

MEMORANDUM | May 6, 2024

TO U.S. Fish and Wildlife Service

FROM Industrial Economics, Incorporated (IEc)

SUBJECT Draft Screening Analysis of the Likely Economic Impacts of the Proposed Rule to Designate Critical Habitat for the Pecos Pupfish

The Service intends to publish a proposed rule to designate critical habitat for the Pecos pupfish (*Cyprinodon pecosensis*). As part of the rulemaking process, the Service must consider the economic impacts, including costs and benefits, of the proposed rule in the context of three separate requirements:¹

- **Executive Order (E.O.) 12866 Regulatory Planning and Review**, which directs Agencies to assess the costs and benefits of the regulatory action;²
- **Section 4(b)(2) of the Endangered Species Act (the Act)**, which requires the Secretary of the Interior to consider economic impacts prior to designating critical habitat; and
- **Regulatory Flexibility Act**, which requires Federal agencies to prepare and make available for public comment an initial regulatory flexibility analysis that describes the effect of a proposed rule on small entities. No initial regulatory flexibility analysis is required if the head of the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities.^{3,4}

This memorandum provides information to the Service on the potential costs and benefits of the proposed critical habitat designation to determine whether the rule meets the threshold for an economically significant rule.⁵ This memorandum also identifies the geographic areas or specific

¹ Additional laws and executive orders require the consideration of the distribution of impacts on vulnerable subpopulations, such as State or local governments. These requirements for distributional analysis are beyond the scope of this memorandum.

² Published September 20, 1993. As affirmed by E.O. 13563 (Improving Regulation and Regulatory Review) of January 18, 2011 and amended by E.O. 14094 (Modernizing Regulatory Review) of April 6, 2023.

³ 5 U.S.C. § 601 et seq.

⁴ For a discussion of the Service's findings regarding the Regulatory Flexibility Act (RFA) and other relevant statutes, please refer to the preamble to the proposed rule published in the Federal Register.

⁵ E.O. 14094, issued on April 6, 2023, amends Section 3(f) of E.O. 12866 to define a significant regulatory action as any regulatory action likely to result in a rule that may have an annual effect on the economy of \$200 million or more. This threshold should be adjusted every three years to account for inflation.

activities that could experience the greatest impacts, measured in terms of changes in social welfare, to inform the Secretary's decision under section 4(b)(2) of the Act.⁶

To prepare this assessment, we rely on: (1) the Service's incremental effects memorandum (IEM); (2) associated geographic information systems (GIS) data layers; and (3) consultation history for species with overlapping proposed critical habitat for the Pecos pupfish.

⁶ The discipline of welfare economics focuses on maximizing societal well-being (see Just et. al. 2005. *The Welfare Economics of Public Policy: A Practical Approach to Project and Policy Evaluation*. Edward Elgar Publishing, Cheltenham and Northampton). It measures costs and benefits in terms of the opportunity costs of employing resources for the conservation of the species and individual willingness to pay to conserve those species. Opportunity cost is the value of the benefit that could have been provided by devoting the resources to their best alternative uses. Opportunity costs differ from the measurement of accounting costs (e.g., actual expenses). Welfare economics is recognized by the U.S. Office of Management and Budget (OMB) as the appropriate tool for valuing the costs and benefits of proposed regulatory actions (OMB, "Circular A-4." November 9, 2023).

Findings of the Screening Analysis

Critical habitat designation for the Pecos pupfish is unlikely to generate costs or benefits having an annual effect on the economy of \$200 million or more. Therefore, the rule is likely/unlikely to meet the threshold for an economically significant rule as defined in E.O. 14094.

Section 7 Costs

The economic cost of implementing the rule through section 7 of the Act will most likely be limited to additional administrative effort to consider adverse modification of the Pecos pupfish critical habitat during consultations. This finding is based on the following:

- The proposed units are considered occupied by the Pecos pupfish, and occupied units are afforded significant baseline protection under the Act due to the presence of the listed species.
 - For instance, all projects with a Federal nexus would be subject to section 7 consultation regardless of the designation of critical habitat due to the presence of the listed species.
 - Furthermore, critical habitat is not likely to change the Service's recommendation for project modifications as part of future consultations considering the Pecos pupfish.
- The Pecos pupfish receives additional baseline protection from co-occurring listed species, which include species with overlapping critical habitat and similar resource and habitat needs.

Based on past consultation activity for the species within the area proposed for the Pecos pupfish critical habitat, the number of future consultations that will consider the Pecos pupfish is unlikely to exceed 1 formal consultation and 2 informal consultations per year. The additional administrative cost of addressing adverse modification in these consultations is likely to be less than \$11,000 in a given year (2024 dollars).

Other Costs

- The designation of critical habitat is not expected to trigger additional requirements under State or local regulations.
- While perceptual effects of Pecos pupfish critical habitat on land values are possible, the likelihood, magnitude, and duration of such effects are uncertain. Empirical studies of critical habitat impacts provide mixed evidence.

Section 7 and Other Benefits

The primary intended benefit of the critical habitat designation is the biological benefit to the Pecos pupfish of increased support for its conservation and recovery. As this economic screening analysis finds that the designation is not likely to result in any project modifications, ancillary economic benefits are not anticipated.

Distribution of Costs by Geography

The location of future activities that will trigger section 7 consultations for the Pecos pupfish is uncertain. In previous years, consultation activity for other species in the areas proposed critical habitat were greatest in Bitter Lake (Unit 3) followed by Upper Pecos River (Unit 1) and Overflow Wetland/Bottomless Lake (Unit 4). The Service does not anticipate projects that will trigger the need for section 7 consultation in Salt Creek Wilderness (Unit 2) and Salt Creek, TX (Unit 5).

Distribution of Costs by Activity Type

The activities most likely to result in section 7 consultation related to critical habitat for the Pecos pupfish are associated with management related activities, as well as construction and repair of pipelines, dams, and bridges.

Section 1. Background^{7,8,9}

The Pecos pupfish is a small, deep-bodied fish that lives in both still water (i.e., springs and sinkholes) and moving water (i.e., rivers and streams). Typically, they are between 1.1 and 1.8 inches in length with colors varying from gray to brown to an iridescent blue. Pecos pupfish will vary in physical characteristics between different isolated habitats. Populations that are found in sinkholes often have larger heads than those found in a marshland habitat. The sinkhole Pecos pupfish also have mouths that are terminal or sub-terminal (angled downwards) to give them better access to benthic (floor) feeding rather than feeding at the surface of the water. Their average lifespan is about a year.

The Pecos pupfish are found in springs, sinkholes, and wetlands within the Pecos River Basin of New Mexico and Texas. The species' habitat can contain silt, sand, cobble, gravel, and/or detritus (e.g., decaying leaves). Pecos pupfish can tolerate a high level of salinity as well as a low level of dissolved oxygen, enabling them to live in areas that other fish cannot. The threats to the Pecos pupfish include hybridization with sheepshead minnow, habitat degradation as water quality and quantity declines, and habitat fragmentation. The ongoing threat of climate change also degrades habitat for the Pecos pupfish.

Pursuant to the Act, the Service proposes to list the Pecos pupfish and designate critical habitat for the species. The proposed designation spans five units across 136 river miles of instream habitat (to the ordinary high-water mark, excluding riparian areas) and approximately 26,555 acres of isolated sinkholes and wetland (see Table 1 and Figure 1). The proposed units contain the physical or biological features (PBFs) essential to the conservation of the Pecos pupfish:

- Adequate water quality:
 - Free of pollutants;
 - Salinity less than 35,000 mg/L;
 - Temperature less than 42.7 °C; and
 - Dissolved oxygen greater than 2.5 mg/L.
- Sufficient water quantity:
 - Permanent water in portion of habitat;
 - Water depth to allow for thermal refugia and breeding;
- Absence of Sheepshead minnow; and
- Silt-free underwater topographic diversity for egg deposition.

All units are occupied by the species and contain one or more of the PBFs described above. The proposed critical habitat consists of four units in New Mexico and one unit in Texas (see Figure 1).

⁷ U.S. Fish and Wildlife Service. Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Pecos Pupfish. Dated March 27, 2024. Pages 3-8.

⁸ U.S. Fish and Wildlife Service. Species Status Assessment Report for the Pecos Pupfish, December 20, 2023. Pages 12-14.

⁹ Personal communication with the Service via email on March 28, 2024.

For the units in New Mexico, one unit is denoted using river miles (Unit 1) whereas the remaining three are described with acres (Units 2, 3, and 4). The one unit in Texas is identified with river miles (Unit 5).

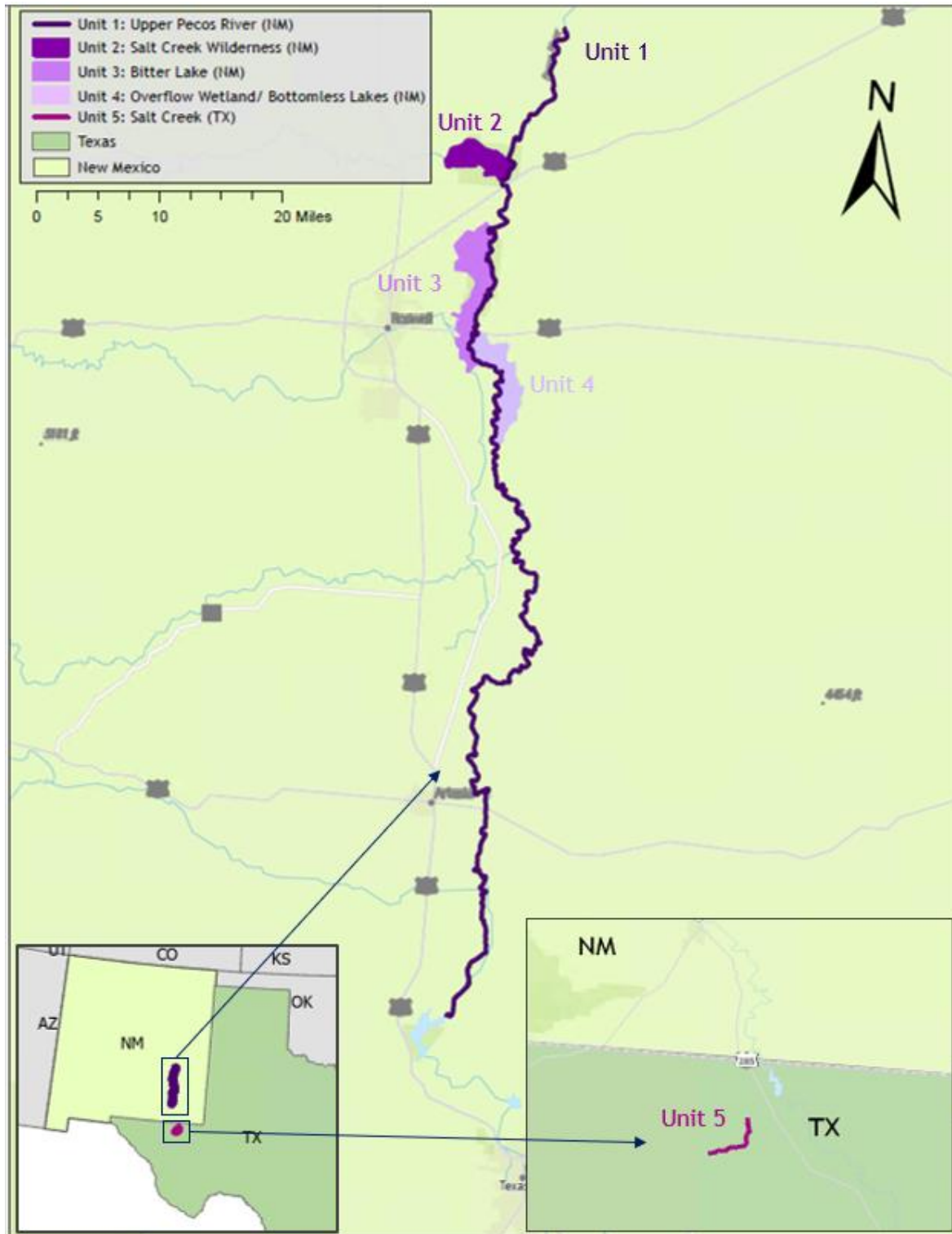
As shown in Table 1, the proposed units denoted in river miles are primarily adjacent to private land (72 percent) followed by Federal land (24 percent) and state land (4 percent). The proposed units described in acres are mostly Federal land (64 percent) followed by private (29 percent) and state land (7 percent). Three of the five proposed units overlap with existing critical habitat for other six other species, including Pecos bluntnose shiner (*Notropis simus pecosensis*), Koster's springsnail (*Juturnia kosteri*), Pecos sunflower (*Helianthus paradox*), Noel's amphipod (*Gammarus desperatus*), Wright's marsh thistle (*Cirsium wrightii*), Roswell springsnail (*Pyrgulopsis roswellensis*), and Pecos assiminea (*Assiminia pecos*).

Table 1. Summary of Proposed Critical Habitat for the Pecos Pupfish

Proposed Unit	Proposed Unit Name (State)	Total Area or Length	State	Federal	Private	Co-occurring ESA-listed Species with Existing Critical Habitat
1	Upper Pecos River (NM)	121.88 mi	4.86 mi	32.61 mi	84.41 mi	Pecos bluntnose shiner, Pecos sunflower
2	Salt Creek Wilderness (NM)	5,428.74 ac	-	5,428.74 ac	-	None
3	Bitter Lake (NM)	11,972.90 ac	87.87 ac	9,663.15 ac	2,221.88 ac	Kosters springsnail, Pecos sunflower, Noels amphipod, Wrights marsh thistle, Roswell springsnail, Pecos assiminea
4	Overflow Wetland/ Bottomless Lakes (NM)	9,153.90 ac	1,854.78 ac	1,784.00 ac	5,515.12 ac	Pecos sunflower
5	Salt Creek (TX)	14.24 mi	-	-	14.24 mi	None
Total (river miles)		136.12 mi	4.86 mi	32.61 mi	98.65 mi	
Total (acres)		26,555.54 ac	1,942.65 ac	16,875.89 ac	7,737.00 ac	

Source: U.S. Fish and Wildlife Service. Incremental Effect Memorandum for the Proposed Rule to Designate Critical Habitat for the Pecos Pupfish. March 27, 2024.

Figure 1. Overview of Proposed Critical Habitat for the Pecos Pupfish



Source: IEc map using (1) proposed critical habitat shapefiles provided by the Service on March 2, 2024, (2) USA States shapefile from Esri; U.S. Department of Commerce, Census Bureau; U.S. Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Geodetic Survey (NGS), and (3) Terrain with Labels Base shapefile from Esri, HERE, Garmin, OpenStreetMap contributors, and the GIS community.

Section 2. Framework

Guidelines issued by the U.S. Office of Management and Budget (OMB) for the economic analysis of regulations direct Federal agencies to measure the costs and benefits of a regulatory action against a baseline (i.e., costs and benefits that are “incremental” to the baseline). OMB defines the baseline as the “best assessment of the way the world would look absent the proposed action.”¹⁰ In other words, the baseline includes any existing regulatory and socio-economic burden imposed on landowners, managers, or other resource users affected by the designation of critical habitat. The baseline includes the economic impacts of listing the species under the Act, even if the listing occurs concurrently with critical habitat designation. Impacts that are incremental to the baseline (i.e., occurring over and above existing constraints) are those that are solely attributable to the designation of critical habitat. This screening analysis focuses on the likely incremental effects of the critical habitat designation.

We consider incremental effects of the designation in two key categories: (1) those that may be generated by section 7 of the Act; and (2) other types of impacts outside of the context of section 7:

- **Incremental section 7 impacts:** Activities with a Federal nexus that may affect listed species are subject to section 7 consultation to consider whether actions may jeopardize the existence of the species, even absent critical habitat.¹¹ As part of these consultations, critical habitat triggers an additional analysis evaluating whether an action will diminish the recovery potential or conservation value of the designated area. Specifically, following the designation, Federal agencies must also consider the potential for activities to result in the destruction or adverse modification of critical habitat. These consultations are the regulatory mechanism through which critical habitat rules are implemented. Any time and effort spent on this additional analysis, as well as the costs and benefits of implementing any recommendations resulting from this review, are economic impacts of the critical habitat designation.
- **Other incremental impacts:** Critical habitat may also trigger additional regulatory changes. For example, the designation may cause other Federal, State, or local permitting or regulatory agencies to expand or change standards or requirements. Regulatory uncertainty generated by critical habitat may also have impacts. For example, landowners or buyers may perceive that the rule will restrict land or water use activities in some way and therefore value the use of the land less than they would have absent critical habitat. This is a perception, or stigma, effect of critical habitat on markets.

¹⁰ OMB, “Circular A-4,” November 8, 2023. Circular A-4 provides “guidance to Federal agencies on the development of regulatory analysis as required under Section 6(a)(3)(c) of E.O. 12866, as amended...”, page 1.

¹¹ A Federal nexus exists for activities authorized, funded, or carried out by a Federal agency.

Section 3. Section 7 Costs of the Critical Habitat Rule

Section 7 of the Act requires Federal agencies to consult with the Service to ensure that their actions will not jeopardize the continued existence of the Pecos pupfish regardless of whether critical habitat is designated. Thus, section 7 provides some baseline protection and generates baseline costs associated with conservation and recovery of the Pecos pupfish due to the species listing, regardless of whether critical habitat is designated. Once critical habitat is designated, section 7 additionally requires that Federal agencies ensure their actions will not destroy or adversely modify critical habitat. Thus, a key focus of this screening analysis is to determine the likelihood that the designation of critical habitat would trigger project modifications to avoid adverse modification that would be above and beyond any modifications triggered by adverse effects to the species itself.

This screening analysis finds that incremental costs associated with section 7 consultations for the Pecos pupfish are likely limited to administrative costs. In other words, project modification recommendations to avoid adverse modification of critical habitat for the Pecos pupfish are not anticipated given other baseline protections of the habitat. Therefore, the incremental costs of the proposed critical habitat rule are most likely limited to the additional effort to consider the adverse impacts on critical habitat for the species during section 7 consultations. This conclusion is based on multiple factors:

- **The concurrent listing of the Pecos pupfish under the ESA provides substantial baseline protection.**
 - **All projects with a Federal nexus will be subject to section 7 consultation regardless of whether critical habitat is designated.** The proposed units are occupied year-round by the Pecos pupfish. The Service states that “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.”¹² Thus, the nature of activities that may require section 7 consultation is not different with or without consultation. As a result, designating critical habitat is not expected to result in additional consultations beyond those required due to the presence of the species.
 - **Critical habitat is not likely to change the Service’s recommendation for project modifications as part of future consultations considering the Pecos pupfish.** For future consultations in the proposed critical habitat area, the Service anticipates that the same kinds of conservation recommendations made to avoid jeopardy would avoid adverse modification of critical habitat. The Service notes “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.”¹³ The Service then goes on to state, “Hence, we expect that any reasonable and prudent alternatives (RPAs) to avoid jeopardy to the species would also avoid

¹² U.S. Fish and Wildlife Service. Incremental Effect Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for Pecos Pupfish. Dated March 27, 2024. Page 15.

¹³ *Ibid*, page 15.

destruction/adverse modification of critical habitat.”¹⁴ Thus, the outcome of these consultations is unlikely to be different with or without the designation of critical habitat.

- **Species and habitat conservation efforts for the co-occurring listed species and critical habitat provide additional baseline protection for the Pecos pupfish.** The critical habitat of seven species and the ranges of eight listed species overlap with proposed critical habitat for the Pecos pupfish. Approximately 20 percent of the proposed river miles and 3 percent of the proposed acres overlap with existing critical habitat; the listed species ranges overlap approximately 96 percent of the proposed units.¹⁵ While not all of these species are aquatic, the Service notes that all of them “face similar threats to the Pecos pupfish including declining water quantity, declining water quality, competition and hybridization, and climate change impacts.”¹⁶ Therefore, absent the proposed rule, there are still protections in place for the species that would result in projects avoiding adverse effects on the species and its critical habitat.

Accordingly, costs of section 7 consultations are likely to be limited to the additional administrative effort to evaluate the potential for adverse modification of Pecos pupfish critical habitat. The following sections provide information on the anticipated levels of consultation activity to gauge the potential magnitude of these administrative costs. First, we estimate future section 7 consultations for the Pecos pupfish based on historical consultations for the seven species with overlapping critical habitat. We then summarize the associated costs of these incremental administrative efforts. This analysis finds that incremental costs are unlikely to exceed \$11,000 in a given year (2024 dollars). The section concludes with a description of the likelihood of project modification costs.

Expected Future Consultations

While the number of potential consultations that may arise from projects or activities with a Federal nexus in proposed critical habitat for the Pecos pupfish is uncertain, historically, very few activities have occurred that triggered consultation for other listed species in the proposed critical habitat area for the pupfish. This is likely due to the remote nature of this proposed units.

In developing its IEM, the Service conducted outreach to Federal agencies likely to consult on projects near proposed critical habitat.¹⁷ For instance, the Bureau of Land Management described a land acquisition in progress that could lead to a recreation-based project in the future.¹⁸ While

¹⁴ *Ibid*, page 15.

¹⁵ Overlap with existing critical habitat calculated using GIS files with proposed critical habitat shapefiles for the Pecos pupfish provided by the Service on February 16, 2024 and existing critical habitat shapefiles accessed through ECOS on March 13, 2024. Overlap with existing listed species ranges determined by IEC using the Service’s “Current Range for All Listed Species” GIS Layer, accessed in March 2024.

¹⁶ U.S. Fish and Wildlife Service. Incremental Effect Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for Pecos Pupfish. Dated March 27, 2024. Page 8.

¹⁷ Personal communication between IEC and the Service on March 12, 2024.

¹⁸ Memorandum from Bureau of Land Management, Pecos District Office, Roswell, NM to U.S. Fish and Wildlife Service, New Mexico Ecological Service Field Office, Albuquerque, NM on March 7, 2024.

the information provided is informative, it is also insufficient to develop a comprehensive consultation forecast for Pecos pupfish critical habitat.

Instead, this analysis uses historical consultation activity levels that considered seven species with overlapping critical habitat and similar habitat needs to the Pecos pupfish: Pecos bluntnose shiner, Koster's springsnail, Pecos sunflower, Noel's amphipod, Wright's marsh thistle, Roswell springsnail, and Pecos assiminea.¹⁹ As shown in Table 1, the ranges of and critical habitat for these species overlap with proposed Units 1, 3, and 4.²⁰ The Service does not anticipate section 7 consultation activity in Units 2 and 5 given no past or future known projects with a Federal nexus.²¹

Historical consultation information provided by the Service identified 71 consultations that considered these seven species between 2008 and 2023.^{22,23} GIS analysis revealed that only six of these consultations are associated with coordinates that fall within or near (i.e., within 10 miles of) proposed critical habitat for the Pecos pupfish.²⁴ Table 2 presents the number of section 7 consultations that considered any of the proxy species between 2008 and 2023 that occurred within or near the proposed critical habitat for the Pecos pupfish. Five of the six consultations occurred between 2019 and 2023, and most consultations occurred in 2022 and 2023.

Across the proposed critical habitat designation for Pecos pupfish, we anticipate Federal agencies will participate in a similar number of consultations per year relative to the consultation history presented in Table 2. Given that activity levels have been greatest in the most recent years, which may indicate an uptick in projects or activities requiring consultation in this area, we base our consultation forecast on the maximum number of consultations per year by consultation type (as opposed to the average). This assumes that more recent years are better predictors of the project and activity levels than the ten-year history. Accordingly, this analysis assumes one formal consultation and two informal consultations per year will consider critical habitat for the Pecos pupfish.²⁵ The Service does not anticipate an increase in consultation activity within these proposed units in the future.²⁶

¹⁹ U.S. Fish and Wildlife Service. Incremental Effect Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for Pecos Pupfish. Dated March 27, 2024. Pages 11-12.

²⁰ The ranges for the species entirely overlap with proposed critical habitat for the Pecos pupfish.

²¹ Personal communication between IEc and the Service on March 12, 2024.

²² Historical consultation information is documented in the Service's TAILS database (for years 2008-2021) and ECOSphere database (for years 2022-2023). The Service provided IEc with this information via email communication on March 2, 2024.

²³ All seven species with overlapping ranges and critical habitats were listed between 1987 and 2023: Pecos bluntnose shiner (1987), Pecos sunflower (1999), Koster's springsnail (2005), Noel's amphipod (2005), Pecos assiminea (2005), Roswell springsnail (2005), and Wrights marsh thistle (2023).

²⁴ TAILS data provided by the Service offered lat/long points for each consultation. IEc determined which of those points fell within or near proposed critical habitat. ECOS data does not have the same location identifiers; instead, the Service identified specific consultations that overlapped proposed critical habitat using available spatial data.

²⁵ This estimate is identical to the Service's projection in its IEM (U.S. Fish and Wildlife Service. Incremental Effect Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for Pecos Pupfish. Dated March 27, 2024. Page 16.).

²⁶ Personal communication between IEc and the Service on March 12, 2024.

Table 2. Historical Consultation Frequency for Seven Species with Ranges Overlapping Proposed Critical Habitat for the Pecos Pupfish

Year	Formal Consultations	Informal Consultations
2008	0	1
2009	0	0
2010	0	0
2011	0	0
2012	0	0
2013	0	0
2014	0	0
2015	0	0
2016	0	0
2017	0	0
2018	0	0
2019	1	0
2020	0	0
2021	0	0
2022	0	2
2023	1	1
Total	2	4
Average/year	0.125	0.25
Max/year	1	2

Source: Historical consultation information documented in the Service's TAILS (for years 2008-2021) and ECOSphere database (for years 2022-2023) and provided by the Service via email communication on March 2, 2024. Proposed critical habitat for the Pecos pupfish identified using shapefiles provided by the Service on February 16, 2024.

Notes: The seven listed species included with overlapping ranges include: Pecos bluntnose shiner, Koster's springsnail, Pecos sunflower, Noel's amphipod, Wright's marsh thistle, Roswell springsnail, and Pecos assiminea.

As described in its IEM, the Service anticipates consulting on activities that could include:

- Prescribed fire projects
- Pipeline and utility crossings
- Watershed restoration activities
- Road maintenance and bridge replacement maintenance
- Maintaining pipeline right of ways
- Pesticide use
- Construction of recreation improvements and management of recreation activities
- Stocking practices
- Surveys and monitoring
- Agricultural activities
- Oil and gas exploration and extraction

These activities are either ongoing or expected to be proposed as projects, regularly, within the proposed critical habitat of the Pecos pupfish.²⁷

Administrative Costs of Section 7 Consultations

The cost associated with a section 7 consultation varies by both type of consultation as well as whether the consultation considers adverse modification, jeopardy, or both. Table 3 presents the per-consultation administrative costs, including 1) the total cost of consultations that consider both jeopardy and adverse modification and 2) the incremental cost of effort to consider adverse modification in a consultation that also considers jeopardy. We apply the costs associated with additional effort to consider adverse modification to the consultation forecast. These costs were developed using data from the 2024 Federal Government Schedule Rates and a previous review of consultation records from Service field offices across the country.

As shown in Table 3, the incremental costs for each programmatic, formal, informal, and technical assistance effort are estimated to be \$11,000, \$5,700, \$2,700, and \$440, respectively. These estimates assume that consultation actions will occur even in the absence of critical habitat due to the presence of the Pecos pupfish, and the amount of administrative effort needed to address the critical habitat during this process is relatively minor.

Table 3. Range of Administrative Consultation Costs per Effort (2024 USD)

Consultation Type	Service	Federal Agency	Third Party	Biological Assessment	Total Costs
Total Cost of Consultation Considering Both Jeopardy and Adverse Modification					
Technical Assistance	\$700	N/A	\$1,100	N/A	\$1,800
Informal	\$3,000	\$3,900	\$2,100	\$2,000	\$11,000
Formal	\$6,800	\$7,700	\$3,500	\$4,800	\$23,000
Programmatic	\$21,000	\$17,000	N/A	\$5,600	\$43,000
Additional Effort to Address Adverse Modification in a New Consultation					
Technical Assistance	\$180	N/A	\$260	N/A	\$440
Informal	\$760	\$960	\$510	\$500	\$2,700
Formal	\$1,700	\$1,900	\$880	\$1,200	\$5,700
Programmatic	\$5,100	\$4,300	N/A	\$1,400	\$11,000

Source: IEc analysis of administrative costs is based on data from the Federal Government Schedule Rates, Office of Personnel Management, 2024, and a review of consultation records from several Service field offices across the country conducted in 2002.

Notes:

1. Estimates are rounded to two significant digits and may not sum to the totals reported due to rounding.
2. Estimates reflect average hourly time required by staff.

²⁷ U.S. Fish and Wildlife Service. Incremental Effect Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Pecos Pupfish. Dated March 27, 2024. Pages 7-11.

Table 4 displays the total incremental administrative section 7 consultation costs expected for the Pecos pupfish critical habitat. This analysis finds that the incremental administrative costs of consultation are unlikely to exceed \$11,000 (2024 dollars) in a given year, including \$5,700 for formal consultations and \$5,500 for informal consultations.

Table 4. Incremental Annual Cost of Section 7 Consultations Considering Pecos Pupfish Critical Habitat (2024 USD)

Consultation Type	Total Costs
Formal Consultations	\$5,700
Informal Consultations	\$5,500
Total	\$11,000

Source: IEc calculations using the maximum number of consultations per year described in Table 2 as well as the per consultation rates described in Table 3. See main text for details.

Note: Estimates are rounded to two significant digits and may not sum to the totals reported due to rounding.

Project Modification Costs

Because the Pecos pupfish is not yet listed, the Service does not have a historical account of project modifications it has suggested as part of section 7 consultations that consider the potential for jeopardy to the species. Instead, the Service describes in its IEM several conservation recommendations that may occur regardless of critical habitat designation for each type of project it anticipates may occur within or near the proposed units.²⁸

As described earlier, the Service does not anticipate that consideration of the potential for adverse modification as part of future section 7 consultations will result in more or different conservation effort recommendations. In other words, the Service would request the same conservation measures during section 7 consultations regardless of whether critical habitat was designated. Therefore, the proposed critical habitat rule is not expected to generate project modification costs.

Section 4. Other Costs of the Critical Habitat Rule

This section discusses the potential for incremental costs to occur outside of the section 7 consultation process. These types of costs include triggering additional requirements or project modifications under State laws or regulations, and perceptual effects on markets. These types of costs may occur even when activities do not have a Federal nexus for consultation.

Additional State or Local Regulation

Indirect incremental impacts may occur if the designation of critical habitat increases awareness of the presence of the species or the need for protection of its habitat, particularly when new

²⁸ For a complete list of the conservation recommendations please reference the U.S. Fish and Wildlife Service. Incremental Effect Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for Pecos Pupfish. Dated March 27, 2024. Pages 8-11.

regulations or requirements are triggered. The Service does not expect additional State or local regulations to be triggered by the designation of critical habitat for the Pecos pupfish.²⁹

Possible Impacts of Public Perception

Comments received regarding proposed designations of critical habitat throughout the United States indicate that the public perceives critical habitat designation as potentially resulting in incremental changes to private property values, above and beyond any effects associated with specific forecasted project modifications under section 7 of the Act.³⁰ These commenters suggest that, all else being equal, a property that is inhabited by a threatened or endangered species or that lies within a critical habitat designation will have a lower market value than an identical property that is not inhabited by the species or that lies outside of critical habitat. This lower value results from the perception that critical habitat will preclude, limit, or slow development, or somehow alter the highest and best use of the property.

We have reviewed all existing studies on the potential property value impacts of critical habitat.³¹ While some identify property value effects of critical habitat designation, others do not. Still other studies identify that critical habitat can positively affect property values. Mamun et al. (2023) which represents the most comprehensive analysis of critical habitat property value impacts conducted to date, finding that “[critical habitat] has had little to no effect, at least at the national level, on treated sales relative to matched control sales.”³² In general, the literature suggests that the potential for property value impacts is species-specific and not generalizable to all critical habitat designations.

Though the literature suggests perceptual effects on property values are possible, the likelihood, magnitude, and duration of such effects for any given designation are uncertain. Over time, as public awareness of the potential regulatory burden placed on designated lands evolves, particularly where no Federal nexus compelling a section 7 consultation exists, the effect of critical habitat designation on property values may attenuate. Existing literature provides little specific insight into the time horizon of potential property value effects.

Section 5. Geographic Distribution of Section 7 and Other Costs

The geographic distribution of future section 7 consultations and associated costs within the proposed units are uncertain. If historical consultation information for the proxy species is a good indicator of the future geographic distribution of section 7 consultations that consider Pecos pupfish critical habitat, then most future consultations are expected to occur in proposed Units 1, 3, and 4. Of the six historical consultations considered in this analysis, five overlapped with Unit 3

²⁹ Personal communication between IEc and the Service on March 12, 2024.

³⁰ See, for example, public comments on the possible impact of designating private lands as critical habitat for the Northern spotted owl (as summarized in Industrial Economics, Incorporated. *Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl: Final Report*. Prepared for the U.S. Fish and Wildlife Service. November 20, 2012. p.5-21) and the cactus ferruginous pygmy owl (as summarized in Industrial Economics, Incorporated. *Economic Analysis of Critical Habitat Designation for the Cactus Ferruginous Pygmy-Owl*. Prepared for the U.S. Fish and Wildlife Service. June 1999. p.44).

³¹ For a review of the existing literature, see: Paterson, R. and M. Flight. “Critical Habitat Designation and Property Values.” A white paper produced for the U.S. Fish and Wildlife Service. November 2023.

³² Mamun, S., E. Nelson and C. Nolte. “Estimating the Impact of Critical-Habitat Designation on the Values of Developed and Undeveloped Parcels.” *Land Economics*. 2023. Pg. 3.

and four overlapped with both Units 1 and 4. The Service does not anticipate projects will trigger section 7 consultation in Units 2 and 5.³³

Section 6. Section 7 and Other Economic Benefits

While conservation of the Pecos pupfish may have various economic benefits, the purpose of this analysis is to identify incremental benefits specific to establishing critical habitat of the species above and beyond any benefits that may accrue under baseline conditions, including the listing of the species.

The primary intended benefit of critical habitat is to support the conservation of threatened and endangered species. Quantification and monetization of species conservation benefits requires information on: (1) the incremental change in the probability of conservation of the species that is expected to result from the designation; and (2) the public's willingness to pay for such beneficial changes. As described in this memorandum, additional efforts to conserve the Pecos pupfish are not predicted. As the designation is unlikely to result in additional or different project modifications, ancillary economic benefits are not anticipated.

Section 7. Summary

In conclusion, the incremental costs of designating critical habitat for the Pecos pupfish are likely to be limited to additional administrative effort to consider adverse modification in section 7 consultations for the species. Based on historical consultation activity for listed species with overlapping ranges and existing critical habitat, these costs are unlikely to exceed \$11,000 in a given year (2024 dollars). Therefore, the rule is unlikely to meet the threshold for an economically significant rule as defined in E.O. 14094.

This finding is based on several factors, including:

- The proposed units are considered occupied by the Pecos pupfish, and occupied units are afforded significant baseline protection under the Act due to the presence of the listed species.
 - For instance, all projects with a Federal nexus would be subject to section 7 consultation regardless of the designation of critical habitat due to the presence of the listed species.
 - Furthermore, critical habitat is not likely to change the Service's recommendation for project modifications as part of future consultations considering the Pecos pupfish.
- The Pecos pupfish receives additional baseline protection from co-occurring listed species, which include species with overlapping critical habitat and similar resource and habitat needs.

The costs and benefits resulting from the proposed critical habitat for the Pecos pupfish are subject to uncertainty due to limited information on what future projects may require section 7 consultation that considers Pecos pupfish habitat. However, the focus of the screening analysis is on the

³³ Personal communication between IEC and the Service on March 12, 2024.

likelihood this proposed rule is economically significant, and it is unlikely that additional data gathering and analysis to address uncertainty would change the findings of this analysis.