IEc

ECONOMIC ANALYSIS OF CRITICAL HABITAT DESIGNATION FOR THE LOUISIANA BLACK BEAR

Final | January 29, 2009

prepared for:

U.S. Fish and Wildlife Service

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EXECUTIVE SUMMARY

1. The purpose of this report is to identify and analyze the potential economic impacts resulting from the proposed critical habitat designation for the Louisiana black bear (*Ursus americanus luteolus* hereafter, "bear"). This report was prepared by Industrial Economics, Incorporated (IEc) under contract to the U.S. Fish and Wildlife Service (Service).

2. On May 6, 2008, the Service published a proposed rule to designate critical habitat for the bear.[1] This proposed rule also rescinds critical habitat that was proposed in 1993 but never designated. The three proposed critical habitat units cover approximately 1,330,000 acres, spanning parts of 15 parishes in Louisiana. The Service proposes to exclude from critical habitat all permanent easements within the National Resources Conservation Service (NRCS) Wetlands Restoration Program (WRP). Exhibit ES-1 presents the distribution of land ownership in the land proposed for critical habitat designation (the "study area").

3. This analysis describes economic impacts of bear conservation efforts associated with the following categories of activity:

   - Oil and Natural Gas Exploration and Mining;
   - Species Management;
   - Residential and Recreational Development;
   - Agriculture and Transportation; and
   - Silviculture.

4. The largest post-designation baseline and incremental economic impacts are associated with project modifications to drilling new oil and gas wells. Based on the consultation history, this analysis forecasts that, if new wells are drilled in bear habitat, some operators may have to re-locate their desired surface drilling location to avoid impacting that habitat. Such project modifications would result in substantial additional costs to these operators. Some of these potential costs are incremental (i.e., they would not occur absent this rulemaking); specifically, these costs are projected to result from application of existing bear conservation measures to non-breeding habitat (as defined in the proposed rule).

5. Exhibit ES-2 summarizes the total forecast potential impacts of the designation. Detailed pre- and post-designation baseline impacts of existing regulations and post-designation

[1] 73 *FR* 25354-25395.

incremental impacts of proposed critical habitat are presented by unit in Exhibits ES-3 through Exhibit ES-5.[2] These impacts are presented separately for areas considered for exclusion.

6. The activities considered in this report are ranked by post-designation baseline impacts in Exhibit ES-6 and by incremental impacts in Exhibit ES-7. The text reports impacts assuming a discount rate of seven percent; the tables also report impacts using an alternative rate of three percent. Detailed costs by time period and activity are presented throughout the report applying a discount rate of seven percent; the report tables are repeated in Appendix B applying a discount rate of three percent. Appendix C presents undiscounted streams of impacts.

EXHIBIT ES-1 LAND OWNERSHIP IN PROPOSED CRITICAL HABITAT

LAND OWNERSHIP					
UNIT	**UNIT NAME**	**FEDERAL**	**STATE**	**PRIVATE**	**TOTAL**
1	Tensas River Basin	99,955	119,276	458,025	677,256
2	Upper Atchafalaya River Basin	15,765	83,314	336,148	435,227
3	Lower Atchafalaya River Basin	7,505	2,003	209,644	219,152
Subtotal		**123,225**	**204,593**	**1,003,817**	**1,331,635**
CONSIDERED FOR EXCLUSION[2]					
1	Tensas River Basin	0	0	54,800	54,800
2	Upper Atchafalaya River Basin	0	0	1,550	1,550
3	Lower Atchafalaya River Basin	0	0	0	0
Subtotal		**0**	**0**	**56,400**	**56,400**
Total		**123,225**	**204,593**	**1,060,217**	**1,388,035**

Notes:
(1) Total may not sum due to rounding.
(2) All of the acreage considered for exclusion is within Units 1 and 2, and enrolled in the Natural Resource Conservation Service's Wetlands Reserve Program with permanent easements.

[2] The "pre-designation" timeframe refers to the period from the bear's listing through the current proposed rule (ie., 1992 through 2008). The "post-designation" timeframe for this analysis is 2009 through 2028.

KEY FINDINGS
BASELINE IMPACTS
The draft economic analysis estimates the present value of post-designation baseline impacts for the next 20 years to be between $9.0 million and $19.0 million, discounted at three percent, or $6.7 million to $14.0 million, discounted at seven percent. The majority of these impacts are forecast to occur as the result of having to move new oil and natural gas well-heads, and directionally drill, in order to avoid existing or potential denning trees. Cost impacts from these project modifications constitute more than 27 percent of total forecast impacts at the low end and more than 64 percent of total forecast estimated impacts at the high end. This range of values is the result of uncertainty in the number of new wells that are likely to be drilled in the next 20 years, and in the forecast costs to move each well-head and directionally drill.
INCREMENTAL IMPACTS
The draft economic analysis estimates that the present value, post-designation incremental impact for the next 20 years is between $1.5 million and $8.6 million, discounted at three percent, or $1.1 million to $6.3 million, discounted at seven percent. All of these projected incremental impacts are due to the potential for project modifications requiring re-location of new oil and natural gas well-heads, and the associated need to directionally drill, in order to avoid existing or potential denning trees within areas proposed for critical habitat designation. These impacts are considered to be incremental because the areas they are forecast to take place in non-breeding areas within proposed critical habitat. The proposed rule defines breeding habitats as areas where the bears are resident; non-breeding habitat is included within proposed critical habitat to allow connectivity between breeding habitat areas, and to allow the species room to grow. This analysis forecasts that, if non-breeding habitat was not designated as critical habitat, there would be no project modifications for oil and gas drilling in those areas.
AREAS CONSIDERED FOR EXCLUSION
The areas considered for exclusion are lands enrolled in permanent easements within the Natural Resource Conservation Service Wetlands Restoration Program (WRP). ● As part of the WRP program, this land has permanent conservation easements that are beneficial to black bear conservation. There are 54,800 acres enrolled in the WRP in Unit 1 and 1,550 acres in Unit 2 . ● The present value of forecast economic impacts for this program in these areas is $98.7 million, discounted at three percent, and $73 million discounted at seven percent. This is the cost of buying perpetual conservation easements through WRP. This practice is unlikely to change as a result of designation (i.e., these are baseline, not incremental, impacts). ● There is widespread concern among conservation organizations that critical habitat designation may reduce voluntary enrollment in WRP, thus reducing the benefits of that program.

EXHIBIT ES-2 SUMMARY OF POTENTIAL POST-DESIGNATION IMPACTS (2009 - 2028, 2008 DOLLARS)

	THREE PERCENT DISCOUNT RATE		SEVEN PERCENT DISCOUNT RATE	
	LOW SCENARIO	HIGH SCENARIO	LOW SCENARIO	HIGH SCENARIO
IMPACTS ATTRIBUTED TO EXISTING, BASELINE REGULATIONS				
Total Present Value Impacts	$9,070,000	$19,000,000	$6,710,000	$14,000,000
Annualized Impacts	$592,000	$1,240,000	$592,000	$1,240,000
CONSIDERED FOR EXCLUSION				
Total Present Value Impacts	$98,700,000		$73,000,000	
Annualized Impacts	$6,440,000		$6,440,000	
IMPACTS ATTRIBUTED INCREMENTALLY TO CRITICAL HABITAT DESIGNATION (THE PROPOSED RULE)				
Total Present Value Impacts	$1,530,000	$8,550,000	$1,130,000	$6,330,000
Annualized Impacts	$99,600	$558,000	$99,600	$558,000
CONSIDERED FOR EXCLUSION				
Total Present Value Impacts	$0		$0	
Annualized Impacts	$0		$0	

7. Exhibit ES-3 presents estimated pre-designation baseline impacts by unit. The majority of pre-designation impacts in areas not considered for exclusion were due to project modifications for oil and gas drilling. All of the pre-designation impacts in areas considered for exclusion were from the purchase of permanent conservation easements under the WRP.

8. Exhibit ES-4 presents potential post-designation baseline impacts by unit. The most substantial baseline impacts are in Unit 3 (Lower Atchafalaya), followed by Unit 1 (Tensas). The most substantial baseline impacts for areas considered for exclusion are in Unit 1 (Tensas).

9. Exhibit ES-5 presents potential post-designation incremental impacts by unit. The most substantial incremental impacts are in Unit 2 (Upper Atchafalya), followed by Unit 1 (Tensas).

10. Exhibit ES-6 ranks the impacts by activity based on forecast post-designation baseline impacts. Potential impacts to species management activities constitute the majority of impacts in the low end estimation scenario (more than 52 percent). The majority of these species management impacts are due to forecast purchases of conservation easements under the WRP program. Oil and gas development project modifications have the second largest relative impacts, at 27 percent of the total. Most of the rest of the forecast potential impacts (19 percent) are associated with programs designed to ease tensions between development and black bear conservation.

11. The principle difference between the high and low end estimates is that a larger number of new wells are forecast to be drilled in the high end scenario, and projected well re-

location costs twice as much. The sixth column of Exhibit ES-6 shows the activity rankings for the high end estimate, where oil and natural gas mining constitute the majority of impacts (65 percent). Species management impacts are associated with 25 percent of the projected impacts, and residential development impacts nine percent. Species management costs are the only post-designation baseline impacts for areas considered for exclusion.

12. Exhibit ES-7 shows that the only incremental impacts that are forecast are due to potential project modifications on oil and gas well drilling. There are no incremental impacts in areas considered for exclusion.

13. Exhibit ES-8 provides an overview map of the three proposed critical habitat units. Exhibit ES-9, ES-10, and ES-11 proved greater detail about the location of Unit 1 (Tensas), Unit 2 (Upper Atchafalaya), and Unit 3 (Lower Atchafalaya), respectively.

KEY SOURCES OF UNCERTAINTY

14. The key sources of uncertainty for this analysis are associated with forecasts of the number of new oil and natural gas wells in the study area in the future, and the costs of project modifications for these resource development activities. To address this uncertainty, the economic analysis presents both low and high end estimates. To date, there have been no known new wells drilled on WRP enrolled lands and there is insufficient publicly available information to identify if any existing oil and natural gas fields are on WRP lands.[3] However, if new wells are drilled on WRP lands, the amount that this analysis would underestimate impacts in WRP lands and overestimate impacts to non-WRP lands is quite modest.

[3] Personal communication with Biologist, Lafayette Fish and Wildlife Service Office, October 29, 2008.

EXHIBIT ES-3 PRE-DESIGNATION BASELINE IMPACTS FOR ALL ACTIVITIES BY UNIT (1992 – 2008, 2008 DOLLARS)

UNIT	UNIT NAME	TOTAL PRESENT VALUE (THREE PERCENT DISCOUNT RATE)		TOTAL PRESENT VALUE (SEVEN PERCENT DISCOUNT RATE)	
		LOW SCENARIO	HIGH SCENARIO	LOW SCENARIO	HIGH SCENARIO
1	Tensas	$4,460,000	$6,140,000	$6,360,000	$8,830,000
2	Upper Atchafalaya	$3,550,000	$4,230,000	$5,060,000	$6,060,000
3	Lower Atchafalaya	$9,570,000	$15,400,000	$13,900,000	$22,500,000
Sub-total		**$17,600,000**	**$25,800,000**	**$25,300,000**	**$37,400,000**
CONSIDERED FOR EXCLUSION					
1	Tensas	$49,400,000	$49,400,000	$58,000,000	$58,000,000
2	Upper Atchafalaya	$1,400,000	$1,400,000	$1,640,000	$1,640,000
Sub-total		**$50,800,000**	**$50,800,000**	**$59,600,000**	**$59,600,000**
TOTAL		**$68,400,000**	**$76,600,000**	**$84,900,000**	**$97,000,000**

EXHIBIT ES-4 POTENTIAL POST-DESIGNATION BASELINE IMPACTS FOR ALL ACTIVITIES, BY UNIT (2009 – 2028, 2008 DOLLARS)

UNIT	UNIT NAME	TOTAL PRESENT VALUE (THREE PERCENT DISCOUNT RATE)		TOTAL PRESENT VALUE (SEVEN PERCENT DISCOUNT RATE)		ANNUALIZED (THREE PERCENT DISCOUNT RATE)		ANNUALIZED (SEVEN PERCENT DISCOUNT RATE)	
		LOW SCENARIO	HIGH SCENARIO	LOW SCENARIO	HIGH SCENARIO	LOW SCENARIO	HIGH SCENARIO	LOW SCENARIO	HIGH SCENARIO
1	Tensas	$2,590,000	$4,600,000	$1,920,000	$3,400,000	$169,000	$300,000	$169,000	$300,000
2	Upper Atchafalaya	$2,570,000	$3,360,000	$1,900,000	$2,490,000	$167,000	$219,000	$167,000	$219,000
3	Lower Atchafalaya	$3,910,000	$11,000,000	$2,890,000	$8,140,000	$255,000	$718,000	$255,000	$718,000
	Sub-total	**$9,070,000**	**$19,000,000**	**$6,710,000**	**$14,000,000**	**$592,000**	**$1,240,000**	**$592,000**	**$1,240,000**
CONSIDERED FOR EXCLUSION*									
1	Tensas	$96,000,000	$96,000,000	$71,000,000	$71,000,000	$6,260,000	$6,260,000	$6,260,000	$6,260,000
2	Upper Atchafalaya	$2,710,000	$2,710,000	$2,000,000	$2,000,000	$177,000	$177,000	$177,000	$177,000
	Sub-total	**$98,700,000**	**$98,700,000**	**$73,000,000**	**$73,000,000**	**$6,440,000**	**$6,440,000**	**$6,440,000**	**$6,440,000**
TOTAL		**$107,770,000**	**$117,700,000**	**$79,710,000**	**$87,000,000**	**$7,032,000**	**$7,680,000**	**$7,032,000**	**$7,680,000**

Note: Totals may not sum due to rounding.
* These costs represent baseline impacts associated with areas being considered for exclusion.

EXHIBIT ES-5 POTENTIAL POST-DESIGNATION INCREMENTAL IMPACTS FOR ALL ACTIVITIES BY UNIT (2009 – 2028, 2008 DOLLARS)

UNIT	UNIT NAME	CENSUS TRACT (2000)	TOTAL PRESENT VALUE (THREE PERCENT DISCOUNT RATE)		TOTAL PRESENT VALUE (SEVEN PERCENT DISCOUNT RATE)		ANNUALIZED (THREE PERCENT DISCOUNT RATE)		ANNUALIZED (SEVEN PERCENT DISCOUNT RATE)	
			LOW SCENARIO	HIGH SCENARIO	LOW SCENARIO	HIGH SCENARIO	LOW SCENARIO	HIGH SCENARIO	LOW SCENARIO	HIGH SCENARIO
PROPOSED FOR DESIGNATION										
1	Tensas		$582,000	$3,340,000	$430,000	$2,470,000	$38,000	$218,000	$38,000	$218,000
2	Upper Atchafalaya		$856,000	$4,830,000	$633,000	$3,570,000	$55,900	$315,000	$55,900	$315,000
3	Lower Atchafalaya		$88,500	$382,000	$65,500	$282,000	$5,780	$24,900	$5,780	$24,900
TOTAL			**$1,530,000**	**$8,550,000**	**$1,130,000**	**$6,330,000**	**$99,600**	**$558,000**	**$99,600**	**$558,000**

Note: Total may not sum due to rounding

EXHIBIT ES-6 ACTIVITIES RANKED BY TOTAL PRESENT VALUE POTENTIAL POST-DESIGNATION BASELINE IMPACTS (2009 – 2028, 2008 DOLLARS)

ACTIVITY	LOW SCENARIO				ACTIVITY	HIGH SCENARIO			
	THREE PERCENT DISCOUNT RATE		SEVEN PERCENT DISCOUNT RATE			THREE PERCENT DISCOUNT RATE		SEVEN PERCENT DISCOUNT RATE	
	ESTIMATED IMPACTS	PERCENT OF TOTAL	ESTIMATED IMPACTS	PERCENT OF TOTAL		ESTIMATED IMPACTS	PERCENT OF TOTAL	ESTIMATED IMPACTS	PERCENT OF TOTAL
Species Management	$4,780,000	52.7%	$3,540,000	52.7%	Oil & Gas	$12,300,000	64.6%	$9,070,000	64.6%
Oil & Gas	$2,500,000	27.6%	$1,850,000	27.6%	Species Management	$4,780,000	25.2%	$3,540,000	25.2%
Development	$1,720,000	18.9%	$1,270,000	18.9%	Development	$1,720,000	9.1%	$1,270,000	9.1%
Agriculture	$71,400	0.8%	$52,800	0.8%	Agriculture	$209,000	1.1%	$155,000	1.1%
Transportation	$0	0.0%	$0	0.0%	Transportation	$0	0.0%	$0	0.0%
Forestry	$0	0.0%	$0	0.0%	Forestry	$0	0.0%	$0	0.0%
Total	**$9,070,000**		**$6,710,000**			**$19,000,000**		**$14,000,000**	
CONSIDERED FOR EXCLUSION									
Species Management	$98,700,000	100.0%	$73,000,000	100.0%	Species Management	$98,700,000	100.0%	$73,000,000	100.0%
TOTAL	**$98,700,000**		**$73,000,000**			**$98,700,000**		**$73,000,000**	

Note: Totals may not sum due to rounding.

EXHIBIT ES-7 ACTIVITIES RANKED BY LEVEL OF TOTAL PRESENT VALUE POTENTIAL POST-DESIGNATION INCREMENTAL IMPACTS (2009 – 2028, 2008 DOLLARS)

ACTIVITY	LOW END SCENARIO				HIGH END SCENARIO			
	DISCOUNTED AT THREE PERCENT		DISCOUNTED AT SEVEN PERCENT		DISCOUNTED AT THREE PERCENT		DISCOUNTED AT SEVEN PERCENT	
	ESTIMATED IMPACTS	PERCENT OF TOTAL	ESTIMATED IMPACTS	PERCENT OF TOTAL	ESTIMATED IMPACTS	PERCENT OF TOTAL	ESTIMATED IMPACTS	PERCENT OF TOTAL
PROPOSED FOR DESIGNATION								
Oil & Gas	$1,530,000	100.0%	$1,130,000	100.0%	$8,550,000	100.0%	$6,330,000	100.0%
TOTAL	**$1,530,000**		**$1,130,000**		**$8,550,000**		**$6,330,000**	
Note: Totals may not sum due to rounding.								

EXHIBIT ES-8 PROPOSED CRITICAL HABITAT UNITS 1-3

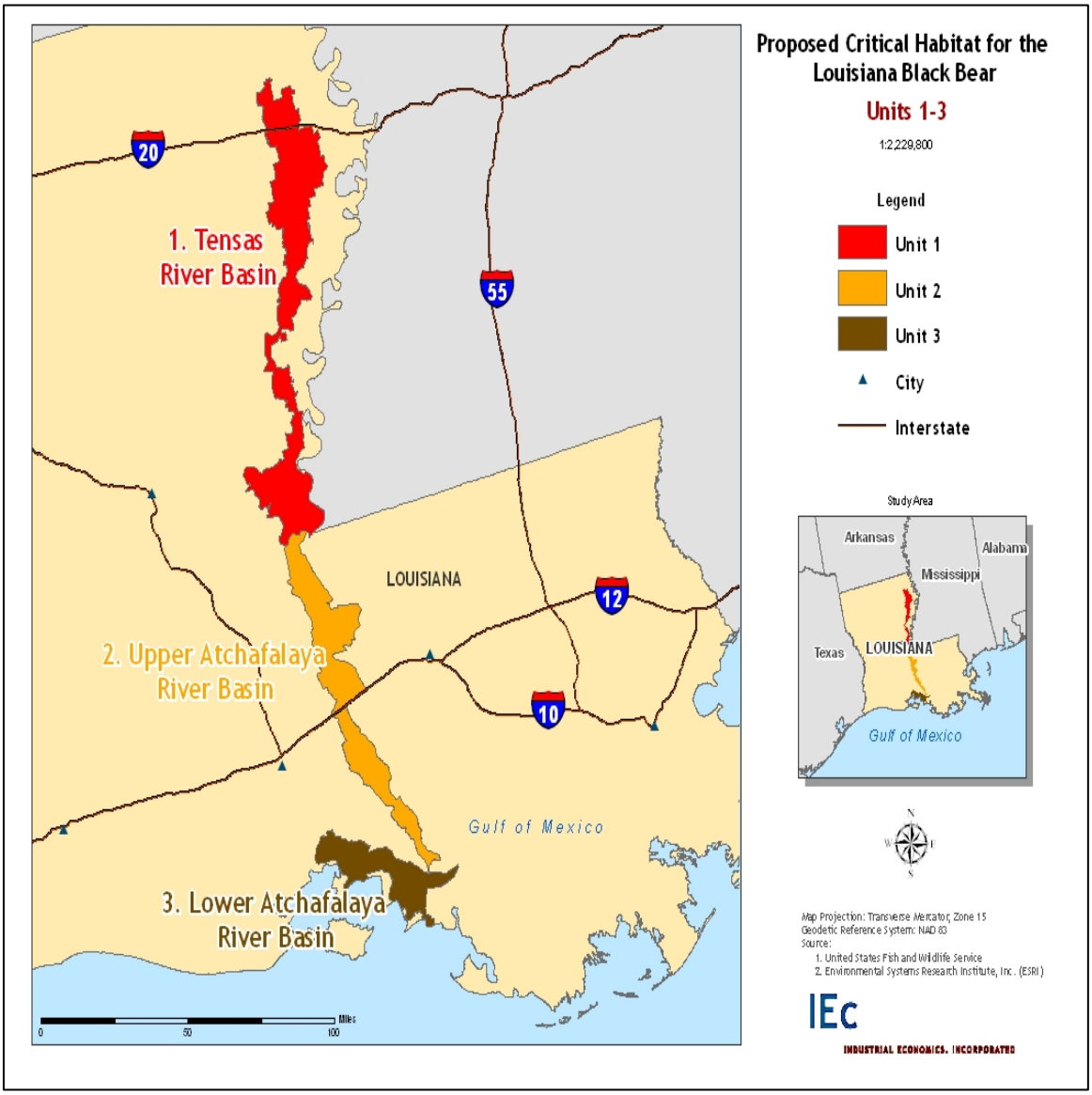
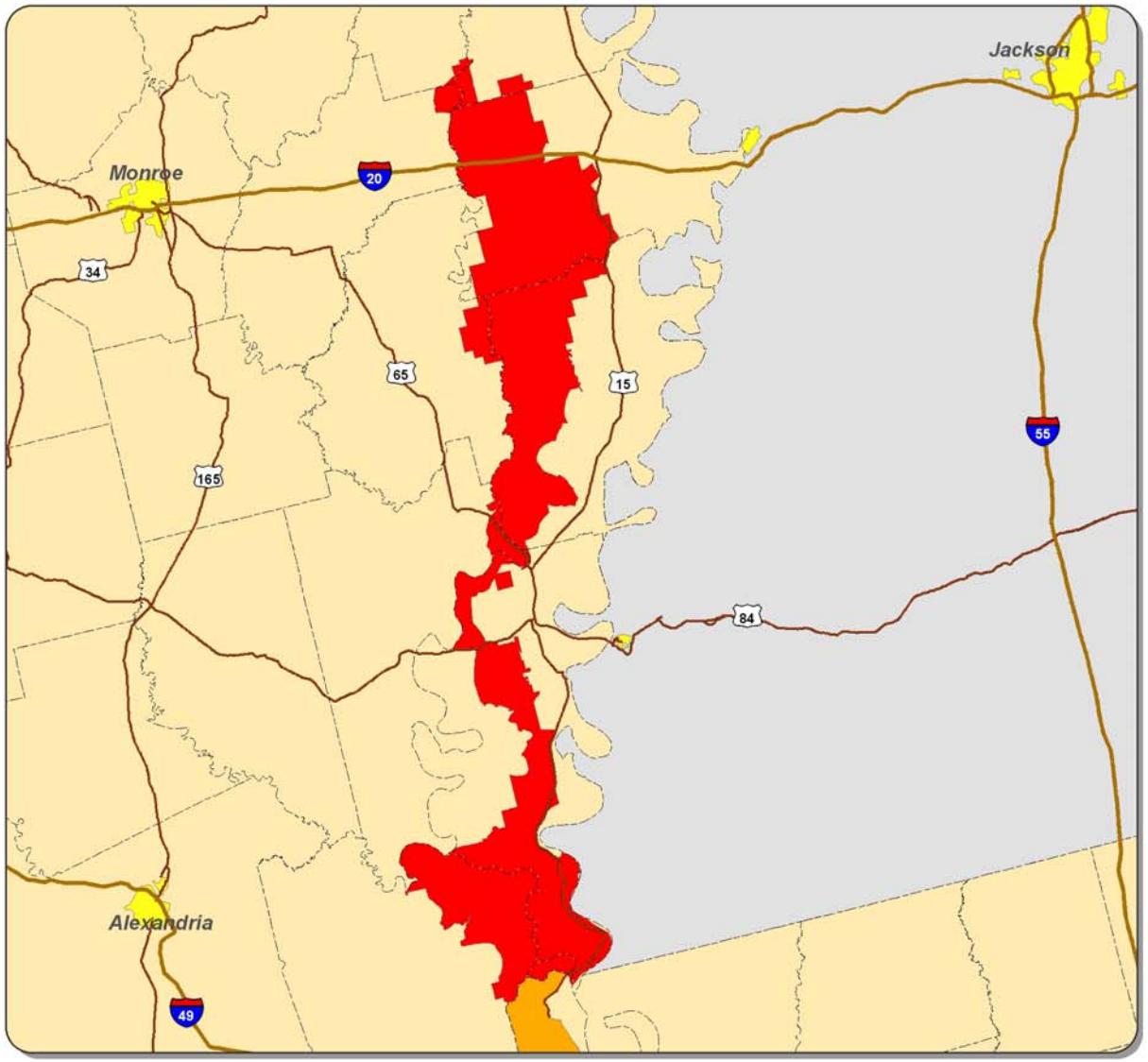


EXHIBIT ES-9 PROPOSED UNIT 1: TENSAS RIVER BASIN



Proposed Critical Habitat for Louisiana Black Bear

1:1,219,772

Unit 1: Tensas River Basin

- Highways
- County Boundary
- Urban Areas

Proposed Units

- Unit 1
- Unit 2
- Unit 3

State

- Louisiana
- Neighboring States

Miles
0 10 20

PROPOSED UNIT	LANDOWNERS (ACRES)			
	FEDERAL	STATE	PRIVATE	TOTAL
1. Tensas River Basin	99,95	119,276	458,025	677,256

Source:
1. US Fish and Wildlife Service.
2. Environmental Systems Research Institute, Inc. (ESRI), Redlands, California.

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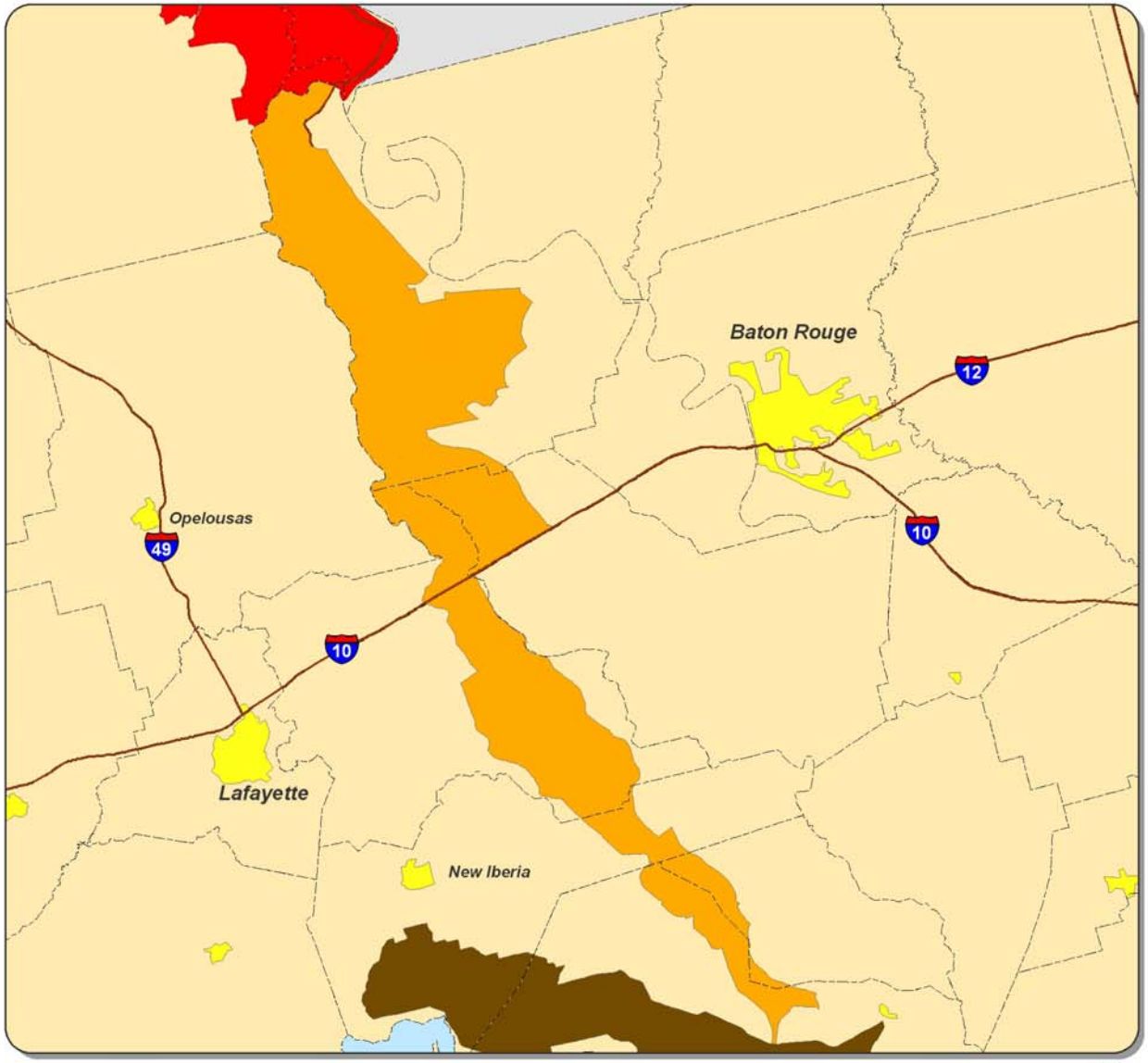
EXHIBIT ES-10 PROPOSED UNIT 2: UPPER ATCHAFALAYA RIVER BASIN



Proposed Critical Habitat for Louisiana Black Bear

1:878,575

Unit 2: Upper Atchafalaya River Basin

- Highway
- County Boundary
- Urban Areas

Proposed Units

- Unit 1
- Unit 2
- Unit 3

State

- Louisiana
- Neighboring States

PROPOSED UNIT	LANDOWNERS (ACRES)			
	FEDERAL	STATE	PRIVATE	TOTAL
2. Upper Atchafalaya River Basin	15,765	83,314	336,148	435,227

Source:
1. US Fish and Wildlife Service.
2. Environmental Systems Research Institute, Inc. (ESRI), Redlands, California.

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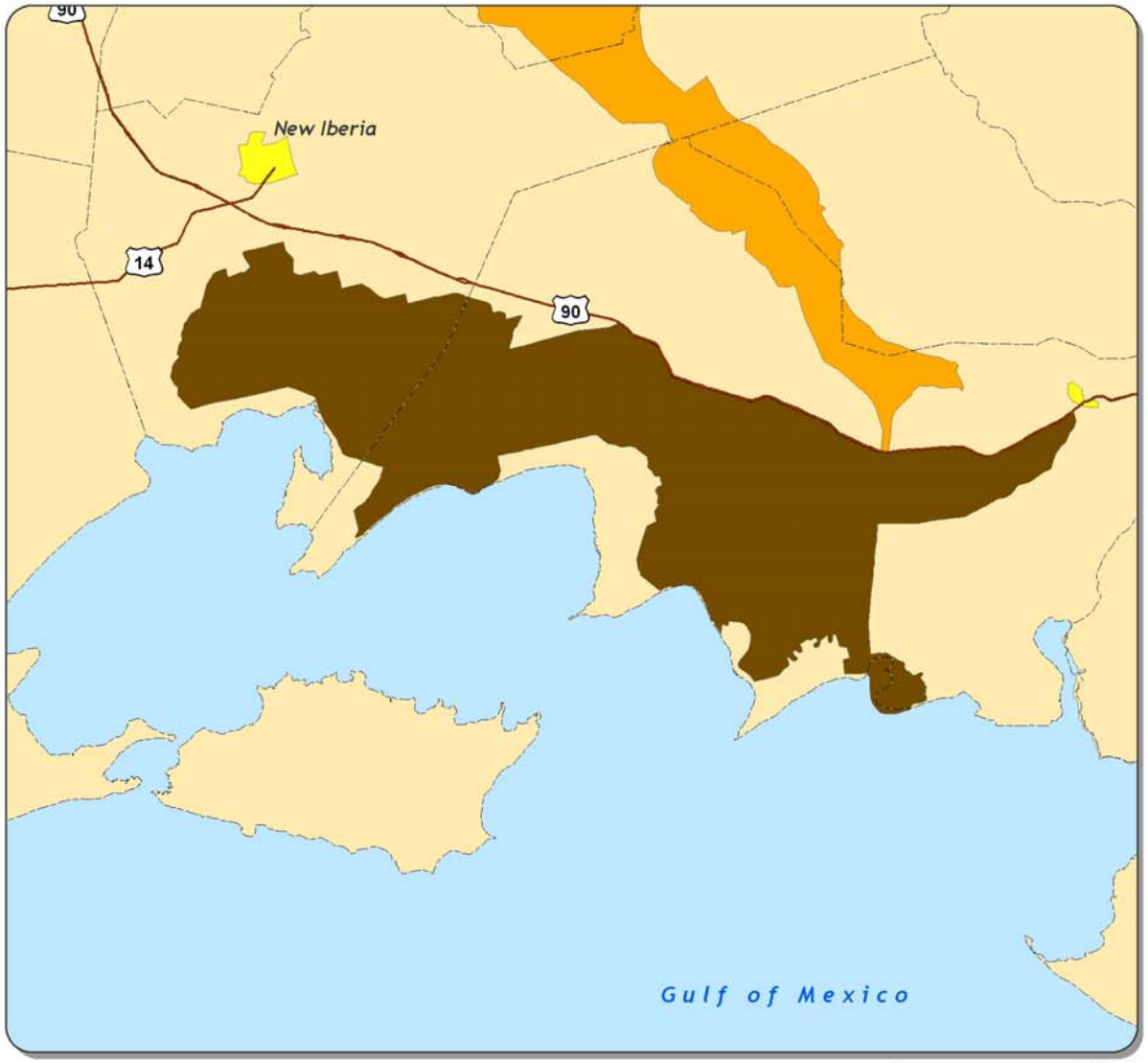
EXHIBIT ES-11 PROPOSED UNIT 3: LOWER ATCHAFALAYA RIVER BASIN



Proposed Critical Habitat for Louisiana Black Bear

1:506,447

Unit 3: Lower Atchafalaya River Basin

- Highway
- County Boundary
- Urban Areas

Proposed Units

- Unit 1
- Unit 2
- Unit 3

State

- Louisiana
- Neighboring States

Miles
0 5 10

PROPOSED UNIT	LANDOWNERS (ACRES)			
	FEDERAL	STATE	PRIVATE	TOTAL
3. Lower Atchafalaya River Basin	7,505	2,003	209,644	219,152

Source:
1. US Fish and Wildlife Service.
2. Environmental Systems Research Institute, Inc. (ESRI), Redlands, California.

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CHAPTER 1 | FRAMEWORK FOR THE ANALYSIS

1. The purpose of this report is to estimate the economic impact of the proposed rule designating critical habitat for the Louisiana black bear (bear). This analysis examines the impacts of restricting or modifying specific land uses or activities for the benefit of the species and its habitat within the areas considered for critical habitat designation. This analysis employs "without critical habitat" and "with critical habitat" scenarios. The "without critical habitat" scenario represents the baseline for the analysis, considering protections already accorded the bear; 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 bear. The analysis looks retrospectively at baseline impacts incurred since the species was listed, and forecasts both baseline and incremental impacts likely to occur after the proposed critical habitat is finalized.

2. This Chapter describes the framework for the analysis. First, it describes the case law that led to the selection of the framework applied in this report. It then describes, in economic terms, the general categories of economic effects that are the focus of regulatory impact analysis, including a discussion of both efficiency and distributional effects. Next, this Chapter describes the analytic framework used to measure these impacts in the context of critical habitat regulation, including the link between existing and critical habitat-related protection efforts and potential impacts, and the consideration of benefits. It concludes with a presentation of the information sources relied upon in the analysis and the structure of the report.

1.1 BACKGROUND

3. 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 regulatory action against a baseline, which it defines as the "best assessment of the way the world would look absent the proposed action."[4] 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

[4] OMB, "Circular A-4," September 17, 2003, available at http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf.

whether assessing the impacts of the Service's proposed regulations using this baseline approach is appropriate in the context of critical habitat designations.

4. 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.[5] 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]."[6]

5. 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.[7] 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,

> "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

[5] *New Mexico Cattle Growers Assn v. United States Fish and Wildlife Service*, 248 F.3d 1277 (10th Cir. 2001).

[6] *New Mexico Cattle Growers Assn v. United States Fish and Wildlife Service*, 248 F.3d 1277 (10th Cir. 2001).

[7] *Cape Hatteras Access Preservation Alliance v. Department of Interior,* 344 F. Supp. 2d 108 (D.D.C.); *Center for Biological Diversity v. United States Bureau of Land Management*, 422 F. Supp 2d 1115 (N.D. Cal. 2006).

designation, the world with the designation must be compared to the world without it.'"[8]

6. In order to address the divergent opinions of the courts and provide the most complete information to decision-makers, this economic analysis reports both:

   a. The baseline impacts of bear conservation from protections afforded the species absent critical habitat designation; and

   b. The estimated incremental impacts precipitated specifically by the designation of critical habitat for the species.

   Summed, these two types of impacts comprise the fully co-extensive impacts of bear conservation in areas considered for critical habitat designation.

7. Incremental effects of critical habitat designation are determined using the Service's December 9, 2004 interim guidance on "Application of the 'Destruction or Adverse Modification' Standard Under Section 7(a)(2) of the Endangered Species Act" and information from the Service regarding what potential consultations and project modifications may be imposed as a result of critical habitat designation over and above those associated with the listing.[9] Specifically, in *Gifford Pinchot Task Force v. United States Fish and Wildlife Service*, the Ninth Circuit invalidated the Service's regulation defining destruction or adverse modification of critical habitat, and the Service no longer relies on this regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat.[10] Under the statutory provisions of the Act, the Service determines destruction or adverse modification on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would remain functional to serve its intended conservation role for the species. A detailed description of the methodology used to define baseline and incremental impacts is provided later in this Chapter.

1.2 CATEGORIES OF POTENTIAL ECONOMIC EFFECTS OF SPECIES CONSERVATION

8. This economic analysis considers both the economic efficiency and distributional effects that may result from efforts to protect the bear and its habitat (hereinafter referred to collectively as "bear 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

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[8] *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.

[9] Director, U.S. Fish and Wildlife Service, Memorandum to Regional Directors and Manager of the California-Nevada Operations Office, Subject: Application of the "Destruction or Adverse Modification" Standard under Section 7(a)(2) of the Endangered Species Act, dated December 9, 2004.

[10] *Gifford Pinchot Task Force v. United States Fish and Wildlife Service*, 378 F.3d 1059 (9th Cir. 2004).

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 bear conservation efforts.

9. 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. The differences between economic efficiency effects and distributional effects, as well as their application in this analysis, are discussed in greater detail below.

1.2.1 EFFICIENCY EFFECTS

10. 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 bear 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.[11]

11. 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, such as the U.S. Bureau of Land Management, may enter into a 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 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.

12. 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

[11] 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.

economic efficiency (i.e., social welfare) can be measured by considering changes in producer and consumer surpluses in the market.

13. This analysis begins by measuring impacts associated with efforts undertaken to protect the bear and its habitat. As noted above, in some cases, compliance costs can provide a reasonable estimate of changes in economic efficiency. In bear habitat, oil and gas exploration activities are likely to experience the greatest impacts. However, the quantity and price of petroleum is not anticipated to be significantly affected. Instead, landowners within the units may experience losses in land value and oil and gas mining companies may experience compliance costs. Therefore measurable changes in consumer and producer surplus are not anticipated.

1.2.2 DISTRIBUTIONAL AND REGIONAL ECONOMIC EFFECTS

14. 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.[12] 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

15. This analysis considers how small entities, including small businesses, organizations, and governments, as defined by the Regulatory Flexibility Act, might be affected by future species conservation efforts.[13] 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.[14]

Regional Economic Effects

16. 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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[12] 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.

[13] 5 U.S.C. §§601 *et seq*.

[14] 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.

17. 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.

18. 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.

19. A regional analysis is performed for the costs of oil and natural gas project modifications that accompany drilling new wells. These costs are sufficient that they may cause some economic disturbance in the local economy. The analysis uses the IMPLAN regional analysis tool, and is presented in Section 3.1.5.

1.3 ANALYTIC FRAMEWORK AND SCOPE OF THE ANALYSIS

20. This analysis identifies those economic activities most likely to threaten the listed species and its habitat and, where possible, quantifies the economic impact to avoid or minimize such threats within the boundaries of the study area (the boundaries of the study area are discussed later in this Chapter).

21. This section provides a description of the methodology used to separately identify baseline impacts and incremental impacts stemming from the proposed designation of critical habitat for the bear. 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.

1.3.1 IDENTIFYING BASELINE IMPACTS

22. 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.

23. Baseline impacts 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.

- Section 7 of the 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. The portion of the administrative costs of consultations under the jeopardy standard, along with the impacts of project modifications resulting from consideration of this standard, are considered baseline impacts. Baseline administrative costs of section 7 consultation are summarized later in Exhibit 1-2.
- 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."[15] 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 the development and management of a property.[16] 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.

24. 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

[15] 16 U.S.C. 1532.

[16] U.S. Fish and Wildlife Service, "Endangered Species and Habitat Conservation Planning," August 6, 2002, accessed at http://endangered.fws.gov/hcp/.

efforts are considered to be baseline protections and costs associated with these efforts 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.

1.3.2 IDENTIFYING INCREMENTAL IMPACTS

25. This analysis separately quantifies the 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 due to existing required or voluntary conservation efforts being undertaken due to other Federal, State, and local regulations or guidelines.

26. 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 project modifications 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.

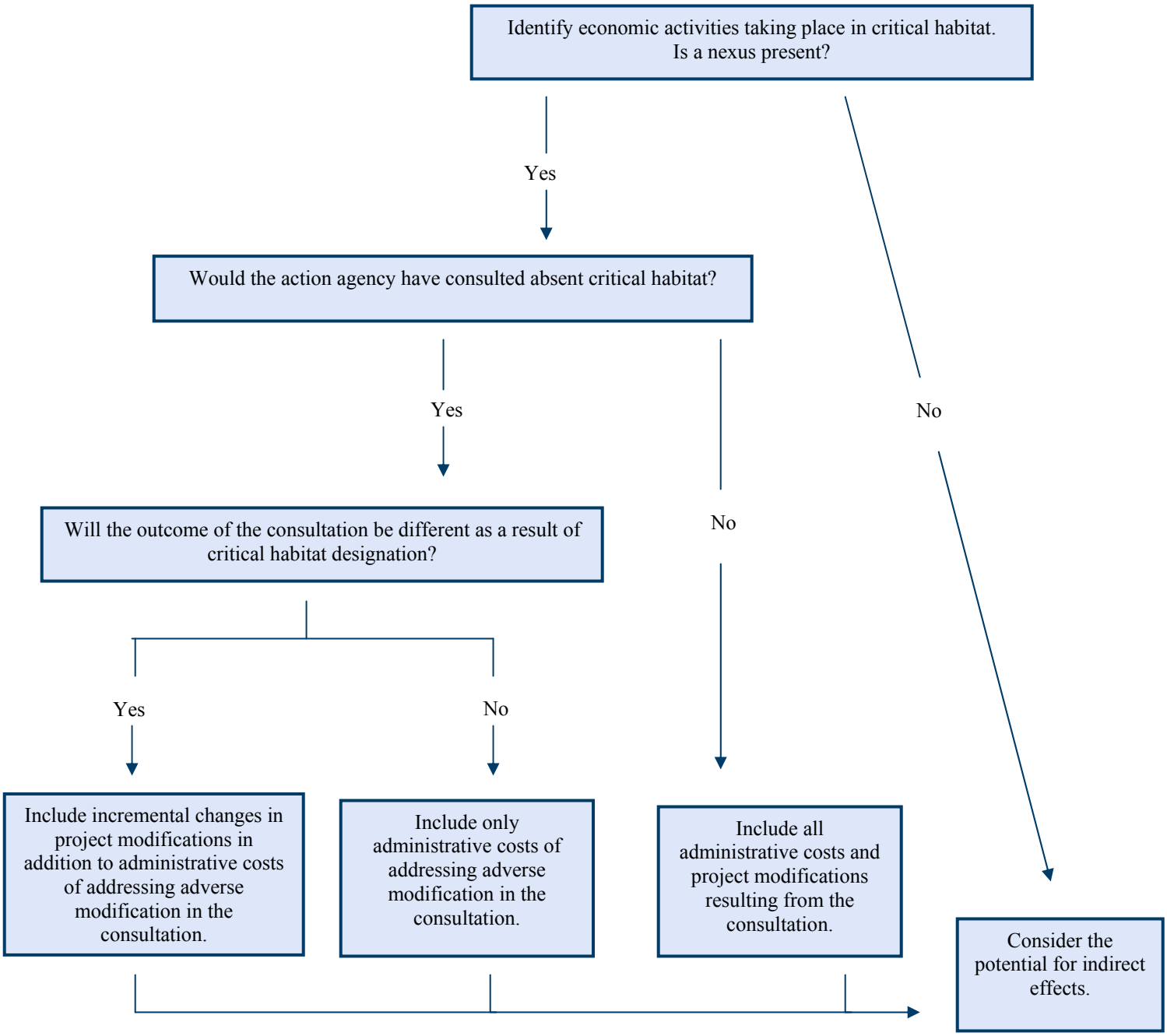
27. Exhibit 1-1 depicts the decision analysis regarding whether an impact should be considered incremental. The following sections describe this decision tree in detail.

28. Incremental impacts may be the direct compliance costs associated with additional effort for forecast consultations, reinitiated consultations, new consultations occurring specifically because of the designation, and additional project modifications that would not have been required under the jeopardy standard. Additionally, incremental impacts may include indirect impacts resulting from reaction to the potential designation of critical habitat (e.g., developing habitat conservation plans) 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 perceptional effects on markets.

Direct Impacts

29. 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 consultation; and 2) implementation of any project modifications requested by the Service through section 7 consultation to avoid or minimize potential destruction or adverse modification of critical habitat.

EXHIBIT 1-1 IDENTIFYING INCREMENTAL IMPACTS OF CRITICAL HABITAT DESIGNATION



Administrative Section 7 Consultation Costs

30. 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 jeopardize the continued existence of the 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.

31. 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 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 potential presence of the species 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 incremental consultations are considered incremental impacts of the designation.

32. 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 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.

33. Exhibit 1-2 provides estimated administrative consultation costs representing effort required for all types of consultation, including those that considered both adverse modification and jeopardy. To estimate the fractions of the total administrative consultation costs that are baseline and incremental, the following assumptions were applied.

- The greatest effort will be associated with consultations that consider both jeopardy and adverse modification. Depending on whether the consultation is precipitated by the listing or the critical habitat designation, part or all of the costs, respectively, will be attributed to the proposed rule.
- Efficiencies exist when considering both jeopardy and adverse modification at the same time (e.g., in staff time saved for project review and report writing), and therefore incremental administrative costs of considering adverse modification in consultations precipitated by the listing result in the least incremental effort, roughly one-quarter of the cost of the entire consultation. The remaining three-quarters of the costs are attributed to consideration of the jeopardy standard in the baseline scenario. This latter amount also represents the cost of a consultation that only considers adverse modification (e.g., an incremental consultation for activities in unoccupied critical habitat) and is attributed wholly to critical habitat.
- Incremental costs of the re-initiation of a previously completed consultation because of the critical habitat designation are assumed to be approximately half the cost of a consultation considering both jeopardy and adverse modification. This assumes that re-initiations are less time-consuming as the groundwork for the project has already been considered in terms of its effect on the species. However, because the previously completed effort must be re-opened, they are more costly than simply adding consideration of critical habitat to a consultation already underway.

EXHIBIT 1-2 RANGE OF ADMINISTRATIVE CONSULTATIONS COSTS (2008 DOLLARS)

BASELINE ADMINISTRATIVE COSTS OF CONSULTATION					
CONSULTATION TYPE	SERVICE	FEDERAL AGENCY	THIRD PARTY	BIOLOGICAL ASSESSMENT	TOTAL COSTS
NEW CONSULTATION CONSIDERING JEOPARDY (DOES NOT INCLUDE CONSIDERATION OF ADVERSE MODIFICATION)					
Technical Assistance	$405	n/a	$788	n/a	$1,130
Informal	$1,760	$2,250	$1,540	$1,500	$7,130
Formal	$3,980	$4,500	$2,630	$3,600	$15,000
Programmatic	$12,000	$9,940	n/a	$4,200	$26,100
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	$540	n/a	$1,050	n/a	$1,500
Informal	$2,350	$3,000	$2,050	$2,000	$9,500
Formal	$5,300	$6,000	$3,500	$4,800	$20,000
Programmatic	$16,000	$13,300	n/a	$5,600	$34,800
NEW CONSULTATION CONSIDERING ONLY ADVERSE MODIFICATION (NON-BREEDING HABITAT)					
Technical Assistance	$405	n/a	$788	n/a	$1,130
Informal	$1,760	$2,250	$1,540	$1,500	$7,130
Formal	$3,980	$4,500	$2,630	$3,600	$15,000
Programmatic	$12,000	$9,940	n/a	$4,200	$26,100
RE-INITIATION OF CONSULTATION TO ADDRESS ADVERSE MODIFICATION					
Technical Assistance	$270	n/a	$525	n/a	$750
Informal	$1,180	$1,500	$1,030	$1,000	$4,750
Formal	$2,650	$3,000	$1,750	$2,400	$10,000
Programmatic	$7,980	$6,630	n/a	$2,800	$17,400
ADDITIONAL EFFORT TO ADDRESS ADVERSE MODIFICATION IN A NEW CONSULTATION (ADDITIVE WITH BASELINE COSTS ABOVE OF CONSIDERING JEOPARDY)					
Technical Assistance	$135	n/a	$263	n/a	$375
Informal	$588	$750	$513	$500	$2,380
Formal	$1,330	$1,500	$875	$1,200	$5,000
Programmatic	$3,990	$3,310	n/a	$1,400	$8,700

Source: IEc analysis of 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. Totals may not sum due to rounding.
2. Estimates reflect average hourly time required by staff.

Section 7 Project Modification Impacts

34. Section 7 consultation considering critical habitat may also result in additional project modification recommendations specifically addressing potential destruction or adverse modification of critical habitat. For forecast consultations considering jeopardy and adverse modification, and for re-initiations of past consultations to consider critical habitat, the economic impacts of project modifications undertaken to avoid or minimize 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 project modifications are assumed to be incremental impacts of the designation. This is summarized below.

1. **Additional effort to address adverse modification in a new consultation -** Only project modifications above and beyond what would be requested to avoid or minimize jeopardy are considered incremental.
2. **Re-initiation of consultation to address adverse modification -** Only project modifications above and beyond what was requested to avoid or minimize jeopardy are considered incremental.
3. **Incremental consultation resulting entirely from critical habitat designation -** Impacts of all project modifications are considered incremental.

Indirect Impacts

35. 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. This section identifies common types of indirect impacts that may be associated with the designation of critical habitat. Importantly, these types of impacts are not always considered incremental. In the case that these types of conservation efforts and economic effects are expected to occur regardless of critical habitat designation, they are appropriately considered baseline impacts in this analysis.

Habitat Conservation Plans

36. Under section 10 of the Act, landowners seeking an incidental take permit must develop an HCP to counterbalance the potential harmful effects that an otherwise lawful activity may have on a species. As such, the purpose of the habitat conservation planning process is to ensure that the effects of incidental take are adequately avoided or minimized. Thus, HCPs are developed to ensure compliance with section 9 of the Act and to meet the requirements of section 10 of the Act.

37. Application for an incidental take permit and completion of an HCP are not required or necessarily recommended by a critical habitat designation. However, in certain situations the new information provided by the proposed critical habitat rule may prompt a landowner to apply for an incidental take permit. For example, a landowner may have

been previously unaware of the potential presence of the species on his or her property, and expeditious completion of an HCP may offer the landowner regulatory relief in the form of exclusion from the final critical habitat designation. In this case, the effort involved in creating the HCP and undertaking associated conservation actions are considered an incremental effect of designation. No specific plans to prepare new HCPs in response to this proposed designation were identified.

Other State and Local Laws

38. 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. In cases where these impacts would not have been triggered absent critical habitat designation, they are considered indirect, incremental impacts of the designation.

39. The California Environmental Quality Act (CEQA), for example, requires that lead agencies, public agencies responsible for project approval, consider the environmental effects of proposed projects that are considered discretionary in nature and not categorically or statutorily exempt. In some instances, critical habitat designation may trigger CEQA-related requirements. This is most likely to occur in areas where the critical habitat designation provides clearer information on the importance of particular areas as habitat for a listed species. In addition, applicants who were "categorically exempt" from preparing an Environmental Impact Report under CEQA may no longer be exempt once critical habitat is designated. In cases where the designation triggers the CEQA significance test or results in a reduction of categorically exempt activities, associated impacts are considered to be an indirect, incremental effect of the designation. Given the significant degree of previous regulation surrounding this species, described in Chapter 3, this designation is unlikely to provide the sole trigger for additional impacts under State and local laws.

Additional Indirect Impacts

40. In addition to the indirect effects of compliance with other laws or triggered by the designation, project proponents, land managers and landowners may face additional indirect impacts, including the following:

- **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 -** The Service conducts each section 7 consultation on a case-by-case basis and issues a biological opinion on formal consultations based on species-specific and site-specific information. As a result, government agencies and affiliated private parties who consult with the Service under section 7 may face uncertainty concerning whether project modifications will be recommended by the Service and what the nature of these modifications 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.

- **Stigma -** 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 project modifications 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. All else equal, a property that is designated as critical habitat may have a lower market value than an identical property that is not within the boundaries of critical habitat due to perceived limitations or restrictions. As the public becomes aware of the true regulatory burden imposed by critical habitat, the impact of the designation on property markets may decrease. To the extent that potential stigma effects on markets are probable and identifiable, these impacts are considered indirect, incremental impacts of the designation. Stigma effects are possible in the case of the bear; however data limitations prevent their quantification in this analysis.

1.3.3 BENEFITS

41. Under Executive Order 12866, OMB directs Federal agencies to provide an assessment of both the social costs and benefits of proposed regulatory actions.[17] 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.[18]

42. 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.[19] *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.*

43. Critical habitat designation may also generate ancillary benefits. Critical habitat aids in the conservation of species specifically by protecting the primary constituent elements on

[17] Executive Order 12866, Regulatory Planning and Review, September 30, 1993.

[18] 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.

[19] Ibid.

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.

44. It is often difficult to evaluate the ancillary benefits of critical habitat designation. To the extent that the ancillary benefits of the rulemaking may be captured by the market through an identifiable shift in resource allocation, they are factored into the overall economic impact assessment in this report. For example, if habitat preserves are created to protect a species, the value of existing residential property adjacent to those preserves may increase, resulting in a measurable positive impact. Where data are available, this analysis attempts to capture the *net* economic impact (i.e., the increased regulatory burden less any discernable offsetting market gains), of species conservation efforts imposed on regulated entities and the regional economy.

1.3.4 GEOGRAPHIC SCOPE OF THE ANALYSIS

45. The geographic scope of the analysis includes all land identified as proposed critical habitat, including the areas under consideration for exclusion from the final designation. Collectively, these locations are referred to as the "study area." Although the entire study area is analyzed, emphasis is placed on understanding impacts in areas proposed for final designation. Note that economic activities affecting critical habitat may be sited outside of the boundaries of the study area (e.g., upstream activities); these activities are considered relevant to this analysis. The study area does not include land previously designated as critical habitat that is not included in this revised proposal or other areas occupied by the bear.

1.3.5 ANALYTIC TIME FRAME

46. The analysis estimates impacts based on activities that are "reasonably foreseeable," including, but not limited to, activities that are currently authorized, permitted, or funded, or for which proposed plans are currently available to the public. The analysis estimates economic impacts to activities from 1992 (year of the species' listing) to 2028. Estimated impacts are divided into pre-designation (1992-2008) and post-designation (2009-2028) impacts.[20]

[20] As described in the Proposed Rule, the Service proposed to designate critical habitat for this species in 1993 (58 *FR* 63560). "Pre-designation" and "post-designation" in this report refer to the critical habitat designation expected in 2009.

1.4 INFORMATION SOURCES

47. The primary sources of information for this report are communications with, and data provided by, personnel from the Service, Federal, State, and local governments and other stakeholders. These sources include: the Black Bear Conservation Committee, the Federal Highway Administration, the Louisiana Department of Natural Resources, the Louisiana Department of Transportation, the Louisiana Department of Wildlife and Fisheries, the Louisiana Forestry Association, the Louisiana Landowners Association, the USDA Louisiana State Farm Service Agency, the USDA Natural Resource Conservation Service, and several private companies in the forestry, oil and gas, and agriculture industries. In addition, this analysis relies upon the Service's section 7 consultation records, and existing habitat management and conservation plans that consider the bear. Due to the high number of entities contacted, the complete list of contacted stakeholders is within the reference section at the end of this document.

CHAPTER 2 | CONSERVATION BASELINE

48. Since the listing of the bear as threatened in 1992, considerable effort has been undertaken to protect the species. This Section provides information about Federal, State, and local conservation action relevant to this analysis. It presents the regulatory elements that exist in the baseline, i.e., the "without critical habitat" scenario.

49. This Section begins by discussing the institutional framework within which the bear critical habitat is proposed for designation. Federal flood control efforts from the 1930s underlie current protections for the bear and its habitat; land use in the Atchafalaya corridor is limited by these flood control efforts. Other statutes, regulations, and other baseline elements that may affect proposed critical habitat areas for the bear include regulations regarding the listing of the species under the Act, the proposal for critical habitat designation in 1993 (that was never designated), the *Louisiana Black Bear Recovery Plan*, and land conservation programs from the Federal and State governments. There are also important ongoing efforts by the Service, the Louisiana Department of Wildlife and Fisheries (LDWF), and the multi-stakeholder Black Bear Conservation Committee (BBCC) that address threats to the bear and its habitat.

50. The Section also provides a discussion of what is perceived as potentially the most important consequence of critical habitat designation: the widespread concern by many public officials that critical habitat designation will cause a decrease in voluntary participation in bear conservation programs by private parties and businesses. Such a decrease in conservation effort could have consequences for the continued recovery of the species.

2.1 HISTORICAL LAND USE IN PROPOSED CRITICAL HABITAT

51. Land use patterns in the areas proposed for critical habitat have been shaped by Federal flood control programs in addition to local economic factors. Beginning in 1928, several Congressional Acts have been established to help control flooding around the Mississippi River. This body of legislation set up a system of floodways in Louisiana to contend with potential floodwaters. In the early 1940s, the West Atchafalya and Morganza Floodways were established, levee construction to constrain the flow of excess water spillover from the Mississippi began, and the US Army Corps of Engineers bought perpetual flood easements from landowners in the floodway. As a result of these programs, there are hundreds of thousands of acres of floodway easements owned by the Federal government that allow for unencumbered overflow of floodwaters, restrict habitation and the construction of buildings, and require permits for activities such as farming, livestock

grazing, timber harvesting, and mining.[21] The floodways coincide with a substantial part of proposed critical habitat Units 2 and 3.

52. The floodways begin below Morganza, Louisiana, south and west of Route 1, and continue along the Atchafalaya River, until the end of a system of confining levees is reached near US Highway 190. At this juncture, near Krotz Springs, the floodways merge into the Atchafalaya Basin Floodway and flow (between Lafayette and Baton Rouge) to the Gulf through Wax Lake and the Lower Atchafalya River/Berwick Bay. Other than a long stretch of development along Interstate 90, there is very little development in these areas.

53. Prior to passage of the flood control Acts, the Atchafalaya Basin had experienced a considerable amount of development and agricultural use. However, by 1951, these activities had all but ceased.[22] This decrease in land use has continued to the present; most economic activity in these areas is still restricted by the easements.

2.2 CONSERVATION PROGRAMS IN THE STUDY AREA

54. There are several Federal and State land conservation programs that provide benefits to the bear and its habitat which fall within proposed critical habitat. These programs are summarized in Exhibit 2-1 and 2-2. The WRP program is especially beneficial for bear conservation; as a result, acres enrolled in permanent easements in this program are the only area being considered for exclusion in the Proposed Rule. Relevant State programs are primarily offered by LDWF. These State programs are summarized in Exhibit 2-2. Together with the Federal programs, these programs provide the context for bear conservation actions taken by conservation organizations. Specifically, Exhibit 2-1 and Exhibit 2-2 show that there are multiple Federal and State programs that are designed to preserve land in ways that can provide habitat for the bear. These programs also provide multiple opportunities for landowners to enhance or restore potential habitat for wildlife.

55. In addition to the multiple opportunities for land preservation and habitat restoration, bear conservation organizations work to reduce conflict between bears and humans. The Service oversees and funds several programs. LDWF conducts research and addresses nuisance issues. BBCC is primarily concerned with public outreach and education, and conducts habitat restoration through their private lands program.

[21] There are 9,000 acres of flood easements below Krotz Springs, 154,437 acres of easements in the West Atchafalaya Floodway, and 71,577 acres of easements in the Morganza Floodway. Written communication from Service Biologist, Fish and Wildlife Service Lafayette Office, August 21, 2008.

[22] The history recounted in this section is from Reuss, Martin, *Designing the Bayous: The Control of Water in the Atchafalaya Basin, 1900-1995*, (College Station, Texas: Texas A & M University Press, 2004), pp. 192-203.

EXHIBIT 2-1 FEDERAL CONSERVATION PROGRAMS RELEVANT TO BEAR HABITAT

PROGRAM	SUMMARY	BENEFITS
Conservation Reserve Program (CRP)- USDA Farm Service Agency (FSA)	This program is designed to transform farmland into conservation land. Landownership and income limitations define eligibility for this program. Upon enrollment, the landowner is to undertake habitat restoration and improvement projects, ranging from enhancing natural land features that reduce flooding to restoring wildlife friendly habitat.	There is an annual rental payment based on the current soil rental rate (SRR). In addition, conservation practice costs are shared between FSA and the landowner. Some additional incentives are made possible for some practices. The maximum payment amount per year is $50,000.
Wetlands Reserve Program (WRP) – USDA Natural Resources Conservation Service (NRCS)	This program is designed to obtain Federal conservation easements on marginally productive private land. Easements are either for 30 year or permanent. Louisiana has the highest amount of participation in this Federal Program. There are 54,800 acres in proposed Unit 1 and 1,550 acres in proposed Unit 2. There is no WRP in proposed Unit 3. Land enrolled in WRP is being considered for exclusion from the Proposed Rule.	Payment is approximately $800 per acre. In some cases, other Federal or State funding is used to restore habitat. Some land uses, such as recreational, are compatible with the easements. In some cases WRP enrollment has resulted in enhancement to both conservation and outdoor recreation.
Conservation Security Program (CSP) – USDA Natural Resources Conservation Service (NRCS)	Private landowners engaged in agricultural production can apply for CSP assistance. Landowners must be in compliance with highly erodible land and wetland conservation provisions of the Food Security Act. The majority of the farming operation must be within the selected watershed, and other specific criteria must be met. CSP assistance is available for landowners to undertake several soil and water quality conservation practices.	Payments are made for establishing and maintaining a conservation baseline. Additional payments may be available for additional conservation efforts and based on the condition of the enrolled land.
Environmental Quality Incentives Programs (EQIP) – Natural Resources Conservation Service	Private landowners engaged in livestock or agricultural production can apply for EQIP assistance. Landowners must be in compliance with highly erodible land and wetland conservation conditions of the Food Security Act. There are income restrictions that must certify that the landowner's primary income is from agriculture.	75% to 90% cost shares are available for conservation practices, with some additional incentive payments available for some practices. The maximum contract amount is $450,000 per individual for the life of the farm.

PROGRAM	SUMMARY	BENEFITS
Wildlife Habitat Incentives Program (WHIP) – Natural Resources Conservation Service (NRCS)	To be eligible, the landowner must be in compliance with conservation provisions of the Food Security Act (e.g., erosion control). In addition, the landowner's average adjusted gross income must be < $2.5 million over the last 3 years (unless > 75% of income comes from farming, ranching, or forestry). The program will provide habitat restoration and land payments depending on easement length.	Participants in WHIP sign agreements with terms that range from five to fifteen years. NRCS pays up to 75 percent of restoration costs.
Healthy Forests Reserve Program (HFRP) – Natural Resources Conservation Service (NRCS)	Private landowners with property that will restore, enhance, or otherwise improve the well-being of species listed under the Endangered Species Act or species that are candidates for listing can apply for this program. Landowners must follow the restoration plan developed by the landowner and NRCS to be eligible. When HFRP enrolled lands provide net conservation benefits for listed or candidate species, a Safe Harbor or similar protective agreement under the Endangered Species Act will be made available to the landowner.	For 99 year easements, the NRCS pays 75-100% of the approved conservation practices carried out during the easement and offers a payment that equals 75-100% of the fair market value of the enrolled land during the easement, less the fair market value of land en cumbered by the easement. Payment and restoration cost reimbursement are smaller for shorter easements.
Partners for Fish and Wildlife Program (Partners) – U.S. Fish and Wildlife Services (FWS)	This program is designed to encourage landowners to undertake habitat restoration and improvement projects. There are no specific landowner requirements for Partners, and private landowner can apply for this program.	Landowners can get up to 100% cost share for conservation practices. There is a maximum payment of up to $25,000 per project.

EXHIBIT 2-2 LOUISIANA STATE CONSERVATION PROGRAMS RELEVANT TO BEAR HABITAT

PROGRAM	LANDOWNER REQUIREMENTS	BENEFITS
Forest Stewardship Program (FSP) – Louisiana Department of Agriculture and Forestry (LDAF)	This is a program designed to foster stewardship. Landowners must manage lands for at least 2 of the following: environmental enhancement, timber, wildlife, recreation, and/or aesthetics.	FSP offers technical assistance from a team of natural resource professionals to help landowners create a forest management plan. After completing several practices outlines of the forest management plan, the landowner can apply for certification. A team of resource specialists will then determine if the property meets stewardship standards. If the property is certified, the landowner will receive an acknowledgement letter, a Stewardship Forest sign for property, and a plaque presented by the state forester as a public recognition of good stewardship.
Forest Productivity Program (FPP) – Louisiana Department of Agriculture and Forestry (LDAF)	This program is designed to promote good forestry. There are no specific landowner requirements to apply for FPP.	Technical assistance and 50% cost share is available for planting or seeding, site preparation for natural regeneration, and control of competing vegetation.
Forest Land Enhancement Program (FLEP) – Louisiana Department of Agriculture and Forestry (LDAF) and US Forest Service (USFS)	This program is designed to promote good forestry. It offers cost shares for different activities than FPP. Non-industrial private landowners interested in developing and managing forest lands are eligible.	The program offers technical assistance and cost share payments for specific forest management practices; these practices include forest health improvements, invasive species control, catastrophic (fire) risk reduction, and catastrophic event rehabilitation (including mechanical site preparation, fertilizing, tree planting, and direct seeding after natural disasters).
Louisiana Waterfowl Project – Ducks Unlimited (DU), Louisiana Department of Wildlife and Fisheries (LDWF), US Fish and Wildlife Services (FWS), and Natural Resources Conservation Service (NRCS)	This program is designed to improve wetlands. Landowners with property where wetlands can be created, restored, or enhanced are eligible.	Technical assistance and cost share payments are available for practices associated with the management of croplands, moist soil areas, forested wetlands, and other created or natural wetlands for migratory and wetland dependent wildlife. Lands under contract must maintain water on the property for at least 4 months between August and March, where waterfowl are most benefited by that condition.

2.3 CONSERVATION ORGANIZATIONS

56. The three organizations most directly involved in bear conservation are the Service, LDWF, and the BBCC. The Service is primarily involved as a funding and coordination agency. LDWF provides a key role in species management, responses to bear nuisance problems, and bear relocation. BBCC acts complementarily to LDWF by providing conservation services not undertaken by LDWF, such as public outreach. A comprehensive discussion of conservation program expenditures is provided in Chapter 4; this chapter discusses the conservation baseline in terms of the roles each organization has in baseline protections provided to the bear.

2.3.1 SERVICE CONSERVATION ACTIVITIES

57. The Service undertakes multiple bear conservation activities, and funds several more at the State level. Through Section 6 of the ESA, the Service works with LDWF and BBCC to coordinate conservation efforts and to provide funding for conservation services. The Service also administers the National Wildlife Refuges and coordinates the conservation activity within them. The Service has funded research studies with several universities and provided support for reforestation programs undertaken by The Nature Conservancy (TNC). The Service currently funds research studies and recovery actions undertaken by LDWF and BBCC as well as conflict management by USDA Wildlife Services.

2.3.2 LDWF

58. LDWF is the lead agency concerned with bear conservation. LDWF responds to nuisance problems and is the primary resource for residential development / bear conflicts. To reduce conflicts, LDWF provides an 800 number for emergencies and generates and distributes information pamphlets. LDWF has worked closely with St. Mary Parish, where bear and resident interaction occurs most frequently. The agency has also been responsible for re-locating bears when necessary, and has been the agency providing recourse and financial assistance for those residents that encounter bears. LDWF also conducts research and implements recovery actions for the bear.

2.3.3 BBCC

59. BBCC is a coalition of public officials and community members, with representation of several area business interests, which focuses on minimizing potential conflicts between active land use and bear conservation activities. One of the primary concerns of BBCC is that critical habitat designation may raise the costs of conservation compatible activities with local land-owners or permitted users of government land (forestry and mining concerns). Their concern is that increases in the costs of these activities may lead to unintended decreases in conservation participation.

2.4 POTENTIAL DECREASES IN BASELINE CONSERVATION

60. BBCC's concern about decreased conservation is widely shared. Specifically, officials within regional conservation agencies are concerned that an unintended consequence of critical habitat designation will be that there is less voluntary cooperation with bear

conservation programs. There may even be purposeful mis-management of bear populations or proposed critical habitat in order to prevent regulatory intrusion by the Federal government onto private lands. These concerns are expressed by officials within the Service, LDWF, BBCC, NRCS, USDA Farm Service Agency, and the Louisiana Landowners Association.[23]

61. The concern that critical habitat designation may create dis-incentives to conservation has precedent in Louisiana. Following the listing of the bear in 1992, critical habitat was proposed in 1993. The proposed critical habitat generated a substantial amount of controversy and mis-understanding. The Service and other conservation groups spent several years educating the public about bear conservation and pursuing conservation strategies that were less contentious.[24] The proposed critical habitat designation from 1993 was never designated, and is being rescinded by the 2008 Proposed Rule.

62. Conservation programs for the bear have been carried out within the currently proposed critical habitat for many years. As a result, and due to the density of the bear in many areas, the areas that bears consistently use and live in are generally known to local landowners and conservation organizations. This knowledge of current bear habitat and the experience of landowners with consultation directed conservation measures in those areas may exacerbate the threat to the bear and its habitat. That is, knowing what land use restrictions critical habitat may bring may provide an incentive for landowners to remove the primary constituent elements in portions of proposed critical habitat that are not frequented by the bear in order to reduce the need for future project modifications.

63. There have been several studies that have investigated tendencies of landowners to manage their land to be less hospitable to endangered species in the face of proposed critical habitat designation.[25] In some cases, landowners have accelerated activities, such as timber harvesting or residential development in anticipation of critical habitat designation.

64. As a result of these factors, there may be fewer enrollments in programs like WRP or CRP that provide substantial benefits for the bear. These programs have set aside substantial tracts of land which serve as bear habitat; thus, any change in future program enrollment could mean less potential habitat for the bear. Following enrollment in WRP, the enrolled private lands often undergo habitat restoration projects (Exhibits 2-1 and 2-2 list several programs that can provide habitat enhancements), which can benefit the bear. Thus, decreases in WRP enrollment could result in reduced expenditure on habitat restoration. That is, designation of the proposed critical habitat could, by reducing

[23] Personal communications in stakeholder interviews June 24-26, and subsequently.

[24] Personal communications in interviews with Service Biologists at the Fish and Wildlife Service Lafayette Office, June 24, 2008 and with Paul Davidson and David Telesco, BBCC, June 26, 2008.

[25] For research on perverse incentives and behaviors that can result from listing and critical habitat designation, see List, John A., Michael Margolis, and Daniel E. Osgood (2006) "Is the Endangered Species Act Endangering Species?" NBER Working Paper W12777 or Lueck, Dean and Jeffrey A. Michael (2003) "Preemptive Habitat Destruction Under the Endangered Species Act," Journal of Law and Economics, vol. 46. For research on the effect of critical habitat designation on housing supply, see Zabel, Jeffrey E. and Robert W. Paterson (2006) "The Effects of Critical Habitat Designation on Housing Supply: An Analysis of California Housing Construction Activity," *Journal of Regional Science*, vol. 46, no. 1, pp. 67-95.

enrollment in WRP, reduce both the quantity and quality of available habitat for the bear relative to what would have been available without critical habitat designation.

65. LDWF also has expressed an additional concern about potential disincentives to conservation caused by critical habitat designation. As lead organizations involved with bear management, both the Service and LDWF commission and conduct bear research in areas where the bears live. Much of this land is private. Historically, most private landowners have been supportive of bear conservation efforts. This support has extended to allowing State and Federal wildlife officials access onto private land for bear research. However, critical habitat designation may reduce landowners' willingness to allow such research or stop it altogether.

2.5 BREEDING HABITAT IN PROPOSED CRITICAL HABITAT

66. Exhibit 2-4 presents a map of the portions of the proposed critical habitat units defined as breeding habitat in the proposed rule. These areas were defined based on the definition in the *Black Bear Restoration Plan*. The Restoration Plan defines these areas as "a geographic area in which there is documented physical evidence of reproduction."[26] The Service used telemetry data of adult female bears and buffered these points with average home range area sizes, while controlling for habitat contiguity, movement barriers, and other landscape features to create the information presented in Exhibit 2-4.[27]

67. Some incremental impacts have been identified for parts of the proposed critical habitat in non-breeding areas. As noted in the Proposed Rule, the Service considers all of the proposed critical habitat units to be occupied by the bear (i.e., there are bears living within the boundaries of every proposed unit). However, there is acreage within each proposed critical habitat unit that is not breeding habitat. The largest of these areas are in the central part of the proposed Tensas Unit (Unit 1) and the southern part of the proposed Upper Atchafalaya Unit (Unit 2). These areas have been included within the proposed critical habitat to provide connectivity between occupied areas across the units. Critical habitat designation could result in requirement for project modifications in these areas. The application of project modifications in these areas will be incremental; that is, they would not be applied absent critical habitat designation.

68. Exhibit 2-3 breaks down the acreage of the breeding and non-breeding habitat, as displayed in Exhibit 2-4.

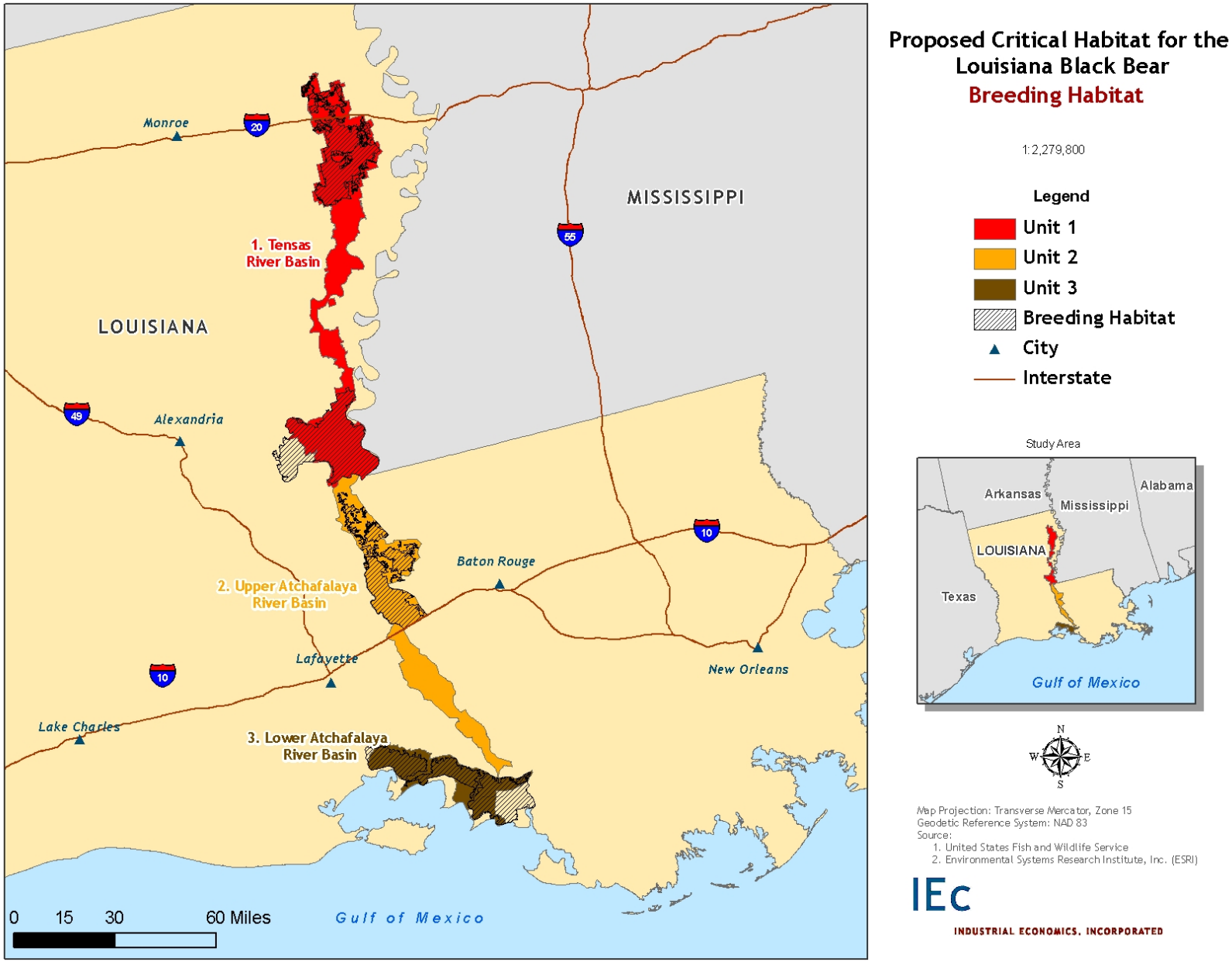
[26] Black Bear Conservation Committee (1997) *Black Bear Restoration Plan*, (Baton Rouge, LA; 133 pages).

[27] Written communication from Biologist, US Fish and Wildlife Service, August 21, 2008.

EXHIBIT 2-3 ACREAGE OF BREEDING HABITAT

UNIT	UNIT NAME	BREEDING HABITAT	NON-BREEDING HABITAT	TOTAL
1	Tensas River Basin	349,761	327,495	677,256
2	Upper Atchafalaya River Basin	147,793	287,434	435,227
3	Lower Atchafalaya River Basin	156,215	62,937	219,152

EXHIBIT 2-4 PROPOSED CRITICAL HABITAT SHOWING BREEDING HABITAT SUB-AREAS



SECTION 3 | POTENTIAL ECONOMIC IMPACTS TO OIL AND GAS DEVELOPMENT

69. Hydrocarbon exploration and production is listed as a threat to the bear and its habitat for all three proposed critical habitat units.[28] This Section provides cost estimates of bear conservation efforts related to seismic exploration and for activities involving the drilling of new oil and natural gas wells. The Section also provides cost estimates for the impacts to bear conservation efforts from the maintenance of existing oil and natural gas pipelines.

70. When potential oil and gas deposits are seismically explored, and when new wells are drilled, the nexus for consultation with the Service is usually through US Army Corps of Engineers Section (US ACE) 404 wetlands permitting process under the *Clean Water Act*. Historically, 11.6 percent of new wells in breeding habitat within the proposed critical habitat have undergone consultation. When exploring for oil deposits, seismologists hire biologists to inspect potential drilling areas for the presence of the bear and for denning trees. If an area is selected for drilling, oil and natural gas development companies generally follow project modifications identified through informal consultations; these project modifications typically involve preparation of the drill-site as well as potential relocation of the surface drill site and directional drilling, if necessary. Of the potential project modifications for oil and gas development related to bear conservation, relocation of drill sites (and use of directional drilling) for new wells make up the greatest share of potential costs. This Section also addresses bear conservation impacts for the maintenance of pipelines.

71. Although the proposed rule notes that each proposed critical habitat unit is occupied, within each proposed critical habitat unit there are areas where impacts from the proposed rule are considered in this report to be baseline effects (i.e., these impacts to oil and natural gas development would occur absent the designation), and areas where impacts will be incremental (i.e., are assumed to result from the designation). The proposed rule defines breeding habitat as "areas with physical evidence of re-production (young, females with young, or lactating females)," breeding habitat is indicative of resident populations.[29] These areas are mapped in Exhibit 2-4. Non-breeding habitat is also found in areas within critical habitat. Non-breeding habitat includes areas important for connectivity between breeding habitat, either as a route for migration between breeding areas or for the potential expansion of breeding habitat as the numbers of bears increase. In this report, application of bear conservation efforts to non-breeding habitat is assumed

[28] 73 FR, p. 25367.

[29] *Ibid*, p. 25367.25355.

to constitute an incremental impact (i.e., these impacts would not occur absent designation). This Section addresses consultation and project modifications in both breeding and non-breeding habitat.

72. This Section first forecasts the number of new wells likely to be drilled in the next 20 years and how many of these wells are expected to undergo section 7 consultation. Next, the Section describes the approach for estimating the impacts of bear conservation on exploring for and drilling new wells for oil and gas. The results are then presented as a range of possible impacts. Next, the Section reviews historical consultations regarding pipelines and bear conservation costs associated with pipelines. The Section then presents the total pre-designation, post-designation baseline, and incremental impacts. The Section concludes with a discussion of the sources of uncertainty that underlie the analysis.

3.1 INTRODUCTION: OIL AND GAS EXPLORATION AND WELL DRILLING

73. The most significant bear conservation impacts analyzed in this report are related to oil and natural gas exploration and well drilling. Section 7 consultation is usually through the US Army Corps of Engineers, for Section 404 permits for work in wetlands, under the Clean Water Act. In addition, in some cases State agencies and private companies consult with the Service for technical assistance concerning seismic exploration and the potential for drilling new wells.

74. The most substantial economic impacts occur when oil and natural gas companies are required to move their first-choice surface drilling location to another site, and then directionally drill to reach their sub-surface target from another location. In this report, estimates of the cost of these project modifications are based on the projection of new wells over the next 20 years and the average per project costs of directional drilling compared to direct surface drilling. Related impacts include consultation costs, costs of biological monitoring for seismic surveys, and site preparation costs. In terms of potential disturbance to bear habitat, it makes no difference whether a well is drilled for oil or for natural gas. This analysis therefore focuses on the total of new wells drilled for both purposes.

3.2 NEW WELL FORECASTS

75. The forecast number of new oil and natural gas wells in the next twenty years is based on the historical drilling rate. Specifically, in order to estimate the rate of future drilling, this analysis considers the number of wells drilled from 1993 to 2007. The period 1993 through 2007 is a period free from price regulation, and with relatively constant proven natural gas reserves. Considering a period without State or Federal price regulations, and with relatively constant supplies, allows the rate of new well development to be studied while controlling for the influence of regulatory intrusions and while controlling for potentially shifting supply effects.

76. The period 1993 to 2007 was chosen as the proper reference period because this period is the only time that both oil and natural gas prices have both been unregulated. Gasoline prices were regulated 1973 through 1976. In 1954, the Federal Power Commission (now the Federal Energy Regulatory Commission, FERC) set wellhead price controls for natural gas that was transported out of state.[30] Starting in 1980, price controls were ended for new gas wells, and in 1993 all price controls were removed. In 1980-1981, real Louisiana wellhead prices of natural gas increased approximately forty percent. In 1992-1995, real Louisiana wellhead prices of natural gas increased about 20 percent and became more volatile.[31] These price changes indicate that a functioning market became established following the deregulation.

77. Selection of the period of deregulation is important because the absence of regulation removes a potential confounding influence on the number of new wells drilled. To be able to forecast the number of new wells, it is important to hold constant as many of the factors that influence the drilling of new wells as possible. The period 1993 to 2007 also makes it possible to essentially hold the total amount of proven reserves of Louisiana natural gas constant. During the period from 1986 to 1992, there was a continuous decrease in proven natural gas reserves. Between 1993 and 2006, proven reserves fell slightly and then increased as more natural gas was found; proven reserves in 2006 were slightly greater than in 1993. Focusing on the period 1993 through 2007 provides a period of stable total supply, which controls for potential effects from supply shocks.

3.2.1 NEW WELLS 1993 TO 2007

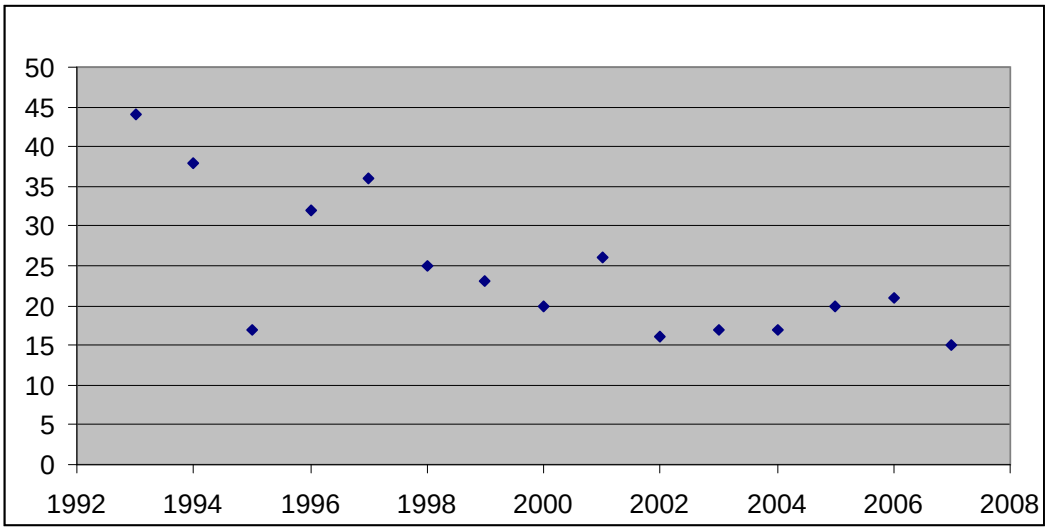
78. Data on the number of new wells drilled per year was obtained from the Louisiana Department of Natural Resources' Strategic Online Resources Information System (SONRIS).[32] First, SONRIS was used to obtain the geographic location of each oil and natural gas field in Louisiana. Fields can contain both oil and gas wells. This enabled the identification of the fields within potential critical habitat. Next, the analysis looked at the number of individual wells within proposed critical habitat and identified those with "spud dates" (the date drilling began) from 1993 to 2007. The analysis identified 367 individual wells with spud dates in the period of interest. Information for three wells was not useable because they had invalid geographic information. Exhibit 3-1 shows the number of wells drilled per year within the boundaries of the proposed critical habitat.

[30] US Energy Information Administration, Natural Gas Summary, accessed August 11, 2008. See http://www.eia.doe.gov/emeu/25opec/sld006.htm

[31] *Ibid*.

[32] Louisiana Department of Natural Resources SONRIS web-site. Accessed last at http://sonris-www.dnr.state.la.us/www_root/sonris_portal_1.htm

EXHIBIT 3-1 NEW WELLS DRILLED PER YEAR



79. There were a total of 364 new wells drilled during this fifteen year period, an average of 24.3 per year. This average is applied to the 20 year period from 2009 to 2028 to forecast the number of new wells that will be drilled within critical habitat, for an estimated total of 485 new wells (24.3 wells per year multiplied by 20 years). One representative of the petroleum industry (a representative of the small, independent oil companies operating in Louisiana) indicated that the rate of drilling would continue at about one third of the historical rate, which would amount to approximately 162 new wells in the next twenty years; this would continue the apparent downward trend observable in Exhibit 3-1.[33] A different representative of the petroleum industry (a representative of one of the large multi-national oil companies) indicated that the rate of drilling would continue at about the same rate as it had been; this view indicates that new wells would be drilled at a longer term historic average rate. Continuation of the historic rate would result in the drilling of 485 new wells in the next twenty years.[34] Information given by these two oil and natural gas industry representatives are used to establish a lower (one third of the historical rate) and upper (continuation of the historical rate) end estimate for the forecast of new wells that will be drilled within proposed critical habitat.

80. Exhibit 3-2 describes the number of new wells between 1993 and 2007 that were drilled within the area that is currently proposed for critical habitat designation. It also shows the number of wells in breeding habitat and non-breeding habitat. Exhibit 3-4 shows the location of oil and natural gas fields in proposed critical habitat, overlain with the breeding and non-breeding habitat boundaries of areas within the proposed critical habitat units. Both Exhibit 3-2 and Exhibit 3-4 highlight that there have been a substantial number of wells drilled in non-breeding habitat.

[33] Written communication from Rudy Sparks, Vice President, Williams Land Company, LLC, August 8, 2008. Mr. Sparks is representative of the small independent oil firms operating in Louisiana.

[34] Personal communication with John M. Broussard, Jr., Location Construction and Environmental Specialist, Onshore Gulf Coast Operations, BP America Production Company, June 24 and August 8, 2008.

EXHIBIT 3-2 NEW WELLS 1993-2007

UNIT	UNIT NAME	NUMBER OF NEW WELLS	
		BREEDING HABITAT	NON-BREEDING HABITAT
1	Tensas River Basin	42	61
2	Upper Atchafalaya River Basin	16	88
3	Lower Atchafalaya River Basin	151	6
Total		**209**	**155**

New Well Consultations: 2000 - 2007

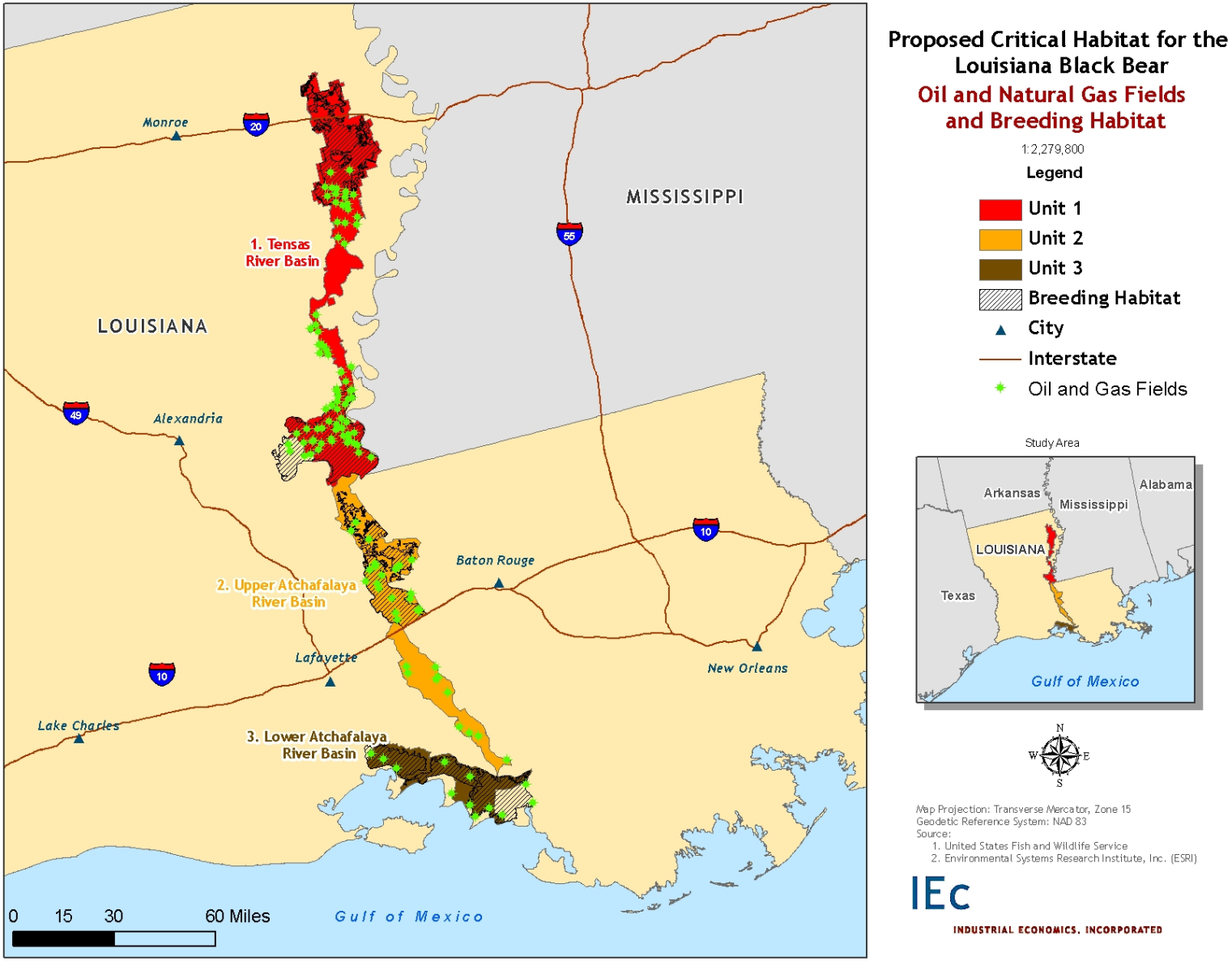
81. While Exhibit 3-2 shows the number of new wells that were drilled between 1993 and 2007, not all of these wells underwent consultations. The Service has records of all consultations that took place from 2000 through 2007. The period from 2000 to 2007 was selected since complete records for prior years were unavailable. Exhibit 3-3 shows the consultation history of all of the oil and natural gas well drilling related consultations between 2000 and 2007 (inclusive). Consultations have primarily taken place with US ACE pertaining to permit applications for activities in bear-occupied wetland areas. New wells that are not located within wetlands generally do not have consultations with ACE and the Service. The consultations listed in Exhibit 3-3 occurred in the breeding areas (shaded) in Exhibit 3-4. For the period 2000 to 2007 there were 78 new wells (this is the 2000-2007 subset of the 209 new wells from 1993 to 2007 in breeding habitat, shown in Exhibit 3-2).

EXHIBIT 3-3 NEW WELLS WITH CONSULTATIONS 2000-2007

YEAR	PROJECT PROPONNENT / PERMIT APPLICANT	NEW WELLS PROJECT MODIFICATIONS	
		BIOLOGICAL SURVEYS, NOISE STATIONS	WELL RE-LOCATION
2000	Jasmine Oil Company	Yes	No
2000	BP America Production Company	Yes	Moved 800 to 1,000 feet
2003	Dominion Exploration and Production	Yes	No
2004	Petro-Hunt LLC	Yes	No
2005	Pennington Oil and Gas Interests	Yes	No
2005	BP America Production Company	Yes	No
2006	Burlington Resources Oil and Gas LP	Yes	No
2007	Phoenix Exploration Company	Yes	No
2007	BP America Production Company	Yes	Moved 300 to 500 feet
Sources: The consultations listed in this Exhibit were reviewed and presented as the best available data on Federal consultations from 2000 though 2007. Written communication, Service Lafayette Fish and Wildlife Office Biologist, September 26, 2008.			

82. There were nine wells that had individual consultations between 2000 and 2007. Exhibit 3-1 also lists the project modifications associated with each consultation. For one of the new well consultations in 2007, the wellhead had to be moved between 300 and 500 feet to avoid denning trees. For one of the new well consultations in 2000, the wellhead had to be moved 800 to 1,000 feet to avoid denning trees. All consultations specified that biological surveys should take place in conjunction with drilling. All of the consultations also specified noise stations should be used to habituate bears to activity in specific areas and accustom them to avoiding those areas.

EXHIBIT 3-4 MAP OF OIL AND NATURAL GAS FIELDS WITHIN PROPOSED CRITICAL HABITAT



3.2.2 NEW WELLS 2009-2028

83. Exhibit 3-5 provides the forecast number of new wells in proposed critical habitat from 2009 through 2028 in both breeding and non-breeding habitat. The forecast number of new wells per proposed critical habitat unit is computed by taking the historical percentage of wells in each unit and multiplying this percentage by the total projected number of wells under the high end (full historical rate) scenario (485). For example, the forecast number of new wells in Unit 1 (in breeding habitat) is (42 / 364) x 485 = 56. The estimated number of wells is then multiplied by one third to obtain the low scenario estimated number of wells.[35] Similar calculations are then made for non-breeding habitat.

EXHIBIT 3-5 FORECAST NEW WELLS, 2009-2028

UNIT	UNIT NAME	NEW WELLS			
		BREEDING HABITAT		NON-BREEDING HABITAT	
		LOW	HIGH	LOW	HIGH
1	Tensas River Basin	19	56	27	81
2	Upper Atchafalaya River Basin	7	21	39	117
3	Lower Atchafalaya River Basin	67	201	3	8
Total		**93**	**278**	**69**	**206**

84. There is insufficient publicly available information to map where WRP enrolled land is located relative to the location of existing oil and natural gas fields. Because this information is unavailable, it is not possible to apply the GIS application used in Section 3.1.2 to forecast the number of new wells that would be drilled in WRP lands. While drilling new wells within WRP lands may be permissible, no wells have been drilled in WRP lands to date.[36]

85. The inability to map WRP lands within proposed critical habitat does not affect the forecast of the total number of new wells drilled. Not being able to map WRP lands changes how the number of new wells drilled within proposed critical habitat is assumed to be distributed across different land types. That is, if there were sufficient publicly available information to map the WRP lands, the total number of new wells would not change; instead there would just be some wells assumed to be on the WRP lands that are currently assumed to be located on non-WRP lands.

86. If new wells are drilled uniformly throughout the proposed critical habitat, then up to six percent of the new wells would be drilled on WRP lands (there are 56,400 WRP acres within the 1.06 million acres of private land proposed for designation; see Exhibit ES-1).

[35] Written communication from Rudy Sparks, Vice President, Williams Land Company, LLC, August 8, 2008. Mr. Sparks is representative of the small independent oil firms operating in Louisiana.

[36] Personal communication, Biologist, Service Lafayette Fish and Wildlife Office, October 29, 2008.

That would mean that a proportional amount of economic impacts that are currently attributed to baseline or incremental impacts would be associated with WRP lands instead. Since there have been no new wells observed within the WRP lands, and since there is insufficient publicly available information to more precisely forecast where new wells would be relative to WRP lands, this analysis does not forecast new wells within WRP lands. The estimate that up to six percent of new wells could be in WRP lands indicates that any potential misattribution of impacts from WRP lands to non-WRP lands is likely to be modest.

3.2.3 FORECAST CONSULTATIONS

87. The majority of consultations for oil and natural gas drilling are informal. The Service has noted that if formal consultations were always pursued, the consultation process would take longer but the project modifications might cost less money.[37] The willingness on the part of the petroleum companies to pursue informal consultation and potentially more costly project modifications is indicative of the high time sensitivity in the petroleum market. Given the regulatory constraints, permitting processes, and labor and resource scarcity constraints, oil and natural gas companies prefer to go through the relatively brief informal consultation process and pursue project modifications rather than wait the extended period of time necessary to go through a full formal consultation process. That is, informal consultation and directional drilling are ultimately considered to be the lower cost option.

88. New consultations are forecast to occur at the same rate as consultations have historically occurred. As shown in Exhibit 3-3, there were nine consultations between 2000 and 2007.[38] There were 78 new wells during the same period. Based on the number of consultations and the number of new wells between 2000 and 2007, the probability of a new well having a consultation is estimated to be 9 / 78, or 11.54 percent. Each of the new wells that had a consultation is assumed to have experienced cost impacts associated with hiring a biological monitor and from using noise stations to accustom bears to stay away from the site. In addition, as indicated in Exhibit 3-3, 1/9 (11.11 percent) of new wells with consultations also had to move the wellhead between 300 and 500 feet to avoid den trees and another 1/9 (11.11 percent) of those new wells with consultations had to move the wellhead between 800 and 1,000 feet to avoid den trees.

89. These consultation and project modifications probabilities are applied to all estimated new wells between 1992 and 2008, and for all forecast new wells between 2009 and 2028. Each consultation also has costs from its implementation. All forecast consultation costs are listed in Exhibit 1-2. For bear breeding habitat in the post-designation period, the majority of the consultation cost is considered baseline ($5,625), with a small portion ($1,875) assigned to consideration of adverse modification (i.e.,

[37] Personal communication from Biologist, Service Lafayette Fish and Wildlife Office, August 14, 2008.

[38] As noted in Section 3.2, the period 2000 to 2007 contains the most complete consultation record in the pre-designation period.

incremental).[39] For non-breeding habitat in the proposed critical habitat, all of the consultation ($6,800) is assumed to be directed toward consideration of adverse modification of critical habitat. Thus, all of these consultation costs are considered incremental.

3.3 WELLHEAD PREPARATION

90. The economic impact for every consultation includes the cost of the consultation itself (per Exhibit 1-2) and the cost of hiring a biological surveyor ($12,500). For consultations for new wells in breeding habitat, there is also the cost of installing and operating "noise stations." In order to habituate the bear to the increased noise and activity levels that will be present at the drill site, and to enable the bear to find substitute sites for foraging, denning, or breeding, the drilling company must employ a noise station, with lights and noise that will alert the bear and make the bear accustomed to avoiding the drill site. This analysis assumes that noise stations would not be required in non-breeding habitat. BP uses a "light station," which is a towed trailer with a diesel generator and spotlights. Light stations of this sort are often present at highway construction sites during night construction. Costs for operating a light station include the fuel costs to continuously run the station prior to the commencement of drilling and labor costs to refuel and maintain the station, frequently in very remote locations. BP estimates the total cost of running a light station is $50,000.[40] The Service has noted that the light station need only operate during the denning season (December 1 through April 30); drilling at other times does not require operation of a light station.[41] Light station impacts are assumed to be equal to the cost of running them ($50,000) multiplied by the probability of having to implement them (five months out of the year). This is approximately $21,000.[42] These impacts are assumed to apply to every forecast well in breeding habitat and are not applied to wells that are forecast in non-breeding habitat. These impacts are included in the total impacts presented in Exhibits 3-6, 3-7, and 3-8.

3.4 WELL DRILLING PROJECT MODIFICATIONS

91. After the site has been prepared, the oil or natural gas company may begin drilling the well. The drilling process may be modified, however, if there are denning trees or other PCEs in proximity to the desired surface drill target. If denning trees are found, then the company must relocate the surface drilling apparatus and drill at another location, ultimately using directional drilling to reach the sub-surface target. The general practice

[39] The consultation costs are for informal consultation without biological opinions, taken from taken from Exhibit 1-2.

[40] Ibid. If a light station is necessary (during denning season), it is typically run for six months.

[41] Personal communication from Biologist, Lafayette Fish and Wildlife Office, June 24, 2008.

[42] The cost to run a light station is $50,000 (which is the total cost of equipment, installation, fuel, and maintenance). Since a light station is only required during the five month breeding season, the $50,000 is multiplied by 5/12. Cost information are from personal communication with John M. Broussard, Jr., Location Construction and Environmental Specialist, Onshore Gulf Coast Operations, BP America Production Company, June 24, 2008 and August 8, 2008..

is to move 500 feet if there is bear habitat that must be avoided. If there is still bear habitat at 500 feet, the surface hole is moved an additional 500 feet.

92. Not every new well has had or will have consultation. Nine out of 78 new wells drilled between 2000 and 2007 required consultation, primarily due to US ACE jurisdiction over wetland use permitting. All of these new wells were assumed to have hired biological monitors to survey for the bear and its habitat as a result of consultation. New wells in breeding habitat had to use noise makers to habituate the bear to avoiding the drill site. The other 69 new wells drilled between 2000 and 2007 were not in wetlands or had no other Federal Nexus for action, thus there were no consultations in them. Of the wells that underwent consultation during that period, one in nine had to relocate the surface drilling hole less than 500 feet, and another one in nine had to relocate the wellhead from 800 to 1,000 feet.

93. BP provided the estimated costs of wellhead relocation and directional drilling for 500 and 1,000 foot (total) wellhead relocations. Based upon their drilling experience in Louisiana, BP estimated that the cost of moving less than 500 feet is $1 million. BP estimates the cost of moving the wellhead 1,000 feet to be $2 million to $4 million.[43] A representative of small oil company operators stated that the additional costs to relocate wellheads and directionally drill were half those reported by BP.[44] The lower cost estimates are incorporated into the low end cost impact estimate. The full costs of $1 million for a 500 foot move and $3 million midpoint estimate for a 1,000 foot move are included in the high end cost impact estimate. Costs of $500,000 for 500 foot movement and $1.5 million for 1,000 foot movement are included in the low end estimate.

3.4.1 PRE-DESIGNATION CONSULTATIONS

94. The rate of consultations and project modifications from 2000 to 2007 is extrapolated back to the period 1992 through 1999 and for 2008, since the consultation history available from the Service from 1992 through 1999 is incomplete and 2008 is not yet complete. There were 209 new wells drilled from 1993 through 2007 in breeding habitat.[45] The average number of new wells in breeding habitat for that period, 13.9 per year, is applied to 1993 and 2007; the total number of estimated new wells in the pre-designation period is then 236.9. Applying the consultation rate from 2000 to 2007 of 11.5 percent, yields 27.3 consultations in the pre-designation period.

95. Costs of consultation-related project modifications are based on the project modification cost estimates discussed in the preceding section.

96. Exhibit 3-6 presents the present value of estimated pre-designation impacts for consultations and project modifications for new oil and natural gas wells in breeding habitat within the study area. These impacts include informal consultation costs, well-head preparation (noise stations), and the surface well relocation/directional drilling

[43] *Ibid.*

[44] Written communication from Rudy Sparks, Vice President, Williams Land Company, LLC, August 8, 2008.

[45] Pre-designation wells drilled in non-breeding habitat are not included, since there were no consultations in these areas.

project modification (1/9 of new well consultations are assumed to have $1 million in cost impacts and 1/9 of new well consultations are assumed to have $3 million in impacts). All impacts are divided evenly across years since there is no detailed information about the number of impacts per year across the entire time period. The low and high scenarios for pre-designation impacts are based on uncertainty regarding whether the costs of wellhead relocation are what BP has claimed (high end estimate) or half of those costs, as claimed by the small oil companies (low end estimate).

EXHIBIT 3-6 PRE-DESIGNATION NEW WELL IMPACTS

UNIT	UNIT NAME	PRESENT VALUE OF IMPACTS, 1992-2008 (7% DISCOUNT RATE)	
		LOW ESTIMATE	HIGH ESTIMATE
1	Tensas River Basin	$2,780,000	$5,150,000
2	Upper Atchafalaya River Basin	$1,060,000	$1,960,000
3	Lower Atchafalaya River Basin	$10,000,000	$18,500,000
Total		**$13,900,000**	**$25,600,000**
Note: Totals may not sum due to rounding.			

97. Exhibit 3-7 presents the present value of forecast post-designation baseline impacts for drilling new wells over the next 20 years. These include the projected costs for an informal consultation, use of well preparation noise stations, and the relocation of the drilling hole and directional drilling. Both a low end estimate (which combines a lower estimate of the forecast number of wells with a lower cost estimate) and high end estimate are provided.

EXHIBIT 3-7 POTENTIAL POST-DESIGNATION BASELINE NEW WELL IMPACTS

UNIT	UNIT NAME	PRESENT VALUE OF IMPACTS, 2009-2028 (7% DISCOUNT RATE)	
		LOW ESTIMATE	HIGH ESTIMATE
1	Tensas River Basin	$319,000	$1,770,000
2	Upper Atchafalaya River Basin	$121,000	$674,000
3	Lower Atchafalaya River Basin	$1,150,000	$6,360,000
Total		**$1,590,000**	**$8,800,000**
Note: Totals may not sum due to rounding.			

98. Exhibit 3-8 presents the present value of potential incremental impacts associated with moving the surface hole of forecast wells and performing directional drilling in non-breeding habitat. The impacts forecast in Exhibit 3-8 correspond to the application of the project modifications for wells in breeding habitat (the shaded areas in Exhibit 3-4) to the wells in fields within non-breeding habitat (the non-shaded areas in Exhibit 3-4), except that the totals in Exhibit 3-8 do not include the cost of using noise-stations for well-head preparation in non-breeding habitat. Exhibit 3-8 includes informal consultation costs that

are wholly incremental (since they occur in areas where the bear is not commonly found) as well as the incremental portion of the forecast baseline consultations.

EXHIBIT 3-8 POTENTIAL INCREMENTAL NEW WELL IMPACTS

UNIT	UNIT NAME	PRESENT VALUE OF IMPACTS, 2009-2028 (7% DISCOUNT RATE)	
		LOW ESTIMATE	HIGH ESTIMATE
1	Tensas River Basin	$430,000	$2,470,000
2	Upper Atchafalaya River Basin	$618,000	$3,560,000
3	Lower Atchafalaya River Basin	$50,300	$267,000
Total		**$1,110,000**	**$6,300,000**
Note: Totals may not sum due to rounding.			

3.5 SEISMIC EXPLORATION

99. Seismic exploration companies generally sub-contract with oil and natural gas companies.[46] Between 2000 and 2007 there were an average of 4.6 consultations per year, with a range of zero to 13 consultations. The period 2000 to 2007 was chosen to extrapolate from since it is the period with the most complete consultation records, as discussed in Section 3.2. Past consultations have generally resulted in a recommendation that a biologist be hired to investigate whether a potentially drillable area is occupied by the bear or contains bear denning trees, and to insure that seismic testing is done so as not to disrupt the bear or its habitat. The cost to hire a biologist ranges from $10,000 to $15,000 per exploration.[47]

100. There are no publicly available data to forecast potential areas of seismic exploration for the next 20 years. Land prices can be highly sensitive to observed seismic exploration, and thus oil and natural gas interests have incentives not to reveal the location of untapped petroleum deposits. In the absence of forecasts of seismic exploration, this analysis assumes that the rate of consultations for seismic exploration will continue at the same rate as in the past, as measured in the period of the most complete consultation records, 2000 to 2007. Each seismic exploration event is also assumed to have its own informal consultation.

101. To estimate the cost of the biological survey that accompanies the seismic survey, a biological bear habitat survey cost of $12,500 is used (this is the midpoint of the $10,000 to $15,000 range provided by BP).[48] An informal consultation for seismic testing is also assumed to occur at the time of drilling the well; the costs are assumed to be baseline for new wells in breeding habitat and incremental in non-breeding habitat.

[46] Personal communication with John M. Broussard, Jr., Location Construction and Environmental Specialist, Onshore Gulf Coast Operations, BP America Production Company, June 24 and August 8, 2008.

[47] *Ibid.*

[48] Ibid.

102. Exhibit 3-9 presents the estimated present value of pre-designation costs for seismic operations within breeding habitat. This analysis assumes that, prior to critical habitat designation, non-breeding habitat would not have undergone consultations or project modifications. There are no low and high scenarios because the number of consultations during this period can be observed from the data and does not need to be estimated. Exhibit 3-9 combines estimated consultation costs with the costs of biological surveys.

EXHIBIT 3-9 PRE-DESIGNATION SEISMIC CONSULTATION AND SURVEY COSTS

UNIT	UNIT NAME	PRESENT VALUE OF IMPACTS, 1992-2008 (7% DISCOUNT RATE)
1	Tensas River Basin	$0
2	Upper Atchafalaya River Basin	$427,000
3	Lower Atchafalaya River Basin	$171,000
Total		**$598,000**
Note: Totals may not sum due to rounding.		

103. Exhibit 3-10 presents the present value of forecast post-designation baseline impacts for seismic activity. Since there were no consultations in Unit 1, there are no predicted impacts in this unit. The post-designation baseline costs are for consultations and biological surveys.

EXHIBIT 3-10 POST-DESIGNATION BASELINE SEISMIC ACTIVITY IMPACTS

UNIT	UNIT NAME	PRESENT VALUE OF IMPACTS, 2009-2028 (7% DISCOUNT RATE)
		LOW ESTIMATE
1	Tensas River Basin	$0
2	Upper Atchafalaya River Basin	$147,000
3	Lower Atchafalaya River Basin	$58,700
Total		**$205,000**
Note: Totals may not sum due to rounding.		

104. Exhibit 3-11 presents potential post-designation incremental impacts associated with seismic exploration activity. Incremental costs are assumed to occur in non-breeding habitat. Incremental costs are composed of the biological survey costs, the costs for new consultations devoted entirely to consideration of potential adverse modification of habitat, and for the post-designation, incremental portion of the consultations included in Exhibit 3-10. Since there were no consultations in Unit 1, there are no predicted impacts in Unit 1.

EXHIBIT 3-11 POTENTIAL POST-DESIGNATION INCREMENTAL SEISMIC ACTIVITY IMPACTS

UNIT	UNIT NAME	PRESENT VALUE OF IMPACTS, 1998-2027 (7% DISCOUNT RATE)
		LOW ESTIMATE
1	Tensas River Basin	$0
2	Upper Atchafalaya River Basin	$15,200
3	Lower Atchafalaya River Basin	$6,070
Total		**$21,300**
Note: Totals may not sum due to rounding.		

3.6 PIPELINE MAINTENANCE AND OPERATION IMPACTS

105. The impacts from pipeline operation and maintenance primarily involve consultation costs and time delay restrictions.

106. The primary conservation measure for pipeline construction is clearing the area outside of the denning season. If it is not possible to avoid clearing during the five month denning season, then pipeline companies may have to undertake additional surveys for bear and denning trees at a cost of approximately $15,000.[49] This analysis assumes that the probability of a project incurring this additional surveying cost is approximately 5/12 (42 percent), or the percentage of the year that is considered denning season. To estimate the number of potentially affected projects, the analysis used the consultation history to determine the number of pipeline projects occurring per unit between 2000 and 2007, and developed an estimated annual frequency of projects per unit. During this period, there were pipeline consultations only in Unit 3. As a result, the pipeline consultations are not forecast for Units 1 and 2.

107. In addition to construction impacts, pipeline companies may incur additional maintenance costs. These impacts appear to be related to possible seasonal restrictions on mowing.[50] This analysis assumes that companies are able to coordinate their mowing schedules as required at minimal cost, thus no impacts associated with these restrictions are forecast.

108. Finally, pipeline projects are expected to incur additional impacts related to the need for section 7 consultations. There have been approximately three pipeline projects requiring consultation from 2000 to 2007.

109. The estimated consultation impacts for pipelines are based on an estimated 7.29 projects from 1992 to 2008. The consultation costs associated with these projects are divided across the acreage of breeding habitat (shaded areas of Exhibit 2-4) in Unit 3.

[49] Personal communication with Stu Buchanan, Southeast Supply Header, LLC, on October 8, 2008.

[50] *Ibid.*

110. The present value of all pre-designation impacts related to pipeline activity are presented in Exhibit 3-12.

EXHIBIT 3-12 POTENTIAL PRE-DESIGNATION PIPELINE IMPACTS

UNIT	UNIT NAME	TOTAL IMPACTS, 1992-2008 (DISCOUNTED AT 7%)
1	Tensas River Basin	$0
2	Upper Atchafalaya River Basin	$0
3	Lower Atchafalaya River Basin	$168,000
Total		**$168,000**
Note: Totals may not sum due to rounding.		

111. The number of pipeline consultations over the next 20 years is forecast to continue at the same rate as it did between 2000 and 2007. The period 2000 to 2007 was chosen to extrapolate from since it is the period with the most complete consultation records. However, some portion of these post-designation consultations will have to address the adverse modification standard; thus, some consultation costs will be incremental.

112. Exhibit 3-13 presents the present value of all forecast post-designation baseline costs for pipeline projects, discounted at seven percent. Based on the frequency of projects in the consultation history, there are 8.57 projects forecast to occur between 2009 and 2028.

EXHIBIT 3-13 POTENTIAL POST-DESIGNATION BASELINE PIPELINE CONSULTATION COSTS

UNIT	UNIT NAME	TOTAL IMPACTS, 2008-2029 (DISCOUNTED AT 7%)
1	Tensas River Basin	$0
2	Upper Atchafalaya River Basin	$0
3	Lower Atchafalaya River Basin	$57,700
Total		**$57,700**
Note: Totals may not sum due to rounding.		

113. Exhibit 3-14 presents the present value of all forecast post-designation incremental costs for pipeline projects, discounted at seven percent. The incremental costs consist of the portion of post-designation consultations that deals with adverse modification in breeding habitat.

EXHIBIT 3-14 POTENTIAL POST-DESIGNATION INCREMENTAL PIPELINE IMPACTS

UNIT	UNIT NAME	TOTAL IMPACTS, 2008-2029 (DISCOUNTED AT 7%)
1	Tensas River Basin	$0
2	Upper Atchafalaya River Basin	$0
3	Lower Atchafalaya River Basin	$9,110
Total		**$9,110**
Note: Totals may not sum due to rounding.		

3.7 TOTAL PRE-DESIGNATION IMPACTS

114. The total pre-designation impacts for all oil and natural gas development activities are based on the consultation history and costs of consultations and their associated project modifications. These impacts include costs for seismic operations, new well drilling, and pipeline operation and maintenance. Exhibit 3-15 presents the estimated present value of total pre-designation impacts.

EXHIBIT 3-15 TOTAL PRE-DESIGNATION IMPACTS TO OIL AND GAS DEVELOPMENT

UNIT	UNIT NAME	TOTAL IMPACTS, 1992-2008 (DISCOUNTED AT 7%)	
		LOW	HIGH
1	Tensas River Basin	$2,780,000	$5,150,000
2	Upper Atchafalaya River Basin	$1,490,000	$2,390,000
3	Lower Atchafalaya River Basin	$10,300,000	$18,900,000
Total		**$14,600,000**	**$26,400,000**
Note: Totals may not sum due to rounding.			

3.8 TOTAL POTENTIAL POST-DESIGNATION IMPACTS

115. Post-designation baseline impacts include the impacts from oil and natural gas exploration and mining, forecast pipeline operation and maintenance costs, and the consultation costs associated with them. The present value of total forecast baseline impacts are presented in Exhibit 3-16. Project modification costs associated with moving the surface hole and directional drilling represent more than 94 percent of the total forecast costs in both the low and the high scenario.

EXHIBIT 3-16 TOTAL POTENTIAL POST-DESIGNATION BASELINE IMPACTS

UNIT	UNIT NAME	TOTAL IMPACTS, 2009-2028 (DISCOUNTED AT 7%)	
		LOW	HIGH
1	Tensas River Basin	$319,000	$1,770,000
2	Upper Atchafalaya River Basin	$268,000	$821,000
3	Lower Atchafalaya River Basin	$1,260,000	$6,480,000
Total		**$1,850,000**	**$9,070,000**
Note: Totals may not sum due to rounding.			

3.9 TOTAL POTENTIAL INCREMENTAL IMPACTS

116. Exhibit 3-17 presents the present value of forecast incremental impacts for seismic exploration, oil and natural gas well drilling project modifications, and consultation costs. Project modification costs associated with relocating the surface drill hole and directional drilling constitute almost 100 percent of the forecast potential incremental impacts for the proposed critical habitat designation. No other economic activities are forecast to apply project modifications in breeding habitat to non-breeding habitat, and no other economic activities have project modifications with magnitudes as large as those associated with oil and natural gas development. Oil and natural gas development activities have the only potential incremental project modifications; all other incremental costs are due to administrative costs of consultations.

EXHIBIT 3-17 TOTAL POTENTIAL INCREMENTAL IMPACTS

UNIT	UNIT NAME	TOTAL IMPACTS (DISCOUNTED AT 7%)	
		LOW	HIGH
1	Tensas River Basin	$430,000	$2,470,000
2	Upper Atchafalaya River Basin	$633,000	$3,570,000
3	Lower Atchafalaya River Basin	$65,500	$282,000
Total		**$1,130,000**	**$6,330,000**
Note: Totals may not sum due to rounding.			

3.10 SOURCES OF UNCERTAINTY

117. The most important source of uncertainty in this analysis involves forecasting costs for future well drilling project modifications, both in terms of the forecast number of new wells as well as the added cost per well associated with bear conservation. The methodology used to estimate the number of new wells is based on the historical number of wells drilled in the period 1993-2007, when several important factors (known natural gas reserves, regulatory constraints) have been held constant. It is not known how often surface well relocation will be required to avoid features of critical habitat; the estimated added costs per well are based on assessments of this frequency in recent years, in which a complete consultation history is available. To the extent that this is incorrect, the

estimated added costs per well may be under- or over-stated, though this possibility is reduced due to the low and high end estimates provided in this Section.

118. To date, there have been no known new wells drilled on WRP enrolled lands.[51] There are also no publicly available data that would enable mapping of existing oil and natural gas fields to WRP lands. As a result, it is not possible to identify any wellhead preparation or project modification impacts that could occur on WRP land. As discussed in Section 3.2.2, if some of the new wells forecast to be drilled on land not in the WRP program are drilled on WRP lands, the amount that impacts in areas not considered for exclusion are overestimated and the amount that impacts in areas considered for exclusion are underestimated would be modest.

119. There is also some uncertainty regarding the likelihood of consultation in Unit 1 for seismic activity and Units 1 and 2 for pipeline maintenance. This analysis relies on the consultation history as the basis for forecasting future consultations for these activities. To the extent that there may be consultations for these activities in these units, this analysis may understate impacts. Any understatement of impacts for these activities, however, is likely to be of small magnitude relative to the impacts forecast for oil and gas drilling project modifications.

[51] Personal communication, Biologist, Service Lafayette Fish and Wildlife Office, October 29, 2008.

SECTION 4 | POTENTIAL ECONOMIC IMPACTS ON SPECIES MANAGEMENT

120. This Section evaluates potential pre- and post-designation impacts of bear conservation activities on species management. Species management activities include outreach and education efforts and Service expenditures for bear recovery projects.[52] This chapter first describes current and ongoing species management. It then provides estimates of the pre-designation baseline, post-designation baseline, and incremental impacts on species management activities.

4.1 SPECIES MANAGEMENT EFFORTS

121. Species management efforts are undertaken by various agencies and organizations throughout the study area. These organizations include LDWF (which is primarily concerned with residential nuisance and research issues; LDWF expenditures are addressed in Section 5), the Service (which owns the Tensas National Wildlife Refuge); BBCC (which conducts outreach and education efforts); and the NRCS (which manages the WRP).

122. The Service purchased the land for the Tensas River National Wildlife Refuge in 1980 at a cost of $2.2 million. This refuge consists of more than 70,000 acres of bottomland hardwoods and contains the state's largest population of the bear. Several management techniques are undertaken by foresters on the refuge, including the planting of new trees as well as selective thinning. The refuge also works to re-introduce female bears and their cubs to currently unoccupied areas.[53] Because the refuge was purchased prior to the listing of the bear in 1992, costs associated with its purchase are not included in this analysis.

123. The Service provides several organizations with grant funds for black bear recovery activities and population studies. Recipients of these funds have included the BBCC as well as the LDWF.[54] In addition, the Service manages the Service's Partners for Fish and Wildlife Program, which provides technical and financial assistance to private landowners and Tribes who work with the Service on a voluntary basis to meet habitat needs. The Partners Program can assist with "projects in all habitat types which conserve

[52] While responding to nuisance bear incidents may be considered species management, impacts associated with these efforts are included in Section 5, Residential Development.

[53] Fish and Wildlife Service, *Tensas River National Wildlife Refuge*. Accessed at: http://www.fws.gov/refuges/profiles/index.cfm?id=43690.

[54] Written communication from Service Biologist, Lafayette Fish and Wildlife Service Office, July 25, 2008.

or restore native vegetation, hydrology, and soils associated with imperiled ecosystems… or otherwise provide an important habitat requisite for a rare, declining or protected species."[55]

124. BBCC undertakes most of the education and outreach efforts within the study area. During the 2007-2008 fiscal year, BBCC hosted more than 63 events, reaching approximately 8,000 people.[56] The BBCC provides landowner workshops that help landowners find technical and financial assistance programs, and gives teacher workshops and presentations at schools, camps, and other venues. The BBCC provides literature and public contact at festivals and special events held in bear habitat and other important areas.[57]

125. Species management efforts may also include activities under various conservation programs, such as the Wetlands Restoration Program (WRP), which are discussed in greater detail in Chapter 2. Impacts associated with the purchase of lands under these conservation programs are presented in this chapter.

4.2 PRE-DESIGNATION IMPACTS

126. To estimate pre-designation impacts, this analysis estimates impacts associated with three types of activities:

1. Service expenditures, including state grants and consultation;
2. BBCC's expenditures on education and outreach; and
3. Purchase of WRP lands.

127. Estimates of pre-designation Service expenditures are based on information provided by the Service, and vary widely by program by year. For example, National Wildlife Refuge funding for 2001 was approximately $151,800, while approximately $17,000 was given to universities in the form of grants for 2007. To prevent double-counting, funds transferred to the Louisiana Department of Wildlife and Fisheries are not included in estimated impacts for species management, because it is assumed that these funds are included in the estimated costs of responding to residential nuisance incidents (see Section 4, Residential Development).

128. As described above, BBCC undertakes most of the education and outreach efforts in the study area. Expenditures on education and outreach include a portion of the salaries of BBCC staff, travel to educational events, administration of the BBCC website, and production of educational literature. BBCC estimates that approximately 32 percent of its budget was spent on education and outreach in 2007, while 52 percent of its budget has been reserved for education and outreach in 2008.[58] To estimate pre-designation impacts,

[55] Fish and Wildlife Service, Partners for Fish and Wildlife, June 19, 2008. Accessed at: http://www.fws.gov/partners/.

[56] Personal communication from Dave Telesco, Black Bear Conservation Committee, on August 19, 2008.

[57] Written communication with Dave Telesco, Black Bear Conservation Committee, on October 7, 2008.

[58] *Ibid.*

this analysis assumes that the BBCC's incurred annual impacts are approximately equal to the 2007 expenditures. These impacts are distributed evenly across the study area.

129. Lands enrolled in the WRP programs have historically been purchased for $800 an acre. There are approximately 56,400 acres of WRP lands enrolled in permanent easements that are located within the study area, predominantly in Unit 1 (see Exhibit 4-1). These lands are being considered for exclusion. Expenditures for habitat restoration activities that benefit the bear are made following land enrollment in WRP, but no estimate of the amount spent on such restoration is publicly available.

130. Total estimated pre-designation impacts across all categories are presented in Exhibit 4-2.

EXHIBIT 4-1 NUMBER OF ACRES ENROLLED IN THE WRP PROGRAM AS OF JULY 2008

UNIT	UNIT NAME	ACRES ENROLLED IN THE WRP PROGRAM
1	Tensas River Basin	54,800
2	Upper Atchafalaya River Basin	1,550
3	Lower Atchafalaya River Basin	0
	Total	**56,400**
Source: Written communication from the Service, August 1, 2008.		

EXHIBIT 4-2 PRE-DESIGNATION IMPACTS

UNIT	UNIT NAME	TOTAL IMPACTS (DISCOUNTED AT 7%)
1	Tensas River Basin	$2,260,000
2	Upper Atchafalaya River Basin	$2,260,000
3	Lower Atchafalaya River Basin	$2,260,000
	Subtotal	**$6,770,000**
Considered for Exclusion		
1	Tensas River Basin	$58,000,000
2	Upper Atchafalaya River Basin	$1,640,000
3	Lower Atchafalaya River Basin	$0
3	**Subtotal**	**$59,600,000**
Total		**$66,400,000**
Note: Totals may not sum due to rounding.		

4.3 POTENTIAL POST-DESIGNATION BASELINE IMPACTS

131. To estimate potential post-designation impacts, this analysis assumes that Service expenditures on recovery efforts will continue for the next 20 years at approximately the same rate as in the past.[59] No future purchases of refuge lands are anticipated.

132. Estimated expenditures for outreach and education are also forecast to continue, for the next 20 years, at the same level as in the past. While BBCC notes that the proposal to designate critical habitat may result in a 10 to 20 percent increase in education and outreach efforts, this analysis assumes that this increase already is incorporated in the estimated expenditures for 2008.

133. This analysis assumes that WRP lands will continue to be purchased at $800 per acre and at the same rate as in the past. This assumption may over-estimate impacts given that the availability of land eligible for the WRP program will likely decrease as more lands are enrolled. Lands covered by existing Federal flood control easements are not eligible for enrollment in the WRP program; this further reduces the amount of eligible land.

134. Therefore, potential post-designation baseline impacts are composed of the following annual impacts:

- Service expenditures of $189,000;
- BBCC expenditures of $123,000; and
- WRP purchases of $6.2 million.

These annual impacts result in total present value impacts (discounted at seven percent) over the next twenty years of approximately $2.1 million in Service expenditures, $1.4 million in BBCC expenditures, and $73 million for the purchase of WRP lands. The sum of all post-designation baseline impacts is presented by unit in Exhibit 4-3.

[59] This assumption was corroborated through Personal communication with Biologist, US Fish and Wildlife Service, August 19, 2008.

EXHIBIT 4-3 POTENTIAL POST-DESIGNATION IMPACTS

UNIT	UNIT NAME	TOTAL IMPACTS (DISCOUNTED AT 7%)
1	Tensas River Basin	$1,180,000
2	Upper Atchafalaya River Basin	$1,180,000
3	Lower Atchafalaya River Basin	$1,180,000
	Subtotal	**$3,540,000**
Considered for Exclusion		
1	Tensas River Basin	$71,000,000
2	Upper Atchafalaya River Basin	$2,000,000
3	Lower Atchafalaya River Basin	$0
3	**Subtotal**	**$73,000,000**
Total		**$76,500,000**
Note: Totals may not sum due to rounding.		

4.4 POTENTIAL INCREMENTAL IMPACTS

135. This analysis does not anticipate any potential incremental impacts related to species management activities. No additional Service expenditures are anticipated as a result of critical habitat designation. Education and outreach efforts are not expected to increase post-designation. As discussed in Section 2, there may be an incremental effect of decreased enrollment in WRP if critical habitat designation makes private landowners less likely to voluntarily enroll, but there is insufficient publicly available data to quantify the expected decrease in enrollment.

4.5 SOURCES OF UNCERTAINTY

136. As discussed above, the rate of future enrollment in the WRP program is uncertain. In the absence of better data, this analysis assumes that lands will continue to be enrolled at approximately the same rate, which may over-estimate the cost of bear conservation. In addition, there are other habitat restoration expenditures which benefit the bear that are performed on newly enrolled WRP lands. However, NRCS was not able to provide estimates of these expenditures, so they are not included in the analysis..

SECTION 5 | POTENTIAL ECONOMIC IMPACTS ON DEVELOPMENT

137. This Section evaluates potential pre- and post-designation impacts of bear conservation activities on recreational and residential development. Specifically, impacts may result from the need for bear-proofing efforts such as the use of bear-proof garbage containers, and from efforts to respond to nuisance bears.

138. This Section first describes the development projects located within the study area, and potential bear management activities. It then provides estimates of the pre-designation baseline, post-designation baseline, and incremental impacts on development activities.

5.1 RESIDENTIAL AND RECREATIONAL DEVELOPMENT WITHIN STUDY AREA

139. According to the proposed rule, residential and recreational development may affect habitat connectivity between ranges. It may also result in increased frequency of nuisance incidents.[60]

140. However, as discussed in Chapter 2, large portions of Unit 2 and Unit 3 are under easements that do not allow residential development. This means that the southern portion of Unit 2, the Atchafalaya River basin between Lafayette and Baton Rouge, already has development prohibitions. Residential development encroachment in this area is unlikely. The southern portion of Unit 1 is not protected by these easements, but this area is not predicted to have substantial residential growth. The most likely residential growth would occur in Unit 3.[61]

141. The pre-designation consultations concerned with development were centered primarily around Poverty Point Reservoir, a man-made lake located near Delhi, Louisiana in Unit 1. There have been several development efforts in the area around the reservoir, including a state park, a golf course, and a private subdivision.

142. The state park is operated by the Louisiana Office of State Parks (LOSP). It was constructed in 2003, using state funding of $745,485.[62] In 2004, a proposed project to construct eight cabins, a recreational vehicle (RV) camping area, and a primitive camping area underwent section 7 consultation with the Service.

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[60] See Proposed Rule, 73 FR 25354, May 6, 2008.

[61] Personal communication with Service Biologists, Lafayette Fish and Wildlife Service Office, June 24, 2008. Personal communication with Maria Davidson, Maria Davidson, Large Carnivore Program Manager, Louisiana Department of Wildlife and Fisheries, June 26, 2008.

[62] Louisiana State Legislature, *Executive Summary: Balancing FY03 Budget*. Accessed at: http://senate.legis.state.la.us/FiscalServices/Publications/FY02-03/FY03Highlights/executivesummary.htm

143. The Black Bear Golf Course was created through the efforts of the Poverty Point Economic Development Corporation. According to Poverty Point Economic Development Corporation's financial statements for fiscal year 2006, "the initial development project consists of a golf course and related facilities, including a clubhouse, equipment maintenance building, and a golf practice and teaching area. A retirement development community is under study."[63] As of 2006, construction for the clubhouse was estimated to have cost $1.3 million; the clubhouse had not been completed at that date. The Cypress Cove at Poverty Point subdivision appears to consist of 15 lots in total.[64]

5.2 PRE-DESIGNATION IMPACTS

144. As part of the section 7 consultation on the state park construction project, LSOP undertook the following conservation measures:

- Upon their entrance to the park, all campers and visitors will be notified, verbally, and/or by distributing brochure-style educational material that black bear may occasionally visit park grounds.
- All garbage produced during the construction, operation, and maintenance of the park will be secured and disposed of in the bear-proof containers provided by the park.
- All fresh food will be secured in the respective RV, tent, or vehicle when not being used.
- All garbage disposal containers will be fitted with bear-proof lids.
- No trees with diameters of 36 inches will be removed or damaged in any fashion during the construction, operation, or maintenance of the proposed project.
- The contractors responsible for project construction shall clean up the job site daily and properly dispose of all trash and garbage.

145. Estimated pre-designation costs appear to be primarily associated with the use of bear-proof containers and trash disposal. Poverty Point State Park currently provides bear-proof containers throughout the park.[65] There are an estimated 60 trash containers throughout the park with bear-proof lids, and the park estimates that it has spent between $50 and $75 per container to bear-proof these lids. In addition, the park has an annual

[63] Poverty Point Regional Economic Development Corporation, *Financial Statements for Fiscal Year ending December 31, 2006*. Accessed at: http://app1.lla.state.la.us/PublicReports.nsf/19290BFA0D640EB286257329007777F1/$FILE/000013D4.pdf.

[64] Marsha Shuler, "Pressure Rising for Man-Made Lakes," *RedOrbit*. Accessed at: http://www.redorbit.com/news/science/896010/pressure_rising_for_manmade_lakes__state_lawmakers_want_poverty/index.html

[65] Louisiana Office of State Parks, *Poverty Point State Reservoir Park*. Accessed at: http://www.crt.state.la.us/parks/ireservoir.aspx.

contract for bear-safe trash disposal that costs $2,000 annually, in addition to the normal trash disposal costs.[66]

146. The park also undertakes education efforts to educate visitors and campers about the presence of bear. These efforts include educational hand-outs at the entrance and signs posted throughout the park. The costs associated with outreach efforts are estimated to be minimal.[67] In total, pre-designation impacts for Poverty Point State Park are estimated at $21,300 (discounted at seven percent).

147. The Service consulted informally on the golf course in 2003, recommending the use of bear-proof waste disposal containers and avoidance of bear den trees. The Service does not appear to have consulted on the private subdivision, and there does not appear to be a clear Federal nexus through which section 7 consultation might occur. Therefore, this analysis does not estimate any impacts associated with these developments.

DEVELOPMENT AND NUISANCE RESPONSE

148. Developed areas have incurred some impacts related to nuisance bear response. Louisiana Department of Wildlife and Fisheries (LDWF) responds to all reports of bear nuisance incidents, primarily involving bears eating trash. The cost of responding to a nuisance bear incident can vary widely depending on the type of incident. In some cases, response consists largely of offering technical assistance over the phone. In other cases, a biologist may visit the area, or the bear may be caught. Over the last fiscal year (2007 – 2008), LDWF responded to 175 incidents in total. LDWF estimates that its total costs of nuisance bear response consist largely of staff costs (approximately $90,000 annually) as well as approximately $20,000 in annual equipment costs.[68] Because information on the specific location of these incidents was not available, this analysis distributes these estimated costs across the study area based on parish population.

EXHIBIT 5-1 TOTAL PRE-DESIGNATION IMPACTS ON RESIDENTIAL DEVELOPMENT

UNIT	UNIT NAME	TOTAL IMPACTS (DISCOUNTED AT 7%)
1	Tensas River Basin	$1,130,000
2	Upper Atchafalaya River Basin	$1,260,000
3	Lower Atchafalaya River Basin	$1,260,000
	Total	**$3,650,000**
Note: Totals may not sum due to rounding.		

[66] Personal communication with Larry Taylor, Park Manager, Poverty Point Reservoir State Park, on August 13, 2008.

[67] Personal communication with Larry Taylor, Park Manager, Poverty Point Reservoir State Park, on August 13, 2008.

[68] Personal communication with Maria Davidson, Large Carnivore Program Manager, Louisiana Department of Wildlife and Fisheries, August 18, 2008.

5.3 POTENTIAL POST-DESIGNATION BASELINE IMPACTS

149. Given that Poverty Point state park currently has bear-proof containers installed, this analysis does not anticipate additional impacts associated with new bear-proof containers. Post-designation impacts are therefore expected to consist of the annual additional trash disposal costs (approximately $2,000 per year for bear-proofing the garbage trucks and trash disposal process). Over twenty years, impacts are estimated at $22,700 (discounted at seven percent). Again, it is not clear that a Federal nexus exists for consultation on the private development; therefore, no impacts are estimated for that project

150. Similar to pre-designation impacts, this analysis also assumes an annual cost of $110,000 for LDWF to respond to nuisance bear incidents. This cost is distributed across the study area based on parish population.

151. Total estimated potential post-designation impacts on residential development are presented in Exhibit 5-2.

EXHIBIT 5-2 TOTAL POTENTIAL POST-DESIGNATION IMPACTS ON RESIDENTIAL DEVELOPMENT

UNIT	UNIT NAME	TOTAL IMPACTS (DISCOUNTED AT 7%)
1	Tensas River Basin	$402,000
2	Upper Atchafalaya River Basin	$434,000
3	Lower Atchafalaya River Basin	$434,000
	Total	**$1,270,000**
Note: Totals may not sum due to rounding.		

5.4 POTENTIAL INCREMENTAL IMPACTS

152. This analysis anticipates that landowners will continue to undertake the same management measures that they currently do under listing. The rate of nuisance bear incidents is not expected to increase under critical habitat.[69] Therefore, this analysis does not forecast any potential incremental impacts associated with residential development activities.

5.5 SOURCES OF UNCERTAINTY

153. Should future residential development become subject to section 7 consultation (for example, depending on their location, some activities may become subject to section 404 permitting from the US Army Corps of Engineers), those projects may experience impacts not estimated in this report. Such development is most likely in Unit 3, as discussed above. LDWF nuisance programs in the area would most likely be expanded to cover any new development at costs comparable to those estimated here.

[69] Personal communication with Maria Davidson, Large Carnivore Program Manager, Louisiana Department of Wildlife and Fisheries, August 18, 2008.

SECTION 6 | POTENTIAL ECONOMIC IMPACTS ON AGRICULTURE AND TRANSPORTATION

154. This Chapter describes the estimated pre- and potential post-designation impacts of bear conservation activities on agriculture and transportation. Specifically, this section discusses the potential baseline and incremental impacts of: (1) installing electric fencing to protect apiaries, and (2) installing highway warning signs.

6.1 POTENTIAL IMPACTS ON AGRICULTURE

155. Damage to bees and hives is the most costly agricultural problem associated with the bear.[70] Bee-keeping requires special management in order to protect apiaries from bears that may eat larvae and honey; protecting the apiaries from bears reduces potential bear nuisance problems. While the bears regularly eat corn in the proposed Tensas Unit (Unit 1), no complaints have been filed with the Service. The lack of complaints to conservation agencies may indicate that farmers in the proposed Tensas Unit are not substantially affected, or may be willing to suffer some crop loss for the purpose of protecting the bear.[71,72]

6.1.1 ESTIMATION METHODOLOGY

156. To estimate impacts on agriculture, this analysis focuses on impacts resulting from attempts to mitigate the impacts of bears on apiaries. Landowners can undertake a number of measures to protect apiaries, including locating beehives as far as possible from bear habitat, harvesting honey as soon as possible, and installing electric fences. Of these mitigation measures, this analysis estimates impacts associated with installing temporary and/or permanent electric fencing. There is no publicly available information to indicate that landowners undertake other measures such as locating beehives away from bear habitat.

157. According to discussions with Louisiana State Director for the United States Department of Agriculture Wildlife Services, on average three to five temporary electric fences are deployed per year to protect apiaries from bears.[73] Private landowners deploy an

[70] Mississippi Department of Wildlife, Fisheries, and Parks, Ecology and Management of the Louisiana Black Bear. Accessed at: http://msucares.com/pubs/publications/p2193.pdf.

[71] Personal communication with Maria Davidson, Large Carnivore Program Manager, Louisiana Department of Wildlife and Fisheries, June 26, 2008.

[72] Personal communication with Biologist, Service Lafayette Field Office, June 24, 2008.

[73] Written communication Service Biologist, Lafayette Fish and Wildlife Office, July 30, 2008.

additional three to five permanent apiary electric fences per year (to replace the temporary fences). On average, an apiary requires approximately 100 feet of fencing for complete enclosure. The average costs of installing electric fences are presented in Exhibit 6-1. Operational costs for these electric fences include electricity and maintenance. Since some electric fence chargers are solar-powered and the amount of maintenance required on 100 feet of fencing is minimal, the operational costs are not included in the estimated costs presented in this report. These costs are incurred annually for different apiaries. Typically, temporary electric fences are installed by the LDWF with the expectation that the apiary owner will replace the temporary fences with permanent fences after three months.

EXHIBIT 6-1 ESTIMATED COSTS OF ELECTRIC FENCE INSTALLATION

CONSERVATION MEASURE	COST
Cost of 100 Feet of Temporary Fencing with Charger	$500 - $700
Cost of 100 Feet of Permanent Fencing with Charger	$1,000 - $2,000
Labor	$160
Estimated Total Per Fence	**$2,260**

Note: The estimated total is based on costs estimated at the mid-point of each price range.
Source: Written communication from Dwight J. LeBlanc, State Director, USDA Wildlife Service, July 30, 2008.

6.1.2 PRE-DESIGNATION IMPACTS

158. In the absence of detailed information about the number of electric fences installed per year and their locations, to estimate pre-designation impacts this analysis assumes that the rate of fence installation is relatively constant from year to year. Specifically, it assumes that each year between three and five apiaries were enclosed with temporary electric fencing, and then those three to five temporary fences were replaced with permanent electric fencing.

159. Assuming that beekeepers began installing fencing in 1992 (the year the bear was listed) and that the rate of fence installation is relatively constant from year to year, pre-designation impacts are estimated at $154,000 to $451,000 (discounted at seven percent). To the extent that beekeepers began fencing apiaries either before or after listing, this analysis may over- or underestimate costs associated with fencing installation.

160. Based on discussions with the Service, apiaries are fenced across all of the proposed critical habitat units. In the absence of specific information about the location of fenced apiaries, this analysis spreads estimated impacts evenly across the three proposed critical habitat units (see Exhibit 6-2).

EXHIBIT 6-2 ESTIMATED PRE-DESIGNATION IMPACTS ASSOCIATED WITH ELECTRIC FENCE INSTALLATION

UNIT	UNIT NAME	TOTAL IMPACTS (DISCOUNTED AT 7%)	
		LOW	HIGH
1	Tensas River Basin	$51,300	$150,000
2	Upper Atchafalaya River Basin	$51,300	$150,000
3	Lower Atchafalaya River Basin	$51,300	$150,000
	Total	**$154,000**	**$451,000**
Note: Totals may not sum due to rounding.			

6.1.3 POTENTIAL POST-DESIGNATION IMPACTS

161. Similar to pre-designation impacts, this analysis assumes that every year for the next twenty years between three and five apiaries will be enclosed with temporary electric fencing, and then that those three to five apiaries will be enclosed with permanent electric fencing. As more landowners install permanent electric fencing, the fencing rate is expected to decline in the future, and thus, this analysis may overestimate the impacts associated with the installation of electric fences. In the absence of specific information about the location of fenced apiaries, this analysis divides the estimated impacts evenly across the three proposed critical habitat units (see Exhibit 6-3).

EXHIBIT 6-3 POTENTIAL POST-DESIGNATION IMPACTS ASSOCIATED WITH ELECTRIC FENCE INSTALLATION

UNIT	UNIT NAME	TOTAL IMPACTS (DISCOUNTED AT 7%)	
		LOW	HIGH
1	Tensas River Basin	$17,600	$51,600
2	Upper Atchafalaya River Basin	$17,600	$51,600
3	Lower Atchafalaya River Basin	$17,600	$51,600
	Total	**$52,800**	**$155,000**
Note: Totals may not sum due to rounding.			

6.1.4 POTENTIAL INCREMENTAL IMPACTS

162. This analysis assumes that fencing continues at a constant rate in the future to continue to protect apiaries from bears. More fencing may be required to protect other apiaries as the species recovers. However, any fencing in the future will not be due to critical habitat designation; rather new fences will be required to protect the bees from the presence of

bears. That is, the construction of electric fencing to protect apiaries from bears is a baseline conservation measure to prevent nuisance incidents.

6.1.5 SOURCES OF UNCERTAINTY

163. As discussed above, the future rate and location of apiary fencing is uncertain.

6.2 ESTIMATED IMPACTS ON TRANSPORTATION

164. This section describes the estimated pre- and potential post-designation impacts of bear conservation on transportation activities. Vehicle-related mortality is the primary cause of bear deaths.[74] In addition, road construction can limit habitat connectivity.

6.2.1 ESTIMATION METHODOLOGY

165. Measures to mitigate the impacts of transportation activities on bear and its habitat include:

- Construction of wildlife crossings (culverts, bridges, overpasses, etc.);
- Setting speed limits; and
- Construction and maintenance of road signs.

166. No crossings have been built for the bear since listing (several existing culverts, built for other purposes, do serve to allow bears access under some highways). In 2004, there was a consultation for construction of potential crossings for a planned connection between Interstate 49 and Interstate 90 in Unit 3. However, the highway connection has not been completed, and it is uncertain if it will be in the next 20 years. The Federal Highway Administration (FHWA) and the Louisiana Department of Transportation (LDOT) estimate that they spent $100,000 in 2004 for administrative, engineering, and consultant services in connection with the proposed highway connection.[75]

167. Based on discussions with the Service, FHWA, and LDOT, the construction and maintenance of road signs has been the conservation measure that has been most used for the bear. These signs both urge lower speeds and alert drivers about the presence of the bear. The estimated costs of sign installation are presented in Exhibit 6-4.

[74] 73 FR 25363

[75] Personal communication with Bob Mahoney, Environmental Specialist, Federal Highway Administration and Jan Grenfell, Environmental Impact Manager, Louisiana Department of Transportation and Development, June 26, 2008.

EXHIBIT 6-4 ESTIMATED COSTS OF SIGN INSTALLATION

CONSERVATION MEASURE	COST
14 foot sign posts	$27.47
Sign Assembly	$65.00
Vehicle	$8.69
Labor	$11.03
Total	$112.19
Source: Written communication from Frank DeBlanc, Louisiana Department of Transportation, July 11, 2008.	

6.2.2 PRE-DESIGNATION IMPACTS

168. Since the listing of the species in 1992, six signs for the bear have been constructed in Unit 1.[76] The signs were originally installed in 2003. Pre-designation impacts also include the consultation, administration, and research costs from the planned I-49/I-90 connection in 2004. Total estimated impacts are presented in Exhibit 6-5.

EXHIBIT 6-5 ESTIMATED PRE-DESIGNATION IMPACTS ASSOCIATED WITH TRANSPORTATION ACTIVITIES

UNIT	UNIT NAME	TOTAL IMPACTS (DISCOUNTED AT 7%)
1	Tensas River Basin	$141,000
	Total	**$141,000**
Note: Totals may not sum due to rounding.		

6.2.3 POTENTIAL POST-DESIGNATION IMPACTS

169. At this time, there are no known plans to install additional signs. Therefore, this analysis does not anticipate any potential post-designation impacts associated with road sign construction.

170. It is unknown when the I-49 / I-90 highway connection will be constructed. While the project has the potential to affect the bear and its habitat and may require an overhead bypass, the biological opinion for the project stated that the project as proposed was not likely to result in jeopardy or adverse modification.[77] Given that future project modifications (if any) are unknown, this analysis does not currently estimate any impacts associated with this project.

[76] Written communication from Frank DeBlanc, Louisiana Department of Transportation, July 11, 2008.

[77] US Fish and Wildlife Service, Letter to William Sussman, Division Administrator, Federal Highway Administration, October 19, 2004. (This document is a formal consultation record between FHWA and the Service.)

6.2.4 POTENTIAL INCREMENTAL IMPACTS

171. No post-designation impacts on transportation activities are forecast. No potential incremental impacts are anticipated for transportation either. The I-49 / I-90 highway connection will likely have to undergo new consultations when the project is initiated, and some portion of those consultation impacts will be incremental. However, since it is unknown when the project will be undertaken, no economic impacts for such consultations can be forecast.

6.2.5 SOURCES OF UNCERTAINTY

172. The timing of the I-49 expansion is highly uncertain, and any potential project modifications for this project are unknown at this time.[78] This represents the most important area of uncertainty. If the project is undertaken within the next 20 years, the forecast economic impacts for transportation activities will under-estimate the impacts from that project.

[78] Personal communication with Bob Mahoney, Environmental Specialist, Federal Highway Administration and Jan Grenfell, Environmental Impact Manager, Louisiana Department of Transportation and Development, June 26, 2008.

SECTION 7 | POTENTIAL ECONOMIC IMPACTS ON SILVICULTURE

173. This Section provides a qualitative discussion of potential impacts of bear conservation activities on silviculture. When the bear was listed in 1992 the Service promulgated a Special Rule at 50 CFR 17(40)i. This special rule exempted "the effects incidental to normal forest management activities" of sustainable forestry practices from the listing. Sustainable forestry was defined as forest harvesting practices that provided a sustained yield and sustained habitat, while avoiding denning trees or other essential features of bear habitat.[79] The final rule states that "[n]ormal forest management activities that support sustained yield of timber products and wildlife habitats are considered compatible with Louisiana black bear needs."[80]

174. This chapter first describes the Louisiana timber industry, and Louisiana forestry best management practices. It then qualitatively describes measures that companies may be undertaking voluntarily that benefit the bear.

7.1 LOUISIANA FORESTRY INDUSTRY

175. Louisiana forests cover approximately 14 million acres. In 2007, a total of 1.2 billion board feet and 6.5 million cords of wood were harvested. This harvest generated approximately $16 million in severance tax revenue.[81]

176. The Louisiana Department of Agriculture and Forestry (LDAF) has outlined certain best management practices (BMPs) in a manual entitled *Recommend Forestry Best Management Practices for Louisiana.* The manual is intended to be a "practical field guide for forest landowners, logging contractors and forest industry, to ensure water quality during forestry operations." A survey in 1997 indicated that 83 percent of survey sites used these BMPs.[82]

177. According to the Service, "timber companies that follow the Louisiana forestry best management practices (BMPs), and that do not remove candidate or actual den trees, are not subject to ESA regulations for the Louisiana black bear. No special certification is required, and virtually all timber companies currently follow the State's BMPs to maintain their operation classification as 'normal silviculture' thereby ensuring their compliance with [the] *Clean Water Act* – Section 404 regulations."[83] Timber companies

[79] 73 FR 25357

[80] 57 FR 588

[81] Louisiana Forestry, 2008 Louisiana Forestry Facts. Accessed at: http://www.laforestry.com/Default.aspx?tabid=509.

[82] Louisiana Department of Agriculture and Forestry, *Recommend Forestry Best Management Practices for Louisiana.* Accessed at: http://www.ldaf.state.la.us/portal/Portals/0/FOR/for%20mgmt/BMP.pdf.

[83] Written communication from the Service, Lafayette Field Office, September 17, 2008.

operating in Louisiana must follow the State BMP's (or some equivalent) to remain in compliance with the Clean Water Act; these BMPs include not converting water to new uses, following specific road construction and site operation practices, and discharge no toxic pollutants.[84] Companies operating in all parts of Louisiana are subject to these restrictions; these BMPs are followed regardless of the presence of the bear or its habitat. Given this information and the fact that silvicultural operations are adhering to the BMPs for reasons unrelated to Endangered Species Act and the bear, no baseline or incremental impacts on silviculture are forecast to result from bear conservation activities.

VOLUNTARY CONSERVATION EFFORTS

178. Some companies also may undertake conservation measures that benefit the bear. However, these conservation measures have not been required as part of section 7 consultation for the bear. An example of these conservation measures is detailed in Exhibit 7-1.

EXHIBIT 7-1. VOLUNTARY ACTIONS RELATED TO BLACK BEAR

ROY O. MARTIN

One timber company, Roy O. Martin, Company, provided additional information about costs that it incurred to protect the black bear and its habitat. These included: (1) an annual cost of approximately $25,000 for sustainable forestry certification from the Forestry Stewardship Council (FSC); (2) an annual cost of $50,000 to hire a wildlife biologist to monitor bear activity; and (3) an annual cost of $5,000 for other bear research projects. Thus, Roy O. Martin appears to be incurring an annual cost of $80,000 for bear-related conservation measures. It is unclear if other timber companies are performing similar conservation measures for the bear, or incurring similar costs.

Source: Written communication from Chris Clayton, Manager of Forestry and Wildlife Environmental Affairs, Roy O. Martin, on July 14, 2008.

[84] US Fish and Wildlife Service Louisiana Ecological Field Office, Lafayette, Louisiana,. Memorandum: Statement of Economic Impacts to Forestry Resulting from Critical Habitat Designation for the Louisiana Black Bear," September 26, 2008.

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APPENDIX A | SMALL BUSINESS ANALYSIS AND ENERGY IMPACTS ANALYSIS

179. This appendix considers the extent to which incremental impacts from critical habitat designation could 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. Information for this analysis was gathered from the Small Business Administration (SBA), the Service, and from interviews with stakeholders contacted in the development of the economic analysis. The energy analysis in Section A.2 is conducted pursuant to Executive Order No. 13211.

180. The analyses of impacts to small entities and the energy industry rely on the estimated incremental impacts associated with the proposed critical habitat designation, and not the post-designation baseline impacts of bear conservation. The incremental impacts of the rulemaking are considered most relevant for the small business and energy impacts analyses as they are expected to stem from the critical habitat designation, and are therefore not expected to occur in the case that critical habitat is not designated for the bear. The post-designation baseline impacts associated with the listing of the bear, as quantified in Chapters 2 through 7 of this report, are expected to occur regardless of the outcome of this rulemaking and are therefore not considered in terms of their impacts on small businesses and the energy industry.

A.1 SBREFA ANALYSIS

181. 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).[85] No initial regulatory flexibility analysis (IRFA) 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 bear conservation efforts to affect small entities.

182. To ensure broad consideration of impacts on small entities, the Service has prepared this small business analysis without first making the threshold determination whether the

[85] 5 U.S.C. § 601 et seq.

proposed critical habitat designation could be certified as not having a significant economic impact on a substantial number of small entities.

A.1.1 SUMMARY OF IMPACTS TO SMALL ENTITIES

183. This screening analysis is based on the estimated incremental impacts associated with the proposed rulemaking as described in Chapters 2 through 7 of this analysis. The analysis evaluates the potential for economic impacts related to the following activity categories:

- Oil and Gas Exploration and Development;
- Species Management;
- Residential Development;
- Forestry;
- Transportation; and
- Agriculture.

This analysis concludes that, with the exception of impacts related to oil and gas exploration and development, there are no incremental impacts resulting from this rulemaking that may be borne by small businesses. Exhibit A-1 summarizes the estimated impacts on small businesses.

EXHIBIT A-1 SUMMARY OF IMPACTS TO SMALL ENTITIES

NAICS CODE	DESCRIPTION	AFFECTED SMALL ENTITIES *		ESTIMATED IMPACT PER SMALL ENTITY (OVER 20 YEARS, DISCOUNTED AT 7%)		IMPACTS AS A PERCENT OF MEDIAN REVENUES **	
		NUMBER	%	LOW	HIGH	LOW	HIGH
Oil and Gas Exploration and Development							
211111	Crude Petroleum and Natural Gas Extraction	18	42.9%	$25,100	$141,000	1.0%	5.4%
211112	Natural Gas Liquid Exploration	4	80.0%				
213111	Drilling Oil and Gas Wells	23	67.7%				
	TOTAL	**45**	**55.6%**	**$25,100**	**$141,000**	**1.0%**	**5.4%**

Notes: Numbers may not sum due to rounding.

*Number of small entities is based on information provided by Dun & Bradstreet, available on a parish basis. This total reflects the number of entities with offices within the counties composing critical habitat; however, not all of these entities may operate within the study area.

** Impact as percent of median revenues is calculated using the annualized impact (discounted at 7 percent). Median revenues are calculated based on the revenues of a sample of 17 of the 45 small entities, which had revenues ranging from $55,000 to $15.1 million. Average revenues (compared to the median) are approximately $1.9 million. If average revenues are used, annualized impacts are approximately 0.1 percent to 0.6 percent of annual revenues.

A.1.2 DETAILED ANALYSIS OF IMPACTS TO SMALL BUSINESSES

184. 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 Endangered Species Act (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 impact, of specifying any particular areas as critical habitat." The Secretary's discretion is limited as (s)he may not exclude areas if so doing "will result in the extinction of the species."

185. 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 U.S. 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.

186. The courts have held that the RFA/SBREFA 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.[86]

187. 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.[87] 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.

188. The Small Business Administration (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.[88] "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."[89]

189. The regulatory mechanism through which critical habitat protections are enforced 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 entity.

190. This screening analysis focuses on small entities that may bear the incremental impacts of this rulemaking quantified in Chapters 2 through Chapter 7 of this economic analysis. Although businesses affected indirectly are considered, this analysis considers only those entities for which impact would not be measurably diluted. This analysis concludes that the only incremental impacts of this rulemaking are on oil and gas operations. Therefore, Exhibit A-2 shows potential incremental impacts to small businesses resulting from oil and gas operations across the three units.

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[86] 773 F. 2d 327 (D.C. Cir. 1985).

[87] 175 F. 3d 1027, 1044 (D.C. Cir. 1999).

[88] Small Business Administration, Office of Advocacy. May 2003. A Guide for Government Agencies: How to Comply with the Regulatory Flexibility Act. pg. 20.

[89] *Ibid.*, pg. 21.

EXHIBIT A-2 SUMMARY OF INCREMENTAL IMPACTS TO SMALL ENTITIES BY UNIT

UNIT	PRESENT VALUE (DISCOUNTED AT 3%)		PRESENT VALUE (DISCOUNTED AT 7%)		ANNUALIZED IMPACTS (3%)		ANNUALIZED IMPACTS (7%)	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
1	$582,000	$3,340,000	$430,000	$2,470,000	$38,000	$218,000	$38,000	$218,000
2	$856,000	$4,830,000	$633,000	$3,570,000	$55,900	$315,000	$55,900	$315,000
3	$88,500	$382,000	$65,500	$282,000	$5,780	$24,900	$5,780	$24,900
TOTAL	**$1,530,000**	**$8,550,000**	**$1,130,000**	**$6,330,000**	**$99,600**	**$558,000**	**$99,600**	**$558,000**

Note: Tables may not sum due to rounding. Estimates assume that all incremental impacts will be borne by small entities.

A.2 POTENTIAL IMPACTS TO THE ENERGY INDUSTRY

191. 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."[90]

192. 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.[91]

193. Two of these criteria are relevant to this analysis: (1) reductions in crude oil supply in excess of 10,000 barrels per day (bbls); and (2) reductions in natural gas production in excess of 25 million Mcf per year. Exhibit A-3 analyzes whether the energy industry, and specifically, oil and gas producers are likely to experience "a significant adverse effect" as a result of the critical habitat designation for Louisiana black bear.

[90] 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.

[91] Ibid.

EXHIBIT A-3. OIL AND GAS PRODUCTION WITHIN CRITICAL HABITAT

PARISH	% OF PARISH WITHIN CHD	CRUDE OIL			NATURAL GAS		
		ANNUAL PRODUCTION (BBLS)	AVERAGE DAILY PRODUCTION (BBLS PER DAY)	DAILY PRODUCTION IN CHD (BBLS PER DAY)	ANNUAL PRODUCTION (CF)	ANNUAL PRODUCTION (MCF)	ANNUAL PRODUCTION IN CHD (MCF)
Avoyelles	18%	113,946	312	57	78,592	78.59	14
Catahoula	3%	261,353	716	18	26,764	26.76	1
Concordia	39%	468,862	1,285	496	280,289	280.29	108
East Carroll	4%	0	0	0	0	0.00	0
Franklin	4%	21,016	58	2	10,497	10.50	0
Iberia	19%	1,965,520	5,385	1,030	39,290,397	39,290.40	7,515
Iberville	9%	730,460	2,001	175	1,713,610	1,713.61	150
Madison	49%	0	0	0	11,149	11.15	5
Pointe Coupee	60%	401,505	1,100	663	65,450,922	65,450.92	39,458
Richland	2%	29,146	80	1	128,402	128.40	2
St. Landry	0%	281,544	771	1	0	0.00	0
St. Martin	30%	1,077,193	2,951	875	3,757,088	3,757.09	1,114
St. Mary	49%	2,769,742	7,588	3,727	39,705,496	39,705.50	19,503
Tensas	42%	180,713	495	207	483,371	483.37	202
West Carroll	1%	0	0	0	0	0.00	0
West Feliciana	3%	2,634	7	0	41,018	41.02	1
	Total	**8,303,634**	**22,750**	**7,253**	**150,977,595**	**150,978**	**68,075**

Source: Production data is for 2007, obtained from the Louisiana Department of Natural Resources' SONRIS database. The database is accessible at: http://sonris-www.dnr.state.la.us/www_root/sonris_portal_1.htm.

194. To estimate the production of wells within critical habitat, this analysis assumes an even distribution of oil and gas production throughout the county. To the extent that wells are more concentrated within critical habitat areas, this analysis may underestimate total production within critical habitat. Based on historic well production records, it appears that wells within critical habitat produce approximately 7,300 barrels of crude oil per day and approximately 68,100 Mcf per year.

195. These numbers represent the total amount of oil and gas production that could be affected by critical habitat designation. Both amounts appear to be well below the respective thresholds of 10,000 barrels of crude oil per day and 25 million Mcf of natural gas per year. Therefore, it appears unlikely that the energy industry will experience "a significant adverse effect."

APPENDIX B| DETAILED TABLES PROVIDING ALTERNATIVE IMPACT ESTIMATES APPPLYING A THREE PERCENT DISCOUNT RATE

EXHIBIT B-1 SUMMARY OF PRE-DESIGNATION BASELINE IMPACTS (DISCOUNTED AT THREE PERCENT)

UNIT	UNIT NAME	OIL AND GAS OPERATIONS		RESIDENTIAL DEVELOPMENT	FORESTRY	SPECIES MANAGEMENT	AGRICULTURE		TRANSPORTATION
		LOW	HIGH				LOW	HIGH	
1	Tensas River Basin	$1,890,000	$3,500,000	$769,000	$0	$1,650,000	$34,800	$102,000	$117,000
2	Upper Atchafalaya River Basin	$1,010,000	$1,620,000	$858,000	$0	$1,650,000	$34,800	$102,000	$0
3	Lower Atchafalaya River Basin	$7,030,000	$12,800,000	$857,000	$0	$1,650,000	$34,800	$102,000	$0
Subtotal		**$9,930,000**	**$17,900,000**	**$2,480,000**	**$0**	**$4,950,000**	**$104,000**	**$306,000**	**$117,000**
Considered for Exclusion									
1	Tensas River Basin					$49,400,000			
2	Upper Atchafalaya River Basin					$1,400,000			
3	Lower Atchafalaya River Basin					$0			
Subtotal		**$0**	**$0**	**$0**	**$0**	**$50,800,000**	**$0**	**$0**	**$0**
Total		**$9,930,000**	**$17,900,000**	**$2,480,000**	**$0**	**$55,800,000**	**$104,000**	**$306,000**	**$117,000**

Note: Totals may not sum due to rounding.

EXHIBIT B-2 SUMMARY OF POST-DESIGNATION BASELINE IMPACTS (DISCOUNTED AT THREE PERCENT)

UNIT	UNIT NAME	OIL AND GAS OPERATIONS		DEVELOPMENT	FORESTRY	SPECIES MANAGEMENT	AGRICULTURE		TRANSPORT
		LOW	HIGH				LOW	HIGH	
1	Tensas River Basin	$431,000	$2,390,000	$544,000	$0	$1,590,000	$23,800	$69,800	$0
2	Upper Atchafalaya River Basin	$362,000	$1,110,000	$586,000	$0	$1,590,000	$23,800	$69,800	$0
3	Lower Atchafalaya River Basin	$1,710,000	$8,760,000	$586,000	$0	$1,590,000	$23,800	$69,800	$0
Subtotal		**$2,500,000**	**$12,300,000**	**$1,720,000**	**$0**	**$4,780,000**	**$71,400**	**$209,000**	**$0**
Considered for Exclusion									
1	Tensas River Basin	$0	$0	$0	$0	$96,000,000	$0	$0	$0
2	Upper Atchafalaya River Basin	$0	$0	$0	$0	$2,710,000	$0	$0	$0
3	Lower Atchafalaya River Basin	$0	$0	$0	$0	$0	$0	$0	$0
Subtotal		**$0**	**$0**	**$0**	**$0**	**$98,700,000**	**$0**	**$0**	**$0**
Total		**$2,500,000**	**$12,300,000**	**$1,720,000**	**$0**	**$103,000,000**	**$71,400**	**$209,000**	**$0**

Note: Totals may not sum due to rounding.

EXHIBIT B-3 SUMMARY OF POST-DESIGNATION INCREMENTAL IMPACTS (DISCOUNTED AT THREE PERCENT)

UNIT	UNIT NAME	OIL AND GAS OPERATIONS		DEVELOPMENT	FORESTRY	SPECIES MANAGEMENT	AGRICULTURE	TRANSPORTATION
		LOW	HIGH					
1	Tensas River Basin	$582,000	$3,340,000	$0	$0	$0	$0	$0
2	Upper Atchafalaya River Basin	$856,000	$4,830,000	$0	$0	$0	$0	$0
3	Lower Atchafalaya River Basin	$88,500	$382,000	$0	$0	$0	$0	$0
Subtotal		**$1,530,000**	**$8,550,000**	**$0**	**$0**	**$0**	**$0**	**$0**
Considered for Exclusion								
1	Tensas River Basin	$0	$0	$0	$0	$0	$0	$0
2	Upper Atchafalaya River Basin	$0	$0	$0	$0	$0	$0	$0
3	Lower Atchafalaya River Basin	$0	$0	$0	$0	$0	$0	$0
Subtotal		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Total		**$1,530,000**	**$8,550,000**	**$0**	**$0**	**$0**	**$0**	**$0**

Note: Totals may not sum due to rounding.

APPENDIX C | UNDISCOUNTED STREAM OF IMPACTS

EXHIBIT C-1 UNDISCOUNTED IMPACTS TO OIL AND GAS OPERATIONS

YEAR	UNIT 1		UNIT 2		UNIT 3	
	LOW	HIGH	LOW	HIGH	LOW	HIGH
Pre-Designation Impacts						
1992	$84,381	$156,176	$45,092	$72,442	$313,639	$571,759
1993	$84,381	$156,176	$45,092	$72,442	$313,639	$571,759
1994	$84,381	$156,176	$45,092	$72,442	$313,639	$571,759
1995	$84,381	$156,176	$45,092	$72,442	$313,639	$571,759
1996	$84,381	$156,176	$45,092	$72,442	$313,639	$571,759
1997	$84,381	$156,176	$45,092	$72,442	$313,639	$571,759
1998	$84,381	$156,176	$45,092	$72,442	$313,639	$571,759
1999	$84,381	$156,176	$45,092	$72,442	$313,639	$571,759
2000	$84,381	$156,176	$45,092	$72,442	$313,639	$571,759
2001	$84,381	$156,176	$45,092	$72,442	$313,639	$571,759
2002	$84,381	$156,176	$45,092	$72,442	$313,639	$571,759
2003	$84,381	$156,176	$45,092	$72,442	$313,639	$571,759
2004	$84,381	$156,176	$45,092	$72,442	$313,639	$571,759
2005	$84,381	$156,176	$45,092	$72,442	$313,639	$571,759
2006	$84,381	$156,176	$45,092	$72,442	$313,639	$571,759
2007	$84,381	$156,176	$45,092	$72,442	$313,639	$571,759
2008	$84,381	$156,176	$45,092	$72,442	$313,639	$571,759
Post-Designation Baseline Impacts						
2009	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
2010	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
2011	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
2012	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373

YEAR	UNIT 1		UNIT 2		UNIT 3	
	LOW	HIGH	LOW	HIGH	LOW	HIGH
2013	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
2014	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
2015	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
2016	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
2017	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
2018	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
2019	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
2020	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
2021	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
2022	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
2023	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
2024	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
2025	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
2026	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
2027	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
2028	$28,108	$156,069	$23,654	$72,401	$111,322	$571,373
Post-Designation Incremental Impacts						
2009	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905
2010	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905
2011	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905
2012	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905
2013	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905
2014	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905
2015	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905

YEAR	UNIT 1		UNIT 2		UNIT 3	
	LOW	HIGH	LOW	HIGH	LOW	HIGH
2016	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905
2017	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905
2018	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905
2019	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905
2020	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905
2021	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905
2022	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905
2023	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905
2024	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905
2025	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905
2026	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905
2027	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905
2028	$37,952	$218,059	$55,876	$315,274	$5,778	$24,905

EXHIBIT C-2 UNDISCOUNTED IMPACTS ON SPECIES MANAGEMENT ACTIVITIES

YEAR	UNIT 1	UNIT 2	UNIT 3	CONSIDERED FOR EXCLUSION		
				UNIT 1	UNIT 2	UNIT 3
Pre-designation Baseline Impacts						
1992	$40,568	$40,568	$40,568	$0	$0	$0
1993	$40,568	$40,568	$40,568	$0	$0	$0
1994	$40,568	$40,568	$40,568	$0	$0	$0
1995	$40,568	$40,568	$40,568	$0	$0	$0
1996	$40,568	$40,568	$40,568	$0	$0	$0
1997	$40,568	$40,568	$40,568	$0	$0	$0
1998	$54,685	$54,685	$54,685	$0	$0	$0
1999	$70,433	$70,433	$70,433	$0	$0	$0
2000	$105,737	$105,737	$105,737	$0	$0	$0
2001	$98,203	$98,203	$98,203	$0	$0	$0
2002	$100,628	$100,628	$100,628	$6,263,657	$176,800	$0
2003	$101,895	$101,895	$101,895	$6,263,657	$176,800	$0
2004	$107,790	$107,790	$107,790	$6,263,657	$176,800	$0
2005	$95,962	$95,962	$95,962	$6,263,657	$176,800	$0
2006	$137,532	$137,532	$137,532	$6,263,657	$176,800	$0
2007	$66,112	$66,112	$66,112	$6,263,657	$176,800	$0
2008	$139,940	$139,940	$139,940	$6,263,657	$176,800	$0
Post-designation Baseline Impacts						
2009	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0
2010	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0
2011	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0
2012	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0

YEAR	UNIT 1	UNIT 2	UNIT 3	CONSIDERED FOR EXCLUSION		
				UNIT 1	UNIT 2	UNIT 3
2013	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0
2014	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0
2015	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0
2016	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0
2017	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0
2018	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0
2019	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0
2020	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0
2021	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0
2022	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0
2023	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0
2024	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0
2025	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0
2026	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0
2027	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0
2028	$104,021	$104,021	$104,021	$6,263,657	$176,800	$0

EXHIBIT C-3 UNDISCOUNTED IMPACTS TO DEVELOPMENT ACTIVITIES

YEAR	UNIT 1	UNIT 2	UNIT 3
Pre-Designation Impacts			
1998	$33,483	$38,264	$38,253
1999	$33,483	$38,264	$38,253
2000	$33,483	$38,264	$38,253
2001	$33,483	$38,264	$38,253
2002	$33,483	$38,264	$38,253
2003	$39,483	$38,264	$38,253
2004	$35,483	$38,264	$38,253
2005	$35,483	$38,264	$38,253
2006	$35,483	$38,264	$38,253
2007	$35,483	$38,264	$38,253
2008	$35,483	$38,264	$38,253
Post-Designation Baseline Impacts			
2009	$35,483	$38,264	$38,253
2010	$35,483	$38,264	$38,253
2011	$35,483	$38,264	$38,253
2012	$35,483	$38,264	$38,253
2013	$35,483	$38,264	$38,253
2014	$35,483	$38,264	$38,253
2015	$35,483	$38,264	$38,253
2016	$35,483	$38,264	$38,253
2017	$35,483	$38,264	$38,253
2018	$35,483	$38,264	$38,253

YEAR	UNIT 1	UNIT 2	UNIT 3
2019	$35,483	$38,264	$38,253
2020	$35,483	$38,264	$38,253
2021	$35,483	$38,264	$38,253
2022	$35,483	$38,264	$38,253
2023	$35,483	$38,264	$38,253
2024	$35,483	$38,264	$38,253
2025	$35,483	$38,264	$38,253
2026	$35,483	$38,264	$38,253
2027	$35,483	$38,264	$38,253
2028	$35,483	$38,264	$38,253

EXHIBIT C-4 UNDISCOUNTED IMPACTS ON OTHER ACTIVITES

YEAR	AGRICULTURE						TRANSPORTATION					
	UNIT 1		UNIT 2		UNIT 3		UNIT 1		UNIT 2		UNIT 3	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
Pre-designation Baseline Impacts												
1992	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
1993	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
1994	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
1995	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
1996	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
1997	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
1998	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
1999	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2000	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2001	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2002	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2003	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$673	$673	$0	$0	$0	$0
2004	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$100,040	$100,040	$0	$0	$0	$0
2005	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2006	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2007	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2008	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
Post-designation Baseline Impacts												
2009	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2010	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0

YEAR	AGRICULTURE						TRANSPORTATION					
	UNIT 1		UNIT 2		UNIT 3		UNIT 1		UNIT 2		UNIT 3	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
2011	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2012	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2013	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2014	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2015	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2016	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2017	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2018	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2019	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2020	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2021	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2022	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2023	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2024	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2025	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2026	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2027	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0
2028	$1,553	$4,553	$1,553	$4,553	$1,553	$4,553	$0	$0	$0	$0	$0	$0