usage, etc. Because of these illegal uses, many Refuge visitors and staff do not feel safe using these units. Eliminating illegal uses, defining access routes, restoring habitat, and creating a sense of community pride in the Refuge will all be necessary for this unit to serve as high quality habitat for wildlife, for the public to feel safe using the site, and for priority public uses to be the dominant uses on the site.				

**GOAL 10: Hunters appreciate and experience a variety of quality hunting opportunities.**



<b>Objective 10a: Provide a Variety of Waterfowl Hunting Opportunities</b>				
Provide a wide variety of waterfowl hunting opportunities at both McNary and Umatilla Refuges. (Also see Objective 1d).				
<b>Alternatives</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	✓
<b>Strategies Applied to Achieve Objective</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Maintain current fee reservation hunting at the McNary Headquarters Fee Area and McCormack Hunt Unit and evaluate the need for additional areas.	✓	✓	✓	✓
Establish a combination of designated hunting sites (posts) and designated parking on the north side of the Wallula Unit at McNary.	✓	✓	✓	
Close current waterfowl hunt area on east McCormack Slough (207 acres) Unit as described in Objective 1d.		✓	✓	
Open a new designated hunt site (48 acres) along river shoreline with a similar number of hunting posts/sites (opportunity) as east McCormack Slough Unit.	✓	✓		
Coordinate with law enforcement and the public through news releases and signing if an emergency knockdown of cornfields (see objective 1b) is needed during the hunting season due to severe weather. Knockdown may require closure of hunting due to baiting regulations. Severe weather is snow or ice covering most of local fields, and/or weather below 0 degrees F for an extended time, leading to an inaccessible food supply on surrounding farms and agricultural fields. See Objective 1b.	✓	✓	✓	✓
Eliminate goose pit blinds in the middle of McNary Refuge’s Peninsula Unit, and increase the availability and quality of this area for upland bird hunters (see Objective 10c).	✓	✓		
Eliminate fall mowing for geese browse and hunting opportunities for geese on the Peninsula Unit and manage for upland grasslands, nesting cover, and pheasant hunting opportunities.	✓	✓	✓	
<p><b>Rationale:</b> The variety of waterfowl hunting opportunities that are currently offered at the Refuges are quite popular and allow people of all abilities to enjoy hunting that suits their needs. Fee hunting is very popular at both Refuges (the Refuges have more hunters using fee units than any of the other units); however, many hunters prefer less regulated opportunities. Fee hunts allow hunters to be guaranteed a spot in advance which provides hunters traveling from a long distance some security. Fee hunting can also reduce law enforcement needs. However, the administrative costs of fee hunts are relatively high, and despite the fee, fee hunts generally don’t pay for themselves. There’s also a certain loss of freedom for the user—there is a higher likelihood of encountering regulation, law enforcement etc. Fee hunts were considered but not adopted under any alternatives for the Peninsula area. At some point in the future, if competition for hunting gets more intense, other areas may need to be managed as fee hunt units. However, fee hunting is neither necessary nor desirable for all units, currently, or in the future. The combination of free roam and designated blind sites at the Peninsula Unit and proposed for the Wallula Unit is another method to reduce competition. Requiring hunters to park at designated posts corresponding to hunting posts will reduce conflict over hunt sites which have been a problem at Wallula Unit. Free roam</p>				

hunts are popular with many hunters and will be maintained at the Two Rivers and Burbank Sloughs Units at McNary Refuge, and at the Crow Butte, Ridge, Paterson, and Boardman Units at Umatilla Refuge. Lost waterfowl hunting sites in the East McCormack Slough would be replaced with one new hunt area located along the river shoreline with nearly an equal amount of hunting opportunity. Hunting quality at the new site would likely be better than that provided in the east slough because a sanctuary wetland could be expected to increase overall bird distribution and hunting success, similar to the situation at McNary Refuge with Headquarters Units 3 (sanctuary) and Headquarters Unit 2 (hunted). The goose pit blinds at the Peninsula Unit are seldom used and generally unproductive for goose hunters. Their elimination, together with habitat managed for upland grasslands and nest cover, will provide increased upland game habitat and hunting. Maintain free roam hunts at the Two Rivers and Burbank Slough Units at McNary and the Crow Butte, Ridge, Paterson, and Boardman Units at Umatilla.

<b>Objective 10b: Improve Access for Disabled Hunters</b>				
At the McNary and Umatilla fee hunt areas, improve existing access programs for disabled waterfowl hunters at designated blinds.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓		
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Bring blind sites #2 and #8 at the McNary Headquarters fee hunt area, and blind site #11 on the Peninsula Unit up to current Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities (ADAAG) standards for accessibility.	✓	✓		
Bring access and blind site #35 at the McCormack Unit up to current ADAAG standards.	✓	✓		
Add 2 additional ADAAG compliant blind sites: 1 at Wallula and 1 at Patterson, Ridge or Whitcomb.	✓	✓		
<p><b>Rationale:</b> Currently, the number of blinds designated for disabled hunters is reasonable and meets the current needs. At least one more accessible site may be needed at each unit over the next 15 years to meet the needs of a growing and aging population. However, the current designated blinds and access routes are not up to ADAAG standards. Implementing this objective would further bring the Refuges' compliance with ADA and will provide better opportunities for hunters with disabilities.</p>				

<b>Objective 10c: Enhance Upland Game Bird Hunt</b>				
Enhance the quality of upland game bird hunts for both Refuges; promote consistency in hunting regulations among all Refuge units and increase hunt opportunities.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified with the text in this row.</i>	✓	✓	Maintain current program	Maintain current program
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Decrease permits for the fee based lottery system from 25 to 15 and extend the permit requirement over the first two weekends of the upland game bird season at Umatilla's McCormack Unit.	✓	✓		
Eliminate goose pit blinds in the middle of McNary Refuge's Peninsula Unit, and increase the availability and quality of this area to upland bird hunters.	✓	✓		
Eliminate fall mowing for geese browse on Peninsula and manage for upland grasslands and nesting.	✓	✓		
Within two years of CCP completion phase out current program that allows WDFW to augment pheasant populations for take by hunters at	✓	✓	✓	

traditional sites, during the upland bird hunting season at McNary Refuge.				
Standardize hunt times and hunt days where possible; continue noon start times on fee units only.	✓	✓		
Close current upland hunt area around east McCormack Unit as described in Objective 1d. <ul style="list-style-type: none"> <li>Open new designated site with an approximately equal amount of hunting opportunity along river shoreline (see 1d).</li> </ul>	✓	✓	✓	

**Rationale:** Fees and permits are primarily used as a tool to limit space competition between hunters and to improve the quality of hunts. At this time, the only location where permits are thought to be necessary is at the McCormack Unit on Umatilla Refuge. Hunters are required to reserve opening weekend in advance through a fee based application process. The current limit of 25 permits per day results in a poor quality hunt because many hunters are constantly cutting each other off in competition for the best hunting spots. Although the number of hunters decreases as the season wears on, implementation of a lottery system and lowering the number of permits for both opening weekends will increase the safety and improve the quality of the hunts.

There is also inconsistency between the management of upland hunts on the former Corps lands and other McNary Units. Regulations (entry times, permits, fees, days open, etc.) should be consistent between units unless special conditions exist. Current inconsistencies make it difficult for hunters to abide by the regulations. In addition, upland bird hunts can conflict with waterfowl hunts partly through space issues (hunters competing for similar areas to shoot) and partly through creating disturbance for each other. Changing the start time to noon on all units except fee areas (after most of the best waterfowl hunting is usually over) would help hunters understand and remember the regulations and would also reduce bird disturbance and conflicts between the different hunting programs.

Goose blinds are unproductive on the Peninsula Unit; staff feels this area is better managed as an upland game site. Because operation of a put-and-take hunting program through stocking of a nonnative species such as ring-necked pheasant is a violation of NWRS policy (601 FW 3.14 F.), this program should be phased out.

<b>Objective 10d: Provide Quality Deer Hunting Opportunities</b>				
Provide quality deer hunting opportunities at McNary and Umatilla Refuges and increase opportunities and permits at Umatilla Refuge's McCormack Unit.				
<b>Alternatives</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	
<b>Strategies Applied to Achieve Objective</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Increase the total number of hunting permits at Umatilla's McCormack Unit to provide more hunting opportunities while reducing the deer population to a target population of 80-100 animals within 5 years.	✓	✓	✓	
To safely accommodate increased hunting permits at Umatilla, extend the length of the season and the days hunted, but continue to limit access to no more than 5-10 hunters per day on the Refuge.				
Annually monitor deer population dynamics and their impacts to vegetation; conduct a post-hunting season November survey; adjust the number of hunt permits for upcoming seasons, considering vegetation conditions and other relevant factors.	✓	✓	✓	

**Rationale:** Despite five years of deer hunting, little visible improvement has occurred in upland shrub condition on the McCormack Unit. Wildland fires and the management of the John Day pool have contributed to the problem, but staff observations at exclosures show that browsing continues to seriously limit shrub and tree growth in riparian and upland areas. The recent decline in the number of deer permits granted is likely to worsen the problem. Better estimates of deer populations are needed, as are more regular assessments of vegetation recovery. In the meantime, with the current population at 150-200 deer, it is necessary to increase the hunt take, especially of does, to reach the target population of 80-100 deer. Controlled special permit hunts are an effective and inexpensive method of reducing herd size.

**GOAL 11: Anglers experience abundant opportunities to catch fish while appreciating the Refuges.**

<b>Objective 11a: Provide for Diverse Fishing Opportunities</b>				
<b>Maintain</b> diverse fishing opportunities on both Refuges and improve fishing facilities and access.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified with the text in this row.</i>	✓	✓	Slightly reduce area open to fishing	✓
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Continue to allow WDFW to operate youth and family fishing augmentation/stocking at McNary Refuge’s Quarry Pond (a small isolated pond) each spring; however, limit stocking to rainbow trout populations.	✓	✓		✓
Maintain accessible sites for disabled fishing at Quarry Pond and on the Walla Walla River at McNary Refuge’s Wallula Unit.	✓	✓	✓	✓
Improve parking facilities and access to river shoreline fishing sites: upgrade fishing access at the Two Rivers, Burbank Sloughs, and Wallula Unit at McNary, and the McCormack and Paterson Units at Umatilla.	✓	✓		
<p><b>Rationale:</b> Both Refuges have lengthy shorelines, abundant reservoir space, and diverse river, slough, and wetland habitats which provide opportunities for anglers fish for everything from large Chinook salmon to small perch and trout. Warm water fish are abundant and anglers can take home smallmouth bass, walleye, and other fish. At Umatilla, warm water fishing is the most popular kind of fishing and has won regional and national acclaim. Fishing for sturgeon is popular, as is fishing for salmon, steelhead, shad and catfish. Similarly, there are abundant bank fishing opportunities as well as river fishing from boats. This diversity of fishing opportunities is a plus for the Refuges. The Refuges can provide a satisfying recreational experience to many people each year from a great diversity of backgrounds. There is opportunity to upgrade fishing facilities. Although stocking of a nonnative species is a violation of NWRS policy (601 FW 3.14 F.), the current State funded and operated program at Quarry Pond is allowable because it only includes seasonal stocking of rainbow trout, a species that is part of the historic fish assemblage of local streams.</p>				

<b>Objective 11b: Promote Fishing Awareness</b>				
<b>Improve</b> public knowledge and awareness of quality fishing locations on the Refuges and disseminate public knowledge about the Refuge System at fishing and boating areas.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective applies as written above to alternatives (✓)</i>	✓	✓		
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Continue to define and map fishing locations. Develop a fishing brochure or set of tear sheets for the public, including information such as parking, roads, boat launches, and accessibility for people with disabilities. Seek partnerships with State and private groups for funding and publication.	✓	✓		
Improve Refuge fishing and related information by installing kiosks at Casey Pond, Wallula Unit boat launch, Paterson Unit boat launch, and McCormack Slough/Oregon fish hatchery boat launch. Include information about the Refuges, good fishing practices, fish identification and other interpretive information. Seek partnerships with State and private groups for funding and construction projects.	✓	✓		
Conduct surveys to determine needs of the fishing public; and provide a Spanish language informational brochure.	✓	✓		

**Rationale:** Fishing on the Refuges is dispersed and managing fishing has been more low-key than other Refuge recreational programs. Yet more visits are made to the Refuges for fishing than for any other use. The Refuge’s fishing public is more culturally diverse than any other Refuge user group and includes recent immigrants from a variety of countries and tourists from other parts of the State. Yet many who come to fish are probably unaware that they are on a Refuge. There is an opportunity for enhancing communications with the fishing population, to provide greater information to these users about the Refuge and Refuge System, and to create greater awareness of good fishing practices. Results from surveys will help the Refuge deliver the Service’s message. Since many people who fish on the Refuges are recent immigrants, it is desirable to provide some brochures and information panels in Spanish and other languages as appropriate.



**GOAL 12:** *Students and teachers understand and value the Refuge System, and the ecology and management of McNary and Umatilla National Wildlife Refuges.*

**Objective 12a: Provide Environmental Education for Students**

Provide environmental education (EE) for **1,500-3,000 students at McNary and 100-500 students at Umatilla annually**. Ensure that the program helps fulfill Washington Assessment of Student Learning (WASL) curriculum requirements.

Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) <u>or</u> the alternative is modified by replacing bolded type above with text in this row.</i>	✓	✓	✓	McNary only
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Maintain total students served, but concentrate on programs for 4 <sup>th</sup> graders.		✓	✓	
Develop more “teach the teacher” programs and Refuge specific instructor training		✓	✓	
Meet annually with Educational Service District 123 to ensure programs are helping the school meet the state requirements.		✓	✓	
Make use of existing high quality programs, such as the Shorebirds Sister Schools Program, that have been developed and tested throughout the northwest.		✓	✓	

**Rationale:** Currently the Refuges provide EE to 1,500-3,000 students, the majority at the 4th grade level. About 15% of the EE classes hosted are off-Refuge (a staff member or volunteer visits the school). The rest of the classes are held at the McNary Environmental Education Center. By using high quality and time tested programs, such as the Shorebird Sister Schools Program, the Refuge can deliver high quality “teach the teacher” programs with a minimum commitment of resources.

<b>Objective 12b: Provide Environmental Education Support</b>				
Foster long-term support for the Environmental Education program by ensuring that McNary Refuge always has a minimum of 25 committed teachers and 30 committed volunteers available for the program.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	✓
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Continue to support the Friends partnership at McNary Refuge with supplies and facility space.	✓	✓	✓	✓
Explore opportunities to gain additional teacher volunteers through the Washington State University teaching program.		✓	✓	
Provide leadership and resources to manage and train volunteers.		✓	✓	
<p><b>Rationale:</b> The Friends group has played a critical role in supporting the McNary Environmental Education program, with an estimated 10,000 hours per year of volunteer support. This is equivalent to about five full-time equivalent employees (FTEs). Supporting the Friends with needed office space, supplies, and an available staff partnership is vital to allow the Friends to continue to provide this critical service. In addition, since the Friends group is comprised mainly of retired citizens in their 60s, 70s, and 80s, for the long-term health of the EE program it is essential to recruit and maintain additional volunteers.</p>				

<b>Objective 12c: Promote Teacher-led Classes</b>				
By the end of 15 years, ensure that at least 75% of the environmental education classes visiting the McNary Refuge are teacher-led.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>		✓	✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Offer teacher training workshops and establish a program to encourage and select trained teachers to use the Refuges' facilities and programs for teacher led EE.		✓	✓	
Conduct outreach to build the base of knowledgeable and enthusiastic teachers.		✓	✓	
Develop lesson plans and supply education module boxes for use by teachers and volunteers		✓	✓	
Develop curricula for the EE program and provide support and resources for the Friends group and volunteers.		✓	✓	
<p><b>Rationale:</b> An EE program that focuses on teaching the teacher has the potential to both expand the number of potential students participating in EE and to broaden the base of knowledgeable EE instructors in the community. Indirectly, this would have the effect of broadening support for the Refuges within the communities. Since it takes time for teachers to receive the training and get comfortable with the educational materials and environment, we anticipate slowly but gradually moving toward a thirty-five percent mark over the life of the CCP. Currently, Refuges' Complex Outdoor Recreation Planner and the McNary Refuge Manager spend approximately 200 hours per year total supporting the EE program. The support needs of the program would be better served by an EE Specialist and/or Volunteer Coordinator.</p>				

<b>Objective 12d: Maintain and Improve Environmental Education Facilities</b>
Continue to focus McNary Refuge's environmental education efforts in and around Burbank Slough and the McNary Environmental Education Center (MEEC), while initiating limited EE programs at Umatilla Refuge based on volunteer and community interest and support.



Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified with the text in this row.</i>		✓	✓	At MEEC only
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Provide support and resources to support EE facilities and programs, and to maintain enthusiastic EE volunteers at McNary Refuge.		✓	✓	✓
Initiate contacts with the community, schools, and volunteers, to find interested teachers and volunteers interested in starting an EE program at Umatilla Refuge.		✓	✓	
Utilize alternative funds to construct EE sites at Umatilla, associated with the auto tour route. Explore opportunities to apply for wildlife-dependent use grants through the Fish and Wildlife Foundation and Heritage Trail funds.		✓	✓	
Tie Umatilla EE facilities (existing and new) into the proposed earthen trail or boardwalk accessing the east McCormack wetland and a .2 mile loop (objective 9d); and integrate features with the Morrow County Columbia River Heritage Trail.		✓	✓	
<b>Rationale:</b> The EE program is currently concentrated at the McNary Refuge which has developed a large volunteer program to support activities. This program benefits the Refuge, community, and school kids and should be supported to keep it running well. Umatilla currently has no program for EE but receives requests from local teachers. Staff, volunteers, and materials could be allocated to Umatilla to begin building an EE program similar to McNary's based on volunteer and community involvement. The existing auto tour route and Morrow County Columbia River Heritage Trail offer excellent areas for EE development and field activities.				



**GOAL 13. Manage cultural resources for their educational, scientific, and cultural values for the benefit of present and future generations of Refuge users and communities.**

Objective 13a: Protect Cultural Resources				
Increase monitoring and protection of all cultural resources and historical sites on both Refuges while increasing public and staff support and appreciation.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	✓
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Using guidance and assistance from the Regional Cultural Resources Team and Tribal programs assemble Regional/National/Tribal databases, reports, and site information to provide Refuge managers with specific access-protected data, site information and guidance.	✓	✓	✓	
Comply with Section 106 of the National Historic Preservation Act (NHPA) when conducting ground disturbing activities or modifying historic structures.	✓	✓	✓	✓
Complete a comprehensive cultural survey of both Refuges as called for in Section 110 of the NHPA, and pull together all previous site surveys, work requests and reports for easy access by managers	✓	✓	✓	
Develop a Refuge GIS layer for cultural resource sites and resources that contains barriers to protect sensitive information.	✓	✓	✓	

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All Refuge law enforcement officers will receive training in the Archaeological Resources Protection Act (ARPA), Native American Graves Protection and Repatriation Act (NAGPRA), and other State and Federal cultural resource regulations no later than March 2008.	✓	✓	✓	
Develop law enforcement monitoring protocols and schedules for patrolling cultural sites as part of a Law Enforcement Management Plan, to be completed no later than 2008. Hire one additional Law Enforcement Officer.	✓	✓	✓	
Identify and protect archaeological and cultural resources associated with rocky features; coordinate with the Umatilla Tribe’s Cultural Resources Program to identify significant sites, and plan for the protection at rocky sites; especially on the Stateline, Juniper Canyon, and Columbia River Island areas.				
<p><b>Rationale:</b> The key to protecting cultural resources is promoting knowledge of and appreciation for the resources. Currently, information on known cultural sites is fragmented and not easily accessible to the Refuge Managers responsible for the Refuges’ management and operations. Umatilla had a comprehensive survey of resources completed by Willamette Associates (1986) and there are several other major surveys and project-specific survey work and reports that include portions of both Refuges; however, a comprehensive access-protected GIS-based database is needed. Law enforcement officers have received training in cultural resource law, but continuing education and coordination, with Tribal and State officers, is needed. Rocky sites are specified because Refuge managers do not know enough about the cultural resources of these sites.</p>				

<b>Objective 13b: Increase Awareness and Appreciation for Cultural Resources</b>				
Increase awareness of and appreciation for historic, archaeological, and cultural resources among Refuge staff and the public.				
<b>Alternatives</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	
<b>Strategies Applied to Achieve Objective</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Bi-annually, provide all Refuge staff with 2-4 hours of training on managing historic, archaeological, and cultural resources.	✓	✓	✓	
Consult with Tribes, historical societies, and other preservation partners to identify types of cultural resource information appropriate for public interpretation.	✓	✓	✓	
Partner with the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and other interested groups to tell the history of the Stateline-Wallula area, and prepare media (pamphlets, signs, exhibits) that portray the American Indians’ and early settlers’ cultural resources and history, on the Refuge, with emphasis the on fish and wildlife resources and their uses during these periods.	✓	✓	✓	
Partner with Tribes, historical societies, interested groups, and government agencies, to develop an overlook site at Wallula to interpret the rich history and importance of the area to Tribes and early Washington settlement.	✓	✓	✓	
Partner with the CTUIR, the Oregon Heritage Trail committee, and other interested groups, to tell the history and interpret the cultural resources of the Umatilla Refuge, and prepare media (pamphlets, signs, and exhibits) describing the history of American Indians and early settlers in this area.	✓	✓	✓	
<p><b>Rationale:</b> Little interpretation of cultural resources has occurred to date on the Refuges. The rich history and cultural sites within both Refuges needs to be told. The Refuge, however, needs assistance and could achieve a higher level of interpretation by partnering with tribes and groups interested in history.</p>				

<b>Objective 13c: Coordination on Cultural Resources</b>				
Increase coordination and consultation with Tribes.				
<b>Alternatives</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	

Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
In partnership with Tribes and the Regional Cultural Resources Team, establish "protocol for consultation" to help managers meet NHPA and ARPA requirements including consultation, identification, inventory and evaluation of projects and sites.	✓	✓	✓	
Establish NAGPRA protocol and procedures for handling inadvertent discoveries of human remains, burial objects, sacred objects, and objects of cultural patrimony.	✓	✓	✓	
Meet at least semiannually to discuss programs and projects with staffs of each of the following: Tribal Cultural Resources Programs; Confederated Tribes and Bands of the Yakama Indian Nation; the Nez Perce Tribe; the Confederated Tribes of the Umatilla Indian Reservation; the Confederated Tribes of the Colville Indian Reservation; and the Wanapum Band of Indians.	✓	✓	✓	
<b>Rationale:</b> Research conducted for this CCP has confirmed the historical presence of the following tribes within the lands encompassed by Refuge lands: Palouse, Cayuse, Yakama, Walla Walla, Umatilla, Nez Perce and Wanapum Tribes and affiliated bands. Although the Refuges have had consultations and meetings in the past, it is important that communication and consultation become more regular and systematic. Since the 2004 ruling by the 9th Circuit Court of Appeals on the Kennewick Man case, it has become incumbent on agencies to ensure that special and significant genetic or cultural relationship to a presently existing indigenous Tribe has been demonstrated, before any objects and remains can be repatriated. How the Refuges can accomplish this, in order to comply with NAGPRA, needs to be addressed.				

Objective 13d: Shoreline Bank Stabilization				
Explore the potential for shoreline bank stabilization, and bio-engineering, at eroding areas on the Strawberry Islands and Umatilla shoreline to protect cultural resources listed on and eligible to the National Register of Historic Places (NRHP).				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Apply for Corps and BPA funding for protection of shorelines threatened with erosion as a result of dam/reservoir operations.	✓	✓	✓	
<b>Rationale:</b> Some bank restoration was completed by the Corps at Strawberry Island. Erosion from operation of the reservoirs may threaten cultural resources at Strawberry Island and the Umatilla Refuges' islands in the Columbia River, and should be considered effects under the Corps/BPA Systems Operation program.				

Objective 13d: Increase Management Efforts for Archaeological Features at Two Sites on the National Register of Historic Places				
Identify and protect archaeological and cultural resources associated with the Miller Site and Telegraph Island, both listed on the National Register of Historic Places.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Adopt and accomplish recommendations from the 1983 Strawberry Island Excavation Report (Schalk 1983), including removing sage and basin wildrye and replacing it with bluebunch wheatgrass and other forbs better representing historic conditions.	✓	✓	✓	
Increase law enforcement efforts to protect cultural resources at these two sites.	✓	✓	✓	
Conduct annual site visits and maintain written records and photo documentation.	✓	✓	✓	
<b>Rationale:</b> The final report by archeologists conducting the 1978-1979 Strawberry Island excavation (Schalk 1983), recommended five management actions to improve protection of the Miller Site, which is on the Register of National Historic Places. One of the recommendations was to maintain vegetation at an early stage of succession. Researchers were worried that both big sagebrush and basin wildrye, which were just beginning to colonize the previously bluebunch wheatgrass dominated site in the 1970s, could damage buried sites because of their extensive root systems. Since then, both species have come to dominate the surface of the archeological site.				

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