

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 marestalk.

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.

Appendix B.

Bibliography/References

- Baldassarre, G.A. and E.G. Bolen. 1994. Waterfowl ecology and management. John Wiley and Sons, New York. 609 pp.
- Behle, W.H. and M.L. Perry. 1975. Utah birds: guide, checklist and occurrence charts. Utah Museum of Natural History. 144pp.
- Burt W.H. and R.P. Grossenheider. 1976. A field guide to the mammals. Houghton Mifflin Company, Boston. 289pp.
- Chaney, E., W. Elmore, and W.S. Platts. 1990. Livestock grazing on western riparian areas. Northwest Resource Information Center, Inc. Eagle, ID. 45pp.
- Collier, M., R.H. Webb, and J.C. Schmidt. 1996. Dams and rivers: A primer on the downstream effects of dams. U.S. Geological Survey, Circular 1126, Denver, CO. 94pp.
- Colorado River Fisheries Program. Species list for Upper Colorado River Basin. Unpublished document. 2pp.
- Colorado Weed Management Association. 1993. Colorado's 30 troublesome weeds—plants that threaten our natural resources, 2nd ed. 74 pp.
- Conant, R. 1975. A field guide to reptiles and amphibians of eastern/central North America. Houghton Mifflin Company, Boston. 429pp.
- Cooper, D. and C. Severn. 1994. Wetlands of the Ouray National Wildlife Refuge, Utah: Hydrology, water chemistry, vegetation, invertebrate communities, and restoration potential. Final report to Recovery Program for the Endangered Fishes of the Upper Colorado River Basin, U.S. Fish and Wildlife Service, Denver, CO. 79pp.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service, Washington, DC. 131pp.
- Dall, D., C. Elliott, and D. Peters. 1997. A system for mapping riparian areas in the Western United States. U.S. Fish and Wildlife Service, National Wetlands Inventories, Lakewood, CO. 15 pp.
- DeLoach, C.J. 1989. Saltcedar, a weed of western North American riparian areas: A review of its taxonomy, biology, harmful and beneficial values, and its potential for biological control. U.S. Bureau of Reclamation, Contract No. 7-AG-30-04930. 296pp.
- Di Tomaso, J.M. 1998. Impact, biology, and ecology of saltcedar (*Tamarix* spp.) in the southwestern United States. Weed Tech. 12:326-336.
- FLO Engineering. 1996. Green River flooded bottomlands investigation: Ouray Wildlife Refuge and Canyonlands National Park, Utah. Recovery Program Project No. CAP-6 HG, FLO Engineering, Inc., Breckenridge, CO.
- FLO Engineering. 1997. Ouray NWR Bottomland Sites Elevation/Area/Capacity Tables. Final Report. FLO Engineering, Inc., Breckenridge, CO.
- Folks, F.N. 1963. Plant list of the Ouray National Wildlife Refuge. U.S. Fish and Wildlife Service. 14pp.

- Goodrich, S. and E. Neese. 1986. *Uintah Basin Flora*. U.S. Government Printing Office: 1986-676-140/40008. 320pp.
- Haines, B. 1999. Assistant Project Leader-Colorado River Fishery Project (CRFP), Vernal, UT. Personal Communication.
- Hamilton, S.J., K.J. Buhl, F.A. Bullard, and S.F. McDonald. 1996. Evaluation of toxicity to larval razorback sucker of selenium-laden food organisms from Ouray NWR on the Green River, Utah. Final report to Colorado River Recovery Implementation Program, U.S. Fish and Wildlife Service, Denver, CO. 79pp.
- Hansen, P.L. 1994. A riparian and wetland habitat evaluation of Ouray and Duchesne River National Wildlife Refuge. Riparian and Wetland Research Program, Univ. of Montana, Missoula, MT. 171pp.
- Hansen, P.L., R.D. Pfister, K. Boggs, B.J. Cook, J. Joy, and D.K. Hinckley. 1995. Classification and management of Montana's riparian and wetland sites. University of Montana, Missoula, MT. Misc. Publication No. 54. 646pp.
- Holechek, J.L., R.D. Pieper, and C.H. Herbel. 1989. Range management principles and practices. Prentice-Hall, Englewood Cliffs, New Jersey. 501 pp.
- Howe, W.H., and F.L. Knopf. 1991. On the imminent decline of Rio Grande cottonwoods in central New Mexico. *Southwestern Naturalist* 36:218-224.
- Kerpez, T.A. and N.S. Smith. 1987. Saltcedar control for wildlife habitat improvement in the southwestern United States. U.S. Fish and Wildlife Service, Resource Publ. 169, Washington D.C. 16pp.
- Knopf, F.L., R.R. Johnson, T. Rish, F.B. Samson, and R.C. Szaro. 1988. Conservation of riparian ecosystems in the United States. *Wilson Bulletin* 100:272-284.
- Knopf, F.L. and T.E. Olson. 1984. Naturalization of Russian-olive: Implications to Rocky Mountain Wildlife. *Wildl. Soc. Bull.* 12:289-298.
- Larson, G.E. 1993. Aquatic and wetland vascular plants of the northern Great Plains. USDA Forest Service, General Technical Report RM-238. 681pp.
- Laubhan, M. 1997. Report on Green River Refuges. Unpublished Report. Ouray NWR, Vernal, UT. 18 pp.
- Locke, L.N., and M. Friend. 1987. Avian Botulism. In M. Friend [ed] *Field Guide to Wildlife Diseases*. Resource Publication 167, U.S. Fish and Wildlife Service, Washington, DC.
- Meffe, G.K., C.R. Carroll, and Contributors. 1997. *Principles of conservation biology*, 2nd ed. Sinauer Associates, Sunderland, MA.
- Modde, T. 1997. Fish use of Old Charley Wash: An assessment of floodplain wetland importance to razorback sucker management and recovery. Recovery Program Project Number CAP-6. 63pp.
- _____. and E.J. Wick. 1997. Investigations of razorback sucker distribution, movements and habitats used during spring in the Green River, Utah. Recovery Program Project Number 49. 40pp.
- _____. and D.B. Irving. 1998. Use of multiple spawning sites and seasonal movement by razorback suckers in the middle Green River, Utah. *North American Journal of Fisheries Management* 18:318-326.

- Morris, T.H. and M.A. Stubben. 1994. Geologic contrasts of the Great Basin and Colorado Plateau. /n K.T. Harper, L.L. St. Clair, K.H. Thorne, and W.M. Hess [eds.], Natural history of the Colorado Plateau and Great Basin. Univ. Press of Colorado, Niwot, CO. 294pp.
- Olson, B.E. 1999. Impacts of noxious weeds on ecologic and economic systems. /n R.L. Sheley and J.K. Petroff [eds.] Biology and management of noxious rangeland weeds. Oregon State Univ. Press. Corvallis, OR.
- Payne, N.F. and F.C. Bryant. 1994. Techniques for wildlife habitat management of uplands. McGraw-Hill, New York. 840 pp.
- Schmidt, K.A. and C. J. Whelan. 1999. Effects of exotic *Lonicera* and *Rhamnus* on songbird nest predation. *Conserv. Biology* 13:1502-1506.
- Sheley, R.L., B.H. Mullin, and P.F. Kay. 1995. Managing riparian weeds. *Rangelands* 17:154-157.
- Trammell, M.A. and J.L. Butler. 1995. Effects of exotic plants on native ungulate use of habitat. *J. Wild. Manage.* 59:808-816.
- U.S. Fish and Wildlife Service. 1999. National Wetlands Inventory. Brennan Basin, Utah. September 1983, 1:58,000, Color Infra Red (CIR).
- U.S. Fish and Wildlife Service. 1999. National Wetlands Inventory. Ouray SE, Utah. September 1983, 1:58,000, Color Infra Red (CIR).
- U.S. Fish and Wildlife Service. 1999. National Wetlands Inventory. Ouray, Utah. September 1983, 1:58,000, Color Infra Red (CIR).
- U.S. Fish and Wildlife Service. 1999. National Wetlands Inventory. Pelican Lake, Utah. September 1983, 1:58,000, Color Infra Red (CIR).
- U.S. Fish and Wildlife Service. Ouray National Wildlife Refuge bird list. Department of the Interior. Pamphlet.
- U.S. Fish and Wildlife Service. Ouray National Wildlife Refuge. Mammals list from Ouray NWR. Unpublished document. 2pp.
- U.S. Fish and Wildlife Service. Ouray National Wildlife Refuge. Reptiles and amphibians of Ouray NWR. Unpublished document. 2pp.
- Valdez, R.A. 1989. Winter habitat study of endangered fish-Green River. Bio/West Report Number 136-2, Bureau of Reclamation Contract No. 6-CS-40-04490. 178pp.
- Waddell, B. 2000. Fish & Wildlife Biologist-Ecological Services, Salt Lake City, UT. Personal Communication.
- Welsh, S.L. and E. Neese. 1979. Inventory of potentially endangered and threatened plant populations of Jones Hole National Fish Hatchery and Ouray National Wildlife Refuge, Utah. Endangered Plant Studies, Inc. Orem, Utah. 28pp.
- Wiesenborn, W.D. 1996. Saltcedar impacts on salinity, water, fire frequency and flooding. Saltcedar Management Workshop, <http://bluegoose.arw.r9.fws.gov/NWR.../SaltcedarWorkshopJun96/Paper3.html>.
- Wydoski R.S. and E.J. Wick. 1998. Ecological value of floodplain habitats to razorback suckers in the upper Colorado River Basin. Final Report. Upper Colorado River Basin Recovery Program, Denver, CO. 55pp.

Appendix C. RONS List

ACTIVITY: Pest Plant Control

MEASURES: 3000 acres will be treated; 3000 acres infested by target species; 3000 acres will be treated chemically

Invasive Plant Control

Reverse infestation of invasive plants to favor native plant communities through the use of new herbicide spray equipment and a full time employee to map, monitor and apply the necessary control measures. Four species of invasive vegetation (Tamarisk, Russian olive, Tall White top and Russian Knapweed) have become well established and now threaten native vegetation and wildlife. Approximately 75% of the riparian area of this refuge is severely invaded by these species. The Ouray NWR serves as vital migrational habitat for numerous species of birds and as critical habitat for four species of endangered fish.

ADDITIONAL FUNDS NEEDED (\$000):

	One-Time	Recurring Base	First Year Need
Construction Costs.....			
Operations: Personnel Costs.....		43	
Equipment Cost.....	40		
Facility Cost.....			
Services/Supplies.....	10	20	
Miscellaneous Costs.....	40	5	
TOTAL Operations Cost.....	90	68	158

ADDITIONAL PERMANENT STAFF NEEDED:

	FTEs	Cost (\$000)
Managers.....		\$0
Biologists.....		\$0
Resource Specialists.....		\$0
Education/Recreation Staff.....		\$0
Law Enforcement.....		\$0
Clerical/Administrative.....		\$0
Maintenance/Equipment Operation.....	1.0	\$43
TOTAL FTEs Needed.....	1.0	\$43

EMPHASIS: 0% Critical health & safety; 50% Critical resource protection; 25% Critical mission; 25% Other important needs

OUTCOMES*:	<u>ES</u>	<u>WF</u>	<u>OMB</u>	<u>HEC</u>	<u>IAF</u>	<u>SDA</u>	<u>RW</u>	<u>PED</u>	<u>FAR</u>	<u>PRC</u>	<u>TOT</u>
	10	10	5	70			5				100

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

Loss of native plant communities will not meet the objectives of: the refuge CCP, the Integrated Pest Management Plan or the FWS Ecosystem goals. Ecosystem goal #2: restore, maintain, enhance ecosystem function of wetland & riparian habitats." Draft CMP refuge goal: 1) maintain/enhance habitat for migratory birds. 2) restore/maintain native plant communities 3) reduce nonnative noxious plants.

PROJECT #:97005..... **RANK - STATION:**1..... **DISTRICT:** ...007... **REGION:**7..... **NATIONAL:**

ACTIVITY: Wetland Restoration

MEASURES: 1790 refuge acres will be restored

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
Construction Costs.....			
Operations: Personnel Costs.....			
Equipment Cost.....	120		
Facility Cost.....			
Services/Supplies.....	200		
Miscellaneous Costs.....	31		
TOTAL Operations Cost.....	351		351

ADDITIONAL PERMANENT STAFF NEEDED:

	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

EMPHASIS: 0% Critical health & safety; 75% Critical resource protection; 0% Critical mission; 25% Other important needs

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

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

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.

PROJECT #:99001..... **RANK - STATION:**2..... **DISTRICT:** ...999... **REGION:** ...122... **NATIONAL:** ...999...

ACTIVITY: Provide Visitor Services

MEASURES: 8000 new visitors will be served; 3500 existing visitors will be served

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
Construction Costs.....			
Operations: Personnel Costs.....			
Equipment Cost.....	10		
Facility Cost.....	90		
Services/Supplies.....	10	5	
Miscellaneous Costs.....	20	5	
TOTAL Operations Cost.....	130	10	140

ADDITIONAL PERMANENT STAFF NEEDED:

	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

EMPHASIS: 0% Critical health & safety - deferred maintenance; 0% Critical health & safety - capital improvement; 0% Critical resource protection - deferred maintenance; 0% Critical resource protection - capital improvement; 0% Critical mission - deferred maintenance; 0% Compliance & other deferred maintenance; 100% Other capital improvements

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

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

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.

PROJECT #:98001..... **RANK - STATION:**3..... **DISTRICT:** ...066... **REGION:**78..... **NATIONAL:**

ACTIVITY: Fire Management

MEASURES: 2000 refuge acres burned under prescription; 10 refuge burns will be conducted; 5 wildfires will be suppressed

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
Construction Costs.....			
Operations: Personnel Costs.....			
Equipment Cost.....	95		
Facility Cost.....	50		
Services/Supplies.....	10	5	
Miscellaneous Costs.....	19	5	
TOTAL Operations Cost.....	174	10	184

ADDITIONAL PERMANENT STAFF NEEDED:

	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

EMPHASIS: 0% Critical health & safety - deferred maintenance; 0% Critical health & safety - capital improvement; 0% Critical resource protection - deferred maintenance; 50% Critical resource protection - capital improvement; 0% Critical mission - deferred maintenance; 0% Compliance & other deferred maintenance; 50% Other capital improvements

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

PLANNING LINKS: Station Goal/Objective; Other Major Plan; 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.

PROJECT #:98002..... **RANK - STATION:**4..... **DISTRICT:** ...999... **REGION:** ...999... **NATIONAL:**

ACTIVITY: Studies & Investigations**MEASURES: 1 studies will be conducted****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
Construction Costs.....			
Operations: Personnel Costs.....			
Equipment Cost.....	30		
Facility Cost.....			
Services/Supplies.....	100		
Miscellaneous Costs.....	21	2	
TOTAL Operations Cost.....	151	2	153

ADDITIONAL PERMANENT STAFF NEEDED:

	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

EMPHASIS: 0% Critical health & safety; 50% Critical resource protection; 25% Critical mission; 25% Other important needs

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

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

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 by the endangered fish as the greatest limiting factor. A feasibility study would provide the needed information for considering such a massive undertaking.

PROJECT #:97002..... **RANK - STATION:**8..... **DISTRICT:** ...999... **REGION:** ...999... **NATIONAL:**

ACTIVITY: Outreach

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; 4 other special events will be hosted

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
Construction Costs.....			
Operations: Personnel Costs.....			
Equipment Cost.....	15		
Facility Cost.....			
Services/Supplies.....	10	5	
Miscellaneous Costs.....	8	5	
TOTAL Operations Cost.....	33	10	43

ADDITIONAL PERMANENT STAFF NEEDED:

	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

EMPHASIS: 0% Critical health & safety; 0% Critical resource protection; 80% Critical mission; 20% Other important needs

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

PLANNING LINKS: Station Goal/Objective, Legal Mandate

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.

PROJECT #:97010..... **RANK - STATION:**6..... **DISTRICT:** ...056... **REGION:** ...999... **NATIONAL:**

ACTIVITY: Cultural Resource Management

MEASURES: 1 investigations will be conducted; 5 sites will be documented; 1 museum property items will be maintained

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 is 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 done through partnership with a University under a challenge cost share.

ADDITIONAL FUNDS NEEDED (\$000):

	One-Time	Recurring Base	First Year Need
Construction Costs.....			
Operations: Personnel Costs.....			
Equipment Cost.....	10		
Facility Cost.....			
Services/Supplies.....	80		
Miscellaneous Costs.....	23	60	
TOTAL Operations Cost.....	113	60	173

ADDITIONAL PERMANENT STAFF NEEDED:

	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

EMPHASIS: % Critical health & safety; 100% Critical resource protection; 0% Critical mission; % Other important needs

OUTCOMES*:	<u>ES</u>	<u>WF</u>	<u>OMB</u>	<u>HEC</u>	<u>IAF</u>	<u>SDA</u>	<u>RW</u>	<u>PED</u>	<u>FAR</u>	<u>PRC</u>	<u>TOT</u>
								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.

PROJECT #:97009..... **RANK - STATION:**7..... **DISTRICT:** ...999... **REGION:** ...999... **NATIONAL:**

ACTIVITY: Private Land Activities (excluding restoration)

MEASURES: 50 landowners will be assisted; 10000 acres will be affected; 10000 % effort will be for wetlands

Easement Monitoring and Enforcement

The Colorado River Recovery Program for endangered fishes is currently negotiating long term conservation easement acquisitions of flooded bottom lands and riparian areas along the Green, Colorado and Gunnison Rivers. These properties are to be managed and administered by the Ouray NWR. The Refuge welcomes this responsibility and recognizes the need for the protection of these critical habitat not only for fish but for many other species. This proposal seeks to insure sustained long term monitoring and enforcement of these critical habitats through the hiring of a permanent full-time biological technician with law enforcement authority and all the necessary equipment.

ADDITIONAL FUNDS NEEDED (\$000):

	One-Time	Recurring Base	First Year Need
Construction Costs.....			
Operations: Personnel Costs.....	30	39	
Equipment Cost.....	40		
Facility Cost.....			
Services/Supplies.....	5	5	
Miscellaneous Costs.....	26	5	
TOTAL Operations Cost.....	101	49	150

ADDITIONAL PERMANENT STAFF NEEDED:

	FTEs	Cost (\$000)
Managers.....		\$0
Biologists.....	1.0	\$39
Resource Specialists.....		\$0
Education/Recreation Staff.....		\$0
Law Enforcement.....		\$0
Clerical/Administrative.....		\$0
Maintenance/Equipment Operation.....		\$0
TOTAL FTEs Needed.....	1.0	\$39

EMPHASIS: 0% Critical health & safety; 50% Critical resource protection; 25% Critical mission; 25% Other important needs

OUTCOMES*:	<u>ES</u>	<u>WF</u>	<u>OMB</u>	<u>HEC</u>	<u>IAF</u>	<u>SDA</u>	<u>RW</u>	<u>PED</u>	<u>FAR</u>	<u>PRC</u>	<u>TOT</u>
	90	5	5								100

PLANNING LINKS: FWS Recovery Plan; FWS Ecosystem Goal/Plan

The Colorado River Recovery program will be acquiring conservation easements to promote more natural flooding of the Upper Colorado River ecosystem. Ecosystem goals: 1)...Restore and maintain an aquatic system capable of supporting the diversity of native aquatic communities to achieve recovery of listed and candidate species and prevent the need of future listing. 2)...Reverse current trend; restore/maintain/enhance species composition and wetland/riparian habitats.

PROJECT #:97007..... **RANK - STATION:**8..... **DISTRICT:** ...999... **REGION:** ...999... **NATIONAL:**

ACTIVITY: Surveys & Censuses**MEASURES: ; 3 habitat surveys will be conducted****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. Endangered plants are often overlooked in refuge management however, these 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
Construction Costs.....			
Operations: Personnel Costs.....	30	16	
Equipment Cost.....	30		
Facility Cost.....			
Services/Supplies.....	5		
Miscellaneous Costs.....	12		
TOTAL Operations Cost.....	77	16	93

ADDITIONAL PERMANENT STAFF NEEDED:

	FTEs	Cost (\$000)
Managers.....		\$0
Biologists.....	0.5	\$16
Resource Specialists.....		\$0
Education/Recreation Staff.....		\$0
Law Enforcement.....		\$0
Clerical/Administrative.....		\$0
Maintenance/Equipment Operation.....		\$0
TOTAL FTEs Needed.....	0.5	\$16

EMPHASIS: 50% Critical health & safety; 0% Critical resource protection; 50% Critical mission; 0% Other important needs

OUTCOMES*:	<u>ES</u>	<u>WF</u>	<u>OMB</u>	<u>HEC</u>	<u>IAF</u>	<u>SDA</u>	<u>RW</u>	<u>PED</u>	<u>FAR</u>	<u>PRC</u>	<u>TOT</u>
	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.

PROJECT #:97016..... **RANK - STATION:**9..... **DISTRICT:**999... **REGION:**999... **NATIONAL:**

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:

- P **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.
- P **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.
- P **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.
- P **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.
- P **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.

P **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.

P **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:

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

Concurrence: _____ Date: _____
Refuge Supervisor

Assistant Regional Director
Refuges and Wildlife

Approval: _____ Date: _____
Manager, Operations

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; PL. 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

- P Senator Orrin G. Hatch
- P Senator Bob Bennett
- P Congressman Merrill Cook
- P Congressman Chris Cannon
- P Congressman James V. Hansen

Federal Agencies

- P Bureau of Indian Affairs, Dave Allison
- P Bureau of Land Management, Vernal and Salt Lake City, Utah
- P Bureau of Reclamation; Provo and Salt Lake City, Utah
- P Dinosaur National Park, Dinosaur, CO
- P Roosevelt Fish and Wildlife Management Assistance Office
- P USDA/Natural Resource Conservation Service
- P US EPA, Denver, CO
- P U.S. Fish and Wildlife Service: Denver, CO; Albuquerque, NM; Portland, OR; Anchorage, AK; Fort Snelling, MN; Atlanta, GA; Hadley, MA; Washington, D.C.; Shepherdstown, WV
- P U.S. Fish and Wildlife Service: Bear River Migratory Bird Refuge; Fish Springs NWR; Seedskadee NWR; Ecological Services, Salt Lake City; Brown's Park NWR.
- P U.S. Forest Service, Vernal, Utah

State Officials

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

State Agencies

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

City/County/Local Governments

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

Libraries

- P Uintah County Library
- P Duchesne County Library

Organizations

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

Newspapers

- P Vernal Express
- P Uinta Basin Standard

Schools/Universities

- P Utah State University, Dr. Rich Etchberger

Individuals

- Batty, Joe
- Batty, Morgan
- Chapman, Nile
- Harbin, Chris
- Henry, Dale
- Johnson, Jim
- Maddox, Henry
- Peg's Café
- Schroeder, Rick
- 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.

Appendix H.

Species Lists of Ouray National Wildlife Refuge

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 bird is a 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	<i>Bucephala clangula</i>
Barrow's Goldeneye	<i>Bucephala islandica</i>
Hooded Merganser	<i>Lophodytes cucullatus</i>
Common Merganser*	<i>Mergus merganser</i>
Red-breasted Merganser	<i>Mergus serrator</i>
Ruddy Duck*	<i>Oxyura jamaicensis</i>

Osprey, Kites, Hawks, and Eagles

Osprey	<i>Pandion haliaetus</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Northern Harrier*	<i>Circus cyaneus</i>
Sharp-shinned Hawk	<i>Accipiter striatus</i>
Cooper's Hawk	<i>Accipiter cooperii</i>
Northern Goshawk	<i>Accipiter gentilis</i>
Swainson's Hawk*	<i>Buteo swainsoni</i>
Red-tailed Hawk*	<i>Buteo jamaicensis</i>
Ferruginous Hawk	<i>Buteo regalis</i>
Rough-legged Hawk	<i>Buteo lagopus</i>
Golden Eagle*	<i>Aquila chrysaetos</i>

Falcons and Caracaras

American Kestrel*	<i>Falco sparverius</i>
Merlin	<i>Falco columbarius</i>
Peregrine Falcon	<i>Falco peregrinus</i>
Prairie Falcon*	<i>Falco mexicanus</i>

Gallinaceous Birds

Ring-necked Pheasant*	Introduced	<i>Phasianus colchicus</i>
Sage Grouse		<i>Centrocercus urophasianus</i>

Rails

Virginia Rail*	<i>Rallus limicola</i>
Sora*	<i>Porzana carolina</i>
Common Moorhen	<i>Gallinula chloropus</i>
American Coot	<i>Fulica americana</i>

Cranes

Sandhill Crane	<i>Grus canadensis</i>
Whooping Crane	<i>Grus americana</i>

Plovers

American Golden-Plover	<i>Pluvialis dominica</i>
Snowy Plover	<i>Charadrius alexandrinus</i>
Semipalmated Plover	<i>Charadrius semipalmatus</i>
Killdeer*	<i>Charadrius vociferus</i>

Stilts and Avocets

Black-necked Stilt*	<i>Himantopus mexicanus</i>
American Avocet*	<i>Recurvirostra americana</i>

Sandpipers and Phalaropes

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

Wilson's Phalarope*
Red-necked Phalarope

Phalaropus tricolor
Phalaropus lobatus

Skuas, Jaegers, Gulls, and Terns

Franklin's Gull
Bonaparte's Gull
Ring-billed Gull
California Gull
Herring Gull
Caspian Tern
Common Tern
Forster's Tern*
Black Tern*

Larus pipixcan
Larus philadelphia
Larus delawarensis
Larus californicus
Larus argentatus
Sterna caspia
Sterna hirundo
Sterna forsteri
Chlidonias niger

Pigeons and Doves

Rock Dove
Band-tailed Pigeon
Mourning Dove*
Introduced

Columba livia
Columba fasciata
Zenaida macroura

Cuckoos and Anis

Yellow-billed Cuckoo*

Coccyzus americanus

Typical Owls

Western Screech-Owl
Eastern Screech-Owl
Great Horned Owl*
Burrowing Owl*
Long-eared Owl
Short-eared Owl
Northern Saw-whet Owl

Otis kennicottii
Otus asio
Bubo virginianus
Athene cunicularia
Asio otus
Asio flammeus
Aegolius acadicus

Nightjars

Common Nighthawk*
Common Poorwill

Chordeiles minor
Phalaenoptilus nuttallii

Swifts

White-throated Swift

Aeronautes saxatalis

Hummingbirds

Black-chinned Hummingbird
Broad-tailed Hummingbird
Rufous Hummingbird

Archilochus alexandri
Selasphorus platycercus
Selasphorus rufus

Kingfishers

Belted Kingfisher

Ceryle alcyon

Woodpeckers

Lewis' Woodpecker*
Red-headed Woodpecker
Yellow-bellied Sapsucker
Downy Woodpecker*
Hairy Woodpecker*
Northern Flicker*

Melanerpes lewis
Melanerpes erythrocephalus
Sphyrapicus varius
Picoides pubescens
Picoides villosus
Colaptes auratus

Tyrant Flycatchers

Western Wood-Pewee
Willow Flycatcher
Say's Phoebe*
Vermilion Flycatcher
Ash-throated Flycatcher
Western Kingbird*
Eastern Kingbird

Contopus sordidulus
Empidonax traillii
Sayornis saya
Pyrocephalus rubinus
Myiarchus cinerascens
Tyrannus verticalis
Tyrannus tyrannus

Shrikes

Loggerhead Shrike*
Northern Shrike

Lanius ludovicianus
Lanius excubitor

Vireos

Warbling Vireo*

Vireo gilvus

Crows, Jays, and Magpies

Pinyon Jay
Black-billed Magpie*
American Crow
Common Raven

Gymnorhinus cyanocephalus
Pica pica
Corvus brachyrhynchos
Corvus corax

Larks

Horned Lark*

Eremophila alpestris

Swallows

Purple Martin
Tree Swallow
Violet-green Swallow
Northern Rough-winged Swallow*
Bank Swallow
Cliff Swallow*
Barn Swallow*

Progne subis
Tachycineta bicolor
Tachycineta thalassina
Stelgidopteryx serripennis
Riparia riparia
Petrochelidon pyrrhonota
Hirundo rustica

Titmice and Chickadees

Black-capped Chickadee*
Mountain Chickadee

Poecile atricapillus
Poecile gambeli

Nuthatches

Red-breasted Nuthatch
White-breasted Nuthatch

Sitta canadensis
Sitta carolinensis

Creepers

Brown Creeper

Certhia americana

Wrens

Rock Wren*
Bewick's Wren
House Wren*
Marsh Wren*

Salpinctes obsoletus
Thryomanes bewickii
Troglodytes aedon
Cistothorus palustris

Kinglets

Golden-crowned Kinglet
Ruby-crowned Kinglet

Regulus satrapa
Regulus calendula

Old World Warblers

Blue-gray Gnatcatcher

Poliioptila caerulea

Thrushes

Western Bluebird
Mountain Bluebird
Townsend's Solitaire
Swainson's Thrush
American Robin*

Sialia mexicana
Sialia currucoides
Myadestes townsendi
Catharus ustulatus
Turdus migratorius

Mimic Thrushes

Gray Catbird
Northern Mockingbird*
Sage Thrasher

Dumetella carolinensis
Mimus polyglottos
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

Poocetes gramineus

Lark Sparrow

Chondestes grammacus

Sage Sparrow

Amphispiza belli

Lark Bunting

Calamospiza melanocorys

Savannah Sparrow

Passerculus sandwichensis

Fox Sparrow

Passerella iliaca

Song Sparrow

Melospiza melodia

Lincoln's Sparrow

Melospiza lincolni

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*

Sturnella 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	<i>Ursus americanus</i>
Raccoons	Raccoon	<i>Procyon lotor</i>
Otters, Badgers, and Skunks	Northern River Otter	<i>Lutra canadensis</i>
	American Badger	<i>Taxidea taxus</i>
	Striped Skunk	<i>Mephitis mephitis</i>
Dogs and Foxes	Coyote	<i>Canis latrans</i>
	Red Fox	<i>Vulpes vulpes</i>
	Kit Fox	<i>Vulpes macrotis</i>
Cats	Mountain Lion	<i>Felis concolor</i>
	Lynx	<i>Lynx canadensis</i>
	Bobcat	<i>Lynx rufus</i>
Squirrels	Yellow-bellied Marmot	<i>Marmota flaviventris</i>
	White-tailed Prairie Dog	<i>Cynomys leucurus</i>
	White-tailed Antelope Squirrel	<i>Ammospermophilus leucurus</i>
	Least Chipmunk	<i>Tamias minimus</i>
Kangaroo Rat	Ord's Kangaroo Rat	<i>Dipodimys ordii</i>
Beaver	American Beaver	<i>Castor canadensis</i>
Mice	Deer Mouse	<i>Peromyscus maniculatis</i>
	White-footed Mouse	<i>Peromyscus leucopus</i>
Vole	Meadow Vole	<i>Microtus pennsylvanicus</i>
Muskrat	Muskrat	<i>Ondatra zibethicus</i>
Porcupine	Porcupine	<i>Erithizon dorsatum</i>
Hares and Rabbits	White-tailed Jackrabbit	<i>Lepus townsendii</i>
	Black-tailed Jackrabbit	<i>Lepus californicus</i>
	Desert Cottontail	<i>Sylvilagus audubonii</i>
Deer	American Elk	<i>Cervus elaphus</i>
	Mule Deer	<i>Odocoileus hemionus</i>
	Moose	<i>Alces alces</i>
Pronghorn	Pronghorn	<i>Antilocapra americana</i>
Bison	American Bison	<i>Bos bison</i>

Reptiles and Amphibians:**Reptiles:**

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

Amphibians:

Toads	Woodhouse's Toad	<i>Bufo woodhousei</i>
	Rocky Mountain Toad	<i>Bufo woodhousei woodhousei</i>
Chorus Frog	Boreal Chorus Frog	<i>Pseudacris triseriata maculata</i>
Leopard Frog	Northern Leopard Frog	<i>Rana pipiens</i>

Fish:

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

*Indicates species is not native to this area.

Plant Species:**Grasses**

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

Forbs and Weeds

Lowland Purslane	<i>Sesuvium sessile</i>
Redroot Amaranth	<i>Amaranthus retroflexus</i>
Springparsley	<i>Cymopterus acaulis</i>
Onion Springparsley	<i>Cymopterus bulbosus</i>
Uintah Basin Springparsley	<i>Cymopterus duchesnensis</i>
Purple Springparsley	<i>Cymopterus purpurascens</i>
Hemp Dogbane	<i>Apocynum cannabinum</i>
Pallid Milkweed	<i>Asclepias cryptoceras</i>
Labriform Milkweed	<i>Asclepias labriformis</i>
Showy Milkweed	<i>Asclepias speciosa</i>
Bur Ragweed	<i>Ambrosia tomentosa</i>
Leafy Aster	<i>Aster frondosus</i>
Nodding Beggarticks	<i>Bidens cernua</i>
Russian Knapweed	<i>Centaurea repens</i>
Douglas Chaenactis	<i>Chaenactis douglasii</i>
False Yarrow	<i>Chaenactis stevioides</i>
Creeping Thistle	<i>Cirsium arvense</i>
Bull Thistle	<i>Cirsium vulgare</i>
Dandelion Hawksbeard	<i>Crepis runcinata glauca</i>
Enceliopsis	<i>Enceliopsis nutans</i>
Fleabane	<i>Erigeron bellidiastrum typicus</i>
Low Fleabane	<i>Erigeron pumilus</i>
Lowland Cudweed	<i>Gnaphalium palustre</i>
Curlycup Gumweed	<i>Grindelia squarrosa</i>
Broom Snakeweed	<i>Gutierrezia sarothrae</i>
Orange Sneezeweed	<i>Helenium autumnale</i>
Wild Sunflower	<i>Helianthus annuus</i>
Sunflower	<i>Helianthus petiolaris</i>
Showy Goldeneye	<i>Heliomeris multiflora</i>
Fineleaf Hymenopappus	<i>Hymenopappus filifolius luteus</i>
Poverty Sumpweed	<i>Iva axillaris</i>
Chicory Lettuce	<i>Lactuca tatarica</i>
Heath Aster	<i>Leucelene ericoides</i>
Skeleton Plant	<i>Lygodesmia grandiflora</i>
Purple Aster	<i>Machaeranthera canescens</i>
Discoid Tansyaster	<i>Machaeranthera grindelioides</i>

Desert Dandelion	<i>Malacothrix sonchoides</i>
	<i>Platyschkuhria integrifolia</i>
	<i>Prenanthea exigua</i>
Canada Goldenrod	<i>Solidago canadensis</i>
Missouri Goldenrod	<i>Solidago missouriensis</i>
Western Goldenrod	<i>Solidago occidentalis</i>
Field Sowthistle	<i>Sonchus arvensis</i>
Prickly Sowthistle	<i>Sonchus asper</i>
Wirelettuce	<i>Stephanomeria pauciflora</i>
Wirelettuce	<i>Stephanomeria runcinata</i>
Nuttall Horsebrush	<i>Tetradymia nuttallii</i>
Cottonthorn Horsebrush	<i>Tetradymia spinosa</i>
Townsendia	<i>Townsendia grandiflora</i>
Townsendia	<i>Townsendia incana</i>
Yellow Salsify	<i>Tragopogon dubius</i>
Rough Cocklebur	<i>Xanthium strumarium</i>
Desert Daisy	<i>Xylorhiza venusta</i>
Cryptantha	<i>Cryptantha ambigua</i>
Yellow Cryptantha	<i>Cryptantha flava</i>
Cryptantha	<i>Cryptantha paradoxa</i>
Desert Stickseed	<i>Lappula redowskii</i>
Persoon	<i>Tiquilia nuttallii</i>
Beauty Rockcress	<i>Arabis pulchra</i>
Rough Wallflower	<i>Erysimum asperum</i>
Prairie Pepperweed	<i>Lepidium densiflorum</i>
Giant Whitetop	<i>Lepidium latifolium</i>
Mountain Pepperweed	<i>Lepidium montanum</i>
African Mustard	<i>Malcolmia africana</i>
Common Twinpod	<i>Physaria acutifolia</i>
Blunt-leaf Yellowcress	<i>Rorippa curvipes</i>
Marsh Yellowcress	<i>Rorippa islandica</i>
Cress	<i>Rorippa lyrata</i>
Flaxleafed Plainsmustard	<i>Schoenocrambe linifolia</i>
Tall Tumble Mustard	<i>Sisymbrium altissimum</i>
	<i>Thelypodopsis elegans</i>
Yellow Bee-plant	<i>Cleome lutea</i>
Rocky Mountain Bee-plant	<i>Cleome serrulata</i>
Fendler Sandwort	<i>Arenaria fendleri eastwoodiae</i>
	<i>Chenopodium atrovirens</i>
Fremont Goosefoot	<i>Chenopodium fremontii</i>
Oakleaf Goosefoot	<i>Chenopodium glaucum</i>
Green Molly	<i>Kochia americana</i>
Kochia Weed	<i>Kochia scoparia</i>
Povertyweed	<i>Monolepis nuttalliana</i>
Russian Thistle	<i>Salsola iberica</i>
Halogeton	<i>Halogeton glomeratus</i>
Field Bindweed	<i>Convolvulus arvensis</i>
Dodder	<i>Cuscuta spp.</i>
Spurge	<i>Euphorbia albomarginata</i>
Fendler Euphorbia	<i>Euphorbia fendleri</i>
Locoweed	<i>Astragalus amphioxys</i>
Cicada Milkvetch	<i>Astragalus chamaeleuce</i>
Lesser Rushy Milkvetch	<i>Astragalus convallarius</i>
Duchesne Milkvetch	<i>Astragalus duchesnensis</i>
Yellow Milkvetch	<i>Astragalus flavus</i>
Geyer Milkvetch	<i>Astragalus geyeri</i>
	<i>Astragalus hamiltonii</i>
Woolly Locoweed	<i>Astragalus mollissimus</i>
Draba Milkvetch	<i>Astragalus spatulatus</i>
American Wild Licorice	<i>Glycyrrhiza lepidota</i>
Dwarf Lupine	<i>Lupinus pusillus</i>
Yellow Sweetclover	<i>Melilotus officinalis</i>
Silvery Sophora	<i>Sophora stenophylla</i>
Tall Centaury	<i>Mentaurium exaltatum</i>
	<i>Nama densum</i>

Scorpionweed	<i>Phacelia crenulata</i>
Scorpionweed	<i>Phacelia ivesiana</i>
Geyer Onion	<i>Allium geyeri</i>
Wild Onion	<i>Allium textile</i>
Asparagus	<i>Asparagus officinalis</i>
Sego Lily	<i>Calochortus nuttallii</i>
False Solomon's Seal	<i>Smilacina stellata</i>
Whitestem Mentzelia	<i>Mentzelia albicaulis</i>
Brushy Mentzelia	<i>Mentzelia dispersa</i>
Wingseed Mentzelia	<i>Mentzelia pterosperma</i>
Purple Ammannia	<i>Ammannia robusta</i>
Alkali-mallow	<i>Malvella leprosa</i>
Scarlet Globemallow	<i>Sphaeralcea coccinea</i>
Nelson Globemallow	<i>Sphaeralcea parvifolia</i>
Sandverbena	<i>Abronia elliptica</i>
Narrowleaf Umbrellawort	<i>Mirabilis linearis</i>
	<i>Tripterocalyx micranthus</i>
Barestem Camissonia	<i>Camissonia scapoidea</i>
Small-flowered Gaura	<i>Gaura parviflora</i>
Tufted Evening-primrose	<i>Oenothera caespitosa</i>
Evening-primrose	<i>Oenothera elata</i>
Pale Evening-primrose	<i>Oenothera pallida</i>
Plantain	<i>Plantago asiatica</i>
Broadleaf Plantain	<i>Plantago major</i>
Woolly Plantain	<i>Plantago patagonica</i>
Ballhead Gilia	<i>Gilia congesta</i>
Gilia	<i>Gilia leptomeria</i>
Gilia	<i>Gilia polycladon</i>
Dwarf Gilia	<i>Gilia pumila</i>
Common Prickly Phlox	<i>Lepodactylon pungens</i>
Hood Phlox	<i>Phlox hoodii</i>
Wild Sweet William	<i>Phlox longifolia</i>
	<i>Eriogonum batemanii</i>
	<i>Nodding Eriogonum</i>
	<i>Eriogonum cernuum</i>
Big Wild Buckwheat	<i>Eriogonum corymbosum</i>
	<i>Eriogonum flexum</i>
Gordon's Umbrella Plant	<i>Eriogonum gordonii</i>
	<i>Eriogonum hookeri</i>
Desert Trumpet Eriogonum	<i>Eriogonum inflatum</i>
Slenderbush Eriogonum	<i>Eriogonum microthecum</i>
	<i>Eriogonum salsuginosum</i>
Shockley Wild Buckwheat	<i>Eriogonum shockleyi</i>
Green Eriogonum	<i>Eriogonum viridulum</i>
Western Virgin-bower	<i>Clematis ligusticifolia</i>
Nuttall Larkspur	<i>Delphinium nuttallianum</i>
Biennial Cinquefoil	<i>Potentilla biennis</i>
Brook Cinquefoil	<i>Potentilla rivalis</i>
Desert Paintbrush	<i>Castilleja chromosa</i>
Marsh Paintbrush	<i>Castilleja exilis</i>
Black Nightshade	<i>Solanum nigrum</i>
Prostrate Verbena	<i>Verbena bracteata</i>

Aquatic and Wetland Plants

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

Woody Plants

Squaw Bush
Biennial Wormwood
Tarragon
Prairie Sage

Black Sagebrush
Bud Sagebrush
Big Sagebrush
Mohave Brickellbush
Rubber Rabbitbrush
Low Rabbitbrush
Silverscale
Fourwing Saltbush
Shadscale
Mat Saltbush
Castle Valley Saltbush

Fivehook Bassia
Winterfat
Spiny Hopsage
Black Greasewood
Russian-olive
Silver Buffaloberry
Torrey Mormon Tea
Woods Rose
Fremont Cottonwood
Peach-leaf Willow
Narrow-leaf Willow
Whiplash Willow
Tamarisk

Cactus

Ball Cactus
Plains Pricklypear
Uintah Basin Hookless Cactus

Rhus trilobata
Artemisia biennis
Artemisia dracunculus
Artemisia ludoviciana
var. ludoviciana
Artemisia nova
Artemisia spinescens
Artemisia tridentata
Brickellia oblongifolia
Chrysothamnus nauseosus
Chrysothamnus viscidiflorus
Atriplex argentea
Atriplex canescens
Atriplex confertifolia
Atriplex corrugata
Atriplex gardneri cuneata
Atriplex heterosperma
Bassia hyssopifolia
Ceratoides lanata
Grayia spinosa
Sarcobatus vermiculatus
Elaeagnus angustifolia
Shepherdia argentea
Ephedra torreyana
Rosa woodsii
Populus fremontii
Salix amygdaloides
Salix exigua
Salix lasiandra
Tamarix ramosissima

Coryphantha vivipara
Opuntia polyacantha
Sclerocactus glaucus

Appendix I.

Environmental Assessment

Table of Contents

Purpose	97
Need for Action	97
Description of Alternatives	98
Alternative 1 - No Action	98
Alternative 2 - Implement the Ouray NWR CCP	99
Alternative 3 - Release Refuge Habitats to the Direct Influence of the Green River	100
Affected Environment	107
Environmental Consequences	107
A. Impacts to the Biological Environment	107
B. Impacts to the Physical Environment	110
C. Impacts to the Human Environment	111
D. Environmental Justice	112

Purpose

Ouray National Wildlife Refuge, located in Uintah County in northeastern Utah, was established in 1960. It is one of more than 500 refuges in the National Wildlife Refuge System managed by the U.S. Fish and Wildlife Service. The Refuge was originally established as a waterfowl production area and as a resting and feeding area for migratory birds traveling along the Green River corridor.

Human demands on water resources in western states have resulted in loss, alteration, and degradation of riparian habitats, and the species dependent on such river systems have declined. The importance of these riverine, riparian, and seasonal wetland habitats has since been recognized, and the Refuge's role in protecting these areas and the wildlife dependent upon them has become more critical.

Purposes for management activities on the Refuge include providing high quality riparian woodland and bottomland wetland habitats for migratory passerine birds and native fish species of the Upper Colorado River Basin, diversification and enhancement of seasonal wetlands that provide nesting habitat for colonial waterbirds and feeding areas for shorebirds, and providing educational and recreational opportunities for the public.

Need for Action

Management needs on the Refuge include: the need to restore degraded riparian and wetland habitats, to assist in the recovery of endangered fish species of the Colorado River, to control spreading nonnative plants, to reduce deposition and concentration of selenium in Refuge bottoms, to resolve conflicts over Refuge mosquito production, and to enhance recreational and educational opportunities for the visiting public.

The Refuge System Improvement Act of 1996 (as amended) requires Comprehensive Conservation Plans (CCP) to be prepared for each refuge by 2015. The CCP is needed to address "...significant problems that may adversely affect the populations and habitats of fish, wildlife, and plants and the actions necessary to correct or mitigate such problems." The CCP will also describe the future management direction of the Refuge, and the desired condition of wildlife habitat. The CCP is needed to bring the Refuge in line with the new National Wildlife Refuge System mission, goals, and policies.

Description of Alternatives

Three potential management directions (Alternatives) that the Refuge could follow for the next 15 years were identified by the planning team. Each Alternative would address Refuge issues, opportunities, and goals in a different manner. A description of each Alternative and how each would address Refuge goals follows:

- * *Alternative 1. No Action.* The Refuge would basically follow the current management direction.
- * *Alternative 2. Implement the Ouray NWR CCP.* Objectives and action items proposed by this Plan are described in this alternative. Basically, more emphasis would be placed on restoring River bottom woodlands and riparian wetlands to a more productive and natural condition to support migratory birds and endangered fish species of the Green River.

Implementation of the Plan within the next 15 years would require additional agency funding for specific objectives, two additional permanent employees, as well as partnerships with other Federal land management agencies, the Ute Tribe, State and local government, private conservation organizations, and local landowners. Refer to the Refuge Goals, Objectives, and Strategies sections of the CCP for a detailed description of the proposed actions.

- * *Alternative 3. Release Refuge Habitats to the Direct Influence of the Green River.* Refuge levees would be breached to give the River control of floodplain habitats. Refuge facilities within the floodplain would be relocated or abandoned.

Alternative 1. No Action.

Current management activities will continue as planned prior to the first levee modification in 1996. Impoundments would be maintained through pumping and diverting water from the Green River and Pelican Lake Pipeline. Enhancement of riparian plant communities for migratory bird habitat would not be a priority. Levees would be maintained to control flooding from the River. Levees modified under the RIP would be restored approximately to their original condition. Limited control of invasive nonnative plants would continue. Limited control of mosquitos by use of BTI would continue at the current level. The diversity of wetland types would remain the same with few shallow water emergent wetlands being available.

The Refuge would continue to assist in the recovery of Colorado River fishes by providing a site and support for the Ouray National Fish Hatchery. Levee modifications would be regarded as experimental and would occur on a limited basis. Bottomland wetlands not included in the experimental levee project would not be exposed to seasonal River flooding, and no new habitat that supports Colorado River fishes would be developed.

Population monitoring for the Uintah hookless cactus would continue at the current level. The Refuge would provide winter roosting habitat for the bald eagle in remnant riparian woodlands and migration feeding habitat for the peregrine falcon.

To provide high energy food for migrating waterfowl and waterbirds, a Refuge cooperater would plant 150 acres of alfalfa, small grains, and row crops in Sheppard Bottom. Upland grassland and desert habitats would be maintained in the same condition as present. Livestock and wild horses would continue to be excluded. Refuge fences currently restrict the movement of pronghorn and would continue to do so. No active management program for uplands or grassland birds would be developed.

Selenium contaminated water in the Roadside Draw would be diverted into other areas to speed up evaporation and plant growth and to reduce the open water attraction to waterbirds. The Refuge is considering channeling water from the Roadside Draw directly to the River bypassing Sheppard Bottom. However, feasibility, surveying, and technical information is still being analyzed, and no decision has been made. The Refuge would continue to cooperate with other local agencies and interest groups attempting to manage selenium.

Public use, education, and interpretation programs would continue much as they do currently. Year round use of the auto tour route and observation tower would continue, with wildlife observation and photography being the main purpose for visits from the public. Hunting for mule deer, waterfowl, and ring-necked pheasants and fishing for channel catfish in the Green River would also continue. Public use facilities that currently exist would not be expanded except for routine maintenance. This includes an information kiosk, picnic area, parking lots for hunters, anglers, and hikers, the auto tour and tower. The tour route displays would not be revised to reflect changes in the landscape and management practices.

No new walking trails, tour routes, and facilities would be developed. Minor revisions to Refuge leaflets and brochures would be made as necessary. Staff participation in community events and educational programs would be determined by time and funding at the current level. Cultural and paleontological resources would continue to receive protection at the current level. Construction sites are surveyed for artifacts before disturbance. Known sites are protected from human disturbance.

Alternative 2. Implement the Ouray NWR CCP

This alternative implements the CCP. Objectives would be accomplished in 15 years unless otherwise stated. Actual implementation of objectives and strategies may differ from the proposals because of funding and staff limitations.

To better achieve its mission of providing habitat for migratory birds, Ouray NWR is changing existing management goals. Many of the objectives and strategies in the proposed CCP call for research and data gathering, as information on habitat conditions and ecological functioning prior to the operation of Flaming Gorge Dam and other major modifications in the Green River has not been gathered. Information about similar habitats along other river corridors exists, but the relationships and requirements of migratory birds using this section of the Green River has not been well defined. Much of this work can be accomplished fairly quickly making use of data already in existence. Specific habitat management proposals can be more clearly defined and implemented in the step-down Habitat Management Plan.

Alternative 3. Release Refuge Habitats to the Direct Influence of the Green River

Under this alternative, Refuge levees on the Green River would be breached, allowing the River to reclaim all habitats within the historic floodplain (see Map 9, 10, and 11). The Refuge would remove or abandon remaining dikes, structures, or roads in this area. No active management of riparian communities, bottomlands, moist soil, or other shallow wetlands would take place, though wildlife and plant community responses to the new River-dependent habitats would be monitored and recorded. Nonnative plants would be controlled if feasible, or where access is still possible. Monitoring of mosquito production and limited control efforts would continue.

Ouray National Fish Hatchery would need structural modifications and protective levees to withstand changes in River flows. Proposed levee modifications would not take place, and the availability of habitats for endangered fish would be dependent on the River.

Roads and other Refuge facilities would need to be relocated to upland areas and would be placed to avoid impacts to colonies of the Uintah Basin hookless cactus. Population monitoring of special status species would continue on a regular basis. Wetland habitats and availability of prey for the bald eagle and peregrine falcon would be dependent on the River; no active manipulations in this area would take place.

Cooperative farming on the Refuge may not occur, depending on how much of the existing farmed fields are flooded. Production of grain crops for migratory birds would be very limited, unless fields were relocated to higher ground.

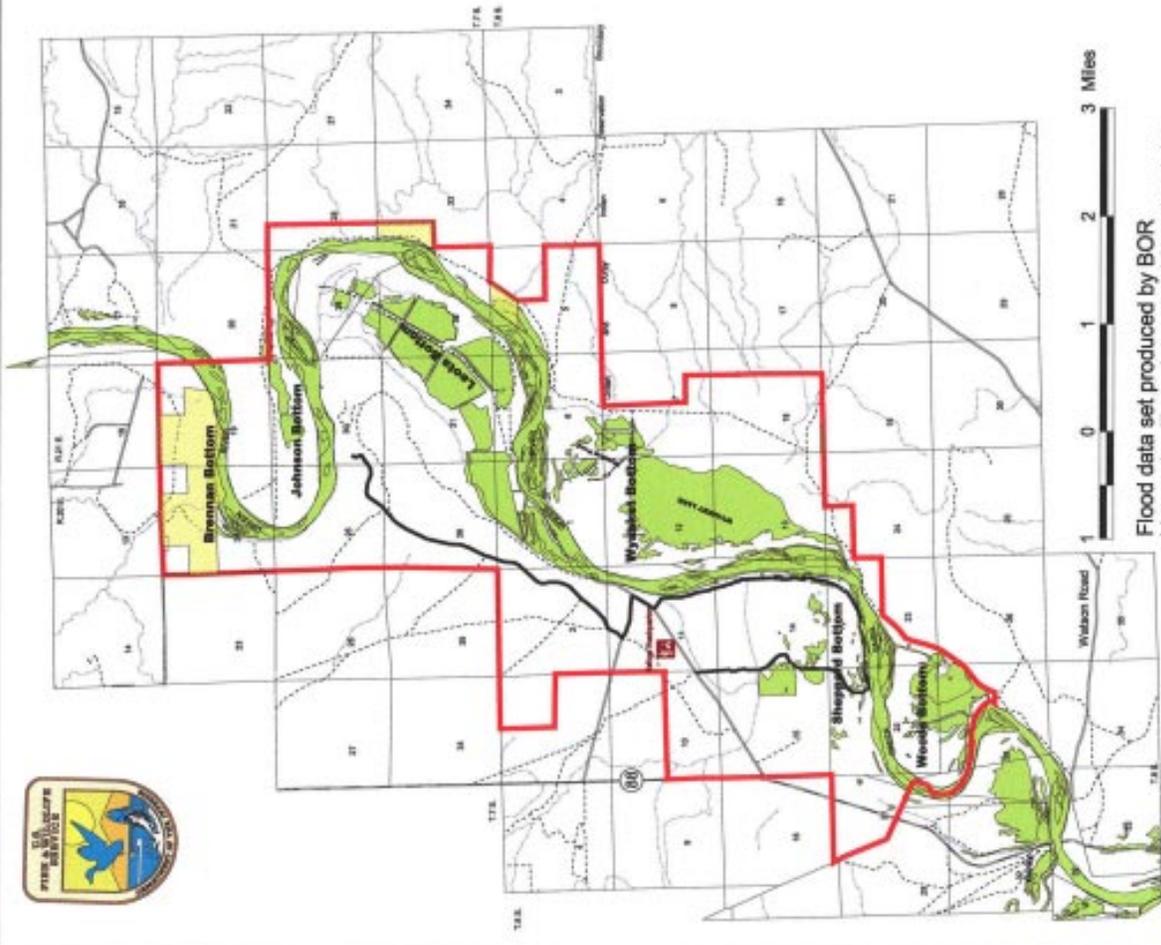
More emphasis on management of remaining uplands would take place. Control of nonnative plants would increase, and more investigation into maintaining the vigor and health of Refuge grasslands and desert uplands would occur. The proposed inventory and monitoring plans for grassland birds and vegetation would be developed. To allow passage for pronghorn, Refuge fences would be modified.

The Refuge's ability to actively reduce selenium concentration in wetlands would be limited by access and water levels reestablished by the River. However, with more water flushing through the floodplain, selenium may be diluted to the point it is not a hazard to birds.

Road and trail access to Refuge wetland and riparian areas would not be developed. Access on existing trails would be available depending on the year or season. Hunting, fishing, and wildlife observation would continue to be permitted in safe areas. Given a suitable location, an upland nature trail with overlooks onto the floodplain would be developed. Interpretation of wetland and River would occur from upland sites. Portions of the existing auto tour route would be closed or rerouted depending on River conditions. All construction areas in the uplands would be surveyed for cultural resources or new paleontological sites. Such resources would be interpreted for Refuge visitors and information incorporated into educational materials.

Refuge brochures and information kiosks would need modifications to describe changes in access and facilities. Interpretive information would be revised to explain the new management approach and how the River would affect Refuge habitats. Refuge visitors would experience the floodplain and wetland habitats of the area from a distance rather than traveling directly through them. Refuge staff would continue to participate in community events, visiting schools, and offering interpretive programs to interested groups.

Ouray National Wildlife Refuge Green River Low Flow Flooded Bottomland Study



LEGEND

- Green River Water Extent at 20,000 cfs - 05/18/96
- Private Lands
- Ouray NWR Boundary

Frequency	Wetland Vegetation Type	Wetland Subject to Flooding
121	FORESTED	235.078
180	SCRUB-SHRUB	241.061
125	EMERGENT	1218.908
107	SAND/BAR	968.166
53	OPEN WATER	1306.673
334	UPLAND	322.246

Map Location



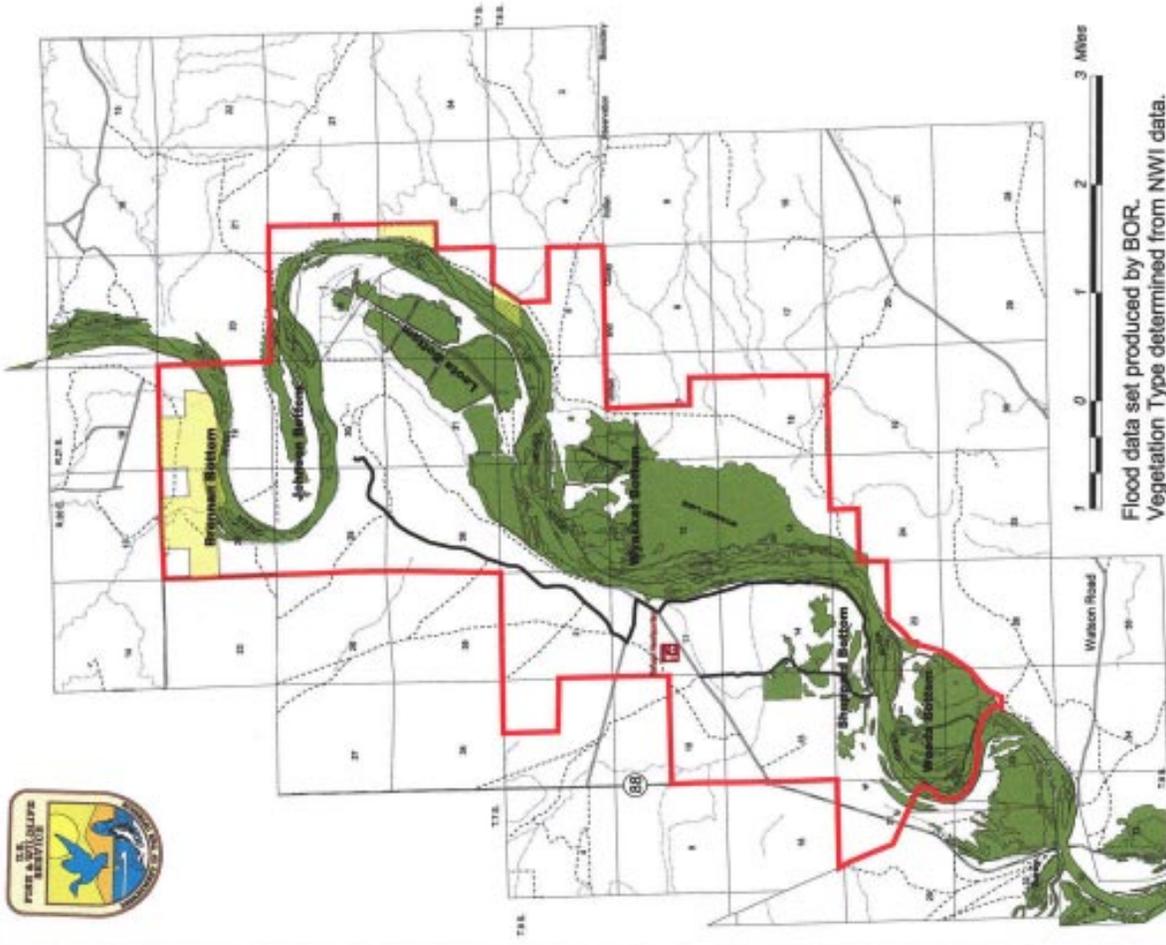
State of Utah

DRAFT

Map # 9

Flood data set produced by BOR
Vegetation Type determined from NWI data.
NWI data was gathered during a 100 year flood event.

Ouray National Wildlife Refuge Green River Medium Flow Flooded Bottomland Study



LEGEND

- Green River Water Extent at 22,056 cfs - 05/20/96
- Private Lands
- Ouray NWR Boundary

Frequency	Wetland Vegetation Type	Vegetation Extent in Flooded Area
105	FORESTED	421,691
162	SCRUB-SHRUB	497,371
124	EMERGENT	1,593,377
130	SAND/BAR	1,198,456
48	OPEN WATER	1,375,973
376	UPLAND	1,124,231

Map Location



State of Utah



Map # 10

DRAFT

Ouray National Wildlife Refuge Green River High Flow Flooded Bottomland Study

LEGEND

-  Green River Water Extent at 24,870 cfs - 06/05/97
-  Private Lands
-  Ouray NWR Boundary

Frequency	Wetland Vegetation Type	Vegetation Index to Flooding
135	FORESTED	448.559
137	SCRUB-SHRUB	643.455
109	EMERGENT	1881.967
129	SAND/BAR	1306.270
51	OPEN WATER	1451.554
278	UPLAND	2605.035

Map Location

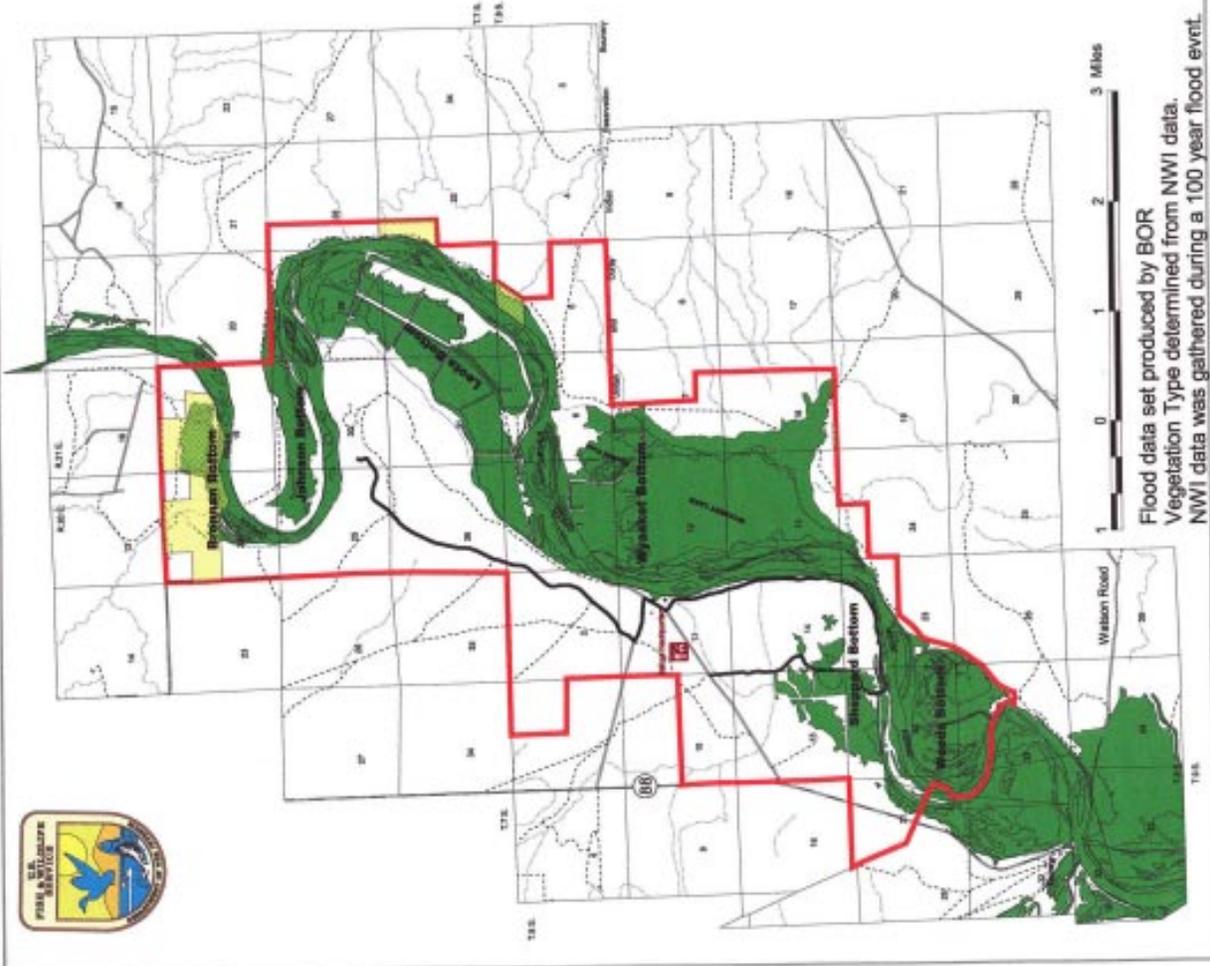


State of Utah



Map # 11

DRAFT



Flood data set produced by BOR
Vegetation Type determined from NWI data.
NWI data was gathered during a 100 year flood event.



Affected Environment

The affected environment is described in the Resources and Refuge Description sections of the CCP.

Environmental Consequences

This chapter evaluates the three alternatives on the basis of consequences or impacts to the environment. Alternative 1, "No Action," is the *status quo* alternative where current conditions and trends of management, public use, and land-use and ownership are projected into the foreseeable future. Alternative 2 implements the CCP. Analysis of Alternative 2 focuses on anticipated environmental change in comparison to conditions remaining under Alternative 1. Alternative 3 proposes a conversion to as completely a natural system as possible under current River conditions.

A. Impacts to the Biological Environment

Alternative 1 would result in no substantial changes in wildlife populations, habitat quality, or biodiversity as it currently exists. Management strategies would continue as they are currently designed. Information on historical riparian plant communities and how to recreate them would be integrated into management plans in a limited manner. Refuge wetland habitats would continue to support those species that prefer semipermanent, deep water wetlands with robust emergent vegetation (primarily cattail and bulrush). Habitat quality and biological diversity of the area would probably decline slowly as a result of continuing degradation of the riparian corridor and invasion of nonnative plants.

Repair and maintenance of fences to exclude livestock would only occur on a limited basis resulting in some habitat damage by trampling. Changes in plant community composition in bottoms would not be documented, so the results of habitat management actions in these areas would not be detected and evaluated. Without expedited control, nonnative plants would continue to expand, reducing the amount of useable habitat for native wildlife. For specific effects of the levee modification project refer to the USFWS EA titled "Levee Removal Project of the Floodplain Habitat Restoration Program," (Appendix K). In areas without levee modifications, riparian and bottomland habitats would continue to degrade, nutrient cycling would decrease, and the amount of invertebrate plant foods for waterfowl would decline. Outbreaks of avian botulism would be harder to control with less personnel time available to clean up dead and dying waterbirds. Lack of seasonal River flows would inhibit new seedbed areas for cottonwood and willow regeneration. Cottonwood and willow stands would not reestablish or expand beyond their current extent.

Under traditional habitat management, the Refuge would not provide bottomland wetland habitat that supports endangered Colorado River fishes (other than that produced by the levee modification program currently being implemented). As riparian cottonwood stands degrade and mature trees fall, the available wintering bald eagle roost habitat would decline. With limited shallow wetland and wet meadow to attract shorebirds, avian predators such as the peregrine falcon would make less use of the Refuge. The Uintah Basin hookless cactus would not be directly affected by Alternative 1.

The Refuge would not provide diversified shallow water wetlands and moist soil habitats for migrating sandhill cranes, waterbirds and shorebirds. These habitats are very limited on the Refuge currently and would remain so. The Refuge would not attract or support many species that used seasonal Green River floodplain wetlands historically. Vegetative and invertebrate foods for migrating and breeding birds produced by shallow wetland plant communities would continue to be very limited. The production of mosquitos on Refuge wetlands would remain generally the same depending on the amount of habitat flooded during spring runoff.

Selenium may continue to accumulate in Sheppard bottom unless the decision is made to breach the protective levee to flush these soil accumulations into the Green River. Waterbirds would continue to be adversely affected, resulting in death and embryo deformations.

The condition of upland habitats would remain largely unchanged. However, with the continued invasion of nonnative plants, native plant communities near wetlands would slowly degrade and provide less quality habitat for terrestrial birds and resident wildlife. Monitoring programs for upland and grassland birds would not be developed, and declines in these species would not be detected or prevented by habitat improvements. The movement of pronghorn would continue to be restricted by impassible fences.

Alternative 2 would result in more effective management of the Refuge's wetland and riparian habitats. Increased monitoring of species and habitat conditions would allow managers to detect problems, identify the specific needs of species of concern and provide them. Specific habitat needs of more migratory bird species would be identified and provided for. Site specific strategies to control nonnative plant species would restore native vegetation over time and increase the amount of quality habitat for migratory and resident wildlife. Nonnative plants, such as white top, may initially increase into newly flooded areas. However, flooding may be scheduled to favor native species and discourage nonnatives over time. Alterations in internal levees in bottoms would allow quicker manipulation of water levels and improve wetland soil nutrient cycling.

With more areas flooded seasonally to create shallow wetlands that support waterbirds and shorebirds, mosquito production may increase; however, much of the same area would dry up in summer, stopping larvae production sooner than in wetlands that currently hold water throughout the season. More dynamic changes in water levels in Refuge wetlands would also decrease the amount of stagnant water held behind levees that currently produces mosquitos.

Migratory bald eagles would benefit from improved wetland and riparian habitat conditions. Mature cottonwood trees used as perches would be protected from disturbance as in *Alternative 1*; however, newly regenerating cottonwood stands would guarantee perch trees for the future. With improved wetland conditions, an increase would occur in fish and bird prey for hunting eagles. Peregrine falcons would also benefit from increases in waterbird and shorebird prey availability.

As in *Alternative 1*, endangered fish species of the Green River would benefit from ongoing levee modifications. Under *Alternative 2*, levee modifications would continue to be carried out and evaluated. If these modifications contribute to increased native fish populations, more would be implemented in each bottom. As bottomland and riparian habitats improve in condition under *Alternative 2*, an increase would occur in protected rearing and spawning habitat for native fishes.

With the proposed removal of protective levee in Sheppard bottom, selenium concentration of these wetland soils would drop and fewer bird mortalities would be detected. If the decision is made not to modify this levee, the Refuge would divert and spread selenium laden water from Roadside Draw to speed evaporation, and plant trees and other vegetation to discourage use of open water by waterbirds. The concentration of selenium may still rise in soils in this area, but fewer birds would be ingesting it.

Under Alternative 2, no initial changes would occur to the condition of upland habitats. As baseline information on grassland wildlife and plant species is generated, habitat management plans for these areas would be developed. The condition of grassland and upland habitats would be maintained over time. When fences that currently block pronghorn movement through uplands are modified, pronghorn would again become part of the wildlife community and effects of their browsing would help maintain these areas in their natural state. Domestic and feral livestock would be controlled to avoid damage to these fragile arid habitats. As habitat and plant community data is collected, the Refuge would determine if an occasional disturbance by livestock or fire would improve grassland vigor.

Alternative 3 would not initially change the condition of floodplain or riparian habitats on the Refuge until all protective levees along the Green River are breached. As wetland units currently holding water permanently drain and equalize with adjacent units, major changes would occur in water quality, salt, alkali deposits would be diluted and spread, nonaquatic vegetative cover may be drowned out, silts and organic wetland soils would move, and disturbances would occur to resident wildlife. In the first spring high River flow event after levee removal, scouring and erosion of Refuge riparian and wetland areas may occur as the Green River reestablishes channels through the floodplain. It may take several years for Refuge floodplain habitats to be restored to their productive conditions. An initial increase may occur in nonnative plant species around the perimeter of the new floodplain. As soils and silts redistribute themselves, riparian woodlands may shift in location, new willow and cottonwood seedlings would appear, and wetland plant communities would reestablish in new areas. The magnitude of these changes would depend on the discharge of the Green and Yampa Rivers in any given year.

Deposits of selenium would shift, but would probably be diluted throughout the floodplain and be flushed back into the Green River. Migratory birds would still find habitat for feeding and resting, and more mudflat and gravel bar habitat would exist for shorebirds. Instead of larger, stabilized deep water wetlands, more small shallow wetland pools that dry out in summer may form. The amount of robust emergent vegetation (bulrush and cattail) may decrease, providing less habitat for nesting bitterns and rails. The production of diving and dabbling ducks may decrease on the Refuge. As riparian and bottomland habitats reestablish themselves, more nesting and feeding habitat would be available for migratory passerine birds and colonial waterbirds such as herons. An increase in bottomland wetland habitat would support native fish species; an increase in their populations may occur. However, nonnative fish established in the Green River would also have access to these protected areas and would increase as well. Competition and predation of juvenile native fish would result.

Refuge activity in the floodplain would consist mainly of wildlife population monitoring including mosquito production, plant community sampling, and evaluation of safe access for recreational activity. Mosquito production would vary with the acreage of floodplain filled each year during spring runoff. The Refuge's ability to control or monitor mosquito production may decrease because of access to floodplain sites.

The condition of upland habitats would not change significantly except for relocating Refuge buildings and/or portions of the current auto tour route. The Refuge would minimize the amount of relocation and would avoid disturbing colonies of Uintah Basin hookless cactus. With Refuge floodplain habitats being "managed" by the Green River, Refuge staff would concentrate on determining the condition and species use of the upland and grassland portions of the Refuge. Management and monitoring plans for upland plant communities and wildlife would be developed. Nonnative plants would be aggressively controlled. Pronghorn would regain access to areas previously barred by fencing.

B. Impacts to the Physical Environment

Alternative 1 would have no measurable affect on the soils and air quality of the region. Water quality in Refuge wetlands and riparian areas may degrade slowly as the decline of riparian plant communities expose aquatic organisms to high summer temperatures and possible bank erosion. Overabundant emergent vegetation in Refuge wetlands and limited circulation of nutrients in impoundments may degrade water quality. Selenium would continue to accumulate in the Roadside Draw unless the Sheppard bottom protective dike is partially breached to increase flushing.

Refuge cultural and paleontological resources would continue to receive protection under this Alternative. Cultural resources are managed according to several Federal Acts. No ground disturbing activities are carried out without consulting the Utah State Historic Preservation Office.

Alternative 2 would result in improved water quality in riparian habitats through restoration of sheltering willow and cottonwood communities that protect from high summer temperatures. Modifying internal levees, installing new spillways and water control structures, and periodically draining bottoms would recycle wetland soil nutrients and improve water exchange in these wetlands, improving water quality and wetland soil productivity. More efficient control of emergent vegetation would improve water quality for wetland dependent birds. Prescribed fire is used periodically to control nonnative plants and to open up vegetation-choked wetlands. Impacts to local air quality are minimal and state burning permits are not currently required. Repair and maintenance of fencing to exclude livestock would protect Refuge soils from compaction and trampling damage.

If the Sheppard bottom levee is breached, soil conditions would improve because the concentration of selenium would be lowered or dispersed.

Refuge cultural and paleontological resources would continue to receive protection under this alternative. Modification of bottomland levees, construction of spillways, or other ground disturbances would be reviewed by the Service's Regional Archaeologist; however, most of these floodplain sites have been disturbed in the past and known cultural or paleontological sites are either no longer discernable or have been obliterated by earlier construction.

Alternative 3 would improve soil condition and water quality of the floodplain areas of the Refuge over time. Initially, increased erosion would occur of remaining dikes and roadbeds which may alter the water quality of the Green River, increased siltation, and redistribution of soil and gravel along the River downstream from the Refuge. Ouray Fish Hatchery facilities would need protection from increased flooding and erosion during high spring River flows. Refuge facilities and roads would either be relocated or would erode away as a result of protective levee removal. With levee removal, the Green River would again flow through the Refuge bottoms and wetlands, allowing nutrient and water exchange and redeposit of silt into wetland soils. Selenium entering the Refuge from Roadside Draw discharges would travel into the Green River system instead of settling out in Sheppard bottom soils. With more of the River passing through Refuge wetlands, the main channel current may decrease resulting in an increase in silt deposits and raising of the local River water temperature. Air quality in the area would be unaffected or minimally affected by a decrease in prescribed burning in wetland habitats. If, because of a decrease in management and maintenance of wetlands, the Refuge uses less than its appropriated water over a period of five years, some state water rights may be forfeited.

In the floodplain areas of the Refuge, no intact cultural or paleontological sites are remaining. Previously unknown sites may be damaged by River action; however, they may also remain undiscovered and protected from human disturbance. Any construction of new facilities or roads in Refuge uplands would be reviewed by the Service's Regional Archaeologist to avoid damage to unknown cultural sites.

C. Impacts to the Human Environment

Alternative 1 would allow minor continued improvements to the public use program. No significant changes would occur in public use of the Refuge but the visitor experience would have only minimal potential to improve. No significant changes would occur to the socio-economic condition of surrounding communities. Mosquito production on the Refuge would remain at its current level. The Refuge would continue to assist the Uintah County Mosquito Abatement District with sampling and localized control of larvae with BTI. The Refuge would not need to submit significantly higher budget or personnel requests to cover ongoing activities.

Alternative 2 would result in improvements to basic visitor facilities, including interpretive signs, construction of information kiosks, and revision and development of leaflets which would clearly describe recreational opportunities, and Refuge specific regulations. Mosquito populations will be monitored to determine if changes in habitat management effect production.

This alternative would also provide for construction of nature trails in Sheppard and Leota bottoms, renovation of the auto tour route, and recruit a volunteer to guide tours for school and community groups in spring and fall. The visiting public would receive more quality experiences, and with expanded outreach into the local community, appreciation and understanding of the Refuge's role would increase. The Service's mission and the National Wildlife Refuge System purposes would be better understood and supported.

Alternative 3 would have dramatic negative impacts to current recreational facilities. Restoring natural River flow regimes throughout the floodplain areas of the Refuge would regularly inundate portions of the existing auto tour route, observation sites, damage interpretive signs, outhouses, hunting areas, and observation points overlooking the farm fields. Until these facilities are relocated to higher ground, public recreational opportunities would be restricted. Until new interpretive sites and materials are developed to explain this management direction, visitors may not understand why this action was taken and may feel the Refuge has been abandoned. Prior to implementing this alternative, the Refuge would need to circulate information to local and regional media, local interest and sportsman's groups, contact adjacent landowners, and negotiate with the Ute Tribe over potential impacts to lands currently leased by the Service. Potential impacts to downstream property owners resulting from changes in the Green River channel would need to be determined.

Interpretive materials for visitors would need to be revised to explain the benefits and drawbacks to this management course prior to implementation. Safe access for hunting and fishing and potential hazardous conditions would need to be evaluated prior to allowing these activities after levees are breached. Mosquito production may increase with restored flooding of bottoms and riparian wetlands. However, these areas may also dry up sooner in the summer halting production sooner in the season. Mosquito production monitoring would continue, but access to some low lying areas may require boats, more personnel, and time. The amount of monitoring would probably decline. Treatment of localized areas with BTI may not be possible.

Once interpretive materials and sites are developed in upland areas, Refuge visitors would observe this portion of the Green River as it was prior to alteration by humans. The dynamic nature of seasonal River flows, functioning bottomland and riparian woodlands, and the wildlife that depends upon these habitats would be more clearly demonstrated and appreciated by the visiting public.

D. Environmental Justice

In accordance with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, Federal agencies must identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. This evaluation considered potential impacts arising under each of the three alternatives, including social, economic, cultural, physical, and biological resources.

As of 1998, census statistics record the Uintah County population as 25,660. The population is composed of 85 percent white, 10 percent Native American, 4 percent Hispanic, and less than 1 percent other minorities. Uintah County's primary industries are livestock production, agriculture, lumber, and mining (including oil and gas). The majority of the County is classified as rural. The economics of the area, including jobs and income, may change but not significantly, and no significant change in taxes or revenue from the Refuge is expected.

Current uses are not known to cause disproportionately high and adverse human health impacts in any population of Uintah County and no such impacts would be expected to occur as a result of the No Action or any action alternative. Current uses are also not known to result in disproportionately high or adverse socio-economic impact to low-income or minority populations, and no such impacts would be expected to occur as a result of any alternative.

Appendix J. 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 (Tyus 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.

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 K. 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-Ourray 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 channeled 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. It 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.

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
Baerer 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 adversely modified.	The project, as proposed, is not likely to jeopardize the continued existence of the razorback sucker and Colorado Squawfish and is not likely to destroy or adversely modify designated critical 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 vegetation 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 L. 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.

OURAY NWR AND NFH
 UTAH 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	USE	PRIORITY DATE	COMPASS	POINT OF DIVERSION	RATE CFS	AF SEASONAL	RATE GPM
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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
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REMARKS: NFH-20 YR FIXED TIME APPL. For use w/43-10026 & 43-9948. Colorado River Fishery Proj.

A-64552			43-10209		WELL #7	FC	04/06/90	NW NW SW	11 08S 20E	0.00	0.00	45
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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
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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
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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
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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
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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
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REMARKS: * COMMINGLED RIGHTS *** ALONG GREEN RIVER WITHIN REFUGE BOUNDARY

* 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.

OURAY NWR AND NFH
 UTAH COUNTY, UTAH
 WATER RIGHTS

12/06/99

** 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 TWM RGE	RATE CFS	AF SEASONAL	RATE GPH
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	896.28	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												

12/06/99
 OURAY NWR AND NFH
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 WATER RIGHTS

* Refuge "commingle" applications total diversion rate
 of 139.06 cfs up to 25,134 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, 513														
		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														

