DRAFT

BIOLOGICAL ASSESSMENT
ENDANGERED, THREATENED, PROPOSED & CANDIDATE SPECIES

ZILKHA RENEWABLE ENERGY
KITTITAS VALLEY WIND POWER PROJECT

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

The purpose of this Biological Assessment (BA) is to determine if the proposed Zilkha Renewable Energy (Zilkha), Kittitas Valley Wind Power Project will adversely affect threatened and endangered species potentially occurring in the project area. Also, the BA will determine if the project will jeopardize the continued existence of candidate species or species proposed for listing under the Endangered Species Act (ESA).

The ESA requires preparation of a BA for major construction projects proposed under Federal authority. While there is currently no federal nexus with the proposed project, future transmission interconnection may require approval by the Bonneville Power Administration (BPA). As a federal agency, BPA is required to consult with U.S. Fish and Wildlife Service (USFWS) to insure that actions proposed, permitted, or funded by BPA do not adversely affect threatened or endangered species or adversely modify designated critical habitat.

The actions being evaluated under this BA are the proposed construction, maintenance, and operation of a 250 megawatt (MW) wind power project in Kittitas County, Washington, north and west of the town of Ellensburg. Zilkha Renewable Energy (Zilkha) plans to construct, operate, and maintain between 100 and 150 wind turbines on approximately 10,000 acres of leased private land east and west of U.S. Highway 97 and north of Interstate 90 between Cle Elum and Ellensburg, Washington (Figure 1). The BA provides a summary of the available information regarding listed species in the area and a thorough effects analysis of the proposed project on the listed species.

1.1 Species Lists

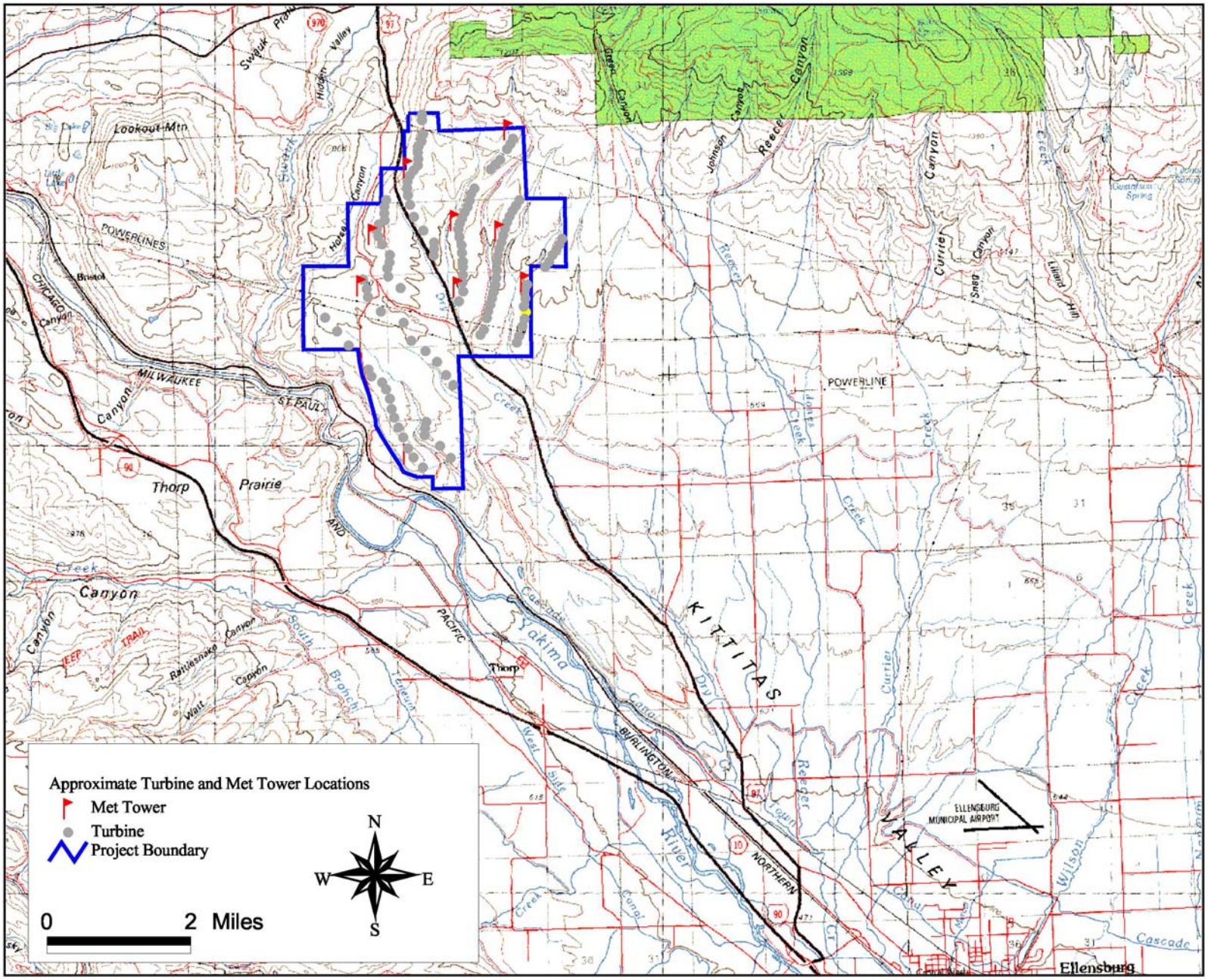
During preliminary environmental impact analysis, the USFWS provided a species list of endangered, threatened, proposed, and candidate species potentially occurring in the project area (Appendix A). The species list indicates that gray wolf (*Canis lupus*), endangered; bald eagle (*Haliaeetus leucocephalus*), threatened; bull trout (*Salvelinus confleuntus*), threatened; northern spotted owl, (*Strix occidentalis caurina*), threatened; Ute ladies'-tresses orchid (*Spiranthes diluvialis*), threatened; western sage grouse (*Centrocercus urophasianus phaios*), candidate; and western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), candidate; may be present near and therefore may be affected by the proposed project. The USFWS indicated that no designated critical habitat for listed species was present near the project.

This BA addresses potential impacts from the project to these species. Prior to initiation of any construction, the species list will be confirmed and the biological assessment may be revised (or amended) if: (1) the scope of work changes significantly so as to create potential effects to listed species not previously considered; (2) new information or research reveals effects of the proposed project may impact listed species in a manner not considered in this BA; or (3) a new species is listed or critical habitat designated that may be affected by the project.

1.2 Proposed and Candidate Species

Proposed species are those for which the USFWS has formally proposed to list as threatened or endangered. Once proposed, there is typically a status review period (often 12 months) where the USFWS reviews all existing information, data, and threats to the species and makes a listing decision.

Figure 1. Proposed Zilkha Kittitas Valley wind power project location.



Species proposed for listing receive protection under the ESA in that proposed projects can not jeopardize the continued existence of these species. According to the USFWS letter, there are no species proposed for listing that may be present in the project area. Therefore, construction, maintenance, and operation of the proposed Zilkha wind power project will not jeopardize any proposed species.

The USFWS maintains a list of candidate species for listing as threatened or endangered. Candidate species are those for which the USFWS has sufficient information on their status and threats to propose them as endangered or threatened, but for which proposed listing is precluded by other higher priority species or actions (USFWS 2000a). While candidate species receive no protection under the ESA, the USFWS encourages actions that conserve these species. Based on the USFWS letter, two candidate species, western sage grouse and western yellow-billed cuckoo, may be present near the project area.

Western Sage Grouse

Western sage grouse is a subspecies of sage grouse that historically occurred from southern British Columbia south through Washington. In Washington, sage grouse historically occurred in most counties east of the Cascades but now only occur in two locations: Douglas County and extreme northern Grant County; and southeastern Kittitas County and northern Yakima County. There are other scattered records from Lincoln County and Benton County but no confirmed breeding in these locations (Smith *et al.* 1997). Sage grouse are found in areas with extensive tracts of native sagebrush steppe habitat that consists primarily of sagebrush/bunchgrass stands with medium to high sagebrush canopy cover (Hays *et al.* 1998). The project is located in a foothills setting of the Cascade Mountains and the primary habitats are shrub-steppe and grassland steppe with scattered areas of lithosol, conifer, agriculture, pasture, and riparian habitats. According to the Washington State Gap Analysis Project (GAP)[1], the project area falls outside mapped and modeled habitat for sage grouse in Washington (Smith *et al.* 1997; WCFWRU 1999). No sage grouse were observed during field surveys in the project area and they are not expected to occur in the vicinity of the project. Implementation of the proposed project will not jeopardize the continued existence of western sage grouse.

Western Yellow-Billed Cuckoo

Yellow-billed cuckoos are found throughout North America from southern Canada into central and eastern Mexico. It is commonly thought that there are two separate subspecies, eastern and western, separated generally by the Rocky Mountains. Western yellow-billed cuckoo is considered a Distinct Population Segment under USFWS policy (USFWS 2001). Yellow-billed cuckoos are migratory and spend the winter as far south as South America and generally occupy the breeding grounds from May through September. Western yellow-billed cuckoos are insectivorous and breed primarily in large riparian areas, particularly cottonwood and willow riparian habitats along large rivers (USFWS 2001). According to the Washington breeding bird atlas, yellow-billed cuckoo is believed to have been extirpated as a breeder in Washington (Smith *et al.* 1997). The project is located in a foothills setting of the Cascade Mountains and the primary habitats are shrub-steppe and grassland steppe with scattered areas of lithosol conifer, agriculture, pasture, and riparian habitats. The riparian habitat in the project area is mainly associated with Swauk and Dry Creek. As most of the development will occur on the ridge tops, little to no riparian habitat will be affected by the project. Based on current knowledge of western yellow-billed cuckoos in Washington and their habitat use, they are not expected to occur in the project area and habitat suitable for their occurrence will not be affected. No cuckoos were observed during field surveys in the project area. Implementation of the proposed project will not jeopardize the continued existence of western yellow-billed cuckoo.

[1] The Washington State Gap Analysis Project is based on a two primary data sources: vegetation types (actual vegetation, vegetation zone, and ecoregion) and species distribution. The two data sources are combined to map the predicted distribution of vertebrate species. More information about the Washington Gap Analysis Project can be found on the WDFW web page: www.wa.gov/wdfw/wlm/gap/dataprod.htm

1.3 Critical Habitat

Critical habitat for threatened or endangered species is defined by the Endangered Species Act as the specific area(s) within the geographical range of a species where physical or biological features are found that are essential to the conservation of the species and which may require special management consideration or protection. Critical habitat is specific geographic area(s) designated by the USFWS for a particular species. Under the ESA, it is unlawful to adversely modify designated critical habitat. According to the USFWS letter, there is no critical habitat as defined by the ESA for threatened or endangered species that may be affected by the project. Therefore, construction, maintenance, and operation of the proposed wind power project will not adversely modify critical habitat for endangered or threatened species.

1.4 No Effect

For most of the species identified, the project should have no effect. Resource information indicated that gray wolf, bull trout, northern spotted owl, and Ute ladies'-tresses orchid are not likely to occur or only accidentally occur in the project area and that essential habitat for some of these species is lacking within the project area.

Gray Wolf

Gray wolf is an endangered species throughout the lower 48 states, except in Minnesota where it is listed as threatened, and in Idaho and Wyoming where it is listed as non-essential, experimental. The primary threats to wolves are loss of habitat and illegal killing by humans (poaching, poisoning). Historically, gray wolves occurred throughout North America from the arctic to the southern U.S. and northern Mexico and inhabited a wide range of habitats including coniferous forests, grasslands, arctic tundra, and deserts. The availability of prey (ungulates) is one of the limiting factors for good wolf habitat (Carbyn 1987). Additionally, large wilderness tracts with little human disturbance are believed essential to maintaining healthy wolf populations. Currently, gray wolves are still fairly abundant in Canada and Alaska, and there are also native populations in northern Minnesota, Michigan, Wisconsin, and northern Montana (USFWS 2000b). Due to the reintroduction efforts of the USFWS, gray wolves also occur in Idaho, Wyoming, and southern Montana. There are no known wolf packs in Washington, however individual wolves are occasionally reported which are believed to be lone wolves from Canada or released wolf-dog hybrids (WDFW 1999). There are several historical records of wolves in the mountains west and north of the project area in the PHS database (WDFW PHS 2002), the latest of which occurred in 1993. Due to the successful wolf reintroduction effort in Central Idaho, wolves may eventually disperse in to southeastern Washington. Wolves generally hunt and live in packs that usually remain within a specific territory that may range in size from 50 to 1,000 square miles depending on prey availability and seasonal movements. Wolves may travel up to 30 miles a day while hunting and lone wolves have been known to disperse up to 500 miles (USFWS 1998a). Wolves usually prey on large ungulates such as moose, elk, bison, or deer, but will also prey on smaller animals such as rodents, beaver, domestic animals, or carrion (Tucker *et al.* 1990). Habitat throughout the northern Cascade Range and in extreme northeastern Washington is considered suitable for wolves (WCFWRU 1999). No wolves were observed during field surveys in the project area and they are not expected to occur in the project area due to the heavy human influence, lack of large tracts of suitable habitat, and uncertain population status in Washington. Implementation of the proposed project will not affect gray wolves.

Bull Trout

Bull trout historically occurred in major river drainages throughout the Pacific Northwest. They were listed as threatened for the Klamath River and the Columbia River distinct population segments in June 1998 (USFWS 1998b). The decline of bull trout is primarily due to habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, past fisheries management practices,

and the introduction of non-native species. It is estimated that bull trout presently occur in 45% of the historical range (Quigley and Arbelbide 1997). Bull trout exhibit resident and migratory life-history strategies through much of the current range (Rieman and McIntyre 1993). Resident bull trout complete their entire life cycle in the tributary or nearby streams in which they spawn and rear. Migratory bull trout spawn in tributary streams where juvenile fish rear from one to four years before migrating to either a lake (adfluvial), river (fluvial), or in certain coastal areas, to saltwater (anadromous), where maturity is reached (Fraley and Shepard 1989; Goetz 1989). Bull trout have specific habitat requirements and appear to be more bottom-oriented than other salmonids (Rieman and McIntyre 1993). Habitat components that influence bull trout distribution and abundance include cold water temperatures; instream cover such as large woody debris, undercut banks, boulders, and pools; clean loose substrate gravel for spawning and rearing; and unobstructed migratory corridors (Fraley and Shepard 1989; Goetz 1989; Rieman and McIntyre 1993; Watson and Hillman 1997). The nearest known bull trout inhabited stream to the project area are the Yakima and Teanaway Rivers (WDFW PHS 2002). The project is not likely to affect bull trout due to lack of suitable stream habitat in the project area and the unlikely probability that the project will affect streams and other aquatic habitats. Implementation of the project will not affect bull trout.

Northern Spotted Owl

Northern spotted owls historically occurred throughout the Pacific Northwest from central California north into southern British Columbia (USFWS 1990). The primary reason for decline of northern spotted owls is habitat loss, degradation and fragmentation due primarily to old growth timber harvest (USFWS 1990). In Washington, spotted owls are found throughout the low and moderate elevation coniferous forests of the Cascade Mountain range and the Olympic peninsula (Smith *et al.* 1997). Northern spotted owls generally require extensive tracts of coniferous forest, usually spruce/cedar/hemlock or Douglas-fir, for nesting and for juvenile dispersal. They nest almost exclusively in mature coniferous forest tracts greater than 1,200 acres in size with dense canopy cover (Gutierrez *et al.* 1995). Spotted owls are territorial and non-migratory and may occupy territories up to 22 square miles (58 km^2) (Gutierrez *et al.* 1995). Spotted owl habitat consists of four components: nesting, roosting, foraging, and dispersal (AFWO 2001). Nesting and roosting habitat consists of dense mature coniferous forest with multiple canopy layers and an abundance of large trees. Spotted owls will forage within nesting habitat but they will also utilize more open and fragmented forests for foraging depending on the characteristics of their home range (AFWO 2001). Dispersal habitat consists of forest stands with adequate tree size and canopy coverage to provide protection from other avian predators (e.g., great horned owl) while the owl travels and forages. Dispersal habitat may not provide good characteristics for nesting, roosting, or foraging. The WDFW PHS database maintains records of spotted owl site centers and management circles for the state of Washington. A site center is a spotted owl location and the management circle is the area encompassed by a 1.8 mile radius circle around the site center, which effectively plots spotted owl territories. Site centers are ranked based on the observation of the spotted owls within the circle, (e.g., a single owl, two or more owls detected, established pair, and documented reproduction). Based on the WDFW PHS database there are northern spotted owl management circles throughout the forests north of the Project. The two northernmost turbine locations (see Figure 1) are located approximately 0.5 mile (0.8 km) and 1.1 miles (1.7 km) respectively, south of spotted owl management circles in the Wenatchee National Forest. Development of the project will not directly affect these management circles. In addition, the project, which is located in open steppe habitats, will not affect any suitable spotted owl habitat and no spotted owls were observed during field surveys of the project area. The potential for the project to affect spotted owls would be based on the accidental occurrence of spotted owls in the steppe habitats of the Project. Implementation of the proposed project will not affect northern spotted owls.

Ute Ladies'-Tresses Orchid

Ute ladies' tresses orchid is a perennial orchid that occurs in wetlands. Ute ladies' tresses was listed as a threatened species in 1992 (USFWS 1992). The primary threats to the species are a general lack of

knowledge about the species ecology and distribution, habitat loss or degradation, and invasion of exotic species (USFWS 1995a). Very little is known about the historic distribution of this plant. It was previously thought to only have occurred in Nevada, Utah, and Colorado. However, since the early 1990's new populations have been discovered in Wyoming, Nebraska, Montana, Idaho, and Washington. Because potential habitat for Ute ladies' tresses is fairly common through the Intermountain, Rocky Mountain west, and western plains it could possibly occur in many unknown locations throughout the region (USFWS 1995a). In Washington, Ute ladies'-tresses orchid is known to occur in north-central Washington in Okanogan and Chelan Counties (WNHP 1999). Ute ladies'-tresses have not been studied in great detail but they are believed to have similar life history traits as other orchids. Other species of *Spiranthes* live initially as saprophytic underground plants that may persist for several years before leaves emerge above ground (USFWS 1995a). Ute ladies' tresses orchids flower in late July through August and occasionally into September and October if conditions are favorable (USFWS 1992). However, it is believed that individual plants rarely flower in consecutive years or under unfavorable conditions, and populations of Ute ladies' tresses orchid are known to fluctuate from year to year, possibly depending on site conditions such as water availability, disturbance history, or encroachment by invasive weeds (USFWS 1995a). This orchid has a close affinity with floodplain areas where the water table is near the surface during the growing season providing continuous sub-irrigation and where the vegetation is relatively open and not overly dense (USFWS 1995a). Ute ladies' tresses tolerate areas with some disturbance such as flooding, grazing, or haying to reduce overstory cover from competing plants (USFWS 1995a). The project is not likely to affect Ute ladies'-tresses due to lack of suitable habitat in the project area and the unlikely probability that the project will affect wetlands. No Ute ladies' tresses orchids were found during rare plant surveys of the project area (Eagle Cap Consulting 2002) Implementation of the project will not affect Ute ladies'-tresses orchid.

1.5 Methods

The BA provides a description of the proposed action (project), a summary of bald eagle biology and distribution, and a description of the environmental baseline for the project including the status and distribution of bald eagle in the project area based on our current knowledge. Finally, the BA provides an assessment of the potential effects of the project on bald eagles and a determination about adverse effects based on this information.

The BA is based largely on available information, however, some primary data was collected from the site through winter bald eagle targeted roadside surveys and weekly surveys at fixed points across the project area (see below). Sources of available information included published literature (including internet resources); a search of the Priority Habitats and Species (PHS) database maintained by the Washington Department of Fish and Wildlife (WDFW); the Washington State Breeding Bird Atlas and Gap analysis; USFWS Breeding Bird Survey results for the last ten years; Audubon Society Christmas Bird Counts for the last ten years; and communication and interviews with resource experts and agency personnel. The searches of the PHS database included the township of the project and a buffer of one township in all directions. Agency information was gained from phone, personal meetings, email, and written requests with resource and agency personnel.

The information gathered for bald eagles focused on, but was not confined to:

X establishing the current status, use, and behavior of bald eagles in the project area,

X establishing the current distribution of important habitat in the project area for bald eagles,

X determining the direct, indirect, and cumulative effects (as defined by the ESA) on bald eagles within the project area,

X determining the likelihood of the project adversely affecting bald eagles,

X identifying conservation measures (mitigation) that may be implemented to avoid and minimize adverse impacts to bald eagles, and

X determining the expected status of bald eagles within the project area after project completion.

Descriptions of the project are based on information provided by Zilkha. Descriptions of the project area and habitat are based on site visits, examination of aerial photographs and topographic maps, and results of the ecological baseline studies conducted for the project. Descriptions of bald eagle habitat, natural history, and behaviors are based mainly on published literature and communications with resource experts. The occurrence and status of bald eagles within Washington and the project area is based on the available information, communication with agency personnel, and data collected from the project area. Bald eagle observations and information were mapped in ArcView.

Primary data collected from the site included winter roadside surveys, weekly point counts from 11 fixed points established across the study area, and incidental/in-transit observations made outside designated survey periods. The studies were initiated as part of a baseline avian study to evaluate potential impacts from the proposed wind plant.

Winter Bald Eagle Surveys

Driving transects to evaluate the numbers of wintering bald eagles and their movements in the project area were initiated in mid-February, 2002. Surveys involved driving and counting bald eagles along four different routes (Figure 2). Surveyors drove the survey routes on an approximately weekly interval. A total of 9 complete surveys (all four transects) were conducted between February 15 and April 11, 2002. The one-way distance for all survey routes combined was approximately 35 miles. Most routes were surveyed twice on any given survey day (e.g., starting in an east to west direction, and returning in a west to east direction).

Survey routes were as follows:

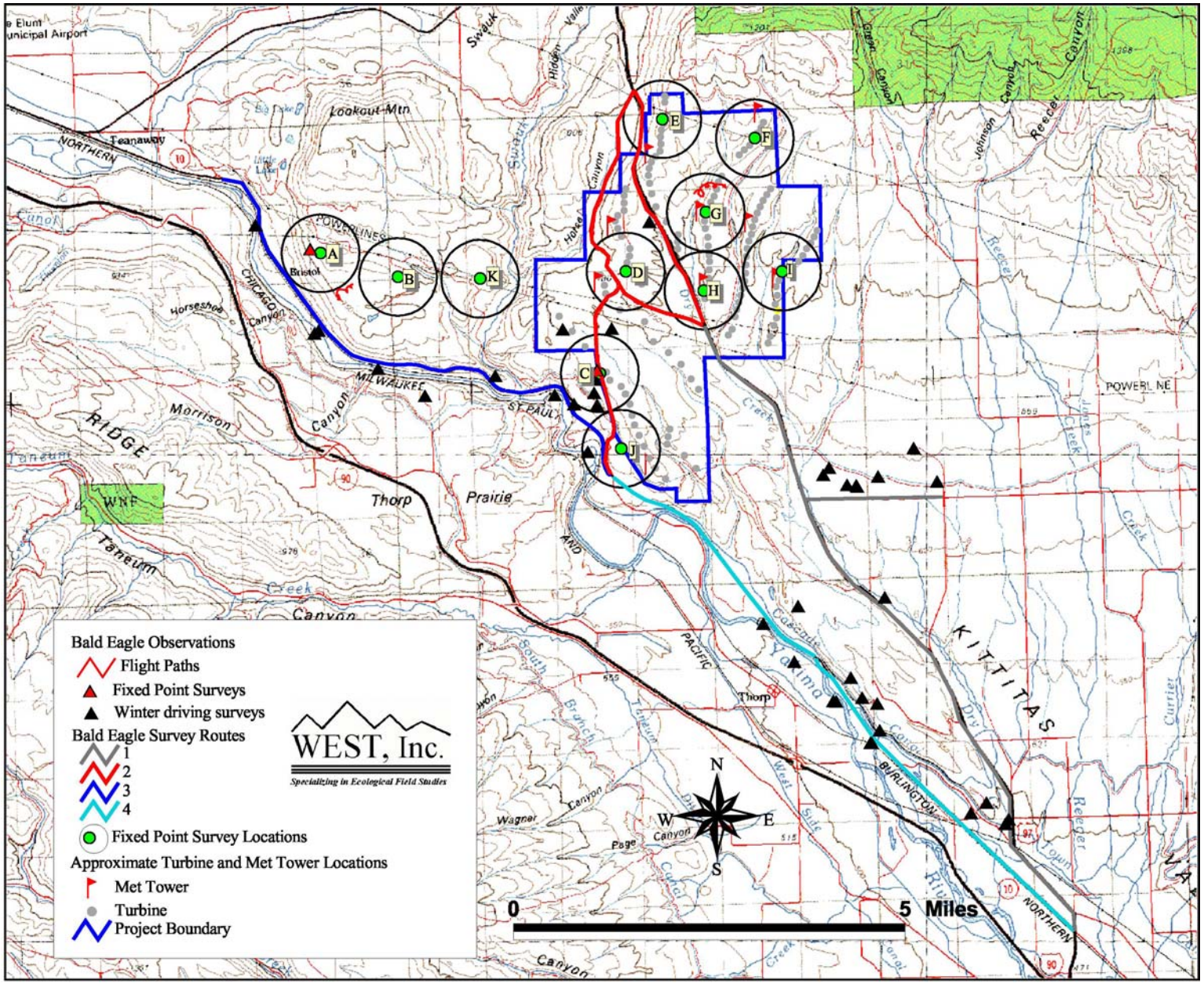
Route 1: From the junction of Highway 97 and Highway 10 along 97 north to the intersection with Bettas Road. Also includes approximately 2.5 miles of Smithson road. Total distance (one-way) was approximately 11 miles.

Route 2: North on Highway 97 from Bettas Road to Northern Bettas Road Junction including all of Bettas Road and south on Hayward Road. Total distance (one-way) was approximately 10 miles.

Route 3: Junction of Hayward Road and Highway 10, west on Highway 10 to Junction with Hart Road. Total distance (one-way) was approximately 7.4 miles.

Route 4: Junction of Highway 97 and Highway 10 west on Highway 10 to Hayward Road. Total distance (one-way) was approximately 6.7 miles.

Figure 2. Winter bald eagle survey routes, fixed-point survey locations, and bald eagle observations.



Depending on traffic and safe pull-off availability, the surveyor looked for eagles within areas visible from the road. During periodic stops, the surveyor scanned areas of large cottonwoods and conifer trees with binoculars and spotting scope to look for perched eagles. Between stops, the observer drove at a slow speed of approximately 20-25 mph (40 kph), when possible. Surveys were conducted in the morning and evening hours, alternating each week. All bald eagles (or groups of bald eagles) observed were assigned a unique observation number and mapped on USGS 7.5' quadrangle maps. UTM coordinates from the road were recorded for each eagle or group of eagles observed. Habitat, activity, and time of day were also recorded for each observation. Flight paths of bald eagles were mapped for as long as the bird was visible. Perch sites and possible evening roost sites were recorded on the topo maps. The direction of the route followed (forward or reverse), total time spent, and distance driven was recorded for each survey route.

Weekly Fixed-point Surveys

Point count surveys were conducted weekly on site at 11 survey locations between March 21 and November 1, 2002. Each plot consisted of an 800-m radius circle centered on a fixed observation point location (Figure 2). Observations of birds beyond the 800 m radius were also recorded, but not included in the detailed analyses of avian use of the site. Survey periods lasted for 20 minutes per point count. Additional details of the survey methods and results can be found in the final technical report prepared for the baseline studies (Erickson *et al.* 2003). Results from the surveys as they pertain to bald eagles are reported below (see Section 4.0 Environmental Baseline)

Incidental/In-transit Observations

All wildlife species of concern, including bald eagles, and uncommon species observed while field observers were traveling between plots were recorded on incidental/in-transit data sheets. Other incidental observations made during other surveys or visits to the sites were also recorded. These observations were recorded in a similar fashion to those recorded during the fixed-point surveys.

2.0 PROJECT DESCRIPTION

The proposed Project would consist of the installation, operation, maintenance, and eventual decommissioning of approximately 120 wind turbines and supporting facilities. The project is anticipated to produce up to approximately 173 MW of electricity. The power would be sold to one or more regional utilities for transmission to regional consumers. The wind turbines proposed for the Project will have a capacity of 1.5 MW each with a rotor diameter of approximately 50 m (25 m blades). The turbines will be mounted on 50-75 m tubular towers, for a total height of approximately 100 m to the tip of the blade. The concrete tower foundations would be approximately 5-15 m square, and extend 6-15 m deep. Wind turbines would be grouped in turbine "strings" of about 4 to 32 turbines generally near the crest of the ridges. Turbines will be spaced approximately 90 to 150 m (300 to 500 ft) from the next or 1.5-2 times the diameter of the turbine rotor. Each turbine will be connected to adjacent turbines by a 34.5-kilovolt (kV) underground collector system.

The electrical output of each turbine string would be connected to the project substation by a combination of overhead and underground 34.5-kV transmission lines. The substation would be connected to the BPA and/or PSE transmission lines that are located adjacent to the substation site. The project would be monitored and controlled from an operations and maintenance (O&M) building located adjacent to the substation (Figure 1). Existing roads would be improved, and some new graveled roads would be constructed to provide access to the wind turbine locations during construction and for O&M. Wind speeds will be monitored using nine permanent meteorological (met) towers.

Total acres of impacted habitat will be relatively small. Approximately 77 acres (31 ha) will be

permanently disturbed (occupied by roads, turbines and other infrastructure) and approximately 302 acres (122 ha) will be temporarily disturbed during construction. Approximately 12 miles (19 km) of new roads and driveway will be constructed, and approximately 10 miles (16 km) of existing roads will be graveled and widened to 20-30 ft (6-9 m).

2.1 Operation and Maintenance

Once constructed, there will be a permanent staff of O&M personnel responsible for upkeep of the wind plant. Approximately 15 wind smiths will be on site on a daily basis and there will be periodic traffic on the roads associated with O&M activity. During the first 3-6 months of wind plant operation, maintenance activity will be higher than normal while the wind plant becomes fully operational and problems are worked out. The primary O&M building will be located near the substations in approximately the center of the wind plant (Figure 1).

3.0 SPECIES DESCRIPTION AND HABITAT REQUIREMENTS

3.1 Bald Eagle

In 1978, the USFWS listed bald eagle throughout the lower 48 States as endangered except in Michigan, Minnesota, Wisconsin, Washington, and Oregon, where it was listed as threatened (USFWS 1978). In 1995, bald eagle was reclassified from endangered to threatened in all of the lower 48 states (USFWS 1995b). In July 1999, the USFWS proposed de-listing bald eagle (USFWS 1999). To date, bald eagle has not been removed from the list of threatened species. The species has been doubling its breeding population every 6-7 years in the lower 48 states since the late 1970's (USFWS 1995b). In 1963, a National Audubon Society survey reported only 417 active nests in the lower 48 states, with an average of 0.59 young produced per active nest. In 1994, about 4,450 occupied breeding areas were reported with an estimated average young per occupied territory (for 4,110 territories) of 1.17 (USFWS 1995b).

3.1.1 Life History and Characteristics

The nesting chronology of bald eagles is variable based on latitude. For more northern populations, nest maintenance and construction occurs during winter months, January and February (Buehler 2000). Eggs are laid between late February and late April, with peak laying during early March. Fledging dates vary accordingly with most young leaving the next between 8 and 14 weeks after hatching (Harmata and Oakleaf 1992, Buehler 2000). Nest production is usually between 1-3 young per year. Little is known of post-fledging behavior, however bald eagles do not reach sexual maturity until 4-5 years and may live up to 20-30 years (Buehler 2000).

Wintering bald eagles in Washington are primarily found along major waterways, with some found on upland wintering areas. During migration and at wintering sites, eagles that concentrate on locally abundant food tend to roost communally. Roost sites form critical habitat for wintering birds (Buehler 2000) with some roosts used regularly by large numbers of eagles. Bald eagle migration varies by populations and may extend over several months (Buehler 2000). In the Pacific Northwest, bald eagle migrations coincide with salmon migrations and both immature and adult bald eagles will migrate north in the late summer to take advantage of fall run salmon as far north as southern Alaska. These birds and more northern birds will then move back south over the fall, arriving on the wintering grounds in November and December (Hodges *et al.* 1987, Hansen *et al.* 1986). Open water and food availability dictate areas of use throughout the winter months. Upland areas may receive considerable use when carrion is available. Important prey includes waterfowl, salmonids, carrion, and small mammals.

3.1.2 Habitat Requirements

Generally, bald eagles require areas in the proximity of water for nesting, and areas with abundant readily available food sources and good roost sites during winter (Harmata 1989, Buehler 2000, Cederholm *et al.* 2001). Bald eagles nest in stands of mature or over-mature timber with old growth characteristics near (generally within one mile) significant water bodies with adequate food supplies. Most nests trees are located in timber stands three acres or larger with canopy closure of less than 80 percent and on flat to moderately sloping terrain with northern aspects. Live trees most often selected are ponderosa pine, Douglas-fir, and cottonwood. Snags of these trees are also used. Most nests are in mature or over-mature dominant or co-dominant trees with open crowns and sturdy horizontal limbs in line of sight to a lake or reservoir greater than 80 acres in size, or fourth order or larger stream (Buehler 2000, MBEWG 1986).

Wintering bald eagles tend to congregate near bodies of water where they feed on fish, carrion, and waterfowl (Buehler 2000, Cederholm *et al.* 2001). Major river drainages and large lakes constitute the majority of winter habitat use. Roosts consist of old large trees or snags where visibility is good and which have sturdy lateral limbs near the crown to provide easy entry and exit (USFS 1977, Green 1985). Communal roosts are usually located in stands of mature old-growth conifer or cottonwoods, and roosts may be several miles from feeding sites.

Important bald eagle habitat includes wetlands, major water bodies, salmonid spawning streams, ungulate winter ranges, spring green-up areas, and areas where open water occurs. Bald eagles have varying tolerances to human disturbance. Disturbance near winter roosts or at the nest site during egg-laying and incubation may result in abandonment of the roost or nest. However, some eagles develop considerable tolerance to human activity and several have been known to nest in the Seattle City limits (Smith *et al.* 1997).

3.1.3 Range and Distribution

Historically, bald eagles occurred over most of North America in a variety of habitats. In Washington, bald eagles are most common west of the Cascades but also occur along most major rivers in eastern Washington (Smith *et al.* 1997). In the winter, the population of bald eagles in Washington increases due to an influx of migrants from the north.

4.0 ENVIRONMENTAL BASELINE

4.1 Area of Effect

For the effects assessment, the area of affect from the project was assumed to be the construction zone or development corridors for the turbine strings, all associated construction permit areas, construction staging areas, plant sites, and any areas requiring reclamation post construction (e.g., disturbed areas) and a buffer zone of approximately ½ mile (approximately 800 m) around these areas.

4.2 Project Area

The Project is located in Kittitas County, Washington, approximately 9 miles (14 km) southeast of the town of Cle Elum, and 12 miles (20 km) northwest of the town of Ellensburg. The Yakima River flows in a southeasterly direction to the south of the Project. U.S. Highway 97 runs north-south through the middle of the project area, and State Highway 10 and Interstate 90 parallel the Yakima River to the south. The project is located in the following sections: Township 19N, Range 17E, Sections 1-3, 7, 9-16, 21-23, and 27, and Township 20N, Range 17E, Section 34 (Figure 1).

The Project is located at the western edge of the Columbia Basin physiographic province at the eastern base of the Cascade Mountain range (Franklin and Dyrness 1988). The Columbia Basin province is surrounded on all sides by mountain ranges and highlands, and covers a large portion of eastern Washington, and extends south into Oregon.

The Project extends over an approximately 4 by 5 mile (6 by 9 km) block of land, which consists primarily of long north-south trending ridges. Between the ridges are ephemeral drainages of Dry Creek and associated tributaries that flow into the Yakima River to the south. Slopes within the project area generally range from 5^B to 20^B, but can reach 40^B in the canyons. Elevations in the project area range from approximately 670 m (2,200 ft) above mean sea level along Highway 97, to approximately 960 m (3,150 ft) near the northernmost turbine string (see Figure 1).

A detailed survey for rare plants and habitat was conducted in spring and summer (April - August) 2002 and additional results and discussions of vegetation in the project are included in Eagle Cap and CH2MHILL (2002). The project area is near the western edge of the big sagebrush/bluebunch wheatgrass zone as defined by Franklin and Dyrness (1988). In addition to big sagebrush (*Artemisia tridentata*), a number of other shrub species may be present in the zone including: rabbitbrushes (*Chrysothamnus* spp. and *Ericameria* spp.), threetip sagebrush (*Artemisia tripartita*), and spiny hopsage (*Grayia spinosa*). The bluebunch wheatgrass is supplemented by variable amounts of grasses and forbs such as needle-and-thread grass (*Hesperostipa comata*), Thurber's needlegrass (*Achnatherum thurberianum*), Cusick's bludegrass (*Poa cusickii*), bottlebrush (*Elymus elymoides*), Sandberg's bluegrass (*Poa secunda*), cheatgrass (*Bromus tectorum)*, and flatspine stickseed (Lappula occidentalis).

Within the project area, many of the plant communities have been impacted and modified due to numerous factors, such as cattle grazing, introduction of exotic plant species, ground disturbance from development activities, past fires, transmission lines, roads and highways, and housing/farms. Much of the riparian vegetation has been removed and degraded from heavy cattle use.

The majority of lands within the project area are privately owned, although several parcels are owned and administered by the State of Washington Department of Natural Resources (DNR). Livestock production (cattle grazing) is a primary land use, although some rural homesite development has also taken place and many of the adjoining sections have been subdivided. The area is also used, on a much more limited basis, for recreational activities such as hunting. A high-voltage transmission line corridor crosses on a roughly east-west line through the middle of the project area. This corridor contains four steel-tower 230 kV electrical transmission lines. Additionally, there is a wood-pole 230kV transmission line that roughly parallels the four-line corridor, and a steel-tower 345 kV line running through the northern portion of the project area (see Figure 1).

4.2.1 Livestock Operations

Historically, the Ellensburg area and Kittitas County has been a large livestock production area and much of the project area is currently rangeland suitable for cattle and horse grazing. Zilkha surveyed the participating landowners for the project to determine the extent and amount of livestock production that occurred within the project area. Three of the participating landowners allow spring grazing on the property within the wind plant. These landowners are located in the southern and western portions of the proposed wind plant [Sections 9 and 21, 22, 27, Township 19 North, Range 17 East]. The Washington DNR land within the project area [Sections 10, 16, 22, Township 19 North, Range 17 East] is also grazed on a 3-year rotational basis which is typically early season one year, late season the next year, and no grazing (deferred) the third year. None of the landowners or the DNR have concentrated calving areas in the project area; however, there are occasional late season calves born on the property. Most of the calving in the Ellensburg area occurs in late January and February. Following the calving season, the

cattle are moved to the spring pastures where they graze for approximately three months (typically April-June). In most years, it is during this time frame that cattle will be present within the wind plant.

4.3 Species Data and Occurrence

4.3.1 Washington State

Bald eagles occur in Washington year round. Breeding bald eagles are most abundant in Washington west of the Cascade Mountain Range, but also occur along major river drainages in the eastern portions of the state (Smith *et al.* 1997). The bald eagle population in Washington has been increasing since the early 1980's (Watson *et al.* 2002). Between 1980 and 1998, the state bald eagle population increased at an exponential annual rate of 10% from approximately 105 occupied territories to 666 occupied territories (Watson *et al.* 2002). The distribution of breeding bald eagles also increased as areas unoccupied in 1980 such as the northeast and southeast regions of the state experienced an influx of nesting pairs.

In winter, Washington experiences a significant influx of bald eagles from Canada, Alaska, Montana, and California, and the population may increase to three to six times the breeding population size (Stinson *et al.* 2001). Winter surveys were conducted in Washington from 1982 - 1989. During this time period the winter bald eagle population increased from approximately 1,200 to 2,800 individuals (Stinson *et al.* 2001). It is estimated that the current winter population of bald eagles in Washington may exceed 4,500 individuals (Stinson *et al.* 2001).

4.3.2 Kittitas Valley

Bald eagles are winter residents in the Kittitas Valley but are not known to breed in the area (Smith *et al.* 1997). The WDFW PHS database identifies the Yakima River riparian corridor from Yakima Canyon to Swauk Creek as important wintering habitat for 25-30 bald eagles, and upstream from Swauk Creek as important winter habitat for 10-15 eagles (WDFW PHS 2002). The PHS database also identifies the Teanaway River riparian corridor west of the Project as wintering habitat for bald eagles but does not provide an estimate of the number of bald eagles using this river (WDFW PHS 2002). Christmas bird count information for the Ellensburg count circle (latitude 47°, longitude 120.6°; approximately northwest Ellensburg town limits) indicates an increasing trend in bald eagle numbers (Table 1).

4.3.3 Project Area

Wintering Bald Eagle Surveys

Nine surveys were conducted along the four winter bald eagle survey routes established for the Project between February 15 and April 11, 2002. Counts of bald eagles (repeat counts are not included) observed during each survey were tallied by route (Table 2). The maximum number of bald eagles observed during one survey day was 12 (March 12, 2002), with one of the twelve observations being an unidentified eagle (either golden or bald eagle). On average, 5.6 bald eagles were observed per survey (including the unidentified eagle). Approximately 58 percent of the observations were adults, 30 percent were subadults (1-3 years of age), 10 percent were juveniles (<1 year old), and 1 observation unidentified as to age class (Table 2).

Table 1. Number of bald eagles observed during Christmas Bird counts for the Ellensburg count circle, 1978 - 2001.

Count Date	Bald Eagles Counted
December 16, 1978	0

December 30, 1979	1
December 20, 1980	2
December 19, 1981	0
December 26, 1982	0
December 17, 1983	3
December 22, 1984	1
December 21, 1985	2
January 3, 1987	2
December 19, 1987	1
December 17, 1988	5
December 16, 1989	7
December 1990	no count
December 25, 1991	1
December 25, 1992	8
December 25, 1993	7
December 25, 1994	1
December 25, 1995	5
December 25, 1996	11
December 25, 1997	8
December 19, 1998	11
December 18, 1999	13
December 16, 2000	13
December 15, 2001	15

Route 4, the southernmost route (Figure 2), had the highest bald eagle use (0.33/survey mile), followed by Route 3 (0.20/survey mile), Route 1 (0.15/survey mile), and Route 2 (0.04/survey mile). The mean observed at routes 4 and 3 were significantly higher than the mean for Route 2 ($p<0.10$). No night roost sites were identified in the upland areas. One potential night roost was identified along the river, although no large groups (> 3) of eagles were ever observed at any one location, including this roost.

Several of the eagle observations on Route 3 were near cattle pasture/calving area along Smithson Road (Figure 2). The survey route within the proposed development, Route 2, had the lowest bald eagle use. Three unique observations and a probable repeat observation of an adult were recorded along this route. One adult bald eagle was observed flying just south of the intersection of Hayward and Bettas Road (February 15) approximately 200 m above ground level. One adult eagle was observed perched in a conifer tree to the west of Highway 97 (February 18), 1.3 miles north of Bettas Road. Another adult eagle was observed perched in a lone tree one mile north of the intersection of Highway 10 and Highway 97 near the crest of the ridge above the Yakima River (April 3). The eagle apparently had been feeding on a dead cow, which was observed in close proximity to the tree.

Table 2. Results of bald eagle surveys in the vicinity of the Project.

	Number of Eagle Observations	
Route		**Age Classification**

Date	1	2	3	4	Total	AD[1]	SA[2]	JUV[3]	UNK[4]
02/15/2002	0	1	6	0	7	3	3	1	0
02/18/2002	2	1	1	2	6	3	2	1	0
02/26/2002	4	0	0	3	7	5	2	0	0
03/04/2002	5	0	3	0	8	5	3	0	0
03/12/2002	2	0	3	7	12	8	3	0	1
03/21/2002	1	0	0	5	6	3	1	2	0
03/27/2002	0	0	0	2	2	0	1	1	0
04/03/2002	0	1	0	1	2	2	0	0	0
04/11/2002	0	0	0	0	0	0	0	0	0
Total	14	3	13	20	50	29	15	5	1
No./survey	1.56	0.33	1.44	2.22	5.56				
No./mile/survey	0.15	0.04	0.20	0.33					
95% CI (LL[5])	0.06	0.02	0.10	0.12					
95% CI (UL[6])	0.29	0.09	0.48	0.61					

Weekly Fixed-point Surveys

Seven bald eagles were observed during the weekly point count surveys in the spring 2002. Observations were made from points A, C, E, and G (Figure 2). Point A is west of the proposed development area. Survey points C, E and G are within the primary development area. The observations at point C were associated with a dead cow that was near the survey point. The observations at points E and G were of bald eagles flying. The dates of the observations were all between March 21, 2002 (the first date of the weekly surveys) and April 18, 2002. No bald eagles were observed during summer or fall surveys in 2002.

Based on the spring observations, the bald eagle use estimate for the site was 0.06 observations per 20-minute survey. Based on this use estimate, bald eagle was the 5th most common raptor on the site in the spring behind red-tailed hawk (0.26 observations/20-min survey), American kestrel (0.22), rough-legged hawk (0.13), and turkey vulture (0.08) and equal to prairie falcon (0.06) and sharp-shinned hawk (0.06). Bald eagle frequency of occurrence (percent of surveys in which species was observed) for the spring was 4.5% (85 total point surveys) which was the 7th most frequently observed raptor behind red-tailed hawk (22.9% of surveys), American kestrel (18.2%), rough-legged hawk (10.1%), turkey vulture (8.0%), prairie falcon (5.7%), golden eagle (5.0%), and equal to Cooper's hawk (4.5%) and sharp-shinned hawk (4.5%).

During the spring surveys, 6 of the 7 bald eagle observations (85.7%) were of birds flying. In half (3) of these observations (50%) the eagle was flying below 25 m above ground level (AGL), two of the observations (33%) were of eagles flying between 25 and 100 m AGL, and one eagle (17%) was flying above 100 m AGL. The zone between 25 and 100 m is approximately the rotor swept area for the turbines and tower heights proposed for the project.

Incidental/In-transit Observations

No bald eagles were observed incidentally or in-transit between scheduled surveys while observers were on site and no bald eagle nests were located during raptor nest surveys (May 6-8, 2002) of the Project and

[1] Adults (>3 years old)
[2] Subadults (1-3 years old)
[3] Juveniles (<1 year old)
[4] Unknown
[5] Lower limit of a 95% confidence interval
[6] Upper limit of a 95% confidence interval

surrounding area within 2 miles.

5.0 EFFECTS OF THE ACTION

Effects associated with major construction projects on threatened and endangered species (and wildlife in general) include both direct effects such as loss of habitat to the actual facility footprint or habitat alteration due to construction activity constraints (e.g., associated work space for heavy machinery to construct turbines); and indirect effects such as disturbance or displacement from increased human presence and activity in the project area (Table 3). Direct effects are results of the proposed action and would include effects such as loss of habitat and mortality of individuals. Indirect effects are those caused by the proposed action that are reasonably certain to occur and may include effects such as disturbance and/or displacement of individuals, and change in habitat suitability or habitat degradation. Effects may be temporary (short-term), for example the life of the construction, or long-term, such as effects arising from long-term operation and maintenance of the facility (Table 3). Also, effects may be cumulative, arising from the total impact of development, management, and use of the surrounding land.

Table 3. Potential impacts to threatened and endangered species from the project.

	Impact Type	
Impact Duration	**Direct**	**Indirect**
Short-Term	Loss of winter habitat from construction permit areas that will be reclaimed. Potential mortality from construction or related activity.	Prohibiting or altering (displacement) movement through an area due to construction activity. Altering or disturbing species behavior patterns due to construction activity.
Long-Term	Permanent loss of winter habitat to wind plant. Potential mortality due to wind plant operation.	Prohibiting or altering (displacement) movement through an area due to wind plant. Altering or disturbing species behavior patterns due to wind plant operation.

5.1 Direct Effects

Direct effects to bald eagles from the project may include loss of winter habitat (temporary and long-term) and potential mortality (temporary due to construction or long-term due to operation of wind plant).

5.1.1 Loss of Winter Habitat

The primary bald eagle winter habitat in the area includes the Yakima River riparian corridor for roosting and adjacent upland areas for foraging. Bald eagles may use the large trees within the riparian corridor

for perching and roosting and may forage in the river for fish. Adjacent upland areas, and in particular where livestock operations occur, are used for foraging. The cattle operations in the area create patchy resources for scavenging and foraging due to dead cattle and calving operations.

The project will be constructed in steppe habitats along the ridge tops and will not result in the permanent (long-term) loss of important winter roosting or perching habitat. The actual turbines, roads, substation, and maintenance facilities will result in the loss of approximately 77 acres of upland habitat which is not considered important bald eagle winter habitat. These areas are not heavily used by wintering bald eagles except when dead cattle or big game may be present creating foraging/scavenging opportunities. Construction activity near the Yakima River riparian corridor (southernmost turbine string) may create disturbances which creates unsuitable roosting/perching habitat (i.e., displaces eagles from roosting/perching opportunities), however, these disturbances will be temporary for the construction period (9-12 months) and will affect only a minor portion of the available riparian habitat.

5.1.2 Potential Mortality

The possibility of short-term (i.e., due to construction activity) mortality effects from the project is considered negligible and very unlikely to occur. Bald eagles in the area during the construction period are unlikely to occur within the construction zones due to disturbances, and therefore are unlikely to be at risk of construction related mortality. In addition, the majority of construction is likely to take place during late spring, summer and fall months when bald eagles very rarely or do not occur in the area.

Once the wind plant is constructed and operational, bald eagles in the area may be at risk of collision with turbines or meteorological towers. Avian species, including some raptor species, are documented casualties due to collision with wind turbines and meteorological towers (see Erickson *et al.* 2001). Raptor mortality has been documented at many wind plants, although raptor mortality at the newer generation wind plants is estimated at 3-7 times less than the wind plant at Altamont Pass in California, which has many older generation wind turbines (Young *et al.* 2002). Golden eagles also appear to be more susceptible to collision mortality than many other raptors (Erickson *et al.* 2001). Despite the apparent susceptibility of golden eagles and some raptors to some wind turbines, there have been no documented bald eagle fatalities to date at wind plants (Erickson *et al.* 2001). Based on the available information about bald eagle use of the site, potential bald eagle mortality due to operation of the wind plant will be confined to the winter and early spring seasons. Bald eagles will not be at risk from the wind plant during summer or fall because they are not known to occur in the area during those seasons.

Estimates of bird mortality from wind projects may be based on bird use of a site and the propensity for that species to fly within the rotor swept area or zone of risk. For the proposed Project, there were only 7 observations of bald eagles during standardized point counts across the project area. Two of these observations were made in areas outside the proposed development. In addition, 33% of these observations were of eagles flying within the zone of risk, defined as the area between 25 and 100 m AGL based on the proposed turbine and tower heights. While the sample size is relatively small, it does show that wintering bald eagles may have some exposure to turbines by flying within the rotor swept area.

5.2 Indirect Effects

Indirect effects from the project may include disturbance and displacement related effects from construction (short-term) as well as operation (long-term) of the wind plant.

5.2.1 Disturbance

Construction of the project will create short-term (life of construction) disturbances that could affect bald eagles in the area. In addition, operation of the wind plant (actual turning turbines) may create

disturbances which also affect eagles in the area. These effects are believed to be negligible for a number of reasons. Based on the site surveys and available information, bald eagles only occur in the area during the winter and early spring. Most of the construction activity is likely to take place during the late spring, summer and fall when weather conditions are more favorable, thus minimizing the potential for construction related disturbances. In addition, bald eagle use of the Project site is minimal compared to surrounding areas such as the Yakima River riparian corridor and likely based on the availability of prey or carrion. Bald eagles are not expected to frequently occur within the project area and operation of the wind plant should have minimal disturbance on bald eagles.

5.2.2 Displacement and Altered Movement Patterns

Wintering bald eagles will sometimes utilize night roosts which are located in secluded, sheltered, upland areas away from human disturbances and which may be considerable distances from foraging areas. There is the possibility that winter roosts may occur in forested areas north of the project and bald eagles therefore could travel across the Project site from areas near the Yakima River. In addition, bald eagles roosting along the Yakima River may fly across portions of the Project to foraging areas. Should a roost occur to the north and bald eagles travel back and forth across the site, both construction and operational disturbances from the wind plant have the potential to displace or alter eagle movement patterns. No evidence that winter roosts occur north of the project was observed during the winter roadside surveys for bald eagles. Due to the concentration of eagle observations along the river corridor, it is more likely that eagles roost in the riparian areas and move from the river to upland foraging areas, and in particular to where cattle are concentrated (e.g., along Smithson Road). It is more likely that bald eagles moving from the riparian areas will encounter the wind plant and therefore be subject to displacement or altered movement patterns.

5.3 Cumulative Effects

Cumulative effects under the ESA are effects of future non-federal actions/activities that are reasonably certain to occur in the foreseeable future. These types of actions include:

- population growth, particularly in Ellensburg and the Kittitas Valley,
- new housing developments and subdivisions,
- increased infrastructure to accommodate population growth,
- increased utilities/pipelines due to increased development,
- increased gravel/materials mining to accommodate development and roads,
- increased energy development including other wind plants,
- logging of state and private forests,
- future agriculture practices on private land including livestock grazing.

The proposed project is not expected to contribute to population growth and associated development activities such as new housing, but is designed to accommodate future power needs associated with population growth and development. The Ellensburg area and Kittitas County are undergoing substantial growth in population. A number of scattered rural residential home sites have been established in the foothills and surrounding areas including areas immediately within and adjacent to the Project. These developments have the effect of reducing open space, forests, and rangeland and activities associated with those landscapes such as logging and livestock production. In addition, due to the windy nature of the area, additional wind plants may be proposed for the County and Kittitas Valley. Further development may contribute cumulative effects to bald eagles by creating more disturbances, reducing foraging and secluded sheltering opportunities, and creating more collision hazards. To a certain degree, livestock production has benefited bald eagles by providing a source of carrion and forage. Reduction of livestock operations in the Kittitas Valley due to subdivisions and city expansion will reduce these resources for bald eagles.

Other cumulative effects associated with increased development, such as increased infrastructure, increased human presence and disturbance, and reductions in the historic land uses, may also effect bald eagles simply by using more space that could be utilized by bald eagles and creating more disturbances. Bald eagles are large avian predators capable of wide ranging movements. While bald eagles can and do become accustomed to human activity, they are also generally sensitive to human encroachment. Future non-federal activities listed above would be expected to affect bald eagles, especially as they allow more human use of areas occupied by eagles. Additional use of open and secluded spaces by humans would be expected to cause some habitat degradation or limit use by bald eagles as they avoid humans. Also, more human activity in the area will lead to more disturbance, displacement, and contribute to other environmental impacts, for example, water quality degradation. The impacts would depend, in part, on where human activities occur, particularly in relation to rivers and lakes. For example, the more activity that occurs in riparian areas and results in the loss of riparian vegetation, the greater the potential for impacts to wintering bald eagles along the Yakima River.

The magnitude of cumulative effects on bald eagles is difficult to measure. While cumulative effects to bald eagles are likely occurring from increased development and human population growth of the area, the project itself is not expected to substantially contribute to the cumulative effects because of the temporary nature of the construction project and the small likelihood that the operational wind plant will affect bald eagles. Operation of the wind plant could lead to disturbance/displacement effects, but it is likely that wintering eagles in the area will become accustomed (habituated) to the wind plant over the long term and continue to use areas nearby. Bald eagles have shown the ability to become accustomed to high human presence and have even nested with the Seattle City limits (Smith et al. 1997). Operation of the wind plant may also lead to a small level of bald eagle mortality if any eagles collide with turbines, however, this low level of mortality is unlikely to have a measurable effect on the growing bald eagle population in Washington. In addition, the presence of the wind plant itself may preclude some additional development such as houses and subdivisions, and preserve some of the historic land uses (livestock production), thus preserving some foraging habitat for wintering eagles.

5.4 Conservation Measures

The following measures will be incorporated into the Project construction to minimize potential short-term (construction) effects on bald eagles from the Project:

- minimize construction activity that will occur during the winter;
- maintain best management practices within the construction zones to minimize adjacent habitat disturbance;
- establish and enforce reasonable driving speed in the Project to minimize wildlife or livestock roadkills;
- provide adequate on-site waste disposal;
- adhere to the NPDES permit stipulations, including erosion control measures;
- reclaim disturbed areas as soon as practical following construction;
- establish and adhere to a fire prevention plan for the construction zone.

The following measures will be employed to minimize potential long-term (operational) effects from the Project:

- establish and enforce reasonable driving speed limits within the wind plant to minimize the potential for road killed wildlife or livestock which may attract foraging bald eagles;
- provide adequate on-site waste disposal;
- remove and disposed of all carcasses of livestock, big game, and other wildlife from within the wind plant that may attract foraging bald eagles;

- ensure that livestock calving areas of participating landowners remain outside the wind plant;
- install bird flight diverters on all guy wires associated with met towers;
- install raptor perch guards on all power poles constructed for the wind plant.

In addition to measures described above, Zilkha proposes to purchase and protect, for the life of the project, a privately-owned parcel of land approximately 500 acres in size [Sections 22 and 27, Township 19 North, Range 17 East] which is adjacent to land owned by the Washington DNR. This parcel is currently one of the areas grazed by cattle within the project and is under immediate threat of development and conversion to rural residential development. In addition, Zilkha will implement measures to enhance the value of the native habitat on this parcel through weed control and by excluding livestock. The location of this parcel is within the southern extent of the proposed wind plant. The proposed action will essentially remove foraging opportunities for bald eagles within the portion of the wind plant closest to the Yakima River riparian corridor.

6.0 DETERMINATION

6.1 Adverse Effects

Under the ESA, effects are classified as those "not likely to adversely affect" or those "likely to adversely affect" a listed species. Not likely to adversely affect is the appropriate conclusion when effects are expected to be discountable, insignificant, or beneficial. Discountable effects are those which are extremely unlikely to occur and are essentially not expected to occur. Insignificant effects refer to the size and/or magnitude of the effect, and are those effects which should never reach a scale where take occurs. Insignificant effects are effects which can not be detected, measured, or evaluated to any meaningful degree. Beneficial effects are positive effects to a species which occur without any associated adverse effects.

The ESA (Section 3) defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct". The USFWS further defines harm as "significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering". The USFWS defines harass as "actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering".

Disturbance and Displacement

The project may conceivably result in short-term and long-term disturbance and/or displacement effects to bald eagles from construction and operation of the wind plant. However, based on the on-site surveys and available information about bald eagle use of the area, the seasonal and spatial use of the site by bald eagles is relatively low and likely directly correlated with the presence of carrion for foraging. The potential for disturbance and displacement to occur which result in adverse effects is considered discountable (i.e., extremely unlikely to occur and essentially not expected to occur) and insignificant (i.e., will not reach a scale where take occurs). That is, the project is not expected disturb or displace bald eagles to the point where harm or harassment (as defined above by the USFWS for listed species) occurs. Additionally, proposed conservation measures are intended to further reduce the possibility of disturbance or displacement.

Potential Mortality

Construction of the wind plant is unlikely to result in the death of a bald eagle; however, operation of the wind plant may put wintering eagles in the area at risk of collision with turbines or met towers. The death of a bald eagle from the wind plant would be considered take and therefore an adverse effect. To date

there have been no reported (known) bald eagle fatalities associated with wind plants in the U.S. (see Erickson *et al.* 2001). While use of the Project site by bald eagles does occur, it is relatively low and appears to be related to the presence of livestock or wildlife carcasses (carrion), which they utilize for forage. Bald eagle use of the Project site appears to be primarily related to eagles moving across the site to foraging areas. Site management measures for the Project are intended to minimize foraging opportunities for bald eagles within the wind plant. All livestock and wildlife carcasses found will be removed and disposed of and livestock calving operations by Project area landowners will remain outside the Project. These measures should effectively minimize foraging opportunities for eagles on site and thus minimize the risk of collision related fatalities. However, despite these measures, there is still the possibility that an eagle flying through the area collides with or is hit by a moving turbine. Because the potential for adverse effects can not be reduced to discountable or insignificant levels (i.e., a scale where take does not occur), the appropriate determination is operation of the wind plant is **likely to adversely affect** bald eagles.

6.2 Future Status of Species

The status of bald eagle in the project area and range wide is not expected to change due to the project. Bald eagle is well on the way to recovery and the USFWS has proposed the species for delisting (USFWS 1999). The bald eagle populations in Washington and throughout North America will continue to increase during and after the project is constructed.

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APPENDIX A – U.S. FISH AND WILDLIFE SERVICE LETTER

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
P. O. Box 848
Ephrata, Washington 98823
Phone: 509-754-8580 Fax: 509-754-8575

July 9, 2002

JUL 15 2002

Wally Erikson
West Inc.
2003 Central Avenue
Cheyenne, Wyoming 82001

RE: Species List Request
FWS Reference: 02-SP-E0269

Thank you for your request dated June 17, 2002. The following threatened, endangered, proposed, and candidate species may be present near the proposed wind plant, Kittitas County, Washington:

KITTITAS COUNTY

LISTED
Endangered
Gray wolf *(Canis lupus)*

Threatened
Bald eagle *(Haliaeetus leucocephalus)*
Bull trout *(Salvelinus confluentus)*
Northern spotted owl *(Strix occidentalis caurina)*
Ute ladies'-tresses *(Spiranthes diluvialis)*, plant

Designated
None

PROPOSED
None

CANDIDATE
Western sage grouse *(Centrocercus urophasianus phaios)*
Western yellow-billed cuckoo (*Coccyzus americanus*)

This list fulfills the requirements of the U. S. Fish and Wildlife Service (Service) under Section 7(c) of the Endangered Species Act of 1973, as amended (Act).

If there is federal agency involvement in this project (funding, authorization, or other action), the involved federal agency must meet its responsibilities under section 7 of the Endangered Species Act of 1973, as amended (Act), as outlined in Enclosure A. Enclosure A includes a discussion of the contents of a Biological Assessment (BA), which provides an analysis of the impacts of the project on listed and proposed species, and designated and proposed critical habitat. Preparation of a BA is required for all major construction projects. Even if a BA is not prepared, potential project effects on listed and proposed species should be addressed in the environmental review for this project. Federal agencies may designate, in writing, a non-federal representative to prepare a BA. However, the involved federal agency retains responsibility for the BA, its adequacy, and ultimate compliance with section 7 of the Act.

Preparation of a BA would be prudent when listed or proposed species, or designated or proposed critical habitat, occur within the project area. Should the BA determine that a listed species is likely to be affected by the project, the involved federal agency should request section 7 consultation with the U. S. Fish and Wildlife Service (Service). If a proposed species is likely to be jeopardized by the project, regulations require conferencing between the involved federal agency and the Service. If the BA concludes that the project will have no effect on any listed or proposed species, we would appreciate receiving a copy for our information.

Candidate species receive no protection under the Act, but are included for your use during planning of the project. Candidate species could be formally proposed and listed during project planning, thereby falling within the scope of section 7 of the Act. Protection provided to these species now may preclude possible listing in the future. If evaluation of the subject project indicates that it is likely to adversely impact a candidate species, we encourage you to modify the project to minimize/avoid these impacts.

If there is no federal agency involvement in your project, and you determine that it may negatively impact a listed or proposed species, you may contact us regarding the potential need for permitting your actions under section 10 of the Act.

Several species of anadromous fishes that have been listed by the National Marine Fisheries Service (NMFS) may occur in the project area. Please contact NMFS in Seattle, Washington, at (206) 526-6150, in Portland, Oregon, at (503) 231-2319, or in Boise, Idaho, at (208) 378-5696 to request a list of these species.

If you would like information concerning state listed species or species of concern, you may contact the Washington Department of Fish and Wildlife, at (360) 902-2543, for fish and wildlife species; or the Washington Department of Natural Resources, at (360) 902-1667, for plant species.

This letter fulfills the requirements of the Service under section 7 of the Act. Should the project plans change significantly, or if the project is delayed more than 90 days, you should request an update to this response.

Thank you for your efforts to protect our nation's species and their habitats. If you have any questions concerning the above information, please contact Skip Stonesifer at (509) 754-8580.

Sincerely,

Mark D. Miller

Supervisor

Enclosure

Enclosure B

Additional Information for *Spiranthes diluvialis* - Ute Ladies'-tresses
Status: Threatened

Spiranthes diluvialis was first described in 1984 (Sheviak 1984), and it is not yet included in many of the dichotomous keys commonly used by botanists in the northwest or Great Basin regions. It is found up to about 6,000 feet in elevation throughout much of its range in the western United States, below the lower margin of montane forests or in the transitional zone. It generally occurs in wetland and riparian areas of open shrub or grassland habitats, including springs, mesic to wet meadows, river meanders, and flood plains. This species has only recently been recorded on a few sites in central Washington, where it can occur at relatively low elevations (down to roughly 700 feet in Chelan County). It is possible that the species occurs in other appropriate wetland and riparian areas in central and eastern Washington.

Ute ladies'-tresses is a perennial, terrestrial orchid (family Orchidaceae) with stems 20 to 50 centimeters (cm) (8 to 20 inches [in]) tall, arising from tuberously thickened roots. Its narrow (0.5 to 1 cm; 0.2 to 0.4 in) leaves are about 28 cm (11 in) long at the base of the stem, and become reduced in size going up the stem. The flowers consist of 7 to 32 small (0.8 to 1.5 cm; 0.3 to 0.6 in) white or ivory flowers clustered into a spike arrangement at the top of the stem. The species is characterized by whitish, stout, ringent (gaping at the mouth) flowers. The sepals and petals, except for the lip, are rather straight, although the lateral sepals are variably oriented, often spreading abruptly from the base of the flower. Sepals are sometimes free to the base.

The non-blooming plants of Ute ladies'-tresses are very similar to those of the widespread, congeneric species *S. romanzoffiana* - hooded ladies' tresses. Usually, it is only possible to positively identify Ute ladies'-tresses when it is flowering. *S. romanzoffiana* has a tight helix of inflated ascending flowers around the spike and lateral appressed sepals. *S. diluvialis* has flowers facing directly away from the stalk, neither ascending nor nodding, and appressed or free lateral sepals (please refer to the attached drawings). Ute ladies'- tresses generally blooms from late July through September, depending on location and climatic conditions. However, in some areas, including central Washington, this species may bloom in early July or as late as early October. Bumblebees are apparently required for pollination.

Mature plants may not produce above ground shoots for one or more growing seasons, or may exhibit vegetative shoots only. Orchids generally require symbiotic associations with mycorrhizal fungi for seed germination. In addition, many plants of some *Spiranthes* species are initially saprophytic, and persist underground for several years before emerging (USFWS 1995). Therefore, it may require multiple years of surveys to document the presence or absence of Ute ladies'-tresses in a given area.

This species may be adversely affected by alterations of its habitat due to livestock grazing, vegetation removal, excavation, construction, stream channelization, and other actions that alter hydrology.

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Enclosure A

Responsibility of Federal Agencies under Section 7 of the Endangered Species Act

Section 7(a) - Consultation/Conferencing

Requires: 1) Federal agencies to utilize their authorities to carry out programs to conserve endangered and threatened species;

2) Consultation with the U.S. Fish and Wildlife Service (Service) when a federal action may affect a listed species to ensure that any action authorized, funded, or carried out by a federal agency will not jeopardize the continued existence of listed species, or result in destruction or adverse modification of critical habitat. The process is initiated by the federal agency after determining that the action may affect a listed species; and

3) Conferencing with the Service when a federal action may jeopardize the continued existence of a proposed species, or result in destruction or adverse modification of proposed critical habitat.

Section 7(c) - Biological Assessment for Major Construction Activities

Requires federal agencies or their designees to prepare a Biological Assessment (BA) for major construction activities[1]. The BA analyzes the effects of the action, including indirect effects and effects of interrelated or interdependent activities, on listed and proposed species, and designated and proposed critical habitat. The process begins with a request to the Service for a species list. If the BA is not initiated within 90 days of receipt of the species list, the accuracy of the list should be verified with the Service. The BA should be completed within 180 days after its initiation (or within such a time period as is mutually agreeable between the Service and the involved federal agency).

We recommend the following for inclusion in a BA: an onsite inspection of the area to be affected by the proposal, which may include a detailed survey of the area to determine if listed or proposed species are present; a review of pertinent literature and scientific data to determine the species' distribution, habitat needs, and other biological requirements; interviews with experts, including those within the Service, state conservation departments, universities, and others who may have data not yet published in scientific literature; an analysis of the effects of the proposal on the species in terms of individuals and populations, including consideration of cumulative effects of the proposal on the species and its habitat; and an analysis of alternative actions considered. The BA should document the results of the impacts analysis, including a discussion of study methods used, any problems encountered, and other relevant information. The BA should conclude whether or not any listed species may be affected, proposed species may be jeopardized, or critical habitat may be adversely modified by the project. Upon completion, the

BA should be forwarded to the Service.

Major concerns that should be addressed in a BA for listed and proposed animal species include:

1. Level of use of the project area by the species, and amount or location of critical habitat;

2. Effect(s) of the project on the species' primary feeding, breeding, and sheltering areas;

3. Impacts from project construction and implementation (*e.g.*, increased noise levels, increased human activity and/or access, loss or degradation of habitat) that may result in disturbance to the species and/or their avoidance of the project area or critical habitat.

Major concerns that should be addressed in a BA for listed or proposed plant species include:

1. Distribution of the taxon in the project area;

2. Disturbance (*e.g.*, trampling, collecting) of individual plants or loss of habitat; and

3. Changes in hydrology where the taxon is found.

Section 7(d) - Irreversible or Irretrievable Commitment of Resources

Requires that, after initiation or reinitiation of consultation required under section 7(a)(2), the Federal agency and any applicant shall make no irreversible or irretrievable commitment of resources with respect to the action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternatives which would avoid violating section 7(a)(2). This prohibition is in force during the consultation process and continues until the requirements of section 7(a)(2) are satisfied.

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[1] A major construction activity is a construction project, or other undertaking having similar physical impacts, which is a major action significantly affecting the quality of the human environment as referred to in the National Environmental Policy Act [42 U.S.C. 4332 (2)(c)].