



ECONOMIC ANALYSIS OF CRITICAL  
HABITAT DESIGNATION FOR THE  
LOST RIVER AND SHORTNOSE  
SUCKERS

Final | December 6, 2012

prepared for:

U.S. Fish and Wildlife Service

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**LIST OF ACRONYMS AND ABBREVIATIONS**

Act	Endangered Species Act
CEQA	California Endangered Species Act
CHD	critical habitat designation
Corps	US Army Corps of Engineers
CWA	Clean Water Act
DOI	U.S. Department of the Interior
ESA	Endangered Species Act
HCP	Habitat Conservation Plan
IEc	Industrial Economics, Incorporated
IM	Integrated Management
INRMP	Integrated Natural Resources Management Plan
Suckers	Lost River and shortnose suckers
NAICS	North American Industry Classification System
OMB	U.S. Office of Management and Budget
RFA	Regulatory Flexibility Act
SBREFA	Small Business Regulatory Enforcement Fairness Act
Service	U.S. Fish and Wildlife Service
USBR	U.S. Bureau of Reclamation

## EXECUTIVE SUMMARY

1. The purpose of this report is to evaluate the potential economic impacts associated with the designation of critical habitat for the Lost River and shortnose suckers (hereafter, “Klamath suckers”). This report was prepared by Industrial Economics, Incorporated (IEc), under contract to the U.S. Fish and Wildlife Service (Service).
2. The Service listed the suckers as endangered on July 18, 1998. The Service published a proposed critical habitat rule for the Klamath suckers on December 1, 1994. The proposal was never finalized. The Oregon Natural Resources Council (now known as Oregon Wild) later contacted the Department of Justice and requested that the Service issue a final critical habitat rule for the Klamath suckers. On May 10, 2010, The Service entered into a settlement agreement that stipulated the Service submit a final rule designating critical habitat for the Klamath suckers by November 30, 2012. The current proposed rule was published on December 7, 2011 as a result of this settlement agreement. The 2011 proposed rule is the subject of this analysis.
3. This analysis first describes existing plans and regulations that provide protection for the suckers and their habitat. Examples of existing protections include previous section 7 consultations on the U.S. Bureau of Reclamation’s Klamath Project, PacifiCorp’s incidental take permit and habitat conservation plans for its operations in the Klamath, and the Fremont-Winema National Forest grazing biological opinion.<sup>1</sup>
4. The discussion of the regulatory baseline provides context for the evaluation of economic impacts expected to result from critical habitat designation, which are the focus of this analysis. These “incremental” economic impacts are those that will occur as a result of designation of critical habitat for the suckers. This information is intended to assist the Secretary of the U.S. Department of the Interior (DOI) in determining whether the benefits of excluding particular areas from the designation outweigh the benefits of including those areas in the designation.<sup>2</sup>

### OVERVIEW OF THE PROPOSED CRITICAL HABITAT

5. The 2011 proposed revised critical habitat designation includes two units containing both stream miles and lake area. These units are located in Klamath and Lake Counties, Oregon, as well as Modoc County in California. Exhibit ES-1 provides information on land ownership within the proposed critical habitat. As shown, the majority of the habitat is federally and privately owned. The remaining area is state-owned.

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<sup>1</sup> There are two habitat conservation plans for PacifiCorp’s operations in the Klamath: one is final and was prepared by the National Marine Fisheries Service (NMFS) related to anadromous salmonids, and the other (presently in draft form) pertains to the Klamath suckers.

<sup>2</sup> 16 U.S.C. §1533(b)(2).

## EXHIBIT ES-1. LANDOWNERSHIP WITHIN PROPOSED CRITICAL HABITAT BY UNIT

CRITICAL HABITAT UNIT		SPECIES	FEDERAL	STATE	PRIVATE/ OTHER	TOTAL
<b>Area of Lakes and Reservoirs (Acres)</b>						
1	Upper Klamath Lake	Lost River	15,198	533	74,684	90,415
2	Lost River Basin		27,238	0	194	27,432
<b>Total</b>			<b>42,437</b>	<b>533</b>	<b>74,878</b>	<b>117,848</b>
1	Upper Klamath Lake	Shortnose	15,198	533	74,684	90,415
2	Lost River Basin		32,051	0	1,124	33,175
<b>Total</b>			<b>47,250</b>	<b>533</b>	<b>75,808</b>	<b>123,590</b>
<b>Stream Length (Miles)</b>						
1	Upper Klamath Lake	Lost River	13	0	106	118
2	Lost River Basin		23	<1	3	27
<b>Total</b>			<b>36</b>	<b>&lt;1</b>	<b>109</b>	<b>146</b>
1	Upper Klamath Lake	Shortnose	6	0	34	40
2	Lost River Basin		72	<1	16	89
<b>Total</b>			<b>78</b>	<b>&lt;1</b>	<b>50</b>	<b>128</b>
Source: Proposed Rule, Tables 1 through 4. Note, acreage by landowner type does not sum to the totals presented in Tables 1 and 3, but do correspond to the total acreage presented in the text of the Proposed Rule. Tables may not sum due to rounding.						

6. Review of the proposed rule, consultation history, public comments on the current proposal, and existing conservation plans identified the following economic activities as potential threats to the Klamath suckers and their habitat within the boundaries of proposed critical habitat.
- (1) **Activities Affecting Water Supply.** These activities may include water management activities such as dam operation and hydropower production within the reservoirs within the proposed critical habitat, particularly the Klamath Project on Upper Klamath Lake.
  - (2) **Activities Affecting Water Quality.** These activities may include agricultural activities, including livestock grazing, as well as in-water construction activities.
  - (3) **Activities Affecting Fish Passage.** These activities may include flood control or water diversions that may result in entrainment or restricted access to spawning habitat.

**KEY FINDINGS**

7. No significant economic impacts are likely to result from the designation of critical habitat. Incremental costs are limited to additional administrative effort to consider potential adverse modification of critical habitat as part of future section 7 consultations for the suckers. This result is attributed to the following key findings.
- **A significant level of baseline protection exists for the suckers**, addressing a broad range of habitat threats. In particular, previous section 7 consultations on the U.S. Bureau of Reclamation's Klamath Project have prescribed minimum lake elevations in order to avoid jeopardy of the suckers. In addition, PacifiCorp has obtained an incidental take permit for its operations in the Klamath.
  - **The Service is unable to foresee a circumstance in which critical habitat would change the conservation efforts recommended for the suckers.** Because all proposed areas are considered occupied and the species has been the subject of significant controversy over the operations of the Klamath Project, action agencies already are aware of the presence of the suckers. Any conservation efforts that may result from section 7 consultation in occupied habitat would be considered baseline because, according to the Service, efforts to address potential jeopardy to the species are the same as those that would be recommended to address adverse modification of critical habitat.
  - **Critical habitat designation is not expected to result in indirect impacts.** The analysis considered the potential for critical habitat designation to result in indirect impacts through triggering other State or local laws such as the California Environmental Quality Act (CEQA), time delays, or regulatory uncertainty or stigma. The proposed critical habitat for the suckers in California is already managed such that the types of projects that may trigger CEQA are precluded; therefore, no development projects are forecast for these areas that may be subject to CEQA review. Moreover, given the high level of attention and controversy surrounding species conservation in the Klamath Basin, we anticipate that projects are already subject to strict conservation standards and are unlikely to be further affected by the designation.
8. In addition, this analysis identifies no quantifiable economic benefits of critical habitat designation for the suckers. The Services does not anticipate that the designation of critical habitat will result in project modifications to avoid adverse modification of sucker habitat. As a result, no changes in economic activity or land management are expected to result from critical habitat designation. Absent changes in land or water management or conservation efforts for the suckers, no incremental economic benefits are forecast to result from designation of critical habitat.
9. This analysis does foresee additional administrative costs associated with the designation of critical habitat. In total, incremental administrative efforts are estimated at \$586,000, or \$51,700 on an annualized basis (discounted at seven percent). Impacts are presented at both a three percent and seven percent discount rate in Exhibit ES-2 below.

## EXHIBIT ES-2. TOTAL ESTIMATED INCREMENTAL IMPACTS BY UNIT (\$2012)

UNIT	UNIT NAME	DISCOUNTED AT 3%		DISCOUNTED AT 7%	
		PRESENT VALUE	ANNUALIZED	PRESENT VALUE	ANNUALIZED
1	Upper Klamath Lake	\$350,000	\$22,800	\$259,000	\$22,900
2	Lost River Basin	\$441,000	\$28,800	\$326,000	\$28,800
Total		\$791,000	\$51,600	\$586,000	\$51,700
Note: Totals may not sum due to rounding.					

**KEY ASSUMPTIONS**

10. The key conclusion of this analysis is that the Service expects that critical habitat designation for the suckers will not generate changes in conservation for the species. Incremental impacts of designating critical habitat for the suckers will therefore consist only of additional administrative costs. This conclusion, and the resulting cost estimates, rely on the following assumptions:
- **Designation of critical habitat will not provide new information to project proponents.** As discussed in Chapter 1, the proposed critical habitat includes only occupied areas. Due to the species' small range and previous controversy over the Klamath suckers' effect on water management, it is likely that land and water managers within the proposed designation know about the presence of suckers and therefore be aware of the section 7 consultation needs even absent critical habitat.
  - **No expected change in the outcome of consultations.** The Service states that it "do[es] not anticipate that the outcome of section 7 consultations would be different upon final designation, especially since all proposed critical habitat is occupied by suckers. A proposed action that affects critical habitat also affects the species."<sup>3</sup> As we understand from discussions with the Klamath Falls Field Office, all conservation efforts that would be recommended to avoid or reduce impacts of a project on critical habitat (e.g., installation of fish screens, maintenance of minimum surface elevations) would also be recommended to avoid jeopardy.<sup>4</sup>
  - **Designation will not result in indirect impacts.** Because the areas proposed for designation in Modoc County, California are part of the Modoc National Forest, no development projects are forecast for these areas that may be subject to CEQA review. Moreover, given the high level of attention and controversy surrounding

<sup>3</sup> Service, "Incremental Effects Memorandum for the Economic Analysis of the Proposed Rule to Designate Critical Habitat for the Lost River Sucker and Shortnose Sucker," February 21, 2012, p. 4.

<sup>4</sup> Personal communication with the Klamath Falls Fish and Wildlife Office, February 1, 2012.

species conservation in the Klamath Basin, we anticipate that critical habitat designation will not result in additional time delays or regulatory uncertainty.

- **The number and location of past section 7 consultations is indicative of future consultations.** Land use activities are not expected to change substantially in any of the proposed critical habitat units. The fact that a majority of areas in the proposed critical habitat is already managed for conservation of the suckers and other species supports this assumption. If activity levels increase in the future, it is possible that this analysis underestimates associated incremental administrative costs of section 7 consultation.

## CHAPTER 1 | BACKGROUND

### 1.1 INTRODUCTION

11. This chapter provides an overview of the proposed critical habitat for the Lost River and shortnose suckers (*Deltistes luxatus* and *Chasmistes brevirostris*). It includes a summary of past legal actions that relate to the current proposal, a map of the area proposed for designation, and a description of activities that may affect or threaten the proposed critical habitat.

#### 1.1.1 PREVIOUS FEDERAL ACTIONS

12. The Service listed the Lost River and shortnose suckers (hereafter “suckers”) as endangered on July 18, 1988. The Service published a critical habitat proposal in December 1994, but the proposal was never finalized. Key regulatory milestones for the suckers include:
  - **Listing.** The Lost River sucker and shortnose sucker were listed as endangered on July 18, 1998.
  - **Original critical habitat proposal.** The Service published a proposed critical habitat rule for the Klamath suckers on December 1, 1994. However, final critical habitat was never designated.
  - **Settlement Agreement.** The Oregon Natural Resources Council (now known as Oregon Wild) contacted the Department of Justice and requested that the Service issue a final critical habitat rule for the Klamath suckers. On May 10, 2010, The Service agreed to a settlement agreement that stipulated the Service submit a final rule designating critical habitat for the Klamath suckers by November 30, 2012.
  - **Current proposed rule.** The current proposed rule was published on December 7, 2011 as a result of this settlement agreement.

#### 1.1.2 PROPOSED CRITICAL HABITAT DESIGNATION

13. The 2011 proposed revised critical habitat designation includes two units containing both stream miles and lake area. These units are located in Klamath and Lake Counties, Oregon, as well as Modoc County in California. Exhibit 1-1 provides information on land ownership within the proposed critical habitat. As shown, the majority of the habitat is federally and privately owned. The remaining area is state-owned.
14. Given increased scientific knowledge about the species’ habitat needs and better mapping tools, the 2011 proposal contains only 27 percent of the area previously identified in the 1994 proposal. The 1994 proposal included upland areas in addition to the bankfull elevation of the water bodies, while the current proposal includes only the bankfull

elevation of the water bodies.<sup>5</sup> Exhibit 1-2 provides a map of the 2011 proposed critical habitat designation.

## 1.2 ECONOMIC ACTIVITIES CONSIDERED IN THIS ANALYSIS

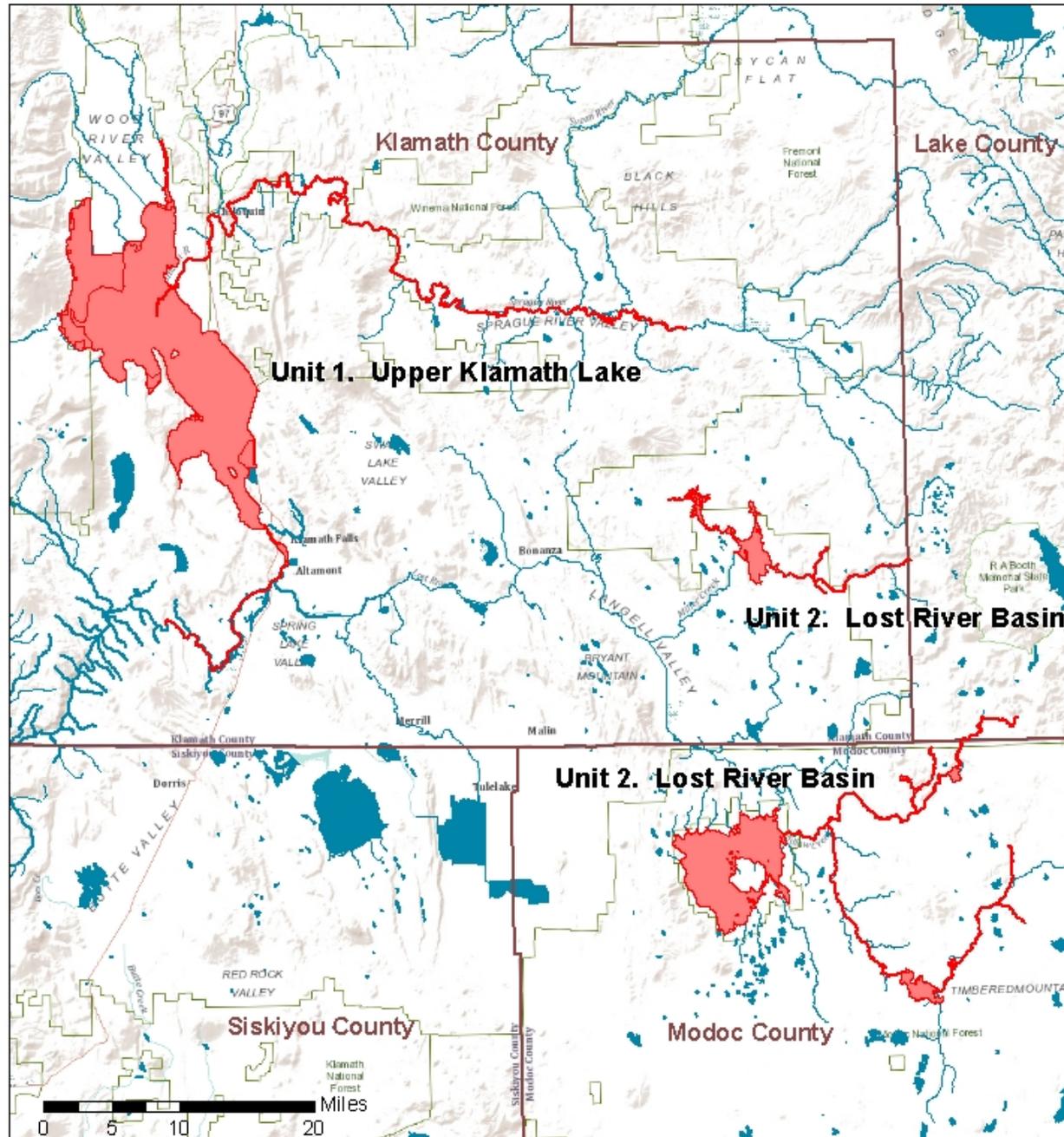
15. Review of the proposed rule, consultation history, public comments on the current proposal, and existing conservation plans identified the following economic activities as potential threats to the Klamath suckers and their habitat within the boundaries of proposed critical habitat.
- (1) **Activities Affecting Water Supply.** These activities may include water management activities such as dam operation and hydropower production within the reservoirs within proposed critical habitat, particularly the Klamath Project on Upper Klamath Lake.
  - (2) **Activities Affecting Water Quality.** These activities may include agricultural activities, including livestock grazing, as well as in-water construction activities.
  - (3) **Activities Affecting Fish Passage.** These activities may include flood control or water diversions that result in entrainment or restrictions on access to spawning habitat.

EXHIBIT 1-1. LANDOWNERSHIP WITHIN PROPOSED CRITICAL HABITAT BY UNIT

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<sup>5</sup> Proposed Rule, p. 76344.

EXHIBIT 1-2. OVERVIEW OF PROPOSED CRITICAL HABITAT FOR THE KLAMATH SUCKERS



**Legend**

Proposed Klamath Sucker Critical Habitat

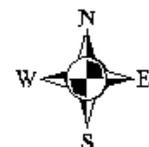
**Overview of Proposed Critical Habitat Areas**



Sources:  
 1. ESRI, Inc.  
 2. US Fish and Wildlife Service

**IEC**

INDUSTRIAL ECONOMICS, INCORPORATED



**1.3 ORGANIZATION OF THE REPORT**

16. The remainder of this report is organized into five chapters and three appendices. Chapter 2 discusses the framework employed in the analysis, while Chapters 3 and 4 describe baseline protections currently afforded the suckers and their habitat and the potential incremental impacts of designating critical habitat.

- Chapter 2 – Framework for Analysis
- Chapter 3 – Baseline Protections
- Chapter 4 – Potential Economic Incremental Impacts
- Chapter 5 – Economic Benefits
- Appendix A – Small Business and Energy Impacts Analyses
- Appendix B – Sensitivity of Results to Discount Rate
- Appendix C – Incremental Effects Memorandum to IEc

## CHAPTER 2 | FRAMEWORK FOR THE ANALYSIS

17. The purpose of this report is to estimate the economic impact of actions taken to protect the suckers and their habitat. This analysis examines the impacts of restricting or modifying specific land uses or other activities for the benefit of the species and their habitat within the proposed critical habitat area. This analysis employs "without critical habitat" and "with critical habitat" scenarios. The "without critical habitat" scenario represents the baseline for the analysis, considering protections otherwise accorded the suckers; for example, under the Federal listing and other Federal, State, and local regulations. The "with critical habitat" scenario describes the incremental impacts associated specifically with the designation of critical habitat for the species. The incremental conservation efforts and associated impacts are those not expected to occur absent the designation of critical habitat for the suckers. The analysis qualitatively discusses baseline protections for the suckers (Chapter 3), and then quantifies potential incremental impacts forecast to occur after the proposed critical habitat is finalized (Chapter 4).
  18. This information is intended to assist the Secretary of the DOI in determining whether the benefits of excluding particular areas from the designation outweigh the benefits of including those areas in the designation.<sup>6</sup> In addition, this information allows the Service to address the requirements of Executive Orders 12866 (as amended by Executive Order 13563) and 13211, and the Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA).<sup>7</sup>
  19. This chapter describes the framework for this analysis. First, it describes the case law that led to the selection of the framework applied in this report. Next, we describe in economic terms the general categories of economic effects that are the focus of the impact analysis, including a discussion of both efficiency and distributional effects. This chapter then defines the analytic framework used to measure these impacts in the context of critical habitat regulation and the consideration of benefits. It concludes with a presentation of the information sources relied upon in the analysis.
- 2.1 BACKGROUND**
20. The U.S. Office of Management and Budget's (OMB) guidelines for conducting economic analysis of regulations direct Federal agencies to measure the costs of a

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<sup>6</sup> 16 U.S.C. §1533(b)(2).

<sup>7</sup> Executive Order 12866, *Regulatory Planning and Review*, September 30, 1993; Executive Order 13563, *Improving Regulation and Regulatory Review*, January 18, 2011; Executive Order 13211, *Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use*, May 18, 2001; 5. U.S.C. §§601 *et seq.*; and Pub Law No. 104-121.

regulatory action against a baseline, which it defines as the "best assessment of the way the world would look absent the proposed action."<sup>8</sup> In other words, the baseline includes the existing regulatory and socio-economic burden imposed on landowners, managers, or other resource users potentially affected by the designation of critical habitat. Impacts that are incremental to that baseline (i.e., occurring over and above existing constraints) are attributable to the proposed regulation. Significant debate has occurred regarding whether assessing the impacts of the Service's proposed regulations using this baseline approach is appropriate in the context of critical habitat designations.

21. In 2001, the U.S. Tenth Circuit Court of Appeals instructed the Service to conduct a full analysis of all of the economic impacts of proposed critical habitat, regardless of whether those impacts are attributable co-extensively to other causes.<sup>9</sup> Specifically, the court stated,

“The statutory language is plain in requiring some kind of consideration of economic impact in the CHD [critical habitat designation] phase. Although 50 C.F.R. 402.02 is not at issue here, the regulation’s definition of the jeopardy standard as fully encompassing the adverse modification standard renders any purported economic analysis done utilizing the baseline approach virtually meaningless. We are compelled by the canons of statutory interpretation to give some effect to the congressional directive that economic impacts be considered at the time of critical habitat designation.... Because economic analysis done using the FWS’s [Fish and Wildlife Service’s] baseline model is rendered essentially without meaning by 50 C.F.R. § 402.02, we conclude Congress intended that the FWS conduct a full analysis of all of the economic impacts of a critical habitat designation, regardless of whether those impacts are attributable co-extensively to other causes. Thus, we hold the baseline approach to economic analysis is not in accord with the language or intent of the ESA [Endangered Species Act].”<sup>10</sup>

22. Since that decision, however, courts in other cases have held that an incremental analysis of impacts stemming solely from the critical habitat rulemaking is proper.<sup>11</sup> For example, in the March 2006 ruling that the August 2004 critical habitat rule for the Peirson's milk-vetch was arbitrary and capricious, the United States District Court for the Northern District of California stated,

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<sup>8</sup> OMB, “Circular A-4,” September 17, 2003, available at <http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf>.

<sup>9</sup> *New Mexico Cattle Growers Assn v. United States Fish and Wildlife Service*, 248 F.3d 1277 (10th Cir. 2001).

<sup>10</sup> *Ibid.*

<sup>11</sup> In explanation of their differing conclusion, later decisions note that in *New Mexico Cattle Growers*, the U.S. Tenth Circuit Court of Appeals relied on a Service regulation that defined “destruction and adverse modification” in the context of section 7 consultation as effectively identical to the standard for “jeopardy.” Courts had since found that this definition of “adverse modification” was too narrow. For more details, see the discussion of *Gifford Pinchot Task Force v. United States Fish and Wildlife Service* provided later in this section.

“The Court is not persuaded by the reasoning of *New Mexico Cattle Growers*, and instead agrees with the reasoning and holding of *Cape Hatteras Access Preservation Alliance v. U.S. Dep’t of the Interior*, 344 F. Supp 2d 108 (D.D.C. 2004). That case also involved a challenge to the Service’s baseline approach and the court held that the baseline approach was both consistent with the language and purpose of the ESA and that it was a reasonable method for assessing the actual costs of a particular critical habitat designation *Id* at 130. ‘To find the true cost of a designation, the world with the designation must be compared to the world without it.’”<sup>12</sup>

23. More recently, in 2010, the U.S. Ninth Circuit Court of Appeals came to similar conclusions during its review of critical habitat designations for the Mexican spotted owl and 15 vernal pool species.<sup>13</sup> Plaintiffs in both cases requested review by the Supreme Court, which declined to hear the cases in 2011.
24. In order to address the divergent opinions of the courts and provide the most complete information to decision-makers, this economic analysis:
  - Describes the baseline protections afforded the suckers absent critical habitat designation (Chapter 3); and
  - Monetizes the potential incremental impacts precipitated specifically by the designation of critical habitat for these species (Chapter 4).<sup>14</sup>
25. Several Courts of Appeal, including the Ninth Circuit and the Fifth Circuit, have invalidated the Service’s regulation defining destruction or adverse modification of critical habitat.<sup>15</sup> At this time the Service is analyzing whether destruction or adverse modification would occur based on the statutory language of the ESA itself, which requires the Service to consider whether the agency’s action is likely “to result in the destruction or adverse modification of habitat which is determined by the Service to be critical” to the conservation of the species. To perform this analysis, the Service considers how the proposed action is likely to impact the function of the critical habitat unit in question. To assist us in evaluating these likely impacts, the Service provided information regarding what potential consultations could occur in the critical habitat units for the suckers and what projection modifications may be imposed as a result of critical habitat designation. The Service also provided a memorandum characterizing the effects

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<sup>12</sup> *Center for Biological Diversity et al, Plaintiffs, v. United States Bureau of Land Management et al., Defendants and American Sand Association, et al, Defendant Intervenors*. Order re: Cross Motions for Summary Judgment, Case 3:03-cv-02509 Document 174 Filed 03/14/2006, pages 44-45.

<sup>13</sup> *Home Builders Association of Northern California v. United States Fish and Wildlife Service*, 616 F.3d 983 (9<sup>th</sup> Cir. 2010), cert. denied, 179 L. Ed 2d 301, 2011 U.S. Lexis 1392, 79 U.S.L.W. 3475 (2011); *Arizona Cattle Growers v. Salazar*, 606 F. 3d 1160 (9<sup>th</sup> Cir. 2010), cert. denied, 179 L. Ed. 2d 300, 2011 U.S. LEXIS 1362, 79 U.S.L.W. 3475 (2011).

<sup>14</sup> The impacts in Chapter 4 are presented in both present value and annualized terms. For information on how to calculate present values, see the textbox at the end of this chapter.

<sup>15</sup> *Gifford Pinchot Task Force v. United States Fish and Wildlife Service*, 378 F.3d 1059 (9<sup>th</sup> Cir. 2004); *Sierra Club v. U. S. Fish and Wildlife Service*, 245 F.3d 434 (5<sup>th</sup> Cir. 2001).

of critical habitat designation over and above those associated with the listing. (Appendix C). A detailed description of the methodology used to define baseline and incremental impacts is provided later in this section.

## 2.2 CATEGORIES OF POTENTIAL ECONOMIC EFFECTS OF SPECIES CONSERVATION

26. This economic analysis considers both the economic efficiency and distributional effects that may result from efforts to protect the suckers and their habitat (hereinafter referred to collectively as “sucker conservation efforts”). Economic efficiency effects generally reflect “opportunity costs” associated with the commitment of resources required to accomplish species and habitat conservation. For example, if the set of activities that may take place on a parcel of land is limited as a result of the designation or the presence of the species, and thus the market value of the land is reduced, this reduction in value represents one measure of opportunity cost or change in economic efficiency. Similarly, the costs incurred by a Federal action agency to consult with the Service under section 7 represent opportunity costs of sucker conservation efforts.
27. This analysis also addresses the distribution of impacts associated with the designation, including an assessment of any local or regional impacts of habitat conservation and the potential effects of conservation efforts on small entities and the energy industry. This information may be used by decision-makers to assess whether the effects of species conservation efforts unduly burden a particular group or economic sector. For example, while conservation efforts may have a small impact relative to the national economy, individuals employed in a particular sector of the regional economy may experience relatively greater impacts.

### 2.2.1 EFFICIENCY EFFECTS

28. At the guidance of OMB and in compliance with Executive Order 12866 "Regulatory Planning and Review," Federal agencies measure changes in economic efficiency in order to understand how society, as a whole, will be affected by a regulatory action. In the context of regulations that protect sucker habitat, these efficiency effects represent the opportunity cost of resources used or benefits foregone by society as a result of the regulations. Economists generally characterize opportunity costs in terms of changes in producer and consumer surpluses in affected markets.<sup>16</sup>
29. In some instances, compliance costs may provide a reasonable approximation for the efficiency effects associated with a regulatory action. For example, a Federal land manager may enter into a section 7 consultation with the Service to ensure that a particular activity will not adversely modify critical habitat. The effort required for the consultation is an economic opportunity cost because the landowner or manager's time and effort would have been spent in an alternative activity had the parcel not been

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<sup>16</sup> For additional information on the definition of "surplus" and an explanation of consumer and producer surplus in the context of regulatory analysis, see: Gramlich, Edward M., A Guide to Benefit-Cost Analysis (2nd Ed.), Prospect Heights, Illinois: Waveland Press, Inc., 1990; and U.S. Environmental Protection Agency, Guidelines for Preparing Economic Analyses, EPA 240-R-00-003, September 2000, available at <http://yosemite.epa.gov/ee/epa/eed.nsf/webpages/Guidelines.html>.

included in the designation. When compliance activity is not expected to significantly affect markets -- that is, not result in a shift in the quantity of a good or service provided at a given price, or in the quantity of a good or service demanded given a change in price -- the measurement of compliance costs can provide a reasonable estimate of the change in economic efficiency.

30. Where habitat protection measures are expected to significantly impact a market, it may be necessary to estimate changes in producer and consumer surpluses. For example, protection measures that reduce or preclude the development of large areas of land may shift the price and quantity of housing supplied in a region. In this case, changes in economic efficiency (i.e., social welfare) can be measured by considering changes in producer and consumer surplus in the market.

#### 2.2.2 DISTRIBUTIONAL AND REGIONAL ECONOMIC EFFECTS

31. Measurements of changes in economic efficiency focus on the net impact of conservation efforts, without consideration of how certain economic sectors or groups of people are affected. Thus, a discussion of efficiency effects alone may miss important distributional considerations. OMB encourages Federal agencies to consider distributional effects separately from efficiency effects.<sup>17</sup> This analysis considers several types of distributional effects, including impacts on small entities; impacts on energy supply, distribution, and use; and regional economic impacts. It is important to note that these are fundamentally different measures of economic impact than efficiency effects, and thus cannot be added to or compared with estimates of changes in economic efficiency.

##### Impacts on Small Entities and Energy Supply, Distribution, and Use

32. This analysis considers how small entities, including small businesses, organizations, and governments, as defined by the RFA, might be affected by future species conservation efforts.<sup>18</sup> In addition, in response to Executive Order 13211 "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use," this analysis considers the future impacts of conservation efforts on the energy industry and its customers.<sup>19</sup>

##### Regional Economic Effects

33. Regional economic impact analysis can provide an assessment of the potential localized effects of conservation efforts. Specifically, regional economic impact analysis produces a quantitative estimate of the potential magnitude of the initial change in the regional economy resulting from a regulatory action. Regional economic impacts are commonly measured using regional input/output models. These models rely on multipliers that represent the relationship between a change in one sector of the economy (e.g.,

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<sup>17</sup> U.S. Office of Management and Budget, "Circular A-4," September 17, 2003, available at <http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf>.

<sup>18</sup> 5 U.S.C. §§601 *et seq.*

<sup>19</sup> Executive Order 13211, Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use, May 18, 2001.

expenditures by recreators) and the effect of that change on economic output, income, or employment in other local industries (e.g., suppliers of goods and services to recreators). These economic data provide a quantitative estimate of the magnitude of shifts of jobs and revenues in the local economy.

34. The use of regional input-output models in an analysis of the impacts of species and habitat conservation efforts can overstate the long-term impacts of a regulatory change. Most importantly, these models provide a static view of the economy of a region. That is, they measure the initial impact of a regulatory change on an economy but do not consider long-term adjustments that the economy will make in response to this change. For example, these models provide estimates of the number of jobs lost as a result of a regulatory change, but do not consider re-employment of these individuals over time or other adaptive responses by impacted businesses. In addition, the flow of goods and services across the regional boundaries defined in the model may change as a result of the regulation, compensating for a potential decrease in economic activity within the region.
35. Despite these and other limitations, in certain circumstances regional economic impact analysis may provide useful information about the scale and scope of localized impacts. It is important to remember that measures of regional economic effects generally reflect shifts in resource use rather than efficiency losses. Thus, these types of distributional effects are reported separately from efficiency effects (i.e., not summed). In addition, measures of regional economic impact cannot be compared with estimates of efficiency effects, but should be considered as distinct measures of impact.

### 2.3 ANALYTIC FRAMEWORK AND SCOPE OF THE ANALYSIS

36. This analysis: 1) identifies those economic activities most likely to threaten the suckers and their habitat; 2) describes the baseline regulatory protection for these species; and 3) monetizes the incremental economic impacts to avoid adverse modification of the proposed critical habitat area. This section provides a description of the methodology used to separately identify baseline protections from the incremental impacts stemming from the proposed designation of critical habitat for the suckers. This evaluation of impacts in a "with critical habitat designation" versus a "without critical habitat designation" framework effectively measures the net change in economic activity associated with the proposed rulemaking.

#### 2.3.1 IDENTIFYING BASELINE IMPACTS

37. The baseline for this analysis is the existing state of regulation, prior to the designation of critical habitat, which provides protection to the species under the Act, as well as under other Federal, State and local laws and guidelines. This "without critical habitat designation" scenario also considers a wide range of additional factors beyond the compliance costs of regulations that provide protection to the listed species. As recommended by OMB, the baseline incorporates, as appropriate, trends in market conditions, implementation of other regulations and policies by the Service and other government entities, and trends in other factors that have the potential to affect economic

costs and benefits, such as the rate of regional economic growth in potentially affected industries.

38. Baseline protections include sections 7, 9, and 10 of the Act, and economic impacts resulting from these protections to the extent that they are expected to occur absent the designation of critical habitat for the species. This analysis describes these baseline regulations, and where possible, provides examples of the potential magnitude of the costs of these baseline protections. The primary focus, however, is not on baseline costs, since these will not be affected by the proposed regulation. Instead, the focus of this analysis is on monetizing the incremental impacts forecast to result from the proposed critical habitat designation.
- Section 7 of Act, absent critical habitat designation, requires Federal agencies to consult with the Service to ensure that any action authorized, funded, or carried out will not likely jeopardize the continued existence of any endangered or threatened species. Consultations under the jeopardy standard result in administrative costs, as well as impacts of conservation efforts resulting from consideration of this standard.
  - Section 9 defines the actions that are prohibited by the Act. In particular, it prohibits the "take" of endangered wildlife, where "take" means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."<sup>20</sup> The economic impacts associated with this section manifest themselves in sections 7 and 10.
  - Under section 10(a)(1)(B) of the Act, an entity (e.g., a landowner or local government) may develop a Habitat Conservation Plan (HCP) for a listed animal species in order to meet the conditions for issuance of an incidental take permit in connection with a land or water use activity or project.<sup>21</sup> The requirements posed by the HCP may have economic impacts associated with the goal of ensuring that the effects of incidental take are adequately avoided or minimized. The development and implementation of HCPs is considered a baseline protection for the species and habitat unless the HCP is determined to be precipitated by the designation of critical habitat, or the designation influences stipulated conservation efforts under HCPs.

Enforcement actions taken in response to violations of the Act are not included in this analysis.

39. The protection of listed species and habitat is not limited to the Act. Other Federal agencies, as well as State and local governments, may also seek to protect the natural resources under their jurisdiction. If compliance with the Clean Water Act or State environmental quality laws, for example, protects habitat for the species, such protective efforts are considered to be baseline protections and costs associated with these efforts

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<sup>20</sup> 16 U.S.C. 1532.

<sup>21</sup> U.S. Fish and Wildlife Service, "Endangered Species and Habitat Conservation Planning," August 6, 2002, accessed at <http://endangered.fws.gov/hcp/>.

are categorized accordingly. Of note, however, is that such efforts may not be considered baseline in the case that they would not have been triggered absent the designation of critical habitat. In these cases, they are considered incremental impacts and are discussed below.

### 2.3.2 IDENTIFYING INCREMENTAL IMPACTS

40. This analysis quantifies the potential incremental impacts of this rulemaking. The focus of the incremental analysis is to determine the impacts on land uses and activities from the designation of critical habitat that are above and beyond those impacts resulting from existing required or voluntary conservation efforts being undertaken due to other Federal, State, and local regulations or guidelines.
41. When critical habitat is designated, section 7 requires Federal agencies to ensure that their actions will not result in the destruction or adverse modification of critical habitat (in addition to considering whether the actions are likely to jeopardize the continued existence of the species). The added administrative costs of including consideration of critical habitat in section 7 consultations, and the additional impacts of implementing conservation efforts (i.e., reasonable and prudent alternatives) resulting from the protection of critical habitat are the direct compliance costs of designating critical habitat. These costs are not in the baseline and are considered incremental impacts of the rulemaking. Exhibit 2-1 depicts the decision analysis regarding whether an impact should be considered incremental.
42. Incremental impacts may be the direct compliance costs associated with additional effort for consultations, reinitiated consultations, new consultations occurring specifically because of the designation, and additional conservation efforts that would not have been requested under the jeopardy standard. Additionally, incremental impacts may include indirect impacts resulting from reaction to the potential designation of critical habitat (e.g., implementing sucker conservation in an effort to avoid designation of critical habitat), triggering of additional requirements under State or local laws intended to protect sensitive habitat, and uncertainty and perceptual effects on markets.

#### Approach to Identifying Incremental Impacts

43. To inform the economic analysis, the Service provided a memorandum describing its expected approach to conservation for the Klamath suckers following critical habitat designation (Appendix C). Specifically, the Service's memorandum provides information on how the Service intends to address projects that might lead to adverse modification of critical habitat as distinct from projects that may jeopardize the species. Exhibit 2-1 summarizes the decision framework described in this section.
44. In the case of Klamath suckers' critical habitat, the Service asserts that the conservation efforts recommended via section 7 consultation to address potential jeopardy to the species are the same as those that would be recommended to address potential adverse

modification of critical habitat. The following bullets describe our understanding of the Service's justification for the above statement.<sup>22</sup>

**The designation does not provide new information to stakeholders:**

- The proposed critical habitat includes only occupied areas.
- Due to the species' small range and previous controversy over the Klamath suckers' effect on water management, the Service believes it is highly likely that project proponents would know about the presence of suckers even absent critical habitat. For example, the U.S. Bureau of Land Management (BLM) and the U.S. Forest Service (USFS) have consulted with the Service for many years, and the U.S. Bureau of Reclamation (USBR) already conducts surveys for the Klamath suckers.<sup>23</sup> Therefore, proponents of projects in the areas proposed for critical habitat subject to a Federal nexus already know to consult with the Service. The Service "do[es] not anticipate any changes in behavior for federal or non-federal landowners."<sup>24</sup>

**No expected change in the outcome of consultations:**

- The Service states that it "do[es] not anticipate that the outcome of section 7 consultations would be different upon final designation, especially since all proposed critical habitat is occupied by suckers. A proposed action that affects critical habitat also affects the species."<sup>25</sup>
- As we understand from discussions with the Klamath Falls Field Office, all conservation efforts that would be recommended to avoid or reduce impacts of a project on critical habitat (e.g., installation of fish screens, maintenance of minimum surface elevations) would also be recommended to reduce impacts to individual suckers and/or to avoid jeopardy of the species.<sup>26</sup> In its memorandum, the Service further states that, "these recommendations would be applicable regardless if critical habitat has been designated or not."<sup>27</sup>

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<sup>22</sup> Personal communication with the Service, January 25, 2012; Personal communication with the Klamath Falls Fish and Wildlife Office, February 1, 2012.

<sup>23</sup> Service, "Incremental Effects Memorandum for the Economic Analysis of the Proposed Rule to Designate Critical Habitat for the Lost River Sucker and Shortnose Sucker," February 21, 2012, p. 2.

<sup>24</sup> Ibid, p. 7.

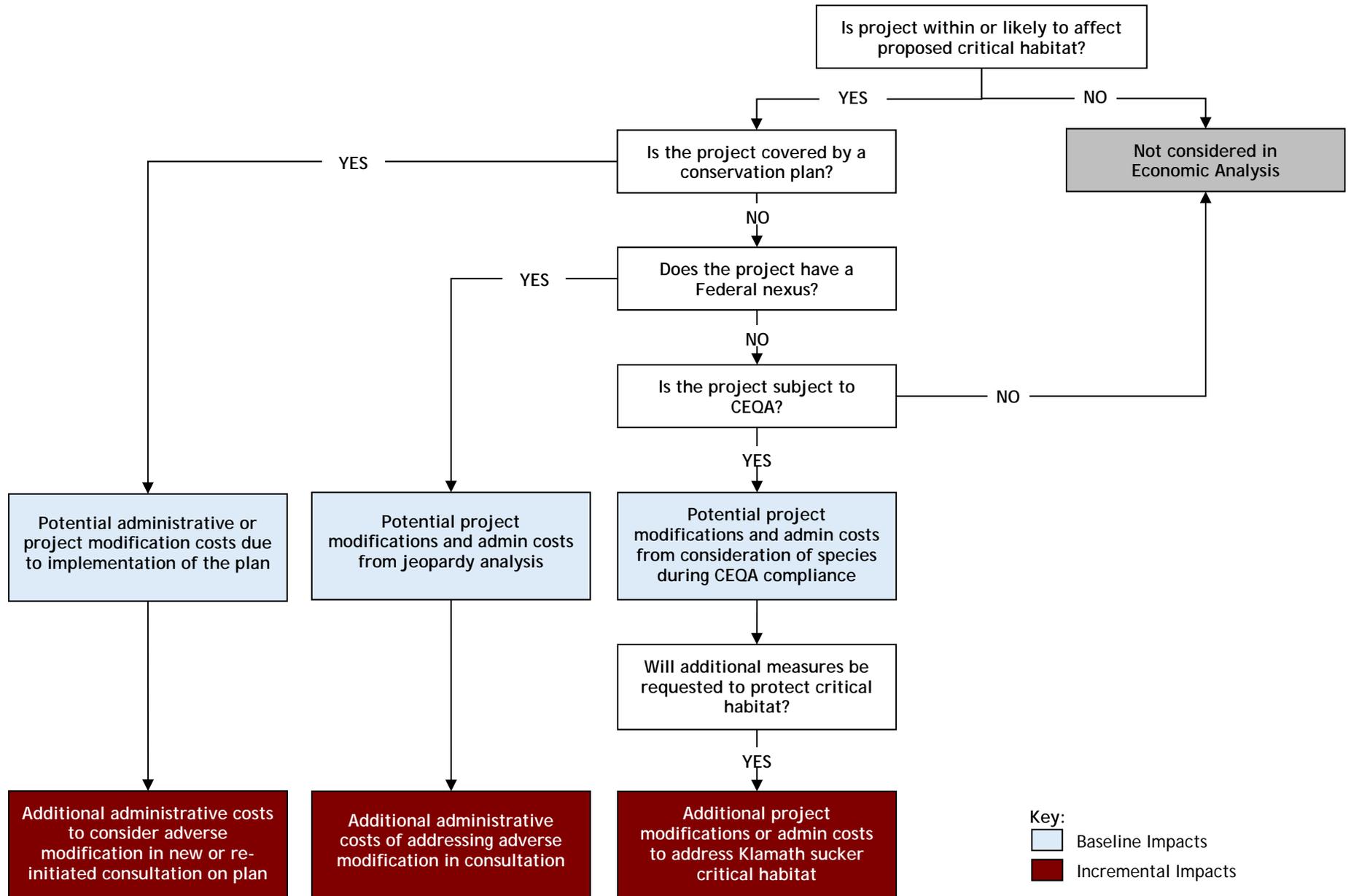
<sup>25</sup> Ibid, p. 4.

<sup>26</sup> Personal communication with the Klamath Falls Fish and Wildlife Office, February 1, 2012.

<sup>27</sup> Service, "Incremental Effects Memorandum for the Economic Analysis of the Proposed Rule to Designate Critical Habitat for the Lost River Sucker and Shortnose Sucker," February 21, 2012, p. 3.

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EXHIBIT 2-1. FRAMEWORK FOR DETERMINING BASELINE AND INCREMENTAL IMPACTS



45. The majority of activities anticipated to occur within the study area are subject to a Federal nexus (e.g., USBR's Klamath Project). Following the above reasoning for these projects, the direct, incremental impacts of critical habitat designation for the Klamath suckers are limited to additional administrative costs associated with new or reinitiated section 7 consultations. Past consultations on existing or draft Habitat Conservation Plans (HCPs) may, for example, be reinitiated following critical habitat designation, resulting in administrative effort. No new conservation efforts, however, are anticipated to result from these consultations, as described above.

#### Direct Impacts

46. The direct, incremental impacts of critical habitat designation stem from the consideration of the potential for destruction or adverse modification of critical habitat during section 7 consultations. The two categories of direct, incremental impacts of critical habitat designation are: 1) the administrative costs of conducting section 7 consultations; and 2) implementation of any conservation efforts requested by the Service through section 7 consultation to avoid potential destruction or adverse modification of critical habitat.<sup>28</sup>
47. Section 7(a)(2) of the Act requires Federal agencies to consult with the Service whenever activities that they undertake, authorize, permit, or fund may affect a listed species or designated critical habitat. In some cases, consultations will involve the Service and another Federal agency only, such as the U.S. Army Corps of Engineers. Often, they will also include a third party involved in projects that involve a permitted entity, such as the recipient of a Clean Water Act section 404 permit.
48. During a consultation, the Service, the action agency, and the entity applying for Federal funding or permitting (if applicable) communicate in an effort to minimize potential adverse effects to the species and/or to the proposed critical habitat. Communication between these parties may occur via written letters, phone calls, in-person meetings, or any combination of these. The duration and complexity of these interactions depends on a number of variables, including the type of consultation, the species, the activity of concern, and the potential effects to the species and designated critical habitat associated with the proposed activity, the Federal agency, and whether there is a private applicant involved.
49. Section 7 consultations with the Service may be either informal or formal. *Informal consultations* consist of discussions between the Service, the action agency, and the applicant concerning an action that may affect a listed species or its designated critical habitat, and are designed to identify and resolve potential concerns at an early stage in the planning process. By contrast, a *formal consultation* is required if the action agency determines that its proposed action may or will adversely affect the listed species or designated critical habitat in ways that cannot be resolved through informal consultation. The formal consultation process results in the Service's determination in its Biological

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<sup>28</sup> The term conservation efforts is intended to broadly capture efforts that stakeholders may undertake for the species, regardless of whether these efforts are explicitly called for in a section 7 consultation.

Opinion of whether the action is likely to jeopardize a species or adversely modify critical habitat, and recommendations to minimize those impacts. Regardless of the type of consultation or proposed project, section 7 consultations can require substantial administrative effort on the part of all participants.

Administrative Section 7 Consultation Costs

50. Parties involved in section 7 consultations include the Service, a Federal action agency, and in some cases, a private entity involved in the project or land use activity. The action agency (i.e., the Federal nexus necessitating the consultation) serves as the liaison with the Service. While consultations are required for activities that involve a Federal nexus and may affect a species regardless of whether critical habitat is designated, the designation may increase the effort for consultations in the case that the project or activity in question may adversely modify critical habitat. Administrative efforts for consultation may therefore result in both baseline and incremental impacts.
51. In general, three different scenarios associated with the designation of critical habitat may trigger incremental administrative consultation costs:
1. **Additional effort to address adverse modification in a new consultation -** New consultations taking place after critical habitat designation may require additional effort to address critical habitat issues above and beyond the listing issues. In this case, only the additional administrative effort required to consider critical habitat is considered an incremental impact of the designation.
  2. **Re-initiation of consultation to address adverse modification -** Consultations that have already been completed on a project or activity (but for which the project or activity is not yet completed) may require re-initiation to address critical habitat. In this case, the costs of re-initiating the consultation, including all associated administrative and project modification costs are considered incremental impacts of the designation.
  3. **Incremental consultation resulting entirely from critical habitat designation -** Critical habitat designation may trigger additional consultations that may not occur absent the designation (e.g., for an activity for which adverse modification may be an issue, while jeopardy is not, or consultations resulting from the new information about the location of species habitat provided by the designation). Such consultations may, for example, be triggered in critical habitat areas that are not occupied by the species. All associated administrative and project modification costs of these consultations are considered incremental impacts of the designation.
52. The administrative costs of these consultations vary depending on the specifics of the project. One way to address this variability is to show a range of possible costs of consultation, as it may not be possible to predict the precise outcome of each future consultation in terms of level of effort. Review of consultation records and discussions with multiple Service field offices resulted in a range of estimated administrative costs of

consultation. For simplicity, the average of the range of costs in each category is applied in this analysis (see Exhibit 2-2).

**EXHIBIT 2-2. RANGE OF ADMINISTRATIVE CONSULTATIONS COSTS (2012 DOLLARS)**

BASELINE ADMINISTRATIVE COSTS OF CONSULTATION					
CONSULTATION TYPE	SERVICE	FEDERAL AGENCY	THIRD PARTY	BIOLOGICAL ASSESSMENT	TOTAL COSTS
CONSULTATION CONSIDERING JEOPARDY (DOES NOT INCLUDE CONSIDERATION OF ADVERSE MODIFICATION)					
Technical Assistance	\$428	n/a	\$788	n/a	\$1,220
Informal	\$1,840	\$2,330	\$1,540	\$1,500	\$7,130
Formal	\$4,130	\$4,650	\$2,630	\$3,600	\$15,000
Programmatic	\$12,500	\$10,400	n/a	\$4,200	\$27,100
INCREMENTAL ADMINISTRATIVE COSTS OF CONSULTATION					
CONSULTATION TYPE	SERVICE	FEDERAL AGENCY	THIRD PARTY	BIOLOGICAL ASSESSMENT	TOTAL COSTS
NEW CONSULTATION RESULTING ENTIRELY FROM CRITICAL HABITAT DESIGNATION (TOTAL COST OF A CONSULTATION CONSIDERING BOTH JEOPARDY AND ADVERSE MODIFICATION)					
Technical Assistance	\$570	n/a	\$1,050	n/a	\$1,620
Informal	\$2,450	\$3,100	\$2,050	\$2,000	\$9,500
Formal	\$5,500	\$6,200	\$3,500	\$4,800	\$20,000
Programmatic	\$16,700	\$13,900	n/a	\$5,600	\$36,100
NEW CONSULTATION CONSIDERING ONLY ADVERSE MODIFICATION (UNOCCUPIED HABITAT)					
Technical Assistance	\$428	n/a	\$788	n/a	\$1,220
Informal	\$1,840	\$2,330	\$1,540	\$1,500	\$7,130
Formal	\$4,130	\$4,650	\$2,630	\$3,600	\$15,000
Programmatic	\$12,500	\$10,400	n/a	\$4,200	\$27,100
RE-INITIATION OF CONSULTATION TO ADDRESS ADVERSE MODIFICATION					
Technical Assistance	\$285	n/a	\$525	n/a	\$810
Informal	\$1,230	\$1,550	\$1,030	\$1,000	\$4,750
Formal	\$2,750	\$3,100	\$1,750	\$2,400	\$10,000
Programmatic	\$8,330	\$6,930	n/a	\$2,800	\$18,100
ADDITIONAL EFFORT TO ADDRESS ADVERSE MODIFICATION IN A NEW CONSULTATION (ADDITIVE WITH BASELINE COSTS, SHOWN ABOVE, OF CONSIDERING JEOPARDY)					
Technical Assistance	\$143	n/a	\$263	n/a	\$405
Informal	\$613	\$775	\$513	\$500	\$2,380
Formal	\$1,380	\$1,550	\$875	\$1,200	\$5,000
Programmatic	\$4,160	\$3,460	n/a	\$1,400	\$9,030
Source: IEC analysis of full administrative costs is based on data from the Federal Government Schedule Rates, Office of Personnel Management, 2010, and a review of consultation records from several Service field offices across the country conducted in 2002.					
Notes:					
1. Estimates are rounded to three significant digits and may not sum due to rounding.					
2. Estimates reflect average hourly time required by staff.					

### Section 7 Conservation Effort Impacts

53. Section 7 consultation considering critical habitat may also result in additional conservation effort recommendations specifically addressing potential destruction or adverse modification of critical habitat. For future consultations considering jeopardy and adverse modification, and for re-initiations of past consultations to consider critical habitat, the economic impacts of conservation efforts undertaken to avoid adverse modification are considered incremental impacts of critical habitat designation. For consultations that are forecast to occur specifically because of the designation (incremental consultations), impacts of all associated conservation efforts are assumed to be incremental impacts of the designation.

### Indirect Impacts

54. The designation of critical habitat may, under certain circumstances, affect actions that do not have a Federal nexus and thus are not subject to the provisions of section 7 under the Act. Indirect impacts are those unintended changes in economic behavior that may occur outside of the Act, through other Federal, State, or local actions, and that are caused by the designation of critical habitat. For example:

- **Triggering Other State and Local Laws.** Under certain circumstances, critical habitat designation may provide new information to a community about the sensitive ecological nature of a geographic region, potentially triggering additional economic impacts under other State or local laws, such as the California Environmental Quality Act (CEQA). In cases where these impacts would not have been triggered absent critical habitat designation, they are considered indirect, incremental impacts of the designation.
- **Time Delays.** Both public and private entities may experience incremental time delays for projects and other activities due to requirements associated with the need to reinitiate the section 7 consultation process and/or compliance with other laws triggered by the designation. To the extent that delays result from the designation, they are considered indirect, incremental impacts of the designation.
- **Regulatory Uncertainty or Stigma -** Government agencies and affiliated private parties who consult with the Service under section 7 may face uncertainty concerning whether reasonable and prudent alternatives will be recommended by the Service and what the nature of these alternatives will be. This uncertainty may diminish as consultations are completed and additional information becomes available on the effects of critical habitat on specific activities. Where information suggests that this type of regulatory uncertainty stemming from the designation may affect a project or economic behavior, associated impacts are considered indirect, incremental impacts of the designation. In some cases, the public may perceive that critical habitat designation may result in limitations on private property uses above and beyond those associated with anticipated conservation efforts and regulatory uncertainty described above. Public attitudes about the limits or restrictions that critical habitat may impose can cause real economic effects to property owners, regardless of whether such limits are actually imposed.

As the public becomes aware of the true regulatory burden imposed by critical habitat, the impact of the designation on property markets may decrease.

### 2.3.3 BENEFITS

55. Under Executive Order 12866, OMB directs Federal agencies to provide an assessment of both the social costs and benefits of proposed regulatory actions.<sup>29</sup> OMB's Circular A-4 distinguishes two types of economic benefits: *direct benefits and ancillary benefits*. Ancillary benefits are defined as favorable impacts of a rulemaking that are typically unrelated, or secondary, to the statutory purpose of the rulemaking.<sup>30</sup>
56. In the context of critical habitat, the primary purpose of the rulemaking (i.e., the direct benefit) is the potential to enhance conservation of the species. The published economics literature has documented that social welfare benefits can result from the conservation and recovery of endangered and threatened species. In its guidance for implementing Executive Order 12866, OMB acknowledges that it may not be feasible to monetize, or even quantify, the benefits of environmental regulations due to either an absence of defensible, relevant studies or a lack of resources on the implementing agency's part to conduct new research.<sup>31</sup> *Rather than rely on economic measures, the Service believes that the direct benefits of the proposed rule are best expressed in biological terms that can be weighed against the expected cost impacts of the rulemaking.*
57. Critical habitat designation may also generate ancillary benefits. Critical habitat aids in the conservation of species specifically by protecting the primary constituent elements on which the species depends. To this end, critical habitat designation can result in maintenance of particular environmental conditions that may generate other social benefits aside from the preservation of the species. That is, management actions undertaken to conserve a species or habitat may have coincident, positive social welfare implications, such as increased recreational opportunities in a region. While they are not the primary purpose of critical habitat, these ancillary benefits may result in gains in employment, output, or income that may offset the direct, negative impacts to a region's economy resulting from actions to conserve a species or its habitat.

### 2.3.4 GEOGRAPHIC SCOPE OF THE ANALYSIS

58. Economic impacts of sucker conservation are considered across the entire area proposed for critical habitat designation, as defined in Chapter 1. Results are presented by proposed critical habitat unit.

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<sup>29</sup> Executive Order 12866, Regulatory Planning and Review, September 30, 1993.

<sup>30</sup> U.S. Office of Management and Budget, "Circular A-4," September 17, 2003, available at <http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf>.

<sup>31</sup> *Ibid.*

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#### 2.3.5 ANALYTIC TIME FRAME

59. Ideally, the time frame of this analysis would be based on the expected time period over which the critical habitat regulation is expected to be in place. Specifically, the analysis would forecast impacts of implementing this rule through species recovery (i.e., when the rule is no longer required). Recent guidance from OMB indicates that “if a regulation has no predetermined sunset provision, the agency will need to choose the endpoint of its analysis on the basis of a judgment about the foreseeable future.”<sup>32</sup> The “foreseeable future” for this analysis includes, but is not limited to, activities that are currently authorized, permitted, or funded, or for which proposed plans are currently available to the public. Forecasted impacts will be based on the planning periods for potentially affected projects and will look out over a 20-year time horizon for most activities (2012 through 2031). OMB supports this time frame stating that “for most agencies, a standard time period of analysis is ten to 20 years, and rarely exceeds 50 years.”<sup>33</sup>

#### 2.4 INFORMATION SOURCES

60. The primary sources of information for this report are communications with, and data provided by, personnel from the Service, local governments and other stakeholders. In addition, this analysis relies upon the Service’s section 7 consultation records. A complete list of references is provided at the end of this document.

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<sup>32</sup> The U.S. Office of Management and Budget, February 7, 2011. “Regulatory Impact Analysis: Frequently Asked Questions (FAQs).” Accessed on May 3, 2011 by [http://www.whitehouse.gov/sites/default/files/omb/circulars/a004/a-4\\_FAQ.pdf](http://www.whitehouse.gov/sites/default/files/omb/circulars/a004/a-4_FAQ.pdf).

<sup>33</sup> *Ibid.*

#### CALCULATING PRESENT VALUE AND ANNUALIZED IMPACTS

This analysis compares economic impacts incurred in different time periods in present value terms. The present value represents the value of a payment or stream of payments in common dollar terms. That is, it is the sum of a series of past or future cash flows expressed in today's dollars. Translation of economic impacts of past or future costs to present value terms requires the following: a) past or projected future costs of critical habitat designation; and b) the specific years in which these impacts have been or are expected to be incurred. With these data, the present value of the past or future stream of impacts ( $PV_c$ ) from year  $t$  to  $T$  is measured in 2012 dollars according to the following standard formula:

$$PV_c = \sum_t^T \frac{C_t}{(1+r)^{t-2012}}$$

$C_t$  = cost of sucker critical habitat conservation efforts in year  $t$

$r$  = discount rate<sup>a</sup>

Impacts for each activity in each unit are also expressed as annualized values. Annualized values are calculated to provide comparison of impacts across activities with varying forecast periods ( $T$ ). For this analysis, activities employ a forecast period of 20 years. Annualized future impacts ( $APV_c$ ) are calculated by the following standard formula:

$$APV_c = PV_c \left[ \frac{r}{1 - (1+r)^{-N}} \right]$$

$N$  = number of years in the forecast period (in this analysis, 20 years)

<sup>a</sup> To discount and annualize costs, guidance provided by the OMB specifies the use of a real rate of seven percent. In addition, OMB recommends sensitivity analysis using other discount rates such as three percent, which some economists believe better reflects the social rate of time preference. (U.S. Office of Management and Budget, Circular A-4, September 17, 2003 and U.S. Office of Management and Budget, "Draft 2003 Report to Congress on the Costs and Benefits of Federal Regulations; Notice," 68 *Federal Register* 5492, February 3, 2003.)

## CHAPTER 3 | BASELINE CONSERVATION FOR THE LOST RIVER AND SHORTNOSE SUCKERS WITHIN THE PROPOSED CRITICAL HABITAT

61. This chapter discusses the baseline state of sucker conservation absent designation of critical habitat to provide context for the incremental analysis presented in Chapter 4. The species and habitat protections described in this chapter result from implementation of the Endangered Species Act (“the Act”), as well as other Federal, State and local regulations and conservation plans.
62. The conservation efforts and baseline protections described in the following sections address potential threats to the suckers and their habitat. These threats can be grouped into three categories: (1) activities affecting water supply such as dam operations and hydropower production; (2) activities affecting water quality such as agricultural and grazing activities; and (3) activities affecting fish passage including flood control or water diversions. These threats are described in greater detail in Chapter 1.
63. This chapter provides an overview of the consultation history of the suckers, along with conservation recommendations made previously by the Service, and a description of existing baseline protections for the suckers, including regulations, land management plans, HCPs, easements, and other measures that provide protection specifically for the suckers.

### 3.1 SUCKER CONSULTATION HISTORY AND PAST CONSERVATION RECOMMENDATIONS

64. Since listing the species in 1988, the Service has conducted a total of 110 formal section 7 consultations for the suckers, as well as 178 informal section 7 consultations. These consultations considered a range of economic activities, including:
  - Water management, including water allocation, dam operations, and hydropower production;
  - Management of fish passage at dams and water diversions;
  - Management of livestock grazing;
  - Herbicide and pesticide application, as well as other agricultural activities;
  - Road and bridge construction and maintenance;
  - Habitat and wetland restoration;
  - Forest management, land use, and timber operations; and
  - Other activities, including sucker recovery actions.

65. Exhibit 3-1 summarizes sucker conservation efforts recommended by the Service through these past consultations.

**EXHIBIT 3-1. SUMMARY OF SUCKER CONSULTATION HISTORY: 1988-2010**

ACTIVITY	FEDERAL AGENCIES AND THIRD PARTIES	NUMBER OF CONSULTATIONS	CONSERVATION EFFORTS
Herbicide and Pesticide Application	U.S. Bureau of Reclamation U.S. Forest Service Natural Resource Conservation Service Farm Service Agency	20	<ul style="list-style-type: none"> <li>Develop buffer zones within which no pesticides can be applied;</li> <li>Use of non-chemical means of pest control; and</li> <li>Apply herbicides and pesticides in a manner consistent with the label restrictions provided by the U.S. Environmental Protection Agency.</li> </ul>
Water Management	U.S. Bureau of Reclamation	19	<ul style="list-style-type: none"> <li>Maintain minimum surface elevations in Upper Klamath Lake, Clear Lake, Gerber Reservoir, and the Tule Lake Sump;</li> <li>Develop an operation plan for low water years; and</li> <li>Monitor, implement improvements, and report on water quality in project delivery area.</li> </ul>
Grazing	U.S. Forest Service Bureau of Land Management	14	<ul style="list-style-type: none"> <li>Protect stream and riparian habitat from significant grazing and trailing effects from livestock; and</li> <li>Monitoring and adaptive management.</li> </ul>
Forest Management	U.S. Forest Service Bureau of Land Management U.S. Army Corps of Engineers	14	<ul style="list-style-type: none"> <li>Use existing roadways or travel paths whenever reasonable; and</li> <li>Minimize the number and length of stream crossings and access routes through riparian areas.</li> </ul>
Habitat and Wetland Restoration	U.S. Forest Service Bureau of Land Management U.S. Fish and Wildlife Service	14	<ul style="list-style-type: none"> <li>Habitat preservation, restoration and improvement (construction, erosion control);</li> <li>Threatened species enhancement/reintroduction;</li> <li>Invasive species monitoring/removal; and</li> <li>Monitoring and adaptive management.</li> </ul>
Road and Bridge Construction and Maintenance	Oregon Department of Transportation U.S. Forest Service Federal Highway Administration U.S. Army Corps of Engineers	13	<ul style="list-style-type: none"> <li>Follow the appropriate state [Oregon Department of Fish and Wildlife (ODFW)] guidelines for timing of in-water work;</li> <li>Establish staging areas beyond the 100-year floodplain in a location and manner that will preclude erosion into or contamination of the stream or floodplain; and</li> <li>Place sediment barriers prior to construction around sites where significant levels of erosion may enter the stream directly or through road ditches.</li> </ul>

ACTIVITY	FEDERAL AGENCIES AND THIRD PARTIES	NUMBER OF CONSULTATIONS	CONSERVATION EFFORTS
Other Activities	U.S. Fish and Wildlife Service U.S. Army Corps of Engineers U.S. Bureau of Reclamation	9	<ul style="list-style-type: none"> <li>Assess ongoing sucker population monitoring and implement needed improvements;</li> <li>Develop annual assessment report; and</li> <li>Initiate rehabilitation of all disturbed areas in a manner that results in similar or better than pre-work conditions.</li> </ul>
Fish Passage and Screening	U.S. Bureau of Reclamation Bureau of Land Management U.S. Army Corps of Engineers Bureau of Indian Affairs	8	<ul style="list-style-type: none"> <li>Reduce entrainment of suckers at Link River Dam and associated hydropower intake bays;</li> <li>Install fish screens on diversions, where appropriate; and</li> <li>Ensure that an experienced professional fisheries biologist, hydrologist or technician is involved in the project design.</li> </ul>
<p><b>Note:</b> The number of consultations per activity does not sum to the total number of consultations because one consultation covers multiple activities.</p> <p><b>Sources:</b> Consultation history provided by the Service on January 5, 2012. Service, <i>Biological Opinion on the 10-year (June 1, 2002 through March 31, 2012) Operation Plan for the Klamath Project</i>, May 31, 2002. Service, <i>Biological Opinion on the Bureau of Reclamation's Proposed Klamath Project Operations from 2008 to 2018</i>, April, 2008, p. 20-33. Service, "Incremental Effects Memorandum for the Economic Analysis of the Proposed Rule to Designate Critical Habitat for the Lost River Sucker and Shortnose Sucker," February 21, 2012.</p>			

### 3.2 EXISTING BASELINE PROTECTIONS FOR THE SUCKERS

66. This section describes the baseline protections currently in place for the suckers. These protections, including regulations, land management plans, a draft habitat conservation plan (HCP), and the ongoing water adjudication process for the Klamath Basin, provide protection to the suckers absent the designation of critical habitat.

#### 3.2.1 CLEAN WATER ACT

67. The Clean Water Act (CWA) serves as an important means by which the Service has authority to consult for endangered species and their habitat on non-Federal lands. The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the United States. It gives the Environmental Protection Agency (EPA) the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA also continued requirements to set water quality standards for all contaminants in surface waters. Sections 401, 402, and 404 of the CWA may offer protection to the suckers by enhancing water quality, and preventing or limiting the discharge of dredge or fill materials. In particular, Section 404 of the CWA requires parties to obtain a permit from the Corps prior to discharging dredge or fill material into "waters of the United States."<sup>34</sup> This permitting process represents a Federal nexus for purposes of section 7 consultation. Specifically, the Corps would generally go through the section 7 consultation process for the suckers for bridge projects, stream restoration, and urban development.

<sup>34</sup> U.S. Code. Title 33, 1344.

68. Since the listing of the suckers in 1988, the Service has conducted eight formal section 7 consultations for the species with the Corps. These consultations considered potential impacts to the suckers that may result from bridge replacement projects, excavation work, highway maintenance, and installation of a fish ladder. Sucker conservation recommendations outlined in these consultations included:<sup>35</sup>
- Establish staging areas (used for construction equipment storage, vehicle storage, fueling, servicing, hazardous material storage, etc.) beyond the 100-year floodplain in a location and manner that will preclude erosion into or contamination of the stream or floodplain;
  - Minimize vegetation clearing activities when preparing staging, project, and/or stockpile areas to reduce exposed soil surfaces;
  - Prior to construction, flag critical riparian vegetation areas, wetlands, and other sensitive sites to prevent ground disturbance in these areas;
  - Place sediment barriers prior to construction around sites where significant levels of erosion may enter the stream directly or through road ditches;
  - All equipment used for instream work shall be cleaned and leaks repaired prior to entering the project area; and
  - Equipment used for instream or riparian work shall be fueled and serviced in an established staging area outside of riparian zone.

### 3.2.2 SUCKER RECOVERY PLAN (RECOVERY PLAN)

69. Recovery Plans are used by the Service to guide its efforts to recover and delist endangered species. Such plans help to guide conservation efforts for each species, ensuring that they all contribute to the ultimate goal of species recovery. The ultimate goal of the recovery program is to arrest the decline of and enhance Lost River sucker and shortnose sucker populations so that ESA protection is no longer necessary. The plan outlines certain threat-based objectives including:
- Restore or enhance spawning and nursery habitat in Upper Klamath Lake and Clear Lake Reservoir systems;
  - Reduce negative impacts of poor water quality;
  - Clarify and reduce the effects of non-native organisms on all life stages;
  - Reduce the loss of individuals to entrainment; and
  - Establish a redundancy and resiliency enhancement program.
70. The Recovery Plan was developed and is being implemented with the assistance of a group of stakeholders, including the California Department of Fish and Game, Nature Conservancy, U.S. Forest Service, Klamath Watershed Partnership, Oregon Department of Environmental Quality, Klamath Tribes, Oregon Department of Fish and Wildlife,

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<sup>35</sup> Service, "Incremental Effects Memorandum for the Economic Analysis of the Proposed Rule to Designate Critical Habitat for the Lost River Sucker and Shortnose Sucker," February 21, 2012.

PacifiCorp, Bureau of Land Management, Klamath Water Users Association, Klamath Irrigation District, among others.<sup>36</sup>

### 3.2.3 SECTION 7 CONSULTATIONS WITH THE U.S. BUREAU OF RECLAMATION ON THE OPERATION PLAN FOR THE KLAMATH PROJECT

71. U.S. Bureau of Reclamation (USBR) has consulted multiple times with the Service regarding its operations as part of the Klamath Project. The Klamath Project was developed to supply farmers with irrigation water and farmland in the Klamath Basin in Oregon. The project covers multiple water bodies including Upper Klamath Lake, Clear Lake Reservoir, Klamath River, Lost River, Lower Klamath Lake, and Tule Lake.
72. In 1996, USBR initiated a formal section 7 consultation on the effects of PacifiCorp and New Earth Corporation activities on listed species in conjunction with the operation of the Klamath Project. Specifically, the consultation considered PacifiCorp's hydroelectric facilities on the Link River and New Earth Corporation's algae harvest facility off the A-Canal. The Service issued a biological opinion concluding that these activities were not likely to jeopardize the suckers. However, new information developed since 1996 indicated that incidental take associated with the release of water into the eastside and westside canals exceeded that anticipated in 1996. In 2001, the Service issued an incidental take statement to address entrainment at the eastside and westside canals. The biological opinion provided reasonable and prudent alternatives to reduce entrainment. An additional biological opinion was issued in May 2002.<sup>37</sup>
73. The primary difference between the 2001 and 2002 biological opinions was the 2001 opinion addressed a one-year operation plan for the Klamath Project during a critically dry inflow year, while the 2002 biological opinion considered a ten-year operation plan for the Klamath Project. A major component of USBR's proposed action in the May 2002 consultation was the maintenance of minimum surface elevations at Upper Klamath Lake, Clear Lake, and Gerber Reservoir depending on the month and type of year (above average, below average, dry, or critically dry). The type of year is based on inflow forecasts from the Natural Resource Conservation Service (NRCS) using snowpack data and known relationships between snowpack and inflow. Minimum lake elevations in each type of year are outlined by month in Exhibit 3-2 below.

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<sup>36</sup> U.S. Fish and Wildlife Service. 2011. Draft revised recovery plan for the Lost River sucker (*Deltistes luxatus*) and shortnose sucker (*Chasmistes brevirostris*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California.

<sup>37</sup> Service, *Biological Opinion on the 10-year (June 1, 2002 through March 31, 2012) Operation Plan for the Klamath Project*, May 31, 2002, p. 7.

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EXHIBIT 3-2. END-OF MONTH, MINIMUM ELEVATIONS (FT) BY INFLOW YEAR TYPES PER 2002 BO

MONTH	TYPE OF YEAR			
	ABOVE AVERAGE	BELOW AVERAGE	DRY	CRITICALLY DRY
<b>Upper Klamath Lake</b>				
October	4139.7	4138.8	4138.2	4137.3
November	4140.3	4139.0	4139.0	4138.1
December	4141.0	4138.8	4139.7	4138.9
January	4141.5	4139.5	4140.3	4140.1
February	4141.9	4141.7	4140.4	4141.1
March	4142.5	4142.7	4141.7	4142.0
April	4142.9	4142.8	4142.2	4141.9
May	4143.1	4142.7	4142.4	4141.4
June	4142.6	4142.1	4141.5	4140.1
July	4141.5	4140.7	4140.3	4138.9
August	4140.5	4139.6	4139.0	4137.6
September	4139.8	4138.9	4138.2	4137.1
<b>Clear Lake</b>				
October	4531.2	4526.8	4522.5	4520.4
November	4531.0	4526.8	4522.5	4520.5
December	4531.5	4526.7	4522.8	4520.7
January	4532.4	4527.0	4522.9	4522.6
February	4531.9	4531.1	4527.0	4524.6
March	4534.6	4531.5	4527.1	4524.6
April	4535.3	4531.2	4526.9	4524.6
May	4535.3	4530.6	4526.4	4523.6
June	4534.7	4529.9	4525.7	4522.8
July	4533.8	4528.8	4524.5	4521.8
August	4532.8	4527.7	4523.5	4520.6
September	4532.1	4527.1	4522.8	4520.6
<b>Gerber Reservoir</b>				
October	4822.6	4804.4	4798.0	4801.6
November	4822.7	4804.3	4798.0	4801.7
December	4824.8	4804.4	4798.0	4802.1
January	4826.7	4804.5	4798.2	4807.7
February	4825.4	4817.5	4804.8	4811.8
March	4833.6	4821.3	4804.2	4812.3
April	4835.0	4821.2	4808.3	4811.8

MONTH	TYPE OF YEAR			
	ABOVE AVERAGE	BELOW AVERAGE	DRY	CRITICALLY DRY
May	4834.2	4818.9	4808.1	4809.8
June	4832.8	4816.1	4803.6	4808.1
July	4830.1	4812.3	4799.2	4805.9
August	4827.6	4808.7	4798.6	4803.6
September	4825.3	4804.6	4798.1	4801.7

Source: Service, *Biological Opinion on the 10-year (June 1, 2002 through March 31, 2012) Operation Plan for the Klamath Project*, May 31, 2002, Tables 2.2.2-1, 2.2.3-1, 2.2.4-1.

74. USBR amended its operations plan in 2008 to cover a ten-year period from 2008 through 2018. This amendment changed the proposed management at Upper Klamath Lake at the request of the National Marine Fisheries Service (NMFS). NMFS requested the use of an interactive management (IM) process to more effectively utilize available water for the benefit of listed and Tribal trust species. With the goal of making water management in the Klamath basin more transparent, the IM process relies on an IM technical team to determine distribution of available water after considering a number of factors such as minimum Klamath River flows at Iron Gate Dam, current inflows at Upper Klamath Lake, the NRCS inflow forecast, the current lake elevation at Upper Klamath Lake, and minimum lake elevations at Upper Klamath Lake.<sup>38</sup>
75. The analysis recognizes the costs of maintaining these minimum lake elevations may be significant in the event that these minimum elevations limit the amount of water available to downstream users and these users are forced to seek alternative water supplies. However, any impacts associated with maintaining these lake levels are considered baseline conservation because they would be implemented for the protection of the species even absent the designation of critical habitat.<sup>39</sup>

#### 3.2.4 PACIFICORP HABITAT CONSERVATION PLAN

76. PacifiCorp completed a draft HCP in December 2011 to cover its operations along the mainstem Klamath River, as well as reservoirs from Link River dam downstream to Iron Gate dam. In total, the plan covers 6,698 acres. Specific operations covered under the plan include:<sup>40</sup>
- Operation and maintenance of the spill gates at Link River dam;
  - Operation and maintenance of the East Side and West Side canals and flowlines;
  - Operation and maintenance of the Keno dam, spill gates, and fish ladder;

<sup>38</sup> Service, *Biological Opinion on the Bureau of Reclamation's Proposed Klamath Project Operations from 2008 to 2018*, April, 2008, p. 20-33.

<sup>39</sup> Service, "Incremental Effects Memorandum for the Economic Analysis of the Proposed Rule to Designate Critical Habitat for the Lost River Sucker and Shortnose Sucker," February 21, 2012.

<sup>40</sup> PacifiCorp, *PacifiCorp Klamath Hydroelectric Project Interim Operations Habitat Conservation Plan for Lost River and Shortnose Suckers*, December 2011.

- Regulation of the water level upstream of Keno dam in accordance with an agreement with the U.S. Bureau of Reclamation;
- Operation and maintenance of the J.C. Boyle dam, fish bypass system, water conveyance system, turbines, and powerhouse facilities;
- Regulation of flows from the J.C. Boyle dam and powerhouse;
- Operation and maintenance of Copco No. 1 and Copco No. 2 dams, water conveyance systems, turbines, and powerhouse facilities;
- Operation and maintenance of the Iron Gate dam, penstocks, turbines, and powerhouse facilities;
- Regulation of releases from Iron Gate dam; and
- Regulation of water levels at Keno, J.C. Boyle, Copco, and Iron Gate reservoirs.

77. The goal of the HCP is “to contribute to the conservation of Lost River and shortnose suckers in the Permit Area.” To achieve this, the HCP outlines a conservation strategy to implement measures that avoid or minimize the direct effects of PacifiCorp’s operations on the suckers and by funding enhancement efforts. Sucker conservation efforts outlined as part of this conservation strategy include:<sup>41</sup>

- Shutting down operation at the East Side and West Side facilities within 30 days of the issuance of the incidental take permit (ITP).
- Establishing a fund to support sucker recovery actions with an initial contribution of \$40,000, followed by \$30,000 on the fourth anniversary of the ITP, and an additional \$30,000 on the seventh anniversary of the ITP. In addition, PacifiCorp plans to provide about \$200,000 in support of the Williamson River Delta Restoration Project.
- Eliminating take resulting from stranding in the Link River downstream of Link River dam and the false attraction at the discharges from the East Side and West Side facilities.
- Implementing monitoring and adaptive management programs at downstream facilities.

### 3.2.5 KLAMATH BASIN WATER ADJUDICATION

78. In addition to the section 7 consultation on the Klamath Project and the PacifiCorp HCP, a process of adjudicating water rights in the Klamath Basin has been ongoing since 1975. The Klamath Basin adjudication is a process by which the state of Oregon determines the historical priority and the amount of surface water for claimed water rights.<sup>42</sup> Claimants included the Klamath Tribes, Indian allottees, USBR, the U.S. Forest Service, the National Park Service, private parties, among others. As of December 1, 2011, more than

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<sup>41</sup> *Ibid.*, p. 64-72.

<sup>42</sup> Upper Klamath Water Users Association, *Information on the Klamath Basin Adjudication*, accessed at <http://ukwua.com/adjudication.html> on April 2, 2012.

99 percent of active claims and contests had been settled or resolved.<sup>43</sup> The Service believes that the completion of the water adjudication process will result in increased certainty about the status of water rights in the basin, and thereby allow for more efficient water management in the Klamath River Basin and more opportunities to enhance water quantity and quality in habitats occupied by suckers.<sup>44</sup>

### 3.2.6 KINGSLEY FIELD AIR NATIONAL GUARD BASE INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

79. The Kingsley Field Air National Guard Base (ANG), located near the city of Klamath Falls in Oregon, finalized an INRMP in October 2011. The INRMP is designed to integrate natural resources management into the mission of Kingsley Field ANG, thereby allowing management of local ecosystems while “ensuring the successful accomplishment of the military mission.”<sup>45</sup> Broadly speaking, the INRMP seeks to implement management practices that (1) minimize habitat fragmentation and promote the natural pattern and connectivity of habitats; (2) protect native species and discourage non-native, exotic species; (3) protect rare and ecologically important species; (4) protect unique or sensitive environments; (5) maintain or mimic natural processes; (6) protect genetic diversity; (7) restore ecosystems, communities, and species; and (8) monitor effects on biodiversity impacts.<sup>46</sup>
80. Conservation measures outlined in the INRMP that may benefit the suckers include:<sup>47</sup>
- Assist the Service in conducting semi-annual surveys for Applegate’s milk vetch, Lost River Sucker, and shortnose sucker, as needed to determine the locations and extent of their populations on, and directly adjacent to, Kingsley Field ANG.
  - Reduce/control nutrient and sediment inputs that degrade water quality in the watershed.
  - Manage the repair and installation of existing and new construction projects in a manner that minimizes the potential for erosion and sedimentation.
  - Minimize non-point source pollution of both surface and groundwater in the watershed through the implementation of best management practices.
  - Gain an understanding of ecosystem dynamics within the watershed in an effort to prevent or respond to threats to its integrity.
  - Maintain vegetation buffers on waterways/riparian corridors.

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<sup>43</sup> Oregon Water Resources Department, *Status of the Adjudication*, accessed at [http://www.oregon.gov/OWRD/ADJ/docs/Status\\_of\\_the\\_Adjudication.pdf](http://www.oregon.gov/OWRD/ADJ/docs/Status_of_the_Adjudication.pdf) on April 2, 2012.

<sup>44</sup> Service, “Incremental Effects Memorandum for the Economic Analysis of the Proposed Rule to Designate Critical Habitat for the Lost River Sucker and Shortnose Sucker,” February 21, 2012, p. 6.

<sup>45</sup> National Guard Bureau, *Integrated Natural Resources Management Plan (INRMP) and Environmental Assessment of INRMP Implementation: Kingsley Field ANG, Oregon*, p. 64-72.

<sup>46</sup> *Ibid.*, p. 64-72.

<sup>47</sup> *Ibid.*, Chapter 4.

## CHAPTER 4 | INCREMENTAL IMPACTS OF CRITICAL HABITAT DESIGNATION FOR THE LOST RIVER AND SHORTNOSE SUCKERS

81. This chapter evaluates the potential for critical habitat designation to result in additional (“incremental”) conservation costs for the suckers. Section 4.1 summarizes the results of the incremental analysis, while Section 4.2 provides the expected incremental administrative costs of forecast consultations for the suckers by activity and unit. Section 4.3 then considers the potential for indirect impacts to occur under the California Environmental Quality Act (CEQA). Section 4.4 concludes with a description of key assumptions related to the analysis of incremental impacts.

### 4.1 SUMMARY OF RESULTS

82. The key conclusion of this analysis is that the incremental impacts of critical habitat designation will be limited to administrative costs because the Service does not expect designation of critical habitat to lead to any project modifications beyond those required by baseline protections for the suckers. As described in Section 2.3.2, all areas proposed for designation are considered occupied. All conservation efforts that would be recommended to avoid or reduce the impacts of a project on critical habitat would also be recommended to reduce impacts to individual suckers.<sup>48</sup> The Service states that, “these recommendations would be applicable regardless if critical habitat has been designated or not.”<sup>49</sup> Moreover, due to the species’ small range and previous controversy over the Klamath suckers’ effect on water management, it is unlikely that the designation provides new information to project proponents. Accordingly, the critical habitat designation is not anticipated to trigger new consultations in areas proposed as critical habitat.

83. Therefore, impacts are expected to consist solely of the administrative costs of considering adverse modification in the context of section 7 consultations that are projected to occur in occupied habitat regardless of the critical habitat designation. In total, impacts are estimated at \$586,000, or approximately \$51,700 on an annualized basis (see Exhibit 4-1). Future consultations are projected for the suckers based on a review of the consultation history, and research regarding potential future levels and locations of future projects.

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<sup>48</sup> Personal communication with the Klamath Falls Fish and Wildlife Office, February 1, 2012.

<sup>49</sup> Service, “Incremental Effects Memorandum for the Economic Analysis of the Proposed Rule to Designate Critical Habitat for the Lost River Sucker and Shortnose Sucker,” January 31, 2012, p. 3.

EXHIBIT 4-1. TOTAL ESTIMATED INCREMENTAL IMPACTS BY UNIT (2012-2031, \$2012, DISCOUNTED AT SEVEN PERCENT)

UNIT	UNIT NAME	PRESENT VALUE	ANNUALIZED
1	Upper Klamath Lake	\$259,000	\$22,900
2	Lost River Basin	\$326,000	\$28,800
	Total	\$586,000	\$51,700
Note: Totals may not sum due to rounding.			

4.2 ADMINISTRATIVE COSTS OF FORECAST SECTION 7 CONSULTATIONS

84. This section describes the methodology for estimating the additional administrative costs required to consider adverse modification of critical habitat as part of future section 7 consultation. It first presents estimates of the administrative costs per section 7 consultation and then discusses projections of future section 7 consultations.

4.2.1 INCREMENTAL ADMINISTRATIVE COSTS OF SECTION 7 CONSULTATIONS

85. Exhibit 4-2 summarizes incremental administrative consultation costs per consultation effort, reproducing portions of Exhibit 2-2. These costs represent the time and effort needed to consider the potential for the proposed project to result in adverse modification of critical habitat. The table summarizes three types of consultations relevant to this analysis:

- a. **New consultation considering only adverse modification.** This first category includes the cost to consider adverse modification for consultations precipitated by critical habitat designation. Because of the high level of awareness of these species, this analysis does not anticipate that the designation of critical habitat will result in any of this type of consultation.
- b. **Re-initiation of consultation to address adverse modification.** This second category considers incremental costs associated with a re-initiated consultation. In this case, the consultation is precipitated by critical habitat designation but is expected to be less costly than the previous category due to the groundwork of the previously completed consultation on the same project. This analysis does not anticipate that the designation of critical habitat will result in any of this type of consultation.
- c. **Additional effort to address adverse modification in a new consultation.** The final category considers the incremental effort to consider critical habitat designation as part of a future section 7 consultation that considers both adverse modification and jeopardy. This category is the least costly as efficiencies exist when considering both jeopardy and adverse modification at the same time (e.g., in staff time for project review and report writing). The consultations projected for the suckers in this section fall into this category.

## EXHIBIT 4-2. INCREMENTAL ADMINISTRATIVE CONSULTATIONS COSTS (\$2012)

CONSULTATION TYPE	SERVICE	FEDERAL AGENCY	THIRD PARTY	BIOLOGICAL ASSESSMENT	TOTAL COSTS
<b>NEW CONSULTATION CONSIDERING ONLY ADVERSE MODIFICATION</b>					
Informal	\$1,840	\$2,330	\$1,540	\$1,500	\$7,130
Formal	\$4,130	\$4,650	\$2,630	\$3,600	\$15,000
Programmatic	\$12,500	\$10,400	n/a	\$4,200	\$27,100
<b>RE-INITIATION OF CONSULTATION TO ADDRESS ADVERSE MODIFICATION</b>					
Informal	\$1,230	\$1,550	\$1,030	\$1,000	\$4,750
Formal	\$2,750	\$3,100	\$1,750	\$2,400	\$10,000
Programmatic	\$8,330	\$6,930	n/a	\$2,800	\$18,100
<b>ADDITIONAL EFFORT TO ADDRESS ADVERSE MODIFICATION IN A NEW CONSULTATION (ADDITIVE WITH BASELINE COSTS OF CONSIDERING JEOPARDY)</b>					
Informal	\$613	\$775	\$513 <sup>a</sup>	\$500	\$2,380
Formal	\$1,380	\$1,550	\$875 <sup>a</sup>	\$1,200	\$5,000
Programmatic	\$4,160	\$3,460	n/a	\$1,400	\$9,030
Source: IEC analysis of full administrative costs is based on data from the Federal Government Schedule Rates, Office of Personnel Management, 2008, and a review of consultation records from several Service field offices across the country conducted in 2002.					
Notes: 1. Estimates are rounded to three significant digits and may not sum due to rounding.					
2. Estimates reflect average hourly time required by staff.					

86. The remainder of this section discusses the projected frequency of section 7 consultations by activity type.

#### 4.2.2 FUTURE CONSULTATIONS FOR ACTIVITIES AFFECTING WATER SUPPLY

87. Activities that may affect water supply consist primarily of water allocation, dam operations and hydropower production. As discussed in Chapter 3, there have been 19 previous section 7 consultations on water management activities. All of these were with the USBR related to the Klamath Project, which consists of operations at Clear Lake Reservoir, Klamath River, Link River, Lost River, Lower Klamath Lake, Tule Lake, and Upper Klamath Lake.
88. As discussed in Chapter 3, USBR develops an operations plan for the project on a 10-year cycle with the most recent cycle running from 2008 through 2018.<sup>50</sup> The analysis assumes that USBR will continue to develop and undergo consultation on its Klamath Project operations plan every ten years, i.e., in 2018, 2028, etc. Because of the size of the project, the analysis assumes this consultation will require a level of effort similar to a programmatic consultation.

<sup>50</sup> Service, Biological Opinion on the 10-year (June 1, 2002, through March 31, 2012) Operation Plan for the Klamath Project, May 31, 2002.

89. USBR separately consulted with the Service on its operations at Agency Lake Ranch in 2000 and 2003.<sup>51</sup> The analysis assumes that consultations on Agency Lake Ranch will continue on a ten-year cycle similar to the operations plan for the Klamath Project as a whole. Therefore, the analysis forecasts one consultation on Agency Lake in 2013, as well as 2023. Because of the size of the project, the analysis assumes this consultation will require a level of effort similar to a programmatic consultation.
90. In addition, the analysis forecasts programmatic section 7 consultations related to PacifiCorp's incidental take permit in 2021 and 2031. As described in Chapter 3, PacifiCorp completed a draft HCP with a 10-year term in December 2011. The analysis assumes that PacifiCorp will elect to renew its HCP every ten years, and consult with the Service accordingly.
91. There have been three consultations related to levee maintenance and emergency dike repairs for the Klamath Project.<sup>52</sup> The types of emergency events that may require consultation cannot be predicted, and only three consultations related to such events have occurred since the listing of the species. The analysis assumes that the probability of an emergency event occurring remains unchanged, and will be unaffected by critical habitat designation. We therefore project an additional three formal consultations for emergency repairs over the next twenty years.
92. Finally, there have been four informal consultations on water management activities over the last 22 years. Because informal consultations have been relatively infrequent for water management activities and because the rate of consultation has not significantly changed since the listing of the species, the analysis assumes that the rate of informal consultations will remain unchanged over the next 20 years.

#### 4.2.3 FUTURE CONSULTATIONS FOR ACTIVITIES AFFECTING WATER QUALITY

93. As described in Chapter 1, the primary activities affecting water quality may include livestock grazing, herbicide and pesticide application, and in-water construction activities. Activities requiring in-water construction may include road and bridge construction or maintenance. Of these activities, 20 formal consultations have taken place on pesticide and herbicide application. The Service has conducted 14 formal consultations on grazing activities, and 13 on transportation activities.
94. To project both formal and informal consultations on pesticide and herbicide application, the analysis relies on the past rate of consultation, which indicates that consultations have taken place on almost an annual basis since the species was listed. This trend suggests that this chemical application both occurs and undergoes consultation on a regular basis. Therefore, the rate of these types of projects is unlikely to change going forward.
95. The analysis forecasts grazing consultations by identifying grazing allotments that intersect proposed critical habitat (see Exhibit 4-3). In total, 20 grazing allotments are

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<sup>51</sup> Service, Biological Opinions # 03-F-068 and #00-F-033.

<sup>52</sup> Service, Biological Opinions # 99-F-109, # 06-F-0143 and #07-F-0003.

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located around areas proposed as critical habitat. As shown in Exhibit 4-3, the vast majority of these allotments are located adjacent to Unit 2.

96. To project the number of consultations on grazing activities, the analysis assumes that one formal consultation for each allotment over the ten-year term of a typical grazing permit.<sup>53</sup> This assumption potentially may over-estimate the number of consultations because one consultation may cover multiple allotments. However, one grazing allotment may also undergo multiple consultations in the event it changes ownership or the owner undertakes a project requiring consultation. In total, the analysis projects 40 formal consultations on grazing activities over the next twenty years. It also projects approximately 16 informal consultations based on the past rate of informal concurrences.
97. For transportation activities such as road and bridge maintenance, the Service has conducted 13 consultations on these activities since the listing of the species. Of these, four were related to Highway 140, which runs through the city of Klamath Falls and to the west of Upper Klamath Lake. Another consultation was conducted for a project along Highway 97, which is located to the east of Upper Klamath Lake. Exhibit 4-4 provides an overview of roads located adjacent to critical habitat. In total, highways or local roads cross proposed stream segments or run alongside proposed lake or reservoir areas 23 times.
98. While the Oregon Department of Transportation (ODOT) and the California Department of Transportation (Caltrans) have planned projects on both Highway 140 and 97, these currently planned projects are not in the immediate vicinity of critical habitat.<sup>54</sup> However, given the previous frequency of consultation on transportation projects, the analysis forecasts that maintenance may need to be conducted at each of the 23 stream crossings sometime in the next twenty years, resulting in 23 formal section 7 consultations. The majority of these forecast consultations are expected to occur in Unit 1, where the roads are located in closest proximity to the proposed designation. Based on the past rate of informal concurrence, the analysis also forecasts an additional 27 informal consultations over the next twenty years.

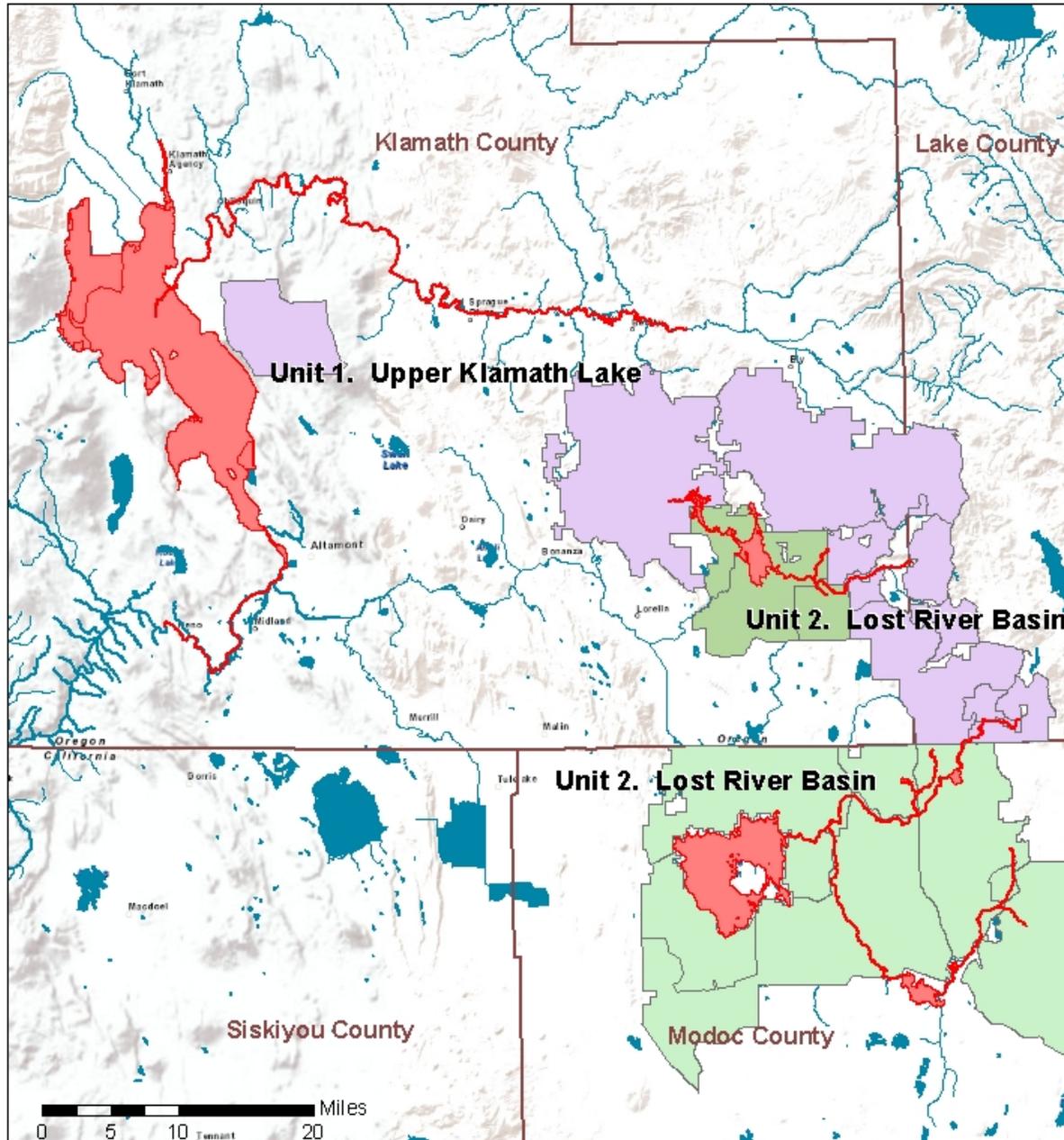
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<sup>53</sup> BLM, Fact Sheet on the BLM's Management of Livestock Grazing, accessed at: <http://www.blm.gov/wo/st/en/prog/grazing.html> on April 3, 2011.

<sup>54</sup> Oregon Department of Transportation, *US 97 Bend North Corridor Solutions: Study Area*, accessed at: [http://www.us97solutions.org/study\\_area/default.aspx](http://www.us97solutions.org/study_area/default.aspx). California Department of Transportation, *Project: Modoc County*, accessed at: <http://www.dot.ca.gov/dist2/projects/modoc.htm>. Oregon Department of Transportation, *Current Highway Projects in Region 4*, accessed at: [http://www.oregon.gov/ODOT/HWY/REGION4/RoadworkImprovements.shtml#KLAMATH\\_COUNTY](http://www.oregon.gov/ODOT/HWY/REGION4/RoadworkImprovements.shtml#KLAMATH_COUNTY).

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EXHIBIT 4-3. MAP OF GRAZING ALLOTMENTS ADJACENT TO PROPOSED CRITICAL HABITAT



**Legend**

- Proposed Klamath Sucker Critical Habitat
- USFS Fremont Winema Allotments
- BLM Allotments
- USFS Modoc Allotments

**Overview of Proposed Critical Habitat Areas**



- Sources:
1. ESRI, Inc.
  2. US Fish and Wildlife Service

**IEc**

INDUSTRIAL ECONOMICS, INCORPORATED

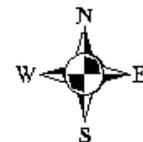
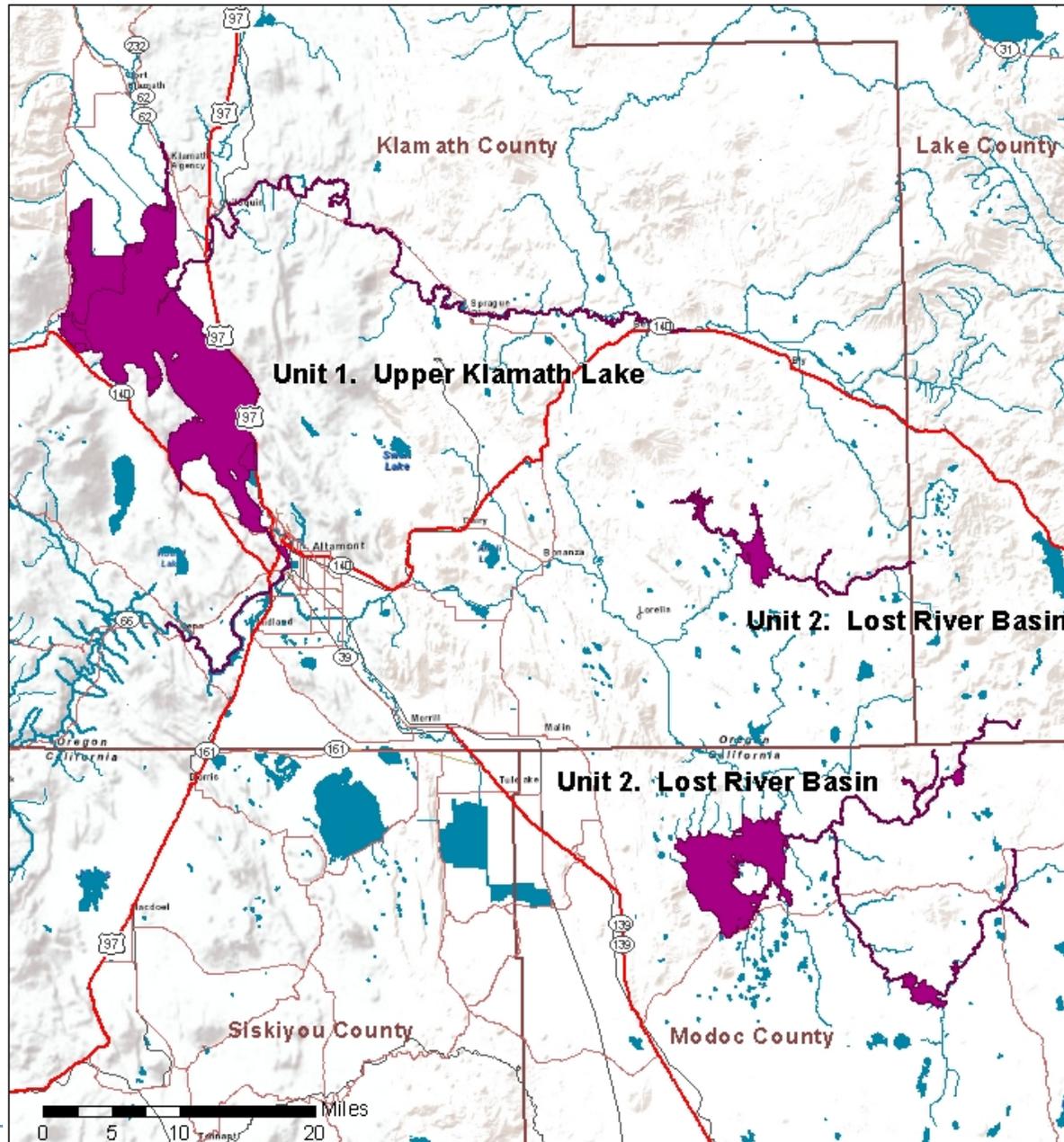


EXHIBIT 4-4. MAP OF ROADS CROSSING PROPOSED CRITICAL HABITAT



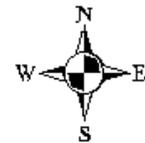
**Legend**

■ Proposed Klamath Sucker Critical Habitat

**Overview of Proposed Critical Habitat Areas**



Sources:  
 1. ESRI, Inc.  
 2. US Fish and Wildlife Service



**IEc**

INDUSTRIAL ECONOMICS, INCORPORATED

#### 4.2.4 FUTURE CONSULTATIONS FOR ACTIVITIES AFFECTING FISH PASSAGE

99. The Service has conducted eight consultations related to fish passage and screening over the last 22 years. To project future consultations related to fish passage, the analysis used GIS data to identify dams and diversions located within the proposed critical habitat designation (see Exhibit 4-5). Of these, the dams at Gerber Reservoir, the Link River Diversion, and Keno Dam form part of the Klamath Project. Based on the previous biological opinions, the analysis assumes that fish passage at these facilities is managed under the over-arching operations plan described in Section 4.2.2.
100. Of the remaining two dams, the Chiloquin Dam was removed in 2008 following studies related to providing fish passage at the dam.<sup>55</sup> The analysis does not forecast any section 7 consultations associated with fish passage installation at this facility. At the A and C Dam along Fletcher Creek, fish passage does not appear to currently exist.<sup>56</sup> Therefore, the analysis forecasts one formal section 7 consultations associated with the installation of fish passage or a fish screen at this dam. Based on the previous rate of informal concurrence for fish passage projects, the analysis projects that approximately three informal consultations may occur over the next twenty years for fish screen maintenance or other smaller projects.

#### 4.2.5 FUTURE CONSULTATIONS FOR OTHER ACTIVITIES

101. Finally, the analysis also projects consultations related to forest management, wetland restoration, and other miscellaneous activities based on the past consultation record. For forest management, we first examined the Land and Resource Management Plans for the Fremont-Winema and Modoc National Forests. These Forest Plans have been amended frequently over the last twenty years, including multiple amendments in 2009 and 2010.<sup>57</sup> Because the frequency of amendment appears to have been relatively constant in the past, the past rate of consultation is assumed to be a reasonable predictor of future consultations. Based on this rate, we forecast approximately 13 formal and 16 informal consultations over the next twenty years.
102. Similar to forest management, the rate of consultation for restoration and other types of projects has remained fairly constant over the last twenty years. In the absence of specific information on future restoration projects, the analysis assumes that the past rate of consultation is a reasonable predictor of the likelihood of future restoration projects. Based on this rate, we forecast approximately 21 formal and 56 informal consultation over the next twenty years.

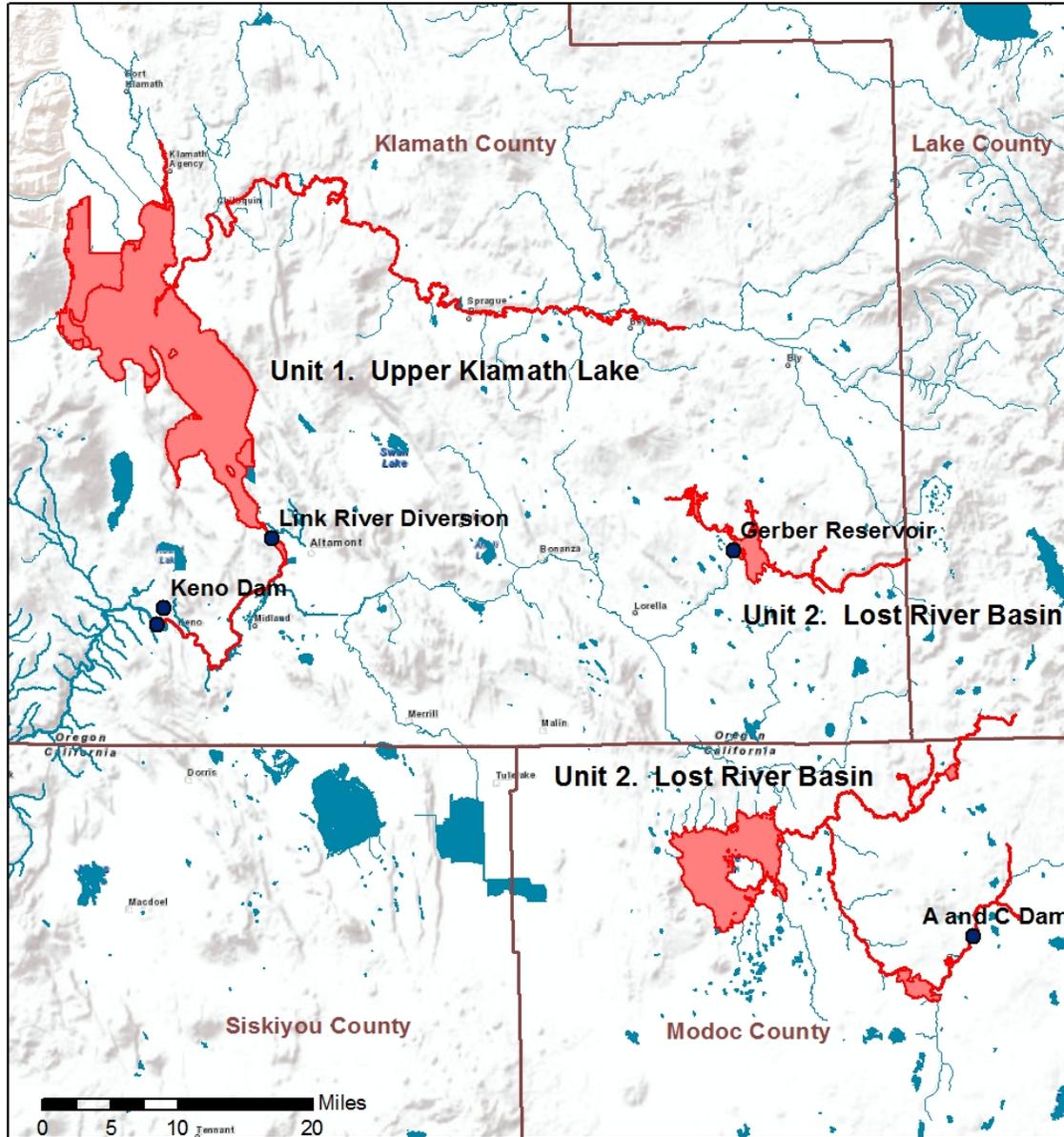
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<sup>55</sup> USBR, *Environmental Assessment for the Chiloquin Dam Fish Passage Project*, April 27, 2005, accessed at: [http://www.usbr.gov/mp/kbao/docs/chiloquin\\_ea4-20-05\\_2.pdf](http://www.usbr.gov/mp/kbao/docs/chiloquin_ea4-20-05_2.pdf). Lee Juillerat, "Chiloquin Dam removed," *Herald and News*, August 30, 2008, accessed at: <http://www.klamathbasinincrisis.org/chiloquindam/removed090108.htm>.

<sup>56</sup> USBR, *Biological Assessment: The Effects of the Proposed Action to Operate the Klamath Project from April 1, 2008 to March 31, 2018 On Federally-Listed Threatened and Endangered Species*, October 2007, accessed at: [http://www.usbr.gov/mp/kbao/operations/2008\\_BA/Assessment\\_latest.pdf](http://www.usbr.gov/mp/kbao/operations/2008_BA/Assessment_latest.pdf).

<sup>57</sup> See, for example, US Forest Service Fremont and Winema National Forests, *Forest Plans and Amendments*, accessed at: [http://www.fs.usda.gov/detailfull/fremont-winema/landmanagement/planning/?cid=fsbdev3\\_061824&width=full](http://www.fs.usda.gov/detailfull/fremont-winema/landmanagement/planning/?cid=fsbdev3_061824&width=full).

EXHIBIT 4-5. OVERVIEW OF DAMS AND DIVERSIONS



**Legend**

- Dams within Proposed Critical Habitat
- Proposed Klamath Sucker Critical Habitat

**Overview of Proposed Critical Habitat Areas**



Sources:  
 1. ESRI, Inc.  
 2. US Fish and Wildlife Service



**IEC**

INDUSTRIAL ECONOMICS, INCORPORATED

#### 4.3 POTENTIAL INDIRECT IMPACTS

103. Even in the absence of critical habitat, CEQA requires the identification of the environmental effects of proposed projects that have the potential to harm sensitive species or habitat (state- or federally-listed). The “Lead Agency” typically requires projects that may affect sensitive species or habitat to undertake a biological assessment by a qualified biologist to determine the potential for impacts to all rare, threatened and endangered species.<sup>58</sup>
104. The designation of critical habitat has the potential to change how local agencies implement CEQA. For example, the mapping of critical habitat areas may result in local agencies becoming more aware of where CEQA review must consider certain species. It may also prevent certain types of projects from claiming a categorical exemption under CEQA.
105. The proposed critical habitat for the suckers in California, however, is already managed such that the types of projects that may trigger CEQA are precluded. The areas proposed for designation in Modoc County, California fall within the Modoc National Forest, and are managed for grazing or as wild horse and burro areas. Accordingly, no development projects are forecast for these areas that may be subject to CEQA review.
106. The analysis also considered the potential for critical habitat designation to result in indirect impacts through time delays, regulatory uncertainty, or stigma effects. The previous controversy surrounding species conservation in the Klamath Basin has already called significant attention to the conservation needs of these species, and we anticipate that projects are already subject to strict conservation standards absent critical habitat designation. Therefore, indirect impacts resulting from voluntary conservation efforts, stigma effects, or regulatory uncertainty are unlikely.

#### 4.3 KEY ASSUMPTIONS

107. The key conclusion of this analysis is that the incremental impacts of critical habitat designation will be limited to administrative costs because the Service does not expect designation of critical habitat to lead to any project modifications beyond those required by baseline protections for the suckers. This conclusion, and the resulting cost estimates, rely on the following assumptions:

- **Designation of critical habitat will not provide new information to project proponents.** As discussed in Chapter 2, the proposed critical habitat includes only occupied areas, which were previously identified as habitat for these species in the 1994 proposed rule. Due to the species’ small range and previous controversy over the Klamath suckers’ effect on water management, it is likely that project proponents would know about the presence of suckers even absent critical habitat.

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<sup>58</sup> Under CEQA, the Lead Agency is the public agency that has the principal responsibility for carrying out or approving a project that is subject to CEQA. In general, a local government agency with jurisdiction over general land uses serves as the lead agency. See South Coast Air Management District, *Frequently Asked CEQA Questions*, accessed at: <http://www.aqmd.gov/ceqa/faq.html#What is a lead agency?>.

- **No expected change in the outcome of consultations.** The Service states that it “do[es] not anticipate that the outcome of section 7 consultations would be different upon final designation, especially since all proposed critical habitat is occupied by suckers. A proposed action that affects critical habitat also affects the species.”<sup>59</sup> As we understand from discussions with the Klamath Falls Field Office, all conservation efforts that would be recommended to avoid or reduce impacts of a project on critical habitat (e.g., installation of fish screens, maintenance of minimum surface elevations) would also be recommended to reduce impacts to individual suckers and/or to avoid jeopardy of the species.<sup>60</sup>
- **The number and location of past section 7 consultations is indicative of future consultations.** Land use activities are not expected to change substantially in any of the proposed critical habitat units. The fact that a majority of areas in the proposed critical habitat is already managed for conservation of the suckers and other species supports this assumption. If activity levels increase in the future, it is possible that this analysis underestimates associated incremental costs of section 7 consultation.
- **Critical habitat designation is not expected to result in indirect impacts.** The analysis considered the potential for critical habitat designation to result in indirect impacts through triggering other State or local laws such as the California Environmental Quality Act (CEQA), time delays, or regulatory uncertainty or stigma. The proposed critical habitat for the suckers in California is already managed such that the types of projects that may trigger CEQA are precluded; therefore, no development projects are forecast for these areas that may be subject to CEQA review. Moreover, the previous controversy surrounding species conservation in the Klamath Basin has already called significant attention to the conservation needs of these species. Therefore, indirect impacts resulting from voluntary conservation efforts, stigma, or regulatory uncertainty are unlikely.

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<sup>59</sup> Service, “Incremental Effects Memorandum for the Economic Analysis of the Proposed Rule to Designate Critical Habitat for the Lost River Sucker and Shortnose Sucker,” February 21, 2012, p. 4.

<sup>60</sup> Personal communication with the Klamath Falls Fish and Wildlife Office, February 1, 2012.

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## CHAPTER 5 | ECONOMIC BENEFITS OF CRITICAL HABITAT DESIGNATION FOR THE LOST RIVER AND SHORTNOSE SUCKERS

108. As discussed in the previous chapters, this analysis does not anticipate that the designation of critical habitat will result in additional conservation for the Lost River and shortnose suckers. As a result, no changes in economic activity or land or water management are expected to result from critical habitat designation. Absent changes in land or water management or conservation efforts for the suckers, no incremental economic benefits are forecast to result from designation of critical habitat. The information in this chapter is therefore provided to offer context for the analysis.
109. There are two types of economic benefits that could result from the proposed critical habitat designations, in general: direct benefits and ancillary benefits. The primary intended benefit of critical habitat (i.e., the direct benefit) is to support the conservation of threatened and endangered species, such as the Lost River and shortnose suckers. Thus, attempts to develop monetary estimates of the benefits of this proposed critical habitat designation would focus on the public's willingness to pay to achieve the conservation benefits to the suckers resulting from any conservation efforts generated by the critical habitat designation.
110. Quantification and monetization of species conservation benefits first requires information on the incremental change in the probability of sucker conservation that is expected to result from the designation or the projected increase in sucker populations. In this case, we refer to the change in conservation probability or species population that is distinct from the change in conservation probability or species population associated with the listing (i.e., the change that results from the specific conservation efforts that would not be undertaken absent the designation). No studies exist that provide such information for the suckers; the extent to which critical habitat designation may improve the populations of the suckers or increase their probability of survival is unknown.
111. Recently, USBR researched individuals' willingness to pay to reduce the extinction rate for the Lost River and shortnose suckers from very high to high, and from very high to moderate.<sup>61</sup> This research estimated a willingness to pay \$40.39 annually for twenty years to reduce the extinction rate from very high to high, and a willingness to pay an additional \$17.37 annually for twenty years to further reduce the extinction rate to moderate.<sup>62</sup> However, as described in Chapters 3 and 4, modifications to future projects

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<sup>61</sup> See RTI International, *Klamath River Basin Restoration Nonuse Value Survey*, January 19, 2012. Accessed at: <http://klamathrestoration.gov/sites/klamathrestoration.gov/files/DDDDD.Printable.Klamath%20Nonuse%20Survey%20Final%20Report%202012%5B1%5D.pdf>.

<sup>62</sup> *Ibid.*, Table 8-3, p. 8-4.

are unlikely given the extensive baseline protections already provided to sucker habitat under various conservation plans. Thus, we do not anticipate that the critical habitat designation itself will generate conservation efforts that reduce the extinction rate as measured in the willingness to pay study. These values are therefore provided to offer information on the public's willingness to pay to conserve the species, thereby demonstrating a positive value for their continued existence.

112. Ancillary benefits may also be achieved through designation of critical habitat. For example, the public may hold a value for habitat conservation, beyond its willingness to pay for conservation of a specific species. Studies have estimated the public's willingness to pay to preserve wilderness areas for wildlife management and preservation programs, protection of open space, and ecosystem maintenance. These studies address categories of benefits (e.g., ecosystem integrity) that may be similar to the types of benefits provided by critical habitat, but do not provide values that can be used to establish the incremental values associated with this proposed critical habitat designation (i.e., the ecosystem and species protection measures in these studies are too dissimilar from the habitat protection benefits that may be accorded by this designation). As the designation of critical habitat is not anticipated to generate additional conservation efforts for the suckers, in this case we do not anticipate ancillary benefits of critical habitat designation.

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**APPENDIX A | SMALL BUSINESS AND ENERGY IMPACTS ANALYSES**

1. This appendix considers the extent to which incremental impacts from critical habitat designation may be borne by small entities and the energy industry. The analysis presented in Section A.1 is conducted pursuant to the Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996. The energy analysis in Section A.2 is conducted pursuant to Executive Order No. 13211.
2. The analyses of impacts to small entities and the energy industry rely on the estimated incremental impacts resulting from the proposed critical habitat designation. The incremental impacts of the rulemaking are most relevant for the small business and energy impacts analyses because they reflect costs that may be avoided or reduced based on decisions regarding the composition of the final rule.

**A.1 SBREFA ANALYSIS**

3. When a Federal agency proposes regulations, the RFA requires the agency to prepare and make available for public comment an analysis that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions as defined by the RFA).<sup>63</sup> No initial regulatory flexibility analysis is required if the head of an agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. SBREFA amended the RFA to require Federal agencies to provide a statement of the factual basis for certifying that a rule will not have significant economic impact on a substantial number of small entities. To assist in this process, this appendix provides a screening level analysis of the potential for sucker critical habitat to affect small entities.
4. To ensure broad consideration of impacts on small entities, the Service has prepared this small business analysis without first making the threshold determination in the proposed rule regarding whether the proposed critical habitat designation could be certified as not having a significant economic impact on a substantial number of small entities. This small business analysis will therefore inform the Service's threshold determination.

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<sup>63</sup> 5 U.S.C. § 601 et seq.

#### A.1.1 BACKGROUND AND FRAMEWORK FOR THE THRESHOLD ANALYSIS

5. This analysis is intended to improve the Service's understanding of the potential effects of the proposed rule on small entities and to identify opportunities to minimize these impacts in the final rulemaking. The Act requires the Service to designate critical habitat for threatened and endangered species to the maximum extent prudent and determinable. Section 4(b)(2) of the Act requires that the Service designate critical habitat "on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impacts, of specifying any particular area as critical habitat." This section grants the Secretary [of the Interior] discretion to exclude any area from critical habitat if (s)he determines "the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat". However, the Secretary may not exclude an area if it "will result in the extinction of the species."
6. Three types of small entities are defined in the RFA:
  - **Small Business** - Section 601(3) of the RFA defines a small business as having the same meaning as small business concern under section 3 of the Small Business Act. This includes any firm that is independently owned and operated and is not dominant in its field of operation. The Small Business Administration (SBA) has developed size standards to carry out the purposes of the Small Business Act, and those size standards can be found in 13 CFR 121.201. The size standards are matched to North American Industry Classification System (NAICS) industries. The SBA definition of a small business applies to a firm's parent company and all affiliates as a single entity.
  - **Small Governmental Jurisdiction** - Section 601(5) defines small governmental jurisdictions as governments of cities, counties, towns, townships, villages, school districts, or special districts with a population of less than 50,000. Special districts may include those servicing irrigation, ports, parks and recreation, sanitation, drainage, soil and water conservation, road assessment, etc. When counties have populations greater than 50,000, those municipalities of fewer than 50,000 can be identified using population reports. Other types of small government entities are not as easily identified under this standard, as they are not typically classified by population.
  - **Small Organization** - Section 601(4) defines a small organization as any not-for-profit enterprise that is independently owned and operated and not dominant in its field. Small organizations may include private hospitals, educational institutions, irrigation districts, public utilities, agricultural co-ops, etc.
7. The courts have held that the RFA/SBREFEA requires Federal agencies to perform a regulatory flexibility analysis of forecast impacts to small entities that are directly regulated. In the case of *Mid-Tex Electric Cooperative, Inc., v. Federal Energy Regulatory Commission (FERC)*, FERC proposed regulations affecting the manner in which generating utilities incorporated construction work in progress in their rates. The generating utilities that expected to be regulated were large businesses; however, their

customers -- transmitting utilities such as electric cooperatives -- included numerous small entities. In this case, the court agreed that FERC simply authorized large electric generators to pass these costs through to their transmitting and retail utility customers, and FERC could therefore certify that small entities were not directly impacted within the definition of the RFA.<sup>64</sup>

8. Similarly, *American Trucking Associations, Inc. v. Environmental Protection Agency* (EPA) addressed a rulemaking in which EPA established a primary national ambient air quality standard for ozone and particulate matter.<sup>65</sup> The basis of EPA's RFA/SBREFA certification was that this standard did not directly regulate small entities; instead, small entities were indirectly regulated through the implementation of State plans that incorporated the standards. The court found that, while EPA imposed regulation on States, it did not have authority under this rule to impose regulations directly on small entities and therefore small entities were not directly impacted within the definition of the RFA.
9. The SBA in its guidance on how to comply with the RFA recognizes that consideration of indirectly affected small entities is not required by the RFA, but encourages agencies to perform a regulatory flexibility analysis even when the impacts of its regulation are indirect.<sup>66</sup> "If an agency can accomplish its statutory mission in a more cost-effective manner, the Office of Advocacy [of the SBA] believes that it is good public policy to do so. The only way an agency can determine this is if it does not certify regulations that it knows will have a significant impact on small entities even if the small entities are regulated by a delegation of authority from the Federal agency to some other governing body."<sup>67</sup>
10. The regulatory mechanism through which critical habitat protections are realized is section 7 of the Act, which directly regulates only those activities carried out, funded, or permitted by a Federal agency. By definition, Federal agencies are not considered small entities, although the activities they may fund or permit may be proposed or carried out by small entities. Given the SBA guidance described above, this analysis considers the extent to which this designation could potentially affect small entities, regardless of whether these entities would be directly regulated by the Service through the proposed rule or by a delegation of impact from the directly regulated Federal agency. However, while it considers businesses that may be affected indirectly, it forecasts impacts only to those entities for which the regulatory link would not be measurably diluted.

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<sup>64</sup> 773 F. 2d 327 (D.C. Cir. 1985).

<sup>65</sup> 175 F. 3d 1027, 1044 (D.C. Cir. 1999).

<sup>66</sup> Small Business Administration, Office of Advocacy. May 2003. A Guide for Government Agencies: How to Comply with the Regulatory Flexibility Act, pg. 20.

<sup>67</sup> *Ibid.*, pg. 21.

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### A.1.2 RESULTS OF THE THRESHOLD ANALYSIS

11. This analysis focuses on small entities that may bear the incremental impacts of this rulemaking quantified in Chapter 4 of this economic analysis. Specifically, this economic analysis quantifies the incremental impact of considering adverse modification as part of section 7 consultation for water management, grazing, transportation, herbicide and pesticide application, forest management, restoration, or installation of fish passage. Small entities may participate in section 7 consultation as a third party (the primary consulting parties being the Service and the Federal action agency). It is therefore possible that the small entities may spend additional time considering critical habitat during section 7 consultation for the suckers. Additional incremental costs of consultation that would be borne by the Federal action agency and the Service are not relevant to this screening analysis as these entities (Federal agencies) are not small.
12. Chapter 4 projects section 7 consultations associated with seven types of activities. Of these activities, small entities are not anticipated to incur incremental costs associated with water management, transportation, herbicide and pesticide application, forest management, restoration, or installation of fish passage. As described in Chapter 4, impacts to these activities are expected to be incurred largely by Federal and State agencies, including USBR, ODOT, the Federal Highway Administration, the Federal Aviation Administration, the Forest Service, the Bureau of Land Management, and the Klamath Basin National Wildlife Refuge. The analysis does forecast that PacifiCorp will engage in two section 7 consultation related to its HCP. However, PacifiCorp not a small entity. To be considered a small entity in the electric production industry, companies must have a total electric output less than 4 million megawatt hour (MWh). In 2011, PacifiCorp generated a total of 55.4 million MWh.<sup>68</sup>
13. Incremental impacts associated with section 7 consultation on grazing activities may be borne by small entities, and thus are the focus of this threshold analysis. Following RFA and SBREFA, the purpose of this threshold analysis is to determine if the critical habitat designation will have a significant economic impact on a substantial number of small entities. Importantly, the impacts of the rule must be *both* significant *and* substantial to prevent certification of the rule. If a substantial number of small entities are affected by the critical habitat designation, but the per-entity economic impact is not significant, the Service may certify the rule. Likewise, if the per-entity economic impact is likely to be significant, but the number of affected entities is not substantial, the Service may also certify. To assist the Service in making this determination, this analysis presents information on both the number of small entities that may be affected and the magnitude of the expected impacts.
14. Exhibit A-1 presents the number of grazing entities that may bear incremental impacts, summarizes the number and percentage of those entities that may be affected by critical habitat designation, and estimates forecast incremental impacts as a percentage of these affected small entities' annual revenues. For purposes of this screening analysis, the

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<sup>68</sup> U.S. Securities and Exchange Commission, 10-K Filing for PacifiCorp for the fiscal year ending December 31, 2011.

study area includes the three counties overlapping the proposed critical habitat designation.<sup>69</sup>

**EXHIBIT A-1. OVERVIEW OF IMPACTS TO SMALL GRAZING ENTITIES**

ITEM	CHARACTERISTICS OF THE GRAZING INDUSTRY
NAICS Code	Beef Cattle Ranching and Farming (112111)
Small Entity Size Standard	\$750,000 in annual revenues
Total Number of Entities in the Study Area <sup>1</sup>	125
Number of Small Entities in the Study Area <sup>2</sup>	121
Number of Affected Small Entities <sup>3</sup>	20
Percentage of Small Entities Affected	16.5%
Annualized Impacts <sup>4</sup>	\$2,170
Annualized Impacts per Affected Entity	\$108.50
Estimated Revenues per Entity <sup>5</sup>	\$131,931
Impacts as % of Annual Revenues	0.08%
<p><b>Source:</b> Dialog search of File 516, Dun and Bradstreet, "Duns Market Identifier," on April 9, 2012.</p>	
<p><b>Notes:</b></p>	
<p>1. The total number of entities in the study area was calculated by querying the Dun and Bradstreet database to identify the number of entities in the NAICS code 112111 across the three counties with areas proposed as critical habitat.</p>	
<p>2. The total number of small entities in the study area was calculated by querying the Dun and Bradstreet database to identify the number of entities falling under the small entity size standard for NAICS code 11211 as developed by the Small Business Administration.</p>	
<p>3. To estimate the number of affected small entities, this analysis assumes one small entity per grazing allotment. This assumption may over- or under-estimate the number of potentially affected grazing entities. If one business grazes on multiple allotments, fewer entities may be affected. If one allotment has multiple permittees, the number of affected entities may be under-estimated.</p>	
<p>4. This estimate excludes the additional incremental costs of consultation that would be borne by the Federal action agency and the Service. These costs are not relevant to this screening analysis as these entities (Federal agencies) are not small.</p>	
<p>5. For grazing, average revenues were developed for farms engaged in calf and cattle sales in the three counties with areas proposed for critical habitat based on USDA, National Agricultural Statistics Service. 2007 Census of Agriculture. Volume 1, Chapter 2: County Level Data, Table 11. Cattle and Calves - Inventory and Sales: 2007 and 2002. See Exhibit A-2. The revenue information is for all businesses, both large and small, in these counties, which may over-estimate revenues for small businesses. Given that 97 percent of grazing businesses in these counties are small and the estimated average revenues per farm are well below the small business size standard for this NAICS code, we believe the estimate is reasonable.</p>	

<sup>69</sup> These counties include Klamath and Lake counties in Oregon and Modoc County in California.

15. Across the study area, 125 businesses are engaged in the beef cattle ranching and farming industry. Of these, 121, or 97 percent, have annual revenues at or below the small business threshold of \$750,000, and thus are considered small (see Exhibit A-1). A section 7 consultation on grazing activity may cover one or more grazing allotments, and a small entity may be permitted to graze on one or more of these allotments. Because the number of allotments and grazing permittees varies from consultation to consultation, this analysis makes the simplifying assumption that one small entity is affected in each of the twenty allotments adjacent to proposed critical habitat. These 20 small entities represent approximately 16.5 percent of small grazers across the study area.
16. To estimate average annual revenues per grazing entity, the analysis relies on data from the National Agricultural Statistics Service, which provides information on the value of calf and cattle sales as well as the number of farms. Using these data, we estimated a value of calf and cattle sales per farm for all the counties in the study area. We then averaged this value across the counties to estimate annual revenues per grazing entity of \$132,000 (see Exhibit A-4). We note that this average is significantly below the threshold level defining a small entity. We estimate total annualized impacts to the 20 entities that may incur administrative costs of approximately \$24,600, or annualized impacts of \$2,170. Assuming 20 affected small entities and that each entity has annual revenues of \$132,000, these annualized impacts per small entity are expected to comprise 0.08 percent of annual revenues.

**EXHIBIT A-2. ESTIMATED ANNUAL REVENUES PER GRAZING ENTITY**

COUNTY	STATE	CALF AND CATTLE SALES (\$)	NUMBER OF FARMS	SALES PER FARM <sup>1</sup>
Klamath	OR	\$53,914,000	577	\$93,438
Lake	OR	\$36,659,000	215	\$170,507
Modoc	CA	\$26,106,000	198	\$131,848
Average sales per farm <sup>2</sup>				\$131,931

**Notes:**

1. The Census of Agriculture does not provide the value of sales by farm size. Because sales data include farms with revenues that may exceed the small business size standard, average sales per farm may be overestimated. That said, given that 97 percent of grazing businesses in these counties are small and the estimated average revenues per farm are well below the small business size standard for this NAICS code, we believe the estimate is reasonable.

2. The analysis averages revenues across the three counties in the study area to develop a more complete understanding of the industry in this area. In addition, because grazing entities may graze on multiple allotments across the various counties, an average across the study area may better represent the revenues of the affected entities.

Source: USDA, National Agricultural Statistics Service. 2007 Census of Agriculture. Volume 1, Chapter 2: County Level Data, Table 11. Cattle and Calves - Inventory and Sales: 2007 and 2002.

## A.2 POTENTIAL IMPACTS TO THE ENERGY INDUSTRY

17. Pursuant to Executive Order No. 13211, “Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use,” issued May 18, 2001, Federal agencies must prepare and submit a “Statement of Energy Effects” for all “significant energy actions.” The purpose of this requirement is to ensure that all Federal agencies “appropriately weigh and consider the effects of the Federal Government’s regulations on the supply, distribution, and use of energy.”<sup>70</sup>
18. The Office of Management and Budget provides guidance for implementing this Executive Order, outlining nine outcomes that may constitute “a significant adverse effect” when compared with the regulatory action under consideration:
- Reductions in crude oil supply in excess of 10,000 barrels per day (bbls);
  - Reductions in fuel production in excess of 4,000 barrels per day;
  - Reductions in coal production in excess of 5 million tons per year;
  - Reductions in natural gas production in excess of 25 million Mcf per year;
  - Reductions in electricity production in excess of 1 billion kilowatts-hours per year or in excess of 500 megawatts of installed capacity;
  - Increases in energy use required by the regulatory action that exceed the thresholds above;
  - Increases in the cost of energy production in excess of one percent;
  - Increases in the cost of energy distribution in excess of one percent; or
  - Other similarly adverse outcomes.<sup>71</sup>
19. The Service identified hydropower production as an activity that potentially may affect the sucker and its habitat. However, as discussed in Chapters 2 and 4, the Service does not anticipate that the designation of critical habitat will result in any changes to the timing or amount of water spilled at the hydroelectric dams within the proposed areas. The analysis forecasts only administrative costs associated with section 7 consultation. Because total present value incremental administrative costs are \$50,100 over 20 years, costs associated with section 7 consultation are unlikely to increase the cost of energy production in the U.S. in excess of one percent.

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<sup>70</sup> Memorandum For Heads of Executive Department Agencies, and Independent Regulatory Agencies, Guidance For Implementing E.O. 13211, M-01-27, Office of Management and Budget, July 13, 2001, <http://www.whitehouse.gov/omb/memoranda/m01-27.html>.

<sup>71</sup> Ibid.

## APPENDIX B | SENSITIVITY OF RESULTS TO DISCOUNT RATE

1. This appendix first summarizes the baseline and incremental impacts calculated assuming a three percent discount rate. We provide these exhibits to demonstrate the sensitivity of our results to the discount rate selected, and they can be compared with similar exhibits, presented in the Executive Summary and Chapter 4, which present results assuming a seven percent discount rate. We also present the stream of undiscounted costs.

EXHIBIT B-1. TOTAL ESTIMATED INCREMENTAL IMPACTS BY UNIT (\$2012)

UNIT	UNIT NAME	DISCOUNTED AT 3%		DISCOUNTED AT 7%	
		PRESENT VALUE	ANNUALIZED	PRESENT VALUE	ANNUALIZED
1	Upper Klamath Lake	\$350,000	\$22,800	\$259,000	\$22,900
2	Lost River Basin	\$441,000	\$28,800	\$326,000	\$28,800
Total		\$791,000	\$51,600	\$586,000	\$51,700
Note: Totals may not sum due to rounding.					

EXHIBIT B-2. UNDISCOUNTED STREAM OF COSTS

YEAR	UNIT 1	UNIT 2	TOTAL
2012	\$21,016	\$32,627	\$53,643
2013	\$30,046	\$27,627	\$57,673
2014	\$21,016	\$27,627	\$48,643
2015	\$21,016	\$27,627	\$48,643
2016	\$21,016	\$27,627	\$48,643
2017	\$21,016	\$27,627	\$48,643
2018	\$25,531	\$32,142	\$57,673
2019	\$21,016	\$27,627	\$48,643
2020	\$21,016	\$27,627	\$48,643
2021	\$25,531	\$32,142	\$57,673
2022	\$21,016	\$27,627	\$48,643
2023	\$30,046	\$27,627	\$57,673
2024	\$21,016	\$27,627	\$48,643

YEAR	UNIT 1	UNIT 2	TOTAL
2025	\$21,016	\$27,627	\$48,643
2026	\$21,016	\$27,627	\$48,643
2027	\$21,016	\$27,627	\$48,643
2028	\$25,531	\$32,142	\$57,673
2029	\$21,016	\$27,627	\$48,643
2030	\$21,016	\$27,627	\$48,643
2031	\$25,531	\$32,142	\$57,673

**APPENDIX C**

**INCREMENTAL EFFECTS MEMORANDUM TO IEC**

## Memorandum

To: Industrial Economics, Incorporated

From: Field Supervisor

Subject: Incremental Effects Memorandum for the Economic Analysis of the Proposed Rule to Designate Critical Habitat for Lost River Sucker and Shortnose Sucker

### **Introduction**

The purpose of this memorandum is to provide information to serve as a basis for conducting an economic analysis of the proposed critical habitat designation for Lost River sucker and shortnose sucker.

Section 4(b)(2) of the Endangered Species Act requires the U.S. Fish and Wildlife Service (Service) to consider the economic, national security, and other impacts of designating critical habitat. The Service may exclude an area from critical habitat if it determines that the benefits of exclusion outweigh the benefits of including the area as critical habitat, unless the exclusion will result in the extinction of the species. To support its weighing of the benefits of excluding versus including an area as critical habitat, the Service prepares an economic analysis for each proposed critical habitat designation, which describes and monetizes where possible, the economic impacts (costs and benefits) of the proposed designation.

### **Background**

On December 1, 1994, the Service published proposed critical habitat for Lost River sucker and shortnose sucker; that proposal was never finalized. Pursuant to the November 12, 1991, court case with the Service, the Oregon Natural Resources Council (now known as Oregon Wild) recently contacted the Department of Justice and requested that the Service issue a final critical habitat rule. On May 10, 2010, a settlement agreement was reached that stipulated the Service submit a final rule designating critical habitat for the Lost River sucker and the shortnose sucker to the Federal Register no later than November 30, 2012 (*Wood et al. v. Thorson et al.*, No. 91–cv–6496–TC (D. Or.)). Given this settlement agreement, advancement in our understanding of Lost River sucker and shortnose sucker ecology, and the technological advancements made available since preparing the former proposed rule, we published a new proposed critical habitat rule on December 7, 2011.

The revised critical habitat rule proposes to designate approximately 27 percent of the area identified in the previous proposed designation. Additionally, the previous designation had 6 proposed units, while the current proposal only has 2 units per species. The differences are based on increased scientific knowledge about the species' habitat needs and better mapping tools, particularly the use of imagery in GIS format to more precisely delineate proposed critical habitat. The previous proposed designation was completed prior to GIS technology and, thus, was delineated by Township, Range and Section lines, which included upland areas, rather than water body boundaries (or bankfull elevations) used in the current proposal. Several changes

have been proposed within the 2011 revised proposed critical habitat designation. A summary table of the differences for Lost River sucker (LRS) and shortnose sucker (SNS) is below:

<b>1994 Proposal</b>	<b>2011 Proposal</b>
Total: 880,000 acres	241,438 acres, 274 miles
LRS: 424,000 acres	117,848 acres, 146 miles
SNS: 456,000 acres	123,590 acres, 128 miles

The decreases in acreage are largely due to the accuracy in mapping and consideration of areas that are presently occupied but have not been determined to be essential to conservation of the species.

### **Analysis**

The guidance for preparing an incremental effects memo from Industrial Economics, Incorporated, suggests the following questions should be answered to provide the most useful information for the economists:

#### **Does the designation include unoccupied or temporarily unoccupied habitat that was not previously subject to the requirements of section 7?**

No, there are no unoccupied or temporarily unoccupied habitats being proposed. All habitats being proposed are currently occupied. Therefore, consultations for projects within critical habitat would take into account the species and its critical habitat. The previous (1994) proposed rule included unoccupied habitat.

*In areas considered to be occupied at a "population scale," provide information about the likelihood that project proponents would have known about the potential presence of the species absent critical habitat.*

It is highly likely the project proponents would have already known about presence of suckers absent critical habitat because of their small range in distribution and their highly controversial profile in relation to water management. For example, the U.S Forest Service and Bureau of Land Management have been consulting with the Service for many years and we have shared distribution information to inform effects of project actions (e.g., grazing consultations). The Bureau of Reclamation (BOR) has abundant knowledge of species distribution as they conduct and fund surveys to understand sucker life history, population dynamics, and distribution.

*Describe typical project modifications the Service will recommend when considering adverse modification.*

We would generally consider recommendations that relate to the amount and timing of water availability, which translates into the amount of habitat available. For example, if a project proposes to alter water delivery that would affect the inundation of spawning and rearing habitat (PCE #2 in the current proposed critical habitat), then we would recommend a change in the timing or amount of water diverted to allow for inundation of that habitat. Specifically, in the April 5, 2001, and May 31, 2002, BOs prepared for Bureau of Reclamation's Klamath Irrigation Project, the determination was that the proposed action was likely to destroy or modify proposed critical habitat. We list these examples as they would continue to be applicable in future consultations, particularly with the BOR, whose operations would potentially affect critical

habitat in many locations; these recommendations would be applicable regardless if critical habitat has been designated or not. In these instances, recommendations included the following:

- Maintenance of minimum surface elevations in Upper Klamath Lake
- Develop an operation plan for low water years
- Adaptive management through water quality monitoring and reporting
- Entrainment reduction and fish passage at A-Canal and Link River Dam and monitoring and restoration of sucker habitats from Keno to Link River
- Management of Upper Klamath Lake water quality refuge areas and emergent vegetation habitats
- Maintain minimum lake levels in Clear Lake, Gerber Reservoir, and the Tule Lake Sump
- A reduction in the effects of adverse water quality and habitat loss in Upper Klamath Lake resulting from Project operations
- Monitor, implement improvements, and report on water quality in project delivery area
- Provide adequate Link River habitat and assess sucker habitat needs in the Link River and downstream in Lake Ewauna and the Keno Reservoir
- Provide adequate habitat below Clear Lake and Gerber Reservoir Dams
- Assess habitat conditions and make improvements for endangered sucker needs in the Lost River
- Determine habitat needs for larval suckers and implement actions to provide additional habitat

Other typical project modifications the Service could recommend when considering adverse modification include altering timing of grazing to reduce impacts to water quality, limit logging activities within riparian areas to reduce sedimentation, and include appropriate fish passage design into culvert replacements to provide passage to spawning and rearing habitat.

*Provide examples representing typical recommendations applicable across a broad suite of projects. Where significant uncertainty exists, provide ranges of potential outcomes.*

- Protect stream and riparian habitat from significant grazing and trailing effects from livestock
- Conduct annual implementation monitoring
- Protect sensitive habitats
- Install fish screens on diversions, where appropriate
- Ensure that an experienced professional fisheries biologist, hydrologist or technician is involved in the project design
- Follow the appropriate state (Oregon Department of Fish and Wildlife (ODFW) guidelines for timing of in-water work
- Establish staging areas (used for construction equipment storage, vehicle storage, fueling, servicing, hazardous material storage, etc.) beyond the 100-year floodplain in a location and manner that will preclude erosion into or contamination of the stream or floodplain
- Minimize vegetation clearing activities when preparing staging, project, and or stockpile areas to reduce exposed soil surfaces
- Prior to construction, flag critical riparian vegetation areas, wetlands, and other sensitive sites to prevent ground disturbance in these areas

- Place sediment barriers prior to construction around sites where significant levels of erosion may enter the stream directly or through road ditches
- All equipment used for instream work shall be cleaned and leaks repaired prior to entering the project area
- Equipment used for instream or riparian work shall be fueled and serviced in an established staging area outside of riparian zone
- Minimize the number and length of stream crossings and access routes through riparian areas
- Existing roadways or travel paths will be used whenever reasonable
- Minimize time in which heavy equipment is in stream channels, riparian areas, and wetlands
- Initiate rehabilitation of all disturbed areas in a manner that results in similar or better than pre-work conditions

**Once critical habitat is designated, will the outcome of section 7 consultations in occupied habitat be different?**

We do not anticipate that the outcome of section 7 consultations would be different upon final designation, especially since all proposed critical habitat is occupied by suckers. A proposed action that affects critical habitat also affects the species. Even in situations when habitat may only seasonally be occupied by the species, such as in spawning tributaries, affects to critical habitat still will ultimately affect some aspect of the life history of the species despite temporal separation. We would anticipate only minor administrative costs associated with agencies or project proponents re-consulting on a previous conference report.

*What laws, conservation plans, or policies currently provide protection to the species and its habitat?*

- Recovery Plan - While not a regulatory document, the Recovery Plan describes conservation strategies and those actions that can be implemented to recover the Lost River sucker and shortnose sucker. These actions are carried out by a collection of agencies, land managers and owners, many of whom are members of the group of stakeholders involved in the development of the Recovery Plan (see Stakeholder list in the Recovery Plan).
- Spotlight Species Action Plans – Developed by the Service, species action plans set conservation goals, identify how achievement of these goals are measured, and indicate those actions needed to reach the goals. A spotlight species action plan was developed for both suckers in 2009. These plans are designed to:
  - Identify sequential actions that, once implemented, move the species towards recovery
  - Funnel funding to on-the-ground projects that yield the biggest conservation benefit
  - Focus limited staff time on key projects that yield the biggest conservation benefit
  - Provide easily tracked and measured outcomes
  - Build momentum toward conservation objectives
- Research - Intensive spawning and migration studies, demography, and habitat research has been conducted throughout the range of the species, particularly in Clear Lake and its tributaries and Upper Klamath Lake and its tributaries, by several groups. The overall

goal of these efforts is to inform conservation and management actions. Collectively, this body of inventory, monitoring, and research has provided sound quantitative data addressing key questions relative to the recovery and conservation of the Lost River and shortnose sucker, which helps to frame the protection and conservation needed while implementing projects and working towards recovery goals.

- Federal Land Policy and Management Act - The Federal Land Policy and Management Act of 1976 requires that “. . . the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that . . . will preserve and protect certain public lands in their natural condition; (and ) that will provide food and habitat for fish and wildlife . . .” Furthermore, it is the policy of the Bureau of Land Management “to manage habitat with emphasis on ecosystems to ensure self-sustaining populations and a natural abundance and diversity of wildlife, fish, and plant resources on public lands” (BLM manual 6500.06).
- National Forest Management Act - The National Forest Management Act of 1976 directs that the National Forest System “...where appropriate and to the extent practicable, will preserve and enhance the diversity of plant and animal communities.” Additionally, sec. 219.12(g) requires the maintenance of viable populations of native vertebrates in National Forests.
- Clean Water Act - Congress passed the Federal Water Pollution Control Act Amendments of 1972 and the Clean Water Act (CWA) of 1977 to provide for the restoration and maintenance of the chemical, physical, and biological integrity of the nation’s lakes, streams, and coastal waters. Primary authority for the implementation and enforcement of the CWA now rests with the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (COE). In addition to the measures authorized before 1972, the CWA implements a variety of programs, including: Federal effluent limitations and state water quality standards, permits for the discharge of pollutants and dredged and fill materials into navigable waters, and enforcement mechanisms.
- Fish and Wildlife Coordination Act - The amendments enacted in 1946 require consultation with the Fish and Wildlife Service and the fish and wildlife agencies of States where the “waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted . . . or otherwise controlled or modified” by any agency under a Federal permit or license. Consultation is to be undertaken for the purpose of “preventing loss of and damage to wildlife resources.”
- National Environmental Policy Act - The National Environmental Policy Act (NEPA) requires federal agencies to integrate environmental values into their decision making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions.
- The 1997 National Wildlife Refuge System Improvement Act (1997 Improvement Act) - This Act amends the National Wildlife Refuge System Administration Act of 1966 serves as the “organic act” for the National Wildlife Refuge System (NWRS) and provides comprehensive legislation describing how the NWRS should be managed and used by the public. The 1997 Improvement Act directs the USFWS to manage the National Wildlife Refuge System (System) as a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources

and their habitats within the United States for the benefit of present and future generations of Americans. Each refuge shall be managed to fulfill the mission of the System, as well as the specific purposes for which that refuge was established. The main components of the 1997 Improvement Act include:

- A strong and singular wildlife conservation mission for the NWRS
- Recognition of six priority public uses of the NWRS (hunting, fishing, wildlife observation, photography, environmental education, and interpretation)
- A requirement that the Secretary of Interior maintain the biological integrity, diversity, and environmental health of NWRS lands
- A new process for determining compatible uses on National Wildlife Refuges
- A requirement to prepare a Comprehensive Conservation Plan for each refuge by 2012
- California Endangered Species Act - The **California Endangered Species Act** states that all native species of fishes, amphibians, reptiles, birds, mammals, invertebrates, and plants, and their habitats, threatened with extinction and those experiencing a significant decline which, if not halted, would lead to a threatened or endangered designation, will be protected or preserved. The Department will work with all interested persons, agencies and organizations to protect and preserve such sensitive resources and their habitats.
- State of Oregon Wildlife Policy - It is the policy of the State of Oregon that wildlife shall be managed to prevent serious depletion of any indigenous species and to provide the optimum recreational and aesthetic benefits for present and future generations of the citizens of this state.
- Other Listed Species – Bull trout are listed as threatened under the Endangered Species Act and its designated critical habitat overlaps the habitat used by the Lost River sucker and shortnose sucker in Unit 1 (specifically, Agency Lake and the lower Wood River).
- Water Adjudication - The completion of the water adjudication process for Klamath Basin in Oregon is expected in 2012, providing for more efficient water management in the Klamath River Basin and more opportunities to enhance water quantity and quality in habitats occupied by suckers.

*What types of project modifications are currently recommended by the Service to avoid jeopardy?*

- Reduce effects of adverse water quality and habitat loss
- Reduce entrainment of suckers at Link River Dam and associated hydropower intake bays
- Maintain access to habitat through managed lake elevation at Clear Lake Reservoir
- Develop a dissolved oxygen risk assessment model for Upper Klamath Lake and incorporate results into project management
- Assess and manage Upper Klamath Lake sucker water quality refuge areas
- Assess ongoing sucker population monitoring and implement needed improvements; develop Annual assessment report
- Sucker die-off monitoring and assessment
- Assess and implement methods to reduce entrainment of larval suckers
- Assess and implement methods to reduce entrainment of juvenile, subadult, and adult suckers at project diversions

- Analyze risk to sucker populations from multiple dry and critically dry years and develop management plan to reduce that risk

*What recommendations will the Service make during a section 7 consultation that considers both jeopardy and adverse modification?*

All proposed critical habitat is occupied so both jeopardy and adverse modification would be considered during consultation. Therefore, a proposed action that affects critical habitat also affects the species. Even in cases where habitat may be seasonally occupied by the species, affects to critical habitat still will ultimately affect some aspect of the life history of the species. Therefore, we do not anticipate any differences in the recommendation for jeopardy versus adverse modification and the same examples listed above would apply in these instances.

**Will the designation provide new information to stakeholders that result in different behavior?**

All of the areas being proposed for designation were previously identified as habitat for these species in the 1994 proposed rule. The current proposed rule refines the ecological importance of certain areas proposed as being essential for conservation; the previous rule encompassed the entire sucker distribution.

*Are Federal agencies (Action agencies) or project proponents more likely to consult under section 7 or to pursue habitat conservation plans (HCPs) under section 10 after the designation of critical habitat?*

No, because designation would occur in only in occupied habitat and critical habitat has been proposed since 1994. Action agencies have been consulting on the species since they became listed in 1988 and conferencing on proposed critical habitat since 1994. Thus, we do not anticipate that action agencies or project proponents would be more likely to pursue either as a result of critical habitat designation because they have been complying with the Endangered Species Act since those dates.

*Will local land use or resource agencies view designated critical habitat differently when making permitting or other decisions?*

We anticipate that local land use or resource agencies will not view designated critical habitat differently when making permitting or other decisions. This is because these agencies that have dealt with permitting or other decisions in the past have had to take into account proposed critical habitat since it was first designated in 1994. Further, they have dealt with a greater expanse of critical habitat since the 1994 proposed rule included 100 year floodplains of rivers and streams; this revised rule includes only bankfull width (or full pool for lakes and reservoirs). With the recently proposed critical habitat, it is likely that these agencies may not be required to contend with as many permitting issues as there is approximately 73% less habitat being proposed now as compared to 1994. Absent proposed critical habitat from 1994, all currently proposed critical habitat is occupied by the species and, as such, we do not anticipate any changes in behavior for federal or non-federal landowners.

In the 2011 proposal for critical habitat, we only proposed areas for designation that are occupied by the species. So, in the absence of critical habitat, land use or resource agencies would still have to consider or examine the effects to the species from their action. Therefore, we would not

anticipate a change in their views or behavior because they would still be going through the regulatory process with or without the presence of critical habitat on the landscape.

**How much additional administrative effort will the Service expend to address adverse modification in its section 7 consultations?**

We would anticipate a minor increase in overall consultation workload and administrative efforts to address adverse modification (see consultation history for previous workload by year). Some of the increased efforts would be tempered by the fact that we have such a long history of consultation on these species, have been conferencing with federal agencies on proposed critical habitat since 1994, and we have a valuable recovery plan from which to draw. This situation will likely make any new consultations that would result from the proposal of new critical habitat areas relatively straightforward. Our experience provides the Service and Federal action agencies some certainty in what to expect under consultations both for analysis and avoidance of jeopardy and adverse modifications. Overall, however, we do not anticipate a substantial number of consultations that would result in adverse modification and, therefore, we do not anticipate a substantial increase in administrative effort to work on measures to avoid adverse modification.