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6 November 2018

To: Lio Salizar  
Planning Division  
Shasta County Department of Resource Management  
1855 Placer Street, Suite 103  
Redding, CA 96001

**Re: Response to Informal Consultation Request for Use Permit 16-007, Fountain Wind Project, Shasta County**

To Whom It May Concern:

Western EcoSystems Technology, Inc. (WEST) was contracted by Pacific Wind Development LLC (Pacific Wind) to perform a variety of biological resource studies in support of the proposed Fountain Wind Project (Project) in Shasta County, CA. This letter addresses comments and recommendations provided by the California Department of Fish and Wildlife (CDFW) in a letter to the Shasta County Planning Division, Department of Resource Management, dated 2 March 2018 (Letter) as they pertain to biological studies of interest.

A summary matrix of the biological comments provided by CDFW in their Letter and responses provided by WEST and Pacific Wind is provided in Table 1, with additional details and discussion provided later in this response letter, as applicable. A number of desktop analyses and field studies have been completed as of the writing of this letter (Site Characterization Study, great gray owl habitat assessment, nocturnal migration assessment, fixed-point bird use surveys, raptor nest surveys, acoustic bat surveys, rare plant surveys, northern goshawk surveys, willow-flycatcher surveys, foothill yellow-legged frog surveys). Recently finalized reports are provided along with and in support of this response letter. Remaining reports associated with surveys currently underway or to be completed in 2019 will be provided to the County and CDFW as they become available. While additional field studies are ongoing at the Project, survey guidelines (e.g., CEC 2007, USFWS 2012) only recommend one year of surveys for most biological surveys at projects, with two or more survey years generally recommended in areas with high potential for annual variation (e.g., California Central Valley). Biological studies conducted to date have already achieved some of these minimum requirements (e.g., one year of avian use, raptor nest, and acoustic bat surveys). While CDFW recommended that all biological surveys be completed and reports provided in advance of the draft Environmental Impacts Report (EIR), there is little support from past studies to suggest that risk to biological resources will change substantially with the addition of a second year of data, and any minor changes to risk could readily be addressed prior to release of the final EIR or through stipulations attached to the County Permit.

**Table 1. Matrix of California Department of Fish and Wildlife (CDFW) biological comments to the Shasta County Planning Division, Department of Resource Management in a letter March 2, 2018 and responses from Pacific Wind Development LLC and Western EcoSystems Technology, Inc. (WEST).**

CDFW Comment Section	Pacific Wind / WEST Response	Report Reference
<b>Biological Resources Work Plan</b>	WEST and Pacific Wind expanded and/or implemented additional surveys at the Project in response to CDFW comments on the Work Plan. Methods and results of all additional studies can be found in the accompanying reports.	<ul style="list-style-type: none"> <li>• Methods and results of additional/expanded studies in response to CDFW comments are available in the accompanying reports.</li> </ul>
<b>Special Status Species and Habitat Surveys</b>	Flora and fauna within the Project area have been/are being addressed through a combination of desktop analyses (Site Characterization Study and species-specific habitat analyses) and field studies (rare plant and habitat survey, wetland delineations, willow flycatcher surveys, foothill yellow-legged frog surveys, northern goshawk surveys, fixed-point avian use surveys, and acoustic bat surveys).	<ul style="list-style-type: none"> <li>• Site Characterization Study (January 2017)</li> <li>• Rare Plant and Natural Vegetation Community Survey Report (October 2018)</li> <li>• Avian Use Survey and Risk Assessment Report (November 2018)</li> <li>• Bat Acoustic Surveys Report (October 2018)</li> <li>• 2017 and 2018 Raptor Nest Surveys (September 2018)</li> <li>• Yellow-legged Frog Survey Report (October 2018)</li> <li>• Willow Flycatcher Assessment and Survey Report (October 2018)</li> <li>• Northern Goshawk Survey Report (October 2018)</li> </ul>
<b>CESA-Listed Species</b>		
Foothill Yellow-legged Frog and Cascades Frog	Habitat assessment and initial field surveys completed in 2018. Future coordination with CDFW on need for additional surveys.	<ul style="list-style-type: none"> <li>• Yellow-legged Frog Survey Report (October 2018)</li> </ul>
Willow Flycatcher (WIFL)	Desktop assessments of potential habitat and WIFL surveys completed in 2018.	<ul style="list-style-type: none"> <li>• Willow Flycatcher Assessment and Survey Report (October 2018)</li> </ul>
Northern spotted owl (NSO)	Project is >4 mi from NSO range therefore no surveys are required or planned.	<ul style="list-style-type: none"> <li>• Not applicable. See additional details later in this response letter.</li> </ul>
Great gray owl (GGOW)	Desktop and field assessment of potential great gray owl habitat conducted in 2018. No suitable habitat was identified that would necessitate surveys.	<ul style="list-style-type: none"> <li>• Great Gray Owl Habitat Assessment Memo (October 2018)</li> </ul>

<p>Gray Wolf</p>	<p>Wolves and/or evidence of wolves traveling through or adjacent to the Project area have been documented (WEST 2018, CDFW 2013, 2018); therefore, there is potential for additional use of Project area in the future. However, gray wolf specific surveys are not planned.</p>	<ul style="list-style-type: none"> <li>• Not applicable; see additional details later in this response letter.</li> </ul>
<p>State Listed and Fully Protected Avian Species</p>	<p>Fixed-point large bird use surveys are being conducted for two consecutive years throughout the project area, which will be used to assess the potential for impacts to the state-listed bald eagle and sandhill crane.</p>	<ul style="list-style-type: none"> <li>• Year 1 Avian Survey and Risk Assessment Report (November 2018)</li> </ul>
<p><b>Fully Protected Species</b></p>	<p>Potential occurrence of Fully Protected species is addressed in the SCS. Fixed-point large bird use surveys are being conducted for two consecutive years throughout the project area. While a second year of data is being collected, an avian risk assessment has been prepared to address impacts to these species based on the first year of data, which is consistent with agency guidelines. While additional data could influence the risk assessment to some extent, substantial changes to the potential for impacts to Fully Protected avian species are not anticipated. Should the second year of data indicated substantial changes in risk to Fully Protected species, such changes will clearly be identified in an updated risk assessment .</p>	<ul style="list-style-type: none"> <li>• Site Characterization Study (January 2017)</li> <li>• Year 1 Avian Survey and Risk Assessment Report (November 2018)</li> <li>• 2017 and 2018 Raptor Nest Surveys (September 2018)</li> </ul>
<p><b>Species of Special Concern (SSC)</b></p>	<p>A number of SSC were identified in the SCS as having some potential to occur in the Project area during some time of the year, although habitat for many species is restricted (e.g., ponds, streams, meadows, riparian thickets) and impacts avoided through project design. Species-specific surveys have been conducted for some species (e.g., northern goshawk). Others will be addressed based on the standardized fixed-point avian use surveys and associated risk assessments.</p>	<ul style="list-style-type: none"> <li>• Site Characterization Study (January 2017)</li> <li>• Year 1 Avian Survey and Risk Assessment Report (November 2018)</li> <li>• Northern Goshawk Survey Report (October 2018)</li> </ul>

Northern goshawk	Surveys conducted in historical occurrence areas in 2018. Limited nesting habitat in areas of potential impacts. Additional surveys dependent on final project layouts.	<ul style="list-style-type: none"> <li>Northern Goshawk Survey Report (September 2018)</li> <li>Year 1 Avian Survey and Risk Assessment Report (November 2018)</li> </ul>
Avian point count surveys	Avian point count surveys are being conducted year round within the Project area to assess risk to avian species.	<ul style="list-style-type: none"> <li>Year 1 Avian Survey and Risk Assessment Report (November 2018)</li> </ul>
Eagle / Large Bird Use Surveys	Eagle / large bird use surveys are being conducted year round within the Project area to assess risk to eagles and other large bird species.	<ul style="list-style-type: none"> <li>Year 1 Avian Survey and Risk Assessment Report (November 2018)</li> </ul>
Nocturnal avian surveys	Collision mortality of nocturnal migrant birds has generally been low at wind energy facilities, particularly in the western US, and multi-bird fatality events are extremely rare. This is consistent with data from the nearby Hatchet Ridge Wind Project. Nocturnal radar studies at proposed wind energy projects have been implemented as a method to characterize migration patterns and potential exposure levels for nocturnal migrants, but no correlation has been found between radar-measured passage rates of avian targets and post-construction fatality rates, indicating that preconstruction radar studies are not an effective tool for assessing risk to migrating birds at wind energy facilities. Nocturnal migration (i.e., radar) surveys are not planned.	<ul style="list-style-type: none"> <li>Nocturnal Radar Synthesis / Summary Report (October 2018)</li> </ul>
Bat monitoring	Acoustic bat monitoring was conducted in 2017 within the Project area, including additional detectors placed in the field following meetings with CDFW in 2017.	<ul style="list-style-type: none"> <li>Bat Acoustic Surveys Report (October 2018)</li> </ul>
Wildlife Movement Study	The project will not impede wildlife movement via installation of fencing or other physical impediments. No specific wildlife movement studies are planned.	<ul style="list-style-type: none"> <li>See additional discussion in later in this letter.</li> </ul>
Deer Habitat.	Development of the Project is not expected to result in levels of activity that exceed what regularly occurs at the Project during timber harvest operations or associated activities	<ul style="list-style-type: none"> <li>See additional discussion in later in this letter.</li> </ul>

	including road maintenance or construction. No deer-specific surveys are planned.	
Rare Plants and Natural Communities	Rare plant surveys and mapping of Natural Vegetation Communities was completed in 2018. No rare plants were documented and no Sensitive Natural Vegetation Communities were identified.	<ul style="list-style-type: none"> <li>• Rare Plant and Natural Vegetation Community Survey Report (October 2018)</li> </ul>
Invasive Species	Invasive plant species were documented during rare plant surveys in 2018 and are discussed in the rare plant report.	<ul style="list-style-type: none"> <li>• Rare Plant and Natural Vegetation Community Survey Report (October 2018)</li> </ul>
Proposed Survey Corridors	Survey Corridors were utilized and incorporated various buffers to guide surveys for taxa and habitats most vulnerable to ground disturbance activities (e.g., rare plants, yellow-legged frog, and willow flycatcher). Much more broad areas were used to guide survey efforts for taxa (e.g., large and small birds) that are more at risk of collision impacts from turbines.	<ul style="list-style-type: none"> <li>• See additional discussion later in this letter.</li> </ul>

## Biological Resources Work Plan

### Summary of Comments and Recommendations:

CDFW requested an updated Biological Resources Work Plan which addresses issues documented in their Letter.

### Response:

Based on discussions with CDFW and USFWS in 2017 regarding the initial study plan, WEST and Pacific Wind expanded several studies (e.g., moved to year-round small bird surveys) and added a number of additional survey efforts (e.g., willow flycatcher, foothill yellow-legged frog). Because most all surveys that were added or expanded in response to agency comments have been completed (in whole or in part), the methods and results are provided in the accompanying survey reports. Table 1 and this response letter provide a summary of how WEST and Pacific Wind addressed concerns over the initial work plan and provides a reference for all studies completed to date and/or planned at Fountain. Given that study methods (and results) are available in the accompanying survey reports, a revised Work Plan has not been prepared.

## Special-Status Species and Habitat Surveys

### Summary of Comments and Recommendations:

CDFW recommended completion of a comprehensive baseline survey including a complete assessment of the flora and fauna within and adjacent to the Project area, with emphasis on special-status species.

### Response:

Flora and fauna within the Project area have been/are being addressed through a combination of desktop analyses and field studies to provide a comprehensive baseline of species occurrence within the Project area. Prior to initiation of biological resource studies at the Project, WEST drafted a desktop Site Characterization Study utilizing publicly available resources. The overall purpose of the Site Characterization Study was to identify the biotic and abiotic environmental characteristics of the Project and surrounding Evaluation Areas, evaluate potential impacts to these resources from wind energy development, and inform whether additional environmental resource surveys or assessments were warranted. The Site Characterization Study focused on the potential occurrence of special-status plant and animal species, and the habitats that support special-status species, including landcover/vegetation maps. In addition, WEST has conducted surveys for birds and bats (e.g., fixed-point avian use surveys and acoustic bat survey) to document use by special-status birds and bats, as well as species-specific surveys for several special status species with predicted possible occurrence in the Project area (e.g., willow flycatcher, northern goshawk, foothill yellow-legged frog, and rare plants). Results of surveys conducted to date are available in the various reports (see Table 1 and the following sections).

## CESA-Listed Species

### Candidate Amphibian Species – Foothill Yellow-legged Frog and Cascades Frog

#### Summary of Comments and Recommendations:

Foothill yellow-legged frog (*Rana boylei*) habitat and Cascades frog (*R. cascadae*) habitat occurs at the Project; the Department recommended completion of a habitat assessment and subsequent focused surveys for these species in all area of the Project where species' habitat may be impacted.

#### Response:

WEST conducted a desktop assessment for foothill yellow-legged frog habitat at the Project and confirmed that models predict the possible occurrence of habitat for this species. In 2018, WEST conducted initial visual encounter surveys (i.e., sub-adult) for foothill yellow-legged frog in modelled potential habitat areas potentially at risk of disturbance through Project development. While surveys in 2018 did not meet full protocol (e.g., surveys during multiple life stages), surveys were conducted following methods for conducting visual encounter surveys as described in *Considerations for Conserving the Foothill Yellow-legged Frog* (CDFW 2018a). Suitable habitat was limited within the Project area and no foothill yellow-legged frogs were detected. Survey results and methodologies are detailed in a stand-alone survey report. The data available from historical work in support of timber management activities within the Project area, and 2018 habitat assessments and surveys for foothill yellow-legged frog, suggest that foothill yellow-legged frog do not currently occur in, nor will they likely colonize the generally low-quality habitats present in the Project Survey Corridors (i.e., areas of potential disturbance based on possible project layouts). Therefore, no impacts to foothill yellow-legged frog are expected as a result of the Project. The need, scope, and timing of additional surveys for this species will be determined in coordination with CDFW.

The Project Survey Corridors have been located entirely outside the occupied range of Cascades frog and the modeled low-quality potential habitat that does occur within the larger Project area was confirmed as non-suitable; therefore, species-specific surveys are not warranted. Cascades frog habitat is distinctly different from foothill yellow-legged frog; Cascades frog prefers lentic waterbodies and associated meadows and wetlands. Based on range maps, the current range of Cascades frog overlaps with only a small area at the southern extent of the Project area, while all Survey Corridors are located more than two mi from the known range. According to the California Natural Diversity Database (CDFW 2018b), no known occurrences of Cascades frog have been documented within the Project area and the closest known occurrence are approximately 1.2 mi (1.9 km) southeast of the Project area boundary and 6.3 mi (10.1 km) north of the Project area boundary. A desktop analysis of the California Wildlife Habitat Relationships (CWHR; CDFW 2018c) database indicated approximately 75 acres (30 hectares) of low quality habitat potentially exists in the southern portion of the Project area, more than two miles south of the Project Survey Corridors. Results from field-based habitat mapping of this area verified that this predicted low quality habitat does not currently include the habitat elements necessary to support Cascades frog (e.g., ponds or wet meadows).



Because the Project Survey Corridors are entirely outside the Cascades frog range and the modeled low-quality potential habitat that does occur within the larger Project area was confirmed as non-suitable, formal surveys for Cascades frog are not warranted.

### **Willow Flycatcher Protocol Surveys**

#### Summary of Comments and Recommendations:

CDFW commented that they were aware of known breeding occurrences of willow flycatcher (*Empidonax traillii*) on or near the Project, and potential habitat may occur at the Project based on the CDFW willow flycatcher habitat model. CDFW recommended that a qualified biologist conduct willow flycatcher habitat delineation and field surveys at the Project to determine site occupancy.

#### Response:

WEST conducted a desktop assessment of willow flycatcher occurrences and potentially suitable habitat at the Project, followed by field surveys that resulted in no willow flycatcher detections. According to the California Natural Diversity Database (CDFW 2018b) the closest occurrences of willow flycatcher are approximately 20 miles (mi) northeast of the Project. Habitat models (Timossi et al. 1995) predict that potentially suitable habitat occurs at the Project in several areas. A qualified WEST biologist conducted a reconnaissance-level site visit to evaluate modelled habitat for potential suitability in June 2018. Following this field assessment, willow flycatcher surveys were conducted at the Project in areas of modelled and field-confirmed potentially suitable habitat during the 2018 breeding season. Protocol-level surveys were conducted following recommendations in *A Willow Flycatcher Survey Protocol for California* (Bombay et al. 2003) by a biologist experienced in conducting surveys for this species in California. No willow flycatchers were detected at the Project during these surveys. Survey results and details on the survey methodology are detailed in a stand-alone survey report.

### **Northern Spotted Owl Protocol Surveys**

#### Summary of Comments and Recommendations:

CDFW recommended surveys for northern spotted owls (*Strix occidentalis caurina*) because designated critical habitat for this species and known northern spotted owl territories are located in close proximity to the Project.

#### Response:

The Project is located outside the range of the northern spotted owl and based on survey protocols, surveys are not warranted. The Project is more than 4.3 mi south of the Pit River, which is the established southern boundary for the northern spotted owl range in California (Gutierrez and Barrowclough 2005). The California Forest Practice Rules require surveys for northern spotted owls only in suitable habitat, and require habitat protection up to 1.3 mi from a known activity center. Because the project is outside of the northern spotted owl range and the distance to any potentially occupied northern spotted owl activity centers far exceeds the 1.3 mi habitat protection buffer, no northern spotted owl surveys are proposed for the Project.

## Great Gray Owl

### Summary of Comments and Recommendations:

CDFW recommended a habitat assessment and surveys for great gray owl (*Strix nebulosi*) be conducted as habitat is modeled within and near the Project.

### Response:

WEST conducted a desktop assessment of potential great gray owl occurrences and habitats in the Project area, which indicated that no suitable great gray owl nesting habitat existed within the Project area and that no documented records of great gray owl exist in or near the Project area (CDFW 2018b); therefore, species-specific surveys for great gray owl were not warranted. CDFW's Great Gray Owl Habitat Model (CDFW 2011) indicated that potentially suitable foraging and nesting habitat was located within the Project area; however, based on a field assessment of the modelled potentially suitable habitats, it was determined that habitat conditions were not suitable for great gray owl. Consistent with the CDFW Model, criteria for inclusion as potential foraging habitat included the following Wildlife Habitat Relationship (WHR) types: wet meadows, annual grasslands, and perennial grasslands; criteria for inclusion as potential nesting habitat included trees of WHR size 4M (11-24 inches diameter at breast height, 12-24 foot (ft) crowns, and 40-59% canopy cover) and larger/denser (CDFW 2011, CDFW 2014). The CDFW Model nesting habitat criteria are generally consistent with criteria identified in the survey protocol for great gray owl within the Northwest Forest Plan (NWFP) Area (Huff and Godwin 2016), which indicates that suitable nesting habitat must include mature or old-growth conifer stands with greater than 50% canopy cover containing potential nest trees (broken-top snags greater than 16-in diameter at breast height, trees containing pre-existing stick nests from hawks, ravens, or squirrels; or mistletoe brooms). Suitable nesting habitat for great gray owl needs to be adjacent to suitable foraging habitat (i.e., meadows greater than 10 acres; Huff and Goodwin 2016). Based on desktop and field reviews of potentially suitable habitats, these conditions do not occur within the Project area. In addition, there are no known occurrences of great gray owl within or adjacent to the Project (CDFW 2018b), and great gray owl has not been detected by biologists conducting a variety of surveys at the Project over the past approximately 18 months. The closest occurrence of great gray owl documented in the California Natural Diversity Database (CDFW 2018b) is approximately 85 mi northeast of the Project. Due to the absence of suitable habitat or great gray owl presence, no further great gray owl habitat assessments or surveys are proposed at the Project. Additional details on the habitat assessment are available in a stand-alone memo.

## Gray Wolf

### Summary of CDFW Comments and Recommendations:

No localized gray wolf (*Canis lupus*) activity is currently known from within or near the Project area, although wolves have been detected in California, including western Lassen and eastern Siskiyou counties. If gray wolf activity is detected during Project surveys, the Project proponent should consult with CDFW.

Response:

The Project area comprises a working commercial forest landscape, with active timber harvest operations, and numerous well-maintained and well-traveled roads, which results in a landscape unlikely to be used for establishing dens or rendezvous sites by gray wolves, relative to other less disturbed landscapes in the region (e.g., National Forests and National Park lands). Because wolves are highly mobile, particularly dispersing individuals, the species may traverse the Project area and records indicate that some transient individuals may have passed through the Project area in the past (CDFW 2018d), and WEST documented what appeared to be tracks of a single wolf in the snow in the Project area in late winter 2018. Should wolves begin to use the Project area with any regularity as populations increase, such use would be expected to be compatible with current surface uses, which includes high levels of habitat fragmentation and high levels of vehicle and human activity during some seasons. If future wolf activity at the Project is confirmed through visual or auditory detections, or other definitive means, Pacific Wind will report such information to CDFW.

**State Listed and Fully Protected Avian Species**Summary of CDFW Comments and Recommendations

Bald eagle (*Haliaeetus leucocephalus*; State Endangered) and greater sandhill crane (*Grus canadensis*; State Threatened) are both listed pursuant to CESA and are Fully Protected under FGC section 3511; therefore the Department is not authorized to issue permits for their incidental take as discussed below.

Response:

WEST and Pacific Wind acknowledge the status of these two state listed and Fully Protected species and the lack of available permits for their incidental take. Fixed-point large bird use surveys are being conducted for two consecutive years throughout the project area, which will provide the data necessary to assess the potential for impacts to the state-listed bald eagle and greater sandhill crane. Additional discussion related to these two species is provided in the following sections.

**Fully Protected Species**Summary of CDFW Comments and Recommendations:

Fully protected avian species, including but not limited to bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), greater sandhill crane (*Grus canadensis*), and American peregrine falcon (*Falco peregrinus anatum*) may be impacted by the Project. Project-related impacts on these species and all other fully protected species identified during the environmental review process should be mitigated to a less than significant level.

Response:

WEST conducted a comprehensive Site Characterization Study intended to identify special status species that may occur or are known to occur on the Project and may be at risk from Project development, and is currently conducting a variety of biological studies that aim to identify occurrence of wildlife species, including fully protected species, at the Project. Surveys

have been and are still being conducted to assess risk to fully protected species. These surveys include two years of large bird use surveys to address risk to large birds, including eagles, sandhill cranes, and peregrine falcon, along with other raptor and large bird species. Raptor nest surveys were also conducted to gain additional information on the potential risk to both bald and golden eagles, as well as other raptors. Additional information on Fully Protected species can be found in the Site Characterization Study and survey-specific reports (e.g., 2017 and 2018 raptor nest surveys and the year 1 avian study report).

### **Species of Special Concern**

#### Summary of CDFW Comments and Recommendations:

The Project has the potential to impact a number of Species of Special Concern (SSC); additional research, including database queries, is necessary to identify the full list of SSC with potential to occur on the Project. Additional surveys will be necessary to identify impacts to these species.

#### Response:

WEST conducted a comprehensive Site Characterization Study intended to identify special status species that may occur or are known to occur on the Project and may be at risk from Project development, and is currently conducting a variety of biological studies that aim to identify occurrence of wildlife species, including SSC, at the Project. Fixed-point avian use surveys are the primary field survey being implemented to address impacts to avian species and are being conducted for two years, which will address impacts to avian SSC potentially resulting from collision with turbines. In addition, species-specific surveys were conducted for northern goshawk to assess the potential presence of historical nests within the Project area. While avian SSC are being addressed through specific surveys (e.g., fixed-point avian and/or species specific surveys), most other SSC are largely confined to habitats unlikely to be significantly impacted by Project development (e.g., aquatic species such as western pond turtle [*Emys marmorata*] and Pacific tailed frog [*Ascaphus truei*] or are highly mobile and more likely to be transient through the Project area (e.g., fisher [*Pekania pennanti*]). Additional information on SSC can be found in survey specific reports (e.g., Site Characterization Study; year 1 avian study report, and northern goshawk nest survey report). No additional species-specific surveys are planned to assess risk to SSC.

### **Northern Goshawk Protocol Surveys**

#### Summary of CDFW Comments and Recommendations:

Northern goshawk (*Accipiter gentilis*) occurrences are documented on and near the Project. CDFW requests completion of focused protocol-level northern goshawk surveys following the *Northern Goshawk Inventory and Monitoring Technical Guide*.

#### Response:

WEST conducted goshawk nest surveys in the four historical goshawk occurrence areas identified within the Project area to assess the potential for occupancy in 2018. Surveys were consistent with techniques described in the Northern Goshawk Inventory and Monitoring Technical Guide (Woodbridge and Hargis 2006). Surveys included two separate methods

implemented during the two most vocal stages in the breeding chronology of this species. Dawn acoustical surveys were conducted during the courtship/nest-building stage (February – April), and broadcast acoustical surveys were conducted during the nestling/fledging stage (June – July; Woodbridge and Hargis 2006). No evidence of nesting northern goshawks was documented, which is consistent with the findings reported in Cedar Boots Timber Harvest Plan (THP-2-16-077-SHA; CDF 2018), which indicated a lack of goshawk activity in the vicinity of three of the occurrence areas in recent years (the fourth area was not assessed in the THP). Survey results and details on the survey methodology are detailed in a stand-alone survey report. In addition to the nest surveys, the first year of comprehensive avian use study at the Project has been completed, with year 2 of that study ongoing. As of September 2018 (17 months of surveys), six northern goshawk observations have been recorded during fixed-point avian use surveys (4 observations) or incidentally (2 observations). Information related to northern goshawks observed during those surveys is, or will be available in the applicable avian use reports.

### **Avian Point Count Surveys**

#### Summary of CDFW Comments and Recommendations:

Bird Use Counts (BUC) are intended to provide baseline data on avian species richness and relative abundance and to estimate the spatial and temporal use of the Project by all birds. The Department requests that a protocol for BUC be developed and addressed in the Work Plan, which should, at a minimum, meet the requirements outlined in the CEC/CDFG Guidelines.

#### Response:

Agency guidelines regarding the study of wildlife and how to assess potential impacts of wind energy on wildlife have evolved over the past 10 years, with the most current agency guidance provided by the USFWS in the Land-based Wind Energy Guidelines (WEG; USFWS 2012) and Eagle Conservation Plan Guidance (ECPG; USFWS 2013). Avian use surveys at the Project were designed to address the questions posed under Tier 3 of the WEG (USFWS 2012) and Stage 2 of the ECPG (USFWS 2013), while also collecting data comparable to what is recommended in the more dated California Wind Energy Guidelines (CEC Guidelines; CEC and CDFG 2007). Similar to the WEG, the CEC Guidelines identify modified point counts surveys (i.e., bird use counts) as the primary survey technique to collect data on bird species composition, relative abundance, and bird behavior that might influence vulnerability to collisions with wind turbines (see top of page 44 of the CEC Guidelines). Recommendations in the WEG, ECPG, and CEC Guidelines all result in data sufficient to document species composition, relative abundance, and behavior; therefore, to reconcile the differing protocols as presented in the various guidelines, implementation of the more current ECPG (and WEG) were given precedent over strict interpretation of the CEC Guidelines. WEST is currently conducting a comprehensive avian use study at the Project, including focused small bird and large bird surveys, which adhere to the best available science regarding survey and/or monitoring techniques for wind energy project development as provided in the WEG and ECPG, while also collecting data to satisfy the intent of the older CEC Guidelines. The comprehensive avian use study is intended to provide baseline data on avian species richness and relative abundance at the Project and to estimate the spatial and temporal use of the Project by avian species.

Surveys are being conducted at all 39 plot locations once per month, year-round (to the extent practicable), for a total of two full years. Survey locations were selected to survey representative habitats and topography within the Project, while achieving relatively even spatial coverage, as possible and practicable. The avian use study includes separate surveys for small birds and large birds, with focused small bird surveys conducted immediately prior to large bird surveys at a given survey plot location. In total, the two years of avian use survey will result in more than 1,200 hours of survey effort. The final report for the first year of avian use surveys was finalized in October 2018 and has been provided for review along with this letter. The second year of surveys will be completed in June 2019, with a final report to follow in summer 2019.

### **Eagle/Large Bird Use Surveys**

#### Summary of CDFW Comments and Recommendations:

The Department requested information as to how large bird use of the Project will be documented in addition to the proposed surveys for eagle and raptor nests and commented that the initial study plan indicated surveys did not meet CEC/CDFG guidelines.

#### Response:

WEST is currently conducting a comprehensive avian use study at the Project, including focused small bird and large bird surveys, which adhere to the best available science regarding survey and/or monitoring techniques for wind energy project development as provided in the WEG (USFWS 2012) and/or ECPG (USFWS 2013), while also collecting data to satisfy the intent of the more dated CEC Guidelines (CEC and CDFG 2007). The large bird / eagle use surveys were specifically designed to address the needs of the ECPG, while also collecting data to satisfy the intent of the CEC guidelines, which is to collect data on bird species composition, relative abundance, and bird behavior that might influence vulnerability to collisions with wind turbines (see top of page 44 of the CEC Guidelines). Recommendations in the 2013 ECPG and the 2007 CEC guidelines both result in data sufficient to document species composition, relative abundance, and behavior; therefore, to reconcile the two slightly differing protocols for eagles/raptors/large birds as presented in the various guidelines, implementation of the more current ECPG were given precedent over strict interpretation of the older CEC recommendations. Surveys under the ECPG (60-min duration) are twice as long as those recommended by the CEC guidelines (30-min), thereby providing twice the survey effort per survey. Additionally, while all survey points are not surveyed weekly, surveyors are on site weekly conducting surveys (1-2 days a week depending on number of technicians) at approximately 9-10 points per week. The survey schedule ensures surveys are spread across the entire survey year and that extended periods of time do not go unsurveyed. Surveys are being conducted for two full years, which further aids in satisfying the intent of the CEC guidelines. The survey design being implemented will result in approximately 1,000 hours of survey effort for large birds specifically during the 2-year survey period (about 500 hours each year).

The final report for the first year of avian use surveys, which includes the large bird use surveys, was finalized in October 2018 and has been provided for review along with this letter. The

second year of surveys will be completed in June 2019, with a final report to follow in summer 2019.

## Nocturnal Avian Surveys

### Summary of CDFW Comments and Recommendations:

The Department recommends utilizing multiple survey methods to conduct a nocturnal migration survey at the Project. The Department also recommends the completion of focused nocturnal owl surveys, designed to detect all species of owls potentially present within the Project.

### Response:

Although nocturnal radar studies at proposed wind energy projects have been implemented as a method to characterize migration patterns and potential exposure levels for nocturnal migrants, no correlation has been found between radar-measured passage rates of avian targets and post-construction fatality rates, indicating that preconstruction radar studies are not an effective tool for assessing risk to migrating birds at wind energy facilities (Tidhar et al. 2012, Stantec 2017). As such, nocturnal radar studies at Fountain are unlikely to inform risk at the Project and are unwarranted. Collision mortality of nocturnal migrant birds has generally been low at wind energy facilities, particularly in the western U.S., and multi-bird fatality events are extremely rare. This trend is supported by the results of the 3-year fatality study at Hatchet Ridge (Tetra Tech 2014), located adjacent to the Project and on the highest ridgeline in the immediately surrounding area, where nocturnal migrant fatality rates have been very low. Relatively large numbers of nocturnal migrant fatalities, such as those found at communication towers, have not been documented at wind energy facilities (Kerlinger et al. 2010), likely due to the use of a different type of lighting. Even at facilities within a well-defined migration corridor, such as along the Texas Gulf Coast, migrant fatalities were relatively low and not quantitatively different from facilities further inland in the region (Erickson et al. 2016). While nocturnal migration studies at Fountain would provide data on nocturnally migrating birds and bats, the data would not be informative in predicting post-construction mortality risk at the Project; therefore, nocturnal migration surveys are not planned. WEST has prepared an analysis of peer-reviewed studies and state of the science surrounding nocturnal avian migration studies related to wind energy development, which has been provided to Pacific Wind in support of this conclusion.

In regard to CDFW's recommendation of conducting nocturnal owl surveys, in lieu of conducting nocturnal owl surveys throughout the Project area, we assume that some owl species occur in the Project area (the Site Characterization Study notes nine owls as likely to occur). To date, two species of owl (great-horned owl [*Bubo virginianus*] and northern pygmy-owl [*Glaucidium gnoma*]) have been detected within the Project area during avian use surveys and/or incidentally, and it is assumed that other species of owl likely also occur in the Project area (e.g., western screech owl [*Megascops kennicottii*], long-eared owl [*Asio otus*], and northern saw-whet owl [*Aegolius acadicus*]). However, most all of the owls likely present in the Project are forest species that spend most of their time below the rotor-swept-zone of modern wind turbines, either in the forest canopy or foraging/traveling in open areas at low flight heights. While nocturnal surveys could confirm presence of some of the owl species likely occurring in the Project area, the surveys would provide no means of assessing risk to these species.

Consistent with the assumed low risk to owls from turbine collision, no owls were documented among fatalities during the three years of fatality monitoring at the adjacent Hatchet Ridge Wind Project (Tetra Tech 2014).

## **Bat Monitoring**

### Summary of CDFW Comments and Recommendations:

The Department recommends the placement of additional bat detectors at the Project in order to provide broader coverage of the Project area. The Department also recommends completion of year-round bat surveys at the Project.

### Response:

At the request of CDFW, additional acoustic detectors were deployed during the 2017 bat acoustic surveys to expand the spatial coverage of areas representative of future turbine locations within the Project area. The bat acoustic study was conducted during the known period of highest bat activity in the region (spring through late fall), and data from the study shows that bat activity at the Project declined markedly in the late fall, near completion of the survey effort. This trend in documented activity at the Project is consistent with fatality monitoring results at the adjacent Hatchet Ridge Wind Project (Tetra Tech 2014), which documented 58 bat fatalities during three full years of surveys, none of which were found during the winter period of mid-December through mid-March, and demonstrates the adequacy of temporal coverage during the bat acoustic study effort and that year-round acoustic studies are not warranted in this part of California. Furthermore, acoustic bat detectors are not designed or intended to function in snow or in extended periods of below-freezing temperatures, and bats are rarely active in such conditions, making year-round surveys both difficult and uninformative in predicting post-construction risk. A comprehensive report on the bat acoustic study conducted at the Project, including a detailed discussion of survey methodology (e.g., spatial and temporal coverage) and associated analyses has been prepared and provided to Pacific Wind.

## **Wildlife Movement Study**

### Summary of CDFW Comments and Recommendations:

The Department recommends the completion of a focused wildlife movement study to document movement corridors within the Project.

### Response:

No evidence exists suggesting that the Project serves as a significant movement corridor for wildlife species. WEST is currently conducting a suite of biological resource studies at the Project, including documentation of incidental wildlife observations, as possible and practicable. Most available data indicate that big game, such as pronghorn and elk, are not significantly impacted by wind energy projects and continue to utilize habitats within and move through operational wind farms (Piorkowski and Diamond 2016, Taylor 2014, Walter et al. 2006, Johnson et al. 2000). Furthermore, the Project area comprises a working forest landscape, with active timber harvest operations, and numerous maintained and well-traveled roads, suggesting that resident big game, or big game that move through this area are likely accustomed to relatively high levels of disturbance. Fencing or other physical barriers that may impede wildlife



movements will be extremely limited (i.e., fencing around O&M building or other secure structures) and should have limited impacts on terrestrial species. Should any evidence suggesting the Project area is serving as a significant wildlife corridor or movement area be discovered, WEST will provide this information to Pacific Wind and CDFW as appropriate.

## **Deer Habitat**

### Summary of CDFW Comments and Recommendations:

The Project is located within deer fawning habitat; impacts to deer should be identified in subsequent documents, including impacts from fencing, construction, noise and/or lighting.

### Response:

Deer occur at the Project, and have persisted in the Project area despite the working forest nature of the area. Development of the Project, including construction and operation, is not expected to exceed levels of activity that regularly occur at the Project during timber harvest operations or associated activities such as road maintenance or construction. Fencing or other physical barriers that may impede deer movements will be extremely limited (i.e., fencing around O&M building or other secure structures). Given the historical management of the timberlands on which the Project is located, long term impacts to deer or deer fawning habitats are not expected. Should impacts occur as a result of Project construction (e.g., due to disturbance resulting from increased activity), the impacts should be of short duration and limited to the construction phase of the Project.

## **Rare Plants and Sensitive Natural Communities**

### Summary of CDFW Comments and Recommendations:

Rare plant surveys should be conducted following the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* at the Project. Surveys should cover CESA and California Rare Plant Rank 1, 2 and 3 species, and should occur at the appropriate time of year and under the correct conditions to identify species with potential to occupy the Project. Surveys should also identify any natural communities with a rank of S1-S3.

### Response:

Comprehensive and seasonally appropriate rare plant surveys were conducted at the Project in 2018 following *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018e). No rare plants (i.e., Rank 1, 2 and 3 species) were documented in Survey Corridors at the Project or within appropriate buffer distances of Survey Corridors during these surveys. Natural vegetation communities were also mapped; of which none were considered to be Sensitive (i.e., having a ranking of S1-S3). A comprehensive report on rare plant surveys conducted at the Project has been provided to Pacific Wind.

## **Invasive Species**

### Summary of CDFW Comments and Recommendations:

The Department recommends completion of invasive plant species mapping in order to document locations of invasive species and avoid or minimize the potential spread of invasive species during Project construction. Invasive species control measures should be developed, including post-construction monitoring to ensure that invasive species are not spread or introduced during construction activities.

### Response:

During the rare plant survey effort described above, a complete floristic inventory was maintained, as possible and practicable, including occurrence of invasive species. Comprehensive and seasonally appropriate rare plant surveys were conducted at the Project in 2018 following protocol provided in *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018e). The Project is a working forest and timber-harvest operations across the Project are ongoing. As such, the Project should be considered a high disturbance area, and construction activities related to development of wind facilities at the Project are not expected to exceed levels of disturbance which currently occur. The comprehensive report on plant surveys conducted at the Project includes documentation of invasive species.

## **Proposed Survey Corridors**

### Summary of CDFW Comments and Recommendations:

The Department requests additional information regarding the use of Survey Corridors, including the width of the corridors, location of corridors in relation to Project activities, and the surveys proposed to be conducted within these corridors.

### Response:

Where appropriate, WEST utilized Survey Corridors provided by Pacific Wind to guide some species- and taxa-specific surveys. Details on the use of corridors are contained in the various survey reports provided to Pacific Wind. Corridors were primarily used to guide surveys for non-mobile taxa (e.g., plants) or for species-specific surveys where impacts were most likely to result from ground clearance activities (e.g., habitat assessments, nest surveys). For the broader based survey efforts (e.g., avian and bats), surveys were not confined to corridors and were more widely dispersed to assess avian and bat use throughout a broader Project area. If Project impacts expand beyond the Survey Corridors or larger Project area due to future changes in Project layout, additional field studies would be implemented to address those changes.

## **Additional Concerns**

Additional issues raised in the Letter are beyond the purview of WEST's involvement in the Project, and as such, have not been addressed here.

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