Appendix A. Glossary

Alluvial fan- A fan-shaped deposit of soil carried by water that accumulates at the mouth of a ravine, a streambed, or gully. Often distinctly different from soils surrounding it.

Benchlands- For the purposes of this document, benchlands refer to the flatter terrain on the clay bluffs that form a sort of remnant bank bordering the river valley on the Refuge.

Biodiversity-The variety of living organisms considered at all levels of organization, including the genetic, species, and higher taxonomic levels, and the variety of habitats and ecosystems, as well as the processes occurring therein (Meffe et al. 1997).

Biome- A large, regional ecological unit, usually defined by some dominant vegetative pattern (Meffe et al. 1997).

Bottomland Wetlands- Periodically flooded areas or lakes that are adjacent to or in the riparian area.

Cold Desert- For the purpose of this document, it is a habitat that occurs at elevations greater than 4,600 feet, has a range of 2-7 inches of precipitation but averages about 3-4 inches and is characterized by the following vegetation: galleta grass, squirreltail, Indian ricegrass, shadscale, four-winged saltbush, greasewood, and some rabbitbrush and sagebrush (Holechek 1989, Payne and Bryant 1994).

Cultural/Paleontological Resource- Can be a fossil or a fossil bed, prehistoric artifacts, Indian midden site, historical structures, burial grounds, or other sites that are protected as antiquities by Federal law.

Ecosystem- Network of interactions of communities of plants and animals with energy, minerals, and nutrients from the sun, air, soil, and water in a manner that sustains life (Payne and Bryant 1994). For purposes of this document, ecosystem is in reference to the Upper Colorado Ecosystem which encompasses the watersheds, headwaters, tributaries, including the Green River and mainstem of the Colorado River in Wyoming, Utah, and Colorado.

Emergents- Plants that grow in water but protrude above the surface. Examples are cattail and hardstem bulrush.

Endangered (species)- A species which is in danger of extinction throughout all or a significant portion of its range.

Extant- A population of animals or plants that exists in its original wild state. A population of animals or plants that no longer exists in the wild is considered extirpated.

Floodplain- Level terrain that may be periodically subjected to and submerged by high river flows.

Fragmentation- Breaking wildlife habitat areas into smaller more isolated parcels, making movement of individuals or genetic information between parcels difficult or impossible.

GIS- Geographic Information System. Refers to such computer mapping programs as ArcView, ArcInfo, ERDAS, etc.

Habitat- A place where a plant or animal naturally or normally lives and grows.

Hydrologic regime- The local pattern and magnitude of water flow influenced by season.

Impoundment- A body of water created by collection and confinement within a series of levees or dikes thus creating separate management units although not always independent of one another.

Larvicide- A pesticide that targets the larval form of mosquitos to prevent them from maturing.

Levee- An embankment along the river to prevent water from overbank flooding. However, also used interchangeably with dike, which are embankments that separate management units or impoundments (Payne and Bryant 1994).

Moist-Soil- A process where water is drawn down intentionally or naturally to produce mudflats (i.e., moist soil) that are required for germination of many desirable plants (Baldassarre and Bolen 1994).

Noxious (weed)- Invasive (usually nonnative) vegetation that can grow and spread rapidly into monotypic stands when left unchecked by natural predators and enemies such as insects or diseases (Colorado Weed Management Association 1993).

Overbank Flooding- River flows that exceed the boundaries of the existing river channel and flood the adjacent riparian areas and bottomlands.

Phenology- Life cycle of a particular species.

Phreatophytes- plants whose roots penetrate to the water table.

Physiographic- Physical geography of a particular region of the U.S.

Prescribed Fire- The intentional application of fire to vegetation under specific environmental conditions to accomplish specific management objectives in specific areas identified in approved prescribed burn plans

Riparian- Plant communities contiguous to and affected by surface and subsurface hydrologic features of perennial or intermittent flowing or still water bodies. These areas have one or both of the following characteristics: 1) distinctively different vegetative species than adjacent areas, and 2) species similar to adjacent areas but exhibiting more vigorous or robust growth forms. Riparian areas are usually transitional between wetland and upland (Dall et al. 1997).

Spatial distribution- The pattern or frequency of a specific habitat type over a larger area.

Species composition- A group of species that inhabit a specific habitat type in its healthy state. To enhance species composition is to ensure that all or as many species as possible inhabit the appropriate habitat by improving the quality of that habitat.

Step-down management plan- A management plan that describes in full detail the day-to-day activities of programs such as environmental education and outreach, cooperative farming, controlled burning, habitat management for specific sites, public hunting and fishing, facilities upgrade and maintenance, wildlife population research, etc.

Submergents- Plants that grow in water but tend to float within and are supported by it. They do not protrude much above the water surface. Examples are pondweeds and marestail.

Threatened (species)- Any species which is likely to become endangered in the near future.

Transect- A predetermined route for taking samples of plants or observing wildlife.

Turbidity- Cloudiness of a water body caused by suspended silt, mud, pollutants, or algae.

Understory- Shrubs and herbaceous plants that typically grow beneath larger trees in a woodland.

Waterbirds- For the purposes of this document, this includes birds that depend upon water for some or all stages in their life history and are in the *Podicipedidae* (grebe), *Pelecanidae* (pelican), *Phalacrocoracidae* (cormorant), *Ardeidae* (bittern, heron, egret), *Threskiornithidae* (ibis), *Gruidae* (crane), *Anatidae* (swan, goose, duck), *Rallidae* (rail, coot), *Recurvirostridae* (stilt, avocet), *Charadriidae* (plover), *Scolopacidae* (sandpiper), and *Laridae* (gull) families.

Wildlife-dependent recreation- Defined by the National Wildlife Refuge System Improvement Act of 1997 as hunting, fishing, wildlife observation, wildlife photography, interpretation, and environmental education.

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Appendix C. RONS List

99001 ACTIVITY: Wetland Restoration

RANK - STA: 1 **MEASURES: 1790 refuge acres will be restored**

GEO:

REG: 68

NAT:

Restore Leota/Sheppard Wetlands

The two primary wetlands of the Ouray NWR (Leota & Sheppard Bottoms) have historically been utilized annually by thousands of waterfowl, and shore birds. Degraded drain structures no longer allow for adequate drainage and the wetlands have now become dense stands of cattail which do not afford ample open water. Restoration of these wetlands would require replacing the interior drain structures and root plowing to sever and expose the cattail root mass. The refuge would contract the drain structure construction to the Bureau of Reclamation and purchase a D7 dozer and root plow to perform the plowing ourselves.

ADDITIONAL FUNDS NEEDED ($000):	One-Time	Recurring Base	First Year Need
Operations: Personnel Costs.....			
Equipment Cost.....	120		
Facility Cost.....			
Services/Supplies.....	200		
Miscellaneous Costs.....	62		
TOTAL Operations Cost.....	382		382

ADDITIONAL RECURRING STAFF NEEDS:	FTEs	Cost ($000)
☐ Approved minimum staffing need?		
Managers.....		$0
Biologists.....		$0
Resource Specialists.....		$0
Education/Recreation Staff.....		$0
Law Enforcement.....		$0
Clerical/Administrative.....		$0
Maintenance/Equipment Operation.....		$0
TOTAL FTEs Needed.....		$0

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
		80	20								100

PLANNING LINKS: Station CCP approved 10/97+; Legal Mandate; Station Step-down Mgmt Plan

The Ouray Refuge CCP identifies the need to maintain Leota and Sheppard Bottom under a 50:50 open water to vegetative cover ratio. The Ouray Refuge enabling legislation used to establish the refuge focuses primarily on managing for migratory birds. This project will directly benefit migratory birds.

00003 **ACTIVITY: Pest Plant Control**

RANK - STA: 2 **MEASURES: 160 acres will be treated; 160 acres infested by target species; 160 acres will be treated chemically; 160 acres will be treated mechanically**

GEO:

REG: 84

NAT:

Control Pest Plants in Sheppard S1a.

Four nonnative plant species (perrenial pepperweed, salt cedar, Russian olive, Russian knapweed) are presently invading much of the refuge bottomland habitat. The scientifice literature shows that chemical and mechanical treatment of well established nonnative species of this type will require reseeding with native plant species. This project proposes to research and experiment with various native plant seeds and reseeding techniques. Successful techniques will then be utilized on a much larger scale within other invaded sites. The majority of the invaded habitat is critical habitat for two species of endangered fish (razorback sucker, Colorado pikeminnow) and numerous waterfowl and songbird species.

ADDITIONAL FUNDS NEEDED ($000):	One-Time	Recurring Base	First Year Need
Operations: Personnel Costs	25		
Equipment Cost	60		
Facility Cost			
Services/Supplies	50		
Miscellaneous Costs	17		
TOTAL Operations Cost	152		152

ADDITIONAL RECURRING STAFF NEEDS:	FTEs	Cost ($000)
Managers		$0
Biologists		$0
Resource Specialists		$0
Education/Recreation Staff		$0
Law Enforcement		$0
Clerical/Administrative		$0
Maintenance/Equipment Operation		$0
TOTAL FTEs Needed		$0

☐ Approved **minimum staffing need?**

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
	20	30	30	20							100

PLANNING LINKS: Station CCP approved 10/97+; Station Goal/Objective; FWS Recovery Plan; FWS Ecosystem Goal/Plan; Station Step-down Mgmt Plan

Control of invasive weeds is identified as a goal within the Ouray CCP. The draft Ouray Habitat Management Plan identifies as it top priority the need to control invasive weeds. The FWS Recovery Plan for the four Colorado River endangered fishes also identifies the need to control invasive weeds. The Upper Colorado River Ecoteam identified as one of its top priority goals the need to control invasive weeds.

00002 **ACTIVITY: Pest Plant Control**

RANK - STA: 3 **MEASURES: 160 acres will be treated; 160 acres infested by target species; 160 acres will be treated chemically; 160 acres will be treated mechanically**

GEO:

REG: 119

NAT:

Control Salt Cedar, Russian Olive, and Pepperweed within Leota Bottom (L10a)

Leota Bottom (L10a) is the last remaining undisturbed riparian bottomland habitat on the west side of the Green River within the Refuge boundary. This site has recently become infested with nonnative salt cedar, Russian olive, and pepperweed. The objective of this project is to control these nonnative species with mechanical and chemical methods for the benefit of migratory song birds.

ADDITIONAL FUNDS NEEDED ($000):	One-Time	Recurring Base	First Year Need
Operations: Personnel Costs.....			
Equipment Cost.....	10		
Facility Cost.....			
Services/Supplies.....	10		
Miscellaneous Costs.....	4	2	
TOTAL Operations Cost.....	24	2	26

ADDITIONAL RECURRING STAFF NEEDS:	FTEs	Cost ($000)

☐ Approved minimum staffing need?

Managers.....		$0
Biologists.....		$0
Resource Specialists.....		$0
Education/Recreation Staff.....		$0
Law Enforcement.....		$0
Clerical/Administrative.....		$0
Maintenance/Equipment Operation.....		$0
TOTAL FTEs Needed.....		$0

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
	5	10	50	30			5				100

PLANNING LINKS: Station CCP approved 10/97+; Station Step-down Mgmt Plan

The planning links for this project are: invasive weed control is identified as a goal within the Ouray draft CCP and the draft step down Habitat Mgt. Plan

98001 **ACTIVITY: Provide Visitor Services**

RANK - STA: 5 **MEASURES: 10000 new visitors will be served; 8500 existing visitors will be served; 100 % will support the top 6 priority public uses**

GEO:

REG: 322

NAT:

Interpretation and Recreation Improvements

The Ouray Refuge was established in 1960 and very few interpretation and recreation facilities have ever been constructed. The refuge lies 30 miles south of Vernal, Utah which receives in excess of 1 million visitors annually. At present many of our visitors are from the Salt Lake City area just 3 hours drive to the west. The refuge has tremendous potential to provide the general public with a positive U.S. Fish and Wildlife Service Refuge experience. Development of interpretive panels, nature trails, photo blinds, hunting blinds, and interpretive stops along nature trails and the auto tour route would greatly improve the refuge visitors experience.

ADDITIONAL FUNDS NEEDED ($000):	One-Time	Recurring Base	First Year Need
Operations: Personnel Costs.....			
Equipment Cost.....	10		
Facility Cost.....	90		
Services/Supplies.....	10	5	
Miscellaneous Costs.....	32	5	
TOTAL Operations Cost.....	142	10	152

ADDITIONAL RECURRING STAFF NEEDS:	FTEs	Cost ($000)
Managers.....		$0
Biologists.....		$0
Resource Specialists.....		$0
Education/Recreation Staff.....		$0
Law Enforcement.....		$0
Clerical/Administrative.....		$0
Maintenance/Equipment Operation.....		$0
TOTAL FTEs Needed.....		$0

☐ :Approved minimum staffing need?

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
								50		50	100

PLANNING LINKS: Station Goal/Objective; Legal Mandate; Station CCP approved 10/97+; FWS Recovery Plan

Executive order No 12996 signed by President Clinton on March 25, 1996 recognizes the importance of wildlife dependent recreation activities, public use and education. Draft CCP refuge goal 5-6 provides for compatible wildlife dependent recreation and public interpretation of wildlife and natural processes.

97010 ACTIVITY: Outreach

RANK - STA: 7 **MEASURES: 5000 participants will be at group presentations; 100000 people will view off-site exhibits; 5 news releases will be issued; 3 TV or radio spots will be developed; 1 other special events will be hosted**

GEO:

REG: 458

NAT:

Curriculum Based Outreach Program

Develop an outreach program for three school districts, a local interagency visitor center, local clubs, special tours and events. Ouray NWR provides an excellent opportunity to educate the public about wetland riparian and endangered species values. The Ouray National Fish Hatchery (an endangered fish facility) would be an excellent place for public resource education. Very little environmental education is being done in schools or the local community. This project would be accomplished with our existent Outdoor Recreation Planner.

ADDITIONAL FUNDS NEEDED ($000):

	One-Time	Recurring Base	First Year Need
Operations: Personnel Costs.....			
Equipment Cost.....	15		
Facility Cost.....			
Services/Supplies.....	10	5	
Miscellaneous Costs.....	12	5	
TOTAL Operations Cost.....	37	10	47

ADDITIONAL RECURRING STAFF NEEDS:

	FTEs	Cost ($000)
Managers.....		$0
Biologists.....		$0
Resource Specialists.....		$0
Education/Recreation Staff.....		$0
Law Enforcement.....		$0
Clerical/Administrative.....		$0
Maintenance/Equipment Operation.....		$0
TOTAL FTEs Needed.....		$0

☐ **Approved minimum staffing need?**

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
								80		20	100

PLANNING LINKS: Station Goal/Objective; Station CCP approved 10/97+

Executive Order No. 12996 dated 3/25/96, recognizes importance of wildlife dependent recreation, public use and education. Draft CCP refuge goals identifies public interpretation of wildlife and natural processes.

97002 ACTIVITY: Studies & Investigations

RANK - STA: 9 **MEASURES: 1 studies will be conducted**

GEO: 999

REG: 999

NAT:

Initiate a Natural Flood Regime Study

Initiate a study to evaluate the feasibility and effects of restoring natural flood regimes of all six Refuge bottomlands. The study would take into consideration the engineering mechanics of levee removal and the potential effects on the habitat and its wildlife. The refuge Comprehensive Conservation Plan (CCP) identifies management under natural flood regimes as a possible alternative. This study would be carried out by a University such as Utah State or private engineering firm.

ADDITIONAL FUNDS NEEDED ($000):	One-Time	Recurring Base	First Year Need
Operations: Personnel Costs			
Equipment Cost	30		
Facility Cost			
Services/Supplies	100		
Miscellaneous Costs	21	2	
TOTAL Operations Cost	151	2	153

ADDITIONAL RECURRING STAFF NEEDS:	FTEs	Cost ($000)
Managers		$0
Biologists		$0
Resource Specialists		$0
Education/Recreation Staff		$0
Law Enforcement		$0
Clerical/Administrative		$0
Maintenance/Equipment Operation		$0
TOTAL FTEs Needed		$0

☐ Approved **minimum staffing need?**

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
	20	20	20	30			5		5		100

PLANNING LINKS: Station Goal/Objective; FWS Recovery Plan; FWS Ecosystem Goal/Plan; Station CCP approved 10/97+; Station Step-down Mgmt Plan

The refuge CCP identifies one of its alternatives as management under a natural flood regime without the hindrance of man-made levees. The Colorado River Recovery Program has identified the lack of wetland access to the endangered fish as the greatest limiting factor in the fishes recovery. A feasibility study would provide the needed information for considering such a massive undertaking.

97009 **ACTIVITY: Cultural Resource Management**

RANK - STA: 11 **MEASURES: 1 investigations will be conducted; 5 sites will be documented; 1 museum property items will be maintained**

GEO: 999

REG: 999

NAT:

Archeological Resource Inventory

Ouray NWR is located astride the Green River in northeastern Utah.. This semi-desert area is well known for its arid clay soils and its ability to sustain preserved artifacts in good to excellent condition. Some of the items discovered consist of dinosaur bones and Native American artifacts. The Green River was known for being a major traveling corridor for Native Americans, Spanish explorers, trappers and early century ranchers. Very little of this refuge has been investigated for archeological resources. This project proposal calls for a sample inventory of 11, 987 acres. This project could potentially be carried out through a cooperative agreement with a University Archeological Field School.

ADDITIONAL FUNDS NEEDED ($000):	One-Time	Recurring Base	First Year Need
Operations: Personnel Costs.....			
Equipment Cost.....	10		
Facility Cost.....			
Services/Supplies.....	80		
Miscellaneous Costs.....	10	60	
TOTAL Operations Cost.....	100	60	160

ADDITIONAL RECURRING STAFF NEEDS:	FTEs	Cost ($000)

☐ Approved minimum staffing need?

Managers.....	$0
Biologists.....	$0
Resource Specialists.....	$0
Education/Recreation Staff.....	$0
Law Enforcement.....	$0
Clerical/Administrative.....	$0
Maintenance/Equipment Operation.....	$0
TOTAL FTEs Needed.....	$0

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
								100			100

PLANNING LINKS: Station Goal/Objective; Station CCP approved 10/97+; Legal Mandate

The Ouray Comprehensive Conservation Plan (CCP) identifies the need for a thorough archeological survey of the refuge.

97016 ACTIVITY: Surveys & Censuses

RANK - STA: 10 **MEASURES: ; 3 habitat surveys will be conducted**

GEO: 999

REG: 999

NAT:

Survey of Endangered Hookless Cactus

Unita Basin Hookless Cactus, an endangered species, has been discovered on the Ouray NWR. There presence was documented over eight years ago and not much is known on its distribution. A detailed survey of specific locations, numbers of cactus, documentation of successful reproduction, and possible conflicts resulting from refuge management practices and public use will be obtained. These plant species are important and their protection and management will facilitate species recovery and sound ecosystem management.

ADDITIONAL FUNDS NEEDED ($000):	One-Time	Recurring Base	First Year Need
Operations: Personnel Costs.....			
Equipment Cost.....	5		
Facility Cost.....			
Services/Supplies.....	35		
Miscellaneous Costs.....	5	5	
TOTAL Operations Cost.....	45	5	50

ADDITIONAL RECURRING STAFF NEEDS:	FTEs	Cost ($000)
		☐ Approved minimum staffing need?
Managers.....		$0
Biologists.....		$0
Resource Specialists.....		$0
Education/Recreation Staff.....		$0
Law Enforcement.....		$0
Clerical/Administrative.....		$0
Maintenance/Equipment Operation.....		$0
TOTAL FTEs Needed.....		$0

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
	90			10							100

PLANNING LINKS: Station Goal/Objective; Station CCP approved 10/97+; Legal Mandate

Habitat surveys and management will be the focus of this activity on Ouray NWR to protect and recover an endangered plant species. We will assure that FWS management actions and public use are not negatively impacting this plant species and its habitat. This project is identified as an objective within the our draft CCP.

98002 **ACTIVITY: Fire Management**

RANK - STA: 8 **MEASURES: 2000 refuge acres burned under prescription; 10 refuge burns will be conducted; 25 wildfires will be suppressed**

GEO: 999

REG: 999

NAT:

Restore Riparian Cottonwood Forest and Wetlands

The Ouray Refuge consists of 12 river miles lined with a fragile cottonwood canopy and bordered by shallow wetlands. This habitat type is very rare within the Green River drainage. Preservation and enhancement of this habitat type relies on aggressive wildfire suppression within the cottonwood canopy and tightly controlled prescribed fire of the boarding shallow wetlands, The preservation and management of these habitats requires adequate fire fighting equipment. The construction of a fire cache building, supplies, and an additional fire engine would allow for ample protection of this rare habitat type.

ADDITIONAL FUNDS NEEDED ($000):	One-Time	Recurring Base	First Year Need
Operations: Personnel Costs.....			
Equipment Cost.....	50		
Facility Cost.....	95		
Services/Supplies.....	5		
Miscellaneous Costs.....	5	5	
TOTAL Operations Cost.....	155	5	160

ADDITIONAL RECURRING STAFF NEEDS:	FTEs	Cost ($000)
☐ Approved minimum staffing need?		
Managers.....		$0
Biologists.....		$0
Resource Specialists.....		$0
Education/Recreation Staff.....		$0
Law Enforcement.....		$0
Clerical/Administrative.....		$0
Maintenance/Equipment Operation.....		$0
TOTAL FTEs Needed.....		$0

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
	10	70	10	10							100

PLANNING LINKS: Station Goal/Objective; Station CCP approved 10/97+; Station Step-down Mgmt Plan

The draft refuge CCP and the step-down Fire Management Plan address the need for the improved fire fighting resources. At present the refuge is supplied with one fire engine and a slip on pumper which is not safe to load and unload. A designated storage location would allow for quick mobilization thus reducing the damage to the natural resource. The refuge has experienced numerous damaging wildfires in the recent past.

Appendix D. Compatibility Determinations

Station Name: Ouray National Wildlife Refuge

Date Established: May 25, 1960

Establishing and Acquisition Authorities:
The Ouray National Wildlife Refuge (NWR) was established under the authority of the Migratory Bird Conservation Act "for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." At present (1994), the approved refuge boundary contains 11,987 acres which includes 2,692 acres of leased land from the Uintah and Ouray Ute Indian Tribe, 3,110 acres of withdrawn public domain, 1,153 acres of leased state lands, and 5, 032 acres of fee title. All Refuge lands are located in Uintah County, Utah.

Purposes for which the Refuge was established:
For lands acquired under the Migratory Bird Conservation Act of 1929, 16 U.S.C. 715-715r, as amended, the purpose of the acquisition is "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." 16 U.S.C. 715d (Migratory Bird Conservation Act).

Refuge Goals and Objectives:

- **Goal A:** Restore and enhance riparian and wetland habitats for migratory birds that depend upon the Green River corridor. Objectives are as follows:

1. Improve structure and composition of woody and herbaceous riparian communities to provide nesting, feeding, loafing, and resting habitat for migratory birds.
2. Improve structure and composition of submergent and emergent wetland communities to provide nesting, feeding, loafing, and resting habitat for migratory waterbirds.

- **Goal B:** Provide habitats that support the recovery of Federally listed and Utah state special status species on or adjacent to the Refuge. Objectives are as follows:

1. Provide habitats that support the recovery of Colorado River endangered fishes (razorback sucker, Colorado pikeminnow, humpback chub).
2. Maintain populations of the Uintah Basin hookless cactus.

- **Goal C:** Maintain healthy grassland (Indian rice grass, shadscale etc.) and semidesert shrubland habitats for wildlife. Objectives are as follows:

1. Investigate whether management techniques exist that can ensure the health of cold desert grasslands.

- **Goal D:** Minimize wildlife exposure to environmental contaminants on or adjacent to the Refuge. Objective is as follows:

1. Reduce the selenium concentration on 240 acres within Sheppard Bottom S-3/S-5.

- **Goal E:** Ouray NWR will promote and enhance opportunities for compatible wildlife-dependent recreation. Objective is as follows:

1. Provide opportunities for wildlife photography, wildlife observation, hunting, and fishing.

- **Goal F:** Increase awareness of the Refuge and the role of the Refuge in wildlife and fisheries management, the National Wildlife Refuge System, and the upper Colorado River ecosystem for visitors and local communities through environmental education, interpretation. Objectives are as follows:

1. Inform visitors and local communities about the fish and wildlife that depend upon the Green River and the Refuge's role in protecting these resources.

- **Goal G:** Provide protection for cultural and paleontological resources on the Refuge and educate visitors about these sites. Objectives are as follows:

1. Protect cultural and paleontological resources on the Refuge.
2. Inform visitors and the local community about cultural and paleontological resources on the Refuge.

Other Applicable Laws, Regulations and Policies:

- Antiquities Act of 1906
- Americans With Disabilities Act of 1992
- Architectural Barriers Act of 1968
- Archaeological and Historical Preservation Act of 1974
- Clean Water Act of 1977
- Endangered Species Act of 1973 as amended (16 U.S.C. 1531-1543; 87 Stat. 884)
- Executive Order 12996 Management and General Public Use of the National Wildlife Refuge System 1996
- Federal Noxious Weed Act of 1990
- Fish and Wildlife Act of 1956
- Migratory Bird Hunting and Conservation Stamp Act of 1934
- Migratory Bird Treaty Act of 1918 as amended (16 U.S.C. 703-712; 40 Stat. 755)
- National Environmental Policy Act of 1969 as amended (P.L. 91-190, 42 U.S.C. 4321-4347; 83 Stat. 852)
- National Recreational Fisheries Policy of 1988
- National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge Improvement Act of 1997 (P.L. 105-57)
- Native American Graves Protection and Repatriation Act of 1990
- National Historic Preservation Act of 1966 as amended
- Rehabilitation Act of 1973
- Refuge Recreation Act of 1962 as amended (16 U.S.C. 460k-460k-4)

I. Description of Proposed Use: Wildlife Observation, Wildlife Photography, Recreational Fishing, Recreational Hunting, Environmental Education, and Interpretation.

The Comprehensive Conservation Plan for Ouray NWR includes opportunities for wildlife-dependent recreation on the Refuge. This recreation includes wildlife observation and photography, fishing, hunting, environmental education, and interpretation. Other activities which are allowed in support of these uses include hiking, bicycling, horseback riding, canoeing, and rafting.

Wildlife observation and photography are allowed along the 12-mile auto tour route through the wetland and riparian habitat of Sheppard Bottom and continuing up the arid bench land to the Leota Overlook. An observation tower located adjacent to the auto tour route and a wildlife viewing sight located north of the cropland provide wildlife observation opportunities as well.

Fishing is allowed on the Green River only. Primary fish species pursued include channel catfish, bullhead catfish, and northern pike. All regulations are in accordance with State fishing regulations. One State regulation states that the "Green River from the confluence with Colorado River upstream to Colorado State line in Dinosaur National Monument is closed to taking of nongame fish: except that carp may be taken by angling, archery, spear or scuba spearfishing." Fishing on the Refuge is allowed year round.

Hunting for waterfowl, pheasant, and mule deer is allowed in designated areas of the Ouray NWR. Waterfowl hunting is allowed on Leota Bottom. Hunting is allowed for pheasant and deer in Brennan, Johnson, Leota, and Wyasket Bottoms. Hunting regulations are in accordance with State of Utah and Federal laws.

Environmental education activities and interpretation programs are allowed on the Ouray NWR. These uses are allowed on the 12-mile auto tour route, the observation tower, the wildlife viewing area and other areas of the Refuge with prior approval from the Refuge manager. Annually, tours and programs are provided to schools. Refuge staff also participate in special Refuge sponsored activities such as Wetlands Day, International Migratory Bird Day, National Fishing Day, National Wildlife Week, and National Wildlife Refuge Week. These activities help inform and educate about 10,000 visitors annually.

Anticipated Impacts on Service Lands, Waters, or Interests:

Wildlife observation, photography, environmental education, and interpretation on the Ouray NWR is not expected to significantly impact any of the Refuge purposes. A majority of the use that occurs on the Refuge occurs along the 12-mile auto tour route. The remaining areas receive little or no disturbance. Approximately 10,000 people visit the Refuge annually, which is considered low impact when spread out over the entire year. Wildlife becomes accustomed to motor vehicles on the auto tour route and generally are not disturbed. Hiking, biking, and horseback riding have low use levels with minimal disturbance to wildlife.

Fishing on the Ouray NWR on the Green River is not expected to significantly impact any of the Refuge purposes. Migratory waterfowl concentrate on the managed wetlands of the Refuge and very little fishing pressure use occurs on the Green River itself. Most other migratory waterbirds including great blue herons, black-crowned night herons, cormorants, various shorebirds, egret, etc., also depend heavily on the managed wetlands and not the River. Bald eagle use occurs primarily in early and late winter when fishing pressure is virtually nonexistent, thus no conflict should occur.

This stretch of the Green River is used primarily by the federally endangered razorback sucker and Colorado pikeminnow. The endangered bonytail and humpback chub are rarely found in this portion of the River. Colorado pikeminnow were historically caught on rod and reel and may still occasionally be caught today. Information signs and notices will aid in educating the public on the need to release endangered fish species which have been caught, and should minimize loss of endangered fish.

Recreational hunting of waterfowl, pheasant, and mule deer on the Ouray NWR is not expected to significantly impact any of the Refuge purposes. The Refuge is 11,987 acres in size and hunting takes place on approximately 6,800 acres. Minor temporary disturbance to some Refuge wildlife using this riparian habitat zone may occur. The majority of developed wetlands, rookeries, and other habitats with large populations of migratory waterbirds are not located close to the River. Most other migratory birds including shorebirds and other waterbirds have migrated south by November and are not significantly affected by hunting. The remaining areas of the Refuge closed to hunting provide undisturbed waterfowl and waterbird habitat.

On occasion, endangered whooping cranes move through the Ouray NWR area in April and again in September-October. They rarely stop on the Refuge in the spring. Cranes mostly use the River and associated sandbars outside the hunting area. If a whooping crane was to use the hunting units, the areas would be temporarily closed to hunting. No significant impact on whooping cranes would be expected from this hunt.

Determination:

Wildlife Observation, Wildlife Photography, Recreational Fishing, Recreational Hunting, Environmental Education, Interpretation, and the other supporting uses (canoeing, rafting, hiking, horseback riding) are compatible with the purposes of the Refuge.

The following stipulations are required to ensure compatibility:

Visitors are not allowed to camp overnight on the Refuge. No open fires are allowed anywhere on the Refuge as well.

The only area around the farm field open to the general public is the Wildlife Viewing site. Other areas adjacent to and within the field are closed year round.

The Refuge makes every effort to notify anglers of endangered fish concerns by posting endangered fish information posters, providing endangered fish information brochures at the kiosk, contacting as many anglers as possible, and providing state regulations with complete descriptions and pictures and cautions on endangered fish.

Fishing is limited to the Green River only. Access to fishing sites are via designated roads or by foot.

Refuge officers will be available to enforce Refuge and state regulations.

Vehicles are restricted to designated roads. Parking is available in designated areas.

Justification:

The wildlife observation, photography, environmental education and interpretation program on this Refuge is low impact with fairly low visitation. Wildlife disturbance is minimal and the benefits gained by providing these activities and information to visitors far outweigh any temporary disturbance which may occur to wildlife. This program is justified on this Refuge.

Recreational fishing on the Green River of the Ouray NWR will not likely interfere with endangered species needs and will not conflict with other Refuge purposes. Guided by the Refuge Recreation Act of 1962, which provides for recreational uses which are compatible with Refuge purposes and the National Recreational Fisheries Policy of 1988, which encourages enhancement of fishing opportunities on National Wildlife Refuges, this program is justified on this Refuge.

Recreational hunting on the Ouray NWR will not conflict with other Refuge purposes. The Ouray NWR is one of the few places open for waterfowl and pheasant hunting within the Uintah Basin. Guided by the Refuge Recreation Act of 1962, which provides for recreational uses that are compatible with Refuge purposes, this use is justified on the Refuge.

II. Description of Proposed Use: Mosquito Control

The Ouray NWR lies within the Uintah County Mosquito Abatement District. The Refuge has many acres of shallow water, which is ideal mosquito rearing habitat. Uintah County has been documented with a high potential for serious incidence of mosquito-borne Western Equine Encephalitis and St. Louis Encephalitis. Six out of the last eight years of monitoring Encephalitis in a sentinel chicken flock by the Utah State Health Department has shown positive reactions in this flock. In 1978, over 60 documented cases of Western Equine Encephalitis were diagnosed. Mosquitoes reproducing on the Refuge have the potential to travel as far as the city of Vernal.

The Abatement District will treat up to 1,000 acres of Refuge wetland with *Bacillus thuringienses israelensis* (BTI) at a rate of 1 pint of concentrate per acre. Application will be with either single engine fixed-wing aircraft or by ground treatment. BTI has been shown to be a target specific, biodegradable and environmentally compatible mosquito larvicide. Review and approval by FWS Region 6 Pesticide Review Committee has been completed.

Up to two treatments may be applied through the summer as monitoring of mosquito larvae indicates. Wetlands to be treated will be determined by the Abatement District and coordinated through the Refuge staff.

The Abatement District will closely monitor Refuge wetland habitat for mosquito habitat conditions and larvae populations. This will require several trips throughout the Refuge to monitor these conditions. Vehicle travel is limited to established roads and field monitoring or treatment evaluation must be done by foot.

Anticipated Impacts on Service Lands, Waters, or Interests:

The abatement program will affect the Refuge purposes in several ways. Aerial applications will likely result in temporary disturbance and displacement of waterbirds and other wildlife. Actual treatment time by aircraft over any given wetland will be only a few minutes and should not result in permanent displacement of wildlife. Colonies of nesting waterbirds are located in Leota Bottom and Woods Bottom. This area will be off limits for aerial application and should not be impacted to a large degree. The first aerial applications will likely occur in mid-May when waterfowl are actively nesting. It is believed that only a minor disturbance to nesting waterfowl will occur and that production will not be affected.

Ground monitoring activities and application of BTI will result in some minor disturbance to wildlife. These activities, however, should be temporary in nature.

During the short time that application by aircraft takes place, negative aesthetic impacts could occur to Refuge visitors from low flying planes. Refuge visitation is very low in midsummer (due to mosquitoes) and will probably not affect anyone other than Refuge employees.

BTI is a selective, environmentally benign mosquito larvicide which will not affect other invertebrates or wildlife, including endangered fish species.

Determination:
Mosquito control on the Ouray NWR is compatible with the purposes of the Refuge.

The following stipulations are required to ensure compatibility:
The Refuge manager may further restrict access or locations of treatment in order to minimize disturbance in areas such as colonial nesting bird sites or areas with a high concentration of migratory birds.

The permittee will notify Refuge staff at least two days prior to ground or aerial application of BTI. At this time, Refuge staff will inform permittee of any sensitive areas and buffer areas which may require no treatment with BTI.

No vehicles may travel off designated roads. All persons must sign in and sign out at the Refuge shop which allows staff to know who is out on the Refuge during what time.

Gate keys will be provided and gates must be closed and locked at all times.

Justification:
These mosquito abatement activities will lower the adult mosquito populations in the vicinity of the Ouray NWR. Fewer adult mosquitoes will lessen the threat of Encephalitis health concerns. This treatment will meet abatement district responsibilities and improve relations with county neighbors. Mosquito control may enhance a positive Refuge visitor experience.

III. Description of Proposed Use: Research

With the completion of Flaming Gorge Dam in 1962, many changes have occurred in the floodplain of the Green River below the dam and in the area of the Ouray NWR. Endangered fish nursery habitat, the geomorphology of the River, and increased numbers of nonnative fish species all may be effected by the changes incurred by damming the Green River. Utah State University, in conjunction with the Recovery Program and BOR, will conduct studies to contribute to the understanding of: 1) the effects of the River regulation on downstream ecosystems and how the dam might be operated to mitigate these effects; 2) how effective isolating important nursery habitats from nonnative predator fish will be; and 3) the needs and requirements of these endangered fish in the Green River.

Research activities will be conducted throughout the spring, summer and fall months. Two to three people will be going out three to five times per week, and each site will be accessed by vehicle on designated roads and by boat. Researchers will use electroshocking equipment, fyke nets, and light traps.

Anticipated Impacts on Service Lands, Waters, or Interests:

These studies should provide information on how Flaming Gorge Dam operations effect downstream channels, backwaters, wetlands, and resulting critical nursery habitat for endangered fish. Impacts to the Refuge lands should be very minimal and only temporary.

Minor, temporary disturbances to some Refuge wildlife using the riparian habitat zone along the River may occur. Waterbirds in the wetland areas may have substantial disturbance from activities associated with the research being conducted. Tree rookery sites of great blue herons and cormorants seem to be able to tolerate some activity without being overly disturbed.

Some disturbance to River backwaters may occur. These backwaters have been shown to be important areas for larval and young endangered fish including the razorback sucker and the Colorado pikeminnow. Some of these young fish may be displaced by this disturbance into the main River channel and be forced into other Refuge backwaters.

Determination:

Research conducted on the Ouray NWR is found to be compatible with the purposes of the Refuge.

The following stipulations are required to ensure compatibility:

Researchers will not be allowed to camp on the Refuge other than in the shop area and no pets will be allowed on the Refuge during research activities.

Trips to and from research sites need to be kept to a minimum and no vehicles shall leave designated roads without prior approval by the Refuge manager. For safety reasons, no vehicle use will be allowed in Leota Bottom during the hunting season. Boat access in the river during this time is permissible.

Further restrictions on access or activities may be necessary if concentrations of migratory birds were to occur on the Refuge. In addition, if other research proposals and activities become so numerous as to develop incompatible disturbances to each other and wildlife resources the compatibility of the studies will be reevaluated to minimize disturbances to wildlife.

Justification:

Research may result in a better understanding of the dynamics of this River system, what weak links may cause populations of four endangered fish species to decline, as well as what the important elements may be in managing River flows to maintain viable River biota. This information shall contribute to understanding the Green River ecosystem as a whole.

Temporary disturbances or displacements of some migratory birds will undoubtedly occur from these research activities. However, the knowledge gained about endangered fish biology should outweigh these migratory bird disturbances. Efforts will be taken to minimize these disturbances.

IV. Description of Proposed Use: Bee Hives

This activity would allow the continued issuance of a Special Use Permit for one site location for up to 30 bee hives on the Ouray NWR. Under this permit, the bee handler may place hives in the SW¼ of Section 15., T8S, R20E., which is located in a remote area of the Refuge just west of Sheppard Bottom.

The handler will be required to visit the hive site twice in May, twice in June, once each July, August, and October for a total of seven visits. These visits are for monitoring and caring for the bees and the collection of honey.

Anticipated Impacts on Service Lands, Waters, and Interests:

Bee hives placed on the Refuge will not have a significant impact on the Refuge purposes. Bees gathering pollen in this vicinity should help with the pollination of some flowering plants. The hives are located in a remote location which lies in an arid draw west of Sheppard Bottom. Little or no disturbance to migratory birds will occur during the season of honey collection. Minor disturbances to a few wildlife such as deer, pheasants, and rabbits may occur in this habitat zone, but only temporarily.

Determination:

Bee hives on the Ouray NWR are found to be compatible with the purposes of the Refuge.

The following stipulations are required to ensure compatibility:

Only one hive site is permitted as designated by the Refuge Manager. The site must remain neat and orderly. The hives must remain in the draw and out of sight of the visiting public.

The handler may access the hive site using the existing road or by foot. All activities and access to the bee hives by the permittee will be limited to daylight hours only.

NEPA Compliance:

Categorical Exclusion
Environmental Assessment
Environmental Impact Statement
FONSI

Signatures:
Project Leader: _____ Date: 7/10/00
Daniel M. Alonso, Ouray NWR

Concurrence: _____ Date: 7/13/00
Refuges Program Supervisor

_____ Date: 7/14/00
Regional Chief
National Wildlife Refuge System

Appendix E. Compliance Requirements

Antiquities Act (1906): Authorizes the Scientific investigation of antiquities on Federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

Americans With Disabilities Act (1992): Prohibits discrimination in public accommodations and services.

American Indian Religious Freedom Act (1978): Directs agencies to consult with native traditional religious leaders to determine appropriate policy changes necessary to protect and preserve Native American religious cultural rights and practices.

Architectural Barriers Act (1968): Requires federally owned, leased, or funded buildings and facilities to be accessible to persons with disabilities.

Archaeological and Historical Preservation Act (1974): Directs the preservation of historic and archaeological data in federal construction projects.

Archaeological Resources Protection Act (1979) as amended: Protects material of archaeological interest from unauthorized removal or destruction and requires Federal managers to develop plans and schedules to locate archaeological resources.

Clean Water Act (1977): Requires consultation with the Corps of Engineers (404 permits) for major wetland modification.

Emergency Wetland Resources Act (1986): Promotes the conservation of migratory waterfowl and offset or prevent the serious loss of wetlands by the acquisition of wetlands and other essential habitat, and for other purposes.

Endangered Species Act (1973): Requires all federal agencies to carry out programs for the conservation of endangered and threatened species.

Executive Order 11988 (1977): Each federal agency shall provide leadership and take action to reduce the risk of flood loss and minimize the impact of floods on human safety, and preserve the natural and beneficial values served by the floodplain.

Executive Order 12996 Management and General Public Use of the National Wildlife Refuge System (1996): Defines the mission, purpose, and priority public uses of the National Wildlife Refuge System. It also presents four principles to guide management of the system.

Executive Order 13007 Indian Sacred Sites (1996): Direct Federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.

Federal Noxious Weed Act (1990): Requires the use of integrated management systems to control or contain undesirable plant species; and an interdisciplinary approach with the cooperation of other Federal and State agencies.

Fish and Wildlife Act (1956): Establish a comprehensive national fish and wildlife policy and broadened the authority for acquisition and development of Refuges.

Fish and Wildlife Coordination Act (1958): Allows the Fish and Wildlife Service to enter into agreements with private landowners for wildlife management purposes.

Land and Water Conservation Fund Act (1965): Uses the receipts from the sale of surplus Federal land, outer continental shelf oil and gas sales, and other sources for land acquisition under several authorities.

Migratory Bird Conservation Act (1929): Establishes procedures for acquisition by purchase, rental, or gift of areas approved by the Migratory Bird Conservation Commission.

Migratory Bird Hunting and Conservation Stamp Act (1934): Authorizes the opening of parts of a Refuge to waterfowl hunting.

Migratory Bird Treaty Act (1918): Designates the protection of migratory birds as a Federal responsibility. This Act enables the setting of seasons, and other regulations including the closing of areas, Federal or non-Federal to the hunting of migratory birds.

Native American Graves Protection and Repatriation Act (1990): Requires Federal agencies and museums to inventory, determine ownership of, and repatriate cultural items under their control or possession.

National Wildlife Refuge System Administration Act of 1966 (Refuge Administration Act; 16 U.S.C. 668dd) as amended by the National Wildlife Refuge System Improvement Act of 1997 (Refuge Improvement Act; P.L. 105-57): Defines the National Wildlife Refuge System and authorizes the Secretary to permit any use of a Refuge provided such use is compatible with the major purposes for which the Refuge was established. This law states that "....the Secretary shall—(1) propose a comprehensive conservation plan for each refuge or related complex of refuges... in the System." Section 5 and 7 of the Refuge Improvement Act provide additional detail on administration of and conservation planning for the Refuge System.

National Historic Preservation Act (1966) as amended: Establishes a policy that the Federal Government is to provide leadership in the preservation of the nation's prehistoric and historic resources.

National Environmental Policy Act (1969): Requires the disclosure of the environmental impacts of any major Federal action significantly affecting the quality of the human environment.

Refuge Recreation Act (1962): Allows the use of Refuges for recreation when such uses are compatible with the Refuge's primary purposes and when sufficient funds are available to manage the uses.

Rehabilitation Act of (1973): Requires programmatic accessibility in addition to physical accessibility for all facilities and programs funded by the Federal government to ensure that anybody can participate in any program.

Appendix F. Mailing List

Federal Officials

- Senator Orrin G. Hatch, Washington, D.C. and Salt Lake City, UT
- Senator Bob Bennett, Washington, D.C. and Ogden, UT
- Congressman Merrill Cook, Salt Lake City, UT
- Congressman Chris Cannon, Washington, D.C. and Provo, UT
- Congressman James V. Hansen, Washington, D.C.

Federal Agencies

- Bureau of Indian Affairs, Dave Allison
- Bureau of Land Management, Vernal and Salt Lake City, Utah
- Bureau of Reclamation; Provo and Salt Lake City, Utah
- Dinosaur National Park, Dinosaur, CO
- Roosevelt Fish and Wildlife Management Assistance Office
- USDA/Natural Resource Conservation Service
- US EPA, Denver, CO
- US Fish and Wildlife Service: Denver, CO; Lakewood, CO; Albuquerque, NM; Portland, OR; Anchorage, AK; Fort Snelling, MN; Atlanta, GA; Hadley, MA; Arlington, VA; Shepherdstown, WV
- US Fish and Wildlife Service: Bear River Migratory Bird Refuge; Fish Springs NWR; Seedskadee NWR; Ecological Services, Salt Lake City, UT; Helena, MT; and Grand Junction, CO; Brown's Park NWR; Tewaukon NWR; Waubay NWR; Arapaho NWR; North Platte/ Crescent Lake NWR; Flint Hills NWR; Arrowwood NWR; Sand Lake NWR; Alamosa/Monte Vista NWR.
- US Forest Service, Vernal, Utah
- USGS, BRD, Fort Collins, CO

State Officials

- Governor Michael Leavitt
- Senator Beverly Evans
- Representative Jack Seitz

State Agencies

- Northeast Utah Visitor Center
- RC&D, Sue Wight
- School and Institutional Trust Lands Administration
- Utah Division of Wildlife Resources, Vernal and Salt Lake City
- Utah State Historical Society
- Utah State Parks and Recreation

City/County/Local Governments

- Uintah County Commissioner, Herb Snyder
- Uintah County Commissioner, Lloyd Swain
- Uintah County Commissioner, Cloyd Harrison
- Uintah County Extension Agent
- Uintah County Mosquito Abatement
- Uintah County Road Department
- Uintah Water Conservancy Dist
- Vernal City Council, Allan Mashburn
- Vernal City Council, Bert Clark
- Vernal City Council, JoAnn Cowan
- Vernal City Council, Matt Foley
- Vernal City Council, Jim Abegglen
- Vernal City Manager, Ken Bassett
- Vernal Mayor, Bill Kremin

Libraries
- Uintah County Library
- Duchesne County Library

Organizations
- Animal Protection Institute, Sacramento, CA
- Audubon Society, Gretchen Muller
- Central Mountain & Plains Section The Wildlife Society, Fort Collins, CO
- Cooperative Alliance for Refuge Enhancement (CARE), Washington, D.C.
- Defenders of Wildlife, Washington, D.C.
- Franson-Noble & Associates, Inc.
- KRA Corporation, Bethesda, MD
- National Wildlife Refuge Association, Brent Giezentanner
- Ouray Park Irrigation
- Salt Lake City Audubon Society
- Uintah Mountain Club
- Uintah & Ouray Natural Resources, Jonas Grant
- Ute Game and Fish, Bobby Chapoose; Karen Courts;
- Vernal Jr. Hi Escape Club, Louise Murch
- Wilderness Society, Washington, D.C.
- Wildlife Management Institute

Newspapers
- Vernal Express
- Uintah Basin Standard

Schools/Universities
- Northwestern University, Professor Paul Friesma
- Utah State University, Dr. Rich Etchberger

Individuals
Batty, Joe
Batty, Morgan
Chapman, Nile
Harbin, Chris
Henry, Dale
Johnson, Jim
Maddox, Henry
Peg's Café
Troester, Herb

Appendix G. List of Preparers

This Plan was written by Dan Alonso, Refuge Manager; Manuel DeLeon, Wildlife Biologist; Dan Schaad, Refuge Operations Specialist; Jennifer DeLeon, Outdoor Recreation Planner; Allison Banks and Kelli Stone. Maps were prepared by Joanne Covas-Munro, Donna Vicars-Benjamin, and Jaymee Fojtik. Document editing and layout was prepared by Barbara Shupe. Photo cover prepared by Beverly Boecher.

Appendix H. Species Lists of Ouray NWR

Including birds, mammals, reptiles and amphibians, fish, and plants. (Behle and Perry 1975, Burt and Grossenheider 1976, Colorado River Fisheries Program, Conant 1975, Folks 1963, Goodrich and Neese 1986, Larson 1993, USFWS, Ouray [birds, mammals, reptiles and amphibians list])

Birds **(*Indicates confirmed nester on the Refuge.)**

Loons	
Common Loon	*Gavia immer*
Grebes	
Pied-billed Grebe*	*Podilymbus podiceps*
Horned Grebe	*Podiceps auritus*
Eared Grebe*	*Podiceps nigricollis*
Western Grebe*	*Aechmophorus occidentalis*
Pelicans	
American White Pelican	*Pelecanus erythrorhynchos*
Cormorants	
Double-crested Cormorant*	*Phalacrocorax auritus*
Bitterns, Herons, and Egrets	
American Bittern	*Botaurus lentiginosus*
Least Bittern	*Ixobrychus exilis*
Great Blue Heron*	*Ardea herodias*
Great Egret	*Ardea alba*
Snowy Egret*	*Egretta thula*
Little Blue Heron	*Egretta caerulea*
Green Heron	*Butorides virescens*
Black-crowned Night-Heron*	*Nycticorax nycticorax*
Ibises and Spoonbills	
White-faced Ibis*	*Plegadis chihi*
New World Vultures	
Turkey Vulture*	*Cathartes aura*
Swans, Geese, and Ducks	
Greater White-fronted Goose	*Anser albifrons*
Snow Goose	*Chen caerulescens*
Canada Goose*	*Branta canadensis*
Trumpeter Swan	*Cygnus buccinator*
Tundra Swan	*Cygnus columbianus*
Wood Duck	*Aix sponsa*
Gadwall*	*Anas strepera*
American Wigeon*	*Anas americana*
Mallard*	*Anas platyrhynchos*
Blue-winged Teal*	*Anas discors*
Cinnamon Teal*	*Anas cyanoptera*
Northern Shoveler*	*Anas clypeata*
Northern Pintail*	*Anas acuta*
Green-winged Teal*	*Anas crecca*
Canvasback*	*Aythya valisineria*
Redhead*	*Aythya americana*
Ring-necked Duck	*Aythya collaris*
Greater Scaup	*Aythya marila*
Lesser Scaup	*Aythya affinis*
Bufflehead	*Bucephala albeola*
Common Goldeneye	*Bucephala clangula*
Barrow's Goldeneye	*Bucephala islandica*
Hooded Merganser	*Lophodytes cucullatus*
Common Merganser*	*Mergus merganser*
Red-breasted Merganser	*Mergus serrator*
Ruddy Duck*	*Oxyura jamaicensis*
Osprey, Kites, Hawks, and Eagles	
Osprey	*Pandion haliaetus*
Bald Eagle	*Haliaeetus leucocephalus*
Northern Harrier*	*Circus cyaneus*
Sharp-shinned Hawk	*Accipiter striatus*
Cooper's Hawk	*Accipiter cooperii*
Northern Goshawk	*Accipiter gentilis*
Swainson's Hawk*	*Buteo swainsoni*
Red-tailed Hawk*	*Buteo jamaicensis*
Ferruginous Hawk	*Buteo regalis*
Rough-legged Hawk	*Buteo lagopus*
Golden Eagle*	*Aquila chrysaetos*
Falcons and Caracaras	
American Kestrel*	*Falco sparverius*
Merlin	*Falco columbarius*
Peregrine Falcon	*Falco peregrinus*
Prairie Falcon*	*Falco mexicanus*
Gallinaceous Birds	
Ring-necked Pheasant* Introduced	*Phasianus colchicus*
Sage Grouse	*Centrocercus urophasianus*
Rails	
Virginia Rail*	*Rallus limicola*
Sora*	*Porzana carolina*
Common Moorhen	*Gallinula chloropus*
American Coot	*Fulica americana*
Cranes	
Sandhill Crane	*Grus canadensis*
Whooping Crane	*Grus americana*
Plovers	
American Golden-Plover	*Pluvialis dominica*
Snowy Plover	*Charadrius alexandrinus*
Semipalmated Plover	*Charadrius semipalmatus*
Killdeer*	*Charadrius vociferus*
Stilts and Avocets	
Black-necked Stilt*	*Himantopus mexicanus*
American Avocet*	*Recurvirostra americana*

Sandpipers and Phalaropes

Greater Yellowlegs	*Tringa melanoleuca*
Lesser Yellowlegs	*Tringa flavipes*
Solitary Sandpiper	*Tringa solitaria*
Willet	*Catoptrophorus semipalmatus*
Spotted Sandpiper*	*Actitis macularia*
Long-billed Curlew*	*Numenius americanus*
Marbled Godwit	*Limosa fedoa*
Western Sandpiper	*Calidris mauri*
Least Sandpiper	*Calidris minutilla*
Baird's Sandpiper	*Calidris bairdii*
Dunlin	*Calidris alpina*
Short-billed Dowitcher	*Limnodromus griseus*
Long-billed Dowitcher	*Limnodromus scolopaceus*
Common Snipe*	*Gallinago gallinago*
Wilson's Phalarope*	*Phalaropus tricolor*
Red-necked Phalarope	*Phalaropus lobatus*

Skuas, Jaegers, Gulls, and Terns

Franklin's Gull	*Larus pipixcan*
Bonaparte's Gull	*Larus philadelphia*
Ring-billed Gull	*Larus delawarensis*
California Gull	*Larus californicus*
Herring Gull	*Larus argentatus*
Caspian Tern	*Sterna caspia*
Common Tern	*Sterna hirundo*
Forster's Tern*	*Sterna forsteri*
Black Tern*	*Chlidonias niger*

Pigeons and Doves

Rock Dove	Introduced	*Columba livia*
Band-tailed Pigeon		*Columba fasciata*
Mourning Dove*		*Zenaida macroura*

Cuckoos and Anis

Yellow-billed Cuckoo*	*Coccyzus americanus*

Typical Owls

Western Screech-Owl	*Otis kennicottii*
Eastern Screech-Owl	*Otus asio*
Great Horned Owl*	*Bubo virginianus*
Burrowing Owl*	*Athene cunicularia*
Long-eared Owl	*Asio otus*
Short-eared Owl	*Asio flammeus*
Northern Saw-whet Owl	*Aegolius acadicus*

Nightjars

Common Nighthawk*	*Chordeiles minor*
Common Poorwill	*Phalaenoptilus nuttallii*

Swifts

White-throated Swift	*Aeronautes saxatalis*

Hummingbirds

Black-chinned Hummingbird	*Archilochus alexandri*
Broad-tailed Hummingbird	*Selasphorus platycercus*
Rufous Hummingbird	*Selasphorus rufus*

Kingfishers

Belted Kingfisher	*Ceryle alcyon*

Woodpeckers

Lewis' Woodpecker*	*Melanerpes lewis*
Red-headed Woodpecker	*Melanerpes erythrocephalus*
Yellow-bellied Sapsucker	*Sphyrapicus varius*
Downy Woodpecker*	*Picoides pubescens*
Hairy Woodpecker*	*Picoides villosus*
Northern Flicker*	*Colaptes auratus*

Tyrant Flycatchers

Western Wood-Pewee	*Contopus sordidulus*
Willow Flycatcher	*Empidonax traillii*
Say's Phoebe*	*Sayornis saya*
Vermilion Flycatcher	*Pyrocephalus rubinus*
Ash-throated Flycatcher	*Myiarchus cinerascens*
Western Kingbird*	*Tyrannus verticalis*
Eastern Kingbird	*Tyrannus tyrannus*

Shrikes

Loggerhead Shrike*	*Lanius ludovicianus*
Northern Shrike	*Lanius excubitor*

Vireos

Warbling Vireo*	*Vireo gilvus*

Crows, Jays, and Magpies

Pinyon Jay	*Gymnorhinus cyanocephalus*
Black-billed Magpie*	*Pica pica*
American Crow	*Corvus brachyrhynchos*
Common Raven	*Corvus corax*

Larks

Horned Lark*	*Eremophila alpestris*

Swallows

Purple Martin	*Progne subis*
Tree Swallow	*Tachycineta bicolor*
Violet-green Swallow	*Tachycineta thalassina*
Northern Rough-winged Swallow*	*Stelgidopteryx serripennis*
Bank Swallow	*Riparia riparia*
Cliff Swallow*	*Petrochelidon pyrrhonota*
Barn Swallow*	*Hirundo rustica*

Titmice and Chickadees

Black-capped Chickadee*	*Poecile atricapillus*
Mountain Chickadee	*Poecile gambeli*

Nuthatches

Red-breasted Nuthatch	*Sitta canadensis*
White-breasted Nuthatch	*Sitta carolinensis*

Creepers

Brown Creeper	*Certhia americana*

Wrens

Rock Wren*	*Salpinctes obsoletus*
Bewick's Wren	*Thryomanes bewickii*
House Wren*	*Troglodytes aedon*
Marsh Wren*	*Cistothorus palustris*

Kinglets

Golden-crowned Kinglet	*Regulus satrapa*
Ruby-crowned Kinglet	*Regulus calendula*

Old World Warblers

Blue-gray Gnatcatcher	*Polioptila caerulea*

Thrushes

Western Bluebird	*Sialia mexicana*
Mountain Bluebird	*Sialia currucoides*
Townsend's Solitaire	*Myadestes townsendi*
Swainson's Thrush	*Catharus ustulatus*
American Robin*	*Turdus migratorius*

Mimic Thrushes

Gray Catbird	*Dumetella carolinensis*
Northern Mockingbird*	*Mimus polyglottos*
Sage Thrasher	*Oreoscoptes montanus*

Starlings
European Starling* *Sturnus vulgaris*

Wagtails and Pipits
American (Water) Pipit *Anthus rubescens*

Waxwings
Bohemian Waxwing *Bombycilla garrulus*
Cedar Waxwing *Bombycilla cedrorum*

Wood Warblers
Orange-crowned Warbler *Vermivora celata*
Virginia's Warbler *Vermivora virginiae*
Yellow Warbler* *Dendroica petechia*
Yellow-rumped Warbler *Dendroica coronata*
Black-throated Gray Warbler *Dendroica nigrescens*
Townsend's Warbler *Dendroica townsendi*
American Redstart *Setophaga ruticilla*
MacGillivray's Warbler *Oporornis tolmiei*
Common Yellowthroat *Geothlypis trichas*
Wilson's Warbler *Wilsonia pusilla*
Yellow-breasted Chat* *Icteria virens*

Sparrows and Towhees
Green-tailed Towhee *Pipilo chlorurus*
Spotted Towhee* *Pipilo maculatus*
American Tree Sparrow *Spizella arborea*
Brewer's Sparrow *Spizella breweri*
Vesper Sparrow *Pooecetes gramineus*
Lark Sparrow *Chondestes grammacus*
Sage Sparrow *Amphispiza belli*
Lark Bunting *Calamospiza melanocorys*
Savannah Sparrow *Passerculus sandwichensis*
Fox Sparrow *Passerelia iliaca*
Song Sparrow *Melospiza melodia*
Lincoln's Sparrow *Melospiza lincolnii*
White-throated Sparrow *Zonotrichia albicollis*
Harris' Sparrow *Zonotrichia querula*
White-crowned Sparrow *Zonotrichia leucophrys*
Dark-eyed Junco *Junco hyemalis*
Snow Bunting *Plectrophenax nivalis*

Cardinals, Grosbeaks, and Allies
Black-headed Grosbeak *Pheucticus melanocephalus*
Blue Grosbeak *Guiraca caerulea*
Lazuli Bunting *Passerina amoena*

Blackbirds and Orioles
Red-winged Blackbird* *Agelaius phoeniceus*
Western Meadowlark* *Surnella neglecta*
Yellow-headed Blackbird* *Xanthocephalus xanthocephalus*
Brewer's Blackbird* *Euphagus cyanocephalus*
Common Grackle *Quiscalus quiscula*
Brown-headed Cowbird* *Molothrus ater*
Baltimore Oriole *Icterus galbula*

Finches
House Finch *Carpodacus mexicanus*
Pine Siskin *Carduelis pinus*
Lesser Goldfinch *Carduelis psaltria*
American Goldfinch* *Carduelis tristis*
Evening Grosbeak *Coccothraustes vespertinus*
Rosy Finch *Leucosticte arctoa*

Old World Sparrows
House Sparrow* Introduced *Passer domesticus*

Mammals

Bears
Black Bear *Ursus americanus*

Raccoons
Raccoon *Procyon lotor*

Otters, Badgers, and Skunks
Northern River Otter *Lutra canadensis*
American Badger *Taxidea taxus*
Striped Skunk *Mephitis mephitus*

Dogs and Foxes
Coyote *Canis latrans*
Red Fox *Vulpes vulpes*
Kit Fox *Vulpes macrotis*

Cats
Mountain Lion *Felis concolor*
Lynx *Lynx canadensi*
Bobcat *Lynx rufus*

Squirrels
Yellow-bellied Marmot *Marmota flaviventris*
White-tailed Prairie Dog *Cynomys leucurus*
White-tailed Antelope Squirrel *Ammospermophilus leucurus*
Least Chipmunk *Tamias minimus*

Kangaroo Rat
Ord's Kangaroo Rat *Dipodimys ordii*

Beaver
American Beaver *Castor canadensis*

Mice
Deer Mouse *Peromyscus maniculatis*
White-footed Mouse *Peromyscus leucopus*

Vole
Meadow Vole *Microtus pennsylvanicus*

Muskrat
Muskrat *Ondatra zibethicus*

Porcupine
Porcupine *Erithizon dorsatum*

Hares and Rabbits
White-tailed Jackrabbit *Lepus townsendii*
Black-tailed Jackrabbit *Lepus californicus*
Desert Cottontail *Sylvilagus audubonii*

Deer
American Elk *Cervus elaphus*
Mule Deer *Odocoileus hemionus*
Moose *Alces alces*

Pronghorn
Pronghorn *Antilocapra americana*

Bison
American Bison *Bos bison*

Reptiles and Amphibians:

Reptiles:

Fence Lizard	
Eastern Fence Lizard	*Sceloporous undulatus*
Side-Blotched Lizard	
Side-blotched Lizard	*Uta stansburiana*
Horned Lizard	
Short-horned Lizard	*Phrynosoma douglassii*
Whiptail	
Western Whiptail	*Cnemidophorus tigris*
Garter Snake	
Wandering Garter Snake	*Thamnophis elegans vagrans*
Racer	
Yellow-bellied Racer	*Coluber constrictor*
Green Snake	
Smooth Green Snake	*Opheodrys vernalis*
Gopher Snake	
Great Basin Gopher Snake	*Pituophis melanoleucus*
Rattlesnake	
Western Rattlesnake	*Crotalus viridis*

Amphibians:

Toads	
Woodhouse's Toad	*Bufo woodhousei*
Rocky Mountain Toad	*Bufo woodhousei woodhousei*
Chorus Frog	
Boreal Chorus Frog	*Pseudacris triseriata maculata*
Leopard Frog	
Northern Leopard Frog	*Rana pipiens*

Fish:

Trouts	
Rainbow Trout*	*Oncorhynchus mykiss*
Brown Trout*	*Salmo trutta*
Pikes	
Northern Pike*	*Esox lucius*
Carps and Minnows	
Common Carp*	*Cyprinus carpio*
Utah Chub*	*Gila atraria*
Roundtail Chub	*Gila robusta*
Bonytail	*Gila elegans*
Humpback Chub	*Gila cypha*
Sand Shiner*	*Notropis stramineus*
Fathead Minnow*	*Pimephales promelas*
Colorado Pikeminnow	*Ptychocheilus lucius*
Speckled Dace	*Rhinichthys osculus*
Redside Shiner*	*Richardsonius balteatus*
Red Shiner*	*Notropis lutrensis*
Suckers	
White Sucker*	*Catostomus commersoni*
Bluehead Sucker	*Catostomus discobolus*
Flannelmouth Sucker	*Catostomus latipinnis*
Razorback Sucker	*Xyrauchen texanus*
Bullhead Catfishes	
Black Bullhead*	*Ictalurus melas*
Channel Catfish*	*Ictalurus punctatus*
Livebearers	
Mosquitofish*	*Gambusia affinis*
Sunfishes	
Green Sunfish*	*Lepomis cyanellus*
Bluegill*	*Lepomis macrochirus*
Smallmouth Bass*	*Micropterus dolomieui*
Black Crappie*	*Pomoxis nigromaculatus*
Perches	
Yellow Perch*	*Perca flavescens*
Walleye	*Stizostedion vitreum vitreum*
Sculpins	
Mottled Sculpin	*Cottus bairdi*
Sticklebacks	
Brook stickleback	*Culaea inconstans*

*Indicates species is not native to this area.

Plant Species:

Grasses

Crested Wheatgrass	*Agropyron cristatum*
Western Wheatgrass	*Agropyron smithii*
Slender Wheatgrass	*Agropyron trachycaulum*
Creeping Bentgrass	*Agrostis stolonifera*
Purple Three-awn	*Aristida purpurea*
American Sloughgrass	*Beckmannia syzigachne*
Cheatgrass	*Bromus tectorum*
Inland Saltgrass	*Distichlis spicata*
Barnyard Grass	*Echinochloa crusgalli*
Nodding Wildrye	*Elymus canadensis*
Low Creeping Wildrye	*Elymus simplex*
Sixweeks Fescue	*Festuca octoflora*
Galleta	*Hilaria jamesii*
Foxtail Barley	*Hordeum jubatum*
Scratchgrass	*Muhlenbergia asperifolia*
Indian Ricegrass	*Oryzopsis hymenoides*
Old Witchgrass	*Panicum capillare*
Common Reed	*Phragmites australis*
Sandberg Bluegrass	*Poa secunda*
Rabbitfoot Grass	*Polypogon monspeliensis*
Squirreltail	*Sitanion hystrix*
Alkali Sacaton	*Sporobolus airoides*
Sand Dropseed	*Sporobolus cryptandrus*
Needle-and-Thread Grass	*Stipa comata*

Forbs and Weeds

Lowland Purslane	*Sesuvium sessile*
Redroot Amaranth	*Amaranthus retroflexus*
Springparsley	*Cymopterus acaulis*
Onion Springparsley	*Cymopterus bulbosus*
Uintah Basin Springparsley	*Cymopterus duchesnensis*
Purple Springparsley	*Cymopterus purpurascens*
Hemp Dogbane	*Apocynum cannabinum*
Pallid Milkweed	*Asclepias cryptoceras*
Labriform Milkweed	*Asclepias labriformis*
Showy Milkweed	*Asclepias speciosa*
Bur Ragweed	*Ambrosia tomentosa*
Leafy Aster	*Aster frondosus*
Nodding Beggarticks	*Bidens cernua*
Russian Knapweed	*Centaurea repens*
Douglas Chaenactis	*Chaenactis douglasii*
False Yarrow	*Chaenactis stevioides*
Creeping Thistle	*Cirsium arvense*
Bull Thistle	*Cirsium vulgare*
Dandelion Hawksbeard	*Crepis runcinata glauca*
Enceliopis	*Enceliopsis nutans*
Fleabane	*Erigeron bellidiastrum typicus*
Low Fleabane	*Erigeron pumilus*
Lowland Cudweed	*Gnaphalium palustre*
Curlycup Gumweed	*Grindelia squarrosa*
Broom Snakeweed	*Gutierrezia sarothrae*
Orange Sneezeweed	*Helenium autumnale*
Wild Sunflower	*Helianthus annuus*
Sunflower	*Helianthus petiolaris*
Showy Goldeneye	*Heliomeris multiflora*
Fineleaf Hymenopappus	*Hymenopappus filifolius luteus*
Poverty Sumpweed	*Iva axillaris*
Chicory Lettuce	*Lactuca tatarica*
Heath Aster	*Leucelene ericoides*
Skeleton Plant	*Lygodesmia grandiflora*
Purple Aster	*Machaeranthera canescens*
Discoid Tansyaster	*Machaeranthera grindelioides*
Desert Dandelion	*Malacothrix sonchoide*
	Platyschkuhria integrifolia
	Prenanthella exigua
Canada Goldenrod	*Solidago canadensis*
Missouri Goldenrod	*Solidago missouriensis*
Western Goldenrod	*Solidago occidentalis*
Field Sowthistle	*Sonchus arvensis*
Prickly Sowthistle	*Sonchus asper*
Wirelettuce	*Stephanomeria pauciflora*
Wirelettuce	*Stephanomeria runcinata*
Nuttall Horsebrush	*Tetradymia nuttallii*
Cottonthorn Horsebrush	*Tetradymia spinosa*
Towndsendia	*Townsendia grandiflora*
Towndsendia	*Townsendia incana*
Yellow Salsify	*Tragopogon dubius*
Rough Cocklebur	*Xanthium strumarium*
Desert Daisy	*Xylorhiza venusta*
Cryptantha	*Cryptantha ambigua*
Yellow Cryptantha	*Cryptantha flava*
Cryptantha	*Cryptantha paradoxa*
Desert Stickseed	*Lappula redowskii*
Persoon	*Tiquilia nuttallii*
Beauty Rockcress	*Arabis pulchra*
Rough Wallflower	*Erysimum asperum*
Prairie Pepperweed	*Lepidium densiflorum*
Giant Whitetop	*Lepidium latifolium*
Mountain Pepperweed	*Lepidium montanum*
African Mustard	*Malcolmia africana*
Common Twinpod	*Physaria acutifolia*
Blunt-leaf Yellowcress	*Rorippa curvipes*
Marsh Yellowcress	*Rorippa islandica*
Cress	*Rorippa lyrata*
Flaxleafed Plainsmustard	*Schoencrambe linifolia*
Tall Tumble Mustard	*Sisymbrium altissimum*
	Thelypodiopsis elegans
Yellow Bee-plant	*Cleome lutea*
Rocky Mountain Bee-plant	*Cleome serrulata*
Fendler Sandwort	*Arenaria fendleri eastwoodiae*
	Chenopodium atrovirens
Fremont Goosefoot	*Chenopodium fremontii*
Oakleaf Goosefoot	*Chenopodium glaucum*
Green Molly	*Kochia americana*
Kochia Weed	*Kochia scoparia*
Povertyweed	*Monolepis nuttalliana*
Russian Thistle	*Salsola iberica*
Halogeton	*Halogeton glomeratus*
Field Bindweed	*Convolvulus arvensis*
Dodder	*Cuscuta spp.*
Spurge	*Euphorbia albomarginata*
Fendler Euphorbia	*Euphorbia fendleri*
Locoweed	*Astragalus amphioxys*
Cicada Milkvetch	*Astragalus chamaeleuce*
Lesser Rushy Milkvetch	*Astragalus convallarius*
Duchesne Milkvetch	*Astragalus duchesnensis*
Yellow Milkvetch	*Astragalus flavus*
Geyer Milkvetch	*Astragalus geyeri*
	Astragalus hamiltonii
Woolly Locoweed	*Astragalus mollissimus*
Draba Milkvetch	*Astragalus spatulatus*
American Wild Licorice	*Glycyrrhiza lepidota*
Dwarf Lupine	*Lupinus pusillus*
Yellow Sweetclover	*Melilotus officinalis*
Silvery Sophora	*Sophora stenophylla*
Tall Centaury	*Mentaurium exaltatum*
	Nama densum
Scorpionweed	*Phacelia crenulata*
Scorpionweed	*Phacelia ivesiana*
Geyer Onion	*Allium geyeri*
Wild Onion	*Allium textile*
Asparagus	*Asparagus officinalis*
Sego Lily	*Calochortus nuttallii*
False Solomon's Seal	*Smilacina stellata*
Whitestem Mentzelia	*Mentzelia albicaulis*
Brushy Mentzelia	*Mentzelia dispersa*
Wingseed Mentzelia	*Mentzelia pterosperma*
Purple Ammannia	*Ammannia robusta*
Alkali-mallow	*Malvella leprosa*
Scarlet Globemallow	*Sphaeralcea coccinea*

Nelson Globemallow	*Sphaeralcea parvifolia*
Sandverbena	*Abronia elliptica*
Narrowleaf Umbrellawort	*Mirabilis linearis*
	Tripterocalyx micranthus
Barestem Camissonia	*Camissonia scapoidea*
Small-flowered Gaura	*Gaura parviflora*
Tufted Evening-primrose	*Oenothera caespitosa*
Evening-primrose	*Oenothera elata*
Pale Evening-primrose	*Oenothera pallida*
Plantain	*Plantago asiatica*
Broadleaf Plantain	*Plantago major*
Woolly Plantain	*Plantago patagonica*
Ballhead Gilia	*Gilia congesta*
Gilia	*Gilia leptomeria*
Gilia	*Gilia polycladon*
Dwarf Gilia	*Gilia pumila*
Common Prickly Phlox	*Lepodactylon pungens*
Hood Phlox	*Phlox hoodii*
Wild Sweet William	*Phlox longifolia*
	Eriogonum batemanii
	Nodding Eriogonum
	Eriogonum cernuum
Big Wild Buckwheat	*Eriogonum corymbosum*
	Eriogonum flexum
Gordon's Umbrella Plant	*Eriogonum gordonii*
	Eriogonum hookeri
Desert Trumpet Eriogonum	*Eriogonum inflatum*
Slenderbush Eriogonum	*Eriogonum microthecum*
	Eriogonum salsuginosum
Shockley Wild Buckwheat	*Eriogonum shockleyi*
Green Eriogonum	*Eriogonum viridulum*
Western Virgin-bower	*Clematis ligusticifolia*
Nuttall Larkspur	*Delphinium nuttallianum*
Biennial Cinquefoil	*Potentilla biennis*
Brook Cinquefoil	*Potentilla rivalis*
Desert Paintbrush	*Castilleja chromosa*
Marsh Paintbrush	*Castilleja exilis*
Black Nightshade	*Solanum nigrum*
Prostrate Verbena	*Verbena bracteata*

Aquatic and Wetland Plants

Narrowleaf Water-plantain	*Alisma gramineum*
Bur-head	*Echinodorus berteroi*
Upright Burhead	*Echinodorus rostratus*
Arrowhead	*Sagittaria cuneata*
Salt Heliotrope	*Heliotropium curassavicum*
Saltmarsh Sandspurry	*Spergularia marina*
	Chara spp
Awned Flatsedge	*Cyperus aristatus*
Needle Spikerush	*Eleocharis acicularis*
Common Spikerush	*Eleocharis palustris*
Dwarf Spikerush	*Eleocharis parvula*
Hardstem Bulrush	*Scirpus acutus*
Alkali Bulrush	*Scirpus maritimus*
Bulrush	*Scirpus saximontanus*
Softstem Bulrush	*Scirpus validus*
Smooth Scouring-rush	*Equisetum laevigatum*
Alpine Rush	*Juncus alpinus*
Wiregrass	*Juncus arcticus*
Toad Rush	*Juncus bufonius*
Torrey Rush	*Juncus torreyi*
Marsh Hedgenettle	*Stachys palustris pilosa*
Water Smartweed	*Polygonum amphibium*
Dooryard-grass	*Polygonum aviculare*
Pale Smartweed	*Polygonum lapathifolium*
Curly Dock	*Rumex crispus*
Canaigre	*Rumex hymenosepalus*
Golden Dock	*Rumex maritimus*
Bitter Dock	*Rumex obtusifolius*
Western Dock	*Rumex occidentalis*
Longleaf Pondweed	*Potamogeton nodosus*
Sago Pondweed	*Potamogeton pectinatus*
Hairleaf Water-buttercup	*Ranunculus aquatilis*
Rocky Mtn. Buttercup	*Ranunculus cymbalaria*
Pennsylvania Buttercup	*Ranunculus pennsylvanicus*
Meadowrue	*Thalictrum spp*
Hedge Hyssop	*Gratiola neglecta*
Mudwort	*Limosella aquatica*
Water Speedwell	*Veronica anagallis-aquatica*
Common Cattail	*Typha latifolia*
Fogfruit	*Phyla cuneifolia*

Woody Plants

Squaw Bush	*Rhus trilobata*
Biennial Wormwood	*Artemisia biennis*
Tarragon	*Artemisia dracunculus*
Prairie Sage	*Artemisia ludoviciana var. ludoviciana*
Black Sagebrush	*Artemisia nova*
Bud Sagebrush	*Artemisia spinescens*
Big Sagebrush	*Artemisia tridentata*
Mohave Brickellbush	*Brickellia oblongifolia*
Rubber Rabbitbrush	*Chrysothamnus nauseosus*
Low Rabbitbrush	*Chrysothamnus viscidiflorus*
Silverscale	*Atriplex argentea*
Fourwing Saltbush	*Atriplex canescens*
Shadscale	*Atriplex confertifolia*
Mat Saltbush	*Atriplex corrugata*
Castle Valley Saltbush	*Atriplex gardneri cuneata*
	Atriplex heterosperma
Fivehook Bassia	*Bassia hyssopifolia*
Winterfat	*Ceratoides lanata*
Spiny Hopsage	*Grayia spinosa*
Black Greasewood	*Sarcobatus vermiculatus*
Russian-olive	*Elaeagnus angustifolia*
Silver Buffaloberry	*Shepherdia argentea*
Torrey Mormon Tea	*Ephedra torreyana*
Woods Rose	*Rosa woodsii*
Fremont Cottonwood	*Populus fremontii*
Peach-leaf Willow	*Salix amygdaloides*
Narrow-leaf Willow	*Salix exigua*
Whiplash Willow	*Salix lasiandra*
Tamarisk	*Tamarix ramosissima*

Cactus

Ball Cactus	*Coryphantha vivipara*
Plains Pricklypear	*Opuntia polyacantha*
Uintah Basin Hookless Cactus	*Sclerocactus glaucus*

Appendix I. Finding of No Significant Impact

Finding of No Significant Impact and Decision Notice
Ouray National Wildlife Refuge
Final Comprehensive Conservation Plan

Three management alternatives for Ouray National Wildlife Refuge were presented and evaluated as to their effectiveness in achieving Refuge purposes and their impact on the human environment. A "No Action" alternative (maintain the status quo), an "Implement the CCP" alternative, and a "Release Habitats to Direct Influence of the Green River" alternative were assessed in the Environmental Assessment. Based on this analysis and comments received, I have selected the preferred alternative (Implement the CCP) to be enacted on the Refuge.

The preferred alternative was selected because it best meets the purposes of the Refuge to manage for migratory birds, assist in the recovery of endangered fish species of the Upper Colorado River, provide public access for wildlife dependent recreation, and provides environmental education opportunities related to fish and wildlife resources.

I find that the proposed action will not have a significant impact on the human environment in accordance with Section 102 of the National Environmental Policy Act and in accordance with the Service's Administrative Manual [30 AMs.9B(2)(d)] and concluded that an environmental impact statement is not necessary.

My rationale for this finding follows:

- The preferred alternative will not adversely impact endangered or threatened species or their habitats.
- The preferred alternative will not adversely affect or cause the loss or destruction of any archaeological or paleontological resources.
- The preferred alternative will have no adverse impact on wetlands or floodplains.
- The preferred alternative will have a positive effect on habitat and wildlife management, water management, selenium contamination, public use and recreation, and environmental education through restoration of riparian and wetland habitats, biological data gathering and analysis, facilities improvements, and effective program evaluation.
- The preferred alternative will have no negative impact on wildlife or wildlife habitat.
- No impact will occur on minority and low-income populations of communities.

Acting Regional Director, Region 6
Fish and Wildlife Service
Denver, Colorado

Date 7/17/00

United States Fish and Wildlife Service
Region 6
Environmental Action Memorandum

Within the spirit and intent of the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act and other statutes, orders, and policies that protect fish and wildlife resources, I have established the following administrative record and have determined that implementing the Ouray NWR CCP will not have a significant environmental effect, based on the Ouray NWR Environmental Assessment and Finding of No Significant Impact, and is therefore authorized to be implemented.

Acting
Regional Director
Region 6
Denver, Colorado

7/17/00
Date

Ken McDermond
Regional Chief
National Wildlife Refuge System

7/14/00
Date

Larry Shunks
Refuges Program Supervisor

7/13/00
Date

Daniel M. Alonso
Refuge Manager
Ouray National Wildlife Refuge

7/10/00
Date

Appendix J. Section 7

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person: Allison Banks, Refuge Planner
Telephone Number: 303-236-8145, ext. 626
Date: 5/10/00

I. Region: 6

II. Service Activity (Program):

Division of Realty, Branch of Land Acquisition and Refuge Planning

III. Pertinent Species and Habitat:

A. Listed species and/or critical habitat within the action area:
Critical habitat areas for the Colorado pikeminnow and the razorback sucker occur within the Green River bisecting the Refuge. For a list of other species please see CCP attachment, page 35)

B. Proposed species and/or critical habitat within the action area:

None

C. Candidate species within the action area:

None

D. Include species/habitat occurrence on a map:
(Please see map attachments)

IV. Geographic area or station name and action:

Ouray National Wildlife Refuge Comprehensive Conservation Plan

V. Location: (please see map attachments)

A. Ecoregion Number and Name:

Upper Colorado River Ecosystem, Number 17,
Middle Rocky Mountains Province

B. County and State:

Uintah County, Utah

C. Section, township, range or latitude/longitude:

Townships 7S, 8S, Range 20E, 21E

D. Distance (miles) and direction to nearest town:

30 miles southwest of Vernal, UT

E. Species/habitat occurrence:

The Refuge provides important habitats for six federally listed species including Colorado pikeminnow, razorback sucker, humpback chub, bonytail, bald eagle, and Uintah Basin hookless cactus. The Colorado pikeminnnow and razorback sucker occur within the Refuge's stretch of the Green River, and make use of riparian wetland and bottomland areas. Humpback chub and bonytail have been recorded in the Green River within the Refuge and in adjacent areas. The bald eagle roosts and hunts from mature cottonwood stands along the river, preying upon fish and waterfowl. As many as 30 individuals have been observed daily during fall and winter. The Uintah Basin hookless cactus occurs on upland gravel terraces on the Refuge. Approximately 2,106 individual plants have been recorded.

VI. Description of proposed action:

The action is to implement the Ouray National Wildlife Refuge Comprehensive Conservation Plan over the next 15 years. Briefly, the CCP will result in more active and extensive restoration of wetland, riparian, and upland habitats, more effective nonnative plant control, selenium management, and increased data gathering and monitoring of habitat conditions. Some Refuge bottomland habitats previously diked will be altered to restore seasonal riverflow fluctuation and allow fish access. For detailed descriptions of proposed actions, please refer to pages 41-52 of the attached draft CCP.

VII. Determination of effects:

A. Explanation of effects of the action on species and critical habitats in items III. A, B, C:

1. Restoration of wetland, riparian and upland habitats.

No long term detrimental effects from restoring wetland, riparian and upland habitats are anticipated. However, riparian and wetland restoration and enhancement activities may initially cause disturbance to Colorado pikeminnow, razorback sucker, and wintereing bald eagles using Refuge impoundments.

2. Nonnative plant control.

Implementing the CCP includes the use of chemical methods to reduce nonnative

plants in virtually every management unit on the Refuge. Chemicals currently identified for use are Roundup (Glyphosate), Arsenal (Isopropylamine salt of Imazapyr), Escort (Metsulfuron), and 2,4-DLo-V 6E (2-Ethylhexyl Ester of 2,4-Dichlorophenoxyacetic acid). The use of these herbicides has been reviewed previously, and use proposals for each are updated and submitted for approval each year.

Arsenal, used to control salt cedar, is not labeled for overwater application but can be used up to the water's edge, and treated areas can be flooded after 48 hours with no hazardous environmental effects (Mike Carrigan, Sr. Vegetation Specialist, American Cyanamid Co). Spot applications are made with a wick applicator directly on the plant and only when wind speed is less than 8 mph to minimize drift. Another technique used is to burn or mow infested areas and then treat regrowth. This reduces the amount of herbicide needed (treating 3 foot plants instead of 8-10 foot plants).

Escort, used to control whitetop, is used experimentally on the Refuge. Escort is not applied over water. Trials underway to determine the most effective treatment and minimal exposure to wildlife include broad application over mature plants, mowing followed by spraying, burning and application to spring regrowth, and direct application to flowering plants using a wick applicator. Spring or summer/fall application has yet to be determined. Early idications are that mowing or burning prior to spray application may be the most effective treatment.

Escort is also used to control Russian knapweed. The Refuge is also experimenting with Roundup and Plateau to treat knapweed in the farm fields. To minimize drift, spot applications will only occur when windspeeds are under 8 mph. As knapweed typically occurs on uplands (none near colonies of the Uintah Basin hookless cactus), no direct impacts to listed species are anticipated.

2,4-D and Arsenal are used to control Russian olive. Stump cut treatment is used, therefore drift is minimal. Evaluation of treatments is still ongoing. Treatment can occur any time from March through October. The Refuge is evaluating injecting Roundup directly into stumps which will eliminate the risk of drift.

3. Minimize wildlife exposure to selenium.

Implementing the CCP includes the goal to minimize wildlife exposure to environmental contaminants on or adjacent to the Refuge. One related strategy is to partially remove the protective levee and complete removal of the S-3/S-5 dike in Sheppard Bottom to allow contaminated water from Roadside Draw to flow through to the Green River and not be impounded (refer to page 50 of the CCP). This strategy will also allow the Green River to regularly flood this area during high flow events.

While this strategy is intended to reduce selenium exposure to wildlife using S-3/S-5, it will allow access and provide a potential exposure route for endangered fish. Selenium concentrations in sediment within the S-3/S-5 area range from 2.58µg/g to 4.33µg/g. Selenium in water from the South Roadside discharge to S-5 ranged from 16µg/l to 110µg/l (unpublished data, USFWS) with volume ranging from 0.15 cfs to 1.3 cfs. Calculations of potential selenium in water within the S-3/S-5 area during a flood event (when fish would have access to the unit) would be 1.8 ppb for a maximum duration of 30 days (average closer to 15 days). We believe that exposure to this concentration would not result in an adverse impact to endangered fish. However, because it is difficult to predict the amount of selenium that could potentially bioaccumulate into the food chain, monitoring of potential exposure pathways including food chain items, will take place during flood events.

4. Increase data gathering and monitoring of habitat conditions.

More frequent biological surveys and sampling called for in the CCP may temporarily disturb individuals present.

5. Levee removal project/bottomland restoration

Potential effects of habitat management activity have previously been discussed in the Final Environmental Assessment on the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin. Critical habitat for pikeminnow and razorback sucker may potentially be affected by changes in current, water temperature, and sediment travel from wetlands during construction or levee removal.

B. Explanation of actions to be implemented to reduce adverse effects:

None anticipated.

VIII. Effect determination and response requested:

A. Listed species/designated critical habitat:

Determination	Response Requested
no effect/no adverse modification	
bonytail	_X_ Concurrence
humpback chub	_X_ Concurrence
Uintah Basin hookless cactus	_X_ Concurrence

may affect, but is not likely to adversely affect species/adversely modify critical habitat

bald eagle	X Concurrence
Colorado pikeminnow	X Concurrence
razorback sucker	X Concurrence

may affect, and is likely to adversely affect species/adversely modify critical habitat

bald eagle Colorado pikeminnow razorback sucker bonytail humpback chub Uintah Basin hookless cactus	_____Formal Consultation

B. Proposed species/proposed critical habitat:

None

C. Candidate species:

None

Adam Mitchell (actg.) 6/10/00
Signature Date

(Title/office of supervisor at Originating station)

IX. Reviewing ESO Evaluation:

A. Concurrence X Nonconcurrence_____

B. Formal consultation required_____

C. Conference required_____

D. Informal conference required_____

E. Remarks:

6-12-2000

Signature (Title/office of reviewing Official)

Date

Acting Field Supervisor
Utah Field Office.

Appendix K. Final Environmental Assessment: Acquisition and Enhancement of Floodplain Habitats Along the Upper Colorado, Green, and Gunnison Rivers as Part of the Recovery Program For Endangered Colorado River Fishes.

Note: This appendix consists of excerpts from the final environmental assessment. Copies of the entire document are available upon request.

Introduction

A. Purpose and Need for Action

Pursuant to the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) The Upper Colorado River Basin Recovery Implementation Program (Recovery Program) seeks to recover the endangered fishes identified within the basin, while allowing water development to continue. The loss of floodplain habitat is believed to be a factor contributing to the decline of these endangered fishes, and ultimately threatens their existence. To reverse this trend, the Recovery Program proposes to restore, enhance, and protect floodplain habitats to support the recovery of these species, namely the Colorado squawfish, razorback sucker, humpback chub, and bonytail.

B. (Omitted)

C. Background

The floodplain habitats described in this document are found within corridors along the mainstem rivers of the Upper Basin. These corridors have been designated as critical habitat for the razorback sucker, Colorado squawfish, bonytail, and humpback chub (except for the Delta to Austin reach of the Gunnison River). Critical habitat is that habitat essential to the conservation and recovery of endangered species. The Service is required to designate critical habitat under ESA. The biological support for the designation of critical habitat for the endangered fishes in the Colorado River system is provided by Maddux et al. (1993).

D. Recovery Program

The Recovery Program is working to reestablish self-sustaining populations of the endangered fish in the Upper Basin. This is a cooperative effort among the Service; Reclamation; Western Area Power Administration; the States of Colorado, Utah, and Wyoming, water development interests; and environmental organizations. An important goal in this effort is seeking solutions for recovering endangered fishes while allowing water development to proceed in the Upper Colorado River Basin (U.S. Fish and Wildlife Service 1987a).

In order to allow continued development of water in the Upper Basin, the Recovery Program was developed to serve as a reasonable and prudent alternative to avoid jeopardy that could result from consultations related to Section 7 of the Endangered Species Act. A detailed description of the Recovery Program and an environmental assessment on its implementation have been prepared by the Service (1987a,b). A description of its evolution with other pertinent background information was prepared by Wydoski and Hamill (1991). Complete citations for this material can be found in Appendix C.

There are five major elements identified by the Recovery Program as critical for the recovery of the endangered fishes in the Upper Basin. These elements are:

(1) flow management;
(2) habitat enhancement and maintenance;
(3) stocking of endangered fish;
(4) management of nonnative fish and sport fishing; and
(5) research, monitoring, and data management (U.S. Fish and Wildlife Service 1987a,b).

The proposed action entails the restoration, enhancement, and protection of habitats required by the endangered fishes via non-flow alternatives outlined in the second element of the Recovery Program.

E. (Omitted)

F. (Omitted)

G. Importance of Floodplain Habitat to the Recovery of Endangered Fishes

The importance of land-water interface to a river system's productivity has been recognized for over twenty-five years (Allan 1995; Hynes 1970; Hynes 1983). The warmth of inundated floodplains, adjacent to rivers, results in an increased production of phytoplankton and development of a food web which supports the river ecosystem (Welcomme 1979). Warmer water temperatures combined with greater food production also results in faster growth rates for young fishes, thereby serving to increase the chances of survival because larger fish are less vulnerable to predation (Bestgen et al. 1997).

Inundated floodplains also provide a quiet-water shelter from main channel river currents. This reduction in energy expenditures of young fishes could be reserved for growth. Inundated floodplain vegetation also offers hiding places from predators (Modde 1997). Floods and floodplains are now understood to be essential components of river ecosystems (Sparks 1995).

The decline of the four native fish species in the Colorado River has been attributed to a lack of recruitment. High mortality during early life stages is believed to contribute to limited recruitment. Few larval razorback suckers are believed to survive to adulthood (Tyus and Karp 1990; Minckley et al. 1991; Modde et al. 1996).

After they hatch, young larval fish need food right away to survive. They must initiate feeding during the "critical period" after swimup or they will die from starvation (Miller et al. 1988). The "critical period" for larval razorbacks lasts from about 7 to 21 days after hatching (Minckley et al. 1991). The larvae and juveniles of all endangered Colorado River fishes feed on zooplankton (Miller et al. 1982). Inundated floodplains have proven to produce the highest densities of zooplankton (Welcomme 1989).

These off-channel habitats not only produce food of the proper quantity and size, they produce this food at the time it is needed by the larval fish (Modde 1997). Finding ways to increase zooplankton production in off-channel habitats is expected to increase the survival of young fish.

H. Distribution of Floodplain Habitat

Bottomland habitats were inventoried during 1993 by Irving and Burdick (1995). Along the Green River, the highest concentration of floodplain habitats is located between Pariette Draw and Dinosaur National Monument (Figure 1-5). Along the Colorado and Gunnison rivers, the highest concentrations of habitats are located within three general areas (Figure 1-3):

(1) the Colorado River between Rifle and DeBeque, Colorado;
(2) the Grand Valley reach of the Colorado River between Fruita (Loma) and Palisade, Colorado;
(3) the Gunnison River near Delta, Colorado.

Criteria used to identify parcels of land suitable for acquisition and restoration as floodplain habitat are:

(1) Biological Importance - areas where razorback suckers currently reside and/or they were historically common to abundant;
(2) "Floodability" - areas that currently flood or can be made to flood at lower flows;
(3) Contaminants - sites which are not contaminated; and
(4) Size - parcel's surface area.

An estimated 3,588 acres of bottomland along the Upper Colorado River meet these criteria. These lands are adjacent to 113 miles of river between Westwater Canyon (Loma) at the Colorado-Utah State line and Rifle, Colorado. Razorback suckers are believed to have been historically abundant in this area (Quartarone 1993). Below Palisade, this reach is also a high concentration area for adult Colorado squawfish, and includes larval nursery areas and historical spawning sites.

Floodplain habitats that meet the above criteria along the Gunnison River are estimated at 774 acres primarily in a 25-mile reach from River Miles 50 and 75 (Nelson 1996, 1997). A remnant population of Colorado squawfish is still found in the Gunnison River but razorback suckers apparently no longer inhabit the river (Burdick 1995) except for those that have been recently stocked. The Gunnison River between Austin and Delta, Colorado historically contained large numbers of razorback suckers (Quartarone 1993).

Bottomland habitats along the Colorado and Gunnison rivers consisted of 48% floodplain terraces, 18% gravel-pit ponds (depressions), 15% side channels, and a 19% mix of other types of habitat. Levees isolate 49.5 miles of habitat from the river (Irving and Burdick 1995).

Along the Green River, floodplain habitats that meet the above criteria are estimated at 11,428 acres on privately-owned properties and 6,000 acres on Tribal lands, primarily concentrated in the 80 mile reach from the boundary of Dinosaur National Monument at River Mile 318 downstream to Pariette Draw at River Mile 238 (Irving and Burdick 1995; Nelson 1996, 1997). Floodplain habitat in this area consists of 75% terraces and 25% depressions. Approximately 15% of the 132 potential bottomland sites along the Green River are isolated from the river by levees, preventing approximately 20 miles of the Green River floodplains from connecting to the river during high stream flows (Irving and Burdick 1995). Razorback suckers spawn during high spring flows upstream of this reach and newly hatched larvae drift downstream. Survival of these larvae are expected to increase if they had access to productive floodplain habitats. This reach of the Green River is especially important to recovery of the razorback sucker because it contains the largest number of adult razorbacks known to occur in the Upper Basin and the largest natural riverine population in the entire Colorado River system (Tyrus 1997).

II. Alternatives

A. (Omitted)

B. (Omitted)

C. Alternatives Considered

To provide and protect floodplain habitat to assist in recovery of the endangered fishes, three alternatives were identified and considered by the interdisciplinary team charged with preparing this environmental assessment. A description of each of the three alternatives follows:

1. The No Action Alternative

The No Action Alternative is the foreseeable future without the project. This alternative suggests a continuation of the status quo. Habitat quality and quantity, which is already not sufficient to achieve or sustain recovery, can be expected to continue to degrade as water development and floodplain development continue. The ecosystem food supply will continue to diminish, affecting all species, including the endangered fishes. Razorback sucker recruitment can be expected to decrease, likely resulting in ultimate extinction for that species. The bonytail may be declared unrecoverable if it is determined that the loss of food supplied by the floodplain is a major limiting factor.

2. Induce Flooding

To provide habitat for endangered fishes, floodplain areas could be inundated by acquiring and releasing large amounts of water from reservoirs during spring runoff. This alternative may restore enough habitat needed for recovery, even if nothing is done to reconnect the 70 miles of bottomland habitat that has been disconnected from the river via flood control levees within the high-priority geographic areas of the Upper Basin (Figures 1-3 and 1-5). However, induced flooding would inundate properties of private landowners without their permission, no doubt resulting in undue hardships. Also, the costs associated with acquiring the amount of water necessary to induce flooding, with litigation, and with paying for flood damages would be extraordinarily high.

3. Protect and Enhance Flooded Bottomlands to Take Advantage of Available Flows

Alternative #3 would entail entering into agreements with and/or acquiring rights from willing landowners to protect and enhance floodplain habitat to benefit the endangered fishes. A variety of tools could be used to accomplish habitat protection, including the development of agreements, partnerships, acquisition of easements, donations, and exchanges. Floodability enhancements could be accomplished, where warranted, via excavation, which may include breaching dikes and levees. All acquisitions, agreements, and habitat enhancements would be done with willing sellers and willing participants. Under this alternative, there would be no condemnation, no acquisition of water rights, and no requests for flood flows.

A willing landowner could *voluntarily* (i.e., without the expectation of compensation) provide the habitat through an agreement, donation, exchange, or partnership; or the landowner could be *compensated* for providing and protecting habitat *by selling* an easement, lease, or in fee. The approach selected and used for any given property would depend on the wishes of the landowner.

Supplemental (prepared by the USFWS, August, 1998)

Introduction

This supplement describes and enhances the preferred alternative in the programmatic *Final Environmental Assessment for the Acquisition and Enhancement of Floodplain Habitats along the Upper Colorado, Green, and Gunnison Rivers as part of the Recovery Program for Endangered Colorado River Fishes.*

Through a cooperative effort, the Upper Colorado River Basin Recovery Implementation Program (Recovery Program) was formed to recover endangered fishes in the Upper Colorado River drainage basin, while allowing water development to continue. The Recovery Program is seeking opportunities to restore, enhance, and protect floodplain habitats to support the recovery of endangered fishes, which include the Colorado squawfish, razorback sucker, humpback chub, and bonytail. To achieve the habitat protection goal, the Recovery Program has completed the above mentioned Environmental Assessment. The programmatic Environmental Assessment evaluates the effects of the land acquisition program which emphasizes the use of conservation easements for habitat protection within the Upper Colorado River drainage basin.

The supplement to the Environmental Assessment clarifies the Service's goals and purposes of accepting conservation easement transfers from the U.S. Bureau of Reclamation for the protection of fish and wildlife habitat by holding and managing the easements as a unit of the National Wildlife Refuge System. While conservation easements will be the primary acquisition interest, other acquisition interests include cooperative agreements and fee title acquisition.

The preferred alternative was selected for implementation because it best meets the underlying need for the proposed action. The underlying need to which the U.S. Fish and Wildlife Service is responding is the opportunity to accept conservation easements from Reclamation, and to hold and manage those easements by way of the National Wildlife Refuge System. The selection of the no action alternative would not allow the Service to respond to this need. The preferred action alternative would also allow the Service to acquire easements if funding was available.

Preferred Alternative

Under the preferred alternative of the EA, as described on page II-2, Reclamation would acquire conservation easements from willing landowners to protect and enhance floodplain habitat to benefit endangered fishes. Using four biological criteria to identify parcels of land suitable for easement acquisition and restoration (EA, page I-4), the Recovery Program identified the portions of river corridors for habitat protection. After acquisition of an easement, Reclamation would transfer the easements to the Service (EA, page II-4), and the easements will be included in a new approved Unit of the National Wildlife Refuge System for protection and management as a Wildlife Management Area. The Refuge WMA will have a boundary that will include up to 10,000 acres on the combined river reaches of the Upper Colorado, Gunnison, and Green River system as described below:

* **Upper Colorado River**
  Approximately an area between river points of Weatwater Canyon at the Colorado-Utah State line and Rifle, Colorado, with the extent of 3,500 acres.

* **Gunnison River**
  Approximately 25-mile reach between River Miles 50 and 75 with the extent of 750 acres.

* **Green River**
  Approximately 80-mile river reach from the boundary of Dinosaur National Monument at River Mile 318 downstream to Pariette Draw at River Mile 238 with an extent of 5,750 acres.

Under this Alternative, the Service will accept conservation easement transfers from Reclamation for the protection of fish and wildlife habitat, and those lands will be administered in accordance with the National Wildlife Refuge System Administration Act and other relevant legislation, executive orders, regulations, and policies. Through the easement program, the landowner would agree to allow management and protection activities that would include monitoring the status and recovery of endangered, threatened, and sensitive species and coordinating other management activities with State and Federal agencies. Public use would be permitted only with the concurrence of the landowner and when it is compatible with the mission of the National Wildlife Refuge System and the Refuge WMA purposes. While the initial acquisition of easements will be accomplished by Reclamation, the Service will also acquire easements in the future if additional funding becomes available.

Appendix L. Environmental Assessment: An Element of the Recovery Program for Endangered Fish Species in the Upper Colorado River Basin: Levee Removal Project

Note: This appendix consists of excerpts from the Levee Removal Project Environmental Assessment. Copies of the entire document are available upon request.

FINAL
ENVIRONMENTAL ASSESSMENT

LEVEE REMOVAL PROJECT
OF THE
FLOODPLAIN HABITAT RESTORATION PROGRAM

An Element of the Recovery Implementation Program
for Endangered Fish Species
in the Upper Colorado River Basin

Department of the Interior

LEAD AGENCY:
Bureau of Reclamation
Upper Colorado Region
Provo Area Office

COOPERATING AGENCIES:
Bureau of Land Management - Vernal District
U.S. Fish and Wildlife Service - Ouray National Wildlife Refuge
Bureau of Indian Affairs - Ft. Duchesne, Utah

FEBRUARY 1997

CHAPTER 1. PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 PROPOSED ACTION

The Bureau of Reclamation (Reclamation), in cooperation with the Bureau of Land Management (BLM)-Vernal District, the U.S. Fish and Wildlife Service-Ouray National Wildlife Refuge (NWR) and the Bureau of Indian Affairs, proposes to implement the Levee Removal Project. The project would restore the connection between the Green River and floodplain habitats at up to eight sites located between Jensen, Utah and Ouray, Utah (Figure 1). This would be accomplished by removing or altering portions of natural and man-made levees and constructing, where necessary, features or facilities to restore the connection of floodplain habitats to the river. Such features or facilities could include ditches, canals, channels, bays, dikes or other features necessary to allow the Green River to begin to inundate the floodplain habitats when flows in this reach of the river are 13,000 cubic feet per second (cfs) or greater. Prior to operation of Flaming Gorge Dam, flows of 20,000 cfs inundated floodplain habitats almost annually. Today, 13,000 cfs would inundate floodplain habitats at the same frequency as prior to operation of the dam if the connection of the floodplain habitats were restored. Implementation of the proposed sites for this project have been identified as high priority sites for potential restoration of natural floodplain habitats. They are believed to be important to the endangered razorback sucker (*Xyrauchen texanus*) of the Colorado River system. The Colorado squawfish (*Ptychocheilus lucius*) is also expected to benefit from the proposed action.

1.2 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the Floodplain Habitat Restoration Program is to aid in the recovery and delisting of the four endangered fishes so they will not need the protection of the endangered Species Act. This purpose is to be accomplished in a manner that allows water development to proceed and does not disrupt State and tribal water rights systems, interstate compacts and court decrees (FWS 1987a). The purpose of the proposed action is to restore or enhance the natural floodplain functions that support recovery of endangered fishes in the Upper Colorado River Basin. The natural floodplain functions include provision of food, enhance water temperatures, high water quality, shelter from high water velocities, vegetative cover for predator avoidance, nursery rearing habitats and spawning habitats.

The proposed action is needed because: *(1)* the populations and critical habitat of the four endangered fishes in the Upper Colorado River Basin have been adversely affected or modified by water development and other activities; *(2)* the flooded bottomland habitats have been hydrologically cut-off from the main channel of the Green River and no longer provide the natural floodplain functions believed to be essential to endangered fish; *(3)* the Floodplain Habitat Restoration Program is a key element of the Recovery Program to offset the adverse effects of flow depletions from the Green River and allow water development in the Upper Colorado River basin; and *(4)* there is a need to continue evaluating the response of the river ecosystem to flooding bottomland habitats.

1.3 BACKGROUND

Historically, upper Colorado River basin floodplains were frequently inundated during spring runoff, but today much of the river is channelized by levees, dikes, riprap and vegetation, such as tamarisk. As a result, the hydrologic connection between the floodplain habitats and the river has been diminished or eliminated. Fish access to these floodplain habitats has been further reduced by decreased spring flows due to upstream water impoundment by dams or diversions. Numerous studies have suggested the importance of seasonal flooding to river productivity. When floodplain habitats are available, razorback suckers use them extensively for feeding prior to and after spawning and may also have spawned in such sites. Colorado squawfish also use these areas for feeding migrating to spawning areas. The Green River downstream of Flaming Gorge Dam formerly provided habitat for all four of the endangered fishes. However, after the dam was closed in 1964, these warmwater species disappeared in the reach between the dam and the confluence with the Yampa River. Colder water temperatures are presumed to be unsuitable and may be the primary reason for the absence of the endangered fishes there.

1.4 (omitted)

1.5 RELATIONSHIP TO OTHER PROJECTS

This project is a key element of the Floodplain Habitat Restoration Program of the *Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin* (Recovery Program) (FWS 1987a). It is also an element of the *Recovery Implementation Program Recovery Action Plan* (RIPRAP) (FWS 1994) for the Recovery Program. The RIPRAP was developed by the Recovery Program participants (U.S. Fish and Wildlife Service, Reclamation, Western Area Power Administration and the States of Wyoming, Colorado and Utah) in support of the Section 7 Agreement. It identifies specific actions and time frames believed to be required to recover the endangered fishes in the most expeditious manner in the Upper Colorado River Basin. The RIPRAP serves as the measure of accomplishment so that the Recovery Program can continue to serve as the reasonable and prudent alternative to avoid the likelihood of jeopardy to the continued existence of the endangered fishes, as well as to avoid the likely destruction or adverse modification of critical habitat. The RIPRAP describes important elements of habitat protection including: *(1)* restoring and managing in-channel habitat and historically flooded bottomland areas: *(2)* restoring passage to historically-occupied river reaches; *(3)* enhancing water temperatures; *(4)* reducing or eliminating the impacts of nonnative fishes and sportfishing; and *(5)* continuation of the Interagency Standardized Monitoring Program. The RIPRAP contains specific tasks to identify and restore important bottomland habitat. The Recovery Program has conducted an inventory of all bottomlands adjacent to mainstem upper basin rivers and has classified them according to their potential value to endangered fish recovery.

The proposed action is related to other actions being undertaken through the Recovery Program, such as operation of Flaming Gorge Dam to provide flows at the times, durations and magnitudes that more closely mimic the natural hydrograph of the Green River to benefit and protect endangered fishes. However, implementation of this proposed project is not contingent on the operation of Flaming Gorge Dam to benefit and protect endangered fishes. It is designed to function with the present flow regimes in this reach of the Green River provided by Flaming Gorge Dam and the Yampa River.

This project is related to similar floodplain habitat restoration activities on the Colorado River near Grand Junction, Colorado. It is also related to ongoing efforts of the U.S. Fish and Wildlife Service to negotiate easements with willing private landowners along the Green River for floodplain habitat restoration on private lands. The success or failure of this project would influence the need to apply similar efforts on private lands along the Green River. The Bureau of Land Management (BLM), U.S. Fish and Wildlife Service and Bureau of Indian Affairs (BIA) have participated as cooperating agencies in preparation of this EA because they are the major land management agencies where the Program would be implemented.

(Next paragraph omitted- discussed selenium contamination in Stewart Lake, Utah)

1.6 (omitted)

CHAPTER 2. PROPOSED ACTION AND ALTERNATIVES

2.1 PROCESS USED TO DEVELOP ALTERNATIVES

Potential alternative courses of action were developed and considered by Reclamation. The range of alternatives was limited to those determined to meet the purpose and need for the proposal. Other alternatives considered are also described in this chapter and the reason(s) they were eliminated from further consideration are discussed.

2.1 ALTERNATIVES ANALYZED

"NO ACTION" ALTERNATIVE - The NEPA requires consideration of the "No Action" alternative. I serves as the baseline for which to compare the environmental effects of the proposed action and other alternatives. In this case, "No Action" means that the Levee Removal Project would not be implemented. Restoration of the physical hydrologic connection between the river and the floodplain habitats would not occur. However, flooding of floodplain habitats may occur as a result of natural hydrologic conditions when flows in the river are sufficient to overtop the existing levees, dikes, berms, or vegetation. Present land uses and resource trends would continue.

PROPOSED ACTION ALTERNATIVE - Reclamation, in cooperation with the BLM and Ouray NWR, would implement the Levee Removal Project at up to eight sites located adjacent to the Green River between Jensen, Utah, and Ouray, Utah (Figure 1 and Table 2.1). The proposed sites have been identified as high priority sites for potential restoration of natural floodplain habitats.

Table 2.1 Levee Removal Project General Description of Project Site (Abbreviated)

Site Name	Estimated Area to be flooded	River Mile	Landowner
Bonanza Bridge	17.2 acres	290	BLM
Horseshoe Bend	18.4 acres	285	BLM
The Stirrup	19.2 acres	276	BLM
Baeser Bend	38.2 acres	273	BLM
Above Brennan	40.7 acres	268.5	BLM
Johnson Bottom	19.8 acres	261	Ouray NWR
Leota Bottom	58.7 acres	258.5	Ouray NWR
Old Charlie (diked)	87.2	251	Uintah-Ouray Tribe (leased by Ouray NWR)

Pre-Project Evaluation and Monitoring Activities - Pre-project studies will be conducted to establish existing biological, physical and chemical conditions so that environmental responses to levee removal can be monitored and evaluated. Researchers from Utah State University, Colorado State University, Utah Division of Wildlife Resources, U.S. Fish and Wildlife Service and private consultants have been collecting pre-project baseline data at the proposed project sites to describe native and nonnative fish species composition and abundance, fish food organisms and water quality, riparian and wetland vegetation and geomorphology. This data will be used to develop the pre-restoration "before" picture of each proposed project site.

Construction Features - The project would restore the hydrological connection of up to eight floodplain habitats to the Green River by removing or breaching portions of natural or man-made levees and constructing, where necessary, features or facilities to restore the connection of historic floodplain habitats to the river. Such features or facilities could include ditches, channels, dikes or other features necessary to allow the river to begin to inundate the floodplain habitats when flows in the reach of the Green River adjacent to the project sites are 13,000 cubic feet per second (cfs) or greater. The connection may consist of one or more levee breaches, inlets, outlets or both depending on specific design criteria at each site. Table 2.2 and the figures describe and portray the design and construction specifications of the project sites. Typical equipment used for the construction would be a trackhoe, backhoe, excavator, patrol and dump truck. Existing roads would be used for construction access to all sites. No new roads

would be constructed. The area inundated at each project site would vary in size from 17 to 87 acres (see Table 2.1) depending upon location, topographic and hydrologic conditions induced at the sites as a result of the levee removal.

Operation and maintenance - Each project site would be designed to operate naturally, meaning that they would begin to inundate when river flows exceed 13,000 cfs. There would be no water control or release structures installed, except at the Leota Bottom L-7a site where a water outlet structure would be installed. The sites would be designed to be self-maintaining to the extent practicable. There may be periodic removal of sediment required where the levee breaches have been constructed. The Recovery Program would take responsibility for ongoing maintenance that may be required.

Construction Schedule - The project is proposed to be implemented over a two-year or longer period. Prior to the 1997 spring runoff, levees would be breached at up to five sites: Bonanza Bridge, Horseshoe Bend, The Stirrup, Leota Bottom L-7a and Old Charlie (diked). However, the Old Charlie (diked) site would be implemented only after written permission to proceed is received from the Tribe. Depending on the post-project monitoring and evaluation of these sites, the remaining five sites would be implemented in 1998 or later prior to the spring runoff.

Post-Project Monitoring and Evaluation - The same studies conducted for the pre-project monitoring would be collected after the levee removal is completed at each site. This data would be used to develop the "after" picture. This monitoring and evaluation would continue through at least 1999. Based on results of the monitoring and evaluation studies, the Recovery Program will decide if modifications are needed and should be made to site design and configuration which have been restored previously and sites targeted for future levee removal. While no problems are anticipated at this time, if there are unforeseen difficulties or problems at any of the project sites, the Recovery Program would be responsible for taking appropriate corrective actions, which could include filling or restoring the breach made in the levee(s).

3.9 SUMMARY OF IMPACTS

The predicted impacts of the alternatives are summarized in Table 3.5.

Table 3.5 - Levee Removal Project EA
Summary of Impacts

Resource Issue	No Action	Proposed Action
Special Status Species	The population of endangered fish endemic to the Green River would likely continue to decline and critical habitat would be adversly modified.	The project, as proposed, is not likely to jeopardize the continued existence of the razorback sucker and Colorado Squawfish and is nto likely too destroy or adversely modify designated ciritcal habitat for those species. It also stated that the project may affect the bald eagle; no effect on other species.
Vegetation and Soils	No effect.	15.0 acres of existing vegetation and soils directly impacted by construction activity to remove levees; disturbed areas would be revegetated.
Wetland and Riparian Areas	No effect.	10.5 acres of existing vegetaiton removed by levee breaching; 299.4 acres of existing floodplain wetland and riparian areas annually inundated for 1-2 months; disturbed areas would be revegetated.
Landownership and Land Use	No effect.	No effect on landownership; some existing land uses such as grazing could be affected.
Recreation	No effect.	No effect on recreation uses; public access to portions of the project sites would be restricted during construction activity for safety purposes.
Cultural Resources	No effect.	No historic or prehistoric cultural resources affected.
Fish and Wildlife	No effect.	10.5 acres of wildlife habitat disturbed due to construction impacts; temporary impacts due to human activity at the project sites. Native and nonnative fish populations would increase.
Water Quality	No effect.	No effect on contaminants such as selenium; short-term, temporary impacts to water quality could result from construction activity in or near river channel.
Indian Trust Assets	No effect.	Tribally-owned lands used for project; existing tribal uses continued; no adverse impact on trust assets.
Vectors and Noxious Weeds	No effect.	No increase in mosquitoes; potential increase in whitetop.

Appendix M. Water Rights

Ouray National Wildlife Refuge currently holds water rights from the Green River for 139.06 cfs for fish and wildlife propagation and the irrigation of 6,185 acres, for a total of 23,452 acre-feet, *of which 9,026 acre-feet is returned to the River*, for a total consumptive use of 14,108 acre-feet annually. This water is diverted by stationary and portable pumps anywhere on the Green River between a point N 13 degrees 24' W 2167.8 feet from the SE corner Section 24, T7S, R20E, SLB&M and an point E 2175 feet and S 3000 feet from the NW corner Section 22, T8S, R20E, SLB&M.

The Refuge is currently the focus of a portion of the *Colorado River Recovery Plan* and is the location of the Ouray National Fish Hatchery. The Hatchery utilizes a well field at the NEW hatchery site in Section 29 that consists of six wells totaling 600 gpm from the River alluvium, which are covered under the above listed surface water rights.

The Hatchery (OLD site) is supplied by five wells in Section 11 that are covered under State permit for a total of 135 gpm.

Finally, the Service also owns 700 shares of stock in the Ouray Park Irrigation Company. Each share is equivalent to 2.7 acre-feet in a "normal" year for a total of 1,890 acre-feet. See below for a complete listing of water rights.

12/06/99

OURAY NWR AND NFH
UINTAH COUNTY, UTAH
WATER RIGHTS

* Refuge "commingle" applications total diversion rate of 139.06 cfs up to 23,134 AF diverted with 9,026 AF returned to the Green River for a total consumptive use of 14,108 AF.

** Shares in Ouray Park Irrigation Company.

APPL. NO.	CHANGE APPL. NO.	CERT. NO.	WATER RIGHT# AREA CODE	** SHARES	TYPE WORKS	TYPE USE	PRIORITY DATE	POINT OF DIVERSION COMPASS	SEC	TWN	RGE	RATE CFS	AF SEASONAL	RATE GPM
STATION: OURAY NFH														
SOURCE: GROUNDWATER														
F-63102			43-10026		WELL #2	FC	03/01/88	NW NW SW	11	08S	20E	0.00	0.80	30
REMARKS: NFH-20 YR FIXED TIME APPL. For use w/43-10026 & 43-9948. Colorado River Fishery Proj.														
A-64552			43-10209		WELL #?	FC	04/06/90	NW NW SW	11	08S	20E	0.00	0.00	45
REMARKS: NFH-Well not yet drilled. No #. For use w/43-10026 & 43-9948 Colorado River Fishery Proj.														
	a-15198		43-9948		WELL #4	FC	05/19/92	NE NE SW	11	08S	20E	0.00	0.00	20
REMARKS: NFH-Replace Abandoned Well #3. For use w/43-10026 & 43-9948. Colo. River Fish. Proj														
	a-15198		43-9948		WELL #5	FC	09/20/96	NE NE SW	11	08S	20E	0.00	0.00	20
REMARKS: NFH-supplemental to well #4. For use W/43-10026 & 43-9948. Colo River Fishery Proj.														
A-62171			43-9948		WELL #1	FC	11/18/86	NE NW SW	11	08S	20E	0.00	0.80	20
REMARKS: NFH-Renovated in '91. Use w/43-10026 & 43-9948. Colo. Rvr. Fish. Proj. (POD #2)														
SOURCE: GW (RIVER ALLUVIUM)														
					WELL FIELD	FC	05/11/92	NW	29	07S	20E	0.00	657.00	600
REMARKS: NFH-Well Field (6) non-cons use covered under Refuge surface water rights per 5/11/92 memo.														
STATION: OURAY NWR														
SOURCE: GREEN RIVER														
34752	a-6977*		43-3670		PUMPS	F,I	12/05/62	***	***	***	***	67.47	4,763.88	0
REMARKS: * COMMINGLED RIGHTS *** ALONG GREEN RIVER WITHIN REFUGE BOUNDARY														

12/06/99

OURAY NWR AND NFH
UINTAH COUNTY, UTAH
WATER RIGHTS

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** Shares in Ouray Park Irrigation Company.

APPL. NO.	CHANGE APPL. NO.	CERT. NO.	WATER RIGHT# AREA CODE	** SHARES	TYPE WORKS	TYPE USE	PRIORITY DATE	POINT OF DIVERSION COMPASS	SEC	TWN	RGE	RATE CFS	AF SEASONAL	RATE GPM
27874	a-4375*		43-3539		PUMPS	F,I	02/15/56	***	***	***	***	0.00	0.00	0
REMARKS: * COMMINGLED RIGHTS *** ALONG GREEN RIVER WITHIN REFUGE BOUNDARY														
18716	a-6981*		49-1676		PUMPS	F,I	05/02/47	***	***	***	***	3.56	453.00	0
REMARKS: * COMMINGLED RIGHTS *** ALONG GREEN RIVER WITHIN REFUGE BOUNDARY														
24847	a-6979*		49-197		PUMPS	F,I	02/14/56	***	***	***	***	0.00	0.00	0
REMARKS: * COMMINGLED RIGHTS *** ALONG GREEN RIVER WITHIN REFUGE BOUNDARY														
26264	a-4375*		43-3514		PUMPS	F,I	09/20/54	***	***	***	***	0.00	0.00	0
REMARKS: * COMMINGLED RIGHTS *** ALONG GREEN RIVER WITHIN REFUGE BOUNDARY														
27586	a-4375*		43-3537		PUMPS	F,I	11/07/55	***	***	***	***	0.00	0.00	0
REMARKS: * COMMINGLED RIGHTS *** ALONG GREEN RIVER WITHIN REFUGE BOUNDARY														
24849	a-6980*		49-80		PUMPS	F,I	05/01/53	***	***	***	***	10.00	858.28	0
REMARKS: * COMMINGLED RIGHTS *** ALONG GREEN RIVER WITHIN REFUGE BOUNDARY														
24414	a-6979*		49-190		PUMPS	F,I	03/04/65	***	***	***	***	25.00	4,792.68	0
REMARKS: * COMMINGLED RIGHTS *** ALONG GREEN RIVER WITHIN REFUGE BOUNDARY														
24848	a-6979*		49-198		PUMPS	F,I	05/01/53	***	***	***	***	0.00	0.00	0
REMARKS: * COMMINGLED RIGHTS *** ALONG GREEN RIVER WITHIN REFUGE BOUNDARY														
24875	a-6979*		49-200		PUMPS	F,I	05/11/53	***	***	***	***	0.00	0.00	0
REMARKS: * COMMINGLED RIGHTS *** ALONG GREEN RIVER WITHIN REFUGE BOUNDARY														
24424	a-4375*		43-3466		PUMPS	F,I	05/06/58	***	***	***	***	0.00	0.00	0
REMARKS: * COMMINGLED RIGHTS *** ALONG GREEN RIVER WITHIN REFUGE BOUNDARY														
25595	a-4376*	5521	43-3509		PUMPS	F,I	02/26/54	***	***	***	***	3.03	562.00	0
REMARKS: *COMMINGLED RIGHTS *** ALONG GREEN RIVER WITHIN REFUGE BOUNDARY														
17858	a-6976*	6104	49-179		PUMPS	F,I	07/17/46	***	***	***	***	2.00	510.16	0
REMARKS: *COMMINGLED RIGHTS *** ALONG GREEN RIVER WITHIN REFUGE BOUNDARY														

OURAY NWR AND NFH
UINTAH COUNTY, UTAH
WATER RIGHTS

* Refuge "commingle" applications total diversion rate of 139.06 cfs up to 23,134 AF diverted with 9,026 AF returned to the Green River for a total consumptive use of 14,108 AF.

** Shares in Ouray Park Irrigation Company.

APPL. NO.	CHANGE APPL. NO.	CERT. NO.	WATER RIGHT# AREA CODE	** SHARES	TYPE WORKS	TYPE USE	PRIORITY DATE	POINT OF DIVERSION COMPASS	SEC	TWN	RGE	RATE CFS	AF SEASONAL	RATE GPM
21883	a-4375*		43-3413		PUMPS	F,I	04/22/57	*	***	***	***	0.00	0.00	0
REMARKS: * COMMINGLED RIGHTS *** ALONG GREEN RIVER WITHIN REFUGE BOUNDARY														
21882	a-4375*		43-3412		PUMPS	F,I	07/03/50	***	***	***	***	28.00	2,168.00	0
REMARKS: * COMMINGLED RIGHTS *** ALONG GREEN RIVER WITHIN REFUGE BOUNDARY														
24850	a-6979*		49-199		PUMPS	F,I	05/01/53	***	***	***	***	0.00	0.00	0
REMARKS: * COMMINGLED RIGHTS *** ALONG GREEN RIVER WITHIN REFUGE BOUNDARY														
25180	a-6980*		43-2513		PUMPS	F,I	06/21/56	***	***	***	***	0.00	0.00	0
REMARKS: * COMMINGLED RIGHTS *** ALONG GREEN RIVER WITHIN REFUGE BOUNDARY														
SOURCE: GROUNDWATER														
A-35346			43-3711		WELL	D,I	05/16/63	SE SW NE	11	08S	20E	0.50	0.00	0
REMARKS: REFUGE DOMESTIC SUPPLY.														
SOURCE: PELICAN LAKE														
		479		160	HEADGATE	I	/ /		03	08S	20E	0.00	480.00	0
REMARKS: OURAY PARK IRRIG CO. FmHA TR (64) APPROX 3 AF PER SHR.														
		513		400	HEADGATE	I	/ /					0.00	1,200.00	0
REMARKS: OURAY PARK IRRIG CO. APPRX 3 AF PER SHARE-TOTAL 2100 AF. SEE CERT 351,352,51														
		352		200	HEADGATE	I	/ /					0.00	600.00	0
REMARKS: OURAY PARK IRRIG CO. APPRX 3 AF PER SHARE-TOTAL 2100 AF. SEE CERT 351, 352, 513														
		351		100	HEADGATE	I	/ /					0.00	300.00	0
REMARKS: OURAY PARK IRRIG CO. APPRX 3 AF PER SHARE-TOTAL 2100 AF. SEE CERT 351, 352, 513														

Appendix N. Summary of Public Involvement

In compliance with the National Environmental Policy Act and the Service's comprehensive conservation planning process, the Service initiated the public scoping of issues for the CCP and environmental assessment to address. Issues, concerns, and opportunities were identified at a Refuge open house in April, 1996. Questionnaires were distributed at the open house and mailed to Refuge neighbors and other interested individuals. About 10 written responses were received. The Draft CCP was released in March, 2000. Approximately 150 copies were made available to agencies, local representatives, the Vernal public library, neighboring landowners, interest groups, and individuals. The Draft CCP was also available on the Internet via the Service's homepage. A 30-day comment period was provided. All public comments received were considered in this final Plan.

We received 14 individual written comments on the Draft CCP. Below are our responses to their questions and concerns.

Division of Environmental Quality, State of Idaho

Alternatives to prescribed burns are considered and used when appropriate and cost effective. On average, the Refuge uses prescribed fire as a management tool on 200 to 300 acres per year. The maximum number of acres burned in any one day will vary, but most prescribed burns will be less than 250 acres. The State of Utah imposes more stringent restrictions on daily burns over 250 acres, so whenever possible, the Refuge keeps the size of most prescribed burns below 250 acres. The Refuge has qualified fire management personnel to conduct prescribed burns and suppress wildfires. Prescribed burns are conducted following guidelines provided by the Utah Smoke Management Plan. Air quality permits are applied for in advance of all prescribed burns. Burns do not take place unless the daily clearing index exceeds 500 and under dry fuel moisture conditions. After each burn, daily emissions reports are submitted that summarize the amount in tons of particulate matter emitted during the burn. Prescribed burns are scheduled to last no longer than one day. The Interagency Fire Center in Vernal is contacted, and they in turn notify neighbors, and landowners, and other agencies of burn plans for that day. Local smoke sensitive areas include the Vernal Municipal Airport, 20 air miles northeast, and State Highway 88, 1 to 4 miles west of the Ouray NWR. Burn activities are coordinated through the Interagency Fire Center in Vernal, Utah and the Smoke Program Coordinator in Salt Lake City, Utah.

Uintah Water Conservancy District

Many of the levees currently existing on Ouray NWR were actually in place prior to the establishment of the Refuge. They have been enhanced in some areas, and currently are being modified to allow some seasonal over-bank flooding. Refuge staff do not directly "blame" Flaming Gorge Dam for all river flow modifications downstream; however, water flows and releases from the Dam have affected wildlife and its habitat. Howe and Knopf explain the effects of water storage and diversion projects on river flow regimes in detail (On the Imminent Decline of Rio Grande Cottonwoods in Central New Mexico). The Dam affects Green River flows by changing the timing and magnitude of peak flows in the river. They now occur just a few weeks off the historical schedule and, therefore, affect spawning of endangered fish. The duration of peak flows have also been reduced.

Data needs identified in the CCP required to make future habitat management decisions will be collected by Refuge staff as staff time and funding allow.

The CCP is designed to guide refuge management over the next 15 years. However, specific programmatic plans are referred to as step-down plans. They describe in full detail the day-to-day activities of environmental education and outreach, cooperative farming, prescribed burning, habitat management for specific sites, public hunting and fishing, facilities upgrade and maintenance, wildlife population research, etc.

The list of threatened and endangered species referred to in the CCP was published in 1998, and as of that date, the peregrine falcon was listed as a state endangered and federally threatened species. Even though the peregrine falcon has been removed from the Federal list, its population must be monitored for at least 10 years. It is still a species of management concern. This list also includes State special status species that may or may not be included in the Federal list.

To clarify: salt cedar and tamarisk are common names for the same nonnative plant. *Tamarix* is the genus name.

Bureau of Land Management

The discussion on page 12 of the CCP regarding selenium contamination has been modified to reflect that the Diamond Mountain Resource Management Plan is still in revision, that the Service is continuing to measure the amount of selenium being deposited on the Refuge from irrigation runoff and from naturally occurring seeps and springs, and that research on potential selenium sources from off-Refuge sources is also ongoing.

Uintah County

The CCP is a broad scale planning document that is intended to be "stepped-down" to more specific day-to-day operational plans. Some of these plans are already in place, as they were administrative requirements before the CCP process was created. Some plans will need revision to bring them in line with the CCP. Step-down plans are available for public viewing under the Freedom of Information Act with a request to the Refuge Manager. If you have specific questions on particular step-down plans or other Refuge activities, you may contact the Refuge Manager. All management plans are subject to NEPA analysis, and new environmental assessments or management plans will be distributed for public review and comment. Uintah County is on the Refuge's contact mailing list and will be notified of any plans available for review.

Areas that will be flooded as a result of implementing the CCP will be within Refuge boundaries. These habitat manipulations will not alter the magnitude of Green River discharges downstream. Refuge flood waters are controlled (to a degree) and maintained by a series of levees, spillways, and water control structures. When draining is necessary, water is released directly into the River. Few, if any, discharges back to the Green River have occurred over the past 15 years. If a significant high water event occurs in the Green River, the Refuge will actually buffer downstream landowners from its effects, as Refuge wetlands can absorb and slow the volume of water released down River.

The Refuge will continue to cooperate with the Uintah County Mosquito Abatement District and allow them access to monitor and control mosquito production (including areas that have been altered to restore wetland and riparian habitats), as long as it does not interfere with Refuge purposes. The staff does not expect a significant increase in the number of mosquitos produced on the Refuge as a result of implementing the CCP.

The Refuge has made the proposed CCP available to adjacent public and private land managers and asked that they consider the Refuge in their management plans; however, the Service does not have the authority to impose policy on lands outside the Refuge boundary. Refuge staff anticipates no major effects to adjacent public lands. Please send the Refuge a copy of the Uintah County General Plan to make sure that the step-down plans are consistent with it.

Utah State Historical Preservation Office

Goal G, Objective 1 states that the Refuge will conduct overviews, identify sites, and consult with State and local authorities to develop a plan for historical preservation. Construction and building activities are reviewed by Service archaeologists and the SHPO prior to ground disturbance. The planning team requested information from the SHPO and BLM during Plan development. The staff has received site information from the SHPO and will continue to coordinate our activities with that office.

Ducks Unlimited

Ouray NWR was originally established for "use as an inviolate sanctuary, or for any other management purpose, for migratory birds." This has not changed. Since the Refuge was established, the Service has also been mandated to protect and recover endangered and threatened species. The Refuge's riparian and bottomland wetland habitats are critical not only for migratory birds but for these imperiled species as well. By restoring and maintaining these areas, the Refuge can provide habitat for waterfowl, endangered fish species, other waterbirds, shorebirds, and migratory passerine birds.

At the time the Refuge was established, management focused on attempting to produce large numbers of waterfowl using artificially constructed impoundments. Time and experience has shown that the Refuge is simply too far south to cost-effectively contribute much to continental waterfowl populations. Impounded habitats have not been suitable for waterfowl production, and are expensive to maintain. As a result, waterfowl production or breeding habitat is being de-emphasized and a stronger emphasis placed on providing quality migrational habitat for waterfowl, including areas for resting, feeding, and loafing. These habitats are also increasingly important for other water birds, raptors, and migratory passerines. Implementation of the CCP will support the Migratory Bird Conservation Act of 1929 and the Migratory Bird Hunting and Conservation Stamp Act of 1934. "Duck Stamp" funding also states that 40 percent of refuge lands purchased with these funds must be open to waterfowl hunting. Forty percent of Refuge land is open to waterfowl hunting currently and will remain so.

Refuge habitat management under the CCP should provide improved migratory habitat for waterfowl. Past water management practices to maximize waterfowl production have actually degraded the quality of wetland habitat for migratory waterfowl over time. Water was artificially pumped into these areas year-after-year and allowed to drawdown during mid-summer which favored the growth of mono-typic stands of cattail and hardstem bulrush and left very little open water. Wetlands that have been deep flooded by the Green River over the past 2 to 3 years now have much more open water, which is much more attractive to waterfowl during the spring and fall migration.

Brett Prevedel
All school tours and programs are given in the Sheppard Bottom area. Just as much, if not more, opportunity exists to view wildlife in Sheppard Bottom. Levee removal in Leota Bottom will be an important part of maintaining healthier wetlands. Allowing seasonal flooding will reduce cattail and bulrush, redistribute soil nutrients, and increase open water. Nonfunctional levees should be modified to restore more natural water movement throughout the bottom. Levees that are not used or maintained create maintenance problems including nonnative plant invasion, siltation, and create pools of stagnant water hosting disease organisms and mosquitos.

The Refuge staff agrees that a temporary invasion may occur of nonnative plants as a result of levee removal and other construction disturbances, but the decision to reestablish cottonwoods and willows requires expanding the riparian corridor including the ability to flood the area. Vigorous control of nonnative plants will be necessary until the natural riparian plant community has established itself.

Ouray NWR was originally established for "use as an inviolate sanctuary, or for any other management purpose, for migratory birds." This may or may not include waterfowl propagation. Nesting structures were constructed for breeding Canada geese. Continental populations of Canada geese are at a historical high, and these structures are no longer needed. The staff time and funding to maintain them is needed elsewhere. The purpose of the Refuge has not changed. However, since the Refuge was established, the Service has also been mandated to protect and recover endangered and threatened species. The Refuge's riparian and bottomland wetland habitats are critical not only for migratory birds but for these imperiled species as well. By restoring and maintaining these areas, the Refuge can provide habitat for waterfowl, endangered fish species, other waterbirds, shorebirds, and migratory passerine birds.

Implementation of the CCP will support the Migratory Bird Conservation Act of 1929 and the Migratory Bird Hunting and Conservation Stamp Act of 1934. "Duck Stamp" funding also states that 40 percent of Refuge lands purchased with these funds must be open to waterfowl hunting. Currently, 40 percent of Refuge land is open to waterfowl hunting and will remain so.

Uintah County Mosquito Abatement District

The Refuge will continue to permit mosquito control and monitoring as long as the activity is compatible, and Refuge purposes are not compromised. While the staff realizes that large populations of mosquitos are produced on the Refuge, these and other aquatic and terrestrial insects serve as a food source for wildlife including endangered fish, migratory birds, and bats. Control, using the larvicide BTI (Bacillus thuringiensis israelensis), is the preferred technique since this is one of the few pesticides that is specific to mosquito species. The Refuge has also permitted site specific fogging using Malathion (as a last resort) for control of adult mosquitos such as Culex spp. that are disease vectors. However, up to this time, the main threat from mosquitos is nuisance bites, not disease. Refuge habitats produce populations of mosquitos every year without any outbreaks of serious disease in the adjacent area. The Service recognizes the potential for an outbreak of Western (WEE) and/or St. Louis (SLE) Equine Encephalitis; however, the Service feels that the risk is no greater than for many other wetland/riverine habitats throughout Utah. No confirmed cases have occurred of WEE in humans since 1964 in Utah (according to the Centers for Disease Control), and none in horses in 1997 or 1998 (reports of the Committee on Infectious Diseases of Horses). No confirmed cases of SLE have been recorded for Utah. The naturally occurring vectors for WEE are birds that infect a mosquito biting the carrier. Humans and equines are actually considered to be "accidental or dead-end hosts" for the disease. Horses are more likely to contract WEE or SLE than humans, and effective vaccines are in use. The Refuge would be interested in any data available on mosquito migratory flight paths mentioned in your letter.

Funding for mosquito control and monitoring has been made available through the Upper Colorado River Recovery Program in the past and will continue as budgets allow. Funding may not be allocated on an annual basis.

Wildlife Management Institute

The $230,000 funding referred to on page 41 of the CCP is new money that will be used for vegetation mapping including aerial photography, GIS/GPS, and baseline surveys for small mammals, upland/grassland birds, reptiles, and amphibians. CCP implementation is comprehensive. The needed work presented in the CCP cannot be completed in "one year." The proposed action is to implement the CCP over the next 15 years. The $460,000 identified in the CCP is projected for the life of the Plan.

Goals, objectives, and strategies are not listed in priority order deliberately. Funding and staff resources will shift from fiscal year to fiscal year so the Refuge needs to remain flexible to take full advantage of resources as they appear. Availability of water and climatic conditions will not be predictable enough to prioritize many actions. Administrative and political climate may also dictate priorities for the Refuge System as a whole. What is a priority today may not be a priority in five years.

Managing habitat to benefit waterfowl is still a priority, but the strategies outlined in the CCP benefit not only waterfowl but many other birds as well as deer, fish, and other wildlife. Waterfowl production has been de-emphasized, and the staff will shift towards management for waterfowl migrational habitat. "Migratory birds," as stated in the mission statement for Ouray NWR, includes more than waterfowl, and by enhancing the riparian corridor, the Refuge will be able to manage for a diversity of species.

The Regional Director made the decision to complete Environmental Assessments for each CCP in Region 6. The purpose of the EA is to identify any alternatives to implementing the CCP as proposed. When the Refuge selects the preferred alternative (implement the CCP), the required funding and staff needed to fully implement it is identified and requested in its annual budget submission. The CCP will be accomplished as funding is made available and not fall back to either of the alternatives that were not selected.

Nile Chapman

Refuge staff is currently experimenting with different nonnative plant control techniques and will expand control efforts on the east side of the Green River once the most effective and economically feasible techniques are determined. Study of nonnative plant infestation and control continues as the staff is still searching for biologically compatible and cost effective treatment methods. Perennial pepperweed has been sprayed along the roadsides in Woods and Wyasket Bottoms on the East side of the River during the past two years.

Salt cedar exists through out the "Ouray Valley" along every water drainage including the Duchesne, Green, and White Rivers, not just on the Refuge. Large stands of Russian knapweed and Russian olive exist throughout the area as well. Seed is spread by the water flow of each drainage, so even if the Refuge gains control of nonnative plant infestations on its own lands, other areas will still be affected as they are today.

Animal Protection Institute

The need for a rigorous assessment and inventory of flora and fauna has been identified in the CCP (page 41, last paragraph) under Goal A. Funding to carry out some of this research has already been provided for the next three years.

The National Wildlife Refuge Improvement Act of 1997 defines hunting, fishing, wildlife observation, photography, environmental education, and interpretation as priority public uses of National Wildlife Refuges. Pursuant to the Migratory Bird Hunting and Conservation Stamp Act of 1934, 40 percent of Refuge lands (purchased in 1960) with Duck Stamp funds must be opened to waterfowl hunting. This is currently the case.

All public uses currently permitted were analyzed and determined to be compatible with the Refuge purpose prior to development of the CCP and have been recertified as compatible during development of the CCP based on site specific knowledge of the Refuge staff. The compatibility of each public use must be reviewed periodically by the Refuge Manager, especially if biological conditions change significantly. The staff agrees that conflicts between wildlife and public use must be researched and documented and will continue to do so.

Visitation to the Refuge, whether for hunting, fishing, hiking, observation, or otherwise, is very low. Only 10,000 people visit Ouray NWR per year, and the majority of these visitors only drive the auto-tour route. The impact of visitation on wildlife is minimal. Roads are far enough from rookeries, perches, and feeding areas as not to disturb birds and other wildlife. No off-road vehicle travel is allowed. Refuge staff routinely recommend that the visiting public stay in vehicles to minimize disturbance, and any areas that have heavy wildlife use are closed to public entry.

Areas open to hunting are physically separated from the auto-tour route, trails, and the observation tower. The Refuge staff has documented that Sheppard Bottom, which is closed to hunting, holds as many songbirds, waterfowl, and shorebirds as Leota Bottom where hunting is allowed. Hunting season duration, dates, and limits are determined by the State of Utah rather than the Refuge Manager. State officials determine the duration of hunting seasons and allowable bag limits using population surveys conducted in each management unit. The Refuge lies within the Vernal Herd Unit for mule deer. Waterfowl surveys are also conducted mid-winter by State officials to obtain numbers and the distribution of birds.