

MEMORANDUM | 16 January 2006

TO Edward Maillett, U.S. Fish and Wildlife Service (the Service)
FROM Industrial Economics, Incorporated (IEc)
SUBJECT Estimated Economic Impact of Conservation Efforts in Designated Critical Habitat for the Thread-Leaved Brodiaea

The Final Economic Analysis of Proposed Critical Habitat for the Thread-Leaved Brodiaea (FEA) assessed the potential economic impacts in areas contemplated for critical habitat designation for the brodiaea as described by the Service in the Proposed Rule.¹ Because the geographic scope of the FEA is consistent with the Proposed Rule, it does not reflect changes made to the proposed critical habitat in the Final Rule.² This memorandum provides information on the economic impacts of conservation efforts for the brodiaea within the designated critical habitat as described in the Final Rule.

In the Final Rule, the Service excluded from critical habitat 48 units in their entirety (24 units proposed for inclusion and 24 units proposed for exclusion in the Proposed Rule), and portions of two units (units 5b and 8d). Accordingly, the final critical habitat designation consists of units 1a, 1b, and portions of units 5b and 8d. Details of the geographic scope of final critical habitat and reasons for the various exclusions are described in detail in the Final Rule.

In order to estimate economic impact of conservation activities in the geographic areas included in the Final Rule, this memorandum takes the following steps. First, costs associated with units 1a and 1b are included in their entirety. Then, costs associated with the portions of units 5b and 8d that were designated are identified and added to the costs for units 1a and 1b.

Impacts associated with units 1a and 1b are reported in Exhibit ES-4 of the FEA. The combined present value (assuming a seven percent discount rate) of costs for these two units range from \$258,000 to \$1.5 million. In annualized terms, this range is \$25,000 to \$139,000.

To identify costs associated with unit 5b, the analysis utilizes information contained in the Final Rule indicating that the acreage removed (15 acres) is not known to be occupied, and that the remaining portion of the unit is located on public land. For this

¹ IEC, Final Economic Analysis of Critical Habitat Designation for the Thread-leaved Brodiaea, prepared for the Service, November 16, 2005; and the Service, Endangered and Threatened Wildlife and Plants: Proposed Designation of Critical Habitat for *Brodiaea filifolia* (thread-leaved brodiaea); Proposed Rule, 69 FR 71284, December 8, 2004.

² The Service, Endangered and Threatened Wildlife and Plants: Designation of Critical Habitat for *Brodiaea filifolia* (thread-leaved brodiaea); Final Rule, published in the *Federal Register* on December 13, 2005, Vol. 70, No. 238.

³ The Service, Endangered and Threatened Wildlife and Plants: Designation of Critical Habitat for *Brodiaea filifolia* (thread-leaved brodiaea); Final Rule, 70 FR 73820, December 13, 2005.

reason, the analysis removes development, transportation, and utility costs from this unit, but retains costs associated with the management of public lands as described in Section 6 of the FEA.

To identify costs associated with unit 8d, the analysis also utilizes information contained within the Final Rule indicating that the acreage removed (63 acres) contains significant existing development. Because the analysis of economic impacts to private development activities contained within the FEA excludes existing developed lands, the exclusion of developed areas in the Final Rule does not change the cost estimate for this unit. Accordingly, all costs for unit 8d are retained.⁴

Exhibit 1 provides an estimate of the economic impacts of brodiaea conservation efforts in areas designated as critical habitat for the brodiaea. The present value (assuming a seven percent discount rate) of costs range from \$1.6 million to \$2.9 million. In annualized terms, this range is \$155,000 to \$275,000.

EXHIBIT 1

ECONOMIC IMPACTS OF CONSERVATION EFFORTS FOR THE BRODIAEA WITHIN AREAS DESIGNATED AS FINAL CRITICAL HABITAT	
TOTAL POST-DESIGNATION IMPACTS (2005-2024)	IMPACTS ESTIMATED IN FINAL CHD
Undiscounted	Low: \$1,652,000 High: \$3,948,000
Present Value (7% discount rate)	Low: \$1,642,000 High: \$2,913,000
Annualized (7% discount rate)	Low: \$155,000 High: \$275,000
Present Value (3% discount rate)	Low: \$1,647,000 High: \$3,390,000
Annualized (3% discount rate)	Low: \$111,000 High: \$228,000

⁴ The methodology used to estimate a portion of the development-related impacts relies on a study by Zabel and Paterson that uses empirical data (i.e., building permits) to estimate changes in the production of housing in cities with designated critical habitat. The results of the paper suggest that the presence of critical habitat results in a consistent reduction in the number of housing permits issued annually (approximately 20 percent). This effect increases slightly with increases in the size of the designation (approximately 0.6 percent for each additional percent of the city that is designated). The authors interpret this as evidence of a "signaling" effect, where designation acts as a sign that all development within a market (i.e., a city) may be more costly. In the FEA, reduced housing production in the City of San Marcos was divided among Units 8a, 8c, and 8d based on the extent of projected developed acreage in each unit. In this memorandum, a slight decrease in housing impact is estimated in San Marcos, because Units 8a and 8c were not designated in the final rule. However, the signaling effect that was formerly split across these three units is now assigned entirely to unit 8d.