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Hanford Site Bald Eagle Monitoring Report for Fiscal Year 2019

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
under Contract 89303320DEM000031

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Richland, Washington 99352

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Hanford Site Bald Eagle Monitoring Report for Fiscal Year 2019

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TERMS

DOE	U.S. Department of Energy
ESA	*Endangered Species Act*
FY	fiscal year
WDFW	Washington State Department of Fish and Wildlife
USFWS	U.S. Fish and Wildlife Service

1.0 INTRODUCTION

A national symbol of the United States, the Bald Eagle (*Haliaeetus leucocephalus)* plays an important role in the riverine ecosystem on the U. S. Department of Energy's (DOE) Hanford Site. Historically, Bald Eagles have occupied the Hanford Site during the winter and early spring, and have more recently remained through the nesting season. Monitoring is essential to maintain current biological information about Bald Eagle abundance and distribution on the Hanford Site, to ensure compliance with protection regulations, and to inform future protection and management efforts. This monitoring report provides an overview of Bald Eagle activity on the Hanford Site, along with Bald Eagle management guidelines and monitoring objectives between November 2018 and July 2019.

1.1 BALD EAGLE PROTECTION AND MANAGEMENT AT THE HANFORD SITE

Bald Eagles are a success story for species protection under the *Endangered Species Act of 1975* (ESA). In 2007, 40 years after the Bald Eagle was listed as endangered and given protection under the ESA, the U.S. Fish and Wildlife Service (USFWS) determined that the population of Bald Eagles in the lower 48 states had recovered sufficiently to be removed from the ESA list. Although significant recovery of Bald Eagle populations has occurred, federal laws including the *Bald and Golden Eagle Protection Act of 1940* and the *Migratory Bird Treaty Act of 1918* still provide protection for eagles, their nest trees, and communal night roosts. In addition, following delisting, the USFWS developed the *National Bald Eagle Management Guidelines* (USFWS 2007), which provides monitoring and management guidance for Bald Eagles.

At the Hanford Site, DOE has developed the *Bald Eagle Management Plan for the Hanford Site* (DOE/RL-94-150), which gives an overview of Bald Eagle distribution, behavior, and ecology on the site and defines DOE policy regarding protection and management of the species. Key elements of this policy are protective measures for roost sites and nests based on federal and state guidelines.

Bald Eagles are attracted to the abundant fish and waterfowl found along the river and use the Hanford Reach of the Columbia River for wintering, and more recently for nesting and raising young. Most bald Eagles arrive on the Hanford Site in mid-November to forage for spawning fall Chinook salmon and wintering waterfowl and are usually present until mid-March. Wintering eagles use different habitats for various activities such as perching, foraging, and roosting. Although Bald Eagles may be observed far from water, on the Hanford Site they typically occupy habitats within 400 m (1,320 ft) of the Columbia River and use trees growing along the shoreline for perching and roosting (DOE/RL-94-150).

The *Bald Eagle Management Plan for the Hanford Site* (DOE/RL-94-150) relies on a roost-site definition developed by the Washington State Department of Fish and Wildlife (WDFW). WDFW defines a roost site under its former management policies as a tree or a group of trees in which at least three eagles roost for at least 2 nights during more than 1 year (Stinson et al. 2007). These roosting locations provide shelter from winter weather and serve a social function.

Administrative protection in the form of roost site buffers and access restrictions is initiated at a new roost site if monitoring meets the WDFW definition, or if continued monitoring over 2 or more years determines that the site is occupied at night by one or more eagles at least 30% of the time (DOE/RL-94-150). These administrative buffers and restrictions are discontinued at sites where monitoring over 2 or more years indicates night roost occupancy by one or more eagles is less than 30% of the time and there is little or no indication of use by more than two eagles (DOE/RL-94-150). Bald Eagle night roost locations on the Hanford Site are protected from disturbance from November 15 through March 15 with 200-m (660-ft) buffers (Table 1, Figure 1).

Nest building has occurred most years, but historically the adults abandoned most nests on the Hanford Site by mid-March prior to producing young. The timing of this abandonment coincides with the eagles migrating toward summer feeding areas or other nesting territories. Bald Eagles were first observed successfully producing fledged young from nests on the Hanford Site in 2013. In Washington State, nesting may begin as early as December and young may fledge as late as August (DOE/RL-94-150). Bald Eagle nests are monitored for occupancy (adults present) and productivity (production of young). A successful nest is described as a nest from which at least one young fledged, or one in which at least one young was raised to an advanced stage of development (Postupalsky 1974). Potential nest sites are monitored to determine if new nest protection areas are necessary. When a new nest is identified, nesting exclusion buffers of 200 m (660 ft) are enforced until the nest is abandoned or the young eagles have fledged (Table 1).

Table 1. Administrative Buffers Used for Bald Eagle Night Roost and Nesting Locations per the *Bald Eagle Management Plan for the Hanford Site* (DOE/RL-94-150).

Bald Eagle Use Area	Buffer Zone	Access Restrictions
Communal night roost (Terrestrial and Aircraft)	200 m (660 ft)	Restricted access from November 15 to March 15. Work-related access granted between 9 a.m. and 3 p.m. after notification of Hanford Site ecological compliance staff.
Perch	No restrictions	No restrictions.
Forage	No restrictions	No restrictions unless major foraging areas are identified.
Nest (Terrestrial Primary Zone)	200 m (660 ft)	Restricted access from November 15 until nest is abandoned or young fledge, leaving the nest unoccupied.
Nest (Terrestrial with additional Conditioned Zone protection)	200 m (660 ft) + any determined conditioned zone(s)	Restricted access from November 15 until nest is abandoned or young fledge, leaving the nest unoccupied. The conditioned zone buffers will be active until the protected resource is no longer necessary for the success of the nest (e.g., an Eagle feeding zone would only be buffered during active salmon spawning periods and when carcasses are present).
Nest (Aircraft)	305 m (1,000 ft) slant distance	With helicopters and fixed winged aircraft, except for authorized biologists trained in survey techniques, avoid operating aircraft within the buffer zone.

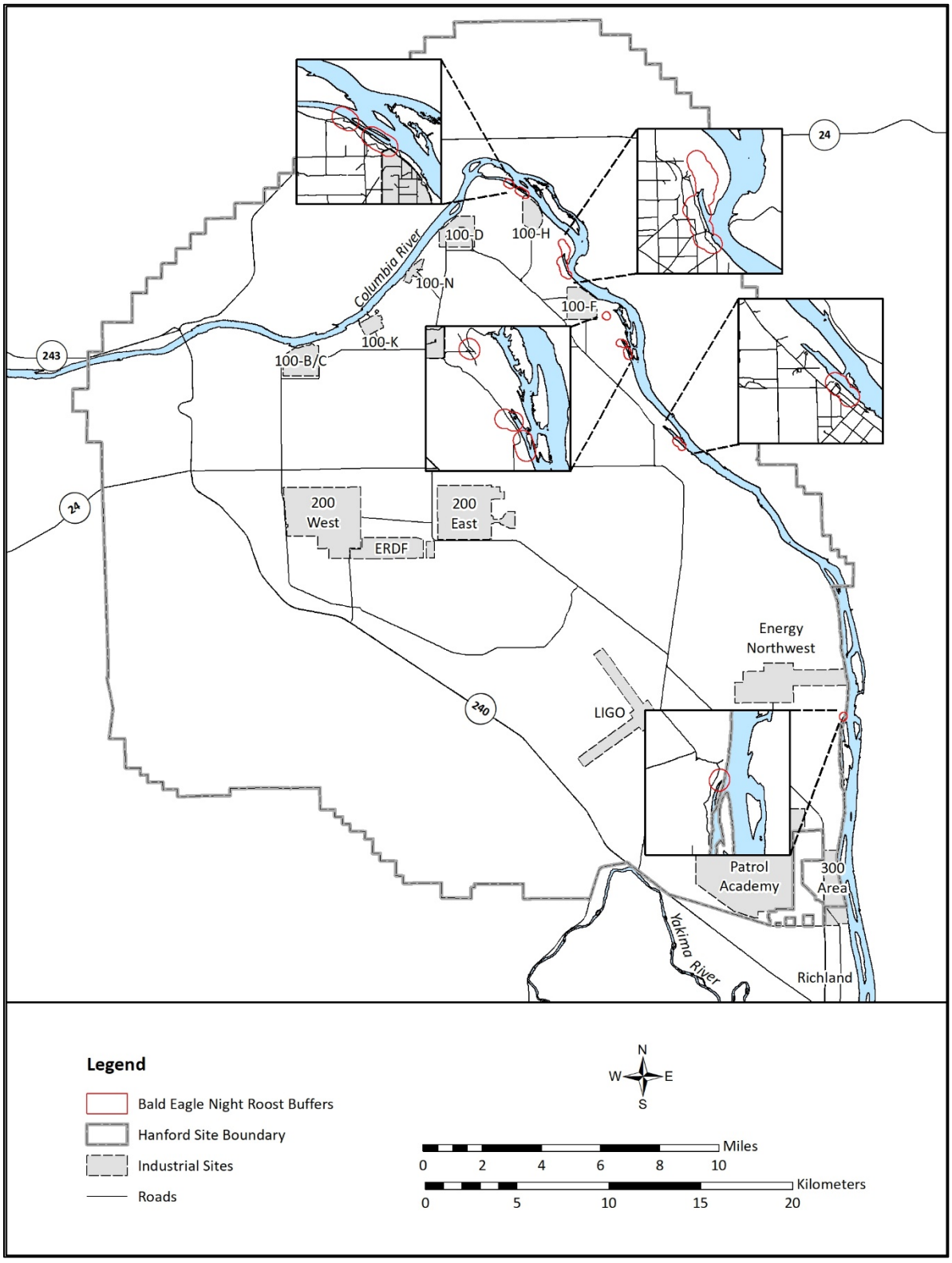

Figure 1. Protected Bald Eagle Night Roosts for FY 2019

1.2 OBJECTIVES OF MONITORING BALD EAGLES ON HANFORD

The continued monitoring of Bald Eagles on the Hanford Site is important to understanding the recovery of this species in the area. Bald Eagle monitoring efforts provide long term abundance trends, effects of Hanford Site operations on the species, relationships between the species and other resources (e.g., Chinook salmon), and nest occupancy and productivity.

Beginning in 2013, two levels of effort were established for annual Hanford Site Bald Eagle monitoring, an extensive Management Monitoring effort to support management decisions for eagles every 3 to 5 years, often preceding a revision to DOE/RL-94-150, and a less intensive Status and Trend Monitoring effort for all other years to follow Bald Eagle roosting and nesting trends and possible conflicts with Hanford Site operations. The level of effort for any given year may be modified based on budget constraints, federal or state agency information requests, and/or Hanford Site remediation projects occurring near or within Bald Eagle nest or night roost protection buffers. Night roost surveys are performed weekly to bi-weekly (Management Monitoring) or monthly (Status and Trend Monitoring) November through March to document the continued usage of the currently protected communal night roosts and to record incidental sightings of eagles outside of known roost areas that may lead to the identification of new roost sites. Boat surveys are performed as part of both levels of monitoring efforts. During the Management Monitoring years, boat surveys are often performed monthly (December through February) to document the abundance, age class, distribution, and activities of Bald Eagles using the Hanford Reach. Status and Trend Monitoring years include at least one boat survey in late November or early December to document the demographics of the peak Hanford Reach Bald Eagle wintering population and another boat survey in March to record late season demographics and nest occupancy. Boat surveys are performed on the same dates as night roost surveys to compare diurnal and nocturnal abundance and distribution. The dataset produced from annual Bald Eagle communal roost monitoring is used to provide guidelines and management goals for Bald Eagles on the Hanford Site. Bald Eagle nest monitoring begins following the conclusion of the communal night roost survey season (mid-March) regardless of the level of monitoring effort for the year.

Bald Eagles can be a relatively long-lived species, usually living anywhere from 20 to 30 years in the wild, and in one rare instance making it to 38 years of age (Schempf 1997; USGS 2020). As with many large raptors, survivorship of young birds is often lower with survival increasing as birds approach adulthood. Monitoring Bald Eagle nests on the Hanford Site provides information on nest locations for administrative protections, site fidelity, and nest productivity. The objective of this report is to present the methods and results from the fiscal year (FY) 2019 Status and Trend Monitoring effort. The effort included night roost, boat, and nest surveys performed from November 2018 through July 2019.

2.0 METHODS

Bald Eagle Status and Trend Monitoring was conducted during FY 2019, consisting of night roost, boat, and nest surveys. The types of surveys are described in further detail in the following subsections.

2.1 NIGHT ROOST SURVEYS

Night roost surveys were conducted at the eight protected night roost sites from November 2018 through March 2019 (Figure 2). The eight areas were divided into three monitoring routes each with 2 to 4 night roost monitoring locations. Performing three separate routes allows staff time to monitor roosts and travel between roost locations while still having adequate light to count birds. The direction that the routes were driven were alternated to reduce bias. Surveys were initiated 15 minutes prior to sunset and continued until completed or there was insufficient light to see individual birds. Surveyors approached each location in a vehicle and remained outside of the designated 200-m (660-ft) protection buffer zones (DOE/RL-94-150). Binoculars and spotting scopes were used to determine the number of Bald Eagles present, age class (adult vs. juvenile), and activity of individual birds. Adults are distinguished from juveniles by their white head and tail feathers, features the birds gain at around the age of 5 years (Buehler 2020). Surveyors recorded additional relevant notes such as the presence of other large birds. Surveyors used an aerial photograph to mark the estimated location of the birds. After a night roost site was adequately assessed, generally less than 10 minutes, a surveyor proceeded to the next night roost location until all locations have been surveyed. Surveyors made sure to scan the roost areas for a short duration upon arrival to the site to account for birds still shifting and settling in for the night.

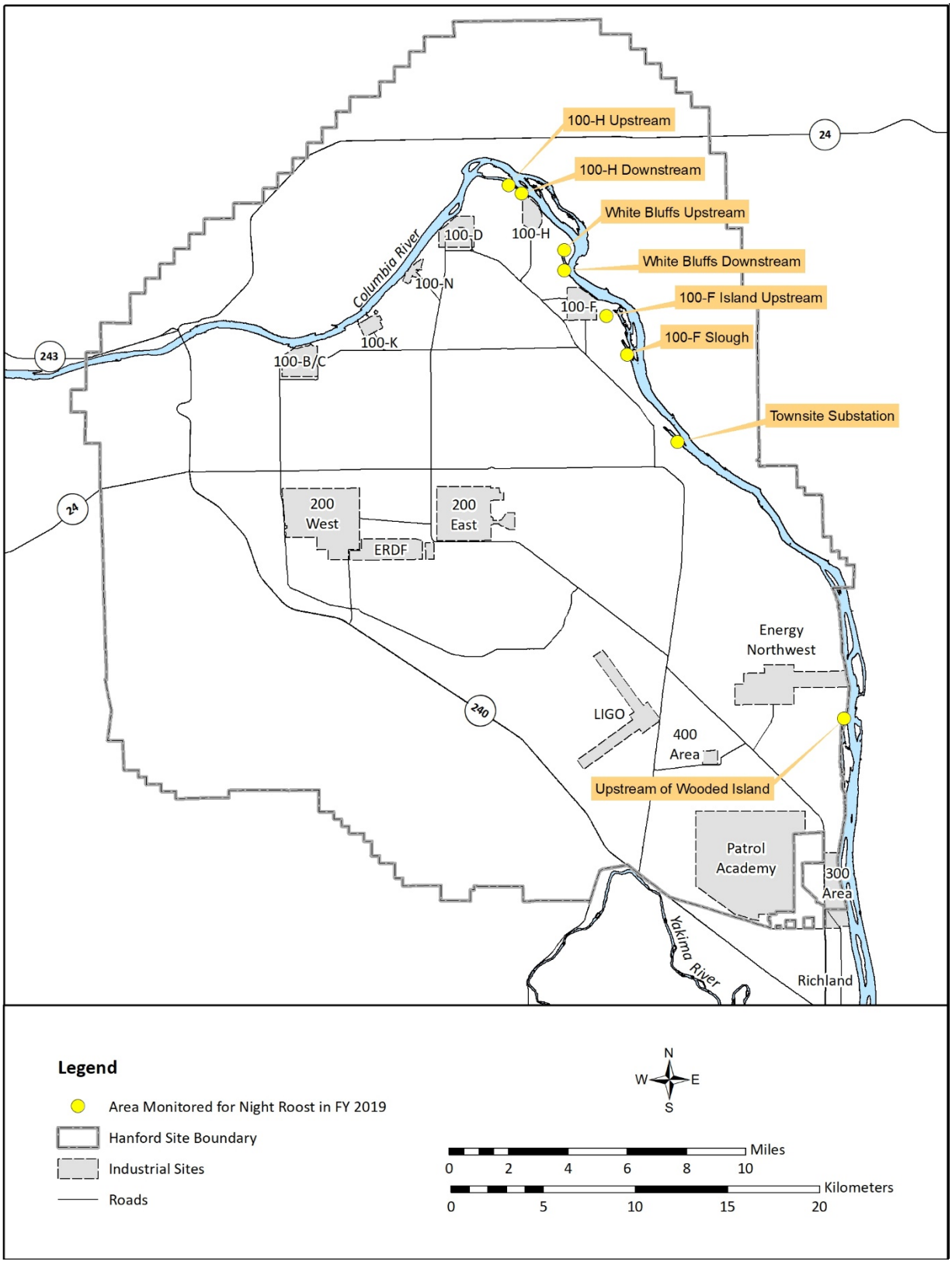

Figure 2. Locations Monitored for Bald Eagle Night Roosting During FY 2019

2.2 BOAT SURVEYS

Boat surveys were performed to determine the age class, distribution, and number of Bald Eagles on the Hanford Reach. Both shorelines of the Columbia River along the Hanford Site were surveyed, beginning immediately upstream of Vernita Bridge and ending at the 300 Area (Figure 3). All boat surveys were performed on the same date as a night roost survey. By performing the two surveys in succession, correlations of day and night counts and distributions can be used to determine additional potential night roost areas and nest sites for future Bald Eagle monitoring efforts. Surveyors collected numbers, age class (adult or juvenile), and activity of the Bald Eagles observed during the survey and estimated their locations on aerial photographs. All spatial data collected during the surveys were transferred from hard copy maps into a geographic information system for analysis.

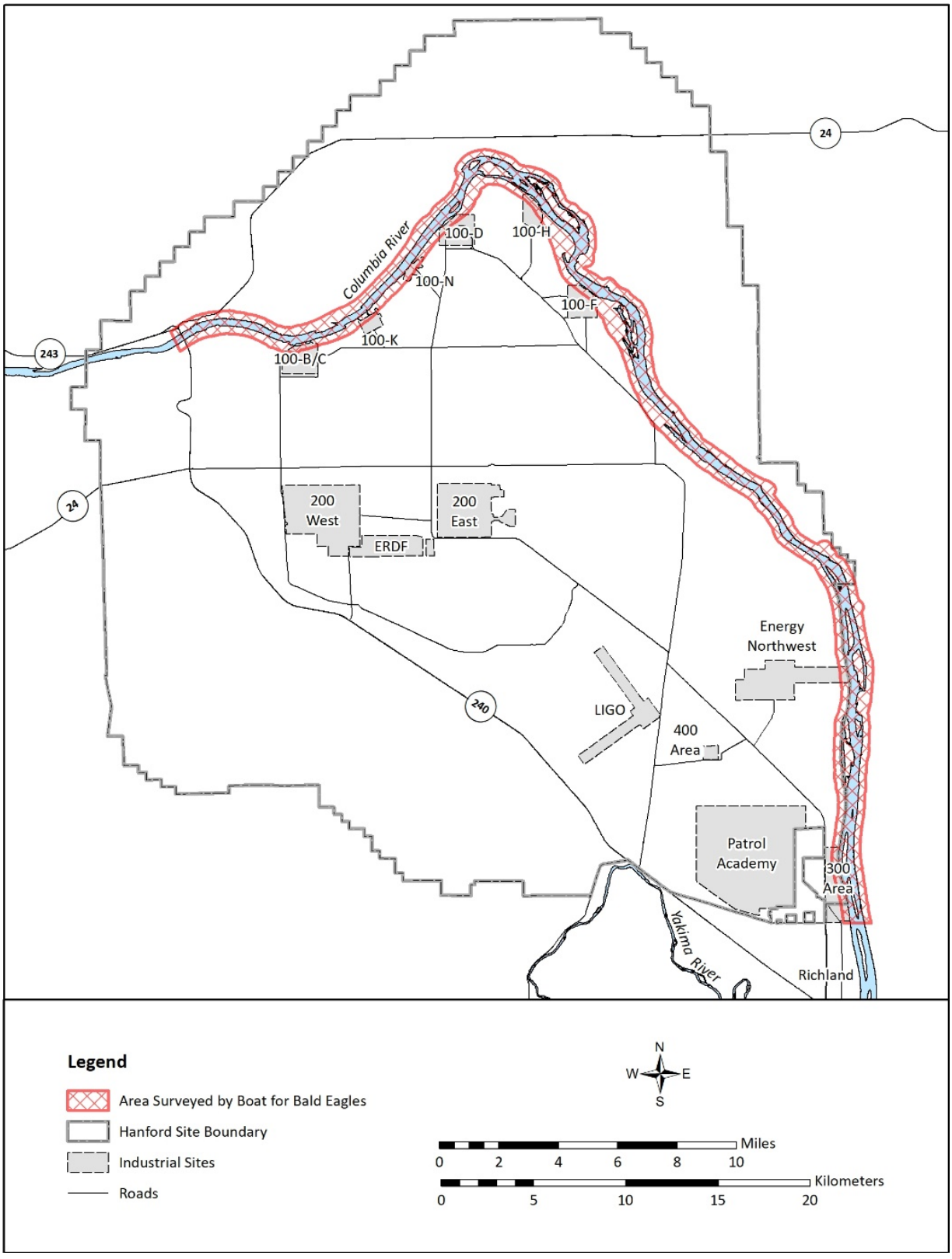

Figure 3. Area Surveyed by Boat

2.3 NEST SURVEYS

Nest surveys were performed at all known potential nest locations. Nest surveys were performed at five locations in 2019 (Figure 4). An observation location was chosen at an appropriate distance, generally at least 200 m (660 ft) from the nest. Staff viewed the nest area with binoculars or spotting scope, and nesting behaviors were documented during the observation period. Nest surveys typically consisted of 1-hour observations in the area of interest, documenting any signs of nesting activity (e.g., territory defense, nest tending, pair bonding behaviors). Nest surveys were concluded as soon as the nest was determined to be active; for example, if a pair of eagles were observed sitting on a nest 30 minutes into the survey, the survey was concluded.

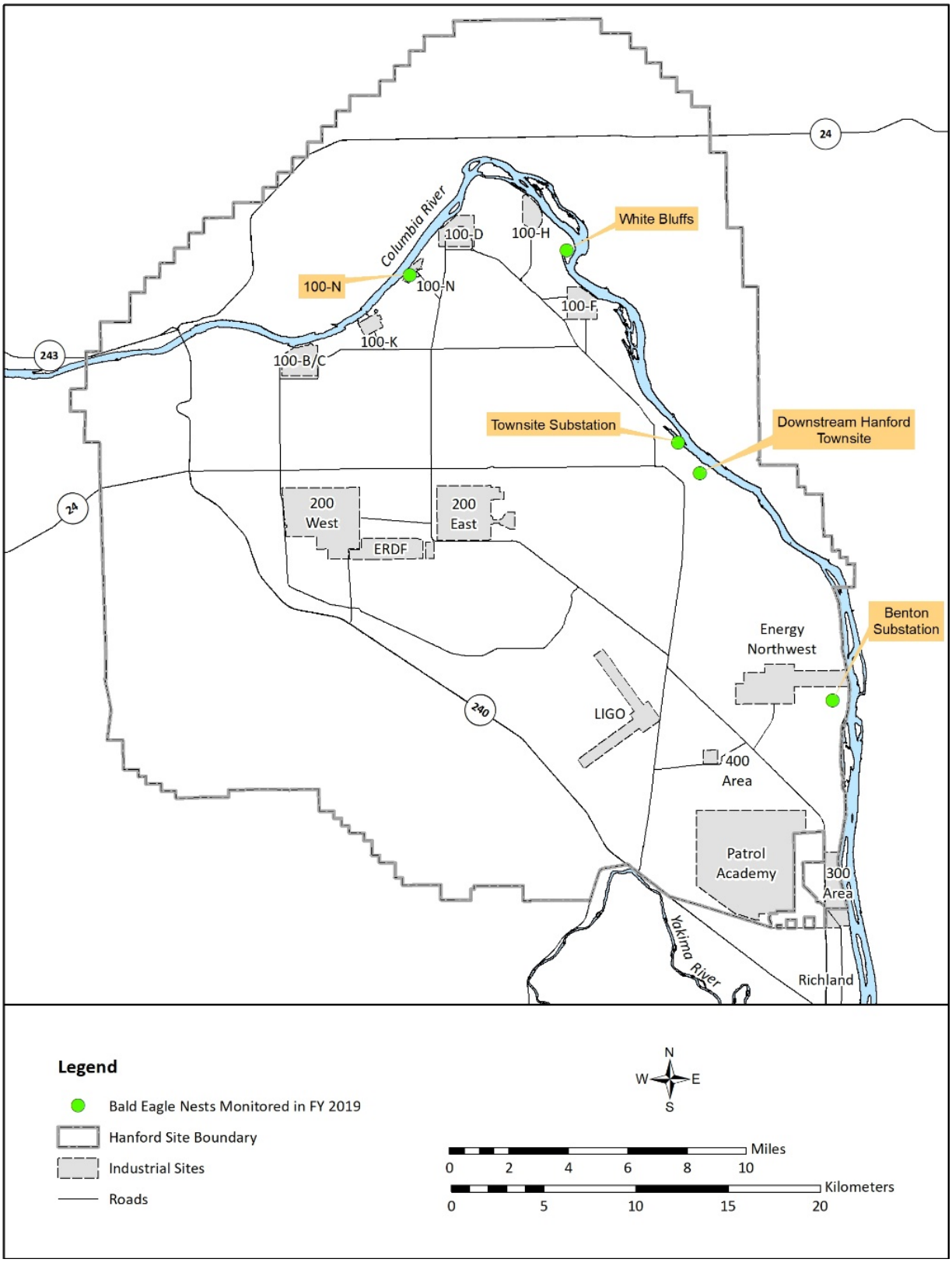

Figure 4. Bald Eagle Nest Locations Monitored in FY 2019

3.0 RESULTS AND DISCUSSION

3.1 NIGHT ROOST SURVEYS

Six night roost surveys at the eight currently protected night roost monitoring locations were completed during the FY 2019 season with the final night roost survey being conducted in concurrence with a boat survey. Bald Eagle use was documented at all the night roost locations monitored during FY 2019. Roughly 70% of the eagles present during the first three night roost surveys were juveniles who grouped in large numbers in areas where spawned out fall Chinook salmon carcasses are known to accumulate. As the season progressed, the number of juveniles on the Hanford Reach dropped off dramatically while the number of adults declined less rapidly (Figure 5). This was likely due to juvenile eagles taking advantage of the fall Chinook salmon (*Oncorhynchus tshawytscha*) food resource then leaving after the carcasses were no longer available, while adult eagles continued to use the Hanford Reach, likely feeding on waterfowl. There were 193 Bald Eagles observed at night roost sites during the FY 2019 monitoring effort, with roughly 40% of them seen at the White Bluffs Upstream roost (77 individuals) and 28% at the 100-H Upstream roost (55 individuals). The night roost survey dates and results are summarized in Table 2 with summaries of observations described in the paragraphs following. Figure 5 displays the total number of individuals by age class observed during each survey.

Table 2. Bald Eagle Night Roost Monitoring Data for FY 2019.

Night Roost Location	Number of Eagles Present					
	11/28/2018	12/10/2018	12/17/2018	1/7/2019	1/21/2019	3/18/2019
100-H Upstream	26	11	9	4	4	1
100-H Downstream	0	1	4	0	4	0
White Bluffs Upstream	36	13	16	5	5	2
White Bluffs Downstream	0	0	0	0	4	0
100-F Island Upstream	18	2	0	0	1	0
100-F Slough	0	0	0	0	1	0
Townsite Substation	3	2	0	2	2	1
Upstream of Wooded/Nest Site Area	2	3	4	2	2	3
TOTALS	**85**	**32**	**33**	**13**	**23**	**7**

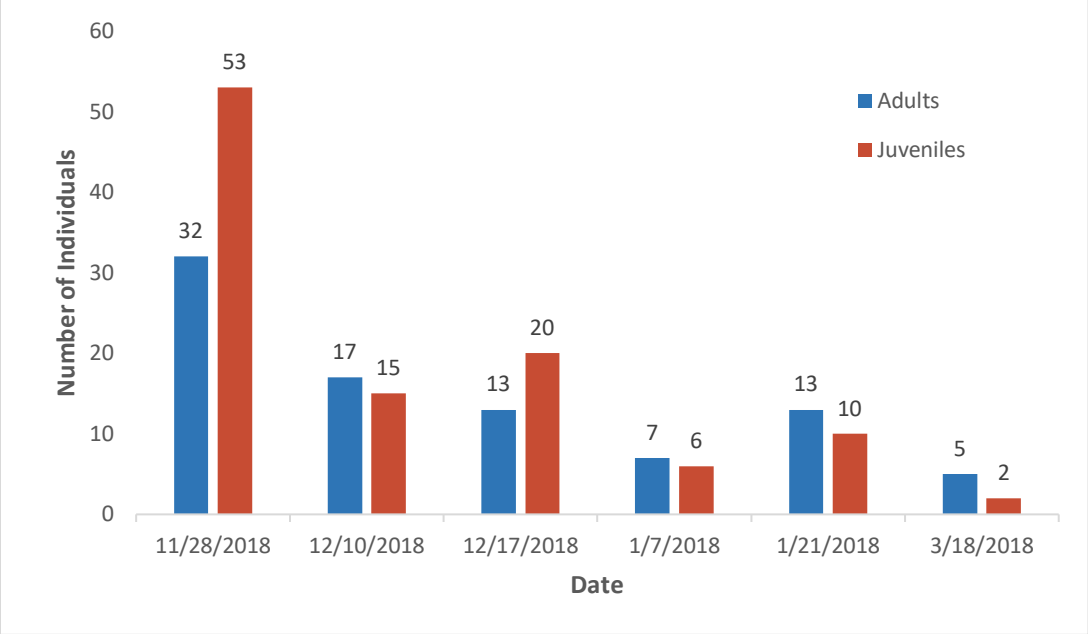

Figure 5. Number and Age Class of Bald Eagles Observed During Night Roost Surveys

3.1.1 100-H Upstream

The night roost located at 100-H Upstream was the second most utilized roosting site monitored during the FY 2019 season. A total of 55 eagles were observed at this site throughout the monitoring season and three or more eagles were observed during five out of six of the conducted night roost surveys. The maximum count of 26 eagles was recorded during the survey on November 28, 2018.

3.1.2 100-H Downstream

The 100-H Downstream roost was used inconsistently throughout the season. A total of 9 eagles were observed throughout the monitoring season, with all being observed mid-December through late January. Three or more eagles were observed on two of the six surveys (December 17, 2018, and January 21, 2019). In the past, it has been noted that eagles appeared to move back and forth between this site and 100-H Upstream as twilight approached (HNF-60744).

3.1.3 White Bluffs Upstream

The roost located at the White Bluffs Upstream site was the most actively utilized roosting site during the FY 2019 monitoring season. A total of 77 eagles were observed throughout the season with the maximum count of 36 eagles being recorded during the November 28, 2018, survey. Three or more eagles were documented using this roost site during five of the six surveys conducted during FY 2019. Use of this site tended to taper off consistently as the season progressed, with five or less eagles being observed during the final three surveys.

3.1.4 White Bluffs Downstream

The White Bluffs Downstream roost site saw very low use throughout the FY 2019 monitoring season. Only four individuals were observed during the monitoring season and all were seen

during the January 21, 2019, survey. The January 21 survey was the only survey during which more than three eagles were documented using the site.

3.1.5 100-F Island Upstream

The roost site located at 100-F Island Upstream was the third most used site monitored during the FY 2019 monitoring season. Most of the activity was observed during the earlier part of the season, with 20 of the 21 observed eagles being documented during the first two surveys (November 28, 2018, and December 10, 2018). Only the November 28 survey showed three or more eagles being observed, with 5 adults and 13 juveniles being recorded for a total of 18 individuals.

3.1.6 100-F Slough

The 100-F Slough roost site was the least utilized during the FY 2019 monitoring season with only one adult eagle being observed throughout the duration of the season. This individual was documented during the January 21, 2019, survey.

3.1.7 Townsite Substation

The Townsite Substation roost site was used moderately when compared to other roost sites during FY 2019. A total of 10 eagles were documented at the site showing relatively constant usage throughout the season. The relatively constant usage of the roost site is due to the occupation of the site by a nesting pair of eagles. Three or more eagles were only observed during one of the six surveys for FY 2019; this was during the November 28, 2018, survey.

3.1.8 Upstream of Wooded Island/Nest Site Area

This area appears to be used slightly more than the Townsite Substation site with 16 eagles being observed over the course of the six surveys conducted during FY 2019. The maximum count of four eagles occurred during the December 17, 2018, survey. Three of the six surveys showed the site being used by three or more eagles.

3.2 BOAT SURVEYS

One boat survey was performed on March 18, 2019, to search for potential nesting locations. A peak count during the winter was not conducted. A total of 18 eagles (9 adults and 9 juveniles) were observed during the March 18 boat survey. These numbers are slightly higher than numbers recorded during the March boat survey in FY 2018 that reported a total of 10 eagles (8 adults and 2 juveniles). The specific locations of Bald Eagles observed during the FY 2019 boat survey are displayed in Figure 6.

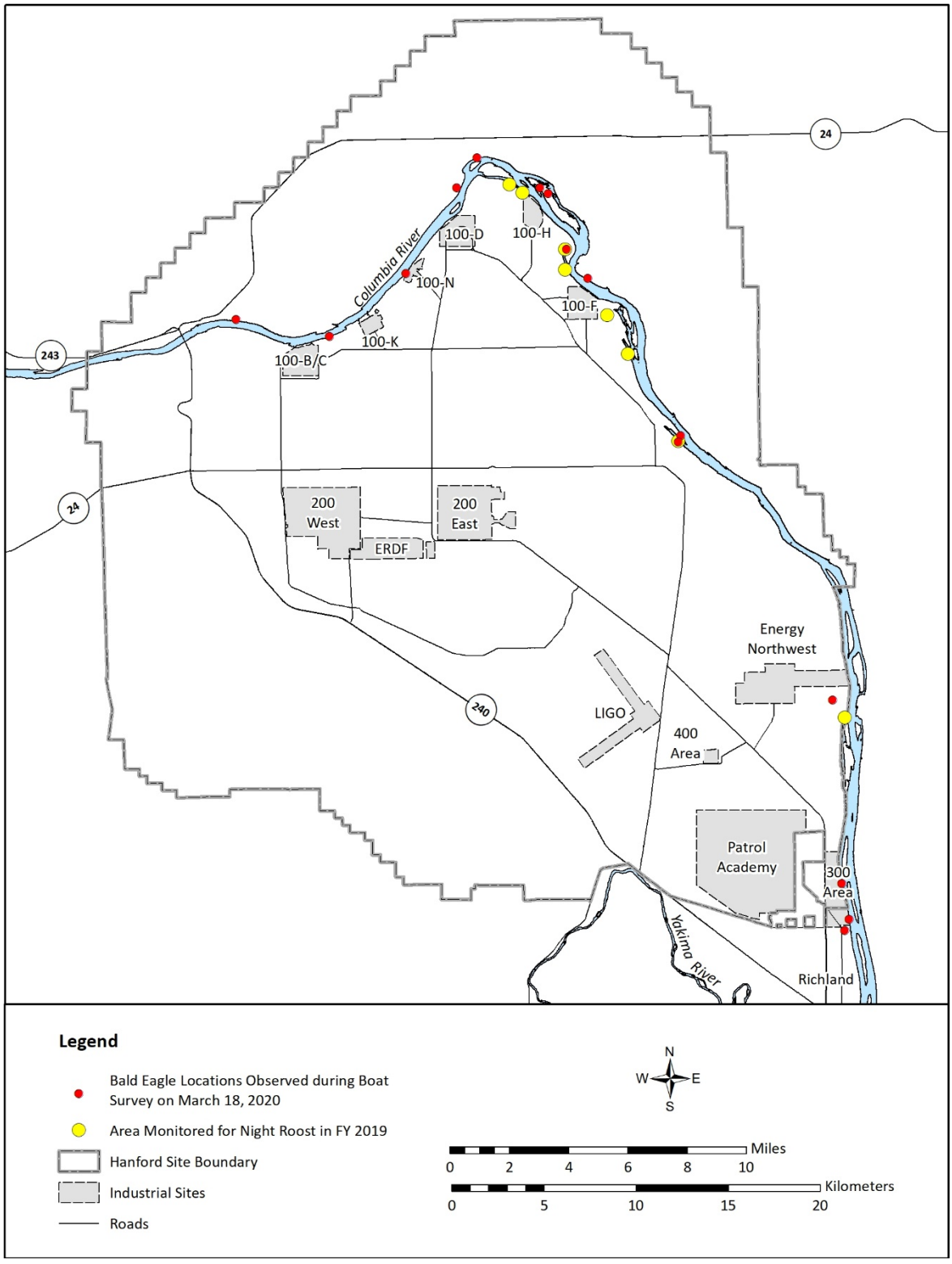

Figure 6. Locations of Bald Eagles Observed During FY 2019 Boat Survey

3.3 NEST SURVEYS

Bald Eagle nesting attempts have been documented on the Hanford Site dating back to the 1960s. Until recently, these nests were typically abandoned by late spring. Five nest sites were monitored in FY 2019. Nest surveys were performed at the Benton Substation on March 27 and May 15, 2019. The Hanford Townsite Substation and Downstream Hanford Townsite nests were surveyed on March 28 and May 14, 2019. The 100-N nest was surveyed on April 3 and May 2, 2019. Lastly, the nest located at White Bluffs was surveyed on April 4 and May 16, 2019.

Successful nesting based on the definition by Postupalsky (1974), is a nest from which at least one young fledged, or one in which at least one young was raised to an advanced stage of development. Successful nests were documented in FY 2019 at the Hanford Townsite Substation, White Bluffs Slough, Benton Substation, and 100-N. At least one young was observed at all nest survey locations in FY 2019 except for the Downstream Hanford Townsite nest.

In FY 2013, a pair of Bald Eagles constructed a nest in the Upstream of Wooded Island night roost area and successfully raised two young. This successful Bald Eagle nest was the first recorded on the Hanford Site. The Upstream of Wooded Island nest was again occupied and successful the following 2 years, producing two young in FY 2014 and three young in FY 2015. In FY 2016, the pair of Bald Eagles occupying this territory moved the nest to a transmission approximately 1,100 m (3,609 ft) to the northwest of the Upstream of Wooded Island nest. This nest, known as the Benton Substation nest, was occupied and successful in FY 2016 (two young), FY 2017 (two young), and FY 2018 (one young). The Benton Substation nest was again occupied and successful in FY 2019 with two young documented on the July 2, 2019, survey.

The White Bluffs Peninsula nest, which was occupied then abandon in previous years, was used and thought to be successful in FY 2015 and FY 2016 but dense foliage prevented staff from confirming the presence of young in the nest. The nest was occupied and successful in FY 2017 and FY 2018 with one young observed each year. The nest was again considered occupied and successful in FY2019 with two young observed in the nest during the May 16, 2019, survey.

During FY 2019 a nest was monitored in the 100-N Area. One adult was observed at this nest during the April 3, 2019, survey and an adult along with two young were observed during the May 2, 2019, survey. This nest was considered successful based on the above definition of successful nests from Postupalsky (1974).

A pair of Bald Eagles briefly occupied then abandoned a nest in the Hanford Townsite Substation night roost area in FY 2017 (HNF-63012). A pair was again observed using the nest in FY 2018 during the night roost surveys. While conducting a nest survey on May 10, 2018, two young with mature feathers were observed in the nest, while one adult perched nearby. During the final nest survey on June 14, 2018, the two young were observed exercising their wings and conducting short hover flights in the nest. No adults were observed in the area. In FY 2019, A pair of eagles were observed in this nest during the March 28 survey. Later in the season, during the May 14, 2019, survey, one adult was observed along with two young chicks.

A possible new nest was observed inland and downstream from the Hanford Townsite High School during a March 19, 2018, boat survey. The Hanford Townsite Downstream Nest appeared to be used for a brief period in FY 2019 with documented use by one adult during the March 28, 2019, survey. However, when this nest was surveyed on May 14, 2019, no birds were observed in the nest itself, with only one adult being seen flushing from a nearby tree. Detailed nest survey observations are presented in Appendix A.

4.0 CONCLUSIONS

4.1 BALD EAGLE FORAGING, PERCHING, AND ROOSTING ON THE HANFORD REACH

Long-term monitoring of the status and trends of Bald Eagle populations clearly show that national, state, and regional protections were successful in reestablishing this species on the Hanford Reach. Although the Bald Eagle was removed from the federal endangered and threatened species list, the species is still protected under federal law. Understanding how Bald Eagles utilize the Hanford Reach is essential to ensure continued compliance with these laws.

In the two most recent limited monitoring events (FY 2018 and FY 2019), only 39% of the total number of individuals observed during the daytime boat surveys were observed during coinciding night roost monitoring. A better understanding of where the remaining eagles are roosting in the future could help ensure continued protection for this species.

4.2 BALD EAGLE NESTING ON THE HANFORD SITE

Eagles are sensitive to disturbance throughout all nest stages but are especially sensitive to human disturbance during the earlier stages of the nesting cycle. Disturbance during courtship, nest building, egg laying, and incubation can lead to abandonment of the nest. Continued protection of nest sites from human disturbance is necessary to minimize the impacts of ongoing Hanford Site operations.

Nest sites are currently identified during boat surveys and night roost monitoring. The seasonal timing of these surveys allows monitoring staff to more easily detect nest building and nesting behavior. As the season progresses, nest monitoring is performed only on land and outside of the 200-m (660-ft) protection buffer zone. Nest monitoring becomes much more difficult as foliage begins to obscure the direct lines-of-sight to the nest. With successful nests documented on the Hanford Site for more than three consecutive years, future monitoring efforts could benefit from the addition of one or more boat surveys later in the season with a focus on nest location identification as well as nest monitoring.

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APPENDIX A

NEST SURVEY OBSERVATIONS FOR FISCAL YEAR 2019

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Nest Location	Date	Time	# of Adults	# of Juv	Observations
Benton	3/27/2019	955	1	0	Perched on wooden utility pole near nest
Substation		1005	1	0	Perched on wooden utility pole near nest
		1012	1	0	Adult on utility pole flew away towards river
		1015	0	0	
		1025	0	0	
		1035	0	0	
		1042	1	0	Adult in nest lifted head, spotting scope required (advice for future surveys)
		1045	1	0	Adult in nest, other adult has not returned, confirming the pair and ending the survey
		1046	2	0	Other adult returned with a stick while packing up spotting scope
Downstream of	3/28/2019	1215	1	0	One adult in nest
Townsite		1225	1	0	One adult in nest
		1235	1	0	One adult in nest
		1245	1	0	One adult in nest
		1255	1	0	One adult in nest
		1304	1	0	One adult in nest
		1315	1	0	One adult in nest The second adult in the pair was not observed. The nest is shallow and if two were in the nest it would be easily observed.
Hanford	3/28/2019	1325	0	0	
Townsite		1335	0	0	
Substation		1342	1	0	One adult flew in and perched on tallest branch above nest
		1345	1	0	One adult flew in and perched on tallest branch above nest
		1355	1	0	One adult flew in and perched on tallest branch above nest
		1358	1	0	Began calling via phone to see if I could get a possible eagle in nest to pop up into view
		1406	2	0	One eagle in nest partly showed its head, one still in the branch perched above
		1415	2	0	One eagle in nest partly showed its head, one still in the branch perched above; Ended survey
100-N	4/3/2019	1200	1	0	Adult sitting on nest, head visible
		1205	1	0	Adult sitting on nest, head visible
		1210	1	0	Adult sitting on nest, head visible
		1215	1	0	Adult sitting on nest, head visible
		1220	1	0	Adult sitting on nest, head visible
		1225	1	0	Adult sitting on nest, head visible
		1230	1	0	Adult sitting on nest, head visible
White Bluffs	4/4/2019	1222	2	0	One adult in tree to the north. One bird (adult) in the nest
		1227	2	0	One adult perched in tree to the North. One adult bird sitting in the nest
		1232	2	0	One adult perched on the tree to the north. One adult remains on the nesting

Nest Location	Date	Time	# of Adults	# of Juv	Observations
		1237	2	0	One adult on northern tree. One adult sitting on the nest
		1242	2	0	Both (2) adults on nest. One sitting, one standing on edge
		1247	1	0	One adult flew from location, no longer present. One adult remains sitting on nest
		1252	1	0	One adult sitting on the nest
100-N	5/2/2019	1040	1	2	One Adult two young in nest
		1045	1	2	Both chicks seen moving
		1050	1	2	Adult tending nest while chicks move heads up/down
		1100	1	2	Photos complete of both young. Nest considered active even pre 5/10
Benton Substation	5/15/2019	1215	1	1	Adult perched on nest. Juvenile sitting up in nest, black/dark brown feathers. See photos
		1220	1	1	Adult perched on nest. Juvenile sitting up in nest, black/dark brown feathers. See photos
		1225	1	1	Adult perched on nest. Juvenile sitting up in nest, black/dark brown feathers. See photos
		1230	1	1	Rain increasing. Juvenile hunkered down in nest, no longer visible
		1235	1	1	Rain increasing. Juvenile hunkered down in nest, no longer visible
Hanford Townsite Downstream	5/14/2019	1030	0	0	No birds observed
		1040	0	0	No birds observed
		1050	0	0	No birds observed
		1100	0	0	No birds observed
		1110	0	0	No birds observed
		1120	0	0	No birds observed
		1127	1	0	One adult flushed from nearby tree that was hidden by vegetation. No birds seen in nest
		1130	0	0	If the nest is active, birds in nest could not be observed
Hanford Townsite Substation	5/14/2019	1153	0	0	No birds seen
		1201	1	0	One adult landed in branch above nest
		1210	1	0	Adult still in branch perched
		1220	1	0	Adult still in branch perched
		1230	1	0	Adult still in branch perched
		1238	1	2	Adult perched in branch, two chick (very young) stood up in nest stretching wings
		1240	1	2	Adult perched in branch, two chick (very young) stood up in nest stretching wings
		1245	1	2	Adult perched in branch, two chick (very young) stood up in nest stretching wings
White Bluffs Slough	5/16/2019	1110	1	1	One adult in tree, one juvenile (4-6 weeks?)
		1120	1	1	Same as above, one adult in tree one juvenile in nest
		1130	1	1	One Adult perched in same location. Juvenile in the nest
		1133	1	2	2nd juvenile much younger 2-4 weeks. Still w/down seen in nest Nest deemed 2019 Active