MEMORANDUM

To: Industrial Economics, Incorporated

From: Field Supervisor, New Mexico Field Office, Albuquerque, New Mexico

Date: March 27, 2024

Subject: Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for Pecos Pupfish

The purpose of this memorandum is to document the likely difference between conservation efforts that would be undertaken for Pecos pupfish (*Cyprinodon pecosensis*) with and without critical habitat designation. This information will be used as the basis and underlying assumptions for conducting an economic analysis for the proposed designation of critical habitat for the Pecos pupfish. This memorandum focuses on understanding the likely outcomes of consultation for Pecos pupfish based on expert opinion, agency experience, consultation history, or proxy species. However, nothing in this memorandum is intended to pre-determine outcomes of specific consultation for Pecos pupfish, as these would be developed on a case-specific basis.

The first sentence of section 4(b)(2) of the Endangered Species Act (Act) requires the Secretary of Interior (Secretary), and therefore by delegation the U.S. Fish and Wildlife Service (Service), to consider the economic, national security, and other impacts of designating a particular area as critical habitat. To comply with the requirement of the Act to consider economic impacts, the Service, often in conjunction with an economic contractor, prepares an economic analysis that describes and monetizes, where possible, the probable economic impacts of the proposed designation of critical habitat. The Secretary has discretion to exclude areas from a designation of critical habitat as described in the second sentence of section 4(b)(2) of the Act. The economic analysis may also be used to inform any discretionary balancing analysis the Secretary chooses to undertake.

I. EFFECTS OF CRITICAL HABITAT

Current regulations at 50 CFR 424.19 require the Service to use an incremental analysis when describing the probable economic impact of a designation of critical habitat. Determining the economic impacts of a critical habitat designation involves evaluating the "without critical habitat" baseline versus the "with critical habitat" scenario, to identify those effects expected to occur solely due to the designation of critical habitat and not from the protections that are in place due to the species being listed under the Act. Economic effects solely due to the critical habitat designation include both: (1) the costs of increased administrative efforts that result from the designation; and, (2) the economic effects of changes in the action to avoid destruction or adverse modification of critical habitat. These changes can be thought of as "changes in

behavior" or the "incremental effect" that would most likely result from the designation if finalized.[1] Specific measured differences between the baseline (without critical habitat) and the designated critical habitat (with critical habitat) may include, but are not limited to: (1) the economic effects stemming from changes in land or resource use or extraction; (2) changes in environmental quality; (3) or time and effort expended on administrative and other activities by Federal landowners Federal action agencies, and in some instances, State and local governments or private third parties. These are the incremental economic effects that serve as the basis for the economic analysis.

A primary purpose of this memorandum is to describe differences between actions that may be needed to avoid jeopardy to the species versus actions that may be needed to avoid destruction or adverse modification of critical habitat. Actions required to avoid jeopardy of a species are attributable solely to the listing of a species. Actions required to avoid destruction or adverse modification of a species' critical habitat are attributable solely to the designation of critical habitat for a species. In some instances, actions required to avoid destruction or adverse modification of a species' critical habitat may be the same as those to avoid jeopardy of a species. To get at this distinction, we need to make an informed decision as to whether destruction or adverse modification would occur based on whether the Federal agency's action is likely "to result in the destruction or adverse modification of habitat which is determined by the Secretary… to be critical." The Service considers how the proposed action is likely to affect the function of the critical habitat unit in serving its intended conservation role relative to the entire designation. The information provided below is intended to identify the possible differences for this species under the two different section 7 standards (i.e., jeopardy to the species and adverse modification of critical habitat). Ultimately, however, a determination of whether an activity may result in the destruction or adverse modification of critical habitat is based on the effects of the action to the designated critical habitat in its entirety. The information provided below is intended to identify the possible differences for Pecos pupfish under the different section 7 standards for jeopardy to the species and destruction or adverse modification of critical habitat.

Section 7 consultation is required whenever there is a discretionary Federal action that may affect listed species or designated critical habitat. Section 7(a)(3) also states that a Federal agency shall consult with the Secretary on any prospective agency action at the request of, and in cooperation with, the prospective permit or license applicant if the applicant has reason to believe that an endangered species or a threatened species may be present in the area affected by his project and that implementation of such action will likely affect such species. The initiation of section 7 consultation under the jeopardy standard takes place if the species may be present and the action is likely to affect the species. Initiation of section 7 consultation under the adverse

[1] Changes in behavior include any additional conservation efforts or activities that would be undertaken to project the species. For example, a change in behavior would include conducting a new consultation, relocating a project, or adding a particular conservation activity to the suite of conservation actions undertaken to protect a species.

modification standard takes place if the action will likely affect critical habitat (the species need not be present).

The Service recognizes the "geographical area occupied by the species" at the time of listing as stated under section 3(5)(A)(i) of the Act as the geographical area that may generally be delineated around the species' occurrences, as determined by the Secretary (i.e., current range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (e.g., migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals). Because of the relatively coarse scale of analysis allowed by the definition of "critical habitat," the species may or may not be present within all portions of the "geographical area occupied by the species" or may be present only periodically. Therefore, at the time of any consultation under section 7 of the Act, the species of interest may not be present within the action area for the purposes of the section 7 consultation, even if that action area is within the "geographical area occupied by the species."

In this memorandum, when we describe occupancy for purposes of estimating the potential economic costs of the critical habitat designation, we are referring to the occupancy status within the action area of a particular Federal action at the time of a consultation under section 7 of the Act. The economic effects of the consultation would likely be considered incremental to critical habitat if a consultation would not have occurred absent the critical habitat designation, either because the area is unoccupied by the species or else because it is not known to be occupied by land managers, regardless of whether the area falls within the geographical area occupied by the species at the time of listing.

These incremental economic effects would derive both from changes in management, such as costs resulting from restrictions on development and other activities due solely to critical habitat, and changes in the scope of administrative review, i.e., the added costs of considering effects to critical habitat during consultation. Additional administrative costs would also occur in *occupied* areas (i.e., areas where the species is present) due to the need to analyze destruction or adverse modification of critical habitat along with jeopardy to the species.

II. DESCRIPTION OF SPECIES AND CRITICAL HABITAT

A. Pecos pupfish

The Pecos pupfish is a small, deep-bodied fish that occurs in a variety of lentic and lotic aquatic environments in the Pecos River Basin of New Mexico and Texas. Pecos pupfish are sexually mature at 20 mm standard length, within a few months of hatching, and are assumed to have an average lifespan of 1 year.

All currently known extant populations of the Pecos pupfish exist within sinkholes, springs, and wetland habitat adjacent to the Pecos River near Bitter Lake National Wildlife Refuge (NWR)

and Bottomless Lakes State Park, the Bureau of Land Management (BLM) Overflow Wetlands, the Pecos River between Bitter Lake NWR and north of Brantley Reservoir, and Salt Creek (TX). Surface water within the Pecos River Basin is supplied by snowmelt (from the Sangre de Cristo and Sacramento Mountains), rainfall, and groundwater. All of the non-riverine habitats for the Pecos pupfish are either completely or partially supported by springs sustained by aquifers that underlay the range of the Pecos pupfish in both Texas and New Mexico. In New Mexico, these springs originate from shallow and deep aquifers (San Andres Artesian Aquifer) in the Roswell Artesian Basin. The Roswell Artesian Basin spans the area 10 to 15 mi west of the Pecos River from north of Roswell, Chaves County to Brantley Reservoir, Eddy County, New Mexico. Chemical investigations of water in sinkholes on Bitter Lake NWR show a mixture of both recent and pre-modern water indicating a complicated recharge system composed of multiple flows and pathways. The artesian carbonate aquifer is recharged by surface waters flowing over permeable surfaces such as the Pecos Buckles. The shallow alluvial aquifer is recharged by the artesian carbonate aquifers below, precipitation, and irrigation return flow. Aquifer levels in the Pecos Basin are influenced by precipitation and groundwater pumping, which have led to reduced spring flows, decreasing water connectivity across the landscape. The picture in Texas is less clear, but surface waters in Salt Creek (TX) are likely at least partially supported by springs from the Rustler Aquifer.

Pecos pupfish vary phenotypically amongst isolated habitat types, which may be advantageous for adapting to different food availability, dissolved oxygen availability, and salinity levels. For example, Pecos pupfish in sinkholes were found to have shallower caudal peduncles and larger heads compared to Pecos pupfish in marshland habitats; these morphological characteristics may provide a better opportunity for these individuals to respire at the water surface. Pecos pupfish mouth position also varies between habitat types with Pecos pupfish in sinkhole habitats having terminal to sub-terminal mouths, allowing for benthic feeding rather than surface feeding.

The individual needs vary somewhat by life stage (egg, hatchling, juvenile, adult); however, as an aquatic species, water quality and quantity are vital to Pecos pupfish habitat needs. Pecos pupfish prefer environments with little to no water flow, and, in areas with flows, they typically occupy pools and shallow runs and riffles. Pecos pupfish habitat can contain a diverse variety of substrates such as detritus, silt, sand, cobble, and gravel. Vegetation found in Pecos pupfish habitat is similarly diverse with a variety of algae, aquatic, semi-aquatic, and halophytic (salt tolerant) vegetation, although not all of these types are present or required for an environment to provide suitable habitat for the Pecos pupfish. Pecos pupfish tolerate high salinity and low dissolved oxygen, which allows them to do well in extreme conditions that other fish may not be able to tolerate. While the specific thermal tolerance of Pecos pupfish is unknown, studies examining thermal tolerance of other pupfish found tolerance to range from below 0 °C to 45 °C, although data collected in studies of desert pupfish (*C. macularius*) found that temperatures above 42.7 °C (108.9 °F) may be lethal. These physical conditions (dissolved oxygen, salinity, and temperature) can be greatly affected by spring discharge and other flow parameters.

The greatest threats to the Pecos pupfish are hybridization with sheepshead minnow, habitat degradation due to declines in water quantity and water quality, and habitat fragmentation. Introduction of sheepshead minnow into new locations occupied by Pecos pupfish could lead to rapid introgression and Pecos pupfish populations that are already negatively impacted by habitat alteration are likely more at risk. Climate change impacts including higher average annual temperatures, more variable or lower average annual precipitation, and increased drought frequency, are currently impacting the Pecos pupfish and will likely continue to do so. Anthropogenic water use and management has impacts on most of the surface water and groundwater within the range of the Pecos pupfish, and continued development and climate-driven changes to water availability will continue to impact the species in the future. Stochastic events such as golden algae blooms have impacted Pecos pupfish populations and climate change may accelerate the future rate of golden algae blooms to create potentially more frequent and severe occurrences.

B. Critical Habitat Description

Proposed critical habitat (pCH) for the Pecos pupfish is based on currently occupied analysis units identified in the species status assessment. In total, we recommend proposing five Units comprised of 136.12 river miles of instream habitat (to the ordinary high water mark; not including riparian areas), and 26,555.54 acres of lands that encompass numerous isolated sinkholes and wetland areas as critical habitat. The proposed critical habitat designation includes lands owned or managed by State, Federal, and private entities. Critical habitat will be limited to areas within these lands with aquatic habitat available to Pecos pupfish.

Upper Pecos River

The Upper Pecos River Unit begins at Bosque Draw in Chaves County, New Mexico and extends south on the Pecos River for 121.88 river miles to Brantley Lake, in Eddy County, New Mexico. The proposed critical habitat designation includes lands under Federal ownership (26.76%), State ownership (3.99%), and private ownership (69.26%). Water availability in the unit is primarily influenced by the management of upstream dams at Ft. Sumner. River flows downstream of Bitter Lake NWR are influenced by groundwater pumping by Pecos Valley Artesian Conservancy District water user and return flows from crop irrigation. See Table 1 for a list of ongoing activities and potential threats within the Upper Pecos River Unit.

Salt Creek Wilderness

The Salt Creek Wilderness Unit in Chaves County, New Mexico contains Salt Creek and four sinkholes within 5,428.74 acres of land between Cottonwood Road and the confluence with the Pecos River. The proposed critical habitat designation includes lands entirely under Federal ownership (100%), primarily encompassing the Refuge North Tract of Bitter Lake National Wildlife Refuge. Salt Creek (New Mexico) is an ephemeral stream with permanent water in

deeper pools along the stream course. See Table 1 for a list of potential threats within the Salt Creek Wilderness Unit.

Bitter Lake

The Bitter Lake Unit is in Chaves County, New Mexico and is west of the Pecos River and contains Bitter Creek, numerous isolated sinkholes, spring ditches, managed and natural wetlands, and oxbows of the Pecos River within 11,972.90 acres of land between Bitter Lake Road in the north and Miami Road in the South. The proposed critical habitat designation includes lands under Federal ownership (80.71%), State ownership (0.73%), and private ownership (18.56%). Most of the unit falls within Bitter Lake National Wildlife Refuge. See Table 1 for a list of ongoing activities and potential threats within the Bitter Lake Unit.

Bottomless Lakes/Overflow Wetlands

The Bottomless Lake/Overflow Wetlands Unit is in Chaves County, New Mexico and is east of the Pecos River and contains a wetland and several sinkholes within 9,153.90 acres of land between Highway 380 in the North and the approximate southern border of the BLM Overflow Wetlands Area of Critical Environmental Concern (ACEC) in the South. The proposed critical habitat designation includes lands under Federal ownership (19.49%), State ownership (20.26%), and private ownership (60.25%). The majority of occupied habitat within this unit falls within Bottomless Lakes State Park and the BLM Overflow Wetlands ACEC. See Table 1 for a list of ongoing activities within the Bottomless Lakes/Overflow Wetlands Unit.

Salt Creek (TX)

The Salt Creek (TX) Unit begins at FM 2119 in Culberson County, Texas and extends northeast on Salt Creek for 14.24 stream miles to RM 652 in Reeves County, Texas. The proposed critical habitat designation is entirely under private ownership (100%). See Table 1 for a list of potential threats within the Salt Creek (TX) Unit.

Table 1: Proposed Critical Habitat Units

Unit Name (total area or length)	Area or length	Considered occupied for consultation purposes?	Landowner /Land Manager	Ongoing activities/potential threats
Upper Pecos River (121.88 miles)	16.72 miles	Yes	BLM	**Ongoing activities:** • Flow management for Pecos bluntnose shiner. **Potential threats:** • Water contamination (agriculture, oil and gas); • Low water levels; • Sheepshead minnow.
	15.89 miles	Yes	Service	
	4.86 miles	Yes	State	
	84.41 miles	Yes	Private	
Salt Creek Wilderness	5,320.31 acres	Yes	Service	**Potential threats:** • Low water levels in Salt Creek;

(5,428.74 acres)	108.43 acres	Yes	BLM	• Potential aquifer impacts by surrounding land users (groundwater pumping).
Bitter Lake (11,972.90 acres)	8,611.72 acres	Yes	Service	**Ongoing activities:** • NWR management for waterfowl and aquatic species habitat; • Routine monitoring for Pecos pupfish and other species. **Potential threats:** • Low water levels; • Aquifer impacts from surrounding land use (groundwater pumping).
	1,051.43 acres	Yes	BLM	
	87.87 acres	Yes	State	
	2,221.88 acres	Yes	Private	
Overflow Wetland/ Bottomless Lakes (9,153.90 acres)	1,763.15 acres	Yes	BLM	**Ongoing activities:** • Routine monitoring for Pecos pupfish; • Recreation at Bottomless Lakes State Park and BLM Overflow Wetlands ACEC.
	20.85 acres	Yes	Service	
	1,854.78 acres	Yes	State	
	5,515.12 acres	Yes	Private	
Salt Creek (TX) (14.24 miles)	14.24 miles	Yes	Private	**Potential threats:** • Water contamination (agriculture, oil and gas); • Low water levels; • Sheepshead minnow; • Potential aquifer impacts by surrounding land users (groundwater pumping).

III. ANTICIPATED ACTIVITIES WITHIN OR WHICH MAY AFFECT PROPOSED CRITICAL HABITAT

A. Reasonably Foreseeable Activities that may be affected by the designation of critical habitat for Pecos pupfish

Any management related action that may benefit the Pecos pupfish and its habitat could impact designated critical habitat. Additionally, Construction and repair of pipelines, dams, and bridges are also a foreseeable activity that may have to Pecos pupfish critical habitat. The following activities are ongoing and expected to regularly be proposed as projects within proposed critical habitat units and surrounding areas of influence:

- Water management
  - The Bureau of Reclamation (BOR) manages water in the Pecos River under the 2017 Carlsbad Project Water Operations Biological Opinion. The BOR manages water operations and water supply conservation for the Carlsbad Project on the Pecos River. The 2017 Carlsbad Project Water Operations Biological Opinion describes the effects of this action on the federally listed Pecos bluntnose shiner (*Notropis simus pecocensis*).
- Fluid mineral extraction from the BLM Application for Permits to Drill and Right of Way applications.

- Watershed restoration activities conducted by BLM or Natural Resources Conservation Service (NRCS).
- Ecological restoration (herbicide treatments, invasive removal, and prescribed burns)
    - The Service routinely conducts vegetation management activities in wetlands occupied by Pecos pupfish. A 2018 Biological Opinion and Conference Opinion for prescribed burns at Bitter Lake NWR was issued to burn herbicide treated areas in moist soil units or drainages.
- Road maintenance may have a Federal nexus under Federal Highway Administration.
- Research and monitoring of other federally listed or at-risk species by Service or other agencies.
- Moist-soil management by the Service at Bitter Lake NWR.
- Pipeline and/or utility crossings funded by FERC.

Although not ongoing, future reintroduction of Pecos pupfish might be conducted or authorized by the Service, BLM, and BOR.

B. Consultation History for the Species

There is no previous consultation history for this species.

The Pecos gambusia (*Gambusia nobilis*) may be a substitute species that provides examples of future types of consultations as both of these species are often found together and in similar habitats. Pecos gambusia faces similar threats to the Pecos pupfish including declining water quantity, declining water quality, competition and hybridization, and climate change impacts

IV. BASELINE ANALYSIS

In the following section, we describe conservation efforts and protections that are part of the baseline. In particular, we identify protections or efforts relevant to the known threats to the species that would provide some level of conservation for the Pecos pupfish absent the proposed critical habitat designation.

A. ESA Protections for the species absent critical habitat designation

1. Protections under the ESA for Pecos pupfish

Protection of the species that occurs as a result of the listing of the species is often the most substantial baseline protection provided to the species absent critical habitat designation. In particular, section 7 consultations and associated conservation efforts that would be taken to be protective of the species often provide baseline protections to critical habitat as well. This section describes these protections. For the threats identified in section I of this memorandum, the following ESA protections are anticipated for Pecos pupfish.

Section 7 protections. Section 7 of the Act provides protections to the species following its listing. There is no consultation history for this species. These actions and associated conservation recommendations would be expected to occur even absent critical habitat for this

species. For this species, the following types of conservation actions would be recommended for this species. Please note that the examples that follow are not exhaustive.

General management practices – would be recommended wherever pertinent to the action proposed by the federal action agency:

- To the maximum extent possible, keep structures, equipment, and materials out of the water body.
- Bridges should completely span the water body (rather than placing supports in the water).
- Minimize the number of water body crossings for pipelines.
- Avoid actions in and around Pecos pupfish habitat that alter hydrology, particularly actions that cause water levels or flows to diminish.
- Avoid actions that cause loss of habitat either due to depletion in water quantity or impairment of water quality.
- Protect habitats from the accidental introduction of sheepshead minnow.
- When instream work is unavoidable, minimize disturbance to Pecos pupfish and their habitat via:
    - Avoid disturbance to habitat.
    - Minimize duration of instream activity.
    - Time of year restrictions on instream activity.
    - Minimize instream foot or equipment traffic.
- Avoid construction in and adjacent to streams during periods of heavy rain when the risk of silt introduction into habitat is higher.
- Develop and implement spill prevention and contingency plans.
- Avoid and minimize riparian damage and disturbance, including:
    - Locating the project footprint outside of the ordinary high water mark.
    - Replant when the project is complete, using native, non-invasive species.
    - Implement invasive species control measures.
- Adhere to best erosion and sediment control practices, such as bank armoring.
- Prohibit water withdrawal from and discharge into occupied water bodiesstreams.
- Minimize grubbing and clearing staging areas, especially in riparian areas that are within the ordinary high water mark.
- Implement biological monitoring, including:
    - Onsite biological monitoring during project implementation.
    - Baseline (pre-project) and post-construction monitoring.
    - Documentation and reporting of monitoring results.

Prescribed fire projects – the applicable general management practices above would be recommended for areas within or adjacent to occupied Pecos pupfish habitat. Avoidance of

large burn units in occupied habitat, particularly during the spawning season, and placement of fire breaks away from occupied Pecos pupfish water features will also be recommended.

Pipeline and utility crossings – the applicable general management practices above would be recommended for areas adjacent to or on occupied Pecos pupfish habitat. Additionally, construct and place the pipe so that it goes underneath the streambed without causing direct impacts to the stream. Drilling should minimize disturbance of riparian areas and be kept as far away from the stream as possible.

Watershed restoration activities – the applicable general management practices above would be recommended for areas adjacent to or on occupied Pecos pupfish habitat. Activities such as planting of riparian vegetation and fencing to protect riparian areas from livestock and other deleterious activities are generally considered beneficial to Pecos pupfish (when implemented in accordance with the general management practices listed above). Design features such as stream access points should be strategically placed in habitats that are currently degraded (avoiding good habitats), in accordance with the NRCS' National Conservation Practice Standards.

Road maintenance and bridge replacement maintenance – the applicable general management practices above would be recommended for areas adjacent to occupied Pecos pupfish habitat. Specific recommendations include intercepting stormwater runoff from bridges and channeling it to discharge points away from the stream or river. Bridge containment tarps will be recommended to trap any materials, including paint and solvents, preventing them from accidentally falling into the river. Bridge removal should be designed to minimize disturbance to the streambed. Pieces of old bridges should be removed to offsite disposal areas.

Maintaining pipeline right of ways – the applicable general management practices above would be recommended for areas adjacent to or on occupied Pecos pupfish habitat. Additional recommendations for this activity type include the use of manual or mechanical methods for vegetation control (instead of chemical treatment).

Pesticide use – specific recommendations include application via targeted "spot" treatments instead of broadcast application. Use of aquatic-specific pesticides will also be recommended in and near Pecos pupfish habitat.

Construction of recreation improvements and management of recreation activities – the applicable general management practices above would be recommended for areas adjacent to or on occupied Pecos pupfish habitat. Specific recommendations include avoiding disturbance of riparian habitat that could lead to water quality alternation, as well as siting and design of facilities to minimize sedimentation and foot-traffic in Pecos pupfish habitats.

Stocking practices – the Service recommends avoiding the release of non-native fish in watersheds occupied by the Pecos pupfish.

Surveys and monitoring – recommendations for threatened and endangered species surveys will include appropriate permit conditions to avoid and minimize injury or death of Pecos pupfish.

Agricultural activities – specific recommendations will include strategic placement of facilities (e.g., confined animal feeding operations) to avoid or minimize water discharges or sedimentation into Pecos pupfish habitat. Assessment of the cumulative effects of any water withdrawals will also be recommended.

Emergency response activities – specific recommendations will include minimizing stream and bank disturbance and siting equipment on the bank above the stream or river (i.e., keeping equipment out of the stream or river). We recommend developing and having in place an emergency plan, which would include techniques necessary to preserve the species from extirpation in the event of a catastrophic event, such as a train derailment or oil/produced water spill. Minimization measures to reduce adverse effects, without impeding response efforts, should be explored.

Oil and gas exploration and extraction – the applicable general management practices above would be recommended for areas adjacent to or on occupied Pecos pupfish habitat. Specific recommendations will include assessing the cumulative effects of water withdrawals.

Habitat Conservation Plans or other ESA protections. Following the listing of the species, the following habitat conservation plans (HCPs) have been developed or have incorporated consideration of the species:

No HCPs have been developed or proposed for the Pecos pupfish.

2. Other listed species protections, including other critical habitat designations

There are eight federally listed species whose habitat or range overlaps with pCH for Pecos pupfish, with most of the overlap occurring on Bitter Lake NWR. The Pecos bluntnose shiner is found in the Upper Pecos River pCH Unit and the Pecos sunflower can be found in the Bitter Lake and Overflow Wetland/Bottomless Lakes pCH units. Most ongoing conservation efforts occur at Bitter Lake NWR (see Section IIIA above). Of the eight species with habitat and range overlap with Pecos pupfish pCH, seven have designated critical habitat that intersect with Pecos pupfish pCH (see Table 2).

Table 2. Listed Species with Consultation Ranges Overlapping Pecos pupfish Critical Habitat Units

Co-occurring Federally Listed Species			Overlap with Proposed Critical Habitat Units				
Species Name	Status*	CH	Upper Pecos River	Salt Creek Wilderness	Bitter Lake	Bottomless Lakes/ Overflow Wetlands	Salt Creek (TX)
Wright's marsh thistle *(Cirsium wrightii)*	T	Yes			X		
Pecos sunflower *(Helianthus paradoxus)*	T	Yes	X		X	X	
Noel's amphipod *(Gammarus desperatus)*	E	Yes			X		
Roswell springsnail *(Pyrgulopsis roswellensis)*	E	Yes			X		
Pecos assiminea *(Assiminea pecos)*	E	Yes			X		
Koster's springsnail *(Juturnia kosteri)*	E	Yes			X		
Pecos gambusia (*Gambusia nobilis)*	E	No			X[a]		
Pecos bluntnose shiner *(Notropis simus pecosensis)*	E	Yes	X				

* T – threatened; E – endangered

[a] denotes NO overlap of designated CH with Pecos pupfish pCH

B. Other regulatory mechanisms that provide protection to Pecos pupfish and its habitat even absent critical habitat designation

The following regulatory mechanisms are relevant to the analysis of potential impacts of critical habitat designation because they provide some conservation benefits to the species under the baseline for the threats and specific activities identified in section III of this memorandum. Such regulatory mechanisms may include Federal, State, or local laws, regulations, policies, or plans. Conservation actions under these regulatory mechanisms are considered part of the baseline because these benefits will continue with or without critical habitat designation.

Federal Regulations/Acts

National Environmental Policy Act (NEPA)

All Federal agencies are required to comply with the National Environmental Policy Act of 1970 (as amended; 42 USC §§ 4321 et seq.), which is a procedural statute. Prior to implementation of projects with a Federal nexus, NEPA requires the agency to analyze the project for potential impacts to the human environment, including natural resources. If an Environmental Impact Statement is prepared for an agency action, the agency must provide a full and fair discussion of significant environmental impacts and inform decision makers and the public of reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human

environment (40 CFR § 1502.1). The public notice provisions of NEPA provide an opportunity for interested parties to review proposed actions and provide recommendations to the implementing agency. NEPA does not impose substantive environmental obligations on Federal agencies—it merely requires informed agency action.

Clean Water Act

The Federal Water Pollution Control Act of 1977 (33 U.S.C. 1251 et seq.), commonly referred to as the Clean Water Act (CWA), establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Under the CWA, the EPA has implemented pollution control programs, such as setting wastewater standards for industry, and has set water quality standards for all contaminants in surface waters. Section 404 of the CWA regulates the discharge of dredged or fill material into waters of the United States. Currently, waters of the United States have been defined to include tributaries to navigable waters (including candy darter streams), interstate wetlands, wetlands which could affect interstate or foreign commerce, and wetlands adjacent to other waters of the United States. Section 404 of the CWA requires parties to obtain a permit from the U.S. Army Corps of Engineers (Corps) prior to discharging dredge or fill material into "waters of the United States."

Federal Land Policy and Management Act of 1976 (FLPMA)

The Federal Land Policy and Management Act (as amended; 43 USC §§ 1701-1785) authorizes BLM to manage public lands under the principles of multiple use and sustained yield. The FLPMA (43 U.S.C. §1701 et seq) requires that public lands be managed "in a manner that will protect the quality of scientific, … ecological, [and] environmental … values" (43 U.S.C. §1701) and that the federal land managers "take any action necessary to prevent unnecessary or undue degradation of the lands" (43 U.S.C. §1732(b)) via rules and regulations (§1701(a)(5)), goals and objectives (43 U.S.C. §1701(a)(7)), legal instruments (43 C.F.R. §1732(b)), and terms and conditions (43 C.F.R. §1732(c)).

Mining Law of 1872 (Mining Law)

In the United States, mineral disposal is authorized under an array of statues primarily administered by the BLM, both on federally managed lands as well as other lands where mineral rights have been reserved to the U.S. (so-called split estate lands). The Mining Law of 1872, as amended (30 USC §§ 22–54), authorizes the disposal of minerals that are not otherwise subject to lease or sale. In 1976, FLPMA amended the Mining Law to prevent "unnecessary or undue degradation of the lands." BLM's implementing regulations for governing operations under the Mining Law provide that operators prevent "unnecessary or undue degradation" by adherence to performance standards, reclamation of disturbed areas, and complying with all applicable Federal and State laws related to environmental protection and the protection of cultural resources (see 43 U.S.C. § 3809.415). The performance standards that apply to such mining

operations include "[t]he operator shall take such action as may be needed to prevent adverse impacts to threatened or endangered species, and their habitat which may be affected by operations" (43 U.S.C. § 3809.420(b)(7)). BLM's regulations do not, however, require operators to ensure that their mining operations prevent adverse impacts to non-listed species or habitat, including non-listed BLM sensitive species or their habitat.

The Mining Law makes "all valuable mineral deposits in lands belonging to the United States... free and open to exploration and purchase..." Accordingly, this statute allows citizens of the U.S. the opportunity to explore for, discover, and purchase certain valuable mineral deposits on Federal lands that are open to mineral entry. Congress, the President, or public land order issued by the Secretary under Section 204 of FLPMA may withdraw lands from the operation of the public laws, including the Mining Law, which would prevent mining in a particular area. However, no areas occupied by Pecos pupfish have been withdrawn from mineral entry. On lands subject to the operation of the Mining Law, an operator must submit a notice to BLM of operations 15 calendar days before exploration causing surface disturbance of 5 acres or less (43 C.F.R. § 3809.21(a)) for disturbance greater than casual use. If a listed species is present, a prospective mining operator must submit a Plan of Operations for disturbance greater than casual use (43 CFR § 3809.11(b)(6)).

Federal Land Management Plans

Bitter Lake NWR had a refuge management plan and a Comprehensive Conservation Plan which refuge staff implements. The refuge is also governed by any individual species management plan or recovery planning document. The Migratory Bird Treaty Act and Clean Water Act are in full effect and are a part of the baseline for this species.

BLM Resource Management Plans and BLM Overflow Wetland Area of Critical Environmental Concern help to determine the actions and activities that occur on the ACEC.

State Laws/Regulations

The New Mexico Department of Game and Fish and the Texas Parks and Wildlife Department have existing laws that prevent the bait-bucket transfer of fish. This is one focal point of the existing Conservation Agreement that is in place for the Pecos pupfish. Bottomless Lakes State Park also has a management plan and regulations to recreate at their facilities.

Conservation Agreement

The Pecos Pupfish Conservation Agreement provides guidance for agencies and partners working toward Pecos pupfish conservation through two primary means. First, the monitoring outlined in the Agreement will provide a long-term data set on the persistence, and as methods are refined, population trends within four analysis units (Bitter Creek Drainage and Bitter Lake NWR Middle Tract Wetlands, BLM Overflow Wetlands and Lea Lake, and Bottomless Lakes

State Park). This will allow partners to detect potential sheepshead minnow introgression and allow for the detection of long-term declines or extirpations. Secondly, the agreement will help provide for ongoing maintenance (or potentially additional) barriers to fish passage that may protect some of the analysis units from sheepshead minnow introgression should a bait bucket transfer occur into the Upper Pecos River. Lastly, the agreement's purpose was to prevent further invasions by a collaborative effort of state and Federal entities to enforce baitfish regulations. The eight signatories are: Texas Parks and Wildlife Department, New Mexico Department of Game and Fish, Energy, Minerals, Natural Resources Division, NM Department of Agriculture, NM Interstate Stream Commission, Commissioner of Public Lands and NM State Land Office, Bureau of Land Management and USFWS. The duration of the Conservation Agreement is indefinite with formal review every 10 years. The agreement has been effective slowing the expansion of the sheepshead minnow by vested parties. This creates a stable foundation for the pupfish in that there are many agencies working together for the survival of the pupfish.

Tribal regulations

No tribal lands are included in the Pecos pupfish proposed critical habitat.

V. INCREMENTAL IMPACTS ANALYSIS

A. Adverse modification analysis in occupied areas

Pecos pupfish are present year-round in all five proposed critical habitat units, so there is no potential for consultations that will affect the critical habitat that will not also affect the species. The Pecos pupfish relies on the essential physical and biological features of these areas for growth, reproduction, and recruitment. Therefore, any action that would appreciably diminish the value of these critical habitat units for both the survival and recovery of Pecos pupfish would also appreciably reduce the likelihood of both the survival and recovery of Pecos pupfish in the wild. We know of no project modifications that would be recommended to avoid adverse alteration of the physical and biological features of the critical habitat that would not also be recommended to avoid adverse effects to the species. Because habitat degradation adversely affects Pecos pupfish, we anticipate that any proposed action that would result in a finding of adverse modification of occupied habitat would also result in a finding of jeopardy to the species. Hence, we expect that any reasonable and prudent alternatives (RPAs) to avoid jeopardy to the species would also avoid destruction/adverse modification of critical habitat and that it is unlikely there would need to be different RPAs to avoid destruction/adverse modification than to avoid jeopardy.

B. Adverse modification analysis for unoccupied areas

We are not proposing to designate unoccupied critical habitat.

C. New Information Provided by Critical Habitat

Because of the ongoing implementation of the Pecos Pupfish Conservation Agreement, most of the land managers are aware of the presence of Pecos pupfish. Designation of critical habitat is unlikely to provide new information to the public or substantially change the likelihood of consultation. The sole exception to this is the potential for landowners to pursue section 10 permits in the vicinity of Salt Creek, Texas where oil and gas operations have the potential to alter hydrology of Pecos pupfish habitat in that unit.

D. Added Administrative Efforts

The increase in administrative effort associated with section 7 consultations that only analyze destruction/adverse modification is unknown. We are aware of one recent BLM project within Pecos pupfish critical habitat units and one Service project within Pecos pupfish critical habitat units. Both involved management of emergent aquatic vegetation. The BOR has a biological opinion in place on the management of Pecos River operations and this consultation would likely need to be amended to include Pecos pupfish. Based on these recent projects within critical habitat units, we estimate up to three section 7 consultations per year total, with a subset of those only analyzing destruction/adverse modification.

VI. CONCLUSION

Because all of the units being proposed for designation as critical habitat are occupied, we do not expect that the critical habitat designation will result in any additional consultations. Because the habitat needs of the Pecos pupfish are the same as those that influence their health, growth and reproduction, the conservation recommendations provided to address impacts to the occupied critical habitat will be the same as those recommended to address impacts to the species. Furthermore, because the critical habitat and the extant known species range are identical, any proposed action that would result in a finding of adverse modification of occupied habitat would also result in a finding of jeopardy to the species. In the event of an adverse modification determination, we expect that reasonable and prudent alternatives to avoid jeopardy to the species would also avoid adverse modification of the critical habitat. The only incremental impact of critical habitat designation that we anticipate is the small administrative effort required during section 7 consultation to document effects on the physical and biological features of the critical habitat.

Sincerely,

Shawn Sartorius
Field Supervisor
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