

Appendix A

Summary Tables of Economic Costs

- Table 1.** Opportunity costs of water acquisition to meet target flows
Table 2. Foregone production and regional economic effects
Table 3. Costs of Federal Agency consultations and project modifications

cited from:

“Final Economic Analysis of Critical Habitat Designation
for the Rio Grande Silvery Minnow

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Industrial Economics, Inc.

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Table 1**SUMMARY TABLE OF REGIONAL ECONOMIC EFFECTS OF PROVIDING A TARGET FLOW OF 50 CFS IN SILVERY MINNOW CRITICAL HABITAT**

River Segment	Value of Forgone Crop Production (2001\$)	Effect on Regional Output ^a (2001\$)	Effect on Regional Employment (persons)	Effect on Regional Tax Revenue (2001\$)
	<i>Direct Effect</i>	<i>Direct, Indirect, and Induced Effects</i>	<i>Direct, Indirect, and Induced Effects</i>	<i>Direct, Indirect, and Induced Effects</i>
<i>95th Percentile Scenario</i>				
Middle Rio Grande	\$5,979,390	\$8,392,464	362	\$1,430,771
Pecos	\$4,212,436	\$6,243,432	158	\$615,779
Total	\$10,191,826	\$14,635,896	520	\$2,046,550
<i>50th Percentile Scenario</i>				
Middle Rio Grande	\$833,450	\$1,169,801	51	\$199,431
Pecos	\$2,829,356	\$4,193,509	106	\$413,599
Total	\$3,662,806	\$5,363,310	157	\$613,030
^a Note that the effects on regional output, employment, and tax revenue include both the direct effect used as an input to the model (see Section 5.2.1) and the modeled indirect or secondary effects on the economy of the study area.				

Table 2**ESTIMATED VALUE OF FORGONE PRODUCTION:
INPUTS TO THE IMPLAN MODEL (*Direct Effects*)**

Variable	Rio Grande Study Area ^a		Pecos Study Area ^a
	Alfalfa ^a	Hay ^a	Alfalfa ^a
Water Removed from Market	40,427 acre-feet/year (5,635)	40,427 acre-feet/year (5,635)	24,463 acre-feet/year (16,431)
Water Consumption ^b	4.45 acre-feet/acre of crop	2.88 acre-feet/acre of crop	4.19 acre-feet/acre of crop
Acres Removed from Production	9,094 acres	14,037 acres	5,839 acres
Yield per Acre per Year ^b	5.67 tons/acre	3.97 tons/acre	6.22 tons/acre
Tons of Forgone Production	51,546 tons	55,775 tons	36,314 tons
Unit Price ^c	\$116/ton	\$94 /ton	\$116/ton
Value of Forgone Production	\$5,979,390 (\$833,450)	\$5,242,880 (\$730,790)	\$4,212,436 (\$2,829,356)

^a Values in the table are calculated based on the 95th percentile scenario with volumes of water and values of foregone production under the 50th percentile scenario included in parentheses. Note that the values presented in this table may have been rounded and so calculations may appear imprecise.

^b New Mexico Cooperative Extension Service Crop Models. Available at:
<http://agecon.mnsu.edu/jlibbin/2001%20projected/hane.edu>.

^c State of New Mexico. New Mexico Agricultural Statistics 1999. New Mexico Agricultural Statistics Service, Department of Agriculture, 1999.

Table 3

SUMMARY OF SECTION 7 COSTS OF CRITICAL HABITAT DESIGNATION FOR THE SILVERY MINNOW: CONSULTATIONS AND PROJECT MODIFICATIONS¹

River Segment	Coextensive Costs (20 years)	Consultations Due to Critical Habitat Alone (20 years)	Total Section 7 Costs (20 years)	Total Section 7 Costs (annual)
Middle Rio Grande	\$14.9 to \$25.5 million	\$5.6 to \$10.8 million	\$20.4 to \$36.3 million	\$1.0 to \$1.8 million
Pecos River	\$0	\$12.4 to \$21.5 million	\$12.4 to \$21.5 million	\$620,000 to \$1.0 million
Lower Rio Grande	\$0	\$3.9 to \$8.4 million	\$3.9 to \$8.4 million	\$195,000 to \$420,000
Total	\$14.9 to \$25.5 million	\$21.9 to \$40.7 million	\$36.7 to \$66.2 million	\$1.8 to \$3.3 million

¹ This exhibit does not include the opportunity costs to provide target flows in critical habitat areas.

Appendix B - Glossary

Many of the definitions provided in this glossary are taken from the Endangered Species Act or regulations or taken or adapted from glossaries developed by the Office of the State Engineer in New Mexico, the U.S. Bureau of Reclamation, or the New Mexico Water Supply Study (cited in this DEIS as Papadopoulos 2000).

A

Acre-foot: The amount of water it takes to cover one acre of land with one foot of water (325,850 gallons or 43,560 cubic feet). This is a measurement of volume, in contrast to cubic feet per second, which is a rate.

Adaptive management plan: A systematic process for continually improving management policies and practices by learning from the outcomes of operational programs. A way for resources managers to proceed responsibly in the face of such uncertainty.

Aggradation: When streambeds are raised in elevation because of the deposit of sediment.

B

Backwater: A small, generally shallow body of water attached to the main canal, with little or no current of its own.

Bankfull width: The width of the stream or river at bankfull discharge, i.e., the flow at which water begins to leave the channel and move into the floodplain.

Biological opinion: Document stating the opinion of the Service as to whether or not the Federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat (50 FR 402.02).

Bosque: Spanish word for forest, used to refer to the riparian forest along the Rio Grande.

Bypass flow: Water that is allowed to flow past a diversion structure or storage facility.

C

Candidate species: A species being considered by the Service for listing as an endangered or threatened species, but not yet the subject of a proposed rule (50 CFR 424.02).

Cobble: Rock fragments, generally rounded or semi-rounded and 3 - 12 inches in diameter.

Conversion Tables:

cubic meter = 1.307 cubic yards

cubic meter = 35.314 cubic feet
hectare = 2.47 acres
mile = 1.609 km (kilometers)

Conveyance loss: Water that is lost in transit from a canal, conduit, or ditch by leakage or evaporation. Generally, the water is not available for further use; however, leakage from an irrigation ditch, for example, can percolate to a groundwater source and be available as groundwater.

Critical habitat: Areas designated by the Secretary as critical habitat under section 4 of the ESA (16 USC sec. 1533). The term is a legal term which connotes a formal designation that takes place through a rulemaking process. It is not to be confused with habitat generally.

Cubic feet per second (cfs): A rate of stream flow; the number of cubic feet of water passing a reference point in one second.

D

Depletion: Losses from the water supply for agricultural, domestic, or riparian use or evaporation from open water surfaces.

E

Eddies: A pool with water moving opposite to that in the river channel.

Endangered species: A species in danger of extinction throughout all or a significant portion of its range (16 USC 1532(6)). As a general rule, the term is used only for species that have been formally listed as endangered under the ESA. (Note: States may also have endangered species laws, and their terms and definitions may or may not be the same as those used in the federal ESA.).

Endangered Species Act (ESA): The federal law that sets forth how the United States will protect and recover animal and plant species whose populations are in dangerous decline or close to extinction (16 USC sec. 1531-1544).

Ephemeral stream: A stream that contains running water only for brief periods of time in response to precipitation.

Evaporation: Water vapor losses from water surfaces, sprinkler irrigation, and similar factors.

Evapotranspiration: The process by which water is returned to the air through direct evaporation or by transpiration of vegetation.

Exotic species: Non-native species introduced into an area.

Extirpated species: A species that was, but is no longer, found in a given area.

F

Fallow: Cropland, either tilled or untilled, allowed to lie idle, during the whole or the greater part of the growing season.

Fecal coliform bacteria: Bacteria that are present in the gut or the feces of warm blooded animals; they are indicators of possible sewage pollution.

Federal agency action: For purposes of the DEIS, actions authorized, funded or carried out by a federal agency and hence subject to Section 7 consultation requirements.

G

Gallery forest: Mature stands of trees in a riparian habitat with a closed canopy that runs along the riverside.

Geomorphology: Geological study of the configuration, characteristics, origin, and evolution of land forms and earth features.

H

Harass: As used in the definition of **take** (see below), means an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR 17.3).

Harm: As used in the definition of **take** (see below), means an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering (50 CFR 17.3).

Human environment: Defined in the regulations implementing the National Environmental Policy Act as the physical and natural environment and the relationship of people with that environment (40 CFR 1508.14).

Hydrograph: A graph showing the stage, flow, velocity, or other property of water with respect to the passage of time. Hydrographs of wells show the changes in water levels during the period of observation.

I, J

Incidental taking: Any taking otherwise prohibited, if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity (50 CFR 17.3).

Intermittent stream: A stream that flows only part of the time. Similar to an ephemeral stream.

K, L

Lentic: Relatively still waters.

Lotic: Flowing water.

Lower Rio Grande: For purposes of this EIS, the reach of the Rio Grande in Texas from the upstream boundary of Big Bend National Park downstream to the Terrell/Val Verde County line, which is the downstream boundary of the Rio Grande Wild and Scenic River.

Lower Rio Grande Basin: The Rio Grande from Fort Quitman, Texas, to the Gulf of Mexico.

M

“May affect, not likely to adversely effect”: Means that all effects are beneficial, insignificant or discountable.

Middle Pecos: For purposes of this DEIS, the Pecos River from Sumner Dam downstream to Brantley Reservoir Dam in New Mexico.

Middle Rio Grande: The Rio Grande between Cochiti Dam and Elephant Butte Dam, in New Mexico, as used in this DEIS. This length of the Rio Grande is, more or less, the *middle* of the Upper Rio Grande, defined below.

Middle Rio Grande Valley: The valley along the Rio Grande from Cochiti Dam to the headwaters of Elephant Butte Reservoir. The valley is situated “in the middle” of the Upper Rio Grande Basin, hence the name “Middle Rio Grande”.

N

National Environmental Policy Act (NEPA): The federal law that requires Federal agencies to include in every recommendation or report on proposals for major Federal actions significantly affecting the quality of the human environment a detailed statement on the environmental impacts of the proposed action, any adverse environmental effects which cannot be avoided should the report be implemented, and alternatives to the proposed action (42 USC sec. 4321-4370e).

National Pollution Discharge Elimination System (NPDES) Permit: A permit required under Section 401 of the Clean Water Act regulating discharge of pollutants into the nation’s waterways.

Neotropical migrant landbirds: Nest in the United States or Canada and spend the winter primarily south in Mexico, Central or South America, or in the Caribbean.

No effect: Means there are absolutely no effects of the project, positive or negative.

O

Oxbow: A natural U-shaped channel in a river as viewed from above.

P

Perennial stream: A stream that normally has water in its channel at all times.

Pueblo Management Areas: Pueblo lands that are covered by special management plans for the conservation of the silvery minnow and its habitats. The Pueblos of Santo Domingo, Santa Ana, Sandia, and Isleta are considered to be Pueblo Management Areas.

Phreatophyte: A plant that habitually obtains its water supply from the zone of saturation, either directly or through the capillary fringe (OSE Glossary, 1999). Commonly used to refer to plants, such as saltcedar or Russian olive, which consume much water.

R

Ramping: Controlling streamflow so that changes in the amount of flow are gradual.

Reasonable and prudent alternative (RPA): Alternative actions identified during formal consultation that can be implemented in a manner consistent with the intended purpose of the action, that can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction, that is economically and technologically feasible, and that the Service believes would avoid the likelihood of jeopardizing the continued existence of listed species or resulting in the destruction or adverse modification of critical habitat (50 CFR 402.02).

Reasonable and prudent measures: Actions the Service believes are necessary or appropriate to minimize the impacts, i.e., amount or extent, of incidental take (50 CFR 402.02).

Recovery: Improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4(a)(1) of the Act (50 CFR 402.02).

Return flow: The part of a diverted flow which is not consumptively used and which returns to a water body.

Riparian: Situated or living on or adjacent to a water supply such as a riverbank, lake, or pond.

Riparian area: The land and vegetation along continuously or intermittently flowing rivers, streams and lake shores.

S

San Juan-Chama Project water: Surface water from the Colorado River system delivered through the San Juan-Chama Project, first authorized by Congress in 1962 (Public Law 87-483).

Santa Fe Group aquifer system: A deep complex of unconsolidated alluvial sediments along the Rio Grande. These sediments form an aquifer that is hydraulically connected with the Rio Grande.

Species of concern: Species for which further biological research and field study are needed to resolve their conservation status. Species of concern have no legal protection under the ESA but are often discussed for planning purposes.

Storage: Water held in a reservoir for later use.

T

Take: As used in the ESA, to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct (16 USC sec. 1532(20)).

Threatened species: Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range (16 USC sec. 1532(20)). As a general rule, the term is used only when a species has been formally listed as threatened under the ESA. (Note: States also have endangered species laws and may or may not use the same terms and definitions as the federal ESA.)

Transpiration: Process by which water absorbed by plants, usually through the roots. The residual water vapor is emitted into the atmosphere from the plant surface.

Turbidity: The opaqueness or reduced clarity of a fluid due to the presence of suspended matter.

U, V

Understory: Vegetation under the trees.

Upper Rio Grande Basin: Extends from the headwaters of the Rio Grande in Colorado south to Fort Quitman, Texas.

W, X, Y, Z

Water budget: A summary that shows the balance in a hydrologic system between water supplies to the system (inflow) and water losses from the system (outflow).

Watershed: An area of land which drains to a common point. It can range in size from a few acres to thousands of square miles.

Wetlands: Lands that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support and that, under normal conditions, do support a prevalence of vegetation typically adapted for life in saturated soil conditions.

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Appendix D - Scientific Names

Common Name

Scientific Name

Vegetation

Alkali sacaton	<i>Sporobolus airoides</i>
Bermuda grass	<i>Cynodon dactylon</i>
Black locust	<i>Robinia pseudoacacia</i>
Bulrush	<i>Scirpus actus</i>
Bunched Cory cactus	<i>Coryphantha ramillosa</i>
Cattail	<i>Typha angustifolia</i>
Chisos Mountain hedgehog cactus	<i>Echinocereus chioensis</i>
Common reed	<i>Phragmites communis</i>
Coyote willow	<i>Salix exigua</i>
Creosote bush	<i>Larrea tridentata</i>
Four-wing saltbush	<i>Atriplex canescens</i>
Fremont cottonwood	<i>Populus fremontii</i> spp.
Giant reed	<i>Arundo donax</i>
Goodding willow	<i>Salix gooddingii</i>
Huisache	<i>Acacia farnesiana</i>
Lance-leaf cottonwood	<i>Populus acuminata</i>
Little walnut	<i>Juglans microcarpa</i>
Mesquite	<i>Prosopis</i> spp.
Mulberry	<i>Morus nigra</i>
New Mexico olive	<i>Forestiera neomexicana</i>
Peachleaf willow	<i>Salix amygdaloides</i>
Pecos sunflower	<i>Helianthus paradoxus</i>
Rabbitbrush	<i>Chrysothamus nauseosus</i>
Rio Grande cottonwood	<i>Populus fremontii</i> var. <i>wislizenii</i>
Russian olive	<i>Eleagnus angustifolia</i>
Saltbush	<i>Atriplex</i> spp.
Saltgrass	<i>Distichlis spicata</i>
Saltcedar (tamarisk)	<i>Tamarix ramosissima</i>
Sandbar willow	<i>Salix interior</i>
Sedge	<i>Eleocharis</i> spp.
Seep willow	<i>Baccharis glutinosa</i>
Siberian elm	<i>Ulmus pumila</i>
Skunkbush	<i>Rhus trilobata</i>
Tamarisk (saltcedar)	<i>Tamarix ramosissima</i>
Tree-of-heaven	<i>Ailanthus altissima</i>
Western soapberry	<i>Sapindus saponaria</i>
Willow	<i>Salix</i>

Fish

Big Bend gambusia	<i>Gambusia gaigei</i>
Black bullhead	<i>Ameiurus melas</i>
Blue sucker	<i>Cycleptus elongatus</i>
Brown trout	<i>Salmo trutta</i>
Channel catfish	<i>Ictalurus punctatus</i>
Chihuahua shiner	<i>Notropis chihuahua</i>
Common carp	<i>Cyprinus carpio</i>
Fathead minnow	<i>Pimephales promelas</i>
Flathead catfish	<i>Pylodictis olivaris</i>
Flathead chub	<i>Platygobio gracilis</i>
Gizzard shad	<i>Dorosoma cepedianum</i>
Gray redhorse	<i>Moxostoma congestum</i>
Green sunfish	<i>Lepomis cyanellus</i>
Greenthroat darter	<i>Etheostoma lepidum</i>
Largemouth bass	<i>Micropterus salmoides</i>
Longear sunfish	<i>Lepomis megalotis</i>
Longnose dace	<i>Rhinichthys cataractae</i>
Longnose gar	<i>Lepisosteus osseus</i>
Mexican tetra	<i>Astyanax mexicanus</i>
Mexican stoneroller	<i>Campostoma ornatum</i>
Pecos bluntnose shiner	<i>Notropis simus pecosensis</i>
Pecos gambusia	<i>Gambusia nobilis</i>
Pecos pupfish	<i>Cyprinodon pecosensis</i>
Phantom shiner	<i>Notropis orca</i>
Plains killifish	<i>Fundulus zebrinus</i>
Plains minnow	<i>Hybognathus placitus</i>
Proserpine shiner	<i>Cyprinella proserpina</i>
Rainbow trout	<i>Oncorhynchus mykiss</i>
Red shiner	<i>Cyprinella lutrensis</i>
Rio Grande bluntnose shiner	<i>Notropis simus simus</i>
Rio Grande chub	<i>Gila pandora</i>
Rio Grande darter	<i>Etheostoma granhami</i>
Rio Grande shiner	<i>Notropis jemezianus</i>
Rio Grande silvery minnow	<i>Hybognathus amarus</i>
Rio Grande sucker	<i>Catostomus plebeius</i>
River carpsucker	<i>Carpiodes carpio</i>
Sand shiner	<i>Notropis stramineus</i>
Shovelnose sturgeon	<i>Scaphirhynchus platorhynchus</i>
Smallmouth buffalo	<i>Ictiobus bubalus</i>
Speckled chub	<i>Machrybopsis aestivalis aestivalis</i>
Tamaulipas shiner	<i>Notropis braytoni</i>
Texas shiner	<i>Notropis amabilis</i>
Western mosquitofish	<i>Gambusia affinis</i>
White sucker	<i>Catostomus commersoni</i>
Yellow bullhead	<i>Ameiurus natalis</i>

Birds

American crow	<i>Corvus brachyrhynchos</i>
American wigeon	<i>Anas americana</i>
Ash-throated flycatcher	<i>Myiarchus cinerascens</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Bell's vireo	<i>Vireo bellii</i>
Bewick's wren	<i>Thryomanes bewickii</i>
Black-chinned hummingbird	<i>Archilochus alexandri</i>
Black-headed grosbeak	<i>Pheucticus melanocephalus</i>
Blue grosbeak	<i>Guiraca caerulea</i>
Canada goose	<i>Branta canadensis</i>
Cassin's sparrow	<i>Aimophila cassinii</i>
Chipping sparrow	<i>Spizella passerina</i>
Cinnamon teal	<i>Anas cyanoptera</i>
Crane	<i>Grus grus</i>
Crissal thrasher	<i>Toxostoma crissale</i>
Dark-eyed junco	<i>Junco hyemalis</i>
Gadwall	<i>Anas strepera</i>
House finch	<i>Carpodacus mexicanus</i>
Indigo bunting	<i>Passerina cyanea</i>
Interior least tern	<i>Sterna antillarum athalassos</i>
Mallard	<i>Anas platyrhynchos</i>
MacGillivray's warbler	<i>Oporornis tolmiei</i>
Mourning dove	<i>Zenaida macroura</i>
Neotropic cormorant	<i>Phalacrocorax brasilianus</i>
Northern flicker	<i>Colaptes auratus</i>
Northern mockingbird	<i>Mimus polygottos</i>
Northern shoveler	<i>Anas clypeata</i>
Peregrine falcon	<i>Falco peregrinus</i>
Pheasant	<i>Phasianus colchicus</i>
Pine siskin	<i>Carduelis pinus</i>
Piping plover	<i>Charadrius melodus</i>
Pyrrhuloxia	<i>Cardinalis sinuatus</i>
Quail	<i>Coturnix coturnix</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Sandhill crane	<i>Grus canadensis</i>
Southwestern willow flycatcher	<i>Empidonax trailii extimus</i>
Western kingbird	<i>Tyrannus verticalis</i>
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>
White-breasted nuthatch	<i>Sitta carolinensis</i>
White-crowned sparrow	<i>Zonotrichia leucophrys</i>
Whooping crane	<i>Grus americana</i>
Wilson's warbler	<i>Wilsonia pusilla</i>

Yellow-rumped warbler

Dendroica coronata

Mammals

Beaver

Castor canadensis

Black bear

Ursus americanus

Black-tailed jackrabbit

Lepus californicus

Coyote

Canis latrans

Desert cottontail

Syvilagus audubonii

Gray fox

Urocyon cinereoargenteus

House mouse

Mus musculus

Little brown bat

Myotis lucifugus

Meadow jumping mouse

Zapus hudsonius

Mule deer

Odocoileus hemionus

Muskrat

Ondatra zibethicus

Porcupine

Erethizon dorsatum

Raccoon

Procyon lotor

Striped skunk

Mephitis mephitis

Western harvest mouse

Reithrodontomys megalotis

White-footed mouse

Peromyscus leucopus

Yuma myotis

Myotis yumanensis

Reptiles and Amphibians

Big Bend slider

Chrysemys scripta gaigeae

Big Bend patch-nosed snake

Salvadora deserticola

Blotched water snake

Natrix erthrogaster transversa

Bullfrog

Rana catesbeiana

Canyon lizard

Sceloporus merriami annulatus

Checkered gartersnake

Thamophis marcianus

Coachwhip

Masticophis flagellum

Common gartersnake

Thamnophis sirtalis

Couch's spadefoot toad

Scaphiopus couchii

Desert kingsnake

Notiosorex crawfordi

Desert spiny lizard

Sceloporus spp.

Eastern fence lizard

Sceloporus undulatus

Glossy snake

Arizona elegans

Gopher snake

Pituophis catenifer / melanoleucus

Great Plains skink

Eumeces obsoletus

Great Plains rat snake

Eumeces obsoletus

Great Plains toad

Bufo cognatus

Marbled whiptail

Cnemidophorus tigris marmoratus

Painted turtle

Chrysemys picta

Rio Grande leopard frog	<i>Rana berlandieri</i>
Side-blotched lizard	<i>Uta stansburiana</i>
Southwestern earless lizard	<i>Holbrookia texana scitula</i>
Spadefoot toad	<i>Pelobatidae</i>
Spiny softshell turtle	<i>Apalone spinifera</i>
Spotted night snake	<i>Spermophilus spilosoma</i>
Striped whiptail	<i>Cnemidophorus inornatus</i>
Texas banded gecko	<i>Coleonyx brevis</i>
Texas toad	<i>Bufo speciosus</i>
Tiger salamander	<i>Ambystoma tigrinum</i>
Trans-Pecos blind snake	<i>Elaphe subocularis</i>
Western coachwhip	<i>Masticophis flagellum</i>
Western diamondback rattlesnake	<i>Pseudacris triseriata</i>
Woodhouse's toad	<i>Bufo Woodhousii</i>
Yellow mud turtle	<i>Kinosternon flavescens</i>

Appendix E - Consultations with Federal Agencies

Section 7 of the Endangered Species Act directs all Federal agencies to use their existing authorities to conserve threatened and endangered species and, in consultation with the Service, to ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat. Section 7 applies to management of Federal lands as well as other Federal actions that may affect listed species such as Federal approval of private activities through the issuance of Federal permits, licenses, or other actions.

Frequently Asked Questions

What activities does section 7 apply to?

Under provisions of section 7(a)(2) of the Endangered Species Act, a Federal agency that permits, licenses, funds, or otherwise authorizes activities must consult with the Fish and Wildlife Service as appropriate, to ensure that its actions will not jeopardize the continued existence of any listed species. (This same process also applies to the National Marine Fisheries Service and the species under their jurisdiction.)

What steps are involved in a section 7 consultation?

The Federal agency, or the applicant as the designated non-Federal entity, contacts the appropriate local Service office to determine if listed species are present within the action area. The Service responds to the request by providing a list of species that are known to occur or may occur in the vicinity; if the Service provides a negative response, no further consultation is required unless the scope or nature of the project is altered or new information indicates that listed species may be affected.

If listed species are present, the Federal agency must determine if the action may affect them. A may affect determination includes those actions that are not likely to adversely affect as well as likely to adversely affect listed species. If the Federal agency determines that the action is not likely to adversely effect listed species (e.g., the effects are beneficial, insignificant, or discountable), and the Service agrees with that determination, the Service provides concurrence in writing and no further consultation is required.

If the Federal agency determines that the action is likely to adversely affect listed species, then it must request initiation of formal consultation. This request is made in writing to the Services, and includes a complete initiation package. Up to that point, interactions have been conducted under informal consultation; however, once a request for formal consultation is received, the process becomes formal, and specific timeframes come into play. Formal consultation is initiated on the date the package is received, unless the initiation package is incomplete. If the package is incomplete, the Service notifies the Federal agency of the deficiencies. If a complete package is submitted, the Service should provide written acknowledgment of the request within 30 working

days. This written acknowledgment is not mandatory, but is encouraged so that there is documentation in the administrative record that formal consultation has been initiated.

From the date that formal consultation is initiated, the Service is allowed 90 days to consult with the agency and applicant (if any) and 45 days to prepare and submit a biological opinion; thus, a biological opinion is submitted to the Federal agency within 135 days of initiating formal consultation. The 90-day consultation period can be extended by mutual agreement of the Federal agency and the Service; however, if an applicant is involved the consultation period cannot be extended more than 60 days without the consent of the applicant. The extension should not be indefinite, and a schedule for completion should be specified.

What are the potential outcomes of a biological opinion?

The biological opinion is the document that states the opinion of the Service as to whether or not the Federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.

What section 7 responsibilities does a Federal agency bear if it is considering an action that may affect species proposed for listing under ESA?

Section 7(a)(4) requires Federal agencies to confer with the Services on any agency action which is likely to jeopardize the continued existence of any species proposed for listing or result in the adverse modification of critical habitat proposed to be designated. A conference may involve informal discussions between the Services, the action agency, and the applicant. Following informal conference, the Services issue a conference report containing recommendations for reducing adverse effects. These recommendations are discretionary, because an agency is not prohibited from jeopardizing the continued existence of a proposed species or from adversely modifying proposed critical habitat. However, as soon as a listing action is finalized, the prohibition against jeopardy or adverse modification applies, regardless of the stage of the action.

Do Fish and Wildlife Service programs need to comply with section 7? How do they accomplish this?

Yes, the Fish and Wildlife Service does need to comply with section 7. This compliance is achieved through Intra-Service consultations and conferences, processes by which the Service consults or confers on actions that may affect listed and proposed species. Service units, such as a refuge, that propose to fund, authorize, or carry out actions that may affect listed species must consult with the appropriate Ecological Services field office. Appendix E to the Interagency Consultation Handbook describes the procedures for completing Intra-Service consultation.

What role does an applicant have in the process?

The Federal agency, which is ultimately responsible for the consultation process, determines the role of the applicant during the consultation process. The Federal agency can identify a non-Federal representative; however, the Services require that the designation be made in writing. The action agency does provide the applicant an opportunity to submit information for use during the consultation. If reasonable and prudent alternatives are necessary, the Service will seek the applicant's input on developing those alternatives.

What's the difference between informal and formal consultation?

Informal consultation is an optional process that is designed to help the applicant and the action agency determine whether formal consultation is needed. It includes all discussions, correspondence, etc., between the Services, the action agency, and the applicant, and has no specified timeframe for completion. Federal agencies and the designated non-Federal entity may use this period to work with the Services on project design and conservation actions that would remove all adverse effects and alleviate the need for formal consultation. Formal consultation is a mandatory process for proposed projects that may adversely affect listed species, is initiated in writing by the Federal agency, and concludes with the issuance of a biological opinion by the Services. The Services strongly encourage the use of informal consultation so that projects can be designed with minimal impact to listed species, possibly resulting in a determination of no adverse effect, eliminating the need for formal consultation.

Must a Federal agency consult with the Services (i.e., receive concurrence) if it determines: a) no effect; b) beneficial effect; or c) not likely to adversely affect?

A Federal agency is not required to consult with the Services if it determines an action will not affect listed species or critical habitat. A Federal agency is required to consult if an action "may affect" listed species or designated critical habitat, even if the effects are expected to be beneficial. In many cases, projects with overall beneficial effects still include some aspects that will adversely affect individuals of listed species and such adverse effects require formal consultation. However, if the Services and the Federal agency determine that an action will not adversely affect listed species or designated critical habitat, the Services provide a concurrence letter.

What's the difference between an Environmental Assessment and a Biological Assessment, and can I incorporate one into the other?

A biological assessment must be prepared if listed species or critical habitat may be present in an area to be impacted by a "major construction activity." A major construction activity is defined at 50 CFR §402.02 as a construction project (or an undertaking having similar effects) which is a major Federal action significantly affecting the quality of the human environment as referred to in the National Environmental Policy Act (NEPA) (42 U.S.C. 4332(2)(C)). Any project

qualifying as a major construction activity under NEPA requires a biological assessment. The contents of a biological assessment are up to the discretion of the action agency, although the regulations do provide a list of recommended contents (50 CFR §402.12(f)). A biological assessment is not required if the action is not considered a major construction activity; however, if listed species are present in the action area, the Federal agency must document to the Services their evaluation of the effects of the action to the listed species. Environmental assessments are prepared in fulfillment of NEPA and assess social, cultural, and economic, effects in addition to biological effects. A biological assessment can be incorporated within an environmental assessment.

Does formal consultation have to be completed before an EA or EIS is written?

Biological assessments may be completed prior to the release of the Draft Environmental Impact Statement (DEIS) or the Environmental Assessment (EA). Formal consultation should be initiated prior to or at the time of release of the DEIS or EA. At the time the Final EIS is issued, section 7 consultation should be completed. The Record of Decision for an EIS should address the results of section 7 consultation. The action agency should initiate informal consultation prior to public scoping required for major construction activities as defined by the National Environmental Policy Act.

Who makes the call on adverse effect?

The Federal agency makes the determination of whether a project may affect a listed species, which includes a determination of whether the action is likely to result in adverse effects. Ideally, the Services and the Federal agency, via informal consultation, determine if adverse effects are present and work together to remove those effects.

What's the difference between reasonable and prudent alternatives and reasonable and prudent measures?

Reasonable and prudent alternatives are alternative methods of project implementation offered in a biological opinion reaching a jeopardy or adverse modification conclusion that would avoid the likelihood of jeopardy to the species or adverse modification of critical habitat. Reasonable and prudent measures are actions necessary to minimize the impacts of incidental take that is anticipated to result from implementing a project that the Service regarded as not likely to jeopardize the species or adversely modify designated critical habitat.

Does a Federal agency have to adhere to the reasonable and prudent alternatives or the reasonable and prudent measures, and what are the consequences if it doesn't?

In both instances, the action agency determines whether and how to proceed with its proposed action. If a jeopardy opinion containing reasonable and prudent alternative(s) is issued, the action agency may: 1) adopt the reasonable and prudent alternative(s); 2) not undertake the project (i.e., deny the permit); 3) request an exemption from section 7(a)(2); 4) reinitiate

consultation based on modification of the action or development of a reasonable and prudent alternative not previously considered; 5) proceed with the action if it believes, upon review of the biological opinion, that such action satisfies section 7(a)(2). Regardless of what action the agency chooses, the agency must notify the Service of its final decision.

Reasonable and prudent measures and the implementing terms and conditions are actions intended to minimize the impact of incidental take. Those conditions are conveyed to the action agency in the form of an incidental take statement (ITS), are non-discretionary, and must be undertaken by the agency so that they become binding conditions of any grant or permit issued to the applicant for the exemption in section 7(o)(2) to apply. If the agency refuses to do so, then it and the applicant must be informed that the protective provision of the ITS may not apply, and both entities could be held responsible for any take that occurs as a result of the action.

Can formal consultation be stopped once it's started? Who can do it and under what conditions?

If the action under consideration is no longer viable (e.g., funding has been withdrawn, an applicant has decided to withdraw the permit application, or congressionally approved action has been deauthorized, etc.), then the action agency can withdraw its request for formal consultation. The agency should notify the Service in writing that consultation should be stopped, and briefly describe why the action is no longer being considered by the agency.

Who reinitiates formal consultation?

Reinitiation of formal consultation must be requested by the Federal agency or by the Services if: a) the amount or extent of taking specified in the incidental take statement is exceeded; b) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; c) the identified action is subsequently modified in a manner or to an extent that causes an effect to the listed species or critical habitat not previously considered in the biological opinion; or, d) a new species is listed or critical habitat designated that may be affected by the identified action.

What constitutes an irreversible or irretrievable commitment of resources?

Any action that has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternatives needed to avoid jeopardizing the species or adversely modifying critical habitat.

Does an agency have to consult on a species that is protected due to similarity of appearance?

Regulations at 50 CFR §17.42 include special regulations for species protected due to similarity of appearance. Some of these species have rules regarding incidental take (e.g., some rules specify that incidental take is not prohibited for certain species, while other rules specify that

incidental take is prohibited). Federal agencies are not responsible for fulfilling the requirements of section 7 with respect to actions that may affect species protected due to similarity of appearance; however, if their actions may result in the take of such species and no special rule addressing this circumstance exists, they must apply for a take permit in accordance with regulations at 50 CFR §17.52.

What is the action area?

The action area is defined by regulation as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR §402.02). This analysis is not limited to the "footprint" of the action nor is it limited by the Federal agency's authority. Rather, it is a biological determination of the reach of the proposed action on listed species. Subsequent analyses of the environmental baseline, effects of the action, and levels of incidental take are based upon the action area.

The documentation used by a Federal action agency to initiate consultation should contain a description of the action area as defined in the Services regulations and explained in the Services' consultation handbook. If the Services determine that the action area as defined by the action agency is incorrect, the Services should discuss their rationale with the agency or applicant, as appropriate. Reaching agreement on the description of the action area is desirable but ultimately the Services can only consult when an action area is defined properly under its regulations.

Can you have an incidental take statement as part of a jeopardy/adverse modification Biological Opinion?

When the Services determine that a proposed action may jeopardize the continued existence of a listed species in the wild or result in adverse modification to designated critical habitat, the Services, with the assistance of the Federal agency and/or applicant, develop Reasonable and Prudent Alternatives that may be undertaken to avoid the likelihood of jeopardy or adverse modification. While these RPAs must avoid jeopardy or adverse modification, they may result in adverse effects to or take of listed species. If take will occur from the implementation of an RPA, an incidental take statement must be developed to exempt such take from section 9 prohibitions. For additional information see pages 4-41 through 4-48 of the Section 7 Consultation Handbook.

How is incidental take calculated? Does it account for reduced take through the Reasonable and Prudent Measures?

Generally incidental take is calculated and expressed as the number of individuals reasonably likely to be taken or the extent of habitat likely to be destroyed or disturbed. When preparing an incidental take statement, a specific number (for some species, expressed as an amount or extent, e.g., all turtle nests not found and moved by the approved relocation technique) or level of disturbance to habitat must be described. Take can be expressed also as a change in habitat

characteristics affecting the species (e.g., for an aquatic species, changes in water temperature or chemistry, flows, or sediment loads) where data or information exists that links such changes to the take of the listed species.

In some situations, the species itself or the effect on the species may be difficult to detect. However, some detectable measure of effect should be provided. For instance, the relative occurrence of the species in the local community may be sufficiently predictable that impacts on the community (usually surrogate species in the community) serve as a measure of take (e.g., impacts to listed mussels may be measured by an index or other censusing technique that is based on surveys of non-listed mussels). In this case, the discussion determining the level at which incidental take will be exceeded (reinitiation level) describes factors for the non-listed mussels, such as an amount or extent of decrease in numbers or recruitment, or in community dynamics.

An incidental take statement identifies the level of take that is anticipated from implementation of a project as proposed. However, a Statement also contains reasonable and prudent measures and terms and conditions that are nondiscretionary actions designed to minimize the effects of the take, and that must be implemented in order for such take to be exempt from the section 9 prohibitions. Thus, while a Statement anticipates the potentially greater amount of take that may occur without implementation of the reasonable and prudent measures and the resulting terms and conditions, that level of take is only exempt if the terms and conditions are properly implemented. For additional information see pages 4-43 through 4-54 of the Section 7 Consultation Handbook.

What constitutes the "best available scientific and commercial information?"

When conducting section 7 consultation, the Services' biologists should use the best available scientific and commercial information available. This information may include the results of studies or surveys conducted by the Federal action agency or the designated non-Federal representative, information contained in past biological opinions and biological assessments, status reports and listing rules, including critical habitat designations, recovery plans, and published and unpublished studies done on the species. However, at times even the best available information may be lacking. When this is the case, the Services should work with the action agency and applicant, if appropriate, to develop sufficient information to adequately evaluate the effects of the proposed action and its potential to jeopardize the species or result in adverse modification of designated critical habitat. If it is not possible to develop such information, the Services should use the information that is available and provide the "benefit of the doubt" to the species when evaluating the potential for jeopardy and adverse modification.

Does an agency have to get a permit under section 10 if the agency's action involves intentional take (e.g., handling, banding birds) as well as incidental take?

Generally, if the take is an intentional take (i.e., the intended result of the action), then a separate permit is required.

Appendix F -Summary of the Tribal Management Plans

I. The Santo Domingo Tribe Rio Grande Silvery Minnow Management Plan (Santo Domingo management plan)

A resolution was passed by the Santo Domingo Tribal Council for the Santo Domingo management plan to exercise the Tribe's sovereign status and provide for special management protections and conservation of the silvery minnow. The Santo Domingo management plan sets the goal of gathering and analyzing data to formulate and prioritize actions to improve the status of these lands. Additionally, the Santo Domingo Tribe will attempt to secure funding to: (1) determine and quantify the extent of the silvery minnow population and habitat found on Santo Domingo lands; (2) develop management actions and strategies to address the threats to the species and provide protection of silvery minnow populations and habitat; (3) develop methods and protocols for gathering, storing, and monitoring data for the Rio Grande watershed; and (4) analyze, revise, and strengthen the Santo Domingo management plan to promote long-term improvement of the watershed and protect the silvery minnow and other species.

The Santo Domingo Tribe intends to coordinate with us to follow methods and protocols that were provided to the Tribe in 2001 to survey for silvery minnows or habitat, to conduct water quality sampling, to develop water quality standards, and to devise relocation or augmentation protocols (Santo Domingo 2002; Service 2001e). The Santo Domingo management plan organizes these activities into silvery minnow population and habitat monitoring, silvery minnow research, bosque (the riparian areas adjacent to the Rio Grande) restoration, and data sharing. Because Santo Domingo commits to implementing these activities, we find that the Santo Domingo management plan provides significant conservation benefit to the silvery minnow. We believe that the resolution passed by the Santo Domingo Tribal Council and the development of the Santo Domingo management plan demonstrate that the management plan will be implemented. The Santo Domingo management plan specifically provides periodic updates as appropriate, including updates based upon silvery minnow population and habitat monitoring and research

II. Santa Ana Management Plan

During the open comment period, the Pueblo of Santa Ana submitted comments and a draft safe harbor agreement to us. The comments and draft safe harbor agreement indicate that the Pueblo is currently enhancing, restoring, and maintaining habitat for the silvery minnow and other species. The Pueblo's current natural resource programs—along with the draft safe harbor agreement—will, along with providing other conservation benefits, serve as the foundation for managing the silvery minnow and other species within the Pueblo's lands. The Pueblo has actively coordinated with us to implement these voluntary conservation programs to augment the silvery minnow population within its lands and intends to continue its existing natural resource management programs that currently provide special management considerations or protections for the silvery minnow. These programs include ecosystem restoration, range

and wildlife, water resources, GIS, and environmental education. The ecosystem restoration program concentrates on the restoration of riparian, wetland, and riverine systems by eradicating non-native plant species and restoring native wildlife habitat, including habitat for the silvery minnow. Its current scope includes developing methods and implementing bosque, wetland, and channel restoration along the Rio Grande within the boundaries of the Pueblo and in the Rio Jemez watershed. The range and wildlife program concentrates on improving the health of the Pueblo's rangeland. The water resources program is responsible for surface water and groundwater projects and programs ongoing and in development at the Pueblo. Activities currently being implemented and anticipated to continue focus on water quality standards development, technical support for water rights establishment, conserving riparian areas, improving water quality, and reestablishing natural hydrologic processes. These natural resource management programs will collect monitoring data such as water quality information, stream geomorphologic assessments, aquatic studies, and vegetation surveys. We expect that periodic updates of information as well as water management improvements will occur because their natural resource programs incorporate monitoring and adaptive management principles.

We believe that Santa Ana Pueblo currently provides, and will continue to provide, special management for the conservation of the silvery minnow through its existing natural resource management programs. Because Santa Ana commits to implementing the activities described above, we conclude that the management of Santa Ana Pueblo lands and those described under the draft safe harbor agreement provide significant conservation benefit to the silvery minnow. We believe that the existing natural resource program and draft safe harbor agreement demonstrate that these voluntary management activities will be implemented. In fact, we have previously commented that Santa Ana's active restoration program includes many standard recommendations we make concerning fish and wildlife and their habitat, such as expansion of shallow, low-velocity habitat in the Rio Grande, creation and restoration of riparian and wetland areas, protection and enhancement of aquatic habitat, and establishment of native plant species in riparian areas cleared of non-native vegetation (Service 2001f). The Santa Ana natural resource program and draft safe harbor agreement also provide for periodic updates as appropriate.

III. Pueblo of Sandia Bosque Management Plan (Sandia management plan)

A resolution passed by the Pueblo of Sandia Tribal Council adopts the management plan. The resolution, among other things, identifies that the Sandia management plan formalizes bosque restoration activities, thus demonstrating the Pueblo's commitment to protect the bosque, including the silvery minnow. The Sandia management plan provides a conservation benefit to the silvery minnow by enhancing and restoring the species' habitat through bosque restoration efforts, water quality monitoring, fire prevention activities, wetland enhancements, and natural pond restoration. The goals of the Sandia management plan are to: (1) create and sustain diverse habitats within the bosque; (2) reduce and eradicate invasive species; (3) plant native grasses, trees, and shrubs; (4) increase water retention and yield of the riparian

area; (5) encourage the reintroduction of native species, including the silvery minnow and the Southwestern willow flycatcher; and (6) continue water quality monitoring to determine if degradation has contributed to the decline of the silvery minnow. The Pueblo also developed specific objectives to provide for special management considerations or protections of the silvery minnow, including: determining silvery minnow distribution, abundance, mesohabitat and habitat preference, and evaluating water quality impacts. Additionally, the Pueblo will prepare a feasibility study for creating silvery minnow habitat and will continue cooperative research efforts with us.

As an example of current protection, Sandia Pueblo has surface water quality standards pursuant to the Clean Water Act. To support these standards, the Pueblo has an intensive monitoring program to assess water quality compliance in relation to its established standards. In addition, the Pueblo is currently engaged with us in conducting a water quality study. The study is designed to assess water quality in relation to the silvery minnow and its habitat. The results of this study will be used to develop and promote long-term strategies that will protect and conserve the silvery minnow.

We find that the Sandia management plan is complete and provides significant conservation benefit to the silvery minnow as described above. We believe that the resolution passed by the Pueblo of Sandia Tribal Council concerning the Sandia management plan demonstrates that the management plan will be implemented. The Sandia management plan also will be periodically updated, as appropriate, on the basis of results of ongoing Federal and State agency programs and studies.

IV. The Pueblo of Isleta Riverine Management Plan: Rio Grande Silvery Minnow (Isleta management plan):

A resolution passed by the Tribal Council of the Pueblo of Isleta adopts the Isleta management plan. The resolution, among other things, demonstrates the Pueblo's commitment through the Isleta management plan to protect, conserve, and promote the management of the silvery minnow and its associated habitat within the boundaries of Isleta Pueblo. Management activities covered by the Isleta Management Plan include silvery minnow population monitoring, habitat protection, and habitat restoration.

As an example of current protection, Isleta Pueblo has surface water quality standards pursuant to the Clean Water Act. The EPA has taken the surface water quality standards developed by Isleta Pueblo into consideration in the development of point source discharge permits; these standards minimize potential water quality impacts on water uses and resources, including the protection of the silvery minnow. The Pueblo regularly monitors compliance with these surface standards, and is currently engaged with us in conducting a water quality study. The study is designed to assess water quality in relation to the silvery minnow and its habitat. The results of this study will be used to develop and promote long-term strategies that will protect and conserve the silvery minnow.

The Isleta management plan sets the overall management goals of (1)

determining, quantifying, and assessing silvery minnow populations within Isleta Pueblo; (2) developing and refining management actions to address potential threats to the silvery minnow; (3) prescribing measures to sustain existing silvery minnow populations and habitat and enhance numbers; and (4) promoting a comprehensive integrated resource management approach for the riverine ecosystem. These goals, conducted in cooperation with the FWS, will be accomplished by silvery minnow population and habitat assessment and monitoring, including surveys, egg sampling and collection, and silvery minnow rescues.

We find that the Isleta management plan is complete and the commitment to implement the activities described above provides significant conservation benefit to silvery minnow. We believe that the resolution passed by the Tribal Council of the Pueblo of Isleta concerning the final Isleta management plan demonstrates that the management plan will be implemented. The Isleta management plan specifically provides periodic updates as appropriate, including updates based upon silvery minnow population, habitat, and water quality monitoring and studies.

Appendix G: Summary of Comments and Recommendations

In the June 6, 2002, proposed rule and Notice of Availability of the DEIS, we requested all interested parties to submit comments or information concerning the designation of critical habitat for the silvery minnow (67 FR 39206). During the comment period, we held public hearings in Socorro and Albuquerque on June 25, and 26, 2002, respectively. We published newspaper notices inviting public comment and announcing the public hearings in the following newspapers in New Mexico: Albuquerque Journal, Albuquerque Tribune, Socorro Defensor Chieftain, Sante Fe New Mexican, and Las Cruces Sun. Transcripts of these hearings are available for inspection at the U.S. Fish and Wildlife Service New Mexico Ecological Services Field Office. The comment period was originally scheduled to close on September 4, but was extended until October 2, 2002 (67 FR 57783). We contacted all appropriate State and Federal agencies, Tribes, county governments, scientific organizations, and other interested parties and invited them to comment. On June 6, 2002, we hosted a teleconference to provide a short presentation and answer questions by reporters on all aspects of the proposed critical habitat designation, the draft economic analysis, and DEIS. We also provided notification of these documents through email, telephone calls, letters, and news releases faxed and/or mailed to affected elected officials, media outlets, local jurisdictions, Tribes, and interest groups. We also published all of the associated documents on our Region 2 Internet site following their release on June 6, 2002.

We solicited five independent experts who are familiar with this species to peer review the proposed critical habitat designation. Only one of the peer reviewers submitted comments, and these supported the proposed designation. We also received a total of 34 oral and 54 written comments. Of the oral comments, 10 supported critical habitat designation and 24 opposed designation. Of the written comments, 17 supported critical habitat designation, 22 opposed designation, and 15 were neutral or provided additional information. We reviewed all comments received for substantive issues and new data regarding critical habitat and the silvery minnow, the draft economic analysis, and the draft EIS. In the following summary of issues we address all comments received on all three documents during the comment periods and public hearing testimony. Comments of a similar nature are grouped into issues.

Issue 1: Biological Concerns

(1) Comment: Some commenters state that the extent of critical habitat proposed by us is inadequate to address survival and recovery of the species (e.g., critical habitat for the silvery minnow should be expanded beyond the current proposal). Recommendations for additional areas designated include the Rio Grande from Caballo to the NM-TX border, the area from the confluence of the Rio Conchas to the downstream boundary of Big Bend National Park, and the Pecos River from Sumner to Brantley Reservoir.

Our Response: Our analysis of the following two areas—(1) the river reach in the middle Pecos River, NM, from Sumner Dam to Brantley Dam in De Baca, Chaves, and Eddy Counties,

NM; and (2) the river reach in the lower Rio Grande in Big Bend National Park downstream of the National Park boundary to the Terrell/Val Verde County line, TX—finds that the benefits of excluding these areas from the designation of critical habitat outweigh the benefits of including them (see “Exclusions Under Section 4(b)(2)” section). Although we believe these areas are essential to the conservation of the silvery minnow, these areas are not designated as critical habitat.

It is critical to the recovery of the silvery minnow that we reestablish the species in areas outside of its current occupied range. We believe that one of the goals of the Recovery Plan can be fulfilled by reestablishing the silvery minnow in areas of its historic range using the flexibility provided for in section 10(j) of the Act. In order to achieve recovery for the silvery minnow, we need assistance from local stakeholders to ensure the success of reestablishing the minnow in areas of its historic range. Use of section 10(j) is meant to encourage local cooperation through management flexibility. Critical habitat is often viewed negatively by the public since it is not well understood and there are many misconceptions about how it affects private landowners (E. Hein, U.S. Fish and Wildlife Service, pers. comm, 2002). It is important for recovery of this species that we have the support of the public when we move toward meeting the second recovery goal of reestablishing the species in areas of its historic range.

The reasons why other areas of the silvery minnow’s historic range were not designated as critical habitat are detailed within the “Reach-by-Reach Analysis” section in the Final Rule. If, in the future, we determine from information or analysis that those areas designated in this final rule need further refinement or if we identify and determine additional areas to be essential to the conservation of the species and requiring special management or protection, we will evaluate whether a revision of critical habitat is warranted at that time.

(2) Comment: The current proposal for critical habitat for the silvery minnow is contrary to the recommendations of the Rio Grande Silvery Minnow Recovery Team and the Recovery Plan. The proposed designation is deficient in its omission of critical habitat in the “three other areas within its historic range” as required by the Recovery Plan. Our proposal to not designate the lower Rio Grande as critical habitat has no factual basis.

Our Response: It is important to note that we utilized the recommendations of the Recovery Team in the Recovery Plan, consistent with this definition of conservation, to conclude that the middle Rio Grande and the middle Pecos River from Sumner Dam to Brantley Dam, NM, and the lower Rio Grande from the upstream boundary of Big Bend National Park downstream through the area designated as a wild and scenic river to the Terrell/Val Verde County line, TX, are “essential to the conservation of” the silvery minnow. Although the middle Pecos River and the lower Rio Grande are not designated as critical habitat, we believe they are important for the recovery of the silvery minnow. Thus, we concur with the Recovery Plan that reestablishment of the silvery minnow within additional geographically distinct areas, within its historical range, is necessary to ensure the minnow’s survival and recovery (Service 1999). However, recovery is not achieved by designating critical habitat. The Act provides for other mechanisms that will provide for reestablishment of the minnow outside of the middle Rio

Grande and the eventual recovery of the silvery minnow. In addition, please see responses 1 and 44 for information related to this particular issue.

(3) Comment: The Service appears to be greatly concerned that critical habitat could jeopardize the trust and spirit of cooperation that has been established over the last several years because critical habitat designation would be viewed as an unwarranted and unwanted intrusion in the middle Pecos and lower Rio Grande. However, the same arguments can be made in the middle Rio Grande.

Our Response: The middle Pecos and lower Rio Grande are essential to the conservation of the silvery minnow. Still, the silvery minnow has been extirpated from these areas of its historic range and we believe that the appropriate means to potentially reestablish the species is through use of the 10(j) experimental population rule (see “Exclusions Under Section 4(b)(2)” section). We also have not included areas within the middle Rio Grande where we believe adequate special management is in place and because of other relevant issues (see “Relationship of Critical Habitat to Pueblo Lands under Section 3(5)(A) and Exclusions Under Section 4(b)(2)” section). However, we determine that other areas of the middle Rio Grande meet the definition of critical habitat, and we did not exclude these areas under section 4(b)(2) based upon economic or other relevant impacts.

We are actively involved with ensuring conservation benefits to the listed species within the middle Rio Grande by participating in a collaborative working group to develop a long-term strategy/solution (Middle Rio Grande Endangered Species Act Collaborative Program). We believe this type of cooperative program is an important opportunity to achieve and facilitate conservation of the minnow, while allowing water activities to continue.

(4) Comment: It is well documented that the Rio Grande has historically gone dry. The current proposal to keep the river running throughout the year is not reasonable, feasible, or necessary. You are attempting to create a habitat that has never existed. The proposed rule does not identify minimum flow requirements to maintain the primary constituent elements. Critical habitat will only increase the “bureaucratic red tape,” not silvery minnow habitat.

Our Response: Critical habitat primarily focuses on the maintenance of habitat features identified as primary constituent elements. Critical habitat does not serve to create these features where they do not currently exist.

We agree that some areas designated as critical habitat within the middle Rio Grande have the potential for periods of low or no flow under certain conditions (see “Primary Constituent Elements” section). We also recognize that the critical habitat designation specifically includes some areas that have lost flow periodically (MRGCD 1999; Scurlock and Johnson 2001; Scurlock 1998). We nevertheless believe these areas are essential to the conservation of the silvery minnow because they likely serve as connecting corridors for fish movement between areas of sufficient flowing water (e.g., see Deacon and Minckley 1974; Eberle et al. 1993). Additionally, we believe the designated critical habitat is essential for the natural channel geomorphology (the topography of the river channel) to maintain habitat, such

as pools, by removing or redistributing sediment during high flow events (e.g., see Simpson *et al.* 1982; Middle Rio Grande Biological Interagency Team 1993). Therefore, we believe that the inclusion of an area that has the potential for periods of low or no flow as critical habitat will ensure the long-term survival and recovery of silvery minnow. As such, we believe that the primary constituent elements as described in this final rule provide for a flow regime that allows for short periods of low or no flow.

The primary constituent elements identified in the Final Rule provide a qualitative description of those physical and biological features necessary to ensure the conservation of the silvery minnow. We did not identify quantitative estimates of specific minimum thresholds (e.g., minimum flows or depths), because we believe these estimates vary seasonally and annually, and by river reach within the designated critical habitat. Thus, we believe these thresholds are appropriately enumerated through section 7 provisions 7(a)(1) and 7(a)(2) (e.g., see Service 2001b), which can be easily changed if new information reveals effects to critical habitat in a manner or extent not previously considered (see 50 CFR 402.16(b)).

We based this final rule on the best available scientific information, including the recommendations in the Recovery Plan (Service 1999). We have designated only river reaches that currently contain the primary constituent elements (described in the Final Rule) during all or a part of the year and that are currently occupied by the minnow. We did not include river reaches where the current or potential suitability for the silvery minnow is unknown. Consequently, we are not attempting to create habitat conditions or minimum flow requirements, but rather, we will review projects that have a Federal nexus to ensure that any proposed actions do not adversely affect the current primary constituent elements to the extent that the designated critical habitat will be adversely modified or destroyed.

(5) Comment: The silvery minnow is doing very well in its current situation and is not vulnerable to a single catastrophic event. The captive breeding program is flourishing and it seems reasonable that you could release many millions of silvery minnows each spring. Therefore, you should not condemn the river to support a species that has an arbitrary designation and is not truly endangered.

Our Response: The purpose of the Act is to conserve listed species and the ecosystems on which they depend. Relegating a species to captivity does not conserve the ecosystem on which they depend. Controlled propagation is not a substitute for addressing factors responsible for an endangered or threatened species' decline. Therefore, our first priority is to recover wild populations in their natural habitat wherever possible, without resorting to the use of controlled propagation. This position is fully consistent with the Act. Moreover, there has been insufficient time to develop a captive propagation management plan that captures the majority of genetic variability of the minnow in the wild to maximize the low genetic diversity in captive propagated silvery minnows (Tumer 2002).

We reviewed the best scientific and commercial data available to determine that the silvery minnow should be classified as an endangered species on July 20, 1994 (59 FR 36988). Procedures found at section 4(a)(1) of the Act, and regulations (50 CFR Part 424) issued to implement the listing provisions of the Act were followed. A species may be determined to be

an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act. There is no evidence to suggest that the silvery minnow is recovered, and recovery goals outlined in the Recovery Plan have not yet been met. Therefore, we do not agree that the silvery minnow is “doing very well in its current situation.” Additionally, the silvery minnow occupies less than 5 percent of its historic range, and the likelihood of extinction from catastrophic events is high because of its limited range (Hoagstrom and Brooks 2000, Service 1999).

(6) Comment: In the proposed rule, the Service suggests that the primary constituent elements for the silvery minnow and Pecos bluntnose shiner are compatible. However, if this were the case, the silvery minnow would not be extirpated from the Pecos River.

Our Response: We continue to believe that the primary constituent elements for the Pecos bluntnose shiner critical habitat (e.g., clean permanent water; a main river channel habitat with sandy substrate; and a low velocity flow (February 20, 1987; 52 FR 5295)) are compatible with our conservation strategy for repatriating the silvery minnow. There are no conclusive data to substantiate any reasons for extirpation of the silvery minnow from the Pecos River. Primary constituent elements are those physical and biological habitat components that are essential for the conservation of the species, and are not determined based upon the species’ presence. The absence of silvery minnows from the Pecos River does not mean that the minnow’s primary constituent elements are not present. (Also refer to the “Background” section for information on the role of the plains minnow (*Hybognathus placitus*) in the decline and extirpation of the silvery minnow from the Pecos River).

(7) Comment: One of the most significant threats to native fish in the southwestern United States is non-native fish; however, the Service did not provide any information on whether non-native fish affect the silvery minnow or its habitat.

Our Response: In the proposed critical habitat designation rule, we stated: “Habitat alteration and loss, and non-native competition, predation, and other effects are inextricably intertwined and have contributed substantially to the endangered status of the silvery minnow (Service 1999; Dudley and Platania 2001). Furthermore, habitat alteration has been a significant contributor to non-native fish invasion, competition, and adverse effects. In turn, non-native species have likely contributed significantly to the inability of native fish, such as the silvery minnow, to persist in altered environments (Hubbs 1990; Propst 1999)” (June 6, 2002; 67 FR 39206).

(8) Comment: There is a notable lack of data in your reports concerning the plains minnow found within the middle Rio Grande.

Our Response: Although the plains minnow was found infrequently in a survey of bait-fishing stores within the Rio Grande Basin (Schmitt 1975), the plains minnow has never been documented in the wild within the middle Rio Grande (R. Dudley, American Southwest Ichthyological Research Foundation, pers. comm., 2002; K. Bestgen, Colorado State University, Larval Fish Laboratory, pers. comm., 2002). The silvery minnow and plains minnow can be

distinguished from each other by morphological and genetic differences (Bestgen and Propst 1996; Cook *et al.* 1992). Therefore, we believe that “a lack of data” is reflective of a lack of presence of the plains minnow in the middle Rio Grande.

(9) Comment: Critical habitat could result in the loss of flood pulses for uses such as periodic flooding of the bosque.

Our Response: The silvery minnow requires a spike in early spring to trigger spawning (Platania and Dudley 2000). Critical habitat will not result in the loss of this pulse of water. In fact, this hydrologic event could also periodically flood some areas of the bosque (bosque is the riparian areas adjacent to the Rio Grande).

(10) Comment: One commenter believes the Service overlooked important information that silvery minnows can bury in the wet sand and survive extensive periods, especially when the river bed is dry. This commenter states that when the river is dry, silvery minnows have been found by digging in the sand.

Our Response: There is no information in the scientific literature or provided by biologists researching the silvery minnow to indicate that the species can either bury underground or survive in the wet sand when the river is dry. Available evidence indicates that silvery minnows die only minutes after being removed from water.

(11) Comment: The Service should consider the use of irrigation ditches to recover the silvery minnow.

Our Response: Ephemeral or perennial irrigation canals and ditches, including the LFCC (i.e., downstream of the southern boundary of Bosque del Apache National Wildlife Refuge to the headwaters of Elephant Butte Reservoir) do not offer suitable refugia and are not useful for conservation of the silvery minnow because they do not contain the primary constituent elements and the habitat is not sufficient to support viable populations of silvery minnow for extended periods of time (see also BOR 2001c). Silvery minnows found in canals and ditches are believed to represent silvery minnows that became entrapped due to the diversion of irrigation water from the mainstem middle Rio Grande. Nevertheless, we are aware that a study is being conducted by New Mexico State University to evaluate the usefulness of irrigation canals and ditches to the silvery minnow (Thompson 2002). We will assess the results of this study when they are available.

(12) Comment: Why does the Service indicate that agricultural runoff is detrimental to the silvery minnow, when the return flows are an important source of water for the species?

Our Response: We recognize that under current irrigation operations, the delivery of irrigation water and associated return flows play an important role in supporting fish survival in the lower reaches of the river. The return flows also help to provide water to meet Rio Grande Compact delivery obligations. Irrigation water deliveries to MRGCD and the six middle Rio Grande Pueblos provide “carriage” water that facilitates the more efficient delivery of

supplemental water to benefit the silvery minnow. However, as noted in the background section, development of agriculture and the growth of cities within the historic range of the silvery minnow may have resulted in a decrease in the quality of river water through municipal and agricultural runoff (i.e., sewage and pesticides).

(13) Comment: What is the relationship between the Southwestern Willow flycatcher and the Rio Grande Silvery Minnow? For example, would removal of salt cedar to enhance minnow habitat adversely affect flycatcher habitat?

Our Response: Human activities that occur outside the river channel can have a demonstrable effect on physical and biological features of aquatic and riparian habitats. We recognize that some activities to benefit the silvery minnow may affect other listed species such as the flycatcher. Activities that may affect the silvery minnow or other listed species will require consultation under section 7 of the Act. Section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of listed species or destroy or adversely modify critical habitat.

(14) Comment: The Rio Grande, from the mouth of Galisteo Creek to Cochiti Dam, is not of sufficient habitat quality for minnows to survive. The sediment load above the confluence of Galisteo Creek and the Rio Grande is insufficient to maintain desired silt or sand bottom substrates. This reach is expected to remain a cobble and gravel bed.

Our Response: Comment noted.

(15) Comment: The Jemez River below Jemez Canyon Dam is expected to become intermittent once the sediments dry out within the reservoir area. However, this reach is likely to be an important backwater habitat area during higher flows in the Rio Grande.

Our Response: The Service agrees that the reach of river below the Jemez Canyon Dam is likely to provide important backwater and seasonal habitats for the silvery minnow.

Issue 2: Procedural and Legal Compliance

(16) Comment: The U.S. Army Corps of Engineers (Corps) should be held responsible for the plight of the silvery minnow because they constructed Cochiti Dam and drastically altered the species' habitat.

Our Response: The effects of past and ongoing human and natural factors leading to the current status of the silvery minnow is called the environmental baseline. The environmental baseline is a snapshot of the species' status at any point in time, and is updated when we conduct a section 7 biological opinion. No single entity can be held responsible for the status of the silvery minnow. However, the Corps is (as are many other entities) included in the Middle Rio Grande Endangered Species Act Collaborative Program and is part of the long-term solution to develop and implement activities to conserve the minnow.

(17) Comment: We must specify in the final rule for critical habitat whether the experimental population under section 10(j) of the Act would be essential or nonessential.

Our Response: When we designate a population as experimental, section 10(j) of the Act requires that we determine whether that population is either essential or nonessential to the continued existence of the species on the basis of the best available information. Any future recovery efforts, including repatriation of the species to areas of its historical range under section 10(j) of the Act, will be conducted in accordance with the pertinent sections of the Act, NEPA, and Federal rulemaking procedures. A NEPA analysis is necessary to carefully consider information concerning every significant environmental impact among all the alternatives and select a preferred alternative. We find that nonessential designations garner wider and more meaningful public support. However, at this time we cannot determine the type of 10(j) rule that may be proposed for the minnow.

(18) Comment: The establishment of experimental populations is purely speculative because according to the Service's regulations, the establishment of an experimental population requires an agreement among the Service, affected States, Federal agencies, and landowners. An agreement is unlikely to happen.

Our Response: We believe that the use of section 10(j) will encourage local cooperation through management flexibility. Our regulations state that we shall consult with appropriate State fish and wildlife agencies, local government entities, affected Federal agencies, and affected private landowners in developing and implementing experimental population rules (50 CFR 17.81(d)). As noted above, any future recovery efforts, including reintroduction of the species to areas of its historic range, will be conducted in accordance with NEPA and the Act.

(19) Comment: Executive Orders 12866 and 12988 appear to apply to the proposed designation of critical habitat.

Our Response: We again read through the comments and information provided concerning Executive Orders 12866 ("Regulatory Planning and Review") and 12988 ("Civil Justice Reform"). While the commenter did not adequately explain the rationale for why they believe our initial determinations in the proposed critical habitat designation were inadequate, we found nothing to warrant changing our original determinations about the applicability of these Executive Orders.

(20) Comment: How can critical habitat include the Isleta reach that the District Court for the District of New Mexico has determined could be dry? The District Court order provides for the potential draining of Heron Reservoir. If the current drought continues through 2003, potentially 75 percent of critical habitat could be dry. The court order from the District Court changes all of the previous analyses and conclusions concerning critical habitat designation. The Service has not considered Judge Parker's recent court order to provide water for the silvery minnow. The Service must consider and analyze all sources of storage water that will now be used for the silvery minnow.

Our Response: On September 23, 2002, the District Court for the District of New Mexico ordered the following: (1) the BOR must provide sufficient flows of water for the remainder of 2002 to maintain a flow of 50 cfs at San Acacia Diversion Dam, and to maintain a flow in the Albuquerque Reach from Angostura Diversion Dam to Isleta Diversion Dam; (2) if necessary to meet these flow requirements for the remainder of 2002, the BOR must release water from Heron Reservoir in 2002; and (3) the Federal Government must compensate those, if any, whose contractual rights to water are reduced in order to meet the flow requirements (Rio Grande Silvery Minnow v. Keys, Civ. No. 99-1320 JP/RLP-ACE).

In a court order issued October 16, 2002, the Tenth Circuit Court of Appeals stayed the District Court's order (Rio Grande Silvery Minnow v. Keys, Civ. No. 02-2254, 02-2255, 02-2267). The court order from the District Court for the District of New Mexico is currently under appeal in the Tenth Circuit Court of Appeals and a written decision has not been issued. On the basis of the consultation history of the silvery minnow, we do not anticipate that the voluntary supplemental water program discussed in responses to comments 56 and 57 will change. Because we anticipate that supplemental flows to avoid destruction or adverse modification of critical habitat will be similar, if not identical, to what is currently required to avoid jeopardizing the species, we do not believe that critical habitat will result in additional flow requirements during consultation. Nevertheless, future section 7 consultations will evaluate whether proposed actions jeopardize the continued existence of the silvery minnow or adversely modify or destroy critical habitat. Each consultation will be evaluated on a case-by-case basis following our regulations (50 CFR 402).

(21) Comment: The Service should consider water table augmentation to satisfy the primary constituent elements rather than flow augmentation. Habitat restoration activities need to move forward quickly because the supplemental water program cannot continue at the current level.

Our Response: We appreciate these and other numerous suggestions we received regarding special management considerations. Water table augmentation and habitat restoration activities may provide for the maintenance and improvement of one or more of the primary constituent elements important for the species' long-term conservation. These types of special management activities, as well as other measures to avoid or minimize incidental take, will be reviewed during consultations with Federal agencies. (Refer to our response to comment 3 above for information on the collaborative working group.)

(22) Comment: The Service should consider the affidavits that were filed in September 2002, in response to the court case (Rio Grande Silvery Minnow v. Keys, Civ. No. 99-1320 JP/RLP-ACE). These include: Dr. Thomas Wesche, Subhas K. Shah, Sterling Grogan, Dr. Richard Valdez, Christopher S. Altenbach, John Whipple, John M. Stomp III, Rolf-Schmidt-Peterson, F. Lee Brown, and Walter G. Hines.

Our Response: We have considered the affidavits and found that none of the information appears to contradict the relevant conclusions for this final designation of critical habitat.

(23) Comment: The Service needs to consult with the State Department and Mexico as directed by Executive Order 12114 because the designation of critical habitat in the lower Rio Grande may have international implications.

Our Response: We are not designating critical habitat along the international border in the lower Rio Grande. We did not consult with the State Department and Mexico because we believe that the action of designating critical habitat within the middle Rio Grande will not have significant effects on the environment outside the geographical borders of the United States and its territories.

(24) Comments: The economic analysis and proposed critical habitat demonstrate a complete disregard for the unique culture and historic heritage associated with agriculture within the middle Rio Grande.

Our Response: As described in the final EIS, we are aware of the unique heritage associated with agriculture within the middle Rio Grande. Still, the regulatory requirements associated with critical habitat do not apply to any agricultural activities, including farming or livestock grazing, or any other activity carried out on private land that does not require and/or involve a Federal permit, authorization, or funding. Because the silvery minnow is listed as endangered, Federal agencies already are required to consult with us on any of their actions that are likely to adversely affect the species and to ensure that their actions do not jeopardize the species' continued existence, regardless of whether critical habitat has been designated. Therefore, we do not believe the designation of critical habitat for the silvery minnow will result in any significant additional regulatory burden on landowners or affect the use of their private property.

(25) Comment: No one was aware that the silvery minnow was going to be listed in 1994. Once a species is listed, critical habitat appears to be an unavoidable consequence.

Our Response: On February 19, 1991, about 80 prelisting proposal letters of inquiry were mailed to various governmental agencies, knowledgeable individuals, and the New Mexico Congressional delegation. On March 20, 1992, we held a meeting in Albuquerque, NM, with various interested governmental and private entities to explore existing or potential flexibility in water delivery schedules that might avoid dewatering of the Rio Grande within the range of the silvery minnow. In the March 1, 1993, proposed rule and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final rule. The comment period originally scheduled to close on April 30, 1993, was extended until August 25, 1993 (58 FR 19220), to conduct public hearings and allow submission of additional comments. We also published notices of the proposed listing in five local newspapers and mailed copies of the proposed rule to list the silvery minnow as endangered to 148 different government agencies, private organizations, and interested individuals, including all counties having lands that border on or were within the area being proposed for critical habitat designation. Two public hearings were also held. Prior to listing the silvery minnow as endangered, we fully met the requirements of the Act for public notification. As discussed in the "Previous Federal Action" section of the final rule, section 4 of

Act requires us to designate critical habitat at the time of listing, unless a determination is made that such designation is not prudent or not determinable. If a not determinable determination is made, we would have an additional year to make such a determination.

(26) Comment: The proposed rule and associated documents did not mention how critical habitat and section 7 consultation may affect the National Pollution Discharge Elimination System, water quality issues, or flood control structures.

Our Response: The EIS analyzed the impacts to the Albuquerque Metropolitan Arroyo Flood Control Authority, National Pollution Discharge Elimination System (NPDES) permitting, and other impacts on water quality (also see “Effect of Critical Habitat Designation” in the Final Rule). The final EIS found that the silvery minnow will most likely be protected by existing water quality standards, and that changes to current EPA discharge permitting activities are expected to be minimal, although the possibility exists for EPA’s consultations with us to change as more becomes known about the water quality needs of the silvery minnow.

It is important to note that section 7(a)(2) of the Act requires that Federal agencies ensure that actions they fund, authorize, or carry out are not likely to result in the “destruction or adverse modification” of critical habitat. In our regulations at 50 CFR 402.02, we define destruction or adverse modification as “direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical.” Where no such Federal agency action is involved, critical habitat designation has no effect on private landowners, State, or Tribal activities.

(27) Comment: How will critical habitat affect the City of Albuquerque’s Drinking Water Project?

Our Response: Analysis of effects to listed species will be addressed in detail during section 7 consultation between the BOR and us. The section 7 consultation will determine whether the City of Albuquerque’s Drinking Water Project jeopardizes the continued existence of the silvery minnow or adversely modifies or destroys critical habitat. As we have in the past, we will continue to work with the City of Albuquerque on conservation issues for the silvery minnow (see our response to comment 57 below).

(28) Comment: The Service proposed a 300-ft (91.4-m) lateral width for the boundary of critical habitat, but there is no site specific information to determine whether any particular area even has a floodplain or whether the floodplain, if present, extends 300 ft (91.4 m).

Our Response: We recognize that the lateral width of riparian areas fluctuates considerably in the middle Rio Grande. The 300-ft (91.4-m) lateral width includes the riparian zone, if present, that is adjacent to each side of the middle Rio Grande. We believe the riparian zone adjacent to the river channel provides an important function for the protection and

maintenance of the primary constituent elements and is essential to the conservation of the species.

Developed lands within the 300-ft (91.4-m) lateral width are not considered critical habitat because they do not include the primary constituent elements. These lands were specifically excluded from the designation and include: developed flood control facilities, existing paved roads, bridges, parking lots, dikes, levees, diversion structures, railroad tracks, railroad trestles, water diversion and irrigation canals outside of natural stream channels, the low flow conveyance channel, active gravel pits, cultivated agricultural land, and residential, commercial, and industrial developments.

(29)Comment: Although the lateral extent may be more clearly defined than in the original rule, as currently proposed, it appears arbitrary. The proposed rule and DEIS do not sufficiently explain how this lateral extent is essential to the conservation of the silvery minnow habitat. Moreover, the DEIS does not analyze any alternatives to the 300-foot lateral extent.

Our Response: We determined the 300-ft (91.4-m) lateral extent for several reasons. First, the implementing regulations of the Act require that critical habitat be defined by reference points and lines as found on standard topographic maps of the area (50 CFR 424.12). Although we considered using the 100-year floodplain, as defined by the Federal Emergency Management Agency (FEMA), we found that it was not included on standard topographic maps, and the information was not readily available from FEMA or from the Corps for the areas we are designating. We suspect this is related to the remoteness of various river reaches. We received comments in relation to other sources of information (e.g., National Wetlands Inventory maps) to refine the lateral extent of critical habitat (see comments section above). After evaluating this information, we concluded that our designation accurately delineates the boundary of critical habitat. We selected the 300-ft (91.4-m) lateral extent, rather than some other delineation, for three reasons: (1) the biological integrity and natural dynamics of the river system are maintained within this area (i.e., the floodplain and its riparian vegetation provide space for natural flooding patterns and latitude for necessary natural channel adjustments to maintain appropriate channel morphology and geometry, store water for slow release to maintain base flows, provide protected side channels and other protected areas for larval and juvenile silvery minnow, allow the river to meander within its main channel in Our Response to large flow events, and recreate the mosaic of habitats necessary for the conservation of the silvery minnow); (2) conservation of the adjacent riparian zone also helps provide essential nutrient recharge and protection from sediment and pollutants, which contributes to successful spawning and recruitment of silvery minnows; and (3) vegetated lateral zones are widely recognized as providing a variety of aquatic habitat functions and values (e.g., aquatic habitat for fish and other aquatic organisms, moderation of water temperature changes, and detritus for aquatic food webs) and help improve or maintain local water quality (March 9, 2000; 65 FR 12897; Middle Rio Grande Biological Interagency Team 1993). Consequently, this critical habitat designation takes into account the naturally dynamic nature of riverine systems and recognizes that floodplains (including riparian areas) are an integral part of the stream ecosystem.

(30) Comment: The Service only considered excluding the Cochiti or San Acacia Reach. No other reaches were considered for exclusion within the middle Rio Grande.

Our Response: We did not include four areas within the Angostura and Isleta Reaches (see “Relationship of Critical Habitat to Pueblo Lands under Section 3(5)(A) and Exclusions Under Section 4(b)(2)” section in the Final Rule and “Sub-alternative B-2” in the FEIS). Additionally, we solicited comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning the reasons why any habitat should or should not be determined to be critical habitat as provided by section 4 of the Act, including whether the benefits of excluding areas will outweigh the benefits of including areas as critical habitat. We requested information on any lands included in the proposed rule for which there was special management and protection in place such that those lands could not be included as critical habitat. We reviewed and considered all of the information and comments received and concluded that special management or protection is provided only for the management plans we received during the comment period from the Pueblos of Santo Domingo, Santa Ana, Sandia, and Isleta. Consequently, no other areas were determined to be not essential for inclusion for the final critical habitat designation.

(31) Comment: The City of Albuquerque requested that we exclude existing projects, facilities, and structures within the designated critical habitat.

Our Response: The City of Albuquerque did not provide a list describing the specific projects, facilities, or structures. However, some existing facilities and structures are excluded from the designation because they do not include the primary constituent elements. See response to comment 25 and the “Regulation Promulgation” section of the final rule for specific exclusions.

(32) Comment: Although the DEIS recognizes that there may be economic impacts on AMAFCA’s flood control operations, these impacts are neither sufficiently defined nor quantified. For example, at pages 4-48 to 4-49 of the DEIS, the analysis acknowledges that some AMAFCA project modifications will be required due to critical habitat designation, and that costs will be incurred relative to those modifications, but costs are not quantified. At a minimum it should be acknowledged that the failure to maintain flood control facilities could result in losses in the millions, if not billions of dollars. In connection with this, the DEIS fails to address the probability of raising taxes to fund necessary project modifications or to account for project delays.

Our Response: In the DEIS and FEIS, the Service states that it is AMAFCA may incur additional costs related to project modifications that may be required due to the designation of critical habitat. In the Economic Analysis, the determination of potential costs related to consultations and project modifications was provided. These dollar amounts were partially based on previous agency consultations with the Service and to date, AMAFCA has not been involved in any section 7 consultations with the Service. Any additional costs AMAFCA may incur due to project modifications may vary by project and cannot be easily defined in this

analysis. However, the Service is more than willing to work with AMAFCA on any proposed projects that may impact the silvery minnow or its critical habitat and has already met with representatives from AMAFCA and the Corps to discuss these issues. It should also be noted that the Service understands the importance of flood control and the role it plays in human health and safety. No constraints for protection of listed species or their critical habitat are ever recommended if they place human lives or structures (e.g., houses) in danger.

It is also important to note that developed lands within the 300-ft (91.4-m) lateral width are not considered critical habitat because they do not include the primary constituent elements. These lands were specifically excluded from the designation and include: developed flood control facilities, existing paved roads, bridges, parking lots, dikes, levees, diversion structures, railroad tracks, railroad trestles, water diversion and irrigation canals outside of natural stream channels, the low flow conveyance channel, active gravel pits, cultivated agricultural land, and residential, commercial, and industrial developments.

(33) Comment: The designation of critical habitat will seize control of our water through Federal regulations and Federal courts. Elected officials and State Engineers are constitutionally responsible for decisions on state water management.

Our Response: An area designated as critical habitat is not a refuge or sanctuary for the species. Listed species are protected by the Act whether or not they are in an area designated as critical habitat.

We published required determinations in the proposed and final rules, including one in accordance with Executive Order 13132, which considered whether the final rule has significant Federalism effects (see “Required Determinations” section in the Final Rule). We requested information from and coordinated development of the proposed and final rules with appropriate resource agencies in NM and TX (e.g., during the EIS scoping and proposed rule public comment period). During the open comment period for the proposed rule, we met on several occasions with the New Mexico Interstate Stream Commission (NMISC) to further coordinate and address issues concerning the designation of critical habitat for the silvery minnow.

We do not anticipate that this regulation will intrude on State policy or administration, change the role of the Federal or State government, or affect fiscal capacity. For example, we have conducted two formal consultations, one of which included a formal conference, with the Corps and BOR, and non-Federal entities over actions related to water operations on the middle Rio Grande (Service 2001b, 2002a). In our experience, the vast majority of such projects can be successfully implemented with, at most, minor changes that avoid significant economic impacts to project proponents.

(34) Comment: Other than the initial scoping letter, the City of Socorro or Bernalillo County was not contacted for either development of the EIS or economic analysis. Several other commenters voiced concern that they were not directly contacted for their opinions on the economic impacts of critical habitat designation.

Our Response: On April 5, 2001, the Federal Register notice announcing public scoping meetings and development of a draft EIS was mailed to the Mayor of Socorro and the Socorro County Board of Commissioners and to Bernalillo County Commissioners. Moreover, on October 4, 2001, our EIS contractor mailed letters to the Chairman of Socorro County Board of Commissioners and the Bernalillo County Manager, and on August 22, 2001, a letter was mailed to the Mayor of the City of Socorro requesting specific information for the development EIS. We did not receive any response to these letters. Economic Analysis contractors utilized databases with information provided by the County of Socorro.

It was not feasible to contact every potential stakeholder in order for us to develop a draft economic analysis. We believe we were able to understand the issues of concern to the local communities on the basis of our review of public comments submitted on the proposed rule and draft economic analysis, transcripts from public hearings, and detailed discussions with 65 local governments. To clarify issues, we solicited information and comments from representatives of Federal, State, Tribal, and local government agencies, as well as some landowners.

(35)Comment: In prior correspondence with USFWS, the USIBWC has raised concern that flows designated for support of the critical habitat could cause the United States to fall short in its obligation to provide treaty water to Mexico. The USIBWC is concerned about severe drought that may occur in the reach between Cochiti Dam and Elephant Butte Dam (referenced as Middle Rio Grande, [MRG]) since official inflow to Elephant Butte Reservoir is based on the flow reaching the gauging station at San Marcial, New Mexico. In the EIS, two possible sources of supplemental water are considered for all alternatives: 1) San Juan-Chama water, if available for lease, and 2) Native Rio Grande water, if available for sale or lease, or in a compact credit situation and stored in upstream reservoirs. In addition to the above water sources, Alternative E (Reaches of Middle Rio Grande, Lower Rio Grande, and Middle Pecos River) requires 24,263 and 16,431 ac-ft per year (33 and 23 cfs) for 95% and 50% target flows, respectively. Possible sources are from lease or purchase of surface and ground water rights along the Pecos River. What if the USFWS is not able to secure its source of water by these means? We believe that the USFWS needs to address these issues in the EIS.

Our Response: We believe that the action of designating critical habitat within the middle Rio Grande will not have significant effects on the environment outside the geographical borders of the United States and its territories. Moreover, some current river maintenance activities (e.g. constructing a temporary channel through the Elephant Butte Reservoir delta) will decrease losses of water from the river and increase deliveries to Elephant Butte Reservoir which helps meet compact obligations. The BOR supplemental water program has been implemented on a year-to-year basis since 1997. During this period, no irrigation water has been used to augment river flows without being replaced (BOR 2001c). For example, the water that was leased from San Juan-Chama contractors and released during 2000 was used by MRGCD for irrigation and was exchanged for an equivalent amount of native Rio Grande water to provide supplemental flows for the silvery minnow. We believe that these types of collaborative actions will continue and do not anticipate that the amount of supplemental instream flow, required by past section 7 consultations (e.g., Service 2001b), will increase because an area is designated as critical habitat.

(36) Comment: The amount of time and information available were insufficient for more detailed responses.

Our Response: On June 6, 2002, we published the proposed critical habitat determination in the Federal Register (67 FR 39205), announced public hearings, and invited public comment for 90 days. The public hearings were held on June 25 and 26. These public hearings were also announced in several newspapers (described above under the introduction of the “Summary of Comments and Recommendations” section). On June 6, we mailed the proposed rule and information on how to obtain the draft economic analysis and draft EIS to over 600 different interested parties. All of the documents were also available at the hearings, from us by request, or by download from our website. On August 28, we mailed a prepublication notice of the comment period extension. The comment period was subsequently extended and closed on October 2, 2002.

(37) Comment: The Service held public hearings only to fulfill a legal obligation and will not pay attention to any public comment.

Our Response: All comments received, including oral comments provided at the public hearing, were carefully evaluated before we made a final determination. In fact, we used special management plans received during the public comment period and other relevant issues to determine specific areas to not include for the final critical habitat designation.

(38) Comment: Some commenters asked whether critical habitat designation would affect the building or maintenance of flood control systems (e.g., levee) to protect the town of Socorro and other areas within the designation.

Our Response: Levees are specifically excluded from the designation (see “Regulation Promulgation” section in the Final Rule). Since 1995, the Corps has entered into section 7 consultation with us regarding its water operations, flood control and levee maintenance, bridge construction, section 404 permitting under the Clean Water Act, and other activities. Through this process, we have reviewed various Corps projects to ensure that the continued existence of the silvery minnow is not jeopardized and that previously designated critical habitat was not adversely modified or destroyed. Since the silvery minnow was federally listed, no Corps projects have been stopped, delayed, or altered in a significant way resulting from section 7 consultation. The draft EIS noted that the Corps will likely propose a design and develop a plan for construction that would permit levees to be rehabilitated without adversely modifying critical habitat.

It is also important to note that we have a special category of section 7 consultation, and corresponding regulations (50 CFR 402.05) called “Emergency Consultations.” The consultation process does not affect the ability of an agency to respond to emergency events such as levee failure or fire. During emergency events, our primary objective is to provide recommendations for minimizing adverse effects to listed species without impeding response efforts. During emergency events, protecting human life and property comes first every time. Consequently, no constraints for protection of listed species or their critical habitat are ever

recommended if they place human lives or structures (e.g., houses) in danger. We are currently working with many of our Federal partners to provide technical assistance, coordination, and, in some instances, section 7 consultation for proactive projects to reduce the potential for emergency events (e.g., wildland urban interface fuels management).

(39) Comment: The designation of critical habitat will impose section 9 restrictions against taking of silvery minnow in areas that do not currently have those restrictions (e.g., within the headwaters of Elephant Butte Reservoir).

Our Response: Section 9 of the Act prohibits the harm or harassment of individuals of listed species. There are no section 9 take prohibitions for critical habitat. Within the middle Rio Grande, prohibitions against take are in effect regardless of whether or not critical habitat has been designated because we consider this area occupied by the silvery minnow. Whether or not a species has designated critical habitat, it is protected from any actions resulting in an unlawful take under section 9 of the Act.

(40) Comment: The Service needs to provide specific analyses on whether each reach contains or is void of primary constituent elements. The constituent elements described are vague and violate 50 CFR Sec. 424.12(c), lack sufficient detail and justification, and should include a more specific description that defines what constitutes critical habitat. Several commenters were concerned that the mapping lacked precision for use by the public and the critical habitat boundaries are ambiguous and difficult to identify. Information is available for us to refine the 300-foot lateral width including National Wetlands Inventory data. The Rio Grande Compact Engineer Advisor from the State of Colorado submitted comments in October 2001 that suggested we use the “daily” Elephant Butte Reservoir water line as the lower terminus of critical habitat. Comments submitted in October 2002 suggested that the boundary as proposed would change from day to day and create total chaos in the operation of Elephant Butte Dam and Reservoir.

Our Response: The critical habitat designation includes the middle Rio Grande from Cochiti Dam to the utility line crossing the Rio Grande with UTM coordinates of UTM Zone 13: 311474 E, 3719722 N, just east of the Bosque Well demarcated on USGS Paraje Well 7.5 minute quadrangle (1980), Socorro County, NM. The designation also includes the tributary Jemez River from Jemez Canyon Dam to the upstream boundary of Santa Ana Pueblo, which is not included. (see the “Regulation Promulgation” section of the Final Rule and “Sub-alternative B-2” in the FEIS for exact descriptions of boundaries of critical habitat). We believe that with the revision to the downstream terminus of critical habitat, the boundary should be clear. Moreover, this final rule describes in the greatest detail possible the primary constituent elements important to the silvery minnow. In addition, please see responses to comments 26 and 45 for information related to this particular issue.

In our proposal and this final rule, we indicate our belief that the primary constituent elements provide for a flow regime that allows for short periods of low or no flow. In the proposal, we also highlighted the difficulties in describing the existing conditions of areas with low or no flow and solicited further information to refine the primary constituent elements and

how they relate to the existing conditions (e.g., flow regime). We noted that flow requirements are dynamic and change during the year and among years. The status of the species also contributes to specific flow requirements at specific areas or stream gages, for example. Consultation under section 7, rather than regulation, is the proper procedure for outlining specific flow requirements.

During the comment period we requested, but did not receive, any information that would either enable us to further refine the primary constituent elements or conduct further analysis on whether particular reaches contained or lacked one or more primary constituent elements. Further, while we welcome and encourage additional studies on the biological requirements of the silvery minnow, we believe the best available information has been used in defining the primary constituent elements necessary for the species' conservation. Nevertheless, we recognize that not all of the developed lands area within the boundaries of the designation will contain the habitat components essential to the conservation of the silvery minnow. For this reason, some developed lands are excluded by definition (see the "Regulation Promulgation" section in the Final Rule and the "Description of the Alternatives" in the FEIS).

We considered National Wetlands Inventory data and other sources of information to refine the lateral width of the designation. Because of the dynamic nature of the Rio Grande and the corresponding ephemeral nature of wetland and riparian vegetation adjacent to the river (Middle Rio Grande Biological Interagency Team 1993; Taylor *et al.* 1999; BOR 2001c), we believe that using National Wetlands Inventory or other data to select the lateral width of critical habitat would not be consistent with our regulations (50 CFR 424.12(c)), which do not allow us to use ephemeral reference points. Consequently, we are designating critical habitat using specific limits and reference points.

(41) Comment: Depletion of stored water in reservoirs by supplemental water releases to benefit critical habitat will affect BOR's ability to deliver water to the MRGCD.

Our Response: According to BOR (2001c), the voluntary supplemental water program for the silvery minnow is not expected to have an adverse affect on the MRGCD. Thus, it is the Service's understanding that BOR's voluntary supplemental water program will be consistent with existing laws and contracts to ensure delivery of water to the MRGCD and to the six middle Rio Grande Pueblos (Cochiti, Santo Domingo, San Felipe, Santa Ana, Sandia, and Isleta) (BOR 2001c). Moreover, section 7 consultation has been occurring regardless of critical habitat designation because of the Federal listing alone. We note that despite one of the State's worst droughts in 50 years, "the Rio Grande helped some farms grow bumper crops of alfalfa . . ." (Albuquerque Tribune December 16, 2002).

(42) Comment: One commenter believes that the proposed rule should be incontrovertible, but it is currently laced with supposition and conjecture, and it contains no conclusive data.

Our Response: As required by section 4(b)(2), the Service used the best available scientific and commercial data. In accordance with our policy published on July 1, 1994 (59 FR

34270), we sent the proposed rule to five peer reviewers to solicit their expert opinions. The purpose of such review is to ensure listing decisions are based on scientifically sound data, assumptions, and analyses. We received only one reply from our peer reviewers. The peer reviewer concluded that our proposal was scientifically sound.

(43) Comment: It does not appear that your EIS analyzed evaporation losses from restoration activities.

Our Response: This issue is discussed in the EIS. We concluded that the extent to which riverine and riparian restoration results in a net gain or net loss to the water supply depends on the design of the project.

(44) Comment: Several commenters suggested that the San Acacia reach be excluded from the designation because of economic or other relevant impacts.

Our Response: This is described as Alternative D in the EIS. The analysis in the EIS found a lower likelihood that habitat essential for the conservation of the silvery minnow would be preserved if this reach were excluded from the critical habitat designation. We also conclude in this final rule that this area is essential to the conservation of the silvery minnow because it likely serves as connecting corridors for fish movements between areas of sufficient flowing water (e.g., see Deacon and Minckley 1974; Eberle *et al.* 1993). Moreover, this reach is important because the additional loss of any habitat that is currently occupied could increase the likelihood of extinction (Hoagstrom and Brooks 2000, Service 1999).

(45) Comment: Several commenters noted that the San Acacia reach has historically experienced prolonged periods of low or no flow, but the construction of reservoirs has actually benefitted the silvery minnow by allowing runoff to extend over a longer time period than was previously possible.

Our Response: The construction and operation of reservoir dams has changed the natural flow regime of the river and thus may affect the survival of the Rio Grande silvery minnow. In the proposed rule, we acknowledged the historic periods of drying in the middle Rio Grande and suggested that reservoirs can facilitate management of water on the Rio Grande to avoid prolonged periods of low or no flow and provide sufficient flowing water during critical time periods, such as from May to October (Service 2001a, 2001b). Reservoirs and diversion dams have fragmented the middle Rio Grande and prevented silvery minnows from movement upstream after hatching (Service 2001b; Dudley and Platania 2001; 2002a). Still, availability of flow is likely not the only factor affecting the silvery minnow (July 20, 1994; 59 FR 36988).

(46) Comment: The designation of critical habitat within the middle Rio Grande will Federalize the water administration and usurp the powers of TX, NM, and Colorado to regulate their water.

Our Response: Designation of critical habitat will not affect the authorities of TX, NM, and Colorado to regulate their water. In fact, critical habitat applies only to actions carried out, funded, or permitted by the Federal Government.

(47) Comment: The proposed rule suggests that future section 7 consultations regarding the critical habitat designation will be analyzed on a case-by-case basis and can provide for flexibility. However, one commenter was concerned that current consultations will affect the outcome of future consultations, resulting in overly restrictive measures.

Our Response: Our regulations require that we use the best scientific and commercial data available for consultations (50 CFR 402.14(d)). This information is used to update and analyze the effects of past and ongoing human and natural activities or events that have led up to the current status of the species and its habitat. One of the benefits of formal consultation is that we are required to provide an up-to-date biological status of the species or critical habitat (i.e., environmental baseline), which is used to evaluate a proposed action. Consequently, the status of the species or critical habitat influences the outcome of a particular consultation more than when that consultation is conducted.

(48) Comment: If the bankfull width of the middle Rio Grande increases, would the additional area be considered critical habitat? It is not clear which lands within the critical habitat boundary are considered critical habitat.

Our Response: Lands are considered critical habitat when they are within critical habitat boundaries, contain one or more of the primary constituent elements, and require special management and protection. In this case those boundaries are based in part on the bankfull stage, which can easily be determined by visual or physical indicators including: the top of the highest depositional features (e.g., point bars), staining of rocks, exposed root hairs, and other features (Rosgen 1996). Federal actions conducted in areas within or outside the boundary of the mapped critical habitat that do not contain any of the primary constituent elements would not trigger a section 7 consultation unless those activities may affect the silvery minnow or the primary constituent elements in the adjacent critical habitat (see “Effect of Critical Habitat Designation” section).

(49) Comment: The Service cannot substitute the proposed conservation strategy for critical habitat; critical habitat triggers section 7 consultation, whereas the proposed conservation strategy offers no protection to the silvery minnow.

Our Response: We believe that the benefits of excluding the middle Pecos River and lower Rio Grande outweigh the benefits of their inclusion as critical habitat (see “Exclusions Under Section 4(b)(2) of the Act” section in the Final Rule and “Development of Alternatives” in the FEIS). We conclude that the exclusion of these areas is consistent with the Recovery Plan (Service 1999) and consistent with our regulations (50 CFR 424.19), and that the added management flexibility provided under section 10(j) will be beneficial to the conservation of the silvery minnow. Additionally, the adverse modification standard serves to preserve the status quo of critical habitat during section 7 consultations. But critical habitat, by itself, does not help

to reestablish minnows into areas where they have been extirpated--a primary goal of the Recovery Plan for the minnow.

(50) Comment: If the lateral boundary of critical habitat extends from the bankfull stage, how does one determine the point of bankfull stage when the Rio Grande is not at this stage?

Our Response: Bankfull stage is the point at which the river overflows its lowest bank, which is the elevation at which flow can be carried by the main channel before spilling over into the floodplain. The bankfull stage is not defined by water, and can easily be determined by visual or physical indicators including: the top of the highest depositional features (e.g., point bars), staining of rocks, exposed root hairs, and other features (Rosgen 1996).

(51) Comment: The designation for the silvery minnow and related documents are flawed and inaccurate, contain numerous errors, and make improper assumptions.

Our Response: As previously discussed, section 4(b)(2) of the Act and 50 CFR 424.19 require us to consider the economic impact, and any other relevant impact, of specifying any particular area as critical habitat. We published our proposed designation of critical habitat for the silvery minnow in the Federal Register on June 6, 2002 (67 FR 39206). The draft EIS and draft economic analysis of the proposed critical habitat designation were made available for review and public comment concurrently with the proposed rule during the public comment period. Based on the public comments received during the open comment period, a final EIS and final Economic Analysis of critical habitat for the silvery minnow were completed. These documents and this final rule addressed or took into consideration information and concerns raised through the comment period. Please refer to the final EIS and final Economic Analysis. Copies of both the draft and final EIS and the draft and final economic analysis are in the supporting record for this rulemaking and can be inspected or obtained by contacting the New Mexico Ecological Services Field Office (refer to the ADDRESSES section of the final rule).

(52) Comment: The draft economic analysis is not a full analysis. It is still an incremental analysis, and it is not in compliance with the recent Tenth Circuit Court ruling on the endangered southwestern willow flycatcher (Empidonax traillii extimus) critical habitat.

Our Response: The economic analysis is a full analysis. Our standard best practice in economic analyses is to apply an approach that measures costs, benefits, and other impacts arising from a regulatory action against a baseline scenario of the world without the regulation. Guidelines on economic analyses, developed in accordance with the recommendations set forth in Executive Order 12866 ("Regulatory Planning and Review"), for both the Office of Management and Budget and the Department of the Interior, note the appropriateness of the approach: "The baseline is the state of the world that would exist without the proposed action. All costs and benefits that are included in the analysis should be incremental with respect to this

baseline.” When viewed in this way, the economic impacts of critical habitat designation involve evaluating the “without critical habitat” baseline versus the “with critical habitat” scenario. Impacts of a designation equal the difference, or the increment, between these two scenarios. Measured differences between the baseline and the scenario in which critical habitat is designated may include (but are not limited to) changes in land use, environmental quality, property values, or time and effort expended on consultations and other activities by Federal landowners, Federal action agencies, and, in some instances, State and local governments and/or private third parties. Incremental changes may be either positive (benefits) or negative (costs).

In New Mexico Cattle Growers Ass'n v. U.S. Fish and Wildlife Service, 248 F.3d 1277, however, the Tenth Circuit recently held that the baseline approach to economic analysis of critical habitat designations used by us for the southwestern willow flycatcher designation was “not in accord with the language or intent of the ESA.” In particular, the court was concerned that we had failed to analyze any economic impact that would result from the designation, because it took the position in the economic analysis that there was no economic impact from critical habitat that was incremental to, rather than merely co-extensive with, the economic impact of listing the species. We had therefore assigned all of the possible impacts of critical habitat designation to the listing of the species, without acknowledging any uncertainty in this conclusion or considering such potential impacts as transaction costs, reinitiations, or indirect costs. The court rejected the baseline approach incorporated in that designation.

In our analysis, we addressed the Tenth Circuit's concern that we give meaning to the Act's requirement of considering the economic impacts of critical habitat designation by acknowledging the uncertainty of assigning certain post-designation economic impacts (particularly section 7 consultations) as having resulted from either the listing or the designation. We believe that for many species the designation of critical habitat has a relatively small economic impact, particularly in areas where consultations have been ongoing with respect to the species. This is because the majority of the consultations and associated project modifications, if any, already consider habitat impacts and, as a result, the process is not likely to change significantly as a result of the designation of critical habitat. Nevertheless, we recognize that the nationwide history of consultations on critical habitat is not broad, and, in any particular case, there may be considerable uncertainty whether an impact results from the critical habitat designation or the listing alone. We also understand that the public wants to know more about the kinds of costs section 7 consultations impose and frequently believes that critical habitat designation could require additional project modifications. Therefore, the final economic analysis incorporates two baselines. One addresses the impacts of critical habitat designation that may be “attributable co-extensively” to the listing of the species. Because of the potential uncertainty about the benefits and economic costs resulting from critical habitat designations, we believe it is reasonable to estimate the upper bounds of the cost of project modifications on the basis of the benefits and economic costs of project modifications that would be required by consultation under the jeopardy standard. It is important to note that the inclusion of impacts attributable co-extensively to the listing does not convert the economic analysis into a tool to be considered in the context of a listing decision. As the court reaffirmed in the southwestern willow flycatcher decision, “the ESA clearly bars economic considerations from having a seat at the table when the listing determination is being made.” The other baseline, the lower boundary

baseline, will be a more traditional rulemaking baseline. The economic analysis attempts to provide our best analysis of which of the effects of future section 7 consultations actually result from the regulatory action under review (i.e., the critical habitat designation). These costs will in most cases be the costs of additional consultations, reinitiated consultations, and additional project modifications that would not have been required under the jeopardy standard alone, as well as costs resulting from uncertainty and perceptual impacts on markets. The final economic analysis provides a detailed study concerning the baseline and potential incremental effects of the designation of critical habitat for the silvery minnow, and we believe it is in compliance with the Tenth Circuit's decision in New Mexico Cattle Growers Ass'n v. U.S. Fish and Wildlife Service, 248 F.3d 1277.

(53) Comment: The connection between Federal entities that grant permits, etc. and citizens (and/or applicants) for these permits is not assessed. This impact may not be a direct effect of designating critical habitat, but is an indirect effect. The EIS makes the point that the only entities affected by the designation of critical habitat would be Federal agencies that must consult with the FWS under Section 7 of ESA. However, these agencies may be consulting on permits (Clean Water Act Section 404) or other such actions (e.g., granting of water rights) where there is an applicant (private citizen, farmer, etc.) and consequently, the individual farmer, business owner, applicant is ultimately affected if project modifications arise from the Section 7 consultation with the Federal agency.

Our Response: Under the Section titled "Effects of the Action as Modified" in Chapter 4 of the DEIS and FEIS, the Service states that formal critical habitat designation would affect non-federal parties if their actions are dependent of Federal agency funding, permitting, or other activity. The potential economic affect that may be associated with consultation requirements and project modifications that may be incurred by such applicants is included in the economic cost estimates provided in the Economic Analysis.

(54) Comment: Please explain why farms are not included as "small business" in the discussion of SBREFA in the Economic Analysis (p87).

Our Response: Based on the past consultation history for the silvery minnow, discharges from municipal wastewater treatment plants and other large manufacturing facilities are the primary activities anticipated to be affected by the designation of critical habitat that could affect small businesses. Historic evidence indicates that NPDES permits have been divided approximately evenly between municipal wastewater treatment facilities and manufacturing facilities. However, because the EPA Region 6 Office commented that the economic analysis should include agriculture in the small business analysis, the final economic analysis quantified the effects of the designation on small businesses that directly experience an increased regulatory burden, including ranching and farming. The number of affected businesses in the ranching and farming industry is calculated by the estimating the acres removed from alfalfa production, calculated in Section 5.2 of the final economic analysis, divided by the average farm size. The final economic analysis estimated that less than one percent of the small businesses in the farming and ranching industries, two percent in the wastewater treatment industry, and less than one percent in other manufacturing industries would be affected by the designation. Therefore,

the analysis concludes that a significant economic impact on a substantial number of small entities will not result from the designation of critical habitat for the silvery minnow.

(55) Comment: What if the Service is unable to secure sources of water to meet the 95% and 50% target flow amounts on the Rio Grande and Pecos?

Our Response: As with all biological opinions, if the Federal action agency, (i.e., the BOR in the June 29, 2001, biological opinion) cannot meet the measures described in the biological opinion that must be undertaken, reinitiation of formal consultation is required. In the middle Rio Grande, if supplemental water is not available to meet target flows contained in a biological opinion, then reinitiation of consultation would be required. Reinitiation of consultation has no bearing on the designation of critical habitat for the silvery minnow.

Studies and historic and current data indicate that “water flows uphill toward money” (Brookshire *et al.* 2002; Hall 2002). In other words, water will move toward the highest valued use in accordance with the economy. For example, 90 percent of all water rights transferred (i.e., leased or sold) in the middle Rio Grande from 1976 to 2000 were previously held by irrigation (Brookshire *et al.* 2002). Consequently, we believe that the voluntary acquisition of water to meet supplemental flows will be available.

(56) Comment: The DEIS fails to include the potential effect on AMAFCA operations in several places in the DEIS and underlying Economic Analysis where other operations are specifically noted. At page 71 of the document, the summary of flood control operations that may require consultation do not include AMAFCA’s operations, despite the fact that AMAFCA is the primary flood control agency in the proposed critical habitat and that AMAFCA regularly must obtain Clean Water Act 404 Permits from the Corps of Engineers. As the DEIS itself notes, AMAFCA’s operations may well be affected as a result of 404 permitting requirements which may trigger ESA compliance not required previously. Project delays and increased costs are likely, but are not assessed in the impact analysis.

Our Response: In Chapter 4, page 71 of the DEIS, the discussion is specific to the Cochiti Reach which is excluded under Alternative C. AMAFCA does not manage any flood control structures in this reach. The reach of river that flows through the City of Albuquerque was included in all of the action alternatives analyzed in the DEIS and the discussion of potential impacts related to AMAFCA were provided in Alternative B, under the heading titled AMAFCA. Since the impacts to AMAFCA would not differ under any of the other action alternatives, a description of impacts specific to AMAFCA was not provided in each alternative. As stated above, the Service is unable to parse out the potential costs AMAFCA may incur as a result of consultation requirements or associated project modifications. However, as discussed in the Final Rule and FEIS, flood control facilities within the 300-ft (91.4-m) lateral width of the designation are not considered critical habitat and were specifically excluded from the designation.

(57) Comment: The DEIS should also assess the increased risk of flooding due to delays and possible seasonal restrictions likely to occur due to any required section 7 consultations.

Our Response: As stated above, the Service does not intend to hinder or impede flood control operations that would result in an increased risk of flooding within the Middle Rio Grande. We have a special category of section 7 consultation, and corresponding regulations (50 CFR 402.05) called “Emergency Consultations.” The consultation process does not affect the ability of an agency to respond to emergency events such as levee failure or fire. During emergency events, our primary objective is to provide recommendations for minimizing adverse effects to listed species without impeding Our Response efforts. During emergency events, protecting human life and property comes first every time.

(58) Comment: The DEIS and attendant economic analysis should include a full impact analysis. In its current form, the DEIS is lacking.

Our Response: The Service believes that the analysis provided in the EIS and Economic Analysis sufficiently analyzes and discusses the potential impacts associated with the proposed critical habitat designation.

Information provided in the EIS was derived from the economic analysis and the economic analysis is a full analysis. Our standard best practice in economic analyses is to apply an approach that measures costs, benefits, and other impacts arising from a regulatory action against a baseline scenario of the world without the regulation. Guidelines on economic analyses, developed in accordance with the recommendations set forth in Executive Order 12866 (“Regulatory Planning and Review”), for both the Office of Management and Budget and the Department of the Interior, note the appropriateness of the approach: “The baseline is the state of the world that would exist without the proposed action. All costs and benefits that are included in the analysis should be incremental with respect to this baseline.” When viewed in this way, the economic impacts of critical habitat designation involve evaluating the “without critical habitat” baseline versus the “with critical habitat” scenario. Impacts of a designation equal the difference, or the increment, between these two scenarios. Measured differences between the baseline and the scenario in which critical habitat is designated may include (but are not limited to) changes in land use, environmental quality, property values, or time and effort expended on consultations and other activities by Federal landowners, Federal action agencies, and, in some instances, State and local governments and/or private third parties. Incremental changes may be either positive (benefits) or negative (costs).

In New Mexico Cattle Growers Ass'n v. U.S. Fish and Wildlife Service, 248 F.3d 1277, however, the Tenth Circuit recently held that the baseline approach to economic analysis of critical habitat designations used by us for the southwestern willow flycatcher designation was “not in accord with the language or intent of the ESA.” In particular, the court was concerned

that we had failed to analyze any economic impact that would result from the designation, because it took the position in the economic analysis that there was no economic impact from critical habitat that was incremental to, rather than merely co-extensive with, the economic impact of listing the species. We had therefore assigned all of the possible impacts of critical habitat designation to the listing of the species, without acknowledging any uncertainty in this conclusion or considering such potential impacts as transaction costs, reinitiations, or indirect costs. The court rejected the baseline approach incorporated in that designation.

In our analysis, we addressed the Tenth Circuit's concern that we give meaning to the Act's requirement of considering the economic impacts of critical habitat designation by acknowledging the uncertainty of assigning certain post-designation economic impacts (particularly section 7 consultations) as having resulted from either the listing or the designation. We believe that for many species the designation of critical habitat has a relatively small economic impact, particularly in areas where consultations have been ongoing with respect to the species. This is because the majority of the consultations and associated project modifications, if any, already consider habitat impacts and, as a result, the process is not likely to change significantly as a result of the designation of critical habitat. Nevertheless, we recognize that the nationwide history of consultations on critical habitat is not broad, and, in any particular case, there may be considerable uncertainty whether an impact results from the critical habitat designation or the listing alone. We also understand that the public wants to know more about the kinds of costs section 7 consultations impose and frequently believes that critical habitat designation could require additional project modifications. Therefore, the final economic analysis incorporates two baselines. One addresses the impacts of critical habitat designation that may be "attributable co-extensively" to the listing of the species. Because of the potential uncertainty about the benefits and economic costs resulting from critical habitat designations, we believe it is reasonable to estimate the upper bounds of the cost of project modifications on the basis of the benefits and economic costs of project modifications that would be required by consultation under the jeopardy standard. It is important to note that the inclusion of impacts attributable co-extensively to the listing does not convert the economic analysis into a tool to be considered in the context of a listing decision. As the court reaffirmed in the southwestern willow flycatcher decision, "the ESA clearly bars economic considerations from having a seat at the table when the listing determination is being made." The other baseline, the lower boundary baseline, will be a more traditional rulemaking baseline. The economic analysis attempts to provide our best analysis of which of the effects of future section 7 consultations actually result from the regulatory action under review (i.e., the critical habitat designation). These costs will in most cases be the costs of additional consultations, reinitiated consultations, and additional project modifications that would not have been required under the jeopardy standard alone, as well as costs resulting from uncertainty and perceptual impacts on markets. The final economic analysis provides a detailed study concerning the baseline and potential incremental effects of the designation of critical habitat for the silvery minnow, and we believe it is in compliance with the Tenth Circuit's decision in New Mexico Cattle Growers Ass'n v. U.S. Fish and Wildlife Service, 248 F.3d 1277.

(59) Comment: What is the likelihood that all or any portion of the 9,094 acres in the Middle Rio Grande (or 5,839 acres in the Pecos) will be taken out of agricultural production, and

the resulting water rights available to support the necessary water flow for the Rio Grande silvery minnow? It seems that FWS should assess whether this scenario is likely to happen, especially in the event that none of the anticipated water (50 cfs minimum) is acquired (e.g., a potential “worst-case scenario”). Similarly, FWS should assess what would happen if few or any of the water rights are acquired or leased from the potential sources listed in the EIS. Would FWS acquire the water through legal means or other Federal agencies?

Our Response: As stated in the EIS and Economic Analysis, the direct and indirect costs of maintaining stream flow, as discussed in the Final Economic Analysis and in the sections below, derive from actions taken to avoid jeopardy to the minnow (i.e., actions stemming from listing). Currently, these costs are based on the flow targets established in the 2001 BO RPA. They are discussed in both the DEIS and Draft Economic Analysis as impacts arising from section 7 consultations, whether as a result of the listing of the species or critical habitat designation, or both. To date, meeting the flow targets established in the 2001 BO RPA has not resulted in any lands being taken out of agricultural production.

As stated in the DEIS and Draft Economic Analysis, the purchase or lease of 40,427 ac-ft/yr of water rights, and retirement from agriculture of 9,084 acres are assumed to be necessary to assure adequate instream flow as specified in the Service’s 2001 BO and reflects the amount of water needed to meet current flow targets 95 years out of 100, given normal climatic variability. It should be noted that this critical habitat designation would not establish flow targets for the silvery minnow. Such flow targets would be determined during section 7 consultations and it is expected that any water required to meet such targets would be acquired through voluntary leases and/or purchases. Chapter 4 of the DEIS and Final EIS include discussions regarding water acquisition by Federal Agencies as well as the State of New Mexico’s Conservation Water Agreement.

The regulations for section 7 consultation require that the worst case scenario be considered when evaluating whether a proposed action will jeopardize the continued existence of a species. This was done in the 2001 BO. If sufficient amounts of water cannot be acquired to meet the flow targets of the 2001 BO or any subsequent BO, then the federal action agencies, in this case, Reclamation and the Corps would be required to reconsult on their actions.

Issue 3: Tribal and Pueblo Concerns

(60) Comment: The Service is legally mandated to have Government-to-Government consultations with affected Tribes and Pueblos. The designation will affect the trust assets of Tribes and Pueblos. Will the designation of critical habitat affect the Pueblos of Taos, San Juan, or the Jicarilla Apache Nation?

Our Response: In accordance with Secretarial Order 3206, “American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act” (June 5, 1997); the President's memorandum of April 29, 1994, “Government-to-Government Relations with Native American Tribal Governments” (May 4, 1994; 59 FR 22951); Executive Order 13175; and the Department of the Interior's requirement at 512 DM 2, we recognize the need to consult

with Federally recognized Indian Pueblos and Tribes on a Government-to-Government basis. Section 4(b)(2) of the Act requires us to gather information regarding the designation of critical habitat and the effects thereof from all relevant sources, including Indian Pueblos and Tribes.

We were available to confer with the affected Indian Pueblos and Tribes during the comment period for this proposed rule. Recognizing our Federal trust responsibility, we met with the following Pueblos and Tribes (some meetings were to provide technical assistance and are not considered Government-to-Government consultations): Jicarilla Apache Nation (October 22, 2001; January 9 and 25, 2002; March 7, 2002), San Juan (December 11, 2001; February 25, 2002; September 6, 2002), Isleta (July 25, 2002; August 8 20, 2002), Sandia (October 22, 2001; February 12, 2002; September 25, 2002), Santa Ana (December 11, 2001; July 9 and 10, 2002; August 2 and 6, 2002; September 13, 2002), Santo Domingo (August 8, 2002), and Taos Pueblos (April 2, 2002; September 11, 2002; October 23, 2002) to discuss how they might be affected by the designation of critical habitat or other issues related to the Act. We provided technical assistance to Santo Domingo, Santa Ana, Sandia, and Isleta Pueblos in the development of their management plans (see “Relationship of Critical Habitat to Pueblo Lands under Section 3(5)(A) and Exclusions Under Section 4(b)(2)” section of the Final Rule and “Consideration of Management Plans” in the FEIS).

The designation of critical habitat is not anticipated to impact Indian Trust Assets, which are legal interests in assets held in trust by the United States Government for Tribes and Pueblos. Water rights are considered an Indian Trust Asset. For an impact to occur, the designation of critical habitat would need to diminish the Tribe’s access to or the value of any Indian Trust Asset. For example, the BOR recently indicated that the six middle Rio Grande Pueblos would receive prior and paramount water deliveries through November 15, 2002, and that future deliveries of prior and paramount water for the six middle Rio Grande Pueblos will also be ensured. Prior and paramount water deliveries are not dependent on, and are not expected to affect, supplemental water deliveries for the silvery minnow (BOR 2002). We also do not believe that other Tribes or Pueblos (e.g., Taos and San Juan Pueblos, Jicarilla Apache Nation) outside of the critical habitat designation will be affected. We believe that the consultation history of the silvery minnow demonstrates that previous section 7 consultations have not affected or impaired Indian Pueblo and Tribal trust resources within the area we are designating as critical habitat (e.g., see Service 2001b). During consultation, measures taken to avoid destruction or adverse modification of critical habitat will likely be similar if not identical to what is currently required to avoid jeopardizing the silvery minnow. Consequently, we do not believe that critical habitat will result in requirements during consultation, and do not believe critical habitat will affect Indian Trust Assets.

(61) Comment: The Service completely omits Pueblos from the analysis under the Regulatory Flexibility Act.

Our Response: We are certifying that this final rule will not have a significant effect on a substantial number of small entities, including Indian Tribes and Pueblos (see “Required Determinations” section in the Final Rule).

(62) Comment: Critical habitat will require the maintenance of river flows which will adversely affect Pueblos by limiting the amount of water available. Pueblos may have substantial unused water rights. If critical habitat limits depletions, the designation would disproportionately affect Pueblos.

Our Response: We do not anticipate that the designation of critical habitat will alter the administration of the supplemental water program. Thus, delivery of water to middle Rio Grande contractors and Pueblos is ensured (BOR 2001c). Environmental justice-related impacts of preferred alternatives for critical habitat designation are discussed in Chapter 4 of the EIS. Nothing in the final rule or the EIS is intended to preclude new depletions resulting from the exercise of senior Indian water rights. In addition, please see response to comment 48 for information related to this particular issue.

Issue 4: Other Relevant Issues

(63) Comment: The Service has continued to ignore the economic consequences of designating critical habitat for the silvery minnow on the Pecos River.

Our Response: The Pecos River is not designated as critical habitat for the silvery minnow.

(64) Comment: In the Economic Analysis, why is it assumed that all the water required to meet supplemental flows will all come from NM agriculture? The Rio Grande flows through three states, so why will the burden of ensuring the survival of the silvery minnow be placed upon the water users in the middle Rio Grande? Are interstate water rights transfers (i.e., sale or lease) possible under existing Federal or State law?

Our Response: The Economic Analysis assumed that water resources in NM are limited, which is demonstrated by an active market in which water rights move between willing buyers and sellers within the confines of State and Federal regulations. From 1976 to 2000, the purchasers of water rights in the middle Rio Grande were generally municipalities (61 percent of purchasers); however, other sectors participate as buyers in this market as well. During the same time frame, the sellers of water rights in the middle Rio Grande were primarily agriculture (90 percent of sellers) reflecting the fact that the majority of the water rights (as measured by total volume of water reflected in these rights) are currently held in the agriculture sector. Given these data, it was assumed that any water provided to the silvery minnow by supplementing present water flow conditions would come from currently held irrigation water rights because these tend to have greater flexibility than water rights for municipal or commercial uses. Thus, the economic analysis focused on the area within the middle Rio Grande for providing supplemental water, and did not consider interstate transfers of water. In general, our economic analyses consider the impacts within the geographic area being proposed as critical habitat. For example, in this case the economic analysis considered the area proposed as critical habitat in the middle Rio Grande, as well as the other two areas found to be essential to the conservation of the minnow (i.e., middle Pecos River and Lower Rio Grande). While interstate water rights

transfers (i.e., sale or lease) may be possible under existing Federal or State law, we concluded that such transfers were beyond the scope of our economic analysis.

(65) Comment: The Economic Analysis severely underestimates the costs associated with providing 40,000 af of supplemental water because it did not estimate transaction costs associated with the purchase or lease of water rights.

Our Response: Easter et al. (1999) found that transaction costs associated with purchase or lease of water rights must be kept low for an effective water market. For example, they estimated that transaction costs range from about \$17 to \$190 per af. Another example indicates that a 10 percent commission is common for completing the sale or lease of a water right in NM (Turner 2002a; <http://www.waterbank.com/Agreements/Agency%20Agreement.htm>). Based on these and other data, the final Economic Analysis estimates that the average transaction cost is likely \$333 and \$183 for the Rio Grande and Pecos, respectively. Consequently, the estimated transaction costs would be approximately 7 to 10 percent of the total price of an acre-foot. These estimates do not change our required determinations in the Final Rule.

(66) Comment: The Service should have used the Upper Rio Grande Water Operations Model (URGWOM) to determine the amount of supplemental water to meet the target flow of 50 cfs at the San Marcial Floodway gage. The Service did not use the best scientific and commercial data available because you failed to engage the State of New Mexico and use their expertise, data, and models.

Our Response: On September 5, 2001, we invited the NMISC to participate in the development of the EIS as a cooperating agency. On October 3, 2001, the NMISC accepted our invitation. On April 9, 2002, the Service requested the expert review of the preliminary predecisional draft EIS and preliminary predecisional draft economic analysis from the NMISC, as a cooperating agency. We requested the review because the NMISC has jurisdiction by law or special expertise over water resources and environmental impacts involved with the Service's action of designating critical habitat. We specifically requested that the review focus on the accuracy of information and analyses as described in the draft documents. On April 25, 2002, the NMISC requested additional information from the Service and our contractors. During the open comment period for the proposed rule, we met on July 2 and 22, 2002, with the NMISC to further coordinate the designation of critical habitat and clarify the additional information requested. Nevertheless, we could not rely on data from URGWOM to develop the final rule because the information has yet to be submitted.

A focal point of discussions with the NMISC was the use of URGWOM for estimating the amount of supplemental water needed to maintain flows in the middle Rio Grande. During these meetings and in a July 16, 2002, letter, we indicated that on the basis of discussions between our contractor and the NMISC, and according to the May 9, 2002, notes from the URGWOM Steering Committee meeting, we understood that URGWOM was still being

calibrated and validated. It was also our understanding that URGWOM and the relevant input and output data have not been tested by all the cooperating agencies for the Upper Rio Grande Water Operations Review EIS and would not be made publicly available until this occurs. As noted in the April 11, and September 12, 2002, notes from the URGWOM Steering Committee meetings: (1) the consensus of the Steering Committee members was that the latest version of URGWOM should not be released until it has been tested and is ready for public use; (2) the data and results for various model runs were not totally successful, but furthered the model debugging, testing, and evaluation; (3) the middle Rio Grande valley water depletions are modeled too high; (4) the water planning model is currently simplistic and rough; and (5) water operations modeling is still undergoing troubleshooting, repairs, and enhancements. Thus, we conclude that URGWOM is not available for use in the economic analysis.

Nevertheless, during the July 22, 2002, meeting with the NMISC, it was agreed that the NMISC would run URGWOM and provide detailed comments, data, output, and interpretation to us during the open comment period on this and other relevant analyses. We also requested that the NMISC assist us in determining the economic costs of providing water to meet Rio Grande Compact delivery obligations separate from the economic costs of leaving water in the river for the silvery minnow. The NMISC indicated in its October 2, 2002, comments on the proposed critical habitat designation that the data and analyses were nearly complete and a report interpreting the results would be submitted in November 2002. Additional comments or data were not submitted. If additional comments or data had been submitted after October 2, 2002, we would not have considered them in the development of this final rule, the economic analysis, or the EIS because the data, analyses, and report would not have been submitted during the open comment period, and other parties would not have had the full opportunity to review and comment on the material.

Section 4(b)(2) of the Act states critical habitat shall be designated on the basis of the best scientific data available. We must make this determination on the basis of the information available at this time, and we are not allowed to delay our decision until further information is submitted. Therefore, we conclude the current hydrological model used in the economic analysis is the best scientific information available at this time, as required by the Act.

(67) Comment: The Economic Analysis appears to underestimate the amount of supplemental water that is required to maintain flows specified by the biological opinion on the middle Rio Grande.

Our Response: From our experience, it is nearly impossible to guarantee continuous flow in the middle Rio Grande at all times of the year, regardless of the extremity of conditions. As a result, our analysis calculates the annual deficit of water below the required minimum flow in the 95th percentile and the 50th percentile worst-case (e.g., driest) year. This calculation results in an average annual deficit of 40,427 af/year in the middle Rio Grande. This estimate of supplemental water is within the range of other estimates of supplemental water required to maintain instream flow in the middle Rio Grande. Since 1996, the BOR has leased water each year to maintain instream flow during this dry period. In 2001, 22,000 af of supplemental water, from the conservation water agreement, was released and was sufficient to meet the

supplemental flow requirements outlined in the June 29, 2001, biological opinion (J. Smith, pers. comm., 2002). In addition, Balleau Groundwater, Inc. (1999) estimated that it would require 52,600 af of water released from Cochiti to maintain a flow of 200 cfs at San Acacia in an average year. Therefore, we believe our estimate of approximately 40,000 af of supplemental water is accurate.

(68) Comment: The Service's analyses do not take into account upstream storage that would be needed to provide for supplemental flows, nor did the Service address storage of native water when storage is restricted in upstream reservoirs (e.g., see Rio Grande Compact, Article VII).

Our Response: The hydrologic model used in the economic analysis did not attempt to model the location of water used to supplement instream flow, but rather provided the amount of supplementary water needed at the San Acacia (middle Rio Grande) and Acme (middle Pecos River) gages. We did not identify sources of supplemental water (e.g., storage) within this designation, because these sources can vary annually. Moreover, the Federal agencies have discretion on selecting specific sources and storage of supplemental water (BOR 2001c; Corps 2001). The amount of supplemental flows will be dependent upon the environmental baseline of the silvery minnow, the proposed action by the Federal agency, and those discretionary actions that are part of the consultation.

(69) Comment: Future supplemental water will not be available in the middle Rio Grande as it was from 1996 to 2002.

Our Response: As with all biological opinions, if the Federal action agency, (i.e., the BOR in the June 29, 2001, biological opinion) cannot meet the measures described in the biological opinion that must be undertaken, reinitiation of formal consultation is required. In the middle Rio Grande, if supplemental water is not available to meet target flows contained in a biological opinion, then reinitiation of consultation would be required. Reinitiation of consultation has no bearing on the designation of critical habitat for the silvery minnow.

(70) Comment: The designation will steal water from an already drought-stricken area. Critical habitat will devastate the farming culture.

Our Response: The maintenance of river flows has been implemented through BOR's voluntary supplemental water program. This program is being implemented within the existing water rights framework, including Federal Indian water rights, San Juan-Chama contract rights, and state law water rights administered by the State of New Mexico. Supplemental flows to avoid destruction or adverse modification of critical habitat will likely be similar if not identical to what is currently required to avoid jeopardizing the species.

During the 2000 irrigation season, most of the supplemental water used to support the silvery minnow was provided through BOR leases of San Juan-Chama Project water from the City of Albuquerque. The City in turn provided that water to the MRGCD to finish the irrigation season, while allowing native Rio Grande flows to remain in the river without

diversion. Moreover, in June 2002, the City of Albuquerque signed two agreements to provide 40,000 af of water to the BOR for supplemental flows for the silvery minnow and an additional 70,000 af of water to extend the MRGCD irrigation season from June to September 2002.

The BOR supplemental water program has been implemented on a year-to-year basis since 1997. During this period, no irrigation water has been used to augment river flows without being replaced (BOR 2001c). For example, the water that was leased from San Juan-Chama contractors and released during 2000 was used by MRGCD for irrigation and was exchanged for an equivalent amount of native Rio Grande water to provide supplemental flows for the silvery minnow. We believe that these types of collaborative actions will continue and do not anticipate that the amount of supplemental instream flow, required by past section 7 consultations (e.g., Service 2001b), will increase because an area is designated as critical habitat.

(71) Comment: The Service should analyze the impacts on groundwater, urban development, and operation of canals and other irrigation structures.

Our Response: The EIS analyzes impacts on water rights and management, land ownership and use, social and economic impacts, and a variety of other environmental consequences.

(72) Comment: The Service should consider the positive impact of critical habitat designation in the region's economy.

Our Response: The potential benefits of critical habitat are described in the economic analysis and EIS.

(73) Comment: It is currently impossible with the natural flow regime (i.e., after all managed uses of water are curtailed) to maintain the primary constituent elements related to water flow. The primary constituent element that indicates conditions "do not increase prolonged periods of low or no flow" presume a baseline is known.

Our Response: Critical habitat is designated on the basis of existing conditions within each of the river reaches. We acknowledge that some of these areas have the potential for no to low flow during certain seasons or years. This primary constituent element provides water of sufficient flows to reduce the formation of isolated pools, and is essential to the conservation of the silvery minnow because the species cannot withstand permanent drying of long stretches of river. In addition, please see response to comment 35 for information related to this particular issue.

(74) Comment: There is not enough information known about the silvery minnow or about the impacts of the designation to perform the required analyses.

Our Response: This final determination constitutes our best assessment of areas needed for the conservation of the silvery minnow. We must make this determination on the basis of the information available at this time, and we may not delay our decision until more information

about the species and its habitat are available. Southwest Center for Biological Diversity v. Babbitt, 215 F.3d 58 (D.C. Cir. 2000).

(75) Comment: The Service concludes that low or no-flow conditions have become more prevalent in the last few decades. The hydrological data demonstrate that this is not true. These unfounded claims indicate that a thorough hydrologic analysis of the middle Rio Grande should be completed using hydrological variability techniques (e.g., Richter et al. 1997).

Our Response: We have revised the “Background” section of the final rule. We are participating in the Upper Rio Grande Basin Water Operations Review and EIS with the Joint Lead Agencies and other cooperators, including the Corps, BOR, and the NMISC, to comprehensively review the water operations activities that are conducted under the existing authorities in the Rio Grande Basin above Fort Quitman, TX. Hydrological variability techniques (e.g., Richter et al. 1997) can guide river managers to define and adopt interim management targets before conclusive long-term research results are available. The Federal agencies have discretion when selecting specific river management targets and activities (e.g. sources and storage of supplemental water (BOR 2001c; Corps 2001)). Consequently, hydrological variability techniques could be applied to river management targets and activities at the discretion of the Federal agencies, but are beyond the scope of this designation.

(76) Comment: One commenter questioned why, although approximately 200,000 af of water were released in the summer of 2000 to save the silvery minnow from extinction, the species suffered one of its most significant declines during this artificially wet period. NM and other signatories of the Rio Grande Compact cannot afford this waste of water.

Our Response: In the spring of 2000, as a result of court-ordered mediation (Minnow v. Keys, Civ. No. 99-1230 JP/KBM-ACE), BOR, through voluntary leases and repayment agreements, and in cooperation with other entities, provided 168,000 af of water to the Rio Grande for the silvery minnow and for irrigation purposes during the year 2000. Data from silvery minnow population monitoring studies in 2001 indicated a slight increase of the population in the Angostura, Isleta, and San Acacia Reaches (Dudley and Platania 2001). Without efforts to maintain at least some flow in the Rio Grande in 2000, it is likely that the silvery minnow might have been extirpated from the middle Rio Grande (Dudley and Platania 2001). It is also important to note that, at least partially as a result of these supplemental flows, NM realized a credit of 100,000 af toward its current and future delivery obligations to TX under the Rio Grande Compact (BOR 2001c).

(77) Comment: Because of the silvery minnow, the Service has not allowed the BOR to maintain a channel through the delta area north of Elephant Butte Reservoir.

Our Response: On May 8, 2000, we received a biological assessment from BOR concerning the creation of a temporary channel through the upstream delta of Elephant Butte Reservoir. BOR proposed to implement several conservation measures—these were included and described in their biological assessment as part of the project. On August 4, 2000, we completed

consultation by concurring with BOR's determination that the project "may affect but is not likely to adversely affect" the silvery minnow or its designated critical habitat, that it "may affect but is not likely to adversely affect" the southwestern willow flycatcher, and that it will have "no effect" on the bald eagle. During September 2000 and April 2001, BOR provided supplementary information and clarifications on the project activities. No additional effects were anticipated and it is our understanding that BOR is proceeding with the construction of the temporary channel in full compliance with its responsibilities under the Act. In a letter dated August 30, 2002, from the Service's New Mexico Ecological Services Field Office to the New Mexico Office of the State Engineer, we reiterated that environmental compliance with the Act had been achieved. In the letter, we specifically asked whether the State Engineer believed that further environmental clearances were required for the completion of the temporary channel. We did not receive a response to the August 30, 2002, letter.

(78) Comment: Many environmental groups are using the silvery minnow to further their agendas of stopping growth and development.

Our Response: The recovery of the silvery minnow follows our cooperative policy on recovery plan participation, a policy intended to involve stakeholders in recovery planning (July 1, 1994; 59 FR 34272). Numerous individuals, agencies, environmental groups, and affected parties were involved in the development of the Recovery Plan or otherwise provided assistance and review (Service 1999). We believe this stakeholder involvement will minimize the social and economic impacts that could be associated with recovery of this endangered species.

Section 4(a)(3) of the Act requires that the Secretary, to the maximum extent prudent and determinable, designate critical habitat at the time a species is listed as endangered or threatened. As noted under the "Background Section" above, when the silvery minnow was listed as endangered in 1994, we found that critical habitat was not determinable. Subsequently, we were ordered to publish a final determination regarding critical habitat for the silvery minnow, Forest Guardians v. Babbitt, Civ. No. 97-0453 JC/DIS. On July 6, 1999, we published a final designation of critical habitat for the silvery minnow (64 FR 36274), pursuant to the court order.

Critical habitat will affect private, State, or Tribal activities when Federal funding, permitting, or authorization is involved. If there is Federal involvement, consultation will be completed within the statutory time frames. The process of section 7 consultation does not stop growth or development.

(79) Comment: Your last economic analysis found that there would be no impacts associated with the designation of critical habitat for the silvery minnow.

Our Response: We were required to prepare a new critical habitat designation under the court order from the United States District Court for the District of New Mexico, in Middle Rio Grande Conservancy District v. Babbitt, 206 F. Supp.2d 1156 (D.N.M. 2000). We prepared a new economic analysis, a draft EIS, and a new proposed rule pursuant to that court order. A new economic analysis was completed to address this revised final designation, the previous

economic analysis is not reflective of this designation or our current approach for analyzing economic impacts.

(80) Comment: The economic analysis only considered the middle Rio Grande as an entire unit and did not evaluate economic impacts to different areas within the middle Rio Grande. An economic analysis that does not take local land and water use into account does not disclose the full economic costs of the designation and is of no benefit to the Service or the public.

Our Response: The economic analysis includes specific analyses within the area designated as critical in the middle Rio Grande by estimating the cost of designating critical habitat in each of the five reaches. The analysis utilized all information provided by the Federal, State, local, and Tribal respondents operating in the area, including models created by and technical assistance from the New Mexico State University Agricultural Extension Service. Information concerning the local and regional economy was analyzed to conclude that there would not be significant economic impacts associated with the designation of critical habitat for the silvery minnow (see also the “Economic Analysis” section of the final rule).

(81) Comment: The draft economic analysis uses alfalfa as the basis for calculating the cost of forgone production and secondary economic impacts. The estimated economic impacts were likely underestimated because alfalfa makes up about 56 percent of the agricultural crops in the middle Rio Grande. The costs of forgone production on the other 44 percent of agricultural crops would likely be higher, since alfalfa is a relatively low-value, high-water-consuming crop.

Our Response: Based on interviews with local crop scientists and because of the dominant status, annual planting cycle, and relatively high water requirements of alfalfa, the economic analysis assumes that acres retired from planting will be those devoted to the alfalfa crop. However, the economic analysis indicated that this assumption is likely to be conservative and to overstate effects on the regional economy when compared with modeling reductions in water available to other crops. A second calculation using a reduction in hay production is included in the final economic analysis to provide comparison. Modeling the same reductions in water available to the second most prevalent crop in each study area (pasture hay for the middle Rio Grande and cotton for the Pecos) produces a total value of forgone production that is 3 percent less than that produced by modeling removals from alfalfa. Given that 90 percent of the irrigated acreage in the middle Rio Grande study area and over 75 percent of the irrigated acreage in the Pecos study area are devoted to the two dominant crops, it is likely that water removed from irrigation would come from one of these two crops, validating the assumptions set forth in the economic analysis.

(82) Comment: The draft economic analysis does not consider that NM has had an active water market for years and many farmers have not chosen to sell their water rights. Consequently, the acquisition of water to meet supplemental flows may not be available.

Our Response: Under New Mexico State law, users of water must hold a water right. Such rights are treated as property rights, and are traded in a market. Since a competitive market

exists for water rights in NM, it is assumed that the price of these rights represents the expected economic benefit of water made available by these rights, in its highest and best use. That is, in paying for water rights, buyers are making clear the implicit value of the water to them. The economic analysis concluded that (1) there is an active market in NM to move water to uses other than the original use; (2) there are multiple buyers and sellers of water rights; and (3) the price of water rights can be predicted from expected underlying economic factors.

Studies and historic and current data indicate that “water flows uphill toward money” (Brookshire *et al.* 2002; Hall 2002). In other words, water will move toward the highest valued use in accordance with the economy. For example, 90 percent of all water rights transferred (i.e., leased or sold) in the middle Rio Grande from 1976 to 2000 were previously held by irrigation (Brookshire *et al.* 2002). Consequently, we believe that the voluntary acquisition of water to meet supplemental flows will be available.

(83) Comment: The economic analysis underestimates the farmland removed from production to provide for supplemental flows.

Our Response: The economic analysis used models created by the New Mexico Cooperative Extension Service and NM agricultural statistics from the New Mexico Agricultural Statistics Service to estimate costs and returns for the State's farming industry in 2001. The commenter did not provide any data for us to consider and did not explain why he or she believes our estimates to be inadequate.

(84) Comment: Agricultural production in the middle Rio Grande valley is on a scale that does not allow comparison to agriculture elsewhere in the United States. Consequently, the values of agriculture are as much social and cultural as they are economic. The Service should consider these values before finalizing the designation.

Our Response: The economic analysis estimated: (1) the opportunity cost of water needed to supplement instream flow; (2) direct, indirect, and induced economic effects resulting from the resulting changes in the use of water, including cultural and secondary impacts on water sellers and communities; and (3) costs of section 7 consultations. The EIS also analyzed the social and economic impacts, impacts on land use, and impacts on cultural resources. Please refer to the economic analysis and EIS for a complete analysis of these impacts.

(85) Comment: The economic analysis assumed that the market for water rights may not result in actual delivery of “wet water” (i.e., water in the river) once the middle Rio Grande is adjudicated.

Our Response: Water rights in the middle Rio Grande are not adjudicated and much of the water uses are not metered (Whitney *et al.* 1996). Adjudicating water rights (i.e., a judicial determination and definition of water rights within a river system that quantifies and establishes the legal right to use water) in the middle Rio Grande would, in conjunction with a metering program, allow for improved administration of water rights and improved water management

(Whitney *et al.* 1996). However, an adjudication may not be completed for the middle Rio Grande in the foreseeable future.

The State Engineer of New Mexico has indicated that as water markets begin to develop in the state, there will be a natural tendency to attempt to transfer paper water rights (New Mexico Office of the State Engineer 2001). The State Engineer is charged with water rights adjudications (New Mexico Office of the State Engineer 2001). The existing adjudication system is being examined to allow the entire State to be adjudicated (New Mexico Office of the State Engineer 2001). Moreover, the State Engineer of New Mexico has three criteria that must be met in order for state law water rights to be transferred: (1) the right must be valid, with a valid priority date; (2) the water must be put to beneficial use; and (3) the transferred water right must not impair the rights of others, including compact deliveries. For these reasons, we believe that the sale or lease of water rights will result in the delivery of “wet water.”

(86) Comment: The prevailing price of water rights in the middle Rio Grande will substantially increase when more than 40,000 of water rights are sold and removed from the water rights market.

Our Response: The price of water rights is significantly affected by the type of buyer (e.g., municipal, private, Federal/State) and has increased in NM over the last several decades (Brookshire *et al.* 1999). However, water markets remain highly localized, with significantly different prices in each market. Nevertheless, the value used in the economic analysis reflects the current price of water rights resulting from the voluntary acquisition of supplemental water. We expect these types of voluntary programs to continue, and do not anticipate that the amount of supplemental water (i.e., demand) in previous consultations (e.g., Service 2001b) will increase because critical habitat is designated. In addition, please see response to comment 57 for information related to this particular issue.

(87) Comment: The economic analysis does not explain why a 20-year time period was selected.

Our Response: The economic analysis stated that activities occurring greater than 20 years in the future are difficult to predict, and the outcomes of such activities are even more uncertain. The 20-year time horizon was selected because population forecasts as well as local and regional planning documents use similar time horizons.

(88) Comment: The economic analysis does not explicitly address whether the benefits of excluding a particular reach outweigh the benefits of including the reach as critical habitat.

Our Response: We use the economic analysis and other relevant information to conduct analyses under section 4(b)(2) of the Act. If relevant to a particular critical habitat designation, these considerations are included in the final rule (50 CFR 424.19). For a detailed discussion, see the “Exclusions Under Section 4(b)(2) of the Act” and “Relationship of Critical Habitat to Pueblo Lands under Section 3(5)(A) and Exclusions Under Section 4(b)(2)” sections of the Proposed Rule.

(89) Comment: The Regulatory Branch of the Corps already consults with the U.S. Fish and Wildlife Service several times a year on an informal basis regarding any potential impacts upon the minnow. For example, agencies such as the Albuquerque Metropolitan Arroyo Flood Control (AMAFCA) currently conduct routine maintenance in their outfall channels without regard to the minnow. We anticipate that we will have to conduct several additional informal and/or formal consultations with the U.S. Fish and Wildlife Service pertaining to potential impacts on the minnow as a result of the inclusion of tributaries and the-foot riparian zone extension as critical habitat.

Our Response: Chapter 4 of the EIS contains information related to Corps Consultations and how they may be affected by the designation of critical habitat. The Service hopes to continue working with the Corps on both informal and formal consultations.

Issue 5: Editorial Comments on the EIS:

(90) Comment: In the Abstract, the third paragraph, the last sentence needs to be corrected to read, “Critical habitat includes occupied and **unoccupied** areas...”

Our Response: This correction has been made.

(91) Comment: Page iii - Correct the official name for the IBWC to read , “International Boundary and Water Commission, **United States and Mexico.**”

Our Response: This correction has been made.

(92) Comment: Page S-3 - In the first bullet (1.) paragraph, first sentence, it is stated that the primary element, hydrologic regime, should provide “sufficient flowing water.” This term needs to be better defined.

Our Response: The primary constituent elements identified in the Proposed and Final Rules, as well as the EIS, provide a qualitative description of those physical and biological features necessary to ensure the conservation of the silvery minnow. We did not identify quantitative estimates of specific minimum thresholds (e.g., minimum flows or depths), because we believe these estimates vary seasonally and annually, and by river reach within the designated critical habitat. Thus, we believe these thresholds are appropriately enumerated through section 7 provisions 7(a)(1) and 7(a)(2) (e.g., see Service 2001b), which can be easily changed if new information reveals effects to critical habitat in a manner or extent not previously considered (see 50 CFR 402.16(b)).

(93) Comment: Page S-7 - In the Counties Affected for Alternative E, LRG, change the spelling of “Breasted” to “**Brewster.**”

Our Response: This correction has been made.

(94) Comment: Pages S-12 through S-15 and Pages 2-25 through 2-28- The table designation at the top left indicates that this is Table S-4, continued; it should read, “**Table S-3.**” Remaining tables S-5 through S-7 need to be renumbered.

Our Response: The Table numbers have been corrected.

(95) Comment: On page S-15 and 2-28, the water operations block for the LRG should indicate that consultation is required of both the USIBWC and the Mexican Section, International Boundary and Water Commission (MXIBWC).

Our Response: We are not designating critical habitat along the international border in the lower Rio Grande. In addition, Mexico would not be required to consult on the critical habitat designation as described under Alternative E.

(96) Comment: The USIBWC understands that the USFWS cannot designate critical habitat outside the United States’ jurisdiction (50 CFR 424.12 (h)). Some reviewers of the EIS may not understand that critical habitat cannot be imposed by the United States upon a foreign territory and think it strange the critical habitat designation would stop at midstream of the Rio Grande. It would be helpful to the general public that a statement or discussion of this aspect be included earlier in the document where designation of critical habitat is discussed.

Our Response: The Service has added the requested language to the Description of Alternatives section of the Summary Chapter of the EIS.

(97) Comment: Page 2-16 - In specific reach 2, the distance between Elephant Butte Dam and Caballo Dam is 28 miles; not 16.

Our Response: This mileage has been corrected.

(98) Comment: We suggest that in any future text for notices such as that found in the present notice be corrected to use the term “**American Diversion Dam**” in place of the terms “American Reservoir” and “American Reservoir Dam.”

Our Response: In the FEIS, all occurrences of the term American Reservoir and American Reservoir Dam have been replaced with the term American Diversion Dam.

(99) Comment: Page 2-17 - Specific reach 7 should be designated, “Downstream of Falcon **Dam** to the gulf of Mexico, Texas.”

Our Response: This correction has been made.

(100) Comment: Page 3-2 - Correct the conversion of 6475 square kilometers to **2,500** square miles.

Our Response: This correction has been made.

(101) Comment: Page 3-5 - The project by which Reclamation's Rio Grande Project water is delivered is the Rio Grande Canalization Project owned, operated, and maintained by the USIBWC. Change the eighth sentence to read, "The project includes facilities constructed and operated by the USIBWC, **the Rio Grande Canalization Project**, to regulate water deliveries..."

Our Response: This change has been made.

(102) Comment: Page 3-66 - In the first complete paragraph on this page, the Texas Clean Rivers Program is supported and administered by the USIBWC. The use of "IBWC" here implies that it is supported and administered by the international body which is incorrect and should be corrected.

Our Response: The term IBWC has been replaced with USIBWC in this sentence.

(103) Comment: Page 4-98 - The first sentence needs to be changed to read, "The USIBWC is a federal **agency** with jurisdiction over the Rio Grande channel from **Percha Diversion Dam**, Sierra County, New Mexico to the Gulf of Mexico." In the first bullet paragraph, change the second sentence to read, "No routine channel maintenance takes place in the Presidio to Amistad **Dam** reach of the Rio Grande."

Our Response: The text has been edited to reflect these comments.

(104) Comment: Page C-6 - Correct the second citation from the top to read, "International Boundary and Water Commission, U.S. Section. 2001b. USIBWC-TCRP Basin Highlights Report: the Rio Grande Basin 2001. United States International Boundary and Water Commission Texas Clean **Rivers** Program."

Our Response: This citation has been corrected.

(105) Comment: Page 1-4, Second paragraph, second sentence - replace "meandering river" with "aggrading and braided river"; The Rio Grande previously had a braided river channel and is becoming more of a meandering river, which is changing the habitat critical to the silvery minnow.

Our Response: The text has been edited to reflect this comment.

(106) Comment: Page 1-9, Under Silvery Minnow - one very important issue that was not included is: *Recruitment*. Habitat requirements for successful hatching and larval silvery minnows are unknown. Studies should be conducted to define critical habitat features and ecological interactions for increasing recruitment. This issue has been raised through the ESA Workgroup Technical Committee. By better understanding the early life history of the silvery minnow, the critical habitat designation will have much greater value.

Our Response: The Service agrees with this comment and has been involved in several of the ESA Workgroup technical committee discussions regarding this issue. We based this final rule and FEIS on the best available scientific information, including the recommendations in the Recovery Plan (Service 1999).

(107) Comment: Page 3-19, first paragraph, second sentence - Strikeout “In an effort to better understand the decline of the minnow, the Service will obtain through the study, requisite scientific information from which current and future minnow augmentations, ecosystem management, and environmental decisions can be made. The lack of proper hypotheses and requisite criteria make it unlikely that the Service can achieve the objectives stated in this sentence.

Our Response: This sentence has been removed.

(108) Comment: Page 3-19, second paragraph - Strikeout “The results should assist in assessing appropriate channel restoration sites and activities.” Without testable hypotheses the results are uncertain.

Our Response The text has been edited to reflect this comment.

(109) Comment: Page 3-32, third paragraph, fifth sentence - “At present, over 95%...”. In 2001, about 70% of the silvery minnow population counted were below San Acacia Diversion Dam.

Our Response: The text has been edited to reflect this comment.

(110) Comment: Page 3-4, third paragraph - Strikeout “which owns the land” & “on lands owned by MRGCD”. To read: “Managed by the City of Albuquerque Open Space Division, in coordination with the MRGCD, the Rio Grande Valley State Park is a 5,000 acre state park extending along the Rio Grande through Albuquerque.” The ownership of these lands is currently under litigation.

Our Response: The text has been edited to reflect this comment..

(111) Comment: Page 3-81, first paragraph, first sentence - Replace “...Reclamation to simulate pre-Brantley Reservoir operating conditions...” with “Reclamation to meet Carlsbad Irrigation District demand, stay within entitlement storage volumes set by the NM Office of the State Engineer,...”

Our Response: This sentence has been changed to reflect this comment.

(112) Comment: Page 4-41, third paragraph, last sentence - Strikeout “Reclamation,” to read “This program will be funded by the NMISC and the City of Albuquerque.” Reclamation will not be funding O&M for the project.

Our Response: This sentence has been edited to reflect this comment..

(113) Comment: Page 4-58, fourth paragraph - The ownership of the lands claimed by MRGCD in this paragraph are undergoing Federal litigation. The easements and right of ways across private and pueblo lands are alright. Recommend editing paragraphs to read: “MRGCD claims many of the areas of the bosque and other lands along the river between Cochiti Dam and Bosque del Apache NWR, and also holds a number of easements and rights of way on private and pueblo lands. The land between Sandia and Isleta pueblos is managed as part of the Rio Grande Valley State Park. These lands may be improved through habitat restoration projects by Federal Agencies, such as those outlined in the Service’s 2001 Programmatic Biological Opinion (Service 2001b). Apart from this, the use and ownership of these underdeveloped bosque lands should not be affected by the listed status of the silvery minnow, nor by critical habitat designation.”

Our Response: This paragraph has been edited to reflect this comment.

(114) Comment: Page 4-86, fourth paragraph, first sentence - Suggest replacing “from” with “under”. I don’t think the Service wants to protect the silvery minnow from consultation requirements.

Our Response: This sentence has been edited to reflect this comment.

(115) Comment: Page 1-4 - Strikeout “C. Hoagstrom, pers. comm” since there are two proper literature citations. Personal communications are irrelevant when proper literature citations are available. The citations Reclamations and Corps should correspond to the system used in literature cited. Either USBR /USACE or Reclamation/Corps.

Our Response: Comment noted, and appropriate changes have been made in the text.

(116) Comment: Page 1-4, third paragraph - Platania 2001 citation is not in literature cited.

Our Response: This citation has been corrected in the text and been added to the bibliography.

(117) Comment: Page 1-4, third paragraph, fourth sentence: “diversion dams ‘may’ allow for the passage of some eggs.” There is no conclusive data showing that the dams divert eggs or allow them to pass.

Our Response: This sentence did not indicate that eggs and larvae were being “diverted” and passed through the irrigation system. This statement was meant to demonstrate that the configuration of the diversion dams allow for the in-channel passage of eggs and larvae over diversion dams while at the same time, prevents fish movements downstream. This sentence has been clarified to reflect that the movements and passages discussed are within the channel and

not through the diversion works. As a side note, field observations indicate that diversion dams do divert silvery minnow eggs during the spawning period.

(118) Comment: Page 1-4, last sentence - “Unscreened diversion dams”, do you mean canals or structures? There is no way to screen a dam.

Our Response: The sentence was intended to describe that the diversion dams result in the diversion of minnow larvae and eggs and that screens have not been installed to help reduce the diversion and entrainment of silvery minnows.

(119) Comment: Page 2-18, first paragraph - Regarding “There are no current or museum records of silvery minnows from the reach.” When was the reach downstream of American Reservoir sampled? Cite the number of times reach was sampled?

Our Response: This statement was derived from information provided in the Rio Grande Silvery Minnow Recovery Plan. In addition, the Service funded a survey in this reach in early 2002. The survey extended from Presidio, TX to Cajoncitos, Mexico and no silvery minnows were collected during this survey.

(120) Comment: Page 2-18, third paragraph - What is the length of the reach from Amistad Dam to Falcon Reservoir?

Our Response: The length of the reach from Amistad Dam to Falcon Reservoir is 299 miles. This mileage has been included in the EIS

(121) Comment: Page 2-18, fourth paragraph - What is the length of the reach from Falcon Dam to the Gulf of Mexico?

Our Response: The length of the reach from Falcon Dam to the Gulf of Mexico is 275 miles. This mileage has been included in the EIS

(122) Comment: Page 2-19, fourth paragraph, third sentence - D. Propst, not “D. Probst”.

Our Response: This correction has been made.

(123) Comment: Page 2-19, fifth paragraph, second sentence: regarding Brune 1981, find the original reference and cite it.

Our Response: The Service believes that the current citation is adequate and appropriate.

(124) Comment: Page 3-4, fourth paragraph - Though ecological and hydrological factors are discussed, there should be a more detailed evaluation of climatic factors.

Our Response: Comment noted

(125) Comment: Page 4-18, second paragraph discussing water surface quality. Is the town of Bernalillo's NPDES permit current?

Our Response: Although the Service consults with EPA regarding their issuance of NPDES permits, it is not the Service's responsibility to track NPDES permits or insure that permit holders are in compliance with their NPDES permit.

(126) Comment: Page 4-83, first paragraph, last sentence - Add Cowley 1979 to the citation. Add "Cowley, D.E. 1979. Temporal and spatial distributions of fishes in the Black River, Eddy County, New Mexico. M.S. Thesis, Eastern New Mexico University, Portales." to the literature cited.

Our Response: Although this literature may provide similar or relevant information to the topic discussed in the noted paragraph, it was not used as a source for deriving the information provided and has not been included in the Bibliography.

(127) Comment: Page 2-6 - AMAFCA believes that developed flood control facilities located in the 300 foot lateral extent of critical habitat should not be included in the definition of critical habitat for the same reasons the enumerated developed features are excluded.

Our Response: The FEIS and Final Rule have been revised to reflect that flood control facilities within the lateral extent of critical habitat are not critical habitat because they do not contain the primary constituent elements associated with critical habitat and therefore, and are specifically excluded from the designation.