

MEMORANDUM | July 7, 2014

TO: U.S. Fish and Wildlife Service (Service)
FROM: Industrial Economics, Incorporated (IEc)
SUBJECT: Consideration of Economic Impacts: Screening Analysis of the Likely Economic Impacts of Critical Habitat Designation for the Zuni Bluehead Sucker

The Service published a proposed rule to designate critical habitat for the Zuni bluehead sucker on January 25, 2013 (78 FR 5351).¹ As part of the rulemaking process, the Service must consider the potential economic costs and benefits of the proposed rule in the context of two primary requirements:²

- **Executive Order (EO)12866 *Regulatory Planning and Review***, which directs Agencies to assess the potential costs and benefits of regulatory actions and quantify those costs and benefits if that action may have an effect on the economy of \$100 million or more in any one year; and
- **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.³

This memorandum provides information to the Service on the potential for the proposed critical habitat rule to result in costs exceeding \$100 million in a single year. If costs do not exceed this threshold, EO 12866 suggests that a qualitative assessment may be sufficient. This memorandum also identifies the geographic areas or specific 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).

To prepare this assessment, we rely on: (1) the proposed rule and associated geographic information systems (GIS) data layers; (2) the Service's incremental effects memorandum (IEM) described in greater detail later in this memorandum; (3) the results of the Service's outreach efforts to other Federal agencies concerning the likely effects of critical habitat; and (4) limited interviews with relevant stakeholders.

¹ The Service revised the boundaries of proposed critical habitat in 2014. This screening memorandum reflects these most recent changes, as presented in the June 13, 2014 Incremental Effects Memorandum.

² Additional laws and executive orders require the consideration of the distribution of impacts on vulnerable subpopulations, such as small entities and State or local governments. These requirements for distributional analysis are beyond the scope of this memorandum.

³ Published September 20, 1993. As affirmed by Executive Order 13563, *Improving Regulation and Regulatory Review*, January 18, 2011.

FINDINGS OF THE SCREENING ANALYSIS

Section 7 Costs

Critical habitat designation for the Zuni bluehead sucker, as proposed, is not likely to generate costs exceeding \$100 million in a single year. Economic impacts will most likely be limited to additional administrative effort resulting from a small number of future section 7 consultations, as well as minor costs of conservation efforts. This finding is based on the following information:

1. Approximately 70 percent of proposed critical habitat stream reaches are considered to be occupied by the species (100.1 river miles). The Service states that critical habitat designation is unlikely to result in incremental changes to conservation actions in currently occupied areas over and above those necessary to avoid jeopardizing of the species. As such, only administrative costs are expected in those areas.
2. In proposed areas that are not occupied by Zuni bluehead sucker (30 percent of proposed critical habitat), few actions are expected to result in section 7 consultation or associated project modifications. In particular:
 - Subunit 2b (6.0 river miles) occurs entirely on Navajo Nation lands. Based on the results of the Service's outreach efforts to Navajo Nation (see the Service's IEM), we do not expect any projects to result in section 7 consultation within the proposed critical habitat areas on these lands.
 - Subunit 1b (35.7 river miles) includes U.S. Forest Service (USFS), private, State, and Zuni Pueblo lands. Communications with affected entities indicate that critical habitat designation is unlikely to result in more than just a few consultations in this unit, with minor conservation efforts that would result in relatively low costs. While current projects are not planned in proposed critical habitat areas on Tribal lands, impacts to future Tribal planning efforts could be affected by proposed critical habitat designation. These future costs are unknown, but appear unlikely to exceed \$100 million in any single year.

Other Costs

- The designation of critical habitat is unlikely to trigger additional requirements under state or local regulations. This assumption is based on the Service's past experience and analyses conducted for other species in the region.
- The designation of critical habitat may cause developers or landowners to perceive that private lands will be subject to use restrictions, resulting in perceptual effects. Due to low development pressure in the area and the lack of a Federal nexus, perceptual effects are unlikely.

Section 7 and Other Benefits

Various economic benefits may result from the incremental conservation efforts identified in this analysis, including: (1) those associated with the primary goal of species conservation (i.e. direct benefits), and (2) those additional beneficial services that derive from conservation efforts but are not the purpose of the Act (i.e. ancillary benefits). Due to existing data limitations, we are unable to assess the likely magnitude of these benefits.

Geographic Distribution of Costs

Since occupied critical habitat units are unlikely to incur incremental project modifications, costs are expected to occur mainly in unoccupied areas of critical habitat—specifically Subunit 2b. Based on communications with affected entities in these areas, this analysis does not anticipate a significant number of consultations in this unit, resulting in relatively low costs.

Entities most likely to incur costs are parties to section 7 consultations, including Federal action agencies and, in some cases, third parties, most frequently State agencies or municipalities. Activities potentially subject to consultations that may involve private entities as third parties are primarily limited to residential and commercial development. The cost to private entities within these sectors is expected to be relatively minor (administrative costs of less than \$10,000 per consultation effort). Therefore, the annual incremental administrative burden is unlikely to reach \$100 million in a single year. While Tribes do not currently have planned or ongoing projects within the proposed designation, critical habitat could affect future Tribal planning efforts. These future costs are unknown, but appear unlikely to exceed \$100 million in any single year.

SECTION 1. BACKGROUND

The Service published proposed rules to list the Zuni bluehead sucker as an endangered species and to designate critical habitat on January 25, 2013.⁴ In 2014, the Service removed significant portions of the areas identified in the Proposed Rule, including Subunits 3a and 3b.⁵ The areas now proposed for critical habitat include 141.9 miles of streams in McKinley and Cibola Counties, New Mexico, and Apache County, Arizona. The Service is considering exclusion of the proposed critical habitat areas on Navajo Nation and Zuni Pueblo lands to the extent consistent with the requirements of section 4(b)(2) of the Act.

The Service states that “in general, the [primary constituent elements] of critical habitat are contained within the riverine ecosystem formed by the wetted channel and the adjacent floodplains within 91.4 lateral meters (300 lateral feet) on either side of bankfull stage, except where bounded by canyon walls.”⁶ The proposed critical habitat is divided into two units encompassing four subunits. Two subunits (comprising approximately 30 percent of proposed critical habitat stream reaches) are considered unoccupied by the species. The majority of areas proposed for critical habitat are Tribal lands (72 percent), in addition to 18 percent private lands, nine percent Federal lands, and one percent State lands. Exhibit 1 presents information on land ownership and occupancy within proposed critical habitat by unit. Exhibit 2 includes a map of proposed critical habitat units.

In the proposed rule, as well as in the IEM, a supplemental memorandum in which the Service describes how it expects to implement the critical habitat regulation (Appendix A), a number of threats to the species are identified. The following economic activities are identified as having the potential to pose a threat to the proposed critical habitat areas:

- Federal lands management (National Park Service, Forest Service, U.S. Bureau of Reclamation);
- Roadway and bridge construction;
- Agriculture;
- Grazing;
- Groundwater pumping;
- In-stream dams and diversions;
- Storage and distribution of chemical pollutants;
- Dredging;
- Commercial or residential development;
- Timber harvest; and

⁴ 2013 Proposed Critical Habitat Rule. 78 FR 5351; 2013 Proposed Listing Rule. 78 FR 5369.

⁵ U.S. Fish and Wildlife Service to Industrial Economics, Inc. June 13, 2014. “Incremental Effects Memorandum for the Economic Analysis for Proposed Rule to Designate Critical Habitat for the Zuni Bluehead Sucker.”

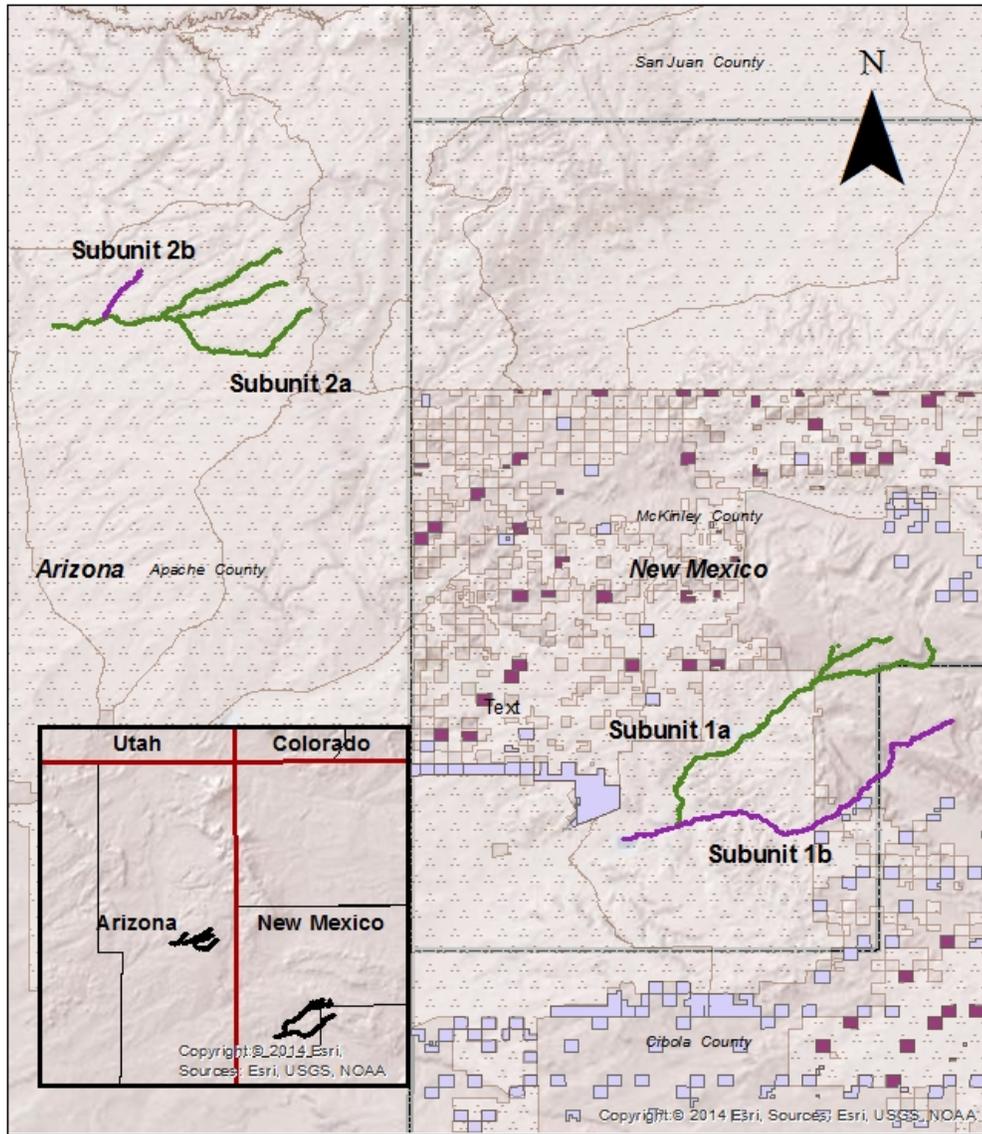
⁶ 2013 Proposed Critical Habitat Rule. 78 FR 5351.

- Recreation (including sport fishing and sport-fish stocking, OHV activity).

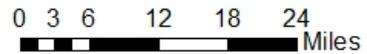
EXHIBIT 1. LAND OWNERSHIP WITHIN CRITICAL HABITAT STUDY AREAS

SUBUNIT NAME	SUBUNIT NUMBER	RIVER MILES (PERCENT OF TOTAL PROPOSED DESIGNATION) ^{1,2}					
		IS THE SUBUNIT OCCUPIED?	TRIBAL ³	FEDERAL	STATE	PRIVATE	TOTAL ⁴
Zuni River Headwaters	1a	Yes	24.2 (17.1%)	8.1 (5.7%)	1.1 (0.8%)	12.7 (9.0%)	46.1 (32.5%)
Zuni River Mainstem	1b	No	18.2 (12.8%)	4.0 (2.8%)	0.2 (0.1%)	13.3 (9.4%)	35.7 (25.2%)
Kinlichee Creek	2a	Yes	54.0 (38.1%)	0 (0%)	0 (0%)	0 (0%)	54.0 (38.1%)
Red Clay Wash	2b	No	6.0 (4.2%)	0 (0%)	0 (0%)	0 (0%)	6.0 (4.2%)
Total			102.4 (72.2%)	12.1 (8.5%)	1.3 (0.9%)	26.0 (18.3%)	141.1 (100%)
Notes: 1. 2013 Proposed Critical Habitat Rule. 78 FR 5351. 2. U.S. Fish and Wildlife Service to Industrial Economics, Inc. June 13, 2014. "Incremental Effects Memorandum for the Economic Analysis for Proposed Rule to Designate Critical Habitat for the Zuni Bluehead Sucker." 3. The Service is considering exclusion of the proposed critical habitat areas on the Navajo Nation and Zuni Pueblo lands to the extent consistent with the requirements of section 4(b)(2) of the Act. 4. Estimates may not sum to the totals reported due to rounding.							

EXHIBIT 2. OVERVIEW OF CRITICAL HABITAT STUDY AREAS



Source:
 1. U.S. Fish and Wildlife Service, Southwest Regional Office
 2. Environmental Systems Research Institute, Inc. (ESRI),
 Redlands, California, USA



North American Equidistant Conic Projection
 Central Meridian: -96
 1st Standard Parallel: 20
 2nd Standard Parallel: 60
 Latitude of Origin: 40



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 of a regulatory action against a baseline (i.e., costs 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.”⁷ 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.⁸ As part of these consultations, critical habitat triggers an additional analysis evaluating whether an action will diminish the recovery potential or the conservation value of the area designated. 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 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 resource less than they would have absent critical habitat. This is a perceptual effect of critical habitat on markets.

SECTION 3. ECONOMIC CONSEQUENCES OF THE CRITICAL HABITAT RULE

In order to focus our analysis on key factors associated with the proposed rule that may generate economic impacts, we began by conducting a screening analysis. The purpose of

⁷ OMB, “Circular A-4,” September 17, 2003, available at http://www.whitehouse.gov/omb/circulars_a004_a-4. Circular A-4 provides “guidance to Federal Agencies on the development of regulatory analysis as required under Section 6(a)(3)(c) of Executive Order 12866...” (p. 1)

⁸ A Federal nexus exists for activities authorized, funded, or carried out by a Federal agency.

the screening analysis is to filter out the geographic areas in which the critical habitat designation is unlikely to generate substantive economic impacts, in turn enabling us to focus on areas in which supplemental analysis may be warranted. In particular, the screening analysis considers baseline costs (i.e., absent critical habitat designation) to include impacts where land and water use may be subject to conservation plans, land management plans, best management practices, or regulations that protect the habitat area as a result of the Federal listing status of the species. The screening analysis filters out particular areas of critical habitat that are already subject to such protections and assesses whether units are unoccupied by the species and may require additional management or conservation efforts as a result of the critical habitat designation for the species.

INCREMENTAL SECTION 7 IMPACTS

First, the Service states that critical habitat designation is unlikely to change the outcome of section 7 consultations in occupied habitat. It is the Service's position that,

“Proposed actions that would result in sufficient harm or harassment to constitute jeopardy to this species would also likely adversely affect PCEs [primary constituent elements] in the occupied designated critical habitat...As such, project modifications that minimize effects to the Zuni bluehead sucker would coincidentally minimize effects to designated critical habitat. Accordingly, in occupied critical habitat it is unlikely that an analysis would identify a difference between measures needed to avoid the destruction or adverse modification of critical habitat from measures needed to avoid jeopardizing the species. Therefore, we do not anticipate any incremental effects in regard to developing and implementing conservation actions in currently occupied critical habitat for the Zuni bluehead sucker.”⁹

As such, of the four proposed subunits, two are considered occupied, and activities that may affect critical habitat will already be subject to section 7 consultation to consider potential jeopardy to the species. Therefore, we anticipate that only administrative costs associated with considering critical habitat as part of future consultation efforts would result in occupied areas.

In proposed areas that are not occupied by Zuni bluehead sucker (30 percent of proposed critical habitat), few actions are planned that will result in section 7 consultation or associated project modifications. Subunit 2b (6.0 river miles) occur entirely on Navajo Nation lands; although Navajo Nation questions the validity of the biological basis of this proposal, they also report that the Nation has in place a number of protections that may provide protection to the species under the baseline. These include the following:

- **The Navajo Nation's Biological Resources Land Use Clearance Policies and Procedures (RCP).** The RCP was drafted by the Navajo Nation Department of Fish and Wildlife to protect all sensitive species of wildlife and their habitat from development throughout Navajo Nation. The RCP identifies “Highly Sensitive

⁹ U.S. Fish and Wildlife Service to Industrial Economics, Inc. June 13, 2014. “Incremental Effects Memorandum for the Economic Analysis for Proposed Rule to Designate Critical Habitat for the Zuni Bluehead Sucker.”

Areas” and sets forth land use restrictions within these areas. All proposed critical habitat units are located within the RCP’s Highly Sensitive Areas. The RCP requires biological evaluations of all projects within Highly Sensitive Areas and sets forth water quality regulations within these areas.

- **The Navajo Nation Ten-Year Forest Management Plan.** The Navajo Nation does not expect its logging activities to impact the Zuni bluehead sucker at this time. All streams containing Zuni bluehead sucker critical habitat are within Special Management Areas (SMAs), which were created in an effort to protect critical wildlife and forest resource areas.
- **The Navajo Nation Fisheries Management Plan.** The Navajo Nation will be working with the Service to update its Fisheries Management Plan to include management and protection for two native species, the Zuni bluehead sucker and a species of dace. The Navajo Nation intends to continue to manage for both sport fishery in man-made lakes and the native fish in streams. The Fisheries Management Plan will also include a native fish monitoring plan for the Zuni bluehead sucker.

Furthermore, based on the results of the Service’s outreach efforts to Navajo Nation, we do not anticipate that any projects will result in section 7 consultation within the proposed critical habitat areas on these lands.¹⁰

Additionally, subunit 1b (35.7 river miles) includes USFS, private, State, and Zuni Pueblo lands. Within subunit 1b, approximately 22.2 of the 35.7 unoccupied river miles fall within Zuni Pueblo or USFS lands (specifically, Cibola National Forest). While the Service may conduct consultations with the USFS on these unoccupied lands, USFS indicates that incremental project modifications are unlikely. In particular, USFS states that it “has no plans to undertake actions that would significantly decrease expansion areas, reduce the ability of the species to expand within its historical range, or preclude the ability of the fish to connect to other occupied areas.”¹¹

Because the potentially affected Tribes are sovereign nations, they have a unique relationship with the U.S. government. Secretarial Order 3206 recognizes that Tribes have governmental authority and the desire to protect and manage their resources in the manner that is most beneficial to them. Service discussions with Navajo Nation and Zuni Pueblo indicate that, on Tribal lands in Subunit 1B, no actions are currently planned that would result in future consultation.¹² While current projects are not planned in proposed critical habitat areas, critical habitat designation could affect future Tribal planning efforts. These future costs are unknown, but appear unlikely to exceed \$100 million in any one year.

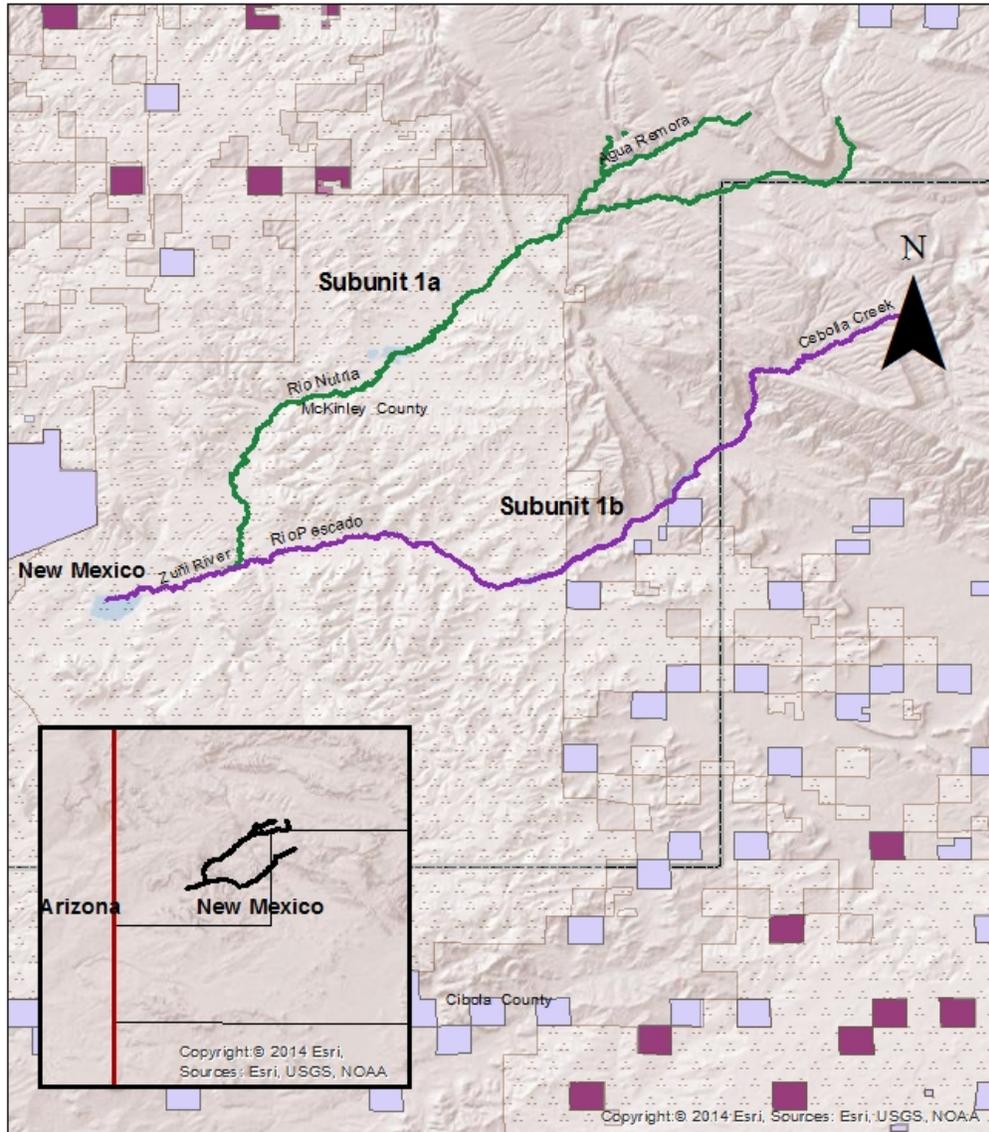
¹⁰ U.S. Fish and Wildlife Service to Industrial Economics, Inc. June 13, 2014. “Incremental Effects Memorandum for the Economic Analysis for Proposed Rule to Designate Critical Habitat for the Zuni Bluehead Sucker.”

¹¹ Letter from USFS to the Service on May 13, 2013.

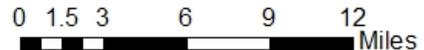
¹² U.S. Fish and Wildlife Service to Industrial Economics, Inc. June 13, 2014. “Incremental Effects Memorandum for the Economic Analysis for Proposed Rule to Designate Critical Habitat for the Zuni Bluehead Sucker.”

The remaining 13.5 unoccupied river miles in Subunit 1b fall within private and State lands along Cebolla Creek in McKinley and Cibola Counties, New Mexico. As these 13.5 river miles were not accounted for in the Service's outreach to Federal and Tribal entities, we focus on these "areas for supplemental analysis of economic impacts" resulting from critical habitat for the Zuni bluehead sucker. Exhibit 3 presents a map of these areas.

EXHIBIT 3. AREAS FOR SUPPLEMENTAL ANALYSIS OF ECONOMIC IMPACTS OF CRITICAL HABITAT DESIGNATION FOR THE ZUNI BLUEHEAD SUCKER



Source:
 1. U. S. Fish and Wildlife Service, Southwest Regional Office
 2. Environmental Systems Research Institute, Inc. (ESRI), Redlands, California, USA



North American Equidistant Conic Projection
 Central Meridian: -96
 1st Standard Parallel: 20
 2nd Standard Parallel: 60
 Latitude of Origin: 40



To supplement the Service's outreach efforts, we conducted limited stakeholder interviews with the following State and local entities to determine if any major projects are scheduled to occur within proposed critical habitat. Specifically within the areas of supplementary analysis of economic impacts in Subunit 1b, we contacted:

- State of New Mexico Lands Office; and
- State of New Mexico Construction Industries Division.¹³

The State of New Mexico Lands Office identified four agricultural leases, totaling 3,200 acres, on State lands overlapping the primary areas of concern in McKinley and Cibola Counties.¹⁴ We do not anticipate that leased State agricultural operations will require Federal permitting or funding. Lacking a Federal nexus, we do not expect critical habitat to result in section 7 consultation or associated impacts on these or other operations occurring on State lands. No changes to leasing practices are anticipated.

On private lands, aerial photography indicates little to no development activity in proposed critical habitat areas. McKinley and Cibola Counties do not have planning offices associated with their county governments, and information on development activity in these areas was not readily available. Based on these findings, we assume it is unlikely that future development requiring a Federal permit, such as a Clean Water Act section 404 or section 402 permit, will occur in the foreseeable future in these areas. Projects that do not occur on Federal lands, are not funded by Federal dollars, and do not require a Federal permit, lack a Federal nexus and are not subject to section 7 consultation. Therefore, we do not expect significant section 7 impacts in these areas. Additionally, perceptual effects on markets related to residential and commercial development are unlikely.

As these findings indicate that section 7-related impacts are likely to be primarily administrative in nature, we considered whether enough consultations would occur in a given year for administrative impacts alone to approach the \$100 million threshold. As the Zuni bluehead sucker is not previously listed, and historical consultation rates for other co-occurring listed species in this region were not readily available, we were unable to use historical consultation rates to forecast the frequency and spatial distribution of section 7 consultation in proposed critical habitat areas. However, unit costs of administrative effort are expected to be less than \$10,000 per consultation (2013 dollars, including costs to all parties participating in a consultation).¹⁵ Therefore, the annual administrative burden is unlikely to reach the threshold of \$100 million of incremental administrative impacts in a single year.

¹³ Neither Cibola nor McKinley Counties, NM have planning or development offices of their own.

¹⁴ Communication with Donald Martinez, Surface Resources Division Director, State of New Mexico Lands Office, on July 9, 2013.

¹⁵ These estimates are based on a review of consultation records from several Service field offices across the country conducted in 2002 and data from the Federal Government Schedule Rates, Office of Personnel Management, 2012.

Other Incremental Impacts

The possibility exists that critical habitat may change the way Arizona and New Mexico State-level regulatory agencies manage key threats to the Zuni bluehead sucker, such as water quality, water quantity, and hydrology. However, the State's past responses to other aquatic and riparian critical habitat designations, such as to Rio Grande silvery minnow, southwestern willow flycatcher, spikedace and loach minnow, and Pecos sunflower critical habitat designations, have not resulted in changes to State water quality standards. Therefore, it appears unlikely that these agencies will alter their State water quality regulations in response to Zuni bluehead sucker critical habitat designation above the level of conservation required by the presence of listed species.¹⁶

While the response of Zuni Pueblo and Navajo Nation governments to critical habitat is not certain, it is possible that the governments could alter management of proposed areas in response to critical habitat designation. To the extent that land management changes occur in the future on these lands due to critical habitat designation, impacts to the Tribes could occur. However, specific alterations are unknown at this time, and are not currently foreseen by Tribal representatives the Service contacted.

SECTION 4. ECONOMIC BENEFITS OF THE CRITICAL HABITAT RULE

The primary intended benefit of critical habitat is to support the conservation of threatened and endangered species, such as the Zuni bluehead sucker. As described in the previous sections of this memorandum, the designation may result in limited incremental conservation efforts for the species. Various economic benefits may result from these incremental conservation efforts, including: (1) those associated with the primary goal of species conservation (i.e. direct benefits), and (2) those additional beneficial services that derive from conservation efforts but are not the purpose of the Act (i.e. ancillary benefits).

In order to quantify and monetize these benefits, information would be needed to determine (1) the incremental change in the probability of Zuni bluehead sucker conservation expected to result from the designation, and (2) the public's willingness to pay for such beneficial changes.¹⁷ Although numerous published studies estimate individuals' willingness to pay to protect endangered species, we are not aware of any published studies that estimate the value the public places on preserving the Zuni bluehead sucker.¹⁸ In addition, we do not have information on the expected change in species population levels that may result from critical habitat designation for the species. Lacking these data, we are not able to quantify the primary species conservation benefit of the critical habitat designation.

¹⁶ See "Final Economic Analysis of Critical Habitat Designation for the Spikedace and Loach Minnow," prepared for The U.S. Fish and Wildlife Service, prepared by Industrial Economics, Inc. February 7, 2012; "Final Economic Analysis of Critical Habitat Designation for the Southwestern Willow Flycatcher," prepared for The U.S. Fish and Wildlife Service, prepared by Industrial Economics, Inc. December 12, 2012.

¹⁷ For a detailed discussion of these data limitations, see Flight and Unsworth, Industrial Economics, Incorporated (2011).

¹⁸ See, for example, Loomis and White (1996).

SECTION 5. SUMMARY

In conclusion, economic impacts of Zuni critical habitat designation are expected to be limited to additional administrative effort as well as minor costs of conservation efforts resulting from a small number of future section 7 consultations. This is due to two factors: 1) a large portion of proposed critical habitat stream reaches are considered to be occupied by the species (70 percent), where the Service states that incremental impacts of critical habitat designation, other than administrative costs, are unlikely; and 2) in proposed areas that are not occupied by Zuni bluehead sucker (30 percent), few actions are anticipated that will result in section 7 consultation or associated project modifications. At approximately \$10,000 or less per consultation, the annual administrative burden is unlikely to reach \$100 million. While current development or other projects are not planned in proposed critical habitat areas on Tribal lands, future Tribal planning efforts could be affected by proposed critical habitat designation. These future costs are unknown, but appear unlikely to exceed \$100 million in any single year. While we expect that incremental critical habitat conservation efforts will result in some level of economic benefits, we cannot quantify these at this time. The magnitude of potential benefits is highly uncertain, and quantification would require primary research and the generation of substantial amounts of new data, which is beyond the scope of this memorandum and Executive Order 12866.¹⁹

Exhibit 4 presents a summary of expected incremental impacts of critical habitat designation for the Zuni bluehead sucker.

¹⁹ Executive Order 12866 directs agencies to base regulatory decisions on “the best reasonably obtainable scientific, technical, economic, and other information concerning the need for, and consequences of, the intended regulation” (58 FR 51736). For a detailed discussion of data limitations associated with the estimation of critical habitat benefits, see Flight, M. and R. Unsworth, Industrial Economics, Incorporated. 2011. *Quantifying Benefits of Critical Habitat Designation for Listed Species*. Memorandum to Douglas Krofta, U.S. Fish and Wildlife Service.

EXHIBIT 4. SUMMARY OF EXPECTED INCREMENTAL IMPACTS OF ZUNI BLUEHEAD SUCKER
CRITICAL HABITAT DESIGNATION

SUBUNIT NUMBER	SUBUNIT NAME	EXPECTED IMPACTS	NOTES ¹
1a	Zuni River Headwaters	Limited administrative costs only	Occupied unit. No incremental project modifications expected in occupied critical habitat.
1b	Zuni River Mainstem	Limited incremental impacts expected	Unoccupied unit. Occurs on USFS, State, private, and Zuni Pueblo lands: <ul style="list-style-type: none"> • Small number of USFS consultations anticipated. • No Zuni Pueblo activities expected to result in consultation; however, future impacts are possible. • Limited economic activity requiring consultation expected on State and private lands.
2a	Kinlichee Creek	Limited administrative costs only	Occupied unit. No incremental impacts expected in occupied critical habitat.
2b	Red Clay Wash	Incremental impacts possible but unlikely	Unoccupied unit. Comprised of Navajo Nation lands; no known activities expected to result in consultation. Future impacts possible.
<p>Notes:</p> <p>1. U.S. Fish and Wildlife Service to Industrial Economics, Inc. June 13, 2014. "Incremental Effects Memorandum for the Economic Analysis for Proposed Rule to Designate Critical Habitat for the Zuni Bluehead Sucker."</p>			