Appendix F
2008 Aerial Raptor and Sage-Grouse Surveys

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POST-CONSTRUCTION 2008 AERIAL RAPTOR NEST AND GREATER SAGE- GROUSE LEK SURVEYS FOR THE WILD HORSE WIND FACILITY

KITTITAS COUNTY, WASHINGTON

FINAL TECHNICAL REPORT

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INTRODUCTION

The Wild Horse Wind Facility (Wild Horse) is located in Kittitas County, Washington, approximately 11 miles east of the City of Kittitas. Wild Horse consists of 127 V80 1.8-MW wind turbines mounted on 67-m (221-ft) towers with blades 39-m (129-ft) long. Maximum height with the blade fully extended is 107-m (351-ft) with rotors turning at a maximum of 16.4 rpm.

As part of the conditions for Wild Horse Site Certificate Agreement (SCA) with the Washington State Energy Facility Site Evaluation Council (EFSEC), Puget Sound Energy (PSE) is required to perform a post-construction assessment of raptors nesting within the Wild Horse facility area including a 1 mile buffer to locate and monitor active raptor nests potentially affected by construction and operation of the facility.

During 2007 post-construction avian and bat fatality monitoring one adult sage grouse observation was made of an individual in early fall, and in late fall a sage grouse nest was found (Erickson *et al.* 2008). No sage grouse leks or individuals were documented during 2003 pre-construction surveys (Erickson *et al.* 2003).

PSE contracted Western EcoSystems Technology, Inc. (WEST) to conduct the post-construction raptor nest survey as well as conduct an additional aerial sage grouse lek survey. This report presents findings from those surveys conducted in early spring 2008.

METHODS

Raptor Nest Surveys

The objective of the aerial raptor nest survey was to locate nests that may be subject to disturbance and/or displacement effects from the wind-energy facility construction and/or operation.

The search area for raptor, corvid, and other large bird nests included the Wild Horse facility and a 1-mile buffer (Figure 1). This study area was extended north to include the proposed Wild Horse Expansion Area (Expansion Area) which was covered in the pre-construction baseline surveys for the Wild Horse Project (Figure 1). Surveys were conducted from a helicopter on March 25, 2008. Search paths were recorded with a real-time differentially-corrected Trimble Trimflight III GPS at 5-second intervals; coordinates were set as Universal Transverse Mercator (UTM) North American Datum (NAD) 27.

Aerial raptor nest surveys were scheduled after most species of raptor had finished courtship and were incubating eggs or brooding young. A focal species for the nest survey was ferruginous hawk (*Buteo regalis*), a state threatened species. Richardson (1996) reports that ferruginous hawks in Washington initiate their nesting activity in late-March and early-April. Golden eagles (*Aquila chrysaetos*) were also a focal species, and

one historic golden eagle nest within the study area was checked. All nests documented in the 2003 pre-construction nest survey were also checked as to status of activity and/or presence. Surveys were scheduled just prior to the onset of leaf-out to increase the visibility of nests within deciduous habitats. Nest searches were conducted by searching habitat suitable for most above-ground nesting species, such as cottonwood, ponderosa pine, tall shrubs, and cliffs or rocky outcrops. During surveys, the helicopter was flown at an altitude of tree-top level to approximately 250 ft (76 m) aboveground. If a nest was observed, the helicopter was moved to a position where nest status and species present could be determined. Efforts were made to minimize disturbance to breeding raptors, including keeping the helicopter a maximum distance from the nest at which the species could be identified, with distances varying depending upon nest location and wind conditions. Data recorded for each nest location included species occupying the nest, nest status (e.g., inactive, bird incubating, young present, eggs present, adult present, unknown or other), nest substrate (e.g., pine, poplar, cottonwood, juniper, shrub, rocky outcrop, cliff or power line), nest type (e.g., stick, scrape, eyrie), nest size, number of young present, time and date of observation and the nest location (recorded with both a handheld Garmin GPS 12 unit and the differentially-corrected unit). The surveys were conducted by a biologist experienced in raptor nest surveys.

Sage Grouse Lek Surveys

The search area for sage grouse leks included the raptor nest study area covering the Wild Horse facility and a 1-mile buffer. This study area also extended north to include the proposed Expansion Area which was covered in the pre-construction lek surveys (Figure 2). Aerial sage grouse lek surveys followed Washington Department of Fish and Wildlife (WDFW) protocols and methods used at the Yakima Training Center (YTC). A helicopter survey was conducted on March 25, 2008 a half hour before sunrise to 1.5 hours after sunrise. Timing of this survey was based upon YTC survey results using the general period when peak attendance at leks by females occurs. The survey was conducted at a range of 30-85 meters above-ground and at an approximate speed of 40 MPH. North-south transects spaced at 0.5 mile intervals were used to cover the survey area, occacionally departing transects to cover historic lek locations and open flat ridgelines (Figure 3). Transects over large open areas were flown higher than areas along fringes of narrower ridgelines, varying based upon topography and associated viewshed. Survey conditions consisted of clear skies, excellent visibility, and little to no wind for the entire survey period.

RESULTS

Raptor Nest Surveys

An aerial survey for raptor nests was completed on March 25, 2008 within the raptor nest study area (project boundary plus minimum one-mile buffer; Figure 4 and 5). One active red-tailed hawk (*Buteo jamaicensis*) nest was located within the study area, and one active red-tailed hawk nest was located approximately two miles east of the project area

(Figure 5). Three inactive large stick nests were located within the study area and four were outside. A historic golden eagle nest location in conifers near the northwest boundary of the study area contained no nest. A nest was found in this area but was inactive during 2003 pre-construction surveys (Figure 4). During pre-construction surveys, unconfirmed potential prairie falcon (*Falco mexicanus*) and great-horned owl (*Bubo virginianus*) nest sites were located approximately 2.5 miles and 3.5 miles from the project area, respectively. The potential prairie falcon nest location was checked during the post-construction survey without any adult observations or nest/eyrie found. Two active red-tailed hawk nests were located within the study area during pre-construction surveys (Figure 4). One of these was inactive during this study, and the other location no longer contained a nest (Figure 5). The active post-construction red-tailed hawk nest was approximately one mile south of the location lacking a nest, approximately one mile north of the existing Wild Horse facility (Figure 4 and 5). One active pre-construction red-tailed hawk nest was found just outside the western edge of the study area, this nest was inactive during the post-construction survey (Figures 4 and 5). One active pre-construction red-tailed hawk nest was located approximately two miles east of the Wild Horse facility, no nest existed at this location during the post-construction study (Figure 4); an active red-tailed hawk nest was found in a new location approximately 1.5 miles south of the old location and two miles east of the Wild Horse facility boundary (Figures 4 and 5). No ferruginous hawks were observed or nests found, and no nest structures characteristic of ferruginous hawk nests were found.

Sage Grouse Lek Surveys

Survey conditions on March 25, 2008 (0620 hrs – 0828 hrs) consisted of clear skies, excellent visibility, and little to no wind for the entire survey period. No sage grouse were flushed or observed.

Incidental Elk Observations

Nineteen groups of elk totaling approximately 720 individuals were documented during the raptor nest and sage grouse lek surveys (Figure 6). Five of these groups were in the Wild Horse facility area, 10 groups were in the 1-mile buffer zone, and 4 groups were observed outside the study area while checking pre-construction nest sites (Figure 6). Mule deer were also seen but not tallied.

DISCUSSION

In general, active raptor nests within the study area during pre-construction surveys (2 red-tailed hawks) and post-construction surveys (1 red-tailed hawk) was low. The study area is 38 square miles (99 km^2); pre-construction nest density was 0.05 nests/mi^2 and post-construction nest density is 0.03 nests/mi^2. During the post-construction survey, two pre-construction red-tailed hawk nests (one in study area and one outside study area) and the historic golden eagle nest (inactive in 2003) no longer had stick nest structures. Two new active red-tailed hawk nests (one in study area, one outside study area) were located

during the post-constructions survey. One of these nests is less than a mile from the Wild Horse facility. During Wild Horse facility construction in 2006, Jeffrey *et al.* (2007) documented two active red-tailed hawk nests (the same active nest in 2008 less than a mile from Wild Horse, and one active nest just west of 1-mile buffer of Wild Horse that was inactive during 2008). Jeffrey *et al.* (2007) also noted that potential nesting habitat sites in ponderosa pines and other trees may have been reduced due to some broken tree tops and lateral branches, apparently from recent high winds or snowload, or both. This may account for areas where stick nests were no longer present and therefore no active nesting was documented. These results with few nests identified during pre-construction and post-construction surveys suggest no displacement impacts on nesting raptors from the Wild Horse Wind Facility.

The objective of sage grouse surveys was to investigate the likelihood of presence of breeding sage grouse within the project vicinity. Aerial and ground-based pre-construction surveys at Wild Horse for breeding season sage grouse presence, including leks, during 2003 surveys documented no lekking or flushed birds (Erickson *et al.* 2003). In spring 2006, aerial lek surveys were conducted within the proposed Expansion Area and a 2-mile buffer which included much of the Wild Horse facility north of Whiskey Dick Mountain (Jeffrey *et al.* 2007). Ground surveys were also conducted in 2006 within the proposed Expansion Area during the sage grouse nesting and brood-rearing seasons (May – July). No sage grouse or sage grouse sign were seen at the Expansion Area during the aerial lek surveys or walking ground surveys (Jeffrey *et al.* 2007).

In the fall season of 2007, one adult sage grouse was flushed during the Avian and Bat Monitoring study of the Wild Horse Wind Facility, and one sage grouse nest site was also documented. The spring 2008 aerial lek survey reported here detected no sage grouse leks or observations of individuals.

Overall, the Wild Horse Wind Facility:

- Had very low raptor nest density during both pre-construction and post-construction surveys, with no sensitive or listed raptor species nesting in the study area.
- Had no evidence of new sage grouse leks or use of historic leks in the study area in spring 2003 or 2008. Additionally, no leks were identified in the 2006 Expansion Area survey, which included most of the Wild Horse Wind Facility north of Whiskey Dick Mountain.
- Had use by elk near existing turbines and nearby areas during early spring.

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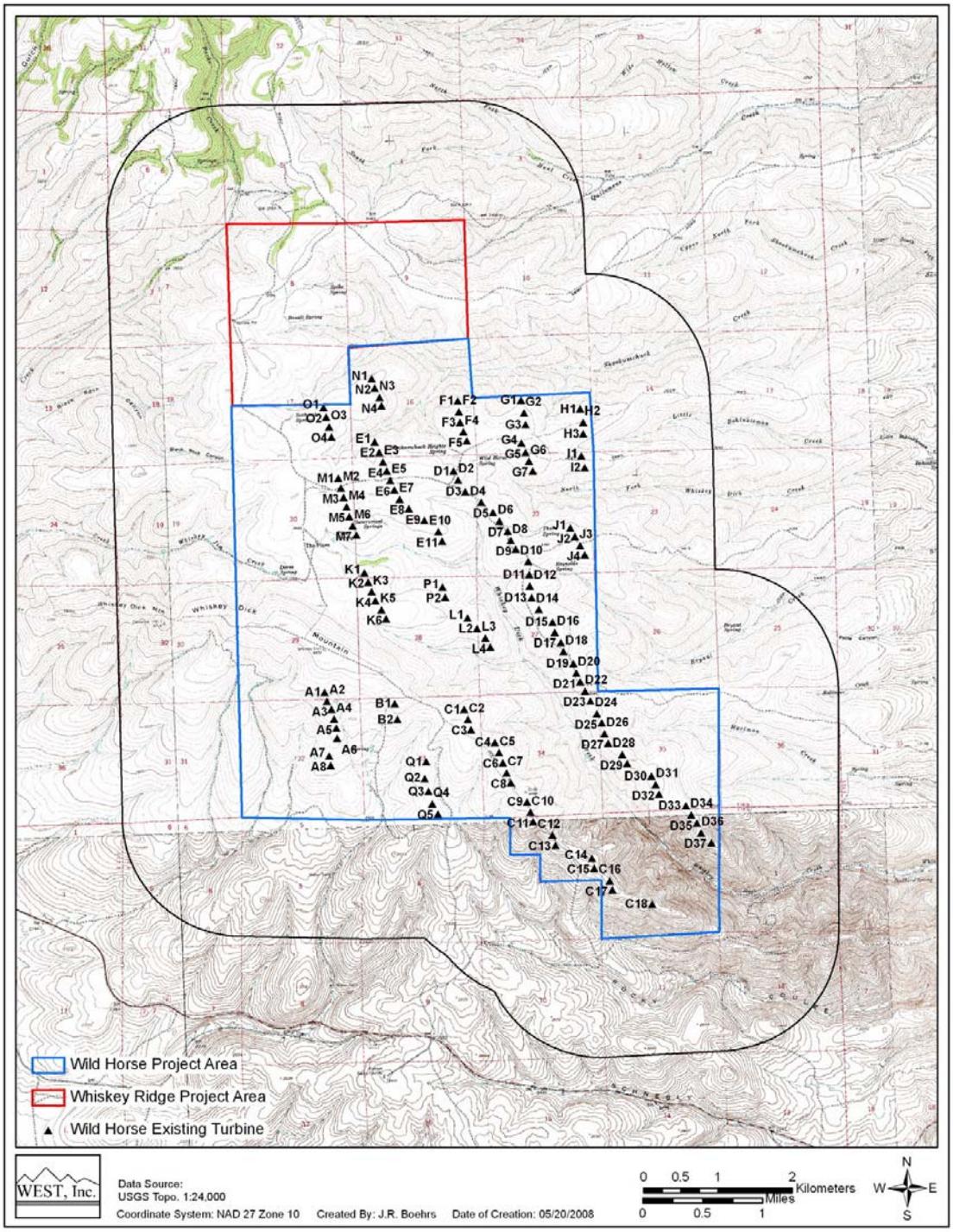

Figure 1. Study area for raptor, corvid, and other large bird nests in the Wild Horse facility and 1-mi buffer. Study area extended north to include proposed Expansion Area which was part of Wild Horse pre-construction raptor surveys. Post-construction aerial surveys conducted on March 25, 2008.

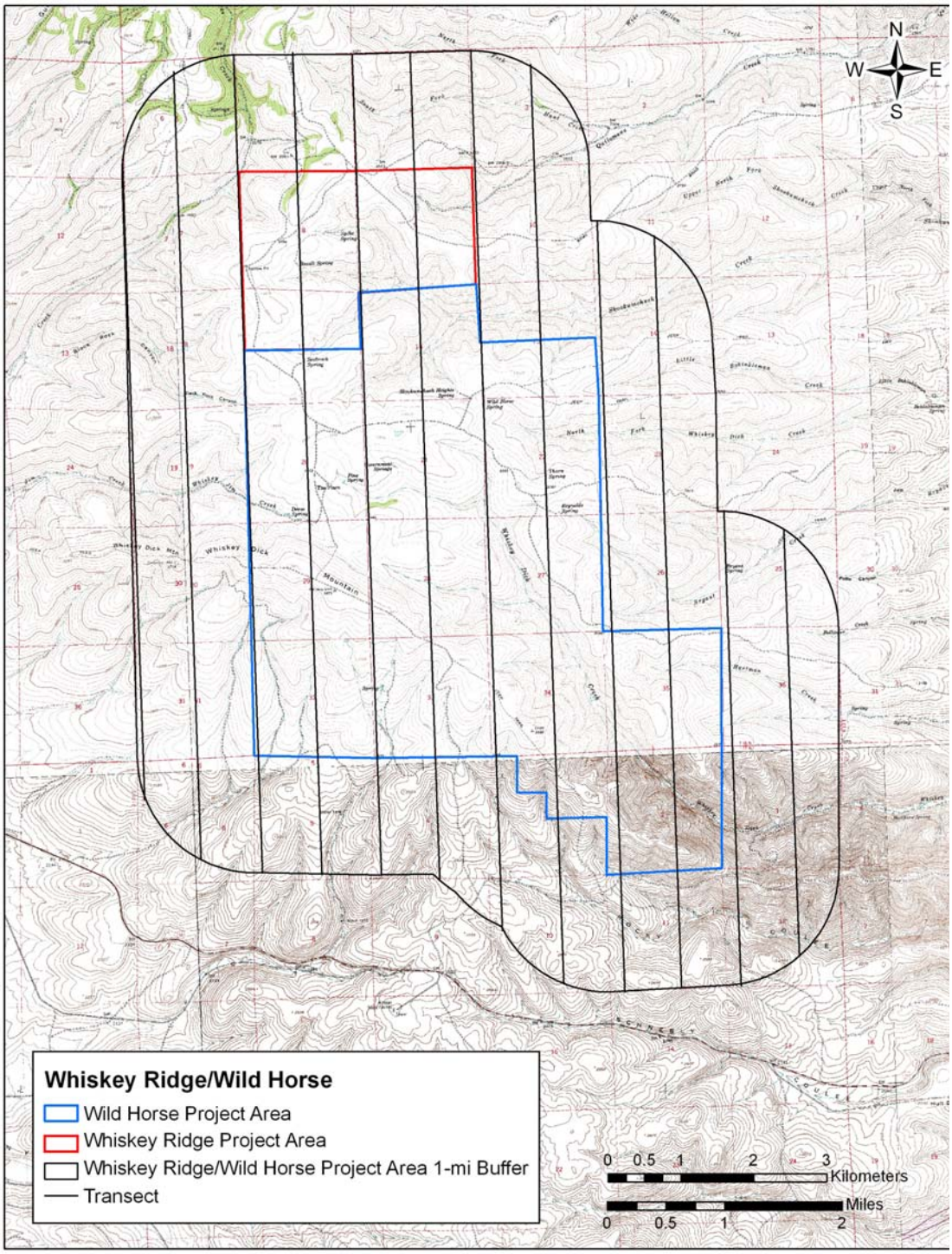

Figure 2. Post-construction Wild Horse sage grouse lek study area with north-south 0.5 mile transects surveyed on March 25, 2008.

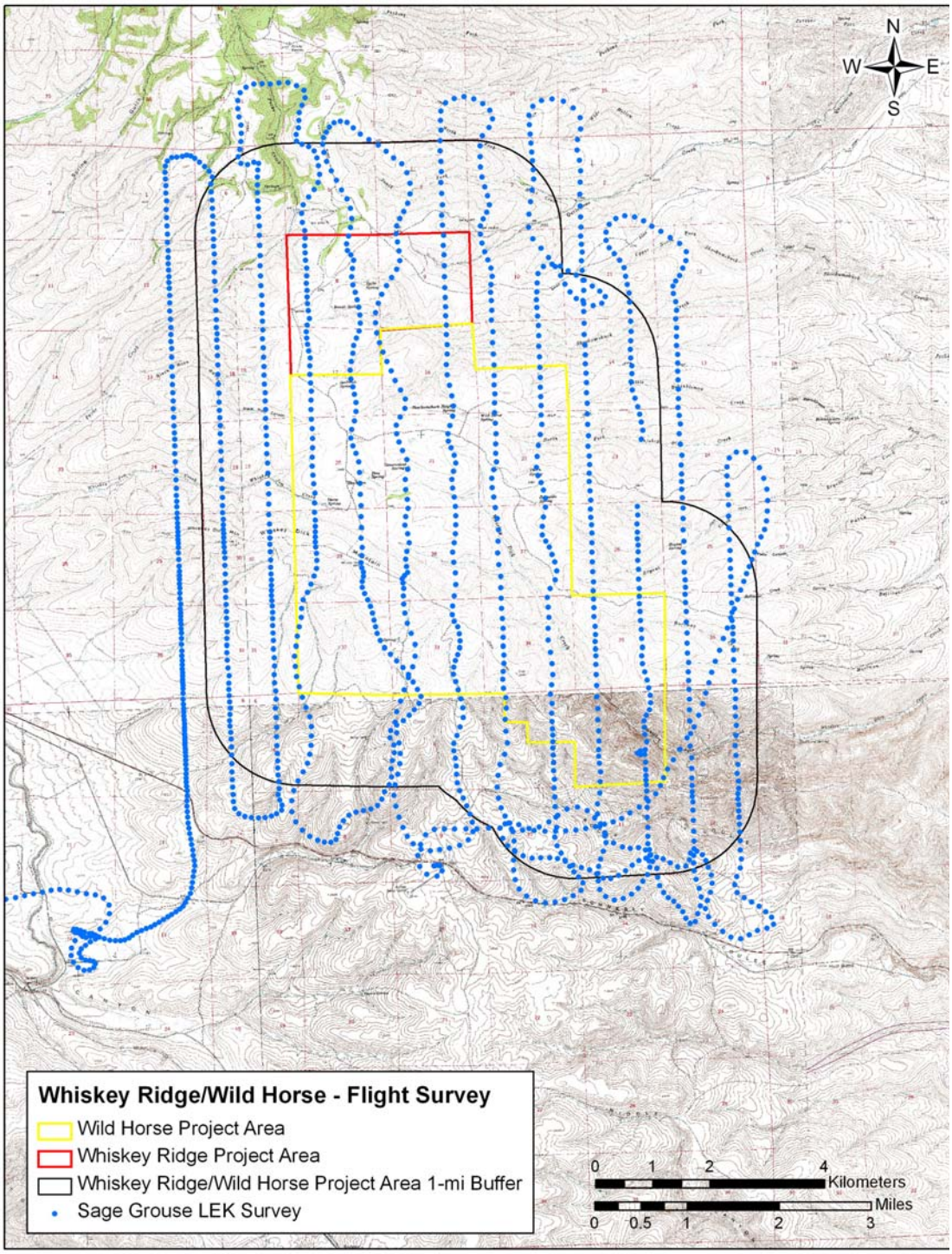

Figure 3. Post-construction Wild Horse sage grouse lek aerial survey path conducted on March 25, 2008.

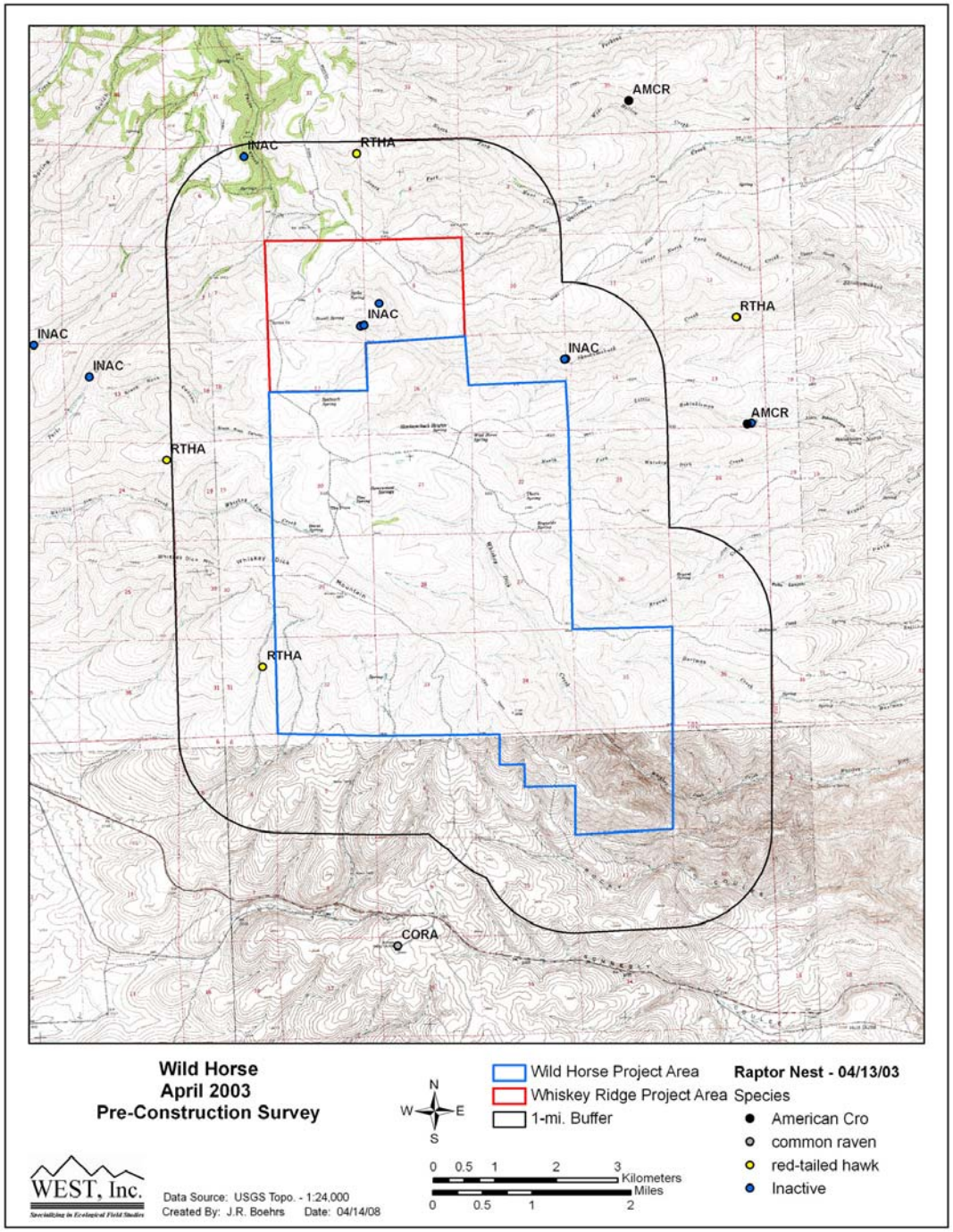

Figure 4. Pre-construction locations of active and inactive raptor nests documented during 2003 aerial survey of the Wild Horse study area and nearby vicinity.

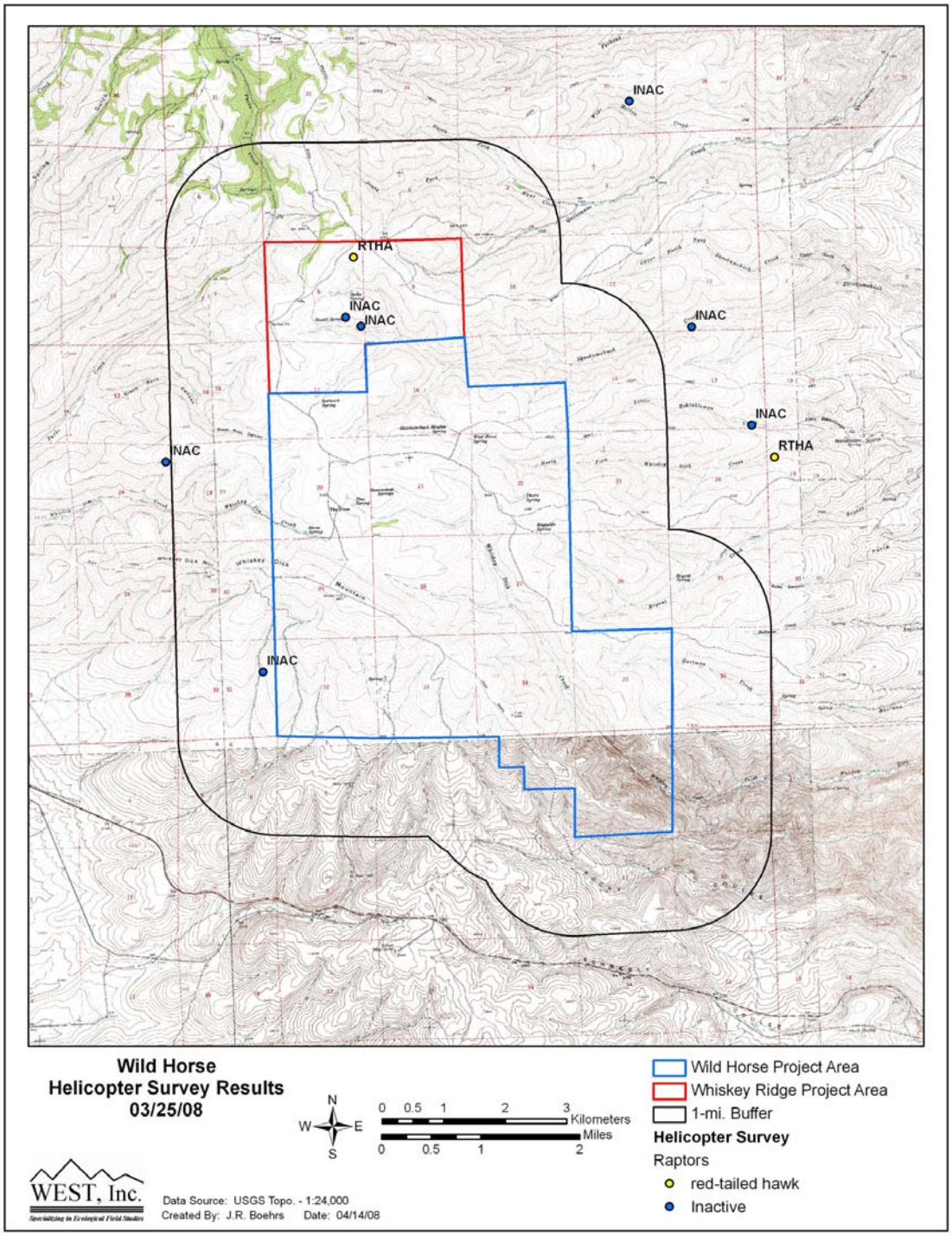

Figure 5. Post-construction locations of active and inactive raptor nests documented in the Wild Horse study area and nearby vicinity on March 25, 2008.

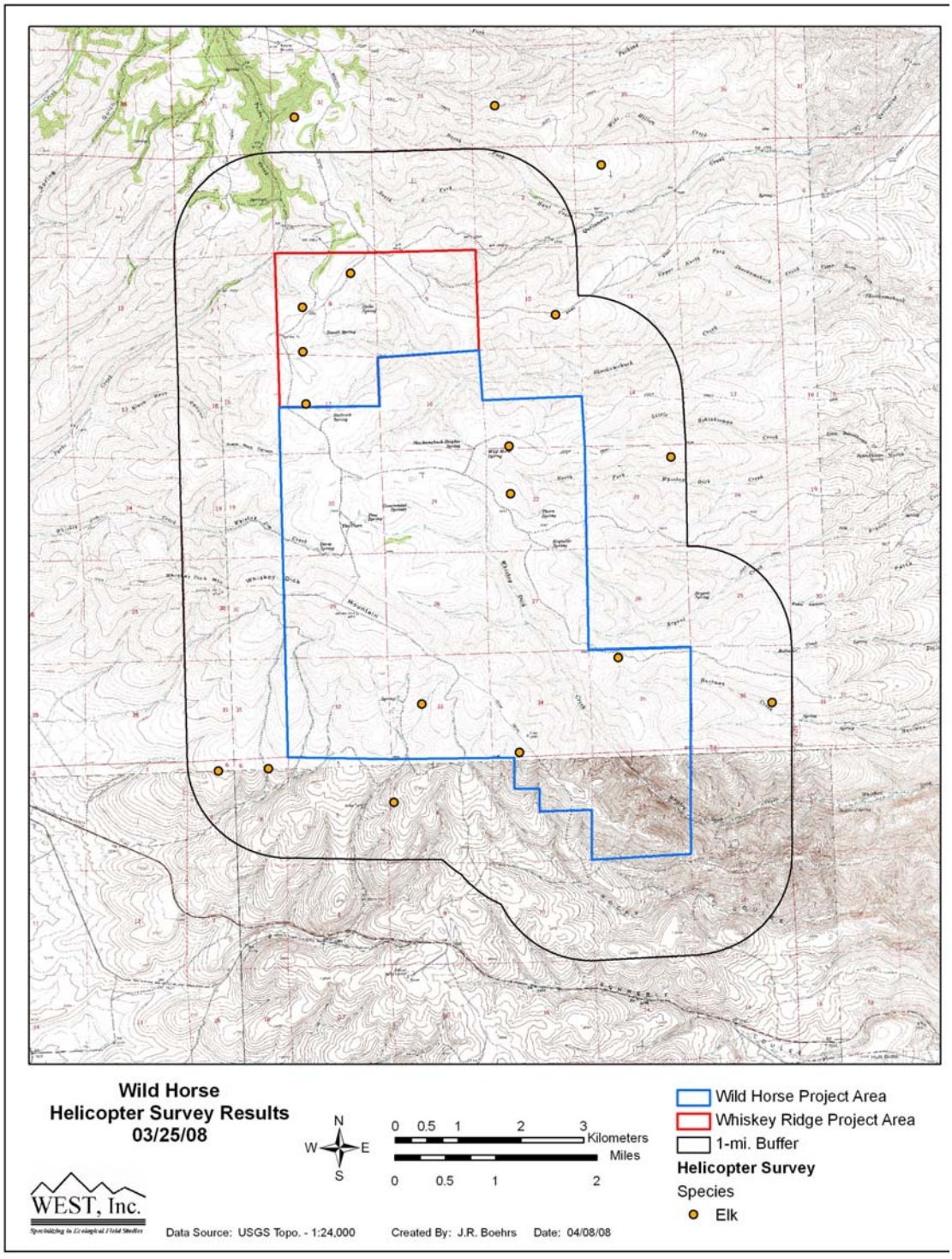

Figure 6. Observations of elk in the Wild Horse study area and nearby vicinity on March 25, 2008.