DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[FWS–R1–ES–2012–0017: 4500030113]

RIN 1018–AX72

Endangered and Threatened Wildlife and Plants; Threatened Status for Eriogonum codium (Umtanum Desert Buckwheat) and Physaria douglasii subsp. tuplashensis (White Bluffs Bladderpod) and Designation of Critical Habitat

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service, propose to list Umtanum desert buckwheat (*Eriogonum codium*) and White Bluffs bladderpod (*Physaria douglasii* subsp. *tuplashensis*) as threatened, under the Endangered Species Act of 1973, as amended (Act). We are also proposing to designate critical habitat for both species under the Act. In total, approximately 344 acres (139 hectares) are being proposed for designation as critical habitat for *Eriogonum codium* in Benton County, Washington, and approximately 2,861 acres (1,158 hectares) are being proposed for designation as critical habitat for *Physaria douglasii* subsp. *tuplashensis* in Franklin County, Washington. We also announce the availability of a draft economic analysis (DEA) of the proposed designation and a required determinations section of the proposal.

DATES: We will consider all comments received or postmarked on or before July 16, 2012. We must receive requests for public hearings, in writing, at the address shown in the **FOR FURTHER INFORMATION CONTACT** section by June 29, 2012. Comments submitted electronically using the Federal eRulemaking Portal (see **ADDRESSES** section, below) must be received by 11:59 p.m. Eastern Time on the closing date.

ADDRESSES: *Document availability:* The draft economic analysis is available at *http://www.regulations.gov* at Docket No. FWS–R1–ES–2012–0017 or by contacting the office listed under **FOR FURTHER INFORMATION CONTACT**.

Comment submission: You may submit your comments or data concerning this proposal by one of the following methods:

(1) *Electronically:* Go to the Federal eRulemaking Portal: *http://www.regulations.gov* and submit your comment to Docket No. FWS–R1–ES–2012–0017.

(2) *By hard copy:* Submit by U.S. mail or hand-delivery to: Public Comments Processing, Attn: FWS–R1–ES–2012–0017; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, MS 2042–PDM, Arlington, VA 22203.

We request that you send comments only by the methods described above. We will post all information received on *http://www.regulations.gov.* This generally means that we will post any personal information you provide us (see the Public Comments section below for more information).

FOR FURTHER INFORMATION CONTACT: Ken Berg, Manager, U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office, 510 Desmond Drive, Suite 102, Lacey, Washington 98503–1263, by telephone (360) 753–9440, or by facsimile (360) 753–9405. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Endangered Species Act (Act), a species may warrant protection through listing if it is endangered throughout all or a significant portion of its range. We are proposing to list Umtanum desert buckwheat and White Bluffs bladderpod as threatened under the Act because of continued threats, and listing can only be done by issuing a rule. Both species occur as single populations in narrow, linear bands on bluffs above and on opposite sides of the Columbia River along the Hanford Reach in Washington State. We are also proposing to designate critical habitat under the Act for both species. Critical habitat represents geographical areas that are essential to a species' conservation, and is designated on the basis of the best scientific information available after taking into consideration the economic impact, impact on national security, and any other relevant impact of specifying any particular area as critical habitat. This proposed rule also announces the availability of a draft economic analysis (DEA), which evaluates the potential economic impacts that may be attributable to the proposed designation of critical habitat for both species.

The basis for our action. Under the Act, a species may be determined to be endangered or threatened based on any of five factors: (1) Destruction, modification, or curtailment of its habitat or range; (2) Overuse; (3) Disease or predation; (4) Inadequate existing regulations; or (5) Other natural or manmade factors. The Act also requires that we designate critical habitat concurrently with listing determinations, if designation is prudent and determinable.

We have made the following finding related to these criteria:

- Umtanum desert buckwheat is threated by wildfire, nonnative plants, seed predation, small population size, limited geographic range, and low recruitment.
- White Bluffs bladderpod is threatened by wildfire, irrigation-induced landslides and slope failure, harm by recreational activities and off-road vehicle use, nonnative plants, small population size, and limited geographic range.

This rule proposes to designate critical habitat for both species.

- Critical habitat designation would not be expected to increase threats to either species, and we have sufficient scientific information on both species to determine the areas essential to their conservation. Accordingly, we have determined the designation of critical habitat is both prudent and determinable.
- Approximately 2,400 acres of Federal land, 17 acres of State land, and 419 acres of private land are being proposed as critical habitat for both species.
- Based on the best available scientific and commercial data, we have not identified a significant number of small entities that may be impacted by the proposed critical habitat designation. Small entities are consequently anticipated to bear a relatively low cost as a result of the designation of critical habitat.

Peer Review. We will seek the expert opinions of at least three appropriate and independent specialists with scientific expertise to ensure our determinations are based on scientifically sound data, assumptions, and analyses.

Information Requested

We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and as effective as possible. Therefore, we request comments or information from the public, other concerned governmental agencies, Native American tribes, the scientific community, industry, or any other interested parties concerning this proposed rule. We particularly seek comments concerning:

(1) Additional information concerning the historical and current status, range, distribution, population size, pollinators and the foraging distances of these species, including the locations of any additional populations of these species.

(2) Any information on the biological or ecological requirements of these species and ongoing conservation measures for these species and their habitat.

(3) The factors that are the basis for making a listing determination for a species under section 4(a) of the Act, which are:

(a) The present or threatened destruction, modification, or curtailment of its habitat or range;

(b) Overutilization for commercial, recreational, scientific, or educational purposes;

(c) Disease or predation;

(d) The inadequacy of existing regulatory mechanisms; or

(e) Other natural or manmade factors affecting its continued existence.

(4) Biological, commercial trade, or other relevant data concerning any threats (or lack thereof) to these species and regulations that may be addressing those threats, as discussed in this proposed rule.

(5) Current or planned activities in the areas occupied by *Eriogonum codium* or *Physaria douglasii* subsp. *tuplashensis* and the possible impacts of these activities on these species. For purposes of this document, we will refer to *Physaria douglasii* subsp. *tuplashensis* as ''White Bluffs bladderpod'' and *Eriogonum codium* as ''Umtanum desert buckwheat''.

(6) The reasons why areas should or should not be designated as critical habitat as provided by section 4 of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531, *et seq.*), including whether there are threats to the species from human activity, the degree of which the threats can be expected to increase due to the designation, and whether that increase in threat outweighs the benefit of designation such that the designation of critical habitat may not be prudent.

(7) Specific information on:

(a) The amount and distribution of habitat for Umtanum desert buckwheat or White Bluffs bladderpod;

(b) What areas occupied at the time of the proposed listing that contain features essential to the conservation of the species should be included in the designation and why;

(c) Special management considerations or protections that may be needed in critical habitat areas we are proposing, including managing for the potential effects of climate change; and

(d) What areas that are not occupied at the time of the proposed listing are essential for the conservation of the species and why.

(8) Land use designations and current or planned activities in the area and their possible impacts on the proposed critical habitat.

(9) Information on the projected and reasonably likely impacts of climate change on Umtanum desert buckwheat or White Bluffs bladderpod and the proposed critical habitat areas.

(10) Any probable economic, national security, or other relevant impacts of designating any area that may be included in the final designation. We are particularly interested in any impacts on small entities or families, and the benefits of including or excluding areas that exhibit these impacts.

(11) Whether any specific areas we are proposing for critical habitat designation should be considered for exclusion under section 4(b)(2) of the Act, and whether the benefits of potentially excluding any specific area outweigh the benefits of including that area under section 4(b)(2) of the Act and why.

(12) Information on whether the draft economic analysis (DEA) identifies all costs and benefits attributable to the proposed critical habitat designation for each of the plants, and information on any costs or benefits that we have overlooked.

(13) Information on whether the DEA makes appropriate assumptions regarding current practices and any regulatory changes likely if we designate critical habitat.

(14) Information on whether the DEA identifies all costs reasonably likely to occur that could result from the critical habitat designation and whether you agree with the analysis.

(15) Economic data on the incremental costs of designating any particular area as critical habitat.

(16) Whether we could improve or modify our approach to designating critical habitat in any way to provide for greater public participation and understanding, or to better accommodate public concerns and comments.

Please note that submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, will not be considered in making a determination, as section 4(b)(1)(A) of the Act directs that determinations as to whether any species is a threatened or endangered species must be made ''solely on the basis of the best scientific and commercial data available,'' and section 4(b)(2) directs that critical habitat designations be made based on the best scientific data available and after consideration of economic and other relevant impacts.

You may submit your comments and materials concerning this proposed rule by one of the methods listed in **ADDRESSES**. We request that you send comments only by the methods described in **ADDRESSES**.

If you submit information via *http://www.regulations.gov,* your entire submission—including any personal identifying information—will be posted on the Web site. If your submission is made via a hardcopy that includes personal identifying information, such as your address, phone number, email address, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on *http://www.regulations.gov.* Please include sufficient information with your comments to allow us to verify any scientific or commercial information you include.

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on *http://www.regulations.gov,* or by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Previous Federal Actions

Candidate History: Umtanum desert buckwheat and White Bluffs bladderpod (formerly *Lesquerella tuplashensis*) were identified as candidates for possible addition to the Lists of Endangered and Threatened Wildlife and Plants in our Annual Candidate Notice of Review, published in the **Federal Register** October 25, 1999 (64 FR 57542). Both species were given a Listing Priority number (LPN) of 5 at that time; the LPN is assigned to a species based on the immediacy and magnitude of threats and the species' taxonomic status. In 1999, threats to both species were considered to be of high magnitude, but nonimminent. However, in 2002, the LPN for Umtanum desert buckwheat was revised to LPN 2, which is assigned when threats to a species are of high magnitude and imminence (67 FR 40663), based on new information revealing low reproduction for the

species. The LPN for White Bluffs bladderpod (formerly *Lesquerella tuplashensis*) was revised to LPN 9 in 2009 (74 FR 57810), to reflect new information indicating threats were now moderate to low in magnitude and imminence. In 2009, the Service completed a Spotlight Species Action Plan for White Bluffs bladderpod to set conservation targets and identify actions to achieve those targets for the next 5 years. This plan can be found on the Service's Web site at: *http://www.fws.gov/ecos/ajax/docs/action_plans/doc3090.pdf.* The 2011 Notice of Review, published October 26, 2011 (76 FR 66370), included Umtanum desert buckwheat and White Bluffs bladderpod; both species have been maintained as candidates since 1999.

Petition History: A petition requesting that Umtanum desert buckwheat, White Bluffs bladderpod, and several other species be listed under the Act was received on May 4, 2004 (Center for Biological Diversity *et al.* [CBD] 2004, pp. 49, 100). On July 12, 2011, the Service filed a multiyear work plan as part of a proposed settlement agreement with Center for Biological Diversity (CBD) and others in a consolidated case in the U.S. District Court for the District of Columbia. The settlement agreement was approved by the court on September 9, 2011, and will enable the Service to systematically review and address the conservation needs of more than 250 species, over a period of 6 years, including Umtanum desert buckwheat and White Bluffs bladderpod.

Background

It is our intent to discuss only those topics directly relevant to the proposed listing and critical habitat designations for Umtanum desert buckwheat and White Bluffs bladderpod in this proposed rule. A summary of topics relevant to this proposed rule is provided below. Additional information on both species may be found in the Candidate Notice of Review, which was published October 26, 2011 (76 FR 66370).

Geography, Climate, and Landscape Setting

Umtanum desert buckwheat and White Bluffs bladderpod are found only on the Hanford Reach of the Columbia River, the last free-flowing stretch of the Columbia River within U.S. borders. The Hanford Reach lies within the semi-arid shrub steppe Pasco Basin of the Columbia Plateau in south-central Washington State. The region's climate is influenced by the Pacific Ocean, the Cascade Mountain Range to the west, and other mountain ranges located to the north and east. The Pacific Ocean moderates temperatures throughout the Pacific Northwest, and the Cascade Range generates a rain shadow that limits rain and snowfall in the eastern half of Washington State. The Cascade Range also serves as a source of cold air drainage, which has a considerable effect on the wind regime on the Hanford Installation. Daily maximum temperatures vary from an average of 1.7 °Celsius (C) (35 °Fahrenheit (F)) in late December and early January, to 36 °C (96 °F) in late July. The Hanford Reach is generally quite arid, with an average annual precipitation of 16 centimeters (cm) (6.3 inches (in)). The relative humidity at the Hanford Reach is highest during the winter months, averaging about 76 percent, and lowest during the summer, averaging about 36 percent. Average snowfall ranges from 0.25 cm (0.1 in) in October to a maximum of 13.2 cm (5.2 in) in December, decreasing to 1.3 cm (0.5 in) in March. Snowfall accounts for about 38 percent of all precipitation from December through February (USFWS 2008, pp. 3.8–3.10).

The Hanford Reach National Monument/Saddle Mountain National Wildlife Refuge (Monument), which includes approximately 78,780 hectares (ha) (195,000 acres (ac)), contains much of the Hanford Reach of the Columbia River. All of the land is owned by the Department of Energy (DOE) and was formerly part of the 145,440-ha (360,000-ac) Hanford installation. The Hanford installation was established by the U.S. Government in 1943 as a national security area for the production of weapons grade plutonium and purification facilities. For more than 40 years, the primary mission at Hanford was associated with the production of nuclear materials for national defense. However, large tracts of land were used as protective buffer zones for safety and security purposes and remained undisturbed.

The Hanford Reach National Monument was established by Presidential Proclamation in June 2000, to connect these tracts of land, protecting the river reach and the largest remnant of the shrub steppe ecosystem in the Columbia River Basin. The Hanford Reach National Monument Proclamation identifies several nationally significant resources, including a diversity of native plant and animal species, including rare and sensitive plant species such as Umtanum desert buckwheat and White Bluffs bladderpod (USFWS 2008, p. 1–4). The Proclamation also sets forth specific management actions and mechanisms that are to be followed: (1) Federal lands are withdrawn from disposition under public land laws, including all interests in these lands, such as future mining claims; (2) off-road vehicle use is prohibited; (3) the ability to apply for water rights is established; (4) grazing is prohibited; (5) the Service and DOE (subject to certain provisions) are established as managers of the Monument; (6) a land management transfer mechanism from the DOE to the Service is established; (7) cleanup and restoration activities are assured; and (8) existing rights, including tribal rights, are protected.

All lands included in the Monument are Federal lands under the primary jurisdiction of the DOE. Approximately 66,660 ha (165,000 ac) are currently managed as an overlay refuge by the Service through agreements with the DOE. Overlay refuges exist where the Service manages lands for the benefit of fish and wildlife resources, but is not the primary holder in fee title of lands forming the refuge (Service 2008, p. 1–7). Because the Monument is administered as a component of the National Wildlife Refuge System, the legal mandates and policies that apply to any national wildlife refuge apply to the Monument. The Proclamation directs the DOE and the Service to protect and conserve the area's native plant communities, specifically recognizing the area's biologically diverse shrub steppe ecosystem (USFWS 2008, pp. 1.21, 3.5). The DOE manages approximately 11,716 ha (29,000 ac) of land within the Monument and retains land surface ownership or control on all Monument acreage. Thus, the Service and DOE have joint management responsibility for the Monument.

The parcel of land containing Umtanum desert buckwheat is on part of what was historically called the McGee Ranch, a historical homestead area of more than 364 ha (900 ac) within the greater Hanford installation. Management of this parcel has been retained by DOE due to unresolved issues with contaminants. This is expected to be resolved over time, and management conveyed to the Monument, since this area is not essential to the operation of the Hanford facility. Umtanum desert buckwheat and White Bluffs bladderpod both occur in narrow, linear bands on bluffs above and on opposite sides of the Columbia River. The populations are approximately 15 kilometers (km) (9 miles (mi)) apart, and although relatively near to each other, their habitat has a widely disparate geologic history and subsequent soil

development. These conditions create unique habitats and substrates that support these and other rare endemic plants (see *Species Information* sections) within the Hanford Reach.

Species Information

Umtanum Desert Buckwheat

Umtanum desert buckwheat is a long-lived, woody perennial plant that forms low mats. Individual plants may exceed 100 years of age, based on counts of annual growth rings on cross sections of recently dead plants. Growth rates are also extremely slow, with stem diameters increasing an average of only 0.17 millimeters (mm) (0.007 in) per year (The Nature Conservancy (TNC) 1998, p. 9; Dunwiddie *et al.* 2001, p. 62). A detailed description of the identifying characteristics of Umtanum desert buckwheat is found in Reveal *et al.* (1995, pp. 350–351). Umtanum desert buckwheat is State-listed as Endangered, with a G1 (i.e., critically imperiled world-wide, and particularly vulnerable to extinction) global ranking and an S1 (i.e., critically imperiled State-wide, and particularly vulnerable to extinction) State ranking (WDNR 2011a, p. 5).

Taxonomy

In 1995, Florence Caplow and Kathryn Beck resumed large-scale rare plant surveys on the Hanford Site that were initiated in 1994 by TNC and the DOE, as part of the Hanford Biodiversity Project. Two previously undescribed plant taxa were discovered, including Umtanum desert buckwheat (Caplow and Beck 1996, p. 5). The species was fully described in Reveal *et al.* (1995) and has retained the current nomenclature unchallenged since that time. Umtanum desert buckwheat is recognized as a distinct species, and there is no known controversy concerning its taxonomy.

Habitat/Life History

Umtanum desert buckwheat was discovered in 1995 during a botanical survey of the Hanford installation (Reveal *et al.* 1995, p. 353), and is found exclusively on soils over exposed basalt from the Lolo Flow of the Wanapum Basalt Formation. As the basalt of the Lolo Flow weathers, a rocky soil type is formed that is classified as lithosol, a term describing the well-drained, shallow, generally stony soils over bedrock (Franklin and Dyrness 1973, p. 347), and talus slopes associated with eroding outcrops and cliffs. These cliffs (scarps), and loose rock at the base of cliffs or on slopes (defined as scree) are found along the crests and slopes of local hills and ridges, including east Umtanum Ridge, where Umtanum desert buckwheat occurs. This type of landform in the Columbia Basin is determined by the underlying basalts, which may be exposed above the soil on ridge tops or where wind and water erode the fine soils away (Sackschewski and Downs 2001, p. 2.1.1).

The Lolo Flow contains higher titanium dioxide and lower iron oxide than the neighboring Rosalia Flow, also of the Priest Rapids Member. The flow top material commonly has a high porosity and permeability and has weathered to pebble and gravel-sized pieces of vesicular basalt (Reveal *et al.* 1995, p. 354). This basalt typically contains small (<5 mm (0.2 in)) crystals of the mineral olivine and rare clusters of plagioclase crystals (Reidel and Fecht 1981, pp. 3–13). It is unknown if the close association of Umtanum desert buckwheat with the lithosols of the Lolo Flow is related to the chemical composition or physical characteristics of the bedrock on which it is found, or a combination of factors not currently understood (Reveal *et al.* 1995, p. 354).

Preliminary counts indicate that seed set occurs in approximately 10 percent of flowers observed, potentially limiting reproductive capacity. Based on a pollinator exclusion study (Beck 1999, pp. 25–27), the species is probably capable of at least limited amounts of self-pollination, although the percentage of seed set in the absence of pollinators appears to be low. A variety of insect pollinators were observed on Umtanum desert buckwheat flowers, including ants, beetles, flies, spiders, moths and butterflies (TNC 1998, p. 8). Wasps from the families Vespidae and *Typhiidae* and a wasp from the species *Criosciolia* have been observed in the vicinity of Umtanum desert buckwheat, but not on the plant itself. A bumble bee, Bombus centralis, has been observed utilizing flowers of Umtanum desert buckwheat plants by Washington Department of Natural Resources (WDNR) specialists (Arnett 2011b, pers. comm.).

Common perennial plant associates of Umtanum desert buckwheat include *Artemisia tridentata* (big sagebrush), Grayia spinosa (spiny hopsage), *Krascheninnikovia lanata* (winterfat), *Eriogonum sphaerocephalum* (rock buckwheat), Salvia dorrii (purple sage), *Hesperostipa comata* (needle and thread), *Pseudoroegneria spicata* (bluebunch wheatgrass), *Poa sandbergii* (Sandberg's wheatgrass), *Sphaeralcea munroana* (Munro's Globemallow), *Astragalus caricinus* (buckwheat milkvetch), and *Balsamorhiza careyana* (Carey's balsamroot). Common annual associates include *Bromus tectorum* (cheatgrass), *Phacelia linearis* (threadleaf phacelia), *Gilia leptomeria* (sand gilia). G. *inconspicua* var. *sinuata* (shy gilia), *Camissonia minor* (small evening primrose), and *Cryptantha pterocarya* (wingnut cryptantha).

Historical Range/Distribution

The only known population of Umtanum desert buckwheat occurs along the top edges of the steep slopes on Umtanum Ridge, a wide mountain ridge in Benton County, Washington, where it has a discontinuous distribution along a narrow (25–150 m (82–492 ft) wide by 1.6 km (1 mi) long) portion of the ridge (Dunwiddie *et al.* 2001, p. 59). The species was discovered in 1995 (Reveal *et al.* 1995, p. 354), and there are no records of any collections prior to that year.

Current Range/Distribution

It is unknown if the prehistorical distribution of Umtanum desert buckwheat was different than the species' current distribution, but it is likely the species has been confined to this location during at least the last 150 years, as annual growth ring counts from fire-killed plants revealed individual ages in excess of 100 years. Individual plants with greater stem diameters (and, therefore, presumably older) are present, which supports the 150-year minimum locality occupation estimate.

Population Estimates/Status

The only known population of Umtanum desert buckwheat was fully censused (an accounting of the number of all individuals in a population) in 1995, 1997, 2005, and 2011 (see Table 1). In 1995, researchers counted 4,917 living individual plants, and in 1997, researchers counted 5,228 individuals (Dunwiddie *et al.* 2001, p. 61). The 1995 census was ''roughly counted'' (Beck 1999, p. 3) (i.e., there was a greater degree of estimation), while the 1997 count was more precise. In addition, the 1995 count may have overlooked an isolated patch with 79 plants to the east that was discovered in 2011. It is not uncommon for estimated population counts to be substantially lower than precise counts (Arnett 2011a, pers. comm.).

TABLE 1—UMTANUM DESERT BUCKWHEAT POPULATION COUNTS 1995–2011

Census year	Total plants counted
1995	4,917
1997	5,228

TABLE 1—UMTANUM DESERT BUCKWHEAT POPULATION COUNTS 1995–2011—Continued

Census year	Total plants counted
2005	4,408
2011	5,169

After a 1997 wildfire burned through a portion of the population, a subsequent count found 5,228 living and 813 dead individual plants. A minimum of 75 percent of the 813 dead individual plants observed died as a direct result of the fire (Dunwiddie *et al.* 2001, p. 61). No survival or resprouting was noted in fire-killed plants in following years. Because a more accurate count was used to derive the number of dead individual plants (Beck 1999, p. 3), this total represents a fairly precise measure of the impact of the 1997 wildfire on Umtanum desert buckwheat (Arnett 2011a, pers. comm.), although it is likely some plants were totally consumed by the fire and thereby unidentifiable.

In 2005, researchers reported 4,408 living plants (Caplow 2005, p. 1), which represents a 15 percent decline in the population over an 8-year period. However, this result likely reflects some variability in how the census was performed over the years since the species was discovered in 1995. On July 12, 2011, a complete population census was conducted, which recorded 5,169 living individuals. This was somewhat higher than average, which could be attributable to a more thorough census, the identification of plant clusters not previously documented, and the recording of larger clumps as containing more than one individual plant. These clumps were likely counted as individual plants in previous counts (Arnett 2011a, pers. comm.).

Demographic monitoring of the largest subpopulation within the main population, commenced in 1997, and demonstrated an average 2 percent annual mortality of adult flowering plants. During the 9 years of monitoring, only 4 or 5 seedlings have been observed to survive beyond the year of their germination (Kaye 2007, p. 5). Since 2007, the demographic monitoring plots continue to reflect population declines and minimal recruitment (Arnett 2011b, pers. comm.). Dunwiddie *et al.* (2001, p. 67) documented a lack of plants in the smallest size classes and the absence of any seed survival over 1 year. Their data did not indicate any spikes or gaps in the size distribution of plants that might reflect years of unusually high or low recruitment of plants, although evidence of such could have been obscured by the variable growth rates of the plants. Populations of long-lived species with low adult mortality can survive with relatively low recruitment rates (Harper 1977 in Dunwiddie *et al.* 2001, p. 67). Further, the survival of a few seedlings each year may be sufficient to replace the occasional adult that dies, or alternatively, an occasional bumper crop of seedlings surviving to maturity during several favorable years may ensure the long-term survival of the population (Dunwiddie *et al.* 2001, p. 67). However, no demographic data supported either of these scenarios for this species (Dunwiddie *et al.* 2001, p. 67).

An unpublished draft population viability analysis (PVA) was recently completed by Thomas Kaye (2007, p. 5), based on 9 years of demographic data. A PVA is a quantitative analysis of population dynamics, with the goal of assessing the risk of extinction of a species. The 2007 study, which took into account observed environmental variability, determined there was little or no risk of a 90 percent population decline within the next 100 years; an approximate 13 percent chance of a decline of 50 percent over the next 50 years; and a 72 percent chance of a 50 percent decline within the next 100 years. The PVA concluded the decline is gradual, consistent with the decline noted by Caplow (2005, p. 1) between 1997 and 2005, and will likely take several decades to impact the population (Kaye 2007, p. 7). Although census data indicates more individuals in 2011 compared to the number of individuals in 1995 and 2005, this increase likely reflects some variability in how the census was performed. The inflorescence for Umtanum desert buckwheat consists of a cluster of flowers arranged on a main stem or branch. As stated earlier, the fact that the 2011 census was somewhat higher than previous plant counts may be attributable to the identification of plant clusters not previously documented, or individually counting plants present in plant clusters (rather than counting the cluster itself as one plant) (Arnett 2011a, pers. comm.). Since 1995, numerous surveys have been conducted at other locations within the lower Columbia River Basin, within every habitat that appears to be suitable for Umtanum desert buckwheat. However no other populations or individuals have been found.

Summary of Factors Affecting the Species

Section 4 of the Act (16 U.S.C. 1533), and its implementing regulations at 50 CFR part 424, set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants (Lists). Under section 4(a)(1) of the Act, we may list a species based on any of the following five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; and (E) other natural or manmade factors affecting its continued existence. Listing actions may be warranted based on any of the above threat factors, singly or in combination. Individual analyses of the above factors have been completed for both Umtanum desert buckwheat and White Bluffs bladderpod and are discussed below.

Umtanum Desert Buckwheat

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Caplow and Beck (1996, pp. 40–41) and other studies indicate that threats to Umtanum desert buckwheat and its habitat are primarily due to wildfire and associated firefighting activities (Beck 1999, pp. 27–29; Dunwiddie *et al.* 2001, p. 66). The invasion of nonnative plants that increase the availability of wildfire fuel sources is also a threat, as discussed below. Livestock trespassing, prospecting, and off-road vehicle use represent potential threats, which appear to be presently reduced because of improved boundary integrity, access controls, fencing, and enforcement. Below is a detailed discussion of these threats and their potential effects on survival and recovery of the species.

Wildfire: Fire may be the primary threat to Umtanum desert buckwheat, and it is likely to become an even greater threat if the frequency or severity of fires increases (TNC 1998 p. 9; Dunwiddie *et al.* 2001, p. 62). Prior to manmade disturbances (livestock grazing, introduction of exotic species, and farming), the historic fire regime was a 32- to 70-year fire return interval of small, high-intensity fires that removed small patches of the fire-intolerant shrub overstory. Small, infrequent fires maintained bunchgrass openings within the shrub-steppe habitat, providing for both shrub and grassland communities. The historic fire regime has been significantly altered by sociopolitical and economic factors.

After the 1900s, human activities interrupted the natural fire interval and patterns of burning. Agricultural development and livestock grazing reduced the light fuels that would normally carry a fire; livestock grazing also had the effect of suppressing native bunchgrasses and allowing nonnative invasive species (*e.g., Bromus tectorum* (cheatgrass)) and native sagebrush densities to increase (USFWS 2008, p. 3–15). Cheatgrass competes with Umtanum desert buckwheat for space and moisture. In turn, the establishment and growth of highly flammable cheatgrass increases the likelihood of fire, potentially further negatively (or adversely) impacting the Umtanum desert buckwheat population.

In mid-August 1984, approximately 80,800 ha (200,000 ac) both on and off the Hanford Site were burned in a fire that expanded westward 20 miles during a 24-hour period. The 1984 fire was initiated by a lightning strike on private land (DOE 2000, p. 3–1). During the summer of 1997, a fire escaped from the Yakima Training Center (U.S. Department of the Army) and traveled down the ridge occupied by Umtanum desert buckwheat. The fire burned on all sides and partially through the population, which caused considerable mortality of adult plants (Dunwiddie *et al.* 2001, p. 60). It was conservatively estimated that at least 10–20 percent of the population may have been killed by the fire event (Dunwiddie *et al.* 2001, p. 62). The fire was most severe where vegetative cover was dense and less severe on thinner soils supporting little or no vegetation. Shrub and grass fuels on parts of the ridge are sparse, and the fire was patchy in the area where Umtanum desert buckwheat is located (Newsome 2011, pers. comm.). In late July 1998, a wildfire triggered by a lightning strike burned approximately 2,828 ha (7,000 ac) before it was contained (DOE 2000, p. 3–1). From 2001 to 2011, there have been 84 wildfire incidents documented, affecting approximately 38,164 ha (94, 460 ac) of lands within the Hanford Reach National Monument and Saddle Mountain National Wildlife Refuge (see Table 2).

TABLE 2—WILDFIRE HISTORY, HANFORD MONUMENT LANDS, HANFORD REACH/SADDLE MOUNTAIN NATIONAL WILDLIFE REFUGE

Year	Number of fires	Acres burned	Hectares burned
2011	2	1	0.4
2010	3	3,350	1,353
2009	10	529	214
2008	6	1,340	542
2007	8	77,319	31,237
2006	5	34	14
2005	8	10,910	4,408
2004	8	41	17
2003	16	512	207
2002	7	299	121
2001	11	125	51
Totals	84	94,460	38,164.4

http://www.fws.gov/fire/program_statistics/ (acres/hectares rounded).

Umtanum desert buckwheat appears to be intolerant of fire, and plants were easily killed. Even plants that were singed but not visibly charred appeared to be negatively affected, and many died the year following the fire. The fire did not stimulate vigorous new growth on established plants or sprouting from the plants' root crowns, which is sometimes observed with other species. In addition, there was no apparent flush of seedlings the following spring. Based on this lack of regeneration, or resprouting from burned plants, the species does not appear to be fire-tolerant (Dunwiddie *et al.* 2001, p. 66). Due to the intensity of the fire in some areas, many plants were entirely consumed and no traces remained that could be definitively identified, which led researchers to believe that the total impact of the 1997 fire on the population was likely to have been considerably higher than the 813 plants documented. The long-term impact of the fire to the population is unknown, but may be significant given the slow growth rates, minimal recruitment, and the increase in cheatgrass on the site following the fire. Cheatgrass plants tended to cluster with Umtanum desert buckwheat plants, likely increasing their flammability (Dunwiddie *et al.* 2001, pp. 62, 67). Mortality from the fire occurred primarily among plants growing where associated vegetation was more abundant, thereby providing fuel to carry the fire. After the fire, a reduction in native plant diversity and loss of shrub components were also observed in areas adjacent to the population. Based on the best available information, wildfire represents an ongoing threat to Umtanum desert buckwheat.

Fire Suppression Activities: In addition to wildfire itself, fire suppression activities could present a threat to the species if they were to occur within the population, since this species appears to be highly sensitive to any physical damage (see discussion under off-road vehicles below). The Umtanum desert buckwheat population is located on a flat natural fire break of rocky soils above steep-slopes, where fire lines and firefighting equipment would tend to be concentrated (Whitehall 2012, pers. comm.; Newsome 2011, pers. comm.). Although fire suppression activities did not take place within the Umtanum desert buckwheat population in response to the 1997 fire, the surrounding area is at high risk of wildfire from human and natural (lightning) ignition sources. The Service's fire program statistics (see Table 2) indicate a recurrence of wildfire events within Monument lands, which would be anticipated to continue.

The 2001 Hanford Reach Wildlife Fire Management Plan prescription for this area states that ''except on existing roads, the use of any equipment (including light engines) within ¼ mile of the escarpment edge of the Umtanum Ridge is prohibited because of surface instability and potential for sloughing at the escarpment. Protection of sensitive resources is an objective unless achieving this objective jeopardizes either firefighter or public safety''

(USFWS 2001, p. 36). Accordingly, if a wildfire were to occur in the surrounding area, protection of the Umtanum desert buckwheat population may not be possible if fire direction and firefighter/public safety considerations were to necessitate establishing fire lines or response equipment staging areas within or near the population. Although the need for wildfire suppression activities near or within the Umtanum desert buckwheat population is unpredictable, this activity is considered a potential threat to this species based on the Monument's wildfire history (see Table 2).

Nonnative Plant Fuel Sources: Another potential consequence of fire and other disturbances that remove native plants from the shrub steppe communities of eastern Washington is the displacement of native vegetation by nonnative weedy species, particularly cheatgrass. As a result of the 1997 fire, a higher percent cover of weedy plant species, including cheatgrass, has become established within and around the Umtanum desert buckwheat population. Wildfire raises the percent cover of weedy species, thereby increasing the availability of ground fuels, which enhances the ability to carry wildfire across the landscape into previously fire-resistant cover types, including habitat for Umtanum desert buckwheat. Accordingly, nonnative weedy species represent an ongoing threat to the species.

Off-road Vehicles and Hikers: There have been incidences of trespassing by off-road vehicles (ORVs) and hikers in the vicinity of and within the Umtanum desert buckwheat population (Caplow 2005, pers. comm.). The open cliff edge where the plants grow is an attractive place for human traffic because of the compact substrate, sparse vegetative cover, and the view overlooking the Columbia River. In 2004 and 2005, the Bonneville Power Administration (BPA) reopened and improved a steep road on the top of the ridge from the substation on China Bar below. The road was then passable to 2-wheel drive vehicles and up until the summer of 2005, was inadequately fenced and gated to prevent trespass (Caplow, pers. com. 2005). The entire known population exists within a narrow corridor where human traffic could be expected to concentrate. Umtanum desert buckwheat plants are easily damaged by trampling or crushing by ORVs, appear to be less resilient following such damage, and are very slow to recover if capable of recovering at all. Within 2 days of being run over by trespassing dirt bikes, portions of damaged plants showed signs of further decline, and some of the damaged plants subsequently died (TNC 1998, p. 62).

This threat appears to have been reduced since direct access to the site has been gradually fenced off over time, the site has been marked with prohibited entry signage, and consistent enforcement is taking place. Although unauthorized access is prohibited, there is a potential for trespass since an open road is located approximately 0.5 km (0.3 mi) (slope distance) below the population through lands commonly used for recreation. However, a fence is present between the road and the Umtanum desert buckwheat population, which should further discourage ORV or hiker trespass incidents. Based on the available evidence, we have no substantive information that would indicate ORV or hiking activities represent ongoing threats to the species, provided current security and boundary integrity efforts are maintained. We will continue to monitor these activities as additional information becomes available.

Livestock: There could be a potential threat of trampling to Umtanum desert buckwheat if livestock were to escape from a pasture area on China Bar, approximately 0.4 km (0.25 mi) (slope distance) below the population, although this has not been observed or documented to date. If it were to occur, it could impact the species by direct means such as crushing and mortality through grazing, and indirect means, including soil disturbance, compaction, and importation of invasive species by seed carried on the body or through feces. In addition, areas disturbed by livestock could increase bare soil areas, making them more suitable for the establishment of invasive plant species. This potential threat has been reduced under the terms of a Department of Energy (DOE) permit issued to the rancher that conducts the seasonal pasturing operations. The DOE permit restricts the seasonal movement of livestock between pastures by way of a paved road directly below the Umtanum desert buckwheat population (Hathaway 2001, pers. comm.). In addition, there is a fence between the paved road and the population. Based on the available evidence regarding permit requirements and boundary integrity, we have no substantive information indicating livestock trespass represents an ongoing threat to the species. However, we will continue to investigate this possibility as additional information becomes available.

Prospecting: Prospecting by rock collectors was initially thought to be a potential threat to Umtanum desert buckwheat. Excavations up to 1.5 m (5 ft) in diameter and 1.2 m (4 ft) deep occur throughout the area occupied by the species (Caplow 2005, pers. comm.), although their age is uncertain. Some may predate 1943, when the DOE acquired the land as part of the Hanford installation, and others may reflect more recent activity. Continuation of this activity could threaten a large portion of the Umtanum desert buckwheat population by trampling, uprooting, or burial of plants during these activities. Although prospecting could be a threat, it has not been observed since the species discovery in 1995, likely because of increased boundary integrity, improved fencing, restrictive signage, and enforcement. We have no information that would indicate there has been any recent prospecting or other unauthorized entry into the site. Therefore, based on the available evidence, we have no substantive information that would indicate prospecting activities represent an ongoing threat to the species. We will continue to investigate this possibility as additional information becomes available.

Based on the information above, we find that specific activities discussed under Factor A: The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range present a threat to Umtanum desert buckwheat and its habitat. These include wildfire, nonnative plant fuel sources, and potentially wildfire suppression activities. Trespassing by off-road vehicles, hikers, and mineral prospectors are not considered ongoing threats at this time, based on permit requirements, access restrictions, boundary fencing, signage, and enforcement actions that are in effect for the area where this population occurs.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

The regulations at 50 CFR 27.51 prohibit collecting any plant on any national wildlife refuge without a special use permit. Evidence of overutilization has not been documented since the discovery of Umtanum desert buckwheat in 1996. In order to maintain a secure source for seed and provide some assurance of maintaining the genome of Umtanum desert buckwheat over time, Berry Botanic Garden in Portland, Oregon, has collected and stored several seed accessions for the species. The facility currently has 401 seeds that were collected in 1997, and 1,108 seeds collected in 2001 and 2002 from an unknown number of plants (Gibble 2011, pers. comm.). Based on a thorough

accounting of all activities on the site by researchers and DOE, there is no evidence that commercial, recreational, scientific, or educational use of this species is occurring at a level that would threaten the population. Based on our review of the best available scientific and commercial information, we find that overutilization for commercial, recreational, scientific, or educational purposes is not now a threat to Umtanum desert buckwheat or in any portion of its range, or likely to become a significant threat in the future.

C. Disease or Predation

Evidence of disease has not been documented in Umtanum desert buckwheat; however, predation of seeds by ants and removal of flower heads by an unknown species has been observed by researchers during demographic monitoring trips.

Researchers from The Nature Conservancy observed western harvester ants (*Pogonomyrmex occidentalis*), a common native species, gathering mature achenes (seeds) of Umtanum desert buckwheat plants and transporting them to their underground colonies (Dunwiddie *et al.* 2001, p. 66). Ants have also been observed discarding the inedible remains of achenes above ground, near the colony. Evidence of seed predation by ants was commonly observed by different researchers between 1999 and 2004 in numerous locations, although it has not been observed on Umtanum desert buckwheat in recent years (Arnett 2011c, pers. comm.). The percentage of achenes consumed by ants and other insects, and the degree of impact this activity may be having on the available seed bank is unknown, although no Umtanum desert buckwheat seedlings have been observed successfully germinating or becoming established near ant colonies. Ant predation of seeds has been shown to be a significant factor in the viability of at least one other rare *Eriogonum* taxon (*Eriogonum umbellatum* var. *torreyanum* (sulfur flower buckwheat)) (TNC 1998, p. 9).

Because ants have been observed moving on and between flowers, they may also be contributing to the pollination of Umtanum desert buckwheat. Whether seed predation by ants is a significant threat to the species based on its current demographic status, or to what degree the threat is offset by potential benefits of pollination is unclear. During the 2011 census of Umtanum desert buckwheat, numerous flower heads that had been clipped off and were lying on top of or very near the plants were observed. The species responsible is unknown, although there was no evidence of mutilation or consumption of the flower structure (Arnett 2011c, pers. comm.). As stated earlier, no Umtanum desert buckwheat seedlings have been observed successfully germinating or becoming established near ant colonies. Because seed predation and the removal of flowering structures could significantly reduce the reproductive potential of the species, which is already in gradual decline based on the results of the PVA, we consider these activities to be ongoing threats to Umtanum desert buckwheat. We are unaware of any other disease or predation interactions that represent potential threats to this species.

D. The Inadequacy of Existing Regulatory Mechanisms

Umtanum desert buckwheat is designated as endangered under the State of Washington's list of endangered, threatened, and sensitive vascular plants (WDNR 2011a, p. 5). The State of Washington's endangered, threatened, and sensitive plant program is administered through the Washington Natural Heritage Program (WNHP), which was created to provide an objective basis for establishing priorities for a broad array of conservation actions (WDNR 2011b, p. 2). Prioritizing ecosystems and species for conservation offers a means to evaluate proposed natural areas and other conservation activities (WDNR 2011b, p. 3). The WNHP is a participant in the Arid Lands Initiative, which is a public/private partnership attempting to develop strategies to conserve the species and ecosystems found within Washington's arid landscape. The WNHP assists in identifying conservation targets, major threats and potential strategies to address them (WDNR 2011b, p. 4). The DOE does not have a rare plant policy that provides specific protection for the species, and presently retains management responsibility for the lands where Umtanum desert buckwheat occurs. Once contaminant issues are resolved in this area, management responsibility will be conveyed to the Service, as a part of the Hanford Reach National Monument.

Agricultural development and livestock grazing reduced the light fuels that would normally carry a fire, and allowed nonnative invasive species like cheatgrass to increase (USFWS 2008, p. 3–15). The establishment of highly flammable cheatgrass within the Umtanum desert buckwheat population increases competition for space and moisture, and the likelihood that a wildfire could negatively impact the species. As fires become larger, the opportunity for seed dispersal is also increased as nonnative species invade burned areas. Nonnative species like cheatgrass can be dispersed in several ways, including long-distance dispersal facilitated by humans and animals. The barbed florets are ideally adapted to being picked up by clothing, feathers, and fur. Seeds can also be dispersed by machinery or vehicles. Animals may carry cheatgrass seed in their feces and hooves, and seed-caching rodents and harvester ants can disperse seeds intermediate distances through caching activity. Cropland, particularly fields of winter wheat and dryland hay, may also be potential seed sources to nearby natural areas and rangelands, as cheatgrass is a common weed in these crops (*http://www.fs.fed.us/database/feis/plants/graminoid/brotec/all.html*). The threat of nonnative invasive species does not appear to lend itself to abatement through regulatory mechanisms, because of the many ways for cheatgrass and other nonnative species to become established in an area. Accordingly, we do not believe nonnative species represent a threat that is susceptible to elimination by regulatory mechanisms.

The Hanford Fire Department maintains four fire stations on the Hanford Reservation (USFWS 2001, Appendix D, p. 74). The Service and the Hanford Fire Department have entered into a cooperative agreement under which either organization can provide firefighting support (USFWS 2001, Appendix D, p. 75) on lands under the jurisdiction or responsibility of the other party (DOE 2011, p. 84). The concept of closest forces is the guiding principle of initial attack suppression. This agreement does not provide specific conservation measures for the protection of Umtanum desert buckwheat, but does acknowledge the presence of plants unique to the site. The objective for this area states that ''except on existing roads, the use of any equipment (including light engines) within ¼ mile of the escarpment edge of the Umtanum Ridge is prohibited because of surface instability and potential for sloughing at the escarpment. Protection of sensitive resources is an objective unless achieving this objective jeopardizes either firefighter or public safety'' (USFWS 2001, p. 36).

Numerous wildland fires occur annually on lands in and surrounding the Hanford Reach National Monument/Saddle Mountain National Wildlife Refuge. Many are human-caused resulting from vehicle ignitions from roads and highways, unattended

campfires, burning of adjacent agricultural lands and irrigation ditches, and arson. Fires of natural origin (lightning caused) also occur on lands within and adjacent to the monument/refuge (USFWS 2001, p. 171). Since wildfires are unpredictable with regard to their location and severity, a fire management plan is necessarily designed to be a response, rather than a regulatory activity.

All collecting is prohibited on the Monument, including antlers, bones, rocks, artifacts, and plant life. Regulations also prohibit fires on Monument lands (Hanford Reach National Monument Hunting Regulations, 2011). The Revised Hanford Site 2011 Wildland Fire Management Plan (DOE 2011, p. 176) addresses Umtanum desert buckwheat briefly in a specific accounting of sensitive resources located on the site. The plan states that ''due to the sensitive nature of the biology of the Hanford Site, an on-call Mission Support Alliance biologist will be requested to assist the command staff in protecting the environment during suppression efforts.'' This requirement does not remove the wildfire threat to the species, but may make a negative incident less probable.

The 1997 wildfire initiated by the U.S. Army Yakima Training Center fire resulted in mortality to 10–20 percent of the population (see Factor A and Table 2). The threat of wildfire originating on the nearby U.S. Army Yakima Training Center and spreading to the Umtanum desert buckwheat site remains, as does the potential for ignition to occur along the BPA transmission line corridor, which crosses the population. Fire could also originate below the Umtanum desert buckwheat site on China Bar and rapidly burn upslope, since this area is commonly used by recreationists. The Hanford Reach National Monument Comprehensive Conservation Plan acknowledges that wildland fire will be suppressed when possible, suppression techniques will be designed to minimize surface disturbance in the vicinity of sensitive resources, and fire control policies will be implemented to reduce the risk of human-caused wildland fire (USFWS 2008, p. 4–8). However, based on the recent wildfire history and acreage affected (see Table 2), fire planning documents are not able to address all possible scenarios. In addition, numerous agencies must coordinate firefighting on this landscape, ignitions from recreationists remain a risk, and timely and effective initial firefighting responses may be difficult. For example, before it was contained, the 24 Command Wildfire (discussed in Factor A above) charred nearly 66,256 ha (164,000 ac) of land both on and off the Hanford site, even though the Hanford Fire Department arrived on scene approximately 20 minutes after the incident was reported. At that time the fire was approximately 4 ha (10 ac) in size (DOE 2000, pp. ES–2–ES–3).

Although the WNHP and Monument CCP are important tools for identifying conservation actions that would benefit Umtanum desert buckwheat, these programs do not appear to have been designed to function as regulatory mechanisms that would eliminate threats to the species. In addition, a fire management plan is necessarily designed to be a response, rather than prescriptive strategy, since wildfires are unpredictable with regard to their location and severity. Accordingly, the impact of wildfire to Umtanum desert buckwheat is not a threat that can be eliminated by regulatory mechanisms, because of the many potential ignition scenarios on the lands within and surrounding the area where the species occurs. Therefore, based on our review of the best available scientific and commercial information, we do not consider the inadequacy of existing regulatory mechanisms to be an ongoing threat to White Bluff's bladderpod.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Umtanum desert buckwheat has a small population size and distribution, and suffers from low recruitment (Kaye 2007, p. 3; Caplow 2005, p. 3). These features make it particularly susceptible to potentially changing climate conditions. For instance, regional climate change models indicate a rise in hotter and drier conditions, which may increase stress on individuals as well as increase wildfire frequency and intensity.

Population structure: The typical size distribution of perennial plants consists of more individuals in smaller and presumably younger size-classes, than in larger or older ones. However, Umtanum desert buckwheat has fewer plants in smaller size-classes than in larger ones. The only known population of this species is dominated by mature plants with little successful establishment of seedlings. The majority of individual plants have a strong tendency to remain in the same size class, and presumably age class, from 1 year to the next. In addition, adult mortality averages 2 percent annually (Kaye 2007, p. 3). Between 1997 and 2006, only five to six seedlings in all demographic monitoring plots were observed to survive longer than 1 year, and in 2005, which was preceded by a dry winter, no germination was observed (Caplow 2005, p. 3).

The lack of establishment and survival of seedlings is a threat, as few plants are becoming established as replacements for plants that die. Several factors may be responsible, such as exposure of young plants to high winds and temperatures and very low spring and summer precipitation. Other possible factors include low seed production, low seed or pollen viability, low seedling vigor and survival, impacts to plant pollinators or dispersal mechanisms, and flowering structure removal/insect predation of seeds (as described under Factor C). There has been some success in germinating and growing Umtanum desert buckwheat in containers, which may indicate that the failure to establish seedlings in the wild may not be due to low fertility, but may be related to conditions necessary for survival after germination (Arnett 2011c, pers. comm.). Long-term monitoring and research may determine the cause of the population's skewed size distribution. A seed bank study has shown that viability of buried seed decreases dramatically after the first year, suggesting a very small and short-lived seed bank for Umtanum desert buckwheat (Caplow 2005, p. 6).

Considered in total, these factors likely combine effects to create negative recruitment for Umtanum desert buckwheat. This theory is supported by the findings of Kaye (2007, p. 5), that the population appears to be in a gradual decline of approximately ⅔ of 1 percent per year. Negative recruitment due to the factors described above combined with a small population size present a significant threat to the species.

Climate change: Our analyses under the Endangered Species Act include consideration of ongoing and projected changes in climate. The terms ''climate'' and ''climate change'' are defined by the Intergovernmental Panel on Climate Change (IPCC). ''Climate'' refers to the mean and variability of different types of weather conditions over time, with 30 years being a typical period for such measurements, although shorter or longer periods also may be used (IPCC 2007, p. 78). The term ''climate change'' thus refers to a change in the mean or variability of one or more measures of climate (e.g., temperature or precipitation) that persists for an extended period, typically decades or longer, whether the change is due to natural variability, human activity, or both (IPCC 2007, p. 78).

Various types of changes in climate can have direct or indirect effects on

species. These effects may be positive, neutral, or negative and they may change over time, depending on the species and other relevant considerations, such as the effects of interactions of climate with other variables (e.g., habitat fragmentation) (IPCC 2007, pp. 8–14, 18–19). In our analyses, we use our expert judgment to weigh relevant information, including uncertainty, in our consideration of various aspects of climate change. The potential impacts of a changing global climate to Umtanum desert buckwheat are presently unclear. All regional models of climate change indicate that future climate in the Pacific Northwest will be warmer than the past, and, together, they suggest that rates of warming will be greater in the 21st century than those observed in the 20th century. Projected changes in annual precipitation, averaged over all models, are small (+1 to +2 percent), but some models project an enhanced seasonal precipitation cycle with changes toward wetter autumns and winters and drier summers (Littell, *et al.* 2009a, p. 1).

At a regional scale, two different temperature prediction models are presented in Stockle *et al.* (2009, p. 199) yet show similar results. Outputs from both models predict increases in mean annual temperature for eastern Washington State. Specifically, the Community Climate System Model General Circulation Model projects temperature increase as 1.4, 2.3 and 3.2 °C (2.5, 4.1, and 5.8 °F) at Lind, Washington, which is 64 km (40 mi) northeast of the Umtanum desert buckwheat population; approximately 1.7, 2.7, and 3.5 °C (3.1, 4.9, and 6.3 °F) at Pullman, Washington, which is 169 km (105 mi) east of the population; and Sunnyside, Washington, which is 50 km (31 mi) southwest of the population, for the 2020, 2040 and 2080 modeling scenarios, respectively. For the Parallel Climate Model effort, the temperature change is expected to be 0.8, 1.7, and 2.6 °C (1.4, 3.1, and 4.7 °F) at Lind, Washington; 1.1, 2.0, and 2.9 °C (2.0, 3.6, and 5.2 °F) at Pullman, Washington; and 1.3, 2.2, and 3 °C (2.3, 4.0, and 5.5 °F) at Sunnyside, Washington, in the 2020, 2040, and 2080 scenarios, respectively.

The projected warming trend will increase the length of the frost-free period throughout the State, increasing the available growing season for plants, which will continue to be limited in eastern Washington by water availability, and likely by extreme heat events in some instances. This will continue the trend observed from 1948 to 2002, during which the frost-free period has lengthened by 29 days in the Columbia Valley (Jones, 2005 *in* Stockle *et al.* 2009, p. 199). Weeds and insects will adapt to the longer season with more favorable conditions (Stockle *et al.* 2009, p. 200).

Given the importance of water availability to plants, precipitation change needs to be included in predictions of climate change effects on invasive plants (Bradley 2009, p. 197). Regional climate models suggest that some local changes in temperature and precipitation may be quite different than average regional changes projected by the global models (Littell *et al.* 2009a, p. 6). Precipitation uncertainties are particularly problematic in the western United States, where complex topography coupled with the difficulty of modeling El Niño result in highly variable climate projections (Bradley 2009, p. 197). Cheatgrass, an invasive species, competes with native species by growing early in the spring season and using available water resources. It senesces in late spring, sets seed, and remains dormant through the summer (Rice *et al.,* 1992; Peterson, 2005; in Bradley 2009, p. 197; Bradley 2009, pp. 204–205). If summer precipitation were to increase, native perennial shrubs and grasses could be more competitive because they would be able to use water resources while cheatgrass is dormant (Loik, 2007 in Bradley 2009, pp. 204–205).

Littell *et al.* (2009b, p. 270) were successful in developing statistical models of the area burned by wildfire for six regions in Washington for the period 1980 to 2006. Future projections from these six models project mean-area-burned increases of between 0 and 600 percent, depending on the ecosystem in question, the sensitivity of the fire model, emissions scenario and the timeframe of the projection. By the 2040s, the area burned in nonforested ecosystems (Columbia Basin and Palouse Prairie) increased on average by a factor of 2.2. Notably, the increase in area burned is accompanied by an increase in variability in some of the more arid systems, such as the Palouse Prairie and Columbia Basin (Littell *et al.* 2009b, p. 270).

We do not know what the future holds with regard to climate change, however, this species has a very limited distribution, small population size, and low recruitment. Despite the lack of site-specific data, increased average temperatures and reduced average rainfall may further influence the current decline of the species and result in a loss of habitat. Hotter and drier summer conditions may also increase the frequency and intensity of fires in the area, as cheatgrass and other invasive plants would become better competitors for resources than Umtanum desert buckwheat. Alternatively, warmer and wetter winter conditions could potentially benefit the species by extending the growing season and providing additional moisture to the soil in the spring. However, if the frequency, intensity, and timing of the predicted changes in climate for eastern Washington are not aligned with the phenology of Umtanum desert buckwheat, the survival and reproduction of the species could be threatened over time. Accordingly, although climate change represents a potential ongoing threat based on the best available information, more thorough investigations are needed to better understand the potential impacts of climate change to this species.

Proposed Determination

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to Umtanum desert buckwheat (see Table 3). The 1997 fire that escaped from the Yakima Training Center killed 813 plants, or approximately 10–20 percent of the population (Dunwiddie *et al.,* 2001, pp. 61–62). The Revised Hanford Site 2011 Wildland Fire Management Plan (DOE 2011) acknowledges the sensitive nature of the biology of the Hanford Site, and provides for environmental protection during fire suppression activities. This plan may reduce the likelihood of a wildfire event within or near the population, but cannot remove the threat completely since wildfire locations, severity, and response needs are unpredictable. The 2007 unpublished draft Population Viability Analysis (PVA) estimated a 72 percent chance of a decline of 50 percent of the population within the next 100 years (Kaye 2007, p. 5). The PVA, which incorporated observed environmental variability, determined the Umtanum desert buckwheat population was in very gradual decline. The decline is very close to stable, but still suggests an annual decline of about ⅔ of one percent, which will take several decades to accumulate significant impacts (Kaye 2007, p. 5). The steady decline observed through demographic monitoring of numbers and recruitment since 1997 may be directly attributable to several of the known threats, although some have been reduced because of increased boundary integrity and access control. Because the population is small, limited to a single site, at risk of invasive species, and sensitive to fire and disturbance in a high fire-risk location,

the species remains vulnerable to the threats summarized in Table 3.

TABLE 3—SUMMARY OF THREAT FACTORS UNDER THE ESA TO UMTANUM DESERT BUCKWHEAT

Factor	Threat	Imminence *	Magnitude *	Severity *
A	Wildfire	Confirmed	High	High.
	Fire suppression activities	Possible **	Unknown	Unknown.
	Harm by recreational activities and/or ORV use	Possible but unlikely. ***	Low	Low.
	Direct harm and habitat modification by livestock	Possible but unlikely. ***	Low	Low.
	Mineral prospecting	Possible but unlikely. ***	Low	Low.
	Competition, fuels load from nonnative plants	Confirmed	High	High.
C	Seed predation	Confirmed	Unknown	Unknown.
	Flower predation	Confirmed	Unknown	Unknown.
E	Small population size	Confirmed	Moderate	Moderate.
	Limited geographic range	Confirmed	Moderate	Moderate.
	Low recruitment	Confirmed	Moderate	Moderate.
	Climate change	Possible	Unknown	Unknown.

* Imminence: The likelihood of the threat currently affecting the species.
Magnitude: The extent of species numbers or habitat affected by the threat.
Severity: The intensity of effect by the threat on the species or habitat.
** If avoidance is not possible due to fire direction or safety needs.
*** Based on ongoing restricted access, fencing, and enforcement.

As described above, Umtanum desert buckwheat is currently at risk throughout all of its range due to ongoing threats of habitat destruction and modification (Factor A), predation (Factor C), and other natural or manmade factors affecting its continued existence (Factor E). Specifically, these factors include the existing degradation or fragmentation of habitat resulting from wildfire, nonnative invasive vegetation that provides fuel for wildfires, predation of seed and flower structures, and potentially changing environmental conditions resulting from global climate change (although its magnitude and intensity are uncertain). Wildfire suppression activities could also threaten the species if they were to occur within the population, since this species appears to be highly sensitive to any physical damage. However, whether this potential threat would actually occur is unknown, given the unpredictable nature of wildfire events. Impacts to Umtanum desert buckwheat from livestock moving through the population, off-road vehicle use, hikers, and prospecting are conceivable, but unlikely, provided DOE livestock movement permit conditions are complied with, access to the site is effectively controlled, boundary integrity is monitored and maintained, and enforcement actions are taken as needed, each of which is presently occurring.

The area where Umtanum desert buckwheat is found is at high risk of frequent fire and is fully exposed to the elements. The population is extremely small, isolated, and in slow but steady decline, notwithstanding the somewhat higher count in the 2011 population census (which may be attributable to the way individual plants were counted as described earlier). These population demographics make the species particularly susceptible to extinction due to threats described in this proposal. The magnitude of the wildfire threat is high; other threats are moderate to low in magnitude. Because of the limited range of Umtanum desert buckwheat, any one of the threats may threaten its continued existence at any time. Since these threats are ongoing, they are also imminent.

The Act defines an endangered species as any species that is ''in danger of extinction throughout all or a significant portion of its range'' and a threatened species as any species ''that is likely to become endangered throughout all or a significant portion of its range within the foreseeable future.'' Since Umtanum desert buckwheat is highly restricted in its range and the threats occur uniformly throughout its range, we assessed the status of the species throughout its entire range. The threats to the survival of the species occur throughout the species' range and are not restricted to any particular significant portion of that range, and the number of individuals in the single population is very small and declining. Some threats are more severe than others, but the population is being affected by small population size, limited range, low recruitment, invasive cheatgrass presence that can fuel wildfire, wildfire (Table 2), seed predation, and flower predation.

Our assessment and proposed determination applies to the species throughout its entire range. In this regard, we find that Umtanum desert buckwheat is likely to become in danger of extinction throughout its entire range, based on the immediacy, severity, and scope of the threats described above (see Table 3). The Hanford Reach National Monument Comprehensive Conservation Plan was developed to protect and conserve the biological, geological, paleontological, and cultural resources described in the Monument Proclamation by creating and maintaining extensive areas within the Monument free of facility development (USFWS 2008, p. v). Several management objectives are identified that could benefit the Umtanum desert buckwheat population; these include treating invasive species and restoring upland habitat (USFWS 2008, pp. 19–22).

As stated earlier, the population is in a very gradual decline, which will take several decades to accumulate significant impacts (Kaye 2007, p. 5). Given the fact that (1) the population is in a very gradual decline; (2) the management objectives of the CCP will be beneficial to the species; (3) access is prohibited without special authorization from the DOE; (4) security fencing surrounds the population; (4) entry prohibited signs are in place; and (5) boundary enforcement is ongoing, the species is not presently in danger of extinction throughout all or a significant portion of its range. Therefore, on the basis of the best available scientific and commercial information, we propose listing Umtanum desert buckwheat as threatened in accordance with sections 3(6) and 4(a)(1) of the Act.

Species Information

White Bluffs Bladderpod

White Bluffs bladderpod is a low-growing, herbaceous, perennial plant with a sturdy tap root and a dense rosette of broad gray-green pubescent (having any kind of hairs) leaves (WDNR 2010). The species produces showy yellow flowers on relatively short stems in May, June, and July. The species inhabits dry, steep upper zone and top exposures of the White Bluffs area of the Hanford Reach at the lower edge of the Wahluke Slope. Along these bluffs, a layer of highly alkaline, fossilized cemented calcium carbonate (caliche) soil has been exposed (Rollins *et al.* 1996, pp. 203–205). A detailed description of the identifying physical characteristics of White Bluffs bladderpod is in Rollins *et al.* (1996, pp. 203–205) and Al-Shehbaz and O'Kane (2002, pp. 319–320). White Bluffs bladderpod is State-listed as Threatened, with a G2 (i.e., imperiled world-wide, vulnerable to extinction) global ranking and an S2 (i.e., vulnerable to extirpation) State ranking (WDNR 2011).

Taxonomy

Although specimens of this taxon were originally collected from a population in 1883, the plant material was in poor condition, no definitive identification could be made, and the plant was not recognized as a species at that time. The population was rediscovered in 1994, and was described and published as a species, *Lesquerella tuplashensis,* by Rollins *et al.* (1996, pp. 319–322). A petition requesting that *L. tuplashensis* be listed as threatened under the Act stated that its status as a valid species is uncontroversial (Center for Biological Diversity *et al.* [CBD] 2004, pp. 49,100). However, the nomenclature and taxonomy of the species has been investigated.

In a general paper on the taxonomy of *Physaria* and *Lesquerella,* O'Kane and Al-Shehbaz (2002, p. 321) combined the genera Lesquerella and Physaria and reduced the species *Lesquerella tuplashensis* to *Physaria douglasii* subsp. *tuplashensis* (O'Kane and Al-Shehbaz (2002, p. 322)), providing strong molecular, morphological, distributional, and ecological data to support the union of the two genera.

Rollins and Shaw (1973, entire), took a wide view of the degree of differentiation between species and subspecies (or varieties) of *Lesquerella,* although many species of *Lesquerella* are differentiated by only one or two stable characters. The research of Rollins *et al.* (1996, pp. 205–206) recognized that, although *L. tuplashensis* and *L. douglasii* were quite similar, they differed sufficiently in morphology and phenological traits to warrant recognition as two distinct species. Simmons (2000, p. 75) suggested in a Ph.D. thesis that L. tuplashensis may be an ecotype of the more common *L. douglasii.* Caplow *et al.* (2006, pp. 8–10) later argued that *L. tuplashensis* was sufficiently different from *douglasii* to warrant a species rank because it: (1) Was morphologically distinct, differed in stipe (a supporting stalk or stem-like structure) length and length-to-width ratio of stem leaves, and had statistically significant differences in all other measured characters; (2) was reproductively isolated from *L. douglasii* by non-overlapping habitat and differences in phenology for virtually all *L. tuplashensis* plants; and (3) had clear differences in the ecological niche between the two taxa (Caplow *et al.* 2006, pp. 8–10).

Based on molecular, morphological, phenological, reproductive, and ecological data, the conclusions in Al-Shehbaz and O'Kane (2002, p. 322) and Caplow *et al.* (2006, pp. 8–10) combining the genera Lesquerella and Physaria and reducing the species *Lesquerella tuplashensis* to *Physaria douglasii* subsp. *tuplashensis,* provide the most consistent and compelling information available to date. Therefore, we will consider it a subspecies of the genus *Physaria,* with the scientific name *Physaria douglasii* subsp. *tuplashensis.*

Habitat/Life History

The only known population of White Bluffs bladderpod is found primarily on near-vertical exposures of weathered, cemented, alkaline, calcium carbonate paleosol (ancient, buried soil whose composition may reflect a climate significantly different from the climate now prevalent in the area) (*http://www.alcwin.org/Dictionary_Of_Geology_Description-84-P.htm*). The hardened carbonate paleosol caps several hundred feet of alkaline, easily eroded, lacustrine sediments of the Ringold Formation, a sedimentary formation made up of soft Pliocene lacustrine deposits of clay, sand, and silt (Newcomb 1958, p. 330). The uppermost part of the Ringold Formation is a heavily calcified and silicified cap layer to a depth of at least 4.6 m (15 ft). This layer is commonly called ''caliche'' although in this case, it lacks the nitrate constituents found in true caliche. The ''caliche'' layer is a resistant caprock underlying the approximately 274–304 m (900–1,000 ft) elevation (above sea level) plateau extending north and east from the White Bluffs (Newcomb 1958, p. 330). This species may be an obligate calciphile, as are many of the endemic *Lesquerella* (now *Physaria*) (Caplow 2006, pp. 2–12). The habitat of White Bluffs bladderpod is arid, and vegetative cover is sparse (Rollins *et al.* 1996, p. 206).

Common associated plant species include: *Artemisia tridentata* (big sagebrush), *Poa sandbergii* (Sandberg's bluegrass), *Bromus tectorum* (cheatgrass), *Astragalus carieinus* (buckwheat milk-vetch), *Eriogonum microthecum* (slender buckwheat), *Oryzopsis hymenoides* (Indian ricegrass), and *Cryptantha spiculifera* (Snake River cryptantha). Occasionally White Bluffs bladderpod is numerous enough at some locations to be subdominant.

Because of its recent discovery and limited range, little is known of the species' life-history requirements. In a presentation of preliminary life-history studies, Dunwiddie *et al.* (2002, p. 7) reported that most individuals reach reproductive condition in their first or second year, most adult plants flower every year, and the lifespan of the species is probably 4 to 5 years. The population size appears to vary from year to year (see Table 4), and the survival of seedlings and adults appears to be highly variable (Dunwiddie *et al.* 2002, p. 8), however, more monitoring is needed to determine the magnitude and frequency of high- and low-number years, as well as to obtain an understanding of the causes of these annual fluctuations (Evans *et al.* 2003, p. 64). Monitoring by Monument staff (Newsome 2011, p. 5) suggests the annual population fluctuations are presumably tied to environmental conditions, such as seasonal precipitation and temperature.

Historical Range/Distribution

In 1996, White Bluffs bladderpod was only known from a single population that occurred along the upper edge of the White Bluffs of the Columbia River in Franklin County, Washington. The population was described to occur intermittently in a narrow band (usually less than 10 m (33 ft) wide) along an approximately 17-km (10.6-mi) stretch of the river bluffs (Rollins *et al.* 1996, p. 205).

Current Range/Distribution

White Bluffs bladderpod is still known only from the single population that occurs along the upper edge of the White Bluffs of the Columbia River, Franklin County, Washington, although the full extent of the species' occurrence has now been described. Most of the species distribution (85 percent) is within lands owned by the DOE and

once managed by the Washington Department of Fish and Wildlife as the Wahluke Wildlife Area (USFWS 200, p. 1–3). This land remains under DOE ownership, and is managed by the Monument. The remainder of the species' distribution is on private land (Newsome 2011, pers. comm.).

TABLE 4—ESTIMATED * POPULATION SIZE OF WHITE BLUFFS BLADDERPOD

Year	10-Transect sample	20-Transect sample
1997	14,034	.....
1998	31,013	32,603
1999	20,354	21,699
2002	11,884	12,038
2007	29,334	28,618
2008	16,928	18,400
2009	16,569	20,028
2010	9,650	9,949
2011	47,593	58,887

* Mean number of plants per transect × total number of transects along permanent 100-m (328-ft) monitoring transects (from Newsome 2011, p. 3). An additional 20-transect sample was added to monitoring after 1997 to increase statistical confidence.

Population Estimates/Status

The size of the population varies considerably between years. Censuses in the late 1990s estimated more than 50,000 flowering plants in high population years (Evans *et al.* 2003, p. 3–2) (see Table 4). Since 1997 to 1998 when the monitoring transects currently used were selected, the population has ranged between an estimated low of 9,650 plants in 2010 and an estimated high of 58,887 plants in 2011 (see Table 4). Following the monitoring period in 2007, a large wildfire burned through the northern portion of the population within the monitoring transects. Annual monitoring was conducted through 2011 to attempt to determine the effects of fire on White Bluffs bladderpod. The monitoring results indicated that when burned and unburned transects were compared, plants in burned transects appear to have rebounded to some extent. However, the burned transects appeared to have a mean of 24 percent fewer plants than in the unburned transects.

The high variability in estimated population numbers was confirmed by the 2011 data, which documented the highest population estimate since monitoring began in 1997, even though it immediately followed the year representing the lowest estimate (2010). May 2011 was identified by the Hanford Meteorological Station (*http://www.hanford.gov/page.cfm/HMS*) as the fifth coolest and seventh wettest month of May recorded on the installation since its establishment in 1944 (Newsome 2011, p. 2). This environment likely provided ideal conditions for germination, growth, and flowering for this year's population following a rather moist fall and mild winter season (Autumn 2010 precipitation was 4.6 cm (21.8 inches) above average: Winter 2011 precipitation was 0.6 cm (0.24 inches) below average (*http://www.hanford.gov/page.cfm/hms/products/seaprcp*).

Summary of Factors: White Bluffs bladderpod

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Caplow and Beck (1996, p. 42) and others state that the threats to White Bluffs bladderpod and its habitat are primarily landslides caused by subsurface water seepage, invasive species, and ORV use (TNC 1998, p. 5; Evans *et al.* 2003, p. 67, Newsome 2007, p. 4). Of these threats, landslides and invasive species competition is of primary concern (Caplow and Beck 1996, p. 42; Newsome 2007, p. 4). Below is a detailed discussion of these threats and their potential effects on survival and recovery of the species.

Landslides: Groundwater movement from adjacent, up-slope agricultural activities has caused mass-failure landslides in portions of the White Bluffs. As a result, the habitat in approximately 6.0 km (3.7 mi), or about 35 percent of the known range of White Bluffs bladderpod has been moderately to severely altered (Brown 1990, pp. 4, 39; Cannon 2005, p. 4.25; Caplow *et al.* 1996, p. 65; Drost *et al.* 1997, pp. 48, 96; Lindsey *et al.* 1997, pp. 4, 10, 11, 12, 14; U.S. Congress (H.R. 1031), 1999, p. 2; USFWS 1996, p. 1). White Bluffs bladderpod plants have not been observed in areas that have undergone recent landslides, regardless of whether the landslide disturbance is moderate or severe. They have not been observed to survive small slumping events, possibly because the mixed soils downslope post-event no longer have the soil horizon that White Bluffs bladderpod plants seem to require. Additionally, these slumped soils are typically more saturated because they end up below the groundwater seep zone. In the arid environment, White Bluffs bladderpod appears to be unable to successfully compete with the host of weedy and invasive drought-intolerant species in the seed bank. Where natural weathering has eroded occupied habitat, White Bluffs bladderpod plants have been observed to occasionally become established on the more gentle slopes. In very large events of rotational slumping or landslides, parts of the original surface horizon may remain somewhat undisturbed on the crest of the slumped block, preserving White Bluffs bladderpod plants, at least for the short term (Caplow *et al.* 1996, p. 42). All mass-failures occurring along the White Bluffs, with one historical exception, are found in association with water seepage (Bjornstad and Fecht 2002, p. 16).

In the 1960s, the Washington State Department of Game (currently known as the Washington Department of Fish and Wildlife) constructed artificial wetlands using irrigation water delivered to unlined wastewater ponds and canals in the vicinity of the White Bluffs for wildlife enhancement (Bjornstad 2006, p. 1). Water entered a preferential pathway for movement along a buried paleochannel, which connected the artificial wetlands with the White Bluffs escarpment near Locke Island only 4.8 km (3 mi) to the southwest. Water percolating from artificial wetlands moved quickly down through highly transmissive flood deposits, and then encountered the low-permeability soils of the Ringold Formation. The water then flowed laterally along the impermeable layer, and discharged through springs along the White Bluffs. Where they were wet, the unstable Ringold Formation sediments have slumped and slid along the steep White Bluffs escarpment (Bjornstad and Fecht 2002, p. 14). Although water flow to the pond has been halted due to concerns about landslides and the artificial wetlands no longer exist, water continues to seep out along the bluffs, apparently due to the large volume that accumulated in the underlying sediments over years of infiltration (Bjornstad and Fecht 2002, p. 15).

The erosional processes at work in the northern White Bluffs vicinity are somewhat different than those of the southern White Bluffs area, where White Bluffs bladderpod occurs. A record of slumping exists along the White Bluffs, beginning with periodic high-recharge, Ice Age flood events. Since the Pleistocene Epoch, landsliding on the southern bluffs where White Bluffs bladderpod is found was dormant until the 1970s, when increased infiltration of moisture from agricultural activities caused a resurgence of slumping (Bjornstad and Peterson 2009b; Cannon *et al.* 2005, p. 4.25; Bjornstad and Fecht 2002, p. 17; Drost *et al.* 1997, p. 76; Brown 1990, pp. 4, 38, 39). Excess irrigation water percolates downward before moving laterally upon lower-permeability Ringold strata. Spring water that

discharges in the vicinity of the bluff face greatly reduces internal soil strength, and leads to slope failure. Heads of landslides characteristically consist of back-rotated slump blocks that transition to debris flows downslope, and the toes of fluidized debris flows often fan out into the Columbia River. Landslides and their damaging effects will likely continue until water that is currently being introduced subsurface through unlined irrigation canals, ponds, and over-irrigation is significantly reduced or eliminated (Bjornstad and Peterson 2009b).

The entire population of White Bluffs bladderpod is down-slope of irrigated agricultural land and is at risk of landslides induced by water-seepage. The threat is greater in the southern portion of the species' distribution where irrigated agriculture is closest in proximity, and in several locations directly adjacent to the bluffs (Bjornstad *et al.,* 2009a, p. 8; Lindsey 1997, p. 12). Wetted soils visible on the cliff faces directly below the private lands indicate that irrigation of the fields above is affecting the bluff. Irrigation water moves a considerable distance laterally across some of the more impermeable beds of the Ringold Formation, as described earlier, and also percolates downward. As the water increases the pore pressure between sediment grains, it reduces the soil material strength. At the steep bluff face, the loss of material strength results in slope failure and formation of landslides (Bjornstad and Fecht 2002, p. 17), which permanently destroy White Bluffs bladderpod habitat. The areas subject to mass-failure landslides are somewhat predictable, and appear as horizontal wetted zones in the cliff face. This threat is imminent and ongoing, potentially affecting most of the population.

Off-road vehicles: ORVs also threaten the species, by crushing plants, destabilizing the soil, increasing erosion, and spreading the seeds of invasive plants. Although ORV activity is prohibited on the Monument (USFWS 2008, p. 1–5), it occurs intermittently on the Federal lands that constitute approximately 85 percent of the species' distribution. Currently, ORV activity is more common within the private portion (approx. 15 percent of the area) at the southern end of the species distribution. The location and extent of this threat has been mapped by Monument staff on the land under their management (Newsome 2011, pers. comm.). Based on the best available information, ORV use is considered to be an ongoing threat to White Bluffs bladderpod, particularly within the southern extent of the species' distribution.

Invasive species: An infestation of *Centaurea solstitialis* (yellow starthistle), a nonnative weed that is known as a rapid invader of arid environments even in the absence of disturbance, was discovered during 2003 within a portion of the range of White Bluffs bladderpod (Evans *et al.* 2003, p. 67). Invasive plants compete with White Bluffs bladderpod for space and moisture and increase the effects of fire. The infestation was mapped, plants were treated using aerial means, and the weeds are currently being controlled. Continued monitoring and timely followup treatment of this ongoing threat is necessary to protect White Bluffs bladderpod habitat. In addition, a portion of the White Bluffs bladderpod population is adjacent to a public access point along the Columbia River. Visitors could potentially transport invasive plant material or seeds into the area, increasing the risk of impacts of establishment of invasive species. Based on the best available information, nonnative invasive species represent an ongoing threat to White Bluffs bladderpod.

Pesticide or Herbicide Use: We initially considered whether White Bluffs bladderpod pollinators could potentially be negatively affected by pesticide or herbicide applications on orchards and other irrigated crops located adjacent to the population along the southern portion of its distribution. However, specific information on whether this is a threat is not available, and we are not identifying this as an ongoing threat at this time. More thorough investigations are necessary, and we will continue to evaluate this as a potential threat as additional information becomes available.

Wildfire: In July 2007, a large wildfire burned through the northern portion of the White Bluffs bladderpod population and within the area of the monitoring transects after monitoring was completed for that year. Fire is considered to be a threat to White Bluffs bladderpod, although the decline in population numbers after the 2007 fire indicated the population estimate was still within the known range of variability. The 2008–2011 monitoring results demonstrated the negative impacts of the fire to be less than expected, as approximately 76 percent of the population remained viable the following year (Newsome and Goldie, 2008). Notwithstanding the species' apparent ability to recover somewhat from the 2007 wildfire event, we believe that wildfire continues to be a threat to the existing population. This is because fire events tend to be large and unpredictable in the Hanford Reach (see Table 2) and can potentially affect large numbers of plants and significant areas of pollinator habitat.

In addition, wildfire also impacts pollinator communities by directly causing mortality, altering habitat, and reducing native plant species diversity. Since an increase in cheatgrass was observed within the White Bluffs bladderpod population and the surrounding areas affected by the 2007 fire, we presume a larger scale fire event would have similar results. Because of its invasive nature (see discussion below), cheatgrass is able to outcompete native species and, once established, increases wildfire fuel availability. White Bluffs bladderpod may be somewhat fire-tolerant based on the post-2007 wildfire response monitoring. However, the establishment and growth of highly flammable cheatgrass increases the likelihood of fire as well as its intensity, potentially elevating the risk of impacting the White Bluffs bladderpod population in the future. Given the invasive nature of cheatgrass, the increased fire frequency and wildfire history within and around the Monument (see Table 2), the increased fuel that becomes available for future wildfire events as cheatgrass proliferates, and observations that cheatgrass presence increased within and around the population after the 2007 wildfire, wildfire is considered to be an ongoing threat to White Bluffs bladderpod.

Nonnative Plant Competition and Fuel Sources: A common consequence of fire is the displacement of native vegetation by nonnative weedy species, particularly cheatgrass. As a result of the 2007 fire, a higher percent cover of weedy plant species, including cheatgrass, has become established within and around the White Bluffs bladderpod population. Cheatgrass is an introduced annual grass that is widely distributed in the western United States, and has been documented in the White Bluffs bladderpod population. The origins are probably southwestern Asia via contaminated grain from Europe in the 1890's. The species was preadapted to the climate and soils in the Great Basin Desert (parts of Idaho, Nevada, Oregon, and Utah) and filled the void left vacant by historic livestock grazing. This opportunistic grass is able to maintain a superiority over native plants in part because it is a prolific seed producer, able to germinate in the autumn or spring, giving it a competitive advantage over native perennials, and is tolerant of increased fire frequency. Cheatgrass can

outcompete native plants for water and nutrients in the early spring, since it is actively growing when native plants are initiating growth. It also completes its reproductive process and becomes senescent before most native plants (Pellant 1996, p. 1–2).

An infestation of yellow starthistle (*Centaurea solstitialis*) discovered during 2003 within a portion of the White Bluffs bladderpod range was mapped and treated aerially (TNC 2003, p. 67). Yellow starthistle infestations can reduce wildlife habitat and forage, displace native plants, and reduce native plant and animal diversity. It significantly depletes soil moisture reserves in both annual and perennial grasslands, and is able to invade and coexist within cheatgrass-dominated annual grasslands (TNC 2003, p. 55). Accordingly, nonnative plants that increase fuel availability for wildfires are considered an ongoing threat to White Bluffs bladderpod.

Fire Suppression Activities: Fire suppression activities, which often damage or remove native plants from the habitat and disturb soils, could potentially be as damaging as the wildfire itself. The Monument Fire Management Plan (USFWS 2001, p. 27) briefly addresses White Bluffs bladderpod by providing guidance for fire suppression activities on the White Bluffs. The plan states: ''Fire Management will protect these sensitive resources by suppressing fires in this area either from existing roads or the use of flappers and water use. The use of hand tools that break the surface will be avoided when possible and the use of any off-road equipment in these areas requires concurrence by the Project Leader.'' In the 2007 fire, damage to habitat from fire suppression activities within the White Bluffs bladderpod population was avoided by limiting soil disturbance to areas outside a 50–100 m (164–228 ft) buffer (Goldie 2012, pers. comm.).

However, the ability to avoid fire suppression impacts to the White Bluffs bladderpod population during future wildfire events would take into account the location, direction, magnitude, and intensity of the event, firefighter safety considerations, and proximity of the fire to the plant population. If a wildfire were to occur in the surrounding area, protection of the White Bluffs bladderpod population may not be possible if wildfire circumstances necessitate establishing fire lines or response equipment staging areas within or near the population. A potential consequence of fire or any soil disturbance during fire suppression activities is the displacement of native vegetation by nonnative weedy species, which increases intraspecific competition for resources and increases the accumulation of fuels. When these conditions occur, they contribute to increases in wildfire frequency and severity in a frequent fire landscape. Accordingly, although the need for wildfire suppression activities near or within the White Bluffs bladderpod population is unpredictable, this activity is considered a potential threat to this species based on the Monument's wildfire history (see Table 2).

Based on the information above, we find that specific activities discussed under Factor A: The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range present a threat to White Bluffs bladderpod and its habitat. These activities include landslides, invasive species, wildfire, off-road vehicle use, and potentially fire suppression activities.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

The regulations at 50 CFR 27.51 prohibit collecting any plant material on any national wildlife refuge. There is no evidence of commercial, recreational, scientific, or educational use of White Bluffs bladderpod, other than occasional collection of relatively few specimens (*e.g.,* dead plants and seed collection). The species is very showy while flowering and may be subject to occasional collection by the public. The University of Washington Rare Care staff collected approximately 2,000 White Bluffs bladderpod seeds from 60 plants on July 29, 2011, and Berry Botanic Garden in Portland, Oregon, currently has 1,800 seeds collected in 1997 from 45 plants (Gibble 2011, pers. comm.). Because the public has access to the species, and it occurs on private land, occasional collection may be expected. Collection for scientific purposes combined with sporadic collection by private individuals remains a possible, but unlikely threat.

Based on our review of the best available scientific and commercial information, we find that overutilization for commercial, recreational, scientific, or educational purposes is not now a threat to White Bluffs bladderpod in any portion of its range and is not likely to become a significant threat in the future.

C. Disease or Predation

Evidence of disease has not been documented in White Bluffs bladderpod; however, predation of developing fruits and infestations on flowering buds has been observed.

Seed predation: Since 1966, some predation by larval insects on developing fruits of White Bluffs bladderpod has been observed. Larvae of a species of Cecidomyiid fly have been observed infesting and destroying flowering buds, and an unidentified insect species has been documented boring small holes into young seed capsules and feeding on developing ovules. However, the overall effect of these insect species on the plants or population is not known (TNC 1998, p. 5). Although insect predation may be a potential threat to White Bluffs bladderpod, more thorough investigations are necessary to determine its significance to seed production. Accordingly, we do not consider insect predation to be a threat to White Bluffs bladderpod at this time. We are unaware of any other disease or predation interactions that represent potential threats to the species.

D. The Inadequacy of Existing Regulatory Mechanisms

White Bluffs bladderpod was added to the State of Washington's list of endangered, threatened, and sensitive vascular plants in 1997 (as *Lesquerella tuplashensis*), and is designated as threatened by the Washington Department of Natural Resources (WDNR, 2011). The State of Washington's endangered, threatened, and sensitive plant program is administered through the Washington Natural Heritage Program (WNHP), and was created to provide an objective basis for establishing priorities for a broad array of conservation actions (WDNR 2011, p. 2). Prioritizing ecosystems and species for conservation offers a means to evaluate proposed natural areas and other conservation activities (WDNR p. 3). The WNHP is a participant in the Arid Lands Initiative, which is a public/private partnership attempting to develop strategies to conserve the species and ecosystems found within Washington's arid landscape. The WHNP assists in identifying conservation targets, major threats, and potential strategies to address them (WDNR 2011 p. 4).

The DOE does not have a rare plant policy that provides specific protection for the species, and the Service manages DOE lands where White Bluffs bladderpod is found as a part of the Hanford National Monument. A comprehensive conservation plan (CCP) for the Monument has been completed that provides a strategy and general conservation measures for rare plants that may benefit White Bluffs bladderpod. This strategy includes support for monitoring, invasive species

control, fire prevention, propagation, reintroduction, and GIS support to map the impact area (USFWS 2008, pp. 2–64—2–65), but does not prescribe mandatory conservation elements. Although specific actions to conserve the species are not identified, the plan acknowledges that protection of the population is needed, and that management actions are required to address its protection (USFWS 2008, p. 3–95). The CCP states that fire control policies will be implemented to reduce the risk of human-caused wildland fire (USFWS 2008, p. 4–13). The CCP also identifies strategies to mitigate the potential for increased human-caused wildfire as a result of increased visitation, through informational signing educating visitors on the danger of wildfire, the adverse effects of wildfire on the shrub-steppe habitat, and how visitors can contribute to fire prevention. Seasonal closure of interpretive trails through high-risk areas would be established and enforced to mitigate the potential of visitor-caused wildfire (USFWS 2008, pp. 4–43—4–44). The CCP states that best management practices and current regulations which prohibit campfires, open fires, fireworks, and other sources of fire ignition on the Monument will be adequate to prevent human-caused wildfires that could potentially result from hunting activity (USFWS 2008, p. 4–46).

A Spotlight Species Action Plan has been developed for White Bluffs bladderpod, which briefly describes the species and the major threats and identifies actions to conserve the species (USFWS 2009). These actions include working with adjacent landowners to restore, manage, and reduce threats to the population, installation of fencing to eliminate ORV use, invasive species studies and potential eradication efforts, seed collection for augmentation/restoration purposes, pollinator species studies, wildfire studies, and climate change studies. However, many of these actions have not been implemented as funding sources have not been identified (Newsome 2011, pers. comm.).

Numerous wildland fires occur annually on lands in and surrounding the Hanford Reach National Monument/Saddle Mountain National Wildlife Refuge. Many are human-caused, resulting from vehicle ignitions from roads and highways, unattended campfires, burning of adjacent agricultural lands and irrigation ditches, and arson. Fires of natural origin (lightning caused) also occur on lands within and adjacent to the monument/refuge (USFWS 2001, p. 171). Since wildfires are unpredictable with regard to their location and severity, a fire management plan is necessarily designed to be a response, rather than a regulatory strategy. The Wildland Fire Management Plan for the Monument is an operational guide for managing the Monument's wildland and prescribed fire programs. The plan defines levels of protection needed to promote firefighter and public safety, protect facilities and resources, and restore and perpetuate natural processes, given current understanding of the complex relationships in natural ecosystems (USFWS 2001, p. 9). The Monument CCP also has an educational and enforcement program in place that reduces the likelihood of human-caused wildfires.

Although the WHNP, Monument CCP, and Spotlight Species Action plans are important tools to identify conservation actions that would benefit White Bluffs bladderpod, they were not designed to function as regulatory mechanisms that would eliminate threats to the species. In addition, the impact of wildfire is not a threat that is susceptible to elimination by regulatory mechanisms, because of the many potential ignition scenarios on the lands within and surrounding the area where White Bluffs bladderpod occurs.

An invasive plant species inventory and management plan has been developed for the Monument (Evans *et al.* 2003, entire). The plan identifies conservation targets, prevention, detection and response activities, prioritization of species and sites, inventory and monitoring, adaptive management, and several other strategies to address invasive species. Invasive species management presents significant management challenges because of the Monument's large size (78,780 ha) (195,000 ac), and the large number of documented or potential invasive plant species present (Evans *et al.* 2003, p. 5). The introduction and spread of invasive plant species is enhanced by the existence of disturbed lands and corridors; potential introduction pathways include the Columbia River, active irrigation canals, wasteways, and impoundments, state highways, and paved and unpaved secondary roads. In addition, recurrent wildfires, powerline development and maintenance, and slumping of the White Bluffs continually create new habitats for invasive species to colonize (Evans *et al.* 2003, p. 5). The invasive species management plan is not a regulatory mechanism, and given the many invasive plant species pathways within and surrounding the population, the impact of nonnative species is not a threat that is susceptible to elimination by regulatory mechanisms.

Although the Hanford Monument Proclamation prohibits off-road vehicle (ORV) use, ORV use has been documented in the publicly accessible Wahluke Unit (where White Bluffs bladderpod occurs). Some of these violators enter the Monument from long-established access routes from adjacent private lands (USFWS 2002, p. 17), causing physical damage to plants and creating ruts in slopes that increase erosion (USFWS 2008, p. 3–57). Although ORV trespass incidents have been documented on Monument lands, and are affecting some White Bluffs bladderpod individuals, we have no information indicating they are occurring with significant frequency or are affecting a substantial portion of the population. ORV use has also been documented on private property, where the southern extent of the population occurs. We have no information that would indicate ORV trespass incidents on Monument lands are taking place over a large area within the White Bluffs bladderpod population, and there are apparently no constraints on ORV use on private property. Accordingly, we do not believe the ORV threat to White Bluffs bladderpod identified in Factor A is being exacerbated because of existing regulations that are inadequate.

As described under Factor A, groundwater movement from adjacent, up-slope agricultural activities has caused mass-failure landslides caused by subsurface water seepage, which is a threat to White Bluffs bladderpod. This threat is greatest in the southern portion of the species' distribution where irrigated agriculture is close in proximity, and in several locations directly adjacent to the bluffs (Bjornstat *et al.,* 2009a, p. 8; Lindsey 1997, p. 12). There are no existing regulatory mechanisms that address this threat.

Based on our review of the best available scientific and commercial information, we do not consider any of the threats described above under Factor D to be subject to elimination by existing regulatory mechanisms. Therefore, the inadequacy of existing regulatory mechanisms does not represent an ongoing threat to White Bluff's bladderpod.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Small Population Size: As stated earlier, since 1997 to 1998 when the monitoring transects currently used were selected, the population has ranged between an estimated low of 9,650 plants in 2010 and an estimated high of 58,887 plants in 2011 (see Table

4). Additionally, the species is known from only a single population that occurs intermittently in a narrow band (usually less than 10 m (33 ft) wide) along an approximately 17-km (10.6-mi) stretch of the river bluffs (Rollins *et al.* 1996, p. 205), and approximately 35 percent of the known range has been moderately to severely affected by landslides. Accordingly, the species is susceptible to being negatively impacted by the activities described in Factors A and C above, particularly if those threats are of a magnitude that affects a significant portion of the population. Therefore, based on the best available information, we consider White Bluffs bladderpod's small population size and limited geographic distribution to represent an ongoing threat to the species.

Climate Change: Our analyses under the Endangered Species Act include consideration of ongoing and projected changes in climate. The terms ''climate'' and ''climate change'' are defined by the Intergovernmental Panel on Climate Change (IPCC). ''Climate'' refers to the mean and variability of different types of weather conditions over time, with 30 years being a typical period for such measurements, although shorter or longer periods also may be used (IPCC 2007, p. 78). The term ''climate change'' thus refers to a change in the mean or variability of one or more measures of climate (e.g., temperature or precipitation) that persists for an extended period, typically decades or longer, whether the change is due to natural variability, human activity, or both (IPCC 2007, p. 78). Various types of changes in climate can have direct or indirect effects on species. These effects may be positive, neutral, or negative and they may change over time, depending on the species and other relevant considerations, such as the effects of interactions of climate with other variables (*e.g.,* habitat fragmentation) (IPCC 2007, pp. 8–14, 18–19). In our analyses, we use our expert judgment to weigh relevant information, including uncertainty, in our consideration of various aspects of climate change.

Regional climate change modeling indicates a potential threat to White Bluffs bladderpod if hotter and drier conditions increase stress on individual plants, or increase the effects of wildfire frequency and intensity (See discussion under Factor A). As described for Umtanum desert buckwheat above (see Factor E), the potential impacts of a changing global climate to White Bluffs bladderpod are presently unclear. All regional models of climate change indicate that future climate in the Pacific Northwest will be warmer than the past, and, together, they suggest that rates of warming will be greater in the 21st century than those observed in the 20th century. Projected changes in annual precipitation, averaged over all models, are small (+1 to +2 percent), but some models project an enhanced seasonal precipitation cycle with changes toward wetter autumns and winters and drier summers (Littell *et al.* 2009a, p. 1). Regional climate models suggest that some local changes in temperature and precipitation may be quite different than average regional changes projected by the global models (Littell *et al.* 2009a, p. 6). Precipitation uncertainties are particularly problematic in the western United States, where complex topography coupled with the difficulty of modeling El Niño result in highly variable climate projections (Bradley 2009, p. 197).

We do not know what the future holds with regard to climate change. Despite a lack of site-specific data, increased average temperatures and reduced average rainfall may promote a decline of the species and result in a loss of habitat. Hotter and drier summer conditions could increase the frequency and intensity of fires in the area as cheatgrass or other invasive plants compete for resources with White Bluffs bladderpod. However, if summer precipitation were to increase, some native perennial shrubs and grasses could be more competitive if they are able to use water resources when cheatgrass or other nonnative species are dormant (Loik, 2007 in Bradley 2009, pp. 204–205). Nevertheless, if the frequency, intensity, and timing of the predicted changes in climate for eastern Washington are not aligned with the phenology of White Bluffs bladderpod, the survival and reproduction of the species could be threatened over time. Although climate change represents a potential threat based on the available information, more thorough investigations are needed to determine the degree to which climate change may be affecting the species.

TABLE 5—SUMMARY OF THREAT FACTORS UNDER THE ESA TO UMTANUM DESERT BUCKWHEAT AND WHITE BLUFFS BLADDERPOD

Factor	Threat	Magnitude *	Severity *	Imminence *
A	Wildfire	Confirmed	High	Moderate.
	Fire suppression activities	Possible **	Unknown	Unknown.
	Slope failure, landslides	Confirmed	High	High.
	Harm by recreational activities and/or ORV use	Confirmed	Moderate	Low.
	Competition, fuels load from nonnative plants	Confirmed	Moderate	Moderate.
E	Small population size	Confirmed	Low	Low.
	Limited geographic range	Confirmed	Low	Low.
	Climate change	Possible	Unknown	Unknown.

* Magnitude: The extent of species numbers or habitat affected by the threat. Severity: The intensity of effect by the threat on the species or habitat. Imminence: The likelihood of the threat currently affecting the species.

** If avoidance is not possible due to fire direction or safety needs.

Proposed Determination

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to White Bluffs bladderpod (see Table 5). Under the Act and our implementing regulations, a species may warrant listing if it is threatened or endangered throughout all or a significant portion of its range. We assessed the status of White Bluffs bladderpod throughout its entire range and found it to be highly restricted within that range. The threats to the survival of the species occur throughout the species' range and are not restricted to any particular significant portion of that range. Accordingly, our assessment and proposed determination applies to the species throughout its entire range.

Approximately 35 percent of the known range of the species has been moderately to severely affected by landslides, resulting in an apparently permanent destruction of the habitat. The entire population of the species is down-slope of irrigated agricultural land, the source of the water seepage

causing the mass-failures and landslides, but the southern portion of the population is the closest to the agricultural land and most affected. Other significant threats include use of the habitat by recreational off-road vehicles which destroy plants, and the presence of invasive nonnative plants that compete with White Bluffs bladderpod for limited resources (light, water, nutrients). Additionally, the increasing presence of invasive nonnative plants may alter fire regimes and potentially increase the threat of fire to the White Bluffs bladderpod population.

Fire suppression activities could potentially be as great a threat as the fire itself, given the location of the species on the tops of bluffs where firelines are often constructed. In addition, firefighting equipment and personnel are commonly staged on ridge tops for safety and strategic purposes (Whitehall 2012, pers. comm.), although this has not been necessary within the White Bluffs bladderpod population to date. During a wildfire response effort in 2007, responders were able to avoid damage to White Bluffs bladderpod habitat during suppression activities by limiting soil disturbance to areas outside a 50–100 m (164–228 ft) buffer around the population. The threats to the population from landslides, ORV use, and potentially fire suppression (contingent on location, safety, the ability to avoid, and other particulars) are ongoing, and will continue to occur in the future. In addition, invasion by nonnative plants is a common occurrence post-fire in the Hanford vicinity, and will likely spread or increase throughout the areas that were burned during the 2007 fire that occurred in the area of the existing population or in future events.

As described above, White Bluffs bladderpod is currently at risk throughout all of its range due to ongoing threats of habitat destruction and modification (Factor A), and other natural or manmade factors affecting its continued existence (Factor E). Specifically, these factors include the existing degradation or fragmentation of habitat resulting from landslides due to water seepage, invasive species establishment, ORV use, wildfire, potential fire suppression activities, and potential global climate change. Most of these threats are ongoing and projected to continue and potentially worsen in the future. The population is small and apparently restricted to a unique geological setting, making it particularly susceptible to extinction due to threats described in the proposed rule. The magnitude of the threat of wildfire is high, while other threats are moderate to low in magnitude (see Table 5). Because of the limited range of the species, any one of the threats could affect its continued existence at any time.

The Act defines an endangered species as any species that is ''in danger of extinction throughout all or a significant portion of its range,'' and a threatened species as any species ''that is likely to become endangered throughout all or a significant portion of its range within the foreseeable future.'' We find that White Bluffs bladderpod is likely to become endangered throughout all or a significant portion of its range within the foreseeable future, based on the immediacy and scope of the threats described above and, therefore, meets the definition of a threatened species under the Act. There are no portions of the species' range where threats are geographically concentrated such that the species is in danger of extinction within that portion of its range. White Bluffs bladderpod is primarily surrounded by Federal ownership, where the lands are managed as an overlay national wildlife refuge for general conservation purposes.

The Hanford Reach National Monument Comprehensive Conservation Plan was developed to protect and conserve the biological, geological, paleontological, and cultural resources described in the Monument Proclamation by creating and maintaining extensive areas within the Monument free of facility development (USFWS 2008, p. v). Several management objectives are identified that could benefit the White Bluffs bladderpod population, include treating invasive species and restoring upland habitat (USFWS 2008, pp. 19–22). The species is also fairly numerous and continuous where it occurs over 17 km (10.6 mi), and the threats are acting with uniform magnitude, intensity, or severity throughout the species' distribution. Since 85 percent of the species distribution is on Federal lands managed as a national wildlife refuge for conservation purposes, and refuge management plans are in place to help protect and conserve the species, we do not believe White Bluffs bladderpod is presently in danger of extinction throughout all or a significant portion of its range. Therefore, on the basis of the best available scientific and commercial information, we propose listing White Bluffs bladderpod as threatened in accordance with sections 3(6) and 4(a)(1) of the Act.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, the development of a recovery plan (including implementation of recovery actions), requirements for Federal protection, and prohibitions against certain practices. Recognition through listing actions results in public awareness and conservation by Federal, State, Tribal, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and requires that recovery actions be carried out for all listed species. The protection measures required of Federal agencies and the prohibitions against certain activities involving listed wildlife are discussed in Effects of Critical Habitat Designation and are further discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Section 4(f) of the Act requires the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Recovery planning includes the development of a recovery outline shortly after a species is listed, preparation of a draft and final recovery plan, and revisions to the plan as significant new information becomes available. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. The recovery plan identifies site-specific management actions that will achieve recovery of the species, measurable criteria that determine when a species may be downlisted or delisted, and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on

our Web site (*http://www.fws.gov/endangered*), or from our Washington Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribal, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (*e.g.,* restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands. The Hanford Reach National Monument Comprehensive Conservation Plan (2008, p. 4–31), identifies several strategies that will support recovery efforts, including (1) continuing ongoing partnerships for monitoring Umtanum desert buckwheat and White Bluffs bladderpod populations; (2) inventory and control of nonnative plant species; (3) consideration of rare plant species and locations when planning management, recreational, access, and other actions; (4) wildfire prevention when possible, and limiting their size; and (5) development of propagation techniques for rare species for reintroductions if populations go below thresholds.

If these species are listed, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the State of Washington would be eligible for Federal funds to implement management actions that promote the protection and recovery of Umtanum desert buckwheat and White Bluffs bladderpod. Information on our grant programs that are available to aid species recovery can be found at: *http://www.fws.gov/grants.*

Although Umtanum desert buckwheat and White Bluffs bladderpod are only proposed for listing under the Act at this time, please let us know if you are interested in participating in recovery efforts for this species. Additionally, we invite you to submit any new information on this species whenever it becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**).

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service.

Federal agency actions within the species habitat that may require conference or consultation or both as described in the preceding paragraph include management and any other landscape-altering activities on Federal lands administered by the Department of Energy, Department of Defense, U.S. Fish and Wildlife Service, Bureau of Reclamation, Bureau of Land Management, Army Corps of Engineers, and construction and management of gas pipeline and power line rights-of-way by the Federal Energy Regulatory Commission.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to all threatened plants. All prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.61, apply. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to import or export, transport in interstate or foreign commerce in the course of a commercial activity, sell or offer for sale in interstate or foreign commerce, or remove and reduce the species to possession from areas under Federal jurisdiction. Seeds from cultivated specimens of cultivated plants are exempt from these prohibitions provided that their containers are marked ''Of Cultivated Origin.'' Certain exceptions to the prohibitions apply to agents of the Service and State conservation agencies. At this time, there are no existing regulatory mechanisms that provide protection for State-listed plants in Washington, even if endangered. In addition, since Umtanum desert buckwheat occurs entirely on Federal land, and White Bluffs bladderpod occurs predominantly on Federal land, all Hanford Reach National Monument regulations that have protective or conservation relevance to either species would be applicable.

It is our policy, as published in the **Federal Register** on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a proposed listing on proposed and ongoing activities within the range of species proposed for listing.

We may issue permits to carry out otherwise prohibited activities involving endangered and threatened plant species under certain circumstances. Regulations governing permits are codified at 50 CFR 17.62 for endangered plants, and at § 17.72 for threatened plants. With regard to endangered plants, a permit must be issued for the following purposes: For scientific purposes or to enhance the propagation or survival of the species.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where we have listed a new species or subsequently designated critical habitat that may be affected and the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law). Consequently, Federal agencies may sometimes need to request reinitiation of consultation with us on actions for which formal consultation has been completed, if those actions with discretionary involvement or control may affect subsequently listed species or designated critical habitat.

Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to our Washington Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**). Requests for copies of the regulations concerning listed animals and general inquiries regarding prohibitions and permits may be addressed to the U.S. Fish and Wildlife Service, Endangered Species Permits, Eastside Federal Complex, 911 NE. 11th Avenue, Portland, Oregon 97232–4181 (telephone (503) 231–6158; facsimile (503) 231–6243).

Critical Habitat

Background

Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical and biological features

(a) Essential to the conservation of the species; and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Conservation, as defined under section 3 of the Act, means to use, and the use of, all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the prohibition against Federal agencies carrying out, funding, or authorizing the destruction or adverse modification of critical habitat. Section 7(a)(2) requires consultation on Federal actions that may affect critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner seeks or requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the consultation requirements of section 7(a)(2) of the Act would apply, but even in the event of a destruction or adverse modification finding, the Federal action agency's and the applicant's obligation is not to restore or recover the species, but to implement reasonable and prudent alternatives to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species, and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat). In identifying those physical or biological features within an area, we focus on the principal biological or physical constituent elements (primary constituent elements such as roost sites, nesting grounds, seasonal wetlands, water quality, tide, soil type) that when combined compose the features essential to the conservation of the species.

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. For example, an area currently occupied by the species but that was not occupied at the time of listing may be essential to the conservation of the species and may be included in the critical habitat designation. We designate critical habitat in areas outside the geographical area occupied by a species only when a designation limited to its current range would be inadequate to ensure the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the **Federal Register** on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106–554; H.R. 5658)), and our associated Information Quality Guidelines, provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we determine which areas should be designated as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include the recovery plan for the species, articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, or other unpublished materials and expert opinion or personal knowledge.

Habitat is often dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be required for recovery of the species. Areas that are important to the conservation of the species, but are outside the critical habitat designation, will continue to be subject to: (1) Conservation actions we implement under section 7(a)(1) of the Act, (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species, and (3) the prohibitions of section 9 of the Act if certain actions occurring in these areas may affect the species. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of these planning efforts warrants otherwise.

Prudency Determination

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12), require that, to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. Our regulations (50 CFR 424.12(a)(1)) state that the designation of critical habitat is not prudent when

one or both of the following situations exist: (1) The species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of threat to the species; or (2) such designation of critical habitat would not be beneficial to the species.

There is no documentation of commercial or private collection of Umtanum desert buckwheat or White Bluffs bladderpod. Although that activity is identified as a possible but unlikely threat to the species, the significance of collection to the viability of the species' populations is not known. In the absence of a finding that the designation of critical habitat would increase threats to a species, if there are any benefits to a critical habitat designation, then a prudent finding is warranted. The potential benefits include: (1) Triggering consultation under section 7 of the Act, in new areas for actions in which there may be a Federal nexus where it would not otherwise occur because, for example, it is or has become unoccupied or the occupancy is in question; (2) focusing conservation activities on the most essential features and areas; (3) providing educational benefits to State or county governments or private entities; and (4) preventing people from causing inadvertent harm to the species.

The primary regulatory effect of critical habitat is the section 7(a)(2) requirement that Federal agencies refrain from taking any action that destroys or adversely modifies critical habitat. At this time, Umtanum desert buckwheat and White Bluffs bladderpod occur only on Federal, State, and private lands along the Hanford Reach of the Columbia River in Washington State. Lands proposed for designation as critical habitat would be subject to Federal actions that trigger section 7 consultation requirements. These include land management planning, Federal agency actions, and permitting by the Saddle Mountain National Wildlife Refuge/Hanford Reach National Monument. There may also be educational or outreach benefits to the designation of critical habitat. These benefits include the notification of lessees and the general public of the importance of protecting the habitats of both of these rare species.

In the case of Umtanum desert buckwheat and White Bluffs bladderpod, these aspects of critical habitat designation would potentially benefit the conservation of both species. Therefore, if the threat of commercial or private collection exists for either species, it is outweighed by the conservation benefits derived from the designation of critical habitat. We therefore find that designation of critical habitat is prudent for Umtanum desert buckwheat and White Bluffs bladderpod.

We also reviewed the available information pertaining to the biological needs of these species and habitat characteristics where they occur. This and other information represent the best scientific data available, and the available information is sufficient for us to identify areas to propose as critical habitat. Therefore, we conclude that the designation of critical habitat is determinable for both species.

Physical or Biological Features

In accordance with sections 3(5)(A)(i) and 4(b)(1)(A) of the Act and the regulations at 50 CFR 424.12, in determining which areas within the geographical area occupied at the time of listing to propose as critical habitat, we consider the physical and biological features (PBF's) essential to the conservation of the species that may require special management considerations or protection. These may include, but are not limited to:

(1) Space for individual and population growth and for normal behavior;

(2) Food, water, air, light, minerals, or other nutritional or physiological requirements;

(3) Cover or shelter;

(4) Sites for breeding, reproduction, or rearing (or development) of offspring; and

(5) Habitats that are protected from disturbance or are representative of the historical, geographical, and ecological distributions of a species.

We derive the specific PBF's required for Umtanum desert buckwheat and White Bluffs bladderpod from studies of each species' habitat, ecology, and life history as described above in the proposed listing rule. We have determined that the PBFs described below are essential for these species. The criteria used to identify the geographical location of the proposed critical habitat areas for both species is described following the *Proposed Critical Habitat Designation* sections below (see *Criteria Used To Identify Critical Habitat*).

Criteria Used To Identify Critical Habitat

As required by section 4(b)(2) of the Act, in developing this proposed rule we used the best scientific data available to propose critical habitat for both Umtanum desert buckwheat and White Bluffs bladderpod. We reviewed available information that pertains to the habitat requirements of these species. In accordance with the Act and its implementing regulations at 50 CFR 424.12(e), we also consider whether designating additional areas outside those currently occupied as well as those occupied at the time of listing is necessary to ensure the conservation of the species. These sources of information included, but were not limited to:

1. Data used to prepare the proposed rule to list the species;

2. Information from biological surveys;

3. Peer-reviewed articles, various agency reports and databases from the Washington Department of Natural Resources Natural Heritage Program and the Hanford National Monument/Saddle Mountain National Wildlife Refuge;

4. Information from the U.S. Department of Energy and other governmental cooperators;

5. Information from species experts;

6. Data and information presented in academic research theses; and

7. Regional Geographic Information System (GIS) data (such as species occurrence data, land use, topography, aerial imagery, soil data, and land ownership maps) for area calculations and mapping.

The long-term survival and recovery of Umtanum desert buckwheat and White Bluffs bladderpod is dependent upon protecting existing populations by maintaining ecological function within these sites, including preserving the integrity of the unique soils and connectivity between occurrences to facilitate pollinator activity. It is also dependent on maintaining these areas free of habitat-disturbing activities, including trampling, the exclusion of invasive, nonnative plant species, and managing the risk of wildfire. Because the areas of unique soils cover a relatively small area within the larger shrub steppe matrix, we did not restrict the designation to individual occupied patches, but included adequate adjacent shrub steppe habitat to provide for ecosystem function. This contiguous habitat provides the requisite physical or biological features for both Umtanum desert buckwheat and White Bluffs bladderpod, including diverse native flowering plants and habitat to support pollinators, and provides the essential feature of habitat free from disturbances, such as invasive species and recreational trampling. We used the following criteria to select areas for inclusion in critical habitat: (a) The geographical areas containing the entire distribution of habitat occupied by Umtanum desert buckwheat and White Bluffs bladderpod at the time of the

proposed listing, because they are each found in only single populations and our goal is to maintain the current species extent and genetic variability; (b) areas that provide the physical and biological features necessary to support the species' life-history requirements; and (c) areas that provide connectivity within and between habitat for each species, and adjacent shrub steppe habitat that provides for pollinator life-history needs.

The first step in delineating proposed critical habitat units was to identify all areas that contained Umtanum desert buckwheat or White Bluffs bladderpod populations, which was accomplished during the summer of 2011. We are proposing to designate critical habitat within and around all occurrences of both populations to conserve genetic variability. These areas are representative of the entire known historical geographic distribution of the species. We then analyzed areas outside the population to identify unoccupied habitat areas essential for the conservation of the species. The proposed designations take into account those features that are essential to Umtanum desert buckwheat or White Bluffs bladderpod, including the presence of unique soils, unique habitat conditions within the area, and the condition of the surrounding landscape features necessary to support pollination, and possibly other life-history requirements.

We do not know if the lack of pollinators is a limiting factor, but in the absence of other information and knowing that both species are largely insect-pollinated, we believe it is prudent to identify an area adjacent to the occupied areas as unoccupied critical habitat to support pollinator species. The outer boundary of the proposed critical habitat designation was primarily determined based on the flight distances of insect pollinators, which are essential to the conservation of both species. Using Geographical Information Systems (GIS), we included an area of native shrub steppe vegetation approximately 300 m (980 ft) around the population to provide habitat of sufficient quantity and quality to support Umtanum desert buckwheat and White Bluffs bladderpod. This boundary was selected because we believe it provides the minimum area needed to sustain an active pollinator community for both species, based on the best available scientific information (see Arnett 2011b; Evans pers. comm., 2001, discussed below). This distance does not include all surrounding habitat potentially used by pollinators, but provides sufficient habitat for those pollinators that nest, feed, and reproduce in areas adjacent to the occupied critical habitat areas.

Although Umtanum desert buckwheat and White Bluffs bladderpod are visited by a variety of likely pollinators, only one insect pollinator species has been verified to date; the bumblebee (*Bombus centralis*) has been confirmed as a pollinator for Umtanum desert buckwheat (Arnett 2011b, pers. comm.). As stated earlier, Bombus did not appear to be an appropriate surrogate to determine pollinator distance for either Umtanum desert buckwheat or White Bluffs bladderpod because of their relatively long-distance foraging capabilities. Instead, we delineated an effective pollinator use area based on the flight distances of solitary bees, a group of important noncolonial pollinators with a relatively limited flight distance. Research literature on flight distances was available for this group (Gathmann and Tscharntke (2002, p. 758)), of which numerous representatives of the genera *Chelostoma, Megachile,* and *Osmia* are found in shrub steppe habitat in the Hanford Reach area. Species within other solitary bee genera such as *Andrena, Anthophora, Habropoda, Hoplitis,* and *Lasioglossum* have also been identified on the Hanford Installation (Evans 2011, pers. comm.). This methodology assumes that potential pollinators with long-range flight capabilities would be able to use this proximal habitat as well (see *Physical and Biological Features* section).

Because the population occurrences of Umtanum desert buckwheat and White Bluffs bladderpod are linear in arrangement, we established the occupied critical habitat areas by connecting the known coordinates for occurrences, using GIS. The mean width for the occupied areas was estimated based on monitoring and transect data compiled by species experts. The estimated mean width for Umtanum desert buckwheat was determined to be 30 m (100 ft), and 50 m (165 ft) for White Bluffs bladderpod. We then established a 300-m (980-ft) unoccupied critical habitat polygon surrounding the mean occupied habitat width to identify insect pollinator habitat that is essential for the conservation of both species. We then mapped the critical habitat unit boundaries for each of the two species based on the above criteria, using aerial imagery, 7.5 minute topographic maps, contour data, WDNR Natural Heritage and Washington Department of Transportation data to depict the critical habitat designation, gather ownership, and acreage information.

When determining proposed critical habitat boundaries, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, other structures, tilled farm lands and orchards on private property, because such lands lack physical or biological features for Umtanum desert buckwheat and White Bluffs bladderpod. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Therefore, if the critical habitat is finalized as proposed, a Federal action involving such developed lands would not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification, unless the specific action would affect the physical and biological features in the adjacent critical habitat.

Umtanum Desert Buckwheat

Space for Individual Population Growth and for Normal Behavior

Umtanum desert buckwheat is highly restricted in its distribution. The only known population occurs at elevations ranging between 340–400 m (1,115–1,310 ft) on flat to gently sloping substrate at the top edge of a steep, north-facing basalt cliff of Umtanum Ridge overlooking the Columbia River. Approximately 5,000 plants occur in a narrow band 1.6 km (1 mi) in length and generally less than 30 m (100 ft) wide (Reveal *et al.* 1995, p. 353). However, individual plants have been found up to 150 m (490 ft) above the cliff breaks (Arnett 2011b, pers. comm.), and scattered plants occur on the steep cliff-face below the breaks (Dunwiddie *et al.* 2001, p. 60).

Umtanum desert buckwheat is found exclusively on soils over exposed basalt from the Lolo Flow of the Wanapum Basalt Formation at the far southeastern end of Umtanum Ridge in Benton County, Washington. This type of landform in the lower Columbia Basin is determined by the underlying basalts, which may be exposed above the soil on ridge tops or where wind and water erode the fine soils away (Sackschewski and Downs 2001, p. 2.1.1). The Lolo flow surface material commonly has a high porosity and permeability. The cliff area has weathered to pebble- and gravel-sized pieces of vesicular basalt (basalt that contains tiny holes formed due to gas bubbles in lava or magma) and is sparsely vegetated where the species is found. It is unknown if the close association of Umtanum desert buckwheat with the lithosols of the Lolo Flow is related to the chemical

composition or physical characteristics of the particular parent bedrock on which it is found, or other factors (Reveal *et al.* 1995, p. 354); however, that particular mineralogy is not known from any other location.

Therefore, based on the information above, we identify weathered Wanapum basalt cliffs, and adjacent outcrops, cliff breaks, and flat or gently sloping cliff tops with exposed pebble and gravel soils as a physical or biological feature essential to the conservation for Umtanum desert buckwheat.

Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements

The presence of unique soil structure and/or chemistry may determine where a rare plant species exists. Umtanum desert buckwheat is found exclusively on pebbly lithosol soils over exposed basalt from the Lolo Flow of the Priest Rapids Member of the Wanapum Basalt Formation. The flow surface material commonly has a high porosity and permeability and typically contains small (< 5 mm, (0.2 in)) crystals of the mineral olivine and rare (occasional) clusters of plagioclase crystals, and differs from the other members of the Wanapum Formation. Basalts of the Lolo Flow contain higher titanium dioxide and lower iron oxide than the neighboring Rosalia Flow, also of the Priest Rapids Member (Reidel and Fecht 1981, p. 3–13).

It is unknown if the distribution of Umtanum desert buckwheat prior to European settlement was different from the species' current distribution, but it is likely that the species has been confined to this location during at least the last 150 years, which indicates an isolated soil exposure, unique within the broader Columbia Basin landscape. The physiological and soil nutritional needs of Umtanum desert buckwheat are not known at this time. Other locations containing apparently suitable habitat have been intensively searched since the species' discovery in 1995, and no additional individuals or populations have been found. The factors limiting the species' distribution are unknown, but could be related to microsite differences (such as nutrient availability, soil microflora, soil texture, or moisture). Additional research is needed to determine the specific nutritional and physiological requirements for Umtanum desert buckwheat.

Therefore, based on the information above, we identify the pebbly lithosol talus soils derived from surface weathering of the Lolo Flow of the Priest Rapids Member of the Wanapum Basalt Formation as a physical and biological feature essential to the conservation for Umtanum desert buckwheat. These areas are sparsely vegetated, with less than 10 percent estimated total cover (including Umtanum desert buckwheat) within the population and less than 5 percent cover by species other than Umtanum desert buckwheat, and less than 1 percent nonnative or invasive plants (Arnett 2001, pers. comm.). Areas of sparse vegetation are required to minimize nonnative plant competition, minimize conditions that promote the accumulation of fuels, and provide for the recovery of the species.

Sites for Breeding, Reproduction, or Rearing (or Development) of Offspring

The availability of insect pollinators is essential to conserve Umtanum desert buckwheat. Based on the results of a pollinator exclusion study, the species is probably capable of at least limited amounts of self-pollination, although the percentage of seedset in the absence of pollinators appears to be low (TNC 1998, p. 8; Reveal *et al.* 1995, p. 355). A variety of potential insect pollinators has been observed on Umtanum desert buckwheat flowers, including ants, beetles, flies, spiders, moths, and butterflies (TNC 1998, p. 8). Wasps from the families *Vespidae* and *Typhiidae* and from the species *Criosciolia* have been observed near, but not on, the species. A bumble bee species, *Bombus centralis* (no common name), has also been observed utilizing the flowers of Umtanum desert buckwheat (Arnett 2011b, pers. comm.). Insect collection and identification efforts by Washington State University on the Hanford Reach documented approximately 2,500 different species of invertebrates, 42 of which were new to science (WNPS 2004, p. 3).

Since pollination is essential to the conservation of Umtanum desert buckwheat, we evaluated alternatives for determining the effective pollinator distance for this species. Since specific known pollinators are mostly unknown for the species and the species is likely frequented by several pollinators, we investigated delineating an effective pollinator distance based on foraging distances of the species' only known pollinator, the bumble bee (*Bombus* spp.). Bumble bee species are internally guided to use a plant species as long as flowers are rewarding and nearby, but will otherwise change to different species (Chittka *et al.* 1997, p. 248). Foraging ranges for Bombus are greater and consistent within species; however, there are substantial differences between species in foraging ranges and the size of the areas they utilize. Knight *et al.* (2005, p. 1,816) observed a maximum foraging distance between 450–760 m (1,475–2,500 ft), and foraging ranges between 62–180 ha (150–450 ac), based on studies of four species of *Bombus* species. Because of these conspecific differences, we concluded that bumble bee foraging distances may not be representative of the suite of pollinators that may be available to Umtanum desert buckwheat. Based on the limited distribution of Umtanum desert buckwheat and the lack of foraging data for *Bombus centralis,* we determined that generalized *Bombus* foraging range data may not be an appropriate surrogate for determining Umtanum desert buckwheat pollinator distance requirements.

We next considered using the flight distances of solitary bees (individual, noncolonial bees) to determine the effective pollinator distance for the species. Numerous Families of this Order (Hymenoptera) have been observed in shrub steppe habitats within the Hanford Reach, including the Genera *Andrena, Anthophora, Chelostoma, Habropoda, Hoplitis, Lasioglossum, Megachile,* and *Osmia,* among others (Evans 2011, pers. comm.) and are likely to be among the pollinators of Umtanum desert buckwheat.

Solitary bees have fairly short foraging distances within similar habitat types, which is suggested as being between 150–600 m (495–1,970 ft) (Gathmann and Tscharntke (2002, pp. 760–762)). Three genera are found in common with those studied in Gathmann and Tscharntke (2002) in the Hanford Reach; *Chelostoma, Megachile,* and *Osmia.* Although the specific insect pollinator species and their foraging distances are not known, we believe 300 m (980 ft) represents a reasonable mid-range estimate of the area needed around the Umtanum desert buckwheat population to provide sufficient habitat for the pollinator community. As noted above, many other insects likely contribute to the pollination of this species, and some may travel greater distances than solitary bees. However, these pollinators may also forage, nest, overwinter, or reproduce within 300 m (980 ft) of Umtanum desert buckwheat plants. As a result, we limited the Umtanum desert buckwheat pollinator support area to 300 m (980 ft) around the population, based on the rationale that pollinators using habitat farther away may not be as likely to contribute to the conservation and recovery of this species.

Vegetation cover in the vicinity of Umtanum desert buckwheat is low

when compared with other shrub steppe sites, which may be related to substrate chemistry. Common perennial associates and habitat for the pollinators listed above include *Artemisia tridentata* (Wyoming big sagebrush), *Grayia spinosa* (spiny hopsage), *Krascheninnikovia lanata* (winterfat), *Eriogonum sphaerocephalum* (round-headed desert buckwheat), *Salvia dorrii* (purple sage), *Hesperostipa comata* (needle and thread grass), *Pseudoroegneria spicata* (bluebunch wheatgrass), *Poa sandbergii* (Sandberg bluegrass), *Sphaeralcea munroana* (Munro's globemallow), *Astragalus caricinus* (buckwheat milkvetch), and *Balsamorhiza careyana* (Carey's balsamroot). Common annual associates include *Bromus tectorum* (cheatgrass), *Phacelia linearis* (threadleaf phacelia), *Gilia leptomeria* (great basin gilia), *G. inconspicua* sweetvar. *Sinuata* (rosy gilia), *Camissonia minor* (small evening primrose), *Mentzelia albicaulis* (whitestem blazingstar), and *Cryptantha pterocarya* (wing-nut cryptantha) (Reveal *et al.* 1995, p. 354; Caplow and Beck 1996, p. 40). Although percent vegetative cover is low in close proximity to *E. codium,* species diversity within the adjacent plant community is fairly high. Nearby vegetative patches with more dense vegetative cover offer increased vertical habitat structure and plant species diversity within the foraging distances of potential pollinators.

In order for Umtanum desert buckwheat genetic exchange to occur, pollinators must be able to move freely between plants. Additional pollen and nectar sources (other plant species within the surrounding sagebrush vegetation) are also needed to support pollinators when the species is not flowering. This surrounding and adjacent habitat will protect soils and pollinators from disturbance, slow the invasion of the site by nonnative species, and provide a diversity of habitats needed by Umtanum desert buckwheat and its pollinators. Therefore, based on the information above, we identify the presence of insect pollinators as a physical and biological feature essential to the conservation for Umtanum desert buckwheat. Insect pollinators require a diversity of native plants, whose blooming times overlap to provide sufficient flowers for foraging throughout the seasons, nesting and egg-laying sites, appropriate nesting materials, and sheltered, undisturbed places for hibernation and overwintering.

Habitats Protected From Disturbance or Representing Historical, Geographical, and Ecological Distributions

The Umtanum desert buckwheat population has a discontinuous distribution along a narrow, 1.6-km (1-mi) long portion of Umtanum Ridge (Dunwiddie *et al.* 2001, p. 59). The entire known population exists within a narrow corridor at the top edge of the steep, north-facing basalt cliffs where human traffic could be expected to concentrate. The plants respond negatively to trampling or crushing and are extremely sensitive following such damage. In one instance, within 2 days of being run over by trespassing dirt bikes, portions of damaged plants showed signs of further decline, and in some cases mortality, as evidenced by damaged plants that later died (TNC 1998, p. 62).

Fire appears to readily kill the slow-growing Umtanum desert buckwheat plants, especially in areas with higher fuel levels. Because of the rocky talus soils and a relatively low fire frequency, the species is confined to a few meters of upper cliff slope, cliff breaks, and tops. Fires increase the risk of invasion of nonnative or invasive species, particularly cheatgrass, which competes with Umtanum desert buckwheat for space and moisture. In turn, the establishment and growth of highly flammable and often continuous cheatgrass increases the likelihood of fire, potentially elevating the risk of impacting the Umtanum desert buckwheat population in the future. The substrate that supports Umtanum desert buckwheat likely had a lower vegetation cover prior to the introduction of cheatgrass in the 1800s. Fire is a primary threat to Umtanum desert buckwheat, and will likely become a greater threat if the frequency or severity of fires increases (TNC 1998 p. 9; Dunwiddie *et al.* 2001, pp. 59, 62, 66).

Therefore, based on the information above, we identify the stable cliff and soil structure that is protected from human-caused trampling and at a low risk of wildfire as a physical and biological feature essential to the conservation for Umtanum desert buckwheat. This habitat contains little or no surface disturbance and is surrounded by diverse native pollinator habitat.

Primary Constituent Elements for Umtanum Desert Buckwheat

Under the Act and its implementing regulations, we are required to identify the physical and biological features essential to the conservation of Umtanum desert buckwheat, focusing on the features' primary constituent elements. We consider primary constituent elements to be the specific compositional elements of physical and biological features that are essential to the conservation of the species.

Based on our current knowledge of the physical or biological features and the habitat characteristics required to sustain the species' life-history process, we have determined that the primary constituent elements specific to Umtanum desert buckwheat are:

1. Primary Constituent Element 1—North to northeast facing, weathered basalt cliffs of the Wanapum Formation at the far eastern end of Umtanum Ridge in Benton County that contain outcrops, cliff breaks, slopes, and flat or gently sloping cliff tops with exposed pebble and gravel soils;

2. Primary Constituent Element 2—Pebbly lithosol talus soils derived from surface weathering of the top of the Lolo Flow of the Priest Rapids Member of the Wanapum Formation;

3. Primary Constituent Element 3—Sparsely vegetated habitat (less than 10 percent total cover), containing low amounts of nonnative or invasive plant species (less than 1 percent cover);

4. Primary Constituent Element 4—The presence of insect pollinator species; and

5. Primary Constituent Element 5—The presence of native shrub steppe habitat within the effective pollinator distance (300 m (approximately 980 ft)) around the population.

Umtanum desert buckwheat occurs only as a single population located within a single site. With this proposed designation of critical habitat, we intend to identify the physical and biological features essential to the conservation of the species, through the identification of the appropriate quantity and spatial arrangement of the primary constituent elements sufficient to support the life-history processes of the species.

Special Management Considerations or Protection

When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features that are essential to the conservation of the species and that may require special management considerations or protection. All areas proposed for designation as critical habitat as described below may require some level of management to address the current and future threats to the physical and biological features essential to the conservation of Umtanum desert buckwheat. In all of the described units, special management

may be required to ensure that the habitat is able to provide for the biological needs of the species.

Public access without security clearance is currently prohibited at the Umtanum desert buckwheat site, reducing the risk of trampling or crushing the plants by ORV use. Special management to protect the proposed critical habitat areas and the features essential to the conservation of Umtanum desert buckwheat from the effects of the current wildfire regime may include preventing or restricting the establishment of invasive, nonnative plant species, post-wildfire restoration with native plant species, and reducing the likelihood of wildfires affecting the population and nearby plant community components. These actions may be achieved by detailed fire management planning by the DOE (the landowner), including rapid response and mutual support agreements between the DOE, the Monument, the U.S. Department of the Army, Bureau of Land Management, and the Washington Department of Fish and Wildlife for wildfire control. These agreements should contain sufficient detail to identify actions by all partners necessary to protect habitat for Umtanum desert buckwheat from fire escaping from other ownerships.

Further studies leading to an enhancement or reintroduction plan may be necessary to increase population size and prepare for recovery post-wildfire. More research is needed to determine habitats most suitable for expansion of the current population. In summary, special management considerations or protections should address activities that would be most likely to result in the loss of Umtanum desert buckwheat plants or the disturbance, compaction, or other negative impacts to the species' habitat. These activities could include, but are not limited to, recreational activities and associated infrastructure, off-road vehicle activity, dispersed recreation, wildfire, and wildfire suppression activities.

Existing Conservation Measures

A fire management plan has been completed for the Hanford installation (DOE 2011, p. 93) and recently revised to incorporate more detailed management objectives and standards. Though not intended to specifically address Umtanum desert buckwheat, implementation of this plan will contribute to the protection of the primary constituent elements (and physical or biological features) by: (1) Using a map of ''sensitive resources'' on the site during implementation, including the location of Umtanum desert buckwheat habitat; (2) requiring a biologist to assist the command staff in protecting these environments during wildfire suppression efforts; and (3) restricting public access to the entire Umtanum desert buckwheat site, including the proposed pollinator use area.

Proposed Critical Habitat Designation

We are proposing one unit as critical habitat for the Umtanum desert buckwheat population. The critical habitat area described below constitutes our best assessment of areas that meet the definition of critical habitat for Umtanum desert buckwheat. Within this unit, no subunits have been identified.

The approximate size and ownership of the proposed Umtanum Ridge critical habitat unit is identified in Table 6 below. The single unit contains currently occupied critical habitat and unoccupied habitat surrounding it.

TABLE 6—PROPOSED CRITICAL HABITAT UNIT FOR UMTANUM DESERT BUCKWHEAT

[Area estimates reflect all land within the critical habitat unit boundaries; values are rounded to the nearest tenth]

Unit name	Land ownership	Occupied critical habitat in hectares (acres)	Unoccupied critical habitat in hectares (acres)	Percent by ownership	Total hectares (acres)
Umtanum Ridge, WA	Federal	5.7 (14.2)	133.5 (329.9)	100	139.3 (344.1)
	State				
	Private				
	Unit Total	5.7 (14.2)	133.5 (329.9)	100	139.3 (344.1)

White Bluffs Bladderpod

Physical and Biological Features

Space for Individual and Population Growth and for Normal Behavior

White Bluffs bladderpod is only known from a single population that occurs in a narrow band approximately 10 m (33 ft) wide by 17 km (10.6 mi) long, at the upper edge of the White Bluffs of the Hanford Reach. The species only occurs at the upper surface areas of a near-vertical exposure of paleosol (ancient, buried soil whose composition may reflect a climate significantly different from the climate now prevalent in an area). This surface material overlays several hundred feet of easily eroded sediments of the Ringold Geologic Formation, a sedimentary formation made up of soft Pliocene lacustrine deposits of clay, sand, and silt (Newcomb 1958, p. 330).

The upper part of the Ringold Formation is a heavily calcified and silicified cap layer that exists to a depth of at least 4.6 m (15 ft). This layer is geologically referred to as ''caliche,'' although it lacks the nitrate constituents found in true caliche. The caliche-like layer is a resistant caprock underlying a 275–305 m (900–1,000 ft) plateau extending north and east from the White Bluffs (Newcomb 1958, p. 330).

The entire population of White Bluffs bladderpod is down-slope of irrigated agricultural land, and is being impacted to differing degrees by landslides induced by water-seepage (see Factor A). The potential for landslide is greatest in the southern portion of the species distribution where irrigated lands are closer to, or directly adjacent to, the bluffs (Lindsey 1997, p. 12). In addition, field investigations have determined that *Lesquerella* (now *Physaria*) plants can be outcompeted by nonnative, weedy plant species associated with irrigation projects and other disturbance (TNC 1998, p. 5).

Therefore, based on the information above, we identify the weathered cliffs at approximately 210–275 m (700–900 ft) above sea level of the White Bluffs of the Ringold Formation exposed by natural erosion as a physical and biological feature essential to the conservation for White Bluffs bladderpod. The habitat includes the adjacent cliff breaks, moderate to gentle slopes (<100 percent slope) to the toe of slope, and flat or gently sloping cliff tops with exposed alkaline paleosols. This habitat is stable with a minimal amount of landslide occurrence.

Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements

The White Bluffs area was submerged during the larger ice-age floods until about 3 million years ago and was protected from high flow events by the Saddle Mountains to the north. As a result, the area experienced little or no erosion. A thin layer of ancient slackwater flood deposits overlay the older paleosols and resistant cap deposits (Bjornstad and Fecht 2002, p. 15). White Bluffs bladderpod occurs only on or near exposed, weathered, highly alkaline, calcium carbonate cap deposits and may be an obligate calciphile (a plant which grows well on chalky or alkaline soils), as are many of the endemic *Lesquerella* (now *Physaria*) species (Caplow 2006, p. 3).

White Bluffs bladderpod plants are found on several different types of soil substrates, (e.g., paleosol, volcanic tuff, caliche, and ancient flood deposits), each of which presumably have a relatively high percentage of calcium carbonate (TNC 1998, p. 5). The species is occasionally observed on the lower slopes of the White Bluffs, which may be related to ancient landslide zones or weathering and disturbance factors that deposit alkaline soils down slope (Caplow and Beck 1996, p. 42). Although there are scattered small exposures of similar caliche substrate in coulees (i.e., deep ravines or gulches that are usually dry, although formed by water) to the north, surveys have failed to detect the species in those areas (Rollins *et al.* 1996, p. 206). The physiological relationship between White Bluffs bladderpod and the high-calcium carbonate soils of the White Bluffs is uncertain; however, the particular combination of exposed soil types where the species occurs is not known from any other location.

Therefore, based on the information above, we identify the weathered alkaline paleosols and mixed soils of the Ringold Formation that occur in a narrow band within and around the exposed caliche-like cap containing a high percentage of calcium carbonate as a physical and biological feature essential to the conservation of White Bluffs bladderpod. This habitat is associated with the White Bluffs, and occurs between 210–275 m (700–900 ft) in elevation.

Sites for Reproduction

Washington State University researchers on the Hanford Reach have identified approximately 2,500 different species of invertebrates, 42 of which are new to science (WNPS 2004, p. 3). Larvae of a species of Cecidomyiid fly have been observed infesting and destroying flowering buds, and another unidentified insect species has been observed boring small holes in young seed capsules and feeding on developing ovules, although the overall positive or negative effects of these insect species to the plant are unknown. White Bluffs bladderpod appears to be served by several pollinators, including butterflies, flies, wasps, bumblebees, moths, beetles, and ant species. The presence of nearby habitat for pollinators is essential to conserving White Bluffs bladderpod, although little is currently known about the reproductive biology of the species. The effective pollinator distance for this species was determined by applying research on known flight distances of solitary bees (individual, noncolonial bees), which are known to pollinate native species and commonly observed in shrub steppe habitat within the Hanford Reach. Research suggests that different species of solitary bees have fairly short foraging distances within similar habitat types (Gathmann and Tscharntke 2002, p. 762); we assume other pollinating insects with longer-range flight capabilities would also utilize this habitat.

Solitary bees foraging distances within similar habitat types is suggested as being between 150–600 m (495–1,970 ft) (Gathmann and Tscharntke (2002, pp. 760–762)). Absent specific data, we believe 300 m (980 ft) represents a reasonable mid-range estimate of the area needed around the White Bluffs bladderpod population to provide sufficient habitat for solitary bees and other pollinators. As noted above, many other insects likely contribute to the pollination of White Bluffs bladderpod, some may travel greater distances than solitary bees, and some likely use habitat within the 300-m (980-ft) pollinator area described above. However, we limited the White Bluffs bladderpod pollinator support habitat to 300 m (980 ft) around the population, based on the rationale that pollinators using habitat farther away may not be as likely to contribute to the conservation/recovery of this species.

Common plant species associated with White Bluffs bladderpod include: *Artemisia tridentata* (big sagebrush), *Poa sandbergii* (Sandberg's bluegrass), *Astragalus carieinu*s (buckwheat milk-vetch), *Eriogonum microthecum* (slender buckwheat), and *Oryzopsis hymenoides* (Indian ricegrass). Occasionally White Bluffs bladderpod is numerous enough at some locations to be subdominant.

Species diversity within the surrounding plant community is quite high, and the presence of increased vegetative cover nearby offers more habitat structure and plant species diversity within the presumed effective flight distances of potential pollinators. In order for genetic exchange to occur between White Bluffs bladderpod individuals, pollinators must be able to move freely between plants. Additional pollen and nectar sources (other plant species within the surrounding sagebrush vegetation) are also needed to support pollinators during times when White Bluffs bladderpod is not flowering. This surrounding and adjacent habitat will protect soils and pollinators from disturbance, slow the invasion of the site by nonnative species, and provide a diversity of habitats needed by White Bluffs bladderpod and its pollinators.

Therefore, based on the information above, we identify insect pollinators as a physical and biological feature essential to the conservation for White Bluffs bladderpod. Insect pollinators require a diversity of native plants, surrounding and adjacent to White Bluffs bladderpod, whose blooming times overlap to provide them with sufficient flowers for foraging throughout the seasons and to provide nesting and egg-laying sites, appropriate nesting materials, and sheltered, undisturbed places for hibernation and overwintering of pollinator species.

Habitats Protected From Disturbance or Representing Historical, Geographical, and Ecological Distributions

White Bluffs bladderpod grows exclusively on the upper edge and upper face of the White Bluffs adjacent to the Columbia River, where human use can be high. The majority of the population occurs within the Wahluke Unit of the Hanford Reach National Monument/Saddle Mountain National Wildlife Refuge. The Wahluke Unit is open for public access in some form in its entirety (USFWS 2008, p. 2–4). The habitat is arid, and vegetation is sparse within the population (Rollins *et al.* 1996, p. 206). The area supporting the population has approximately 10–15 percent total vegetative cover. Species other than White Bluffs bladderpod comprise less than 5 percent cover, and nonnative or invasive plant species comprise less than 1 percent cover (Arnett 2011c, pers. comm.). Much of this area (85 percent) is on public land that is managed as an overlay national wildlife refuge on the Monument, and accessible by vehicle from a nearby State highway. Off-road vehicle (ORV) use can impact the species by crushing

plants, destabilizing the soil, and spreading seeds of invasive plants. Within White Bluffs bladderpod habitat, ORV activity is prohibited on the Hanford Reach National Monument lands, intermittent on other Federal lands, and is most common on private lands. ORV use increases soil disturbance and erosion, and has been observed to destroy White Bluffs bladderpod individuals since this activity more often takes place on the more moderate slopes where the species occurs (Caplow and Beck 1996, p. 42).

Fire threatens White Bluffs bladderpod by directly burning plants and opening new areas to the establishment of invasive species. A large wildfire burned through the northern portion of the population in July 2007. The observed decline in the number of plants counted after the 2007 fire was within a natural range of variability (between highest and lowest counts) determined during survey transects. The 2008–2011 monitoring indicated the negative impacts of the burn were less than expected, since 76 percent of the previous population numbers were observed the following year. However, large-scale wildfires continue to be a threat to the existing population (Newsome pers. comm. 2008; Goldie pers. comm. 2008) by destroying pollinator habitat and facilitating competition with nonnative and invasive plant species that become established in openings created by wildfires.

Therefore, based on the information above, we identify stable bluff formations and caliche-like alkaline soils as a physical and biological feature essential to the conservation for White Bluffs bladderpod. These areas (1) are at a low risk of wildfire, (2) are not open to motorized recreational use, (3) are protected from human-caused trampling, (4) have little or no surface disturbance, (5) are sparsely vegetated (i.e., have 10 to 15 percent total vegetation cover), and (6) are surrounded by native pollinator habitat.

Primary Constituent Elements for White Bluffs Bladderpod

Under the Act and its implementing regulations, we are required to identify the physical and biological features essential to the conservation of White Bluffs bladderpod in areas occupied at the time of listing, focusing on the features' primary constituent elements. We consider primary constituent elements to be the specific compositional elements of physical and biological features that are essential to the conservation of the species.

Based on our current knowledge of the physical or biological features and the habitat characteristics required to sustain the species' life-history process, we have determined that the primary constituent elements specific to White Bluffs bladderpod are:

1. Primary Constituent Element 1—Weathered alkaline paleosols and mixed soils overlying the Ringold Formation. These soils occur within and around the exposed caliche-like cap deposits associated with the White Bluffs of the Ringold Formation, which contain a high percentage of calcium carbonate. These features occur between 210–275 m (700–900 ft) in elevation.

2. Primary Constituent Element 2—Sparsely vegetated habitat (less than 10–15 percent total cover), containing low amounts of nonnative or invasive plant species (less than 1 percent cover).

3. Primary Constituent Element 3—The presence of insect pollinator species.

4. Primary Constituent Element 4—The presence of native shrub steppe habitat within the effective pollinator distance (300 m (approximately 980 ft)).

5. Primary Constituent Element 5—The presence of stable bluff formations with minimal landslide occurrence.

White Bluffs bladderpod occurs only as a single population found within a single location. With this proposed designation of critical habitat, we intend to identify the physical and biological features essential to the conservation of the species, through the identification of the appropriate quantity and spatial arrangement of the primary constituent elements sufficient to support the life-history processes of the species.

Special Management Considerations or Protection

When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features that are essential to the conservation of the species and that may require special management considerations or protection. Because the public can access the White Bluffs bladderpod population, there is increased risk for plants being trampled and the spread of nonnative or invasive plants. To address this concern, the Hanford National Monument may develop a management plan on lands within its jurisdiction to protect the areas proposed as critical habitat for White Bluffs bladderpod, while continuing to allow the public to enjoy the area. Recreational access may be managed and controlled by directing foot traffic away from the species, installing fencing, and establishing appropriate signage for pedestrians and ORV traffic across unprotected boundaries with private and State land.

Special management to protect the proposed critical habitat areas from irrigation-induced landslides could include working with landowners through the U.S. Department of Agriculture (Natural Resources Conservation Service) to support water conservation practices to reduce excessive groundwater charging. This program could be designed to increase water efficiency as a savings and benefit to agricultural producers as well. Management considerations could include coordination with the Bureau of Reclamation to make water delivery to its customers more efficient and route wastewater return such that it reduces groundwater infiltration. Special management to protect the proposed critical habitat area from the effects of wildfire may include preventing or restricting the establishment of invasive, nonnative plant species, post-wildfire restoration with native plant species, and reducing the likelihood of wildfires affecting the nearby plant community components. Many of these actions are already in place, and need only refinement through detailed fire management planning to protect proposed critical habitat by the Monument.

In summary, special management considerations or protections should address activities that would be most likely to result in the loss of White Bluffs bladderpod plants or the disturbance, compaction, or other negative impacts to the species' habitat through landslides or other means. These activities could include, but are not limited to, dispersed recreation, off-road vehicle activity, wildfire, and wildfire suppression activities.

Existing Conservation Measures

The Service has completed a comprehensive conservation plan for the Hanford National Monument that provides a strategy and general conservation measures for rare plants that may benefit White Bluffs bladderpod. This strategy includes support for monitoring, invasive species control, fire prevention, propagation, reintroduction and GIS support (USFWS 2008, pp. 2–64–2–65). The conservation of White Bluffs bladderpod is addressed by acknowledging that protection is needed, and that the plant is required to be addressed in any management action (USFWS 2008, p. 3–95).

Proposed Critical Habitat Designation

We are proposing one unit as critical habitat for the White Bluffs bladderpod

population. The critical habitat area described below constitutes our best assessment of that portion of the landscape that meets the definition of critical habitat for this population. Within this unit, no subunits have been identified. The approximate size and ownership of the proposed White Bluffs critical habitat unit is identified in Table 7. The unit includes both occupied and unoccupied habitat.

TABLE 7—PROPOSED CRITICAL HABITAT AREA FOR WHITE BLUFFS BLADDERPOD

[Area estimates reflect all land within critical habitat unit boundaries; values are rounded to the nearest tenth]

Unit name	Land ownership	Occupied critical habitat in hectares (acres)	Unoccupied critical habitat in hectares (acres)	Percent by ownership	Total hectares (acres)
White Bluffs	Federal	87 (216)	884 (2,184)	84	971 (2,400)
	State	2 (6)	14 (36)	2	17 (42)
	Private	19 (47)	151 (372)	15	170 (419)
	Total	109 (269)	1,049 (2,592)	100	1,158 (2,861)

Effects of Critical Habitat Designation

Section 7 Consultation

Umtanum Desert Buckwheat and White Bluffs Bladderpod

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of designated critical habitat of such species. In addition, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of proposed critical habitat.

Decisions by the Fifth and Ninth Circuit Courts of Appeals have invalidated our regulatory definition of ''destruction or adverse modification'' (50 CFR 402.02) (see *Gifford Pinchot Task Force* v. *U.S. Fish and Wildlife Service,* 378 F. 3d 1059 (9th Cir 2004) and *Sierra Club* v. *U.S. Fish and Wildlife Service et al.,* 245 F.3d 434, 442F (5th Cir 2001)), and we do not rely on this regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Under the statutory provisions of the Act, the key factor in determining whether an action will destroy or adversely modify critical habitat is whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Examples of actions that are subject to the section 7 consultation process are actions that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Natural Resources Conservation Service or the Bureau of Reclamation). Federal actions not affecting listed species or critical habitat, and actions on State, tribal, local, or private lands that are not federally funded or authorized, do not require section 7 consultation.

As a result of section 7 consultation, we document compliance with the requirements of section 7(a)(2) through our issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that may affect, or are likely to adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable. We define ''reasonable and prudent alternatives'' (at 50 CFR 402.02) as alternative actions identified during consultation that:

(1) Can be implemented in a manner consistent with the intended purpose of the action;

(2) Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction;

(3) Are economically and technologically feasible; and

(4) Would, in the Director's opinion, avoid the likelihood of jeopardizing the continued existence of the listed species or avoid the likelihood of destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where we have listed a new species or subsequently designated critical habitat that may be affected and the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law). Consequently, Federal agencies sometimes may need to request reinitiation of consultation with us on actions for which formal consultation has been completed, if those actions with discretionary involvement or control may affect subsequently listed species or designated critical habitat.

Application of the Jeopardy and Adverse Modification Standards

Jeopardy Standard

If either species were listed under the Act, the Service would apply an analytical framework for jeopardy analyses relying heavily on the importance of habitat parameters at known population sites essential to the species' survival and recovery. The Service would focus its section 7(a)(2) analysis not only on these populations but also on the habitat conditions necessary to support them.

The jeopardy analysis usually expresses the survival and recovery needs of the species in a qualitative fashion without making distinctions between what is necessary for survival and what is necessary for recovery.

Generally, the jeopardy analysis would focus on the rangewide status of Umtanum desert buckwheat or White Bluffs bladderpod, the factors responsible for those conditions, and what is necessary for the species to survive and recover. An emphasis would also be placed on characterizing the conditions of these species and their habitat in the area that would be affected by a proposed Federal action, and the role of affected populations in the survival and recovery of either Umtanum desert buckwheat or White Bluffs bladderpod. That context would then be used to determine the significance of the adverse and beneficial effects of the proposed Federal action, and any cumulative effects for purposes of making the jeopardy determination.

Application of the ''Adverse Modification'' Standard

The key factor related to the adverse modification determination is whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species. Activities that may destroy or adversely modify critical habitat are those that alter the physical or biological features to an extent that appreciably reduces the conservation value of the critical habitat for Umtanum desert buckwheat or White Bluffs bladderpod. As discussed above, the role of critical habitat is to support the various life-history needs and provide for the conservation of both species.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may destroy or adversely modify such habitat, or that may be affected by such designation.

Activities that, when carried out, funded, or authorized by a Federal agency, may affect critical habitat and therefore result in consultation for Umtanum desert buckwheat or White Bluffs bladderpod include, but are not limited to:

(1) Actions within or near designated critical habitat areas that would result in the loss, disturbance, or compaction of unique soils at cliff breaks, slopes, and flat to gently sloping upper surface areas. Such activities could include, but are not limited to:

- Recreational activities and associated infrastructure;
- Off-road vehicle activity;
- Dispersed recreation;
- New road construction or widening or existing road maintenance;
- New energy transmission lines, or expansion of existing energy transmission lines;
- Maintenance of existing energy transmission line corridors;
- Wildfire suppression and post-wildfire rehabilitation activities;
- Activities that result in the burial of seeds such that germinants do not successfully reach the soil surface to flower and set seed;
- Activities that result in compaction that smoothes the surface, causing seeds to be carried away by wind or water due to the lack of rough surface textures to capture seed;
- Activities that result in changes in soil composition leading to changes in the vegetation composition, such as an increase in invasive, nonnative plant cover within and adjacent to cliff break microsites, resulting in decreased density or vigor of individual Umtanum desert buckwheat or White Bluffs bladderpod plants; and
- Activities that result in changes in soil permeability and increased runoff that degrades, reduces, or eliminates habitat necessary for growth and reproduction of either species.

(2) Actions within or near designated critical habitat areas that would result in the significant alteration of intact, native, sagebrush-steppe habitat within the range of Umtanum desert buckwheat or White Bluffs bladderpod. Such activities could include:

- ORV activities and dispersed recreation;
- New road construction or widening or existing road maintenance;
- New energy transmission lines or expansion of existing energy transmission lines;
- Maintenance of existing energy transmission line corridors;
- Fuels management projects such as prescribed burning; and
- Rehabilitation or restoration activities using plant species that may compete with Umtanum desert buckwheat or White Bluffs bladderpod, or not adequately address habitat requirements for insect pollinators.

These activities could result in the replacement or fragmentation of sagebrush-steppe habitat through the degradation or loss of native shrubs, grasses, and forbs in a manner that promotes increased wildfire frequency and intensity, and an increase in the cover of invasive, nonnative plant species that would compete for soil matrix components and moisture necessary to support the growth and reproduction of either species.

(3) Actions within or near designated critical habitat that would significantly reduce pollination or seed set (reproduction). Such activities could include, but are not limited to:

- Recreational development and associated infrastructure; and
- Use of pesticides, mowing, fuels management projects such as prescribed burning, and post-wildfire rehabilitation activities using plant species that may compete with Umtanum desert buckwheat or White Bluffs bladderpod.

These activities could prevent or reduce successful reproduction by removal or destruction of reproductive plant parts and could impact the habitat needs of generalist insect pollinators through habitat degradation and fragmentation, reducing the availability of insect pollinators for either species.

The occupied areas proposed as critical habitat contain the physical and biological features essential to the conservation of Umtanum desert buckwheat and White Bluffs bladderpod, and are within the historical geographic range of the species. The unoccupied areas are essential to the conservation of the species because they provide areas needed by insect pollinators. Federal agencies would need to consult with us to ensure that their actions do not jeopardize the continued existence of the species, or adversely affect designated critical habitat, if the species are listed under the Act.

Exemptions

Application of Section 4(a)(3) of the Act

The Sikes Act Improvement Act of 1997 (Sikes Act) (16 U.S.C. 670a) required each military installation that includes land and water suitable for the conservation and management of natural resources to complete an integrated natural resources management plan (INRMP) by November 17, 2001. An INRMP integrates implementation of the military mission of the installation with stewardship of the natural resources found on the base. Each INRMP includes:

(1) An assessment of the ecological needs on the installation, including the need to provide for the conservation of listed species;

(2) A statement of goals and priorities;

(3) A detailed description of management actions to be implemented to provide for these ecological needs; and

(4) A monitoring and adaptive management plan.

Among other things, each INRMP must, to the extent appropriate and applicable, provide for fish and wildlife management; fish and wildlife habitat

enhancement or modification; wetland protection, enhancement, and restoration where necessary to support fish and wildlife; and enforcement of applicable natural resource laws.

The National Defense Authorization Act for Fiscal Year 2004 (Pub. L. 108–136) amended the Act to limit areas eligible for designation as critical habitat. Specifically, section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) now provides: ''The Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense (DOD), or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation.''

There are no DOD lands with a completed INRMP within the proposed critical habitat designation.

Exclusions

Application of Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary must designate and revise critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate will result in the extinction of the species. In making that determination, the legislative history is clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor.

Exclusions Based on Economic Impacts

Under section 4(b)(2) of the Act, we consider all relevant impacts, including economic impacts. In compliance with section 4(b)(2) of the Act, we have prepared a draft analysis of the economic impacts of this proposed designation of critical habitat (DEA), which is available as supporting information for the proposed critical habitat designation. This document is available for downloading from the Internet at *http://www.regulations.gov,* or from the Washington Fish and Wildlife Office directly (see **FOR FURTHER INFORMATION CONTACT**). The DEA evaluates potential economic impacts of the designation, considering land ownership, reasonably foreseeable land use activities, potential Federal agency actions within the area and section 7 consultation requirements, baseline conservation measures (i.e., measures that would be implemented regardless of the critical habitat designation), and incremental conservation measures (i.e., measures that would be attributed exclusively to the critical habitat designation).

The DEA concludes that incremental economic impacts are unlikely, given the species' narrow geographic range and the fact that any economic impacts related to conservation efforts to avoid adverse modification or destruction of critical habitat would be, for the most part, indistinguishable from those that would be required because of the listing of the species under the Act. Although unoccupied critical habitat areas are typically where incremental effects would be expected, in this case unoccupied critical habitat areas that support insect pollinators are immediately adjacent to occupied critical habitat. The effects of an action in occupied critical habitat would be analyzed concurrently with regard to its effects to unoccupied critical habitat. We anticipate that, in most cases, conservation recommendations or conservation recommendations would be identical, regardless of the critical habitat type. The DEA concludes that any incremental costs would be limited to additional administrative costs that would be borne by Federal agencies associated with section 7 consultations. During the development of the final designation, we will consider economic impacts, public comments, and other new information. Certain areas may be excluded from the final critical habitat designation under section 4(b)(2) of the Act and or implementing regulations at 50 CFR 424.19.

At this time, we are not proposing any exclusions of areas from critical habitat under section 4(b)(2) of the Act for Umtanum desert buckwheat or White Bluffs bladderpod. During the comment period for the proposed designation of critical habitat, we will consider any available information about areas covered by conservation or management plans that we should consider for exclusion from the designation under section 4(b)(2) of the Act, including whether the benefits of exclusion would outweigh the benefits of their inclusion and whether exclusion would or would not result in the extinction of the species. We are specifically asking for public comment on the benefits of exclusion versus inclusion of private lands in the designation of critical habitat, and will determine whether any such lands may merit exclusion from the designation under section 4(b)(2) of the Act. Furthermore, we will evaluate all comments provided during the public comment period of this proposed rule on whether the benefits of excluding any particular area from critical habitat outweigh the benefits of including that area in critical habitat under section 4(b)(2) of the Act.

Exclusions Based on National Security Impacts

Under section 4(b)(2) of the Act, we consider whether there are lands owned or managed by the DOD where a national security impact might exist. In preparing this proposal, we have determined that the lands within the proposed designation of critical habitat for either of the species are not owned or managed by the DOD and, therefore, we anticipate no impact to national security. Consequently, the Secretary does not propose to exercise his discretion to exclude any areas from the final designation based on impacts on national security.

Exclusions Based on Other Relevant Impacts

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security. We consider a number of factors including whether the landowners have developed any Habitat Conservation Plans (HCPs) or other management plans for the area, or whether there are conservation partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at any Tribal issues, and consider the government-to-government relationship of the United States with Tribal entities. We also consider any social impacts that might occur because of the designation.

In preparing this proposal, we have determined that there are currently no HCPs or other management plans that specifically address management needs for either of the species, and the proposed designation does not include any Tribal lands or trust resources. We anticipate no impact to Tribal lands, partnerships, or HCPs from this proposed critical habitat designation. Accordingly, the Secretary does not propose to exercise his discretion to exclude any areas from the final designation based on other relevant impacts.

Peer Review

In accordance with our joint policy published in the **Federal Register** on

July 1, 1994 (59 FR 34270), we will seek the expert opinions of at least three appropriate and independent specialists regarding this proposed rule. The purpose of peer review is to ensure that our determination of status for this species is based on scientifically sound data, assumptions, and analyses. We have invited these peer reviewers to comment, during this public comment period, on the specific assumptions and conclusions regarding the proposal to list Umtanum desert buckwheat and White Bluffs bladderpod as threatened, and our proposed determinations regarding critical habitat for these species.

We will consider all comments and information received during the comment period on this proposed rule during preparation of a final rulemaking. Accordingly, the final decision may differ from this proposal.

Public Hearings

Section 4(b)(5) provides for one or more public hearings on this proposal, if requested. Requests must be received within 45 days after the date of publication of this proposal in the **Federal Register**. Such requests must be sent to the address shown in the **FOR FURTHER INFORMATION CONTACT** section. We will schedule public hearings on this proposal, if any are requested, and announce the dates, times, and places of those hearings, as well as how to obtain reasonable accommodations, in the **Federal Register** and local newspapers at least 15 days before the hearing.

Required Determinations

Regulatory Planning and Review (Executive Orders 12866 and 13563)

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) will review all significant rules. OIRA has determined that this rule is not significant.

Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

Under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 *et seq.*), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996, whenever an agency must publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities.

To determine if the proposed designation of critical habitat for Umtanum desert buckwheat or White Bluffs bladderpod would affect a substantial number of small entities, we considered the potential number of small entities potentially affected within the particular types of economic activities most likely to be affected. In order to determine whether it is appropriate for our agency to certify that this rule would not have a significant economic impact on a substantial number of small entities, we considered each industry or category individually. In estimating the numbers of small entities potentially affected, we also considered whether their activities have any Federal involvement. Since the predominant private land use that could be impacted by the proposed critical habitat designation for White Bluffs bladderpod appears to be irrigated agriculture, we focused our RFA and SBREFA analyses to that particular activity. The proposed designation is focused on Federal, State, and private lands that contain occupied habitat and the adjacent areas with native shrub steppe vegetation that provides nearby habitat for insect pollinators. Lands that are under agricultural use are not included in the proposed critical habitat designation.

In 2007, Franklin County, Washington, had 891 farms, which encompassed 246,664 ha (609,046 ac) and had an average farm size of 277 ha (684 ac, (*http://www.co.franklin.wa.us/assessor/demo_countywide.html*). The Franklin County data indicates that 393,025 acres were in irrigated agriculture. The market value of agricultural products sold was $467 million, and the net cash return from agricultural sales was $116.8 million. For purposes of this analysis, we assumed the entire critical habitat designation proposed on private lands (170 ha (419 ac)) could be used for irrigated agriculture, to determine the scope of maximum impact for the proposed designation on small entities (i.e., the worst-case scenario). Although the DEA does not differentiate between the acreage most likely suitable for agricultural use and the acreage not suitable for such use, much of the 170 ha (419 ac) is steep, and contains numerous cliffs, high gradient draws, and areas of active and dormant soil fracturing and sloughing. Accordingly, the DEA represents an upper bound, and likely overstates the potential economic impacts to small entities.

Based on Franklin County, Washington 2007 data, the proposed designation would overlay approximately 1/10 of 1 percent of the total irrigated acres (159,175 ha (393,025 ac)) in the county. Approximately 65 percent of the total land in farms (609,046 acres) consists of irrigated acreage (393,025 acres). The 2007 irrigated-acres value would proportionally represent approximately $304 million of the total market value of all agricultural products sold ($467 million). Each irrigated acre, therefore, proportionally represents approximately $724 in value/year, based on the 2007 data. Based on this calculation, the maximum economic impact for the entire 419 acres of private land proposed as critical habitat would be $303,559 if all acreage were conducive to and planned for irrigation agricultural use. However, since much of this acreage is not suitable for agriculture based on topography, the actual economic impact would likely be considerably less. Based on this analysis (see Table 6), the proposed designation of critical habitat within the 419 acres of private property would not have a significant economic impact on a substantial number of small entities. Since the average size of a farm in Franklin County, Washington, is 277 ha (684 ac), 170 ha (419 ac) represents approximately 61 percent of the size of one average farm; there are 891 farms in the County. Each private property acre within the proposed critical habitat designation potentially represents approximately $724 in annual value based on 2007 data, although a substantial percentage of this acreage is

not conducive to agricultural use because of steep topography and erosion potential. In addition, the designation of critical habitat would not affect private property unless a proposed development activity required Federal authorization or involved Federal funding, which is uncertain.

TABLE 8—POTENTIAL UPPER BOUND ECONOMIC IMPACT TO PRIVATE LAND OF THE PROPOSED CRITICAL HABITAT DESIGNATION FOR WHITE BLUFFS BLADDERPOD *

Description	Variable	Value
1. Total land in farms (acres)	(a)	609,046
2. Lands in irrigated farms (acres)	(b)	393,025
3. Market value agricultural products sold	(c)	$467,014,000
4. Net cash return from agricultural sales	(d)	$116,803,000
5. Proposed critical habitat acres	(e)	419
6. Percent of (a) represented by (b): [(b) ÷ (a)]	(f)	65%
7. Proportional (d) represented by (b): [(b) × 0.65]	(g)	$303,559,100
8. Percentage of (b) represented by (e): [(e) ÷ (b)]	(h)	0.001%
9. Proportional value of (g) represented by (e): [(g) × (h)]	(i)	$303,559
10. Proportional value (i) per acre (e): [(i) ÷ (e)]	(j)	$724

* Based on 2007 Franklin County tax assessor data.

Other than the above 170 ha (419 ac), the remainder of the areas proposed as critical habitat for White Bluffs bladderpod are either on State or Federal lands, and the proposed critical habitat designation for Umtanum desert buckwheat is entirely on Federal land. Federal and State governments are not considered small entities for purposes of our RFA analysis.

Based on the best available scientific and commercial data, we have not identified a significant number of small entities that may be impacted by the proposed critical habitat designation, based on land ownership information. Small entities are consequently anticipated to bear a relatively low cost impact as a result of the designation of critical habitat for Umtanum desert buckwheat or White Bluffs bladderpod. Accordingly, we certify that, if promulgated, the proposed critical habitat designation would not have a significant economic impact on a substantial number of small business entities. Therefore, an initial regulatory flexibility analysis is not required.

Energy Supply, Distribution, or Use—Executive Order 13211

Executive Order 13211 (Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare Statements of Energy Effects when undertaking certain actions. Seventeen high-voltage transmission lines cross the Monument boundaries, 11 of which cross the Hanford Reach. There are also two electric substations and several microwave towers located within the Monument boundaries. Periodic patrols and 24-hour access for emergency replacement of failed equipment are required for these facilities, and lines are patrolled by helicopter usually three times each year to assess potential problem areas. Helicopters may also be used in lieu of ground vehicles for maintenance or repairs (FWS 2008, p. 3–168). Other than an existing Bonneville Power Administration (BPA) overhead transmission line near the Umtanum desert buckwheat population on lands administered by the Department of Energy (DOE), there are no energy facilities within the footprint of the proposed critical habitat boundaries. The BPA has existing agreements with the DOE (the agency managing the land where the Umtanum desert buckwheat population occurs) for management of transmission line rights-of-way, access roads, microwave tower lines-of-sight, electric power substations, and other sites. The BPA will likely need to expand its existing transmission system in the vicinity of the Monument to meet future needs for moving electricity from generation sources in Montana, northern Idaho, and northeastern Washington to load centers in the Pacific Northwest.

Any activities related to transmission system expansion would first require study and analysis under the National Environmental Policy Act and coordination with the DOE and FWS to ensure protection of the Monument's natural and cultural resources (USFWS 2008, p. 3–169). This analysis would be required regardless of the designation of critical habitat for Umtanum desert buckwheat or White Bluffs bladderpod. However, we have no information indicating that new energy projects are planned for areas within the boundaries of the proposed critical habitat units, or that any of the maintenance activities described above would affect either the Umtanum desert buckwheat or White Bluffs bladderpod populations. Accordingly, we do not expect the designation of this proposed critical habitat to significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required. Any comments received addressing energy supply will be fully considered and addressed in the final rule. The DOE Richland Operations Office is supportive of the Service's efforts to list Umtanum desert buckwheat under the Act (DOE 2011).

Unfunded Mandates Reform Act

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq.*), we make the following findings:

(a) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both ''Federal intergovernmental mandates'' and ''Federal private sector mandates.'' These terms are defined in 2 U.S.C. 658(5)–(7). ''Federal intergovernmental mandate'' includes a regulation that ''would impose an enforceable duty upon State, local, or [T]ribal governments'' with two exceptions. It excludes ''a condition of Federal assistance.'' It also excludes ''a duty arising from participation in a voluntary Federal program,'' unless the regulation ''relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and [T]ribal governments under entitlement authority,'' if the provision would ''increase the stringency of conditions of assistance'' or ''place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding,'' and the State, local, or Tribal governments ''lack authority'' to adjust accordingly. At the time of enactment, these entitlement programs were:

Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. ''Federal private sector mandate'' includes a regulation that ''would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program.''

The designation of critical habitat does not impose a legally binding duty on non-Federal government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

We do not believe that this rule will significantly or uniquely affect small governments. The lands being proposed for critical habitat designation are predominantly owned by the Department of Energy and the Department of the Interior. These government entities do not fit the definition of ''small governmental jurisdiction.'' Therefore, a Small Government Agency Plan is not required. However, we will further evaluate this issue as we conduct our economic analysis, and review and revise this assessment as warranted.

Takings—Executive Order 12630

In accordance with Executive Order 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), this rule is not anticipated to have significant takings implications. As discussed above, the designation of critical habitat affects only Federal actions. Although private parties that receive Federal funding, assistance, or require approval or authorization from a Federal agency for an action may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. We do not anticipate that property values will be affected by the critical habitat designation, but will fully consider all comments in this regard. We will revise this preliminary assessment as warranted, and prepare a Takings Implication Assessment, based on those comments, if needed.

Federalism—Executive Order 13132

In accordance with Executive Order 13132 (Federalism), this proposed rule does not have significant Federalism effects. A Federalism assessment is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of, this proposed critical habitat designation with the appropriate State resource agencies in Washington. The designation of critical habitat in areas currently occupied by Umtanum desert buckwheat and White Bluffs bladderpod may impose nominal additional regulatory restrictions to those currently in place and, therefore, may have little incremental impact on State and local governments and their activities. The designation may have some benefit to these governments because the areas that contain the physical or biological features essential to the conservation of the species are more clearly defined, and the elements of the features of the habitat necessary to the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist local governments in long-range planning (rather than having them wait for case-by-case section 7 consultations to occur).

Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) would be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.

Civil Justice Reform—Executive Order 12988

In accordance with Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Executive Order. We have proposed designating critical habitat in accordance with the provisions of the Act. This proposed rule identifies the physical and biological features within the designated areas to assist the public in understanding the habitat needs of both Umtanum desert buckwheat and White Bluffs bladderpod.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This rule does not contain any new collections of information that require approval by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). This rule will not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.)

It is our position that, outside the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses as defined by NEPA (42 U.S.C. 4321 *et seq.*) in connection with designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. court of Appeals for the Ninth Circuit (*Douglas County* v. *Babbitt,* 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)).

Clarity of the Rule

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

(a) Be logically organized;

(b) Use the active voice to address readers directly;

(c) Use clear language rather than jargon;

(d) Be divided into short sections and sentences; and

(e) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in the **ADDRESSES** section above. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, Government-to-Government Relations with Native American Tribal Governments (59 FR 22951), Executive Order 13175, and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997, ''American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act'', we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Native American Indian culture, and to make information available to Tribes. Neither Umtanum desert buckwheat nor White Bluffs bladderpod occurs on Tribal lands, and there are no unoccupied areas essential to the conservation of either species on Tribal lands. Therefore, we are not proposing any Tribal lands as critical habitat for either Umtanum desert buckwheat or White Bluffs bladderpod. The Confederated Tribes and Bands of the Yakima Nation indicated they have interest in protecting and managing resources occurring in the Ceded Territories designated under the Treaty of 1855. The Tribe submitted a letter stating they are supportive of the proposed ''Federal special status listing'' of Umtanum desert buckwheat and White Bluffs bladderpod.

References Cited

A complete list of all references cited in this proposed rule is available on the Internet at *http://www.regulations.gov,* or upon request from the Manager, Washington Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT** section).

Author(s)

The primary authors of this proposed rule are the staff members of the Central Washington Field Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, and Transportation.

Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Public Law 99–625, 100 Stat. 3500, unless otherwise noted.

2. Amend § 17.12(h) by adding entries for ''*Eriogonum codium''* (Umtanum desert buckwheat) and ''*Physaria douglasii* subsp. *tuplashensis*'' (White Bluffs bladderpod) to the List of Endangered and Threatened Plants in alphabetical order under Flowering Plants to read as follows:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Species		Historic range	Family	Status	When listed	Critical habitat	Special rules
Scientific name	Common name						
FLOWERING PLANTS							
*	*	*	*	*	*		*
Eriogonum codium	Umtanum desert buckwheat.	U.S.A. (WA)	Polygonaceae	T	.....	17.96(a)	NA
*	*	*	*	*	*		*
Physaria douglasii subsp. *Tuplashensis*.	White Bluffs bladderpod.	U.S.A. (WA)	Brassicaceae	T	.....	17.96(a)	NA
*	*	*	*	*	*		*

3. In § 17.96, amend paragraph (a) by adding an entry for ''*Physaria douglasii* subsp. *tuplashensis* (White Bluffs bladderpod)'' in alphabetical order under Family Brassicaceae and an entry for ''*Eriogonum codium* (Umtanum desert buckwheat)'' in alphabetical order under Family Polygonaceae to read as follows:

§ 17.96 Critical habitat—plants.

(a) *Flowering plants.*

* * * * *

Family Brassicaceae: *Physaria douglasii* subsp. *tuplahensis* (White Bluffs bladderpod)

(1) The critical habitat unit is depicted for Franklin County, Washington, on the map at paragraph (5) of this entry.

(2) The primary constituent elements of the physical and biological features essential to the conservation of critical habitat for *Physaria douglasii* subsp. *tuplashensis* are the following:

(i) Weathered alkaline paleosols and mixed soils overlying the Ringold Formation. These soils occur within and around the exposed caliche-like cap deposits associated with the White Bluffs of the Ringold Formation, which contain a high percentage of calcium carbonate. These features occur between 210–275 m (700–900 ft) in elevation.

(ii) Sparsely vegetated habitat (less than 10–15 percent total cover), containing low amounts of nonnative or invasive plant species (less than 1 percent cover).

(iii) The presence of insect pollinator species.

(iv) The presence of native shrub steppe habitat within the effective pollinator distance (300 m (approximately 980 ft)).

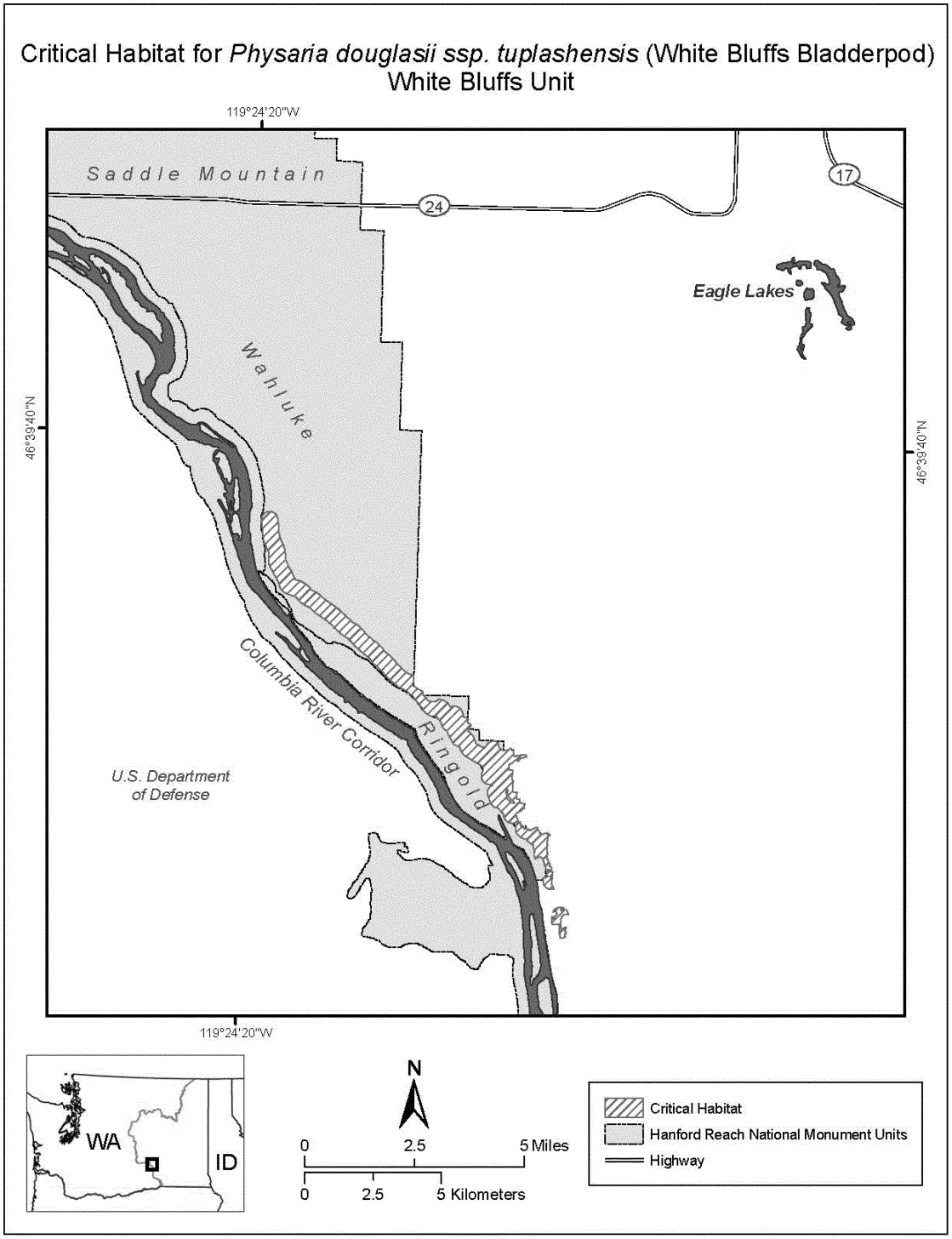
(v) The presence of stable bluff formations with minimal landslide occurrence.

(3) Critical habitat does not include irrigated private lands or manmade structures (such as buildings, pavement, or other structures) and the land on which they are located existing within the legal boundaries on the effective date of this rule.

(4) This critical habitat unit was mapped using Universal Transverse Mercator, Zone 11, North American Datum 1983 (UTM NAD 83) coordinates. These coordinates establish the vertices of the unit boundaries.

(5) **Note:** Map of critical habitat for *Physaria douglasii* subsp. *tuplashensis* (White Bluffs bladderpod) follows:

BILLING CODE 4310–55–P



* * * * *

Family Polygonaceae: *Eriogonum codium* (Umtanum desert buckwheat)

(1) The critical habitat unit is depicted for Benton County, Washington, on the map at paragraph (5) of this entry.

(2) The primary constituent elements of the physical and biological features essential to the conservation of *Eriogonum codium* are the following:

(i) North- to northeast-facing, weathered basalt cliffs of the Wanapum Formation at the far eastern end of Umtanum Ridge in Benton County that contain outcrops, cliff breaks, slopes, and flat or gently sloping cliff tops with exposed pebble and gravel soils.

(ii) Pebbly lithosol talus soils derived from surface weathering of the top of the Lolo Flow of the Priest Rapids Member of the Wanapum Formation.

(iii) Sparsely vegetated habitat (less than 10 percent total cover), containing low amounts of nonnative or invasive plant species (less than 1 percent cover).

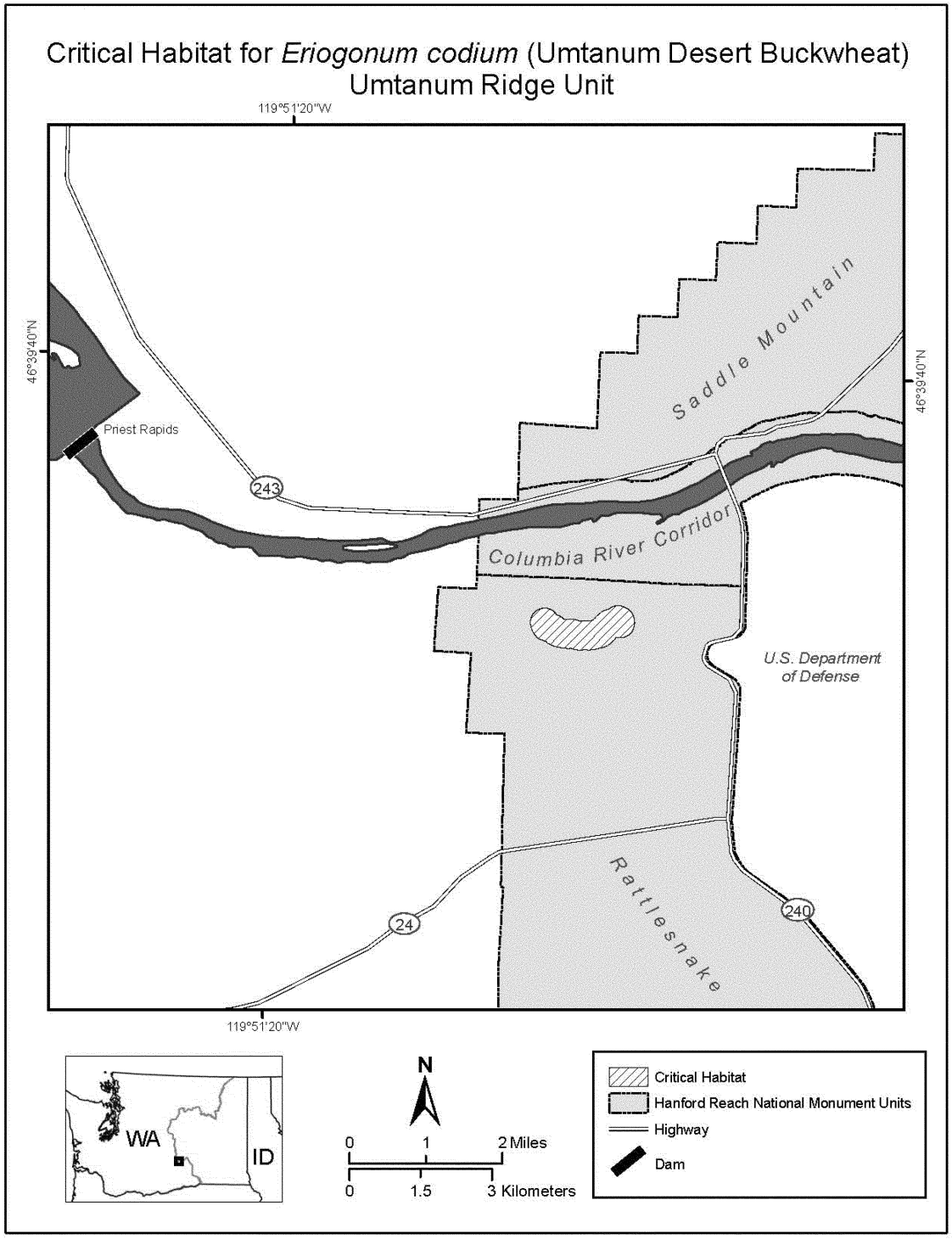
(iv) The presence of insect pollinator species.

(v) The presence of native shrub steppe habitat within the effective pollinator distance (300 m (approximately 980 ft)) around the population.

(3) Critical habitat does not include manmade structures (such as buildings, pavement, or other structures) and the land on which they are located existing within the legal boundaries on the effective date of this rule.

(4) This critical habitat unit was mapped using Universal Transverse Mercator, Zone 11, North American Datum 1983 (UTM NAD 83) coordinates. These coordinates establish the vertices of the unit boundaries.

(5) **Note:** Map of critical habitat for *Eriogonum codium* (Umtanum desert buckwheat) follows:



* * * * *

Dated: April 24, 2012.

Eileen Sobeck,

Acting Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 2012–11100 Filed 5–14–12; 8:45 am]

BILLING CODE 4310–55–C