



# Keeyask Generation Project Terrestrial Effects Monitoring Plan

## Bald Eagle Habitat Effects Monitoring Report

TEMP-2024-09



# **KEYYASK GENERATION PROJECT**

## **TERRESTRIAL EFFECTS MONITORING PLAN**

REPORT #TEMP-2024-09

### **BALD EAGLE HABITAT EFFECTS MONITORING YEAR 2 OPERATION 2023**

Prepared for

Manitoba Hydro

By

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# SUMMARY

## Background

Construction of the Keeyask Generation Project (the Project) began in July 2014 and became fully operational in March 2022. The Keeyask Hydropower Limited Partnership (KHLP) was required to prepare a plan to monitor the effects of operation of the generating station on the terrestrial environment, including bald eagles. Monitoring results will help the KHLP, government regulators, members of local First Nation communities, and the general public understand how operation of the generating station will affect bald eagles and their habitat, and whether more needs to be done to reduce potentially harmful effects.

Project operation was anticipated to reduce the amount of bald eagle foraging habitat in the upstream reservoir, which was likely to be offset by increased foraging opportunities in the tailrace area (immediately downstream of the spillway). These habitat changes were predicted to result in a shift of bald eagle use away from the reservoir to areas downstream of the Project. Additionally, the local bald eagle population was not expected to change appreciably.

This report describes the results of bald eagle habitat effects monitoring conducted during the summer of 2023, the second summer of full Project operation, and compares results to previous construction-phase surveys conducted in 2015, 2017, 2019, and 2021, and the operation-phase survey in 2022.



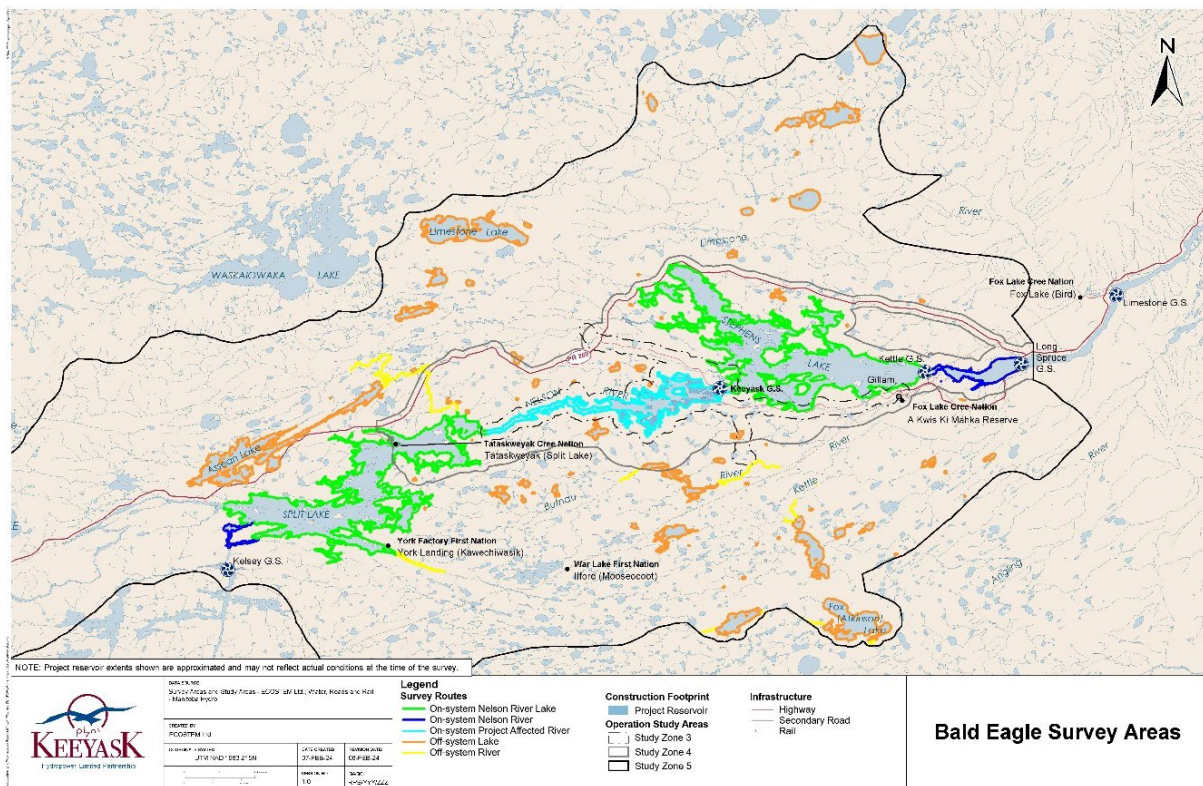
**Bald Eagle with Two Nestlings on a Nesting Platform (installed for the Project) in June 2023**

### Why is the study being done?

The Project has the potential to affect bald eagle populations through alteration and loss of habitat. Bald eagle habitat effects monitoring is being done to evaluate Project effects on the number and location of bald eagles and their breeding habitats.

### What was done?

Helicopter-based aerial surveys took place in May, June, and July 2023 to determine the abundance, distribution, and habitat use of bald eagles in Project-affected areas and in reference areas within the Keeyask region. Bald eagle nests were also monitored for eggs and nestlings to monitor productivity. Previous surveys were conducted in the same area during Project construction in 2015, 2017, 2019, and 2021, and during the first year of operation in 2022.



### Shorelines Surveyed for Bald Eagles and Nests in 2023

### What was found?

A total of 116 bald eagle nests were identified and monitored in 2023, along the surveyed shorelines. Of the 116 nests identified, 66 were occupied by a breeding pair of bald eagles and 40 nests successfully produced 51 late-stage nestlings. Successful bald eagle nests produced an average of 1.31 nestlings per nest.

In 2023, the distribution and density of nests in the Project-affected hydraulic zone (all areas within 200 m of the actual Project footprint), remained similar to the first operation-phase survey conducted in 2022, and to previous surveys conducted during the pre-construction and construction periods. Bald eagles built nests along the newly expanded shoreline in the reservoir and used two of the Project-constructed artificial nesting platforms.

Within the Nelson River hydraulic zone (mainly Split Lake and Stephens Lake), the percent of successful bald eagle nests was low compared to construction-phase surveys. This may have been a result of the relatively low water levels in the Nelson River in 2023.

### **What does it mean?**

Project operation did not affect the number, distribution, or success of nests, or the number of chicks produced in 2023. The bald eagle population in the Project-affected hydraulic zone appears to be stable and sustainable, and the artificial nesting platforms are providing successful habitat mitigation.

In other areas of the Nelson River, including Split Lake and Stephens Lake, the low water levels in the summer of 2023 may have reduced prey availability or the amount of foraging habitat, reducing the number of successful nests and the number of nestlings produced in these areas.

### **What will be done next?**

The 2023 bald eagle survey was the second operation-phase survey for the Project. During Project operation, bald eagle habitat effects monitoring will continue annually for the next 3 years and then every two years until 2034. The next bald eagle survey is scheduled for 2024.

# STUDY TEAM

We would like to thank Custom Helicopters, and Sherrie Mason and Rachel Boone of Manitoba Hydro for their assistance. We would also like to thank Dr. James Ehnes, of ECOSTEM Ltd. for GIS supported study design and cartography.

Biologists, technicians, and other personnel who designed, participated in, and drafted the study included:

- Robert Berger, Wildlife Resource Consulting Services MB Ltd. (WRCS), Design, analysis, and reporting
- Mark Baschuk, WRCS, Survey personnel, analysis, and reporting
- Danica Langan, WRCS, Survey personnel

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# 1.0 INTRODUCTION

The Keeyask Generation Project (the Project) is a 695-megawatt hydroelectric generating station (GS), located at the former Gull Rapids on the lower Nelson River in northern Manitoba where Gull Lake flows into Stephens Lake. Project construction began in July 2014 and was fully operational in March 2022.

The *Keeyask Generation Project: Response to EIS Guidelines* (the EIS), completed in June 2012, provides a summary of predicted effects and planned mitigation for Project construction and operation. Technical supporting information for the terrestrial environment, including a description of the environmental setting, effects and mitigation, and a summary of proposed monitoring and follow-up programs is provided in the *Keeyask Generation Project Environmental Impact Statement: Terrestrial Environment Supporting Volume* (TESV). The *Terrestrial Effects Monitoring Plan* (TEMP) was developed as part of the licensing process for the Project. Monitoring activities for various components of the terrestrial environment were described, including the focus of this report, bald eagle (*Haliaeetus leucocephalus*) habitat effects monitoring, for the operation phase of the Project.

Reservoir creation and Project operation was anticipated to reduce the amount of fast-flowing riverine areas in the Nelson River, resulting in a loss of bald eagle foraging habitat (KHL P 2012). The loss of bald eagle foraging habitat due to reservoir creation was predicted to be offset by the tailrace area, where increased foraging opportunities due to the increased accessibility to fish was anticipated (KHL P 2012). It was expected that bald eagles that previously foraged between Birthday Rapids and Gull Rapids, would shift away from the reservoir to areas downstream of the Project (KHL P 2012). These changes were not expected to change the local population appreciably.

Overall, the Project was predicted to increase bald eagle habitat by 380 ha (0.03% of habitat in Study Zone 5) as a result of reservoir flooding and expansion creating riparian habitat suitable for nesting and perching (KHL P 2015a). Long-term loss of some perching and nesting trees in the reservoir was anticipated due to shoreline erosion and peatland disintegration (KHL P 2015a). The effect of tree loss is expected to be small as perching and nesting trees will be available in other areas of the new reservoir shorelines.

Previous bald eagle habitat effects monitoring, conducted during Project operation in 2022 and during construction in 2015, 2017, 2019, and 2021 found that the distribution and number of bald eagle nests in the Project-affected hydraulic zone (all areas within 200 m of the Project reservoir footprint), remained similar during these periods and during the pre-construction period (WRCS 2016; WRCS 2018; WRCS 2020; WRCS 2022). While Project construction did alter bald eagle habitat in the study area, it did not significantly affect the number, distribution, or success of nests, or the number of chicks produced.

The goal of this monitoring study is to evaluate how Project operation may be affecting the abundance, distribution, and reproductive success of nesting bald eagles, and to assess the

effectiveness of Project-installed artificial nesting platforms (Photo 1). This report provides the results of the second year of operation-phase monitoring for the Bald Eagle Habitat Effects Study.



**Photo 1: Artificial Nesting Platform Installed on the Reservoir Shoreline in 2017**



## 2.0 METHODS

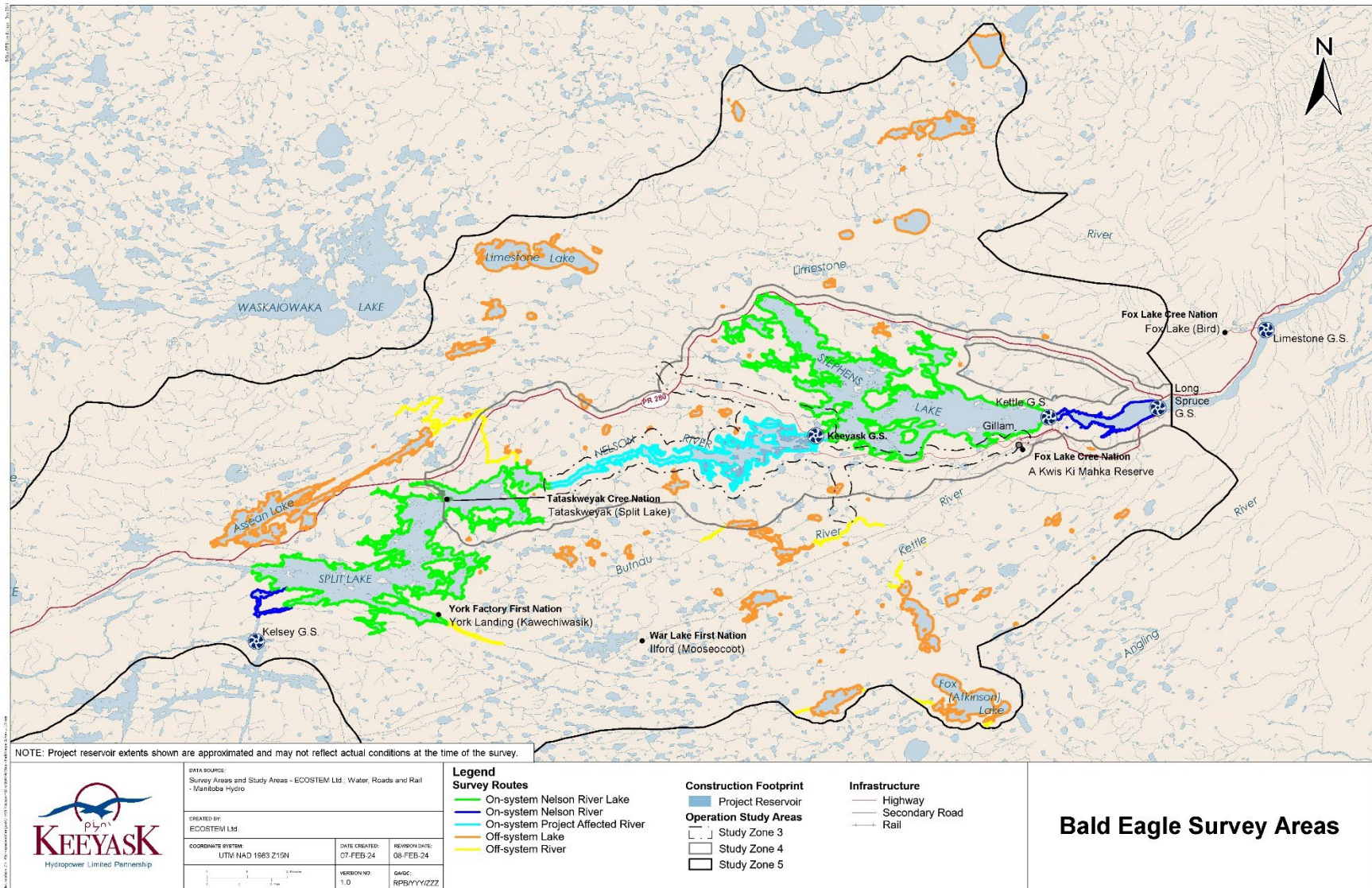
### 2.1 DATA COLLECTION

Helicopter-based aerial surveys were conducted to monitor the abundance, distribution, reproductive success, and habitat attributes of nesting locations of bald eagle in portions of Study Zone 5 during the 2023 breeding season (Map 1). Identical methods were used during the previous construction-phase surveys in 2015, 2017, 2019, and 2021 (WRCS 2016; WRCS 2018; WRCS 2020; WRCS 2022), and during operation in 2022 (WRCS 2023).

A random, stratified design was used to select waterbodies to be surveyed. Stratified random sampling is a method of sampling that involves the division of a population into smaller groups. These smaller groups (strata) were based on shared characteristics, including size and shoreline length. Waterbodies were classified broadly into either on-system (including Project-affected and Nelson River) or off-system hydraulic zones of influence, grouped into two basic categories (lake or river), and grouped into different size classes (0-10, >10-100, >100-1,000, >1,000-10,000, >10,000-100,000 ha). The Project-affected hydraulic zone includes all areas within 200 m of the actual Project reservoir footprint at the time of the survey (KHLP 2015a). The Nelson River zone included other reaches of the regulated Nelson River system from the Kelsey Generating Station (GS) downstream to the Limestone GS, but outside of the Project footprint. The Off-system zone included randomly selected waterways and waterbodies off the Nelson River system that are unaffected by hydroelectric development. The total shoreline lengths and distribution of waterbodies are presented in Table 1 and Map 1.

**Table 1: Shoreline Length (km) and Size Class (ha) of Waterbody Types Surveyed in 2023**

Hydraulic Zone	Waterbody Type	Waterbody Size Class (ha)					Total Shoreline Length (km)
		>0-10	>10-100	>100-1000	>1,000-10,000	>10,000-100,000	
Project-affected	River	0	0	0	327	0	327
Nelson River	Lake	0	0	0	34	1,411	1,445
	River	0	0	29	69	0	98
Off-system	Lake	18	50	213	606	0	887
	River	8	85	124	0	0	218
<b>Total</b>		26	135	366	1,036	1,411	2,974



Map 1: Shorelines Surveyed for Bald Eagles and Nests in 2023

Aerial surveys followed protocols adapted from methods employed by the United States Fish and Wildlife Service (Jurek 1990; Jackman and Jenkins 2004) and the British Columbia Ministry of Environment (BCME 2013). Daily flights were conducted when wind speeds were below 25 km/h and when rain or fog did not restrict observers' ability to count birds or nests. The survey was flown at approximately 100 km/h and at elevations greater than 100 m above ground level (agl) to minimize disturbance to nesting bald eagles and avoid collisions with flying birds.

The aerial survey crew consisted of two observers and the helicopter pilot. The helicopter flew 50-100 m from the shoreline providing observers with a clear view of the trees along the shoreline. During the surveys, bird of prey observations and large stick nests were recorded along with their locations. Nests were named with a unique identification number ending with the year the nest was first observed (e.g., 14-2015, 105-2017). Tree species, nest height and tree heights were estimated using professional judgement and were verified using photography. All observations were georeferenced with a global positioning system (Garmin GPS 64). When a nest was observed, the helicopter slowed and circled the site once to georeference the nest and collect photographs with a Canon EOS Rebel T6i camera. Photography was conducted quickly to minimize disturbing birds and observers retreated if the eagles displayed agitated behaviour. Photographs were reviewed to confirm occupancy, and to verify nest contents.

Additionally, the five artificial nesting platforms installed by the Project in February 2017 were also surveyed during the bald eagle habitat effects monitoring survey in 2023.

The first survey occurred from May 22-25, 2023, and was conducted to locate initial nests and determine occupancy. A nest was considered occupied if at least one adult bald eagle was present at the nest. The second survey in the mid-nesting season occurred from June 12-15, 2023, to determine the contents (e.g., perched adult, incubating adult, nestlings, empty) of nests located in May and to locate any additional nests that were not detected during the first survey. The third and final survey, occurred between July 17-18, 2023, and determined the number of late-stage nestlings, near the fledgling stage of development (Photo 2) and documented any nests that were not detected in the previous surveys.

Bald eagle nests observed off the survey route while ferrying between refueling stops were recorded as incidental and excluded from the final productivity analysis. Other bird of prey species and large stick nests observed during the survey were recorded as incidental.





**Photo 2: Late-stage Bald Eagle Nestling**

## 2.2 DATA ANALYSIS

### 2.2.1 NEST ACTIVITY AND SUCCESS

Based on the results of the surveys, and using accepted standard methods (Jurek 1990; Jackman and Jenkins 2004), occupancy determinations were made for each monitored nest as follows:

- **Active:** Nests were defined as *Active* if there were two sexually mature bald eagle present on or near a nest, or there was at least one bald eagle in incubating posture on a nest (Steenhof and Newton 2007) during any of the three survey visits. Bald eagles are capable of breeding in their fifth year and are unmistakable with their completely white head and tail (McCollough 1989). Nests defined as *Active* were further categorized as:
  - **Active, Successful:** A nest with at least one late-stage nestling (dark plumage, no down present; Photo 2) or as a fledged juvenile observed near the nest (Steenhof and Newton 2007).
  - **Active, Not Successful:** An *Active* nest with two sexually mature bald eagles and where no incubating adult or nestlings were observed.



- **Active, Abandoned:** An *Active* nest containing an incubating adult, eggs or nestlings, where the adults ceased to attend the nest and did not successfully raise nestlings to the near fledging stage.
- **Active, Success Unknown:** An *Active* nest containing an incubating adult, eggs or nestlings, that was not sufficiently monitored to determine reproductive success (*i.e.*, *Active* nests observed in May or June and not observed in July).
- **Inactive:** Nests were defined as *Inactive* when only one or zero sexually mature bald eagles were observed near a sufficiently monitored nest (*i.e.*, nests observed in May and *Active* nests first observed in June).
- **Status Unknown:** Nests were defined as *Status Unknown* when an *Inactive* nest was not sufficiently monitored to determine reproductive success (*i.e.*, *Inactive* nests only observed in June or July).

Percentage of *Active* nests is calculated as:

$$\% \text{ Active nests} = \frac{\text{Total \# Active nests}}{\text{\# Active nests} + \text{\# Inactive nests}}$$

Percentage of *Successful* nests is calculated as:

$$\% \text{ Successful nests} = \frac{\text{Total \# Active, Successful nests}}{\text{\# Active nests}}$$

The percent of active, successful nests observed in the Project-affected zone during Project construction was compared to the Off-system and Nelson River hydraulic zones using a Wilcoxon signed-rank test ( $\alpha=0.05$ ).

## 2.2.2 REPRODUCTIVE SUCCESS

Reproductive success was calculated as the number of nestlings per bald eagle breeding pair (*i.e.*, per *Active* nests) and the number of nestlings per successful bald eagle breeding pair. Nests assessed as *Active*, *Success Unknown* were not included in reproductive success calculations as the number of late stage nestlings in these nests was undetermined. The number of nestlings observed in nests in July was used as the numerator for both calculations.

$$\# \text{ Nestlings/Pair} = \frac{\text{Total \# late stage nestlings in Active nests}}{\text{\# Active nests}}$$

$$\# \text{ Nestlings/Successful pair} = \frac{\text{Total \# late stage nestlings in Active, Successful nests}}{\# \text{ Active, Successful nests}}$$

Because the incubation period for bald eagle eggs is 35 days (Buehler 2000), nests observed to contain nestlings in the June or July survey were either *Active* in May but not detected by the survey team or became active shortly after the May survey. Thus, *Active* nests first observed in June or July were included in occupancy determinations (Photo 3). *Inactive* nests observed for the first time in June or July were deemed *Status Unknown* because, without an observation earlier in the nesting season, there was no way to determine if the nest was used earlier in the season (*i.e.*, it was not known whether a nesting attempt had failed). Nests that did not contain nestlings in July but contained nestlings in June that were less than 10 weeks old, were assessed as *Abandoned*; it is confidently assumed that such nestlings did not survive to the point when they would fledge from the nest.

The number of late-stage nestlings per active nest observed and the number of late-stage nestlings per active, successful nest observed in the Project-affected hydraulic zone were compared to the values observed in the Off-system and Nelson River hydraulic zones using a Wilcoxon signed-rank test ( $\alpha=0.05$ ).



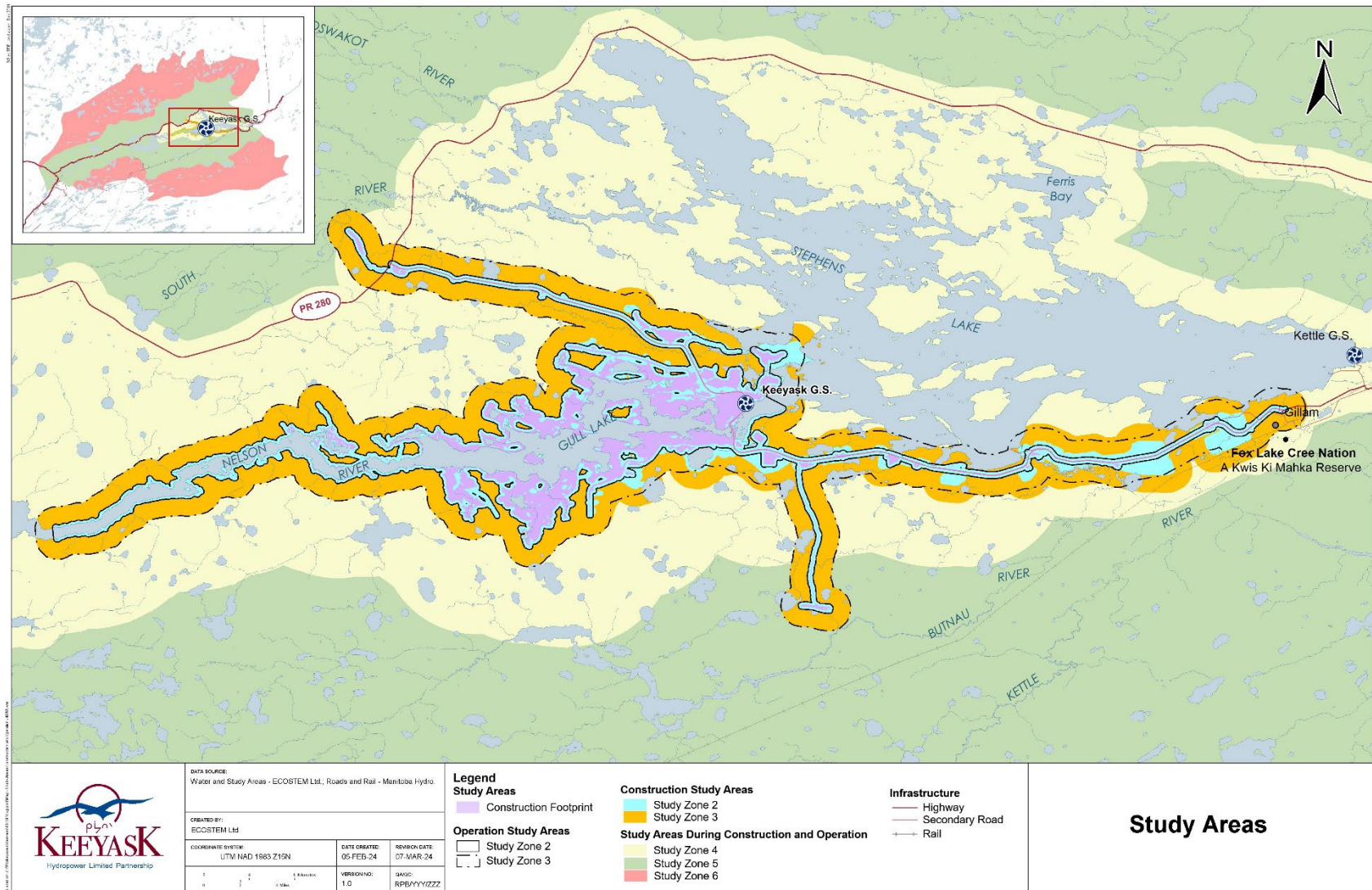
**Photo 3: Bald Eagle Nest with One Chick, June 2023**

### 2.2.3 REFERENCE TO STUDY ZONES

During the creation of the Project's Environmental Impact Statement (EIS) a cautious approach was used to estimate the area of the Project construction footprint (Study Zone 1) and associated local study zones (Study Zones 2 and 3). This cautious approach included all of the possibly disturbed areas and areas that were unlikely to be affected in the licensed Project footprint.

Once the Project was fully operational, the Project footprint and associated local study zones were refined to represent the actual areas affected by the Project during construction, as many areas included for the effects assessment were not disturbed by the Project. Study Zone 1 was remapped to only include areas that were actually cleared or physically disturbed by the Project. Study zones 2 and 3, the indirect Project zones of influence, were delineated using the same buffer distances of Study Zone 1 that were used in the EIS - 150 m and 1,150 m, respectively. (ECOSTEM Ltd 2024). Information provided in this report shows the revised Operations Study Zones (Map 2).





Map 2: Actual Construction Footprint and Revised Operation Study Zones



## 3.0 RESULTS

### 3.1.1 NEST ACTIVITY AND SUCCESS

In 2023, a total of 116 bald eagle nests were found and monitored on the shorelines of surveyed waterbodies (Map 2), which was in the range observed previously during the construction-phase surveys from 2015-2021 and the operation survey in 2022. Of the monitored nests, 18 were observed in the Project-affected zone, 62 were in the Nelson River zone, and 36 were in the Off-system zone (Map 2; Map 3). The distribution of bald eagle nests remained relatively steady in the different hydraulic zones during operation in comparison to construction. There was no apparent shift in habitat use of bald eagles from the Project-affected zone to other areas (Map 3; Map 4).

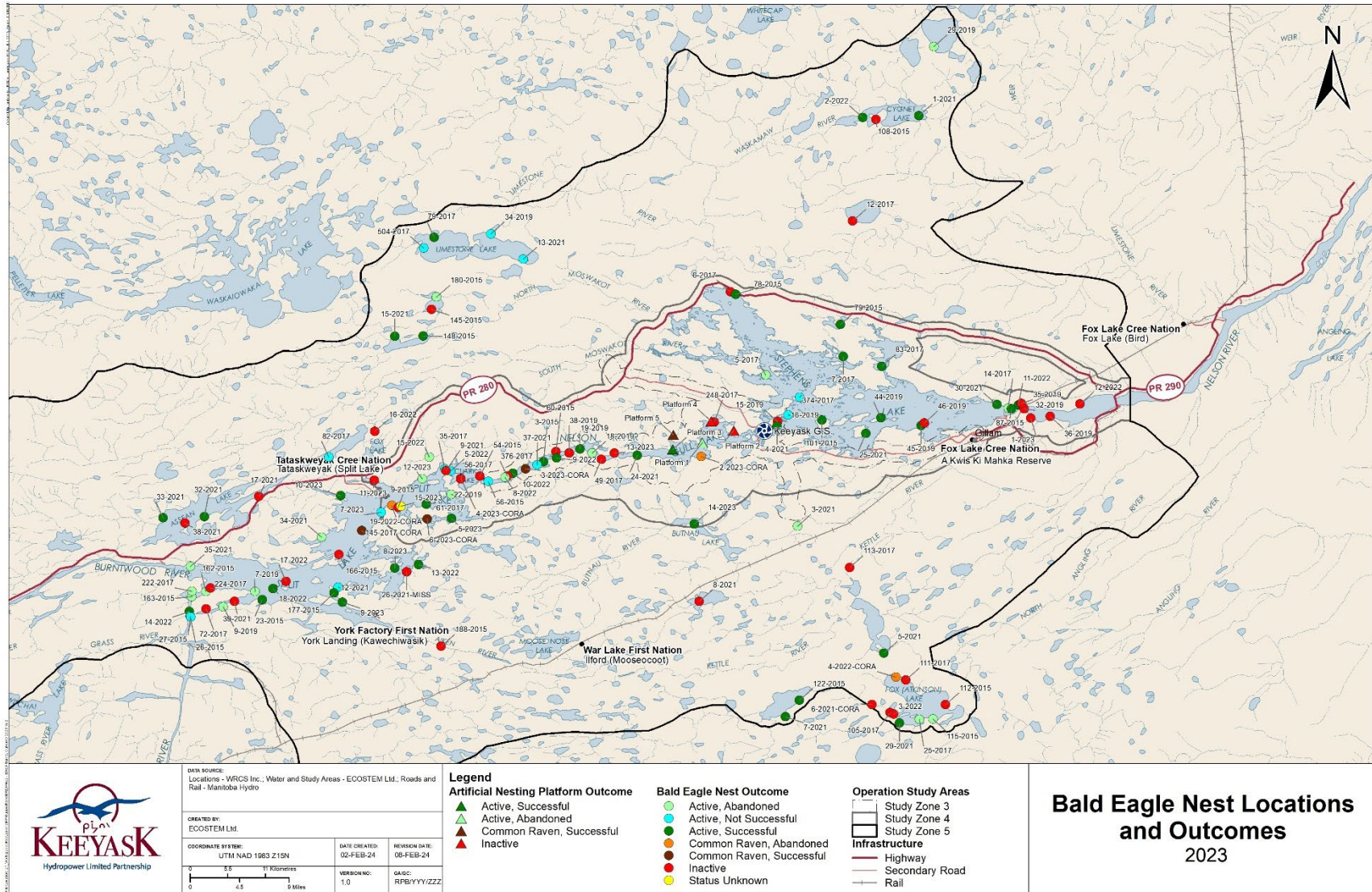
The number of active, successful nests in Study Zone 5 in 2023 was within the ranges observed during construction-phase surveys (2017, 2019, 2021), and greater than the number observed during the first operation-phase survey in 2022 (Table 2).

The overall, active nest density (nests/ 100 km of shoreline) in Study Zone 5 was within the ranges observed previously in most hydraulic zones during construction and operation-phase surveys (Table 3). There was a small increase in nest densities observed in 2023 in the Nelson River Lake and Off-system River hydraulic zones (Table 3).

The number and density of active nests in the Project-affected zone were within the ranges observed during the construction and operation-phase surveys (Figure 1; Table 4). There were small increases observed in density of active nests in the Nelson River Lake and Off-system River hydraulic zones, with densities remaining within the ranges observed previously in the remaining hydraulic zones (Table 4).

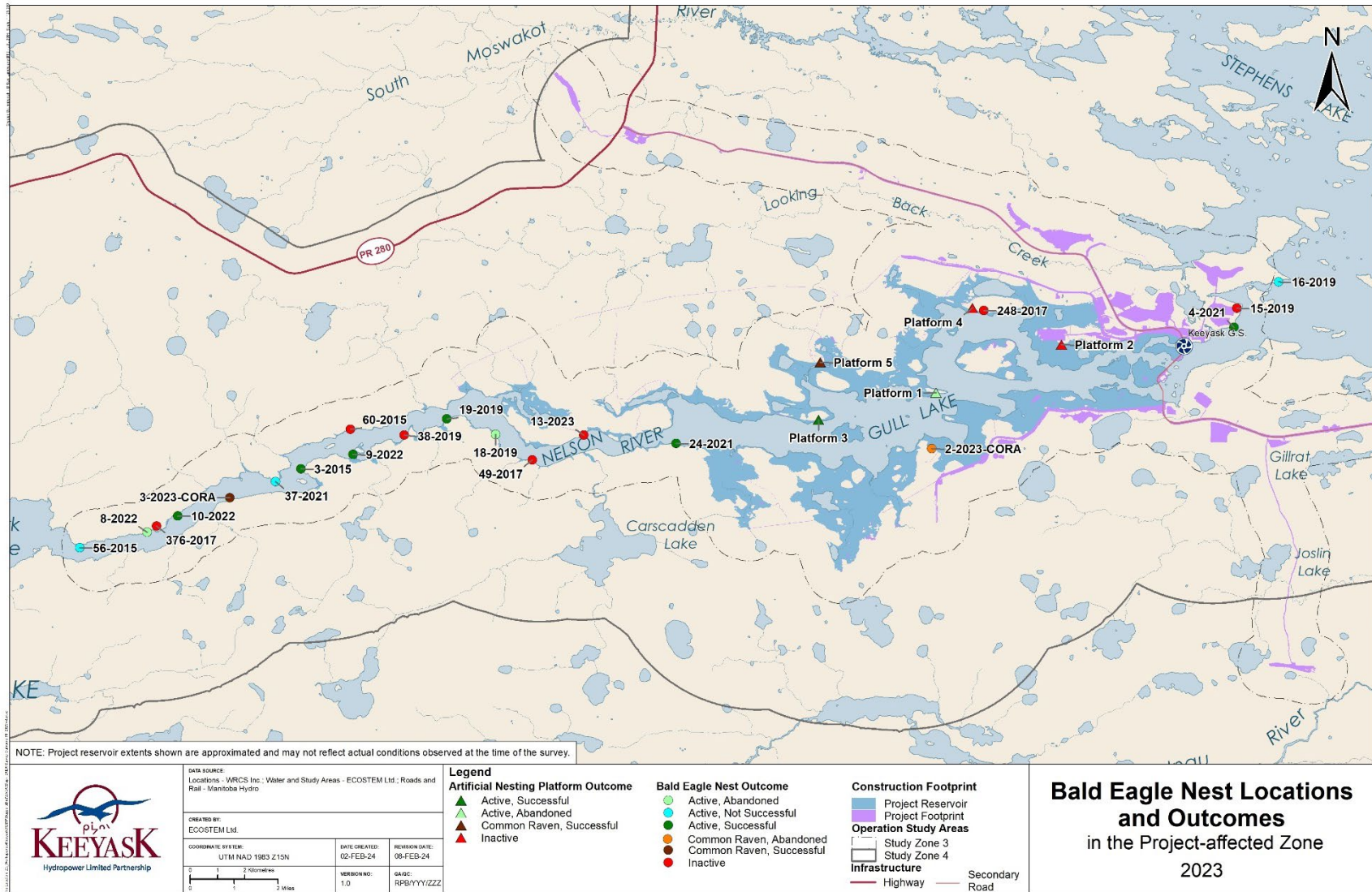
The percent of active, successful nests in the Project-affected zone in 2023 was higher than those observed during three of the years of construction-phase surveys (2015, 2019, 2021) and the operation-phase survey in 2022, but lower than in 2017 (Table 4). In the Nelson River zone, the percentage of active, successful nests was lower than those observed during the construction-phase surveys, but higher than the operations-phase surveys (Table 4). In the Off-system zone, the percent of active, successful nests in 2023 was within the ranges observed during the construction-phase surveys and greater than those observed during the operation-phase survey in 2022 (Table 4).

The differences between the percent of active, successful nests in different hydraulic zones was not significant and the percent did not differ between the Project-affected zone and the Nelson River zone ( $p=0.44$ ) or the Project-affected zone and the Off-system zone ( $p=0.31$ ).



Map 3: Bald Eagle Nest Locations and Outcomes on Surveyed Waterbodies in 2023





**Map 4: Bald Eagle Nest Locations and Outcomes in the Project-Affected Hydraulic Zone in 2023**

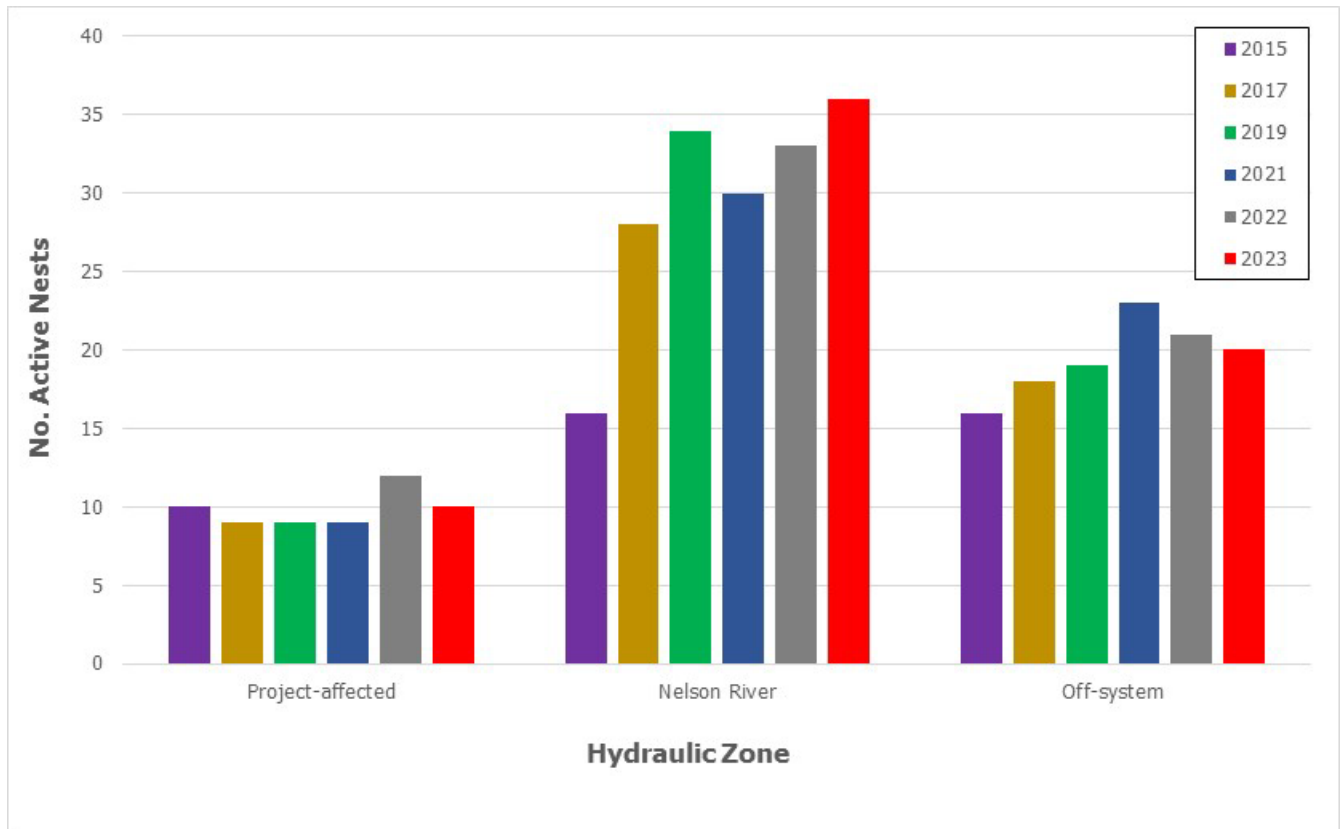


**Table 2: Number and Outcomes of Bald Eagle Nests in Study Zone 5 from During Project Construction (2015-2021) and Operation (2022-2023)**

Nest Outcome	Number of Bald Eagle Nests					
	2015	2017	2019	2021	2022	2023
Active, Successful	25	36	44	38	31	40
Active, Not Successful	4	3	4	3	1	6
Active, Nest Abandoned	13	14	14	21	34	20
Active, Success Unknown	0	2	0	0	0	0
Inactive	18	38	43	58	45	49
Status Unknown	4	4	1	5	2	1
Total	64	97	106	125	113	116

**Table 3: Active Bald Eagle Nest Density (nests/100 km of shoreline) Within Study Zone 5 During Project Construction (2015-2021) and Operation (2022-2023)**

Hydraulic Zone	Waterbody Type	Nest Density (Nests/100 km)					
		2015	2017	2019	2021	2022	2023
Project-affected	River	4.08	3.67	3.67	2.75	3.67	3.06
	Lake	0.90	1.45	2.21	1.87	2.08	2.28
Nelson River	River	3.06	7.14	3.06	3.06	3.06	3.06
	Lake	1.69	1.92	1.80	2.25	2.03	1.80
Off-system	River	0.46	0.46	0.92	1.38	1.38	1.83
	Total	1.45	1.90	2.14	2.08	2.22	2.22



**Figure 1: Number of Active Bald Eagle Nests in Different Hydraulic Zones during Project Construction (2015-2021) and Operation (2022-2023)**

**Table 4: Productivity of Bald Eagle Nests During Project Construction (2015-2021) and Operation (2022-2023)**

Year	Zone	# Nests surveyed	# Active nests	# Active, Successful nests	% Active, Successful nests	# Late stage nestlings	# Late stage nestlings/ Active nests	# Late stage nestlings/ Active, Successful nests
2015	Project-affected	16	10	3	30	6	0.60	2.00
	Nelson River	26	16	12	75	20	1.25	1.67
	Off-system	22	16	10	63	16	1.00	1.60
	Study Zone 5 (All areas)	64	42	25	60	42	1.00	1.68
2017	Project-affected	23	9	7	78	11	1.22	1.57
	Nelson River	43	28	17	61	26	0.93	1.53
	Off-system	31	18	12	67	15	0.83	1.25
	Study Zone 5 (All areas)	97	55*	36	67	52	0.96	1.44
2019	Project-affected	18	9	4	44	7	0.78	1.75
	Nelson River	59	34	27	79	46	1.35	1.70
	Off-system	29	19	13	68	22	1.16	1.69
	Study Zone 5 (All areas)	106	62	44	71	75	1.21	1.70
2021	Project-affected	15	9	4	44	5	0.56	1.25
	Nelson River	64	30	22	73	33	1.1	1.5



<b>Year</b>	<b>Zone</b>	<b># Nests surveyed</b>	<b># Active nests</b>	<b># Active, Successful nests</b>	<b>% Active, Successful nests</b>	<b># Late stage nestlings</b>	<b># Late stage nestlings/ Active nests</b>	<b># Late stage nestlings/ Active, Successful nests</b>
2022	Off-system	41	23	12	52	18	0.78	1.5
	Study Zone 5 (All areas)	125	62	38	61	56	0.9	1.47
	Project-affected	19	12	7	58	9	0.75	1.29
	Nelson River	59	33	12	36	16	0.48	1.33
	Off-system	35	21	12	57	16	0.76	1.33
	Study Zone 5 (All areas)	113	66	31	47	41	0.62	1.32
2023	Project-affected	18	10	6	60	9	0.9	1.5
	Nelson River	62	36	21	56	25	0.69	1.25
	Off-system	36	20	13	65	17	0.85	1.31
	Study Zone 5 (All areas)	116	66	40	60	51	0.77	1.31



### 3.1.2 REPRODUCTIVE SUCCESS

The number of late-stage nestlings per active nest in Study Zone 5 in 2023 was lower than those observed during the construction phase surveys, but higher than those observed in the first operation-phase survey in 2022. In the Project-affect zone the number of late-stage nestlings per active nest in 2023 was higher than all survey years, with the exception of 2017 (Table 4).

The number of late-stage nestlings per active, successful nest in 2023 was within the ranges observed previously in the Project-affected zone and Off-system zone, and slightly lower in the Nelson River zone, and in Study Zone 5, overall.

The number of late-stage nestlings per active nest, and the number of late-stage nestlings per active, successful nest in the Project-affected zone was not significantly different from those observed in the Nelson River ( $p = 0.44$  and  $p = 0.40$ , respectively) or in the Off-system hydraulic zones ( $p = 0.56$  and  $p = 0.31$ , respectively).

In 2023, two of the artificial nesting platforms installed by the Project in 2017 were used by nesting bald eagles (Table 5). One nest was abandoned by July and the other, on Platform 3, successfully raised one late-stage chick (Table 5; Photo 4). Common ravens also successfully nested on one of the platforms (Table 5; Photo 5).

**Table 5: Artificial Nesting Platform Contents during Surveys from 2017-2023. Note: Data from 2015 are absent as the artificial nesting platforms were installed in 2017**

<b>Nesting Platform</b>	<b>2017</b>	<b>2019</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
Platform 1	Empty	Active common raven nest	Potential unused bald eagle nest	Incubating bald eagle in May, nest abandoned by June	Incubating bald eagle in May and June, abandoned by July
Platform 2	Empty	Empty	Empty	Empty	Empty
Platform 3	Empty	Some sticks on platform	Potential unused bald eagle nest	Successful bald eagle nest, one late-stage nestling	Successful bald eagle nest, one late-stage nestling
Platform 4	Some sticks on platform	Some sticks on platform	Active common raven nest	Successful common raven nest	Empty
Platform 5	Empty	Empty	Some sticks on platform	Empty common raven nest	Successful common raven nest





**Photo 4: Successful Bald Eagle Nest with one Late-stage Nestling in Platform 3, July 2023**



**Photo 5: Successful Common Raven Nest with Nestlings in Platform 5, June 2023**

## 4.0 DISCUSSION

Reservoir creation and Project operation was anticipated to reduce the amount of bald eagle foraging habitat, which was predicted to be offset by the tailrace area (KHLP 2012). These habitat changes were anticipated to result in a potential shift of bald eagle use away from the reservoir to areas downstream of the Project (KHLP 2012). Additionally, the local bald eagle population was not expected to change appreciably. Results of the 2023 survey suggest that no shift in bald eagle distribution has occurred and Project operation may have had smaller impacts on the local bald eagle population than predicted in the EIS. The effective nesting habitat used in the newly formed reservoir may explain why there was no shift of nesting bald eagles from the reservoir to the tailrace area during operation. Further surveys will determine if a gradual shift in nesting locations occur in the future.

Within the Project-affected hydraulic zone there was a decrease of two active bald eagle nests from 2022, which was in the range observed during previous pre-construction and construction-phase surveys. The number of successful nests and the percent of successful nests was also within the ranges observed previously and suggests that early Project operation is not affecting bald eagle nest success in the area.

The artificial nesting platforms in the reservoir continued to provide successful mitigation in 2023. Two of the artificial nesting platforms were used by nesting bald eagles, similar to 2022, with one of the platforms successfully raising a late-stage nestling. Due to the philopatric nature of bald eagles, it is likely that the artificial platforms used in 2022 and 2023 will be occupied in the future. The presence of old common ravens' nests in two of the platforms may also make them more appealing for bald eagles to use in the future.

Two of the artificial nesting platforms, Platform 3 and Platform 2, may require maintenance to make them more suitable for bald eagle nesting in future years. In 2023, Platform 3, which had a successful nest, was noted to be leaning at a steep angle, possibly due to being pushed by ice in the spring. This artificial nesting platform should be inspected to determine if it is at risk of falling over and repaired, if possible, to allow for future use by bald eagles. Maintenance activities should be done outside the nesting season which occurs from approximately April 1 to August 31. Platform 2, which has remained empty since its installation in 2017 could be made more attractive to bald eagles by adding nesting material such as small branches outside of the nesting season.

The number of late-stage nestlings per active nest and the number of late-stage nestlings per active, successful nest were highest in the Project-affected hydraulic zone in 2023, in comparison to the Nelson River and Off-system zones. These values were also within the ranges observed during construction-phase surveys and suggests that sufficient foraging habitat was available to support the breeding bald eagles in this area and foraging is not being affected by Project operation.

In other areas, including the Nelson River and Off-system hydraulic zones, the densities of active bald eagle nests were within ranges observed previously, or increased slightly, as was observed in Off-system river habitat. This suggests that bald eagle populations are stable in the region.

Nest success in the Nelson River hydraulic zones was slightly less than observed during construction surveys but had increased by 20% over the nest success observed in 2022. The number of late-stage nestlings per active nest and per active, successful nest was also relatively low in the Nelson River hydraulic zone in 2023 in comparison to construction-phase surveys. In 2022, breeding bald eagles were suspected to have been impacted by the historic levels of precipitation in southern Manitoba that flowed through the Nelson River, which potentially reduced the ability and availability of bald eagle foraging and, subsequently, their reproductive output. In 2023, water levels in the Nelson River were relatively low in comparison to previous years of operation (Appendix 1) and may have resulted in changes to foraging habitat and availability. Lower water levels in the Nelson River, upstream of the reservoir, may have resulted in lower prey availability due to changes in fish habitat use caused by water temperature, flow, and turbidity (Hunt *et al.* 2002), or caused physical changes in bald eagle foraging habitat, reducing foraging efficiency (Hunt *et al.* 1992; Brown *et al.* 1998).

Overall, the percent of successful nests and the number of late-stage nestlings observed in the region and within all hydraulic zones meet the general threshold of 50% nest success and 0.7 young fledged annually per nest that is required for a bald eagle population to be sustainable (Sprunt *et al.* 1973; Elliott *et al.* 1998). The observed nest success and number of late-stage nestlings are also within the ranges presented by Gerard *et al.* (1992), from a long-term study in Saskatchewan from 1968-1991, that found that bald eagle nest success ranged from 42-88% and averaged one fledged young per successful nest. It appears that in 2023, the local bald eagle population in Study Zone 5 was stable or slightly increasing.



## 5.0 SUMMARY AND CONCLUSIONS

Project operation did not appear to negatively affect bald eagle nest numbers or productivity in the reservoir and shifting of nests from the reservoir area to the tailrace area was not observed. A small decrease in the number of active bald eagle nests was observed in the reservoir in 2023, but the number observed was within the range observed previously during pre-construction and construction surveys. Two of the artificial nesting platforms continued to provide successful habitat mitigation in 2023. One artificial nesting platform may require repairs as it is leaning at an angle, and another could be made more attractive to nesting bald eagles by the addition of nesting material.

A decreased number of bald eagle nests and lowered productivity was observed in the Nelson River hydraulic zone of the study area in comparison to construction-phase observations. The precise cause of this is unknown but may have been related to the relatively low water levels that occurred in the system during the summer of 2023.

There were no significant differences in the percent of active, successful nests or the number of late-stage nestlings produced in the Project-affected zone compared to other zones in the study area. This suggests that sufficient nesting habitat and foraging opportunities exist within the study area for bald eagles to successfully nest and raise young.

The 2023 bald eagle survey was the second operation-phase survey for the Project. Bald eagle habitat effects monitoring will continue annually for the next three years, and then every second year until 2034. The next survey is scheduled for 2024.

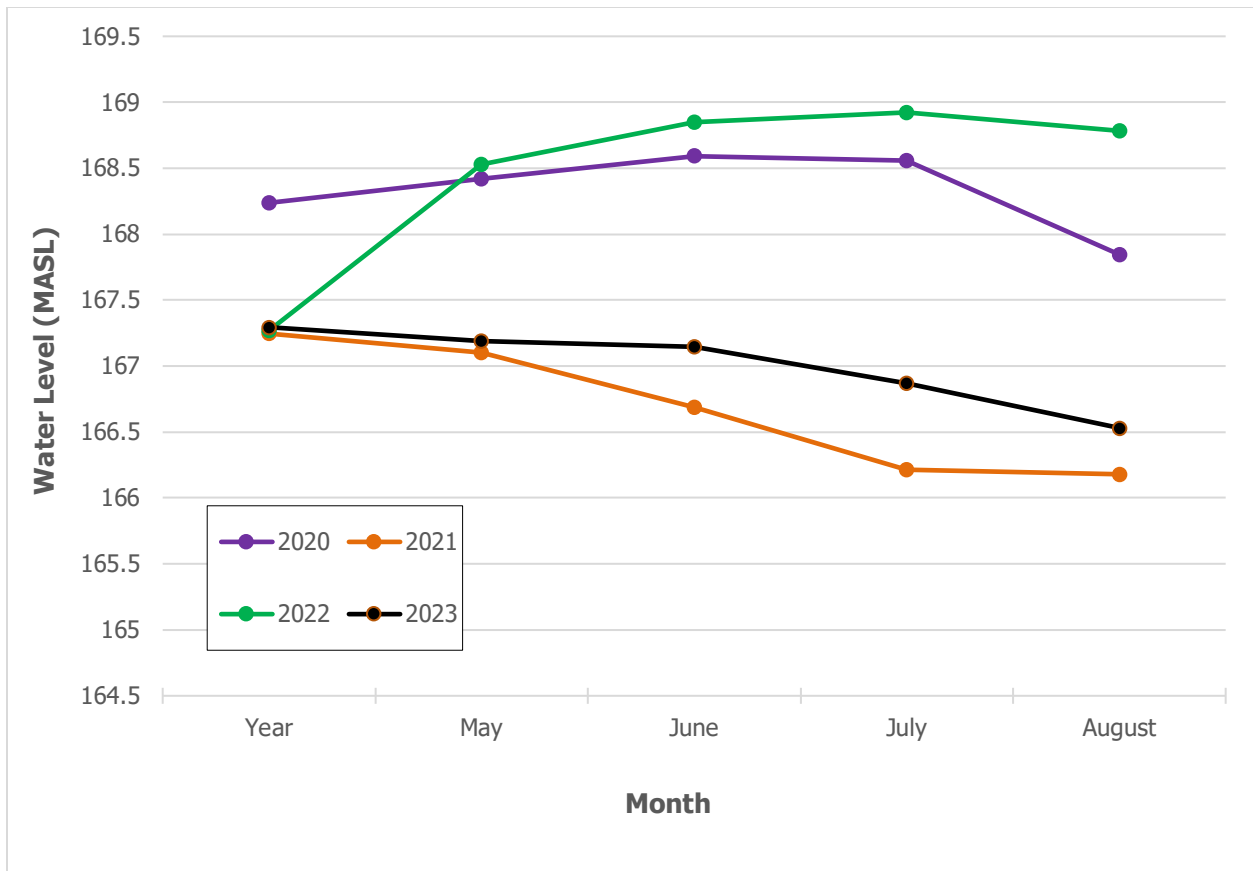
## 6.0 LITERATURE CITED

- Brown, B.T., Stevens, L.E., and Yates, T.A. 1998. Influences of Fluctuating River Flows on Bald Eagle Foraging Behavior. *The Condor*, 100: 745-748.
- Buehler, D. A. 2000. Bald Eagle (*Haliaeetus leucocephalus*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Available from: <http://bna.birds.cornell.edu/bna/species/506> (accessed 10 February 2016).
- ECOSTEM Ltd. 2024. Keeyask Generation Project Terrestrial Effects Monitoring Plan Report #TEMP-2024-01: Long-Term Effects on Habitat Monitoring, Year 2 Operation, 2023. A report prepared for Manitoba Hydro by ECOSTEM Ltd., June 2024.
- Elliott, J. E., I. E. Moul, and K. M. Cheng. 1998. Variable reproductive success of bald eagles on the British Columbia coast. *Journal of Wildlife Management*, 62(2): 518-529.
- Hunt, W.G., Jackman, R.E., and D.E. Driscoll. 2002. Foraging Ecology of Nesting Bald Eagles in Arizona. *The Journal of Raptor Research* 36(4): 245-255.
- Hunt, W.G., Jenkins, J.M., Jackman, R.E., Thelander, C.G., and A.T. Gerstell. 1992. Foraging Ecology of Bald Eagles on a Regulated River. *The Journal of Raptor Research* 26(4): 243-256.
- Jackman, R. E., and J. M. Jenkins. 2004. Protocol for Evaluating Bald Eagle Habitat and Populations in California. Report prepared by Garcia and Associates, San Anselmo, California, for U.S. Fish and Wildlife Service Endangered Species Division, Forest and Foothills Ecosystem Branch, Sacramento, California. 42 pp.
- Jurek, R. M. 1990. California Bald Eagle Breeding Population Survey and Trend, 1970-90. Nongame Bird and Mammal Section Wildlife Management Division, California. 34 pp.
- KHLP (Keeyask Hydropower Limited Partnership). 2012. Keeyask Generation Station Project Environmental Impact Statement – Response to EIS Guidelines. Prepared by Keeyask Hydropower Partnership Limited, Winnipeg, Manitoba. June 2012. 1208 pp.
- KHLP. 2015a. Keeyask Generation Project Terrestrial Effects Monitoring Plan. Prepared by Keeyask Hydropower Partnership Limited, Winnipeg, Manitoba. December 2015. 355 pp.
- McCullough, M. A. 1989. Molting sequence and aging of Bald Eagles. *Wilson Bulletin*, 101: 1-10.
- Sprunt IV, A., W. B. Robertson, Jr., S. Postupalsky, R. J. Hensel, C. E. Knoder, and F. J. Ligas. 1973. Comparative productivity of six Bald Eagle populations. *Transactions of the North American Wildlife and Natural Resources Conference*, 38: 96-106.
- Steenhof K. and I. Newton. 2007. Assessing raptor nest success and productivity. In: Bird D.M., and K.L. Bildstein, editors. *Raptor Management and Research Techniques*. Hancock House; Blaine, WA, USA. pp. 181–192.

- WRCS (Wildlife Resource Consulting Services MB Inc.). 2016. Bald Eagle Habitat Effects Monitoring Report 2015. Terrestrial Effects Monitoring Plan Report #TEMP-2016-05. A report prepared for Manitoba Hydro by Wildlife Resource Consulting Services MB Inc., June 2016. 64 pp.
- WRCS. 2018. Keeyask Generation Project Terrestrial Effects Monitoring Plan Report #TEMP-2018-10. Bald Eagle Habitat Effects Monitoring 2017. A report prepared for Manitoba Hydro by Wildlife Resource Consulting Services MB Inc., June 2018. 55 pp.
- WRCS. 2020. Keeyask Generation Project Terrestrial Effects Monitoring Plan Report #TEMP-2019-11. Bald Eagle Habitat Effects Monitoring 2019. A report prepared for Manitoba Hydro by Wildlife Resource Consulting Services MB Inc., June 2018. 47 pp.
- WRCS. 2022. Keeyask Generation Project Terrestrial Effects Monitoring Plan Report #TEMP-2022-13. Bald Eagle Habitat Effects Monitoring 2021. A report prepared for Manitoba Hydro by Wildlife Resource Consulting Services MB Inc., June 2022.
- WRCS. 2023. Keeyask Generation Project Terrestrial Effects Monitoring Plan Report #TEMP-2023-10. Bald Eagle Habitat Effects Monitoring, Operations Phase, 2022. A report prepared for Manitoba Hydro by Wildlife Resource Consulting Services MB Inc., June 2023.

# **Appendix 1 : Nelson River Water Levels**





**Figure 1: Water Levels in Split Lake during Bald Eagle Surveys from 2020-2023**

## **Appendix 2 : Bald Eagle Nest-Tree Types, Nest Heights, and Location**

<b>Nest</b>	<b>Hydraulic Zone</b>	<b>Location</b>	<b>UTM</b>	<b>Nest Tree Type</b>	<b>Tree height (m)</b>	<b>Nest Height (m)</b>
3-2015	Project-affected	Nelson River, Birthday Rapids	15 V 331640 6242724	Poplar	17	15
8-2015	Nelson River	Split Lake	15 V 314661 6233773	Poplar	8	8
9-2015	Nelson River	Split Lake	14 V 682284 6235714	Poplar	12	12
10-2015	Nelson River	Split Lake	14 V 679877 6234113	Dead Spruce	22	20
2-2017	Nelson River	Nelson River	15 V 365925 6248579	NA	NA	NA
5-2017	Nelson River	Stephens Lake, West shore	15 V 364136 6255411	Spruce	12	11
6-2017	Nelson River	Stephens Lake, North shore	15 V 358991 6267595	Poplar	25	22
7-2017	Nelson River	Stephens Lake, North shore	15 V 375496 6258125	Spruce	12	12
11-2017	Off-system	Cygnat Lake	15 V 377203 6292419	NA	NA	NA
12-2017	Off-system	Little Limestone Lake	15 V 376851 6277952	Jack Pine	15	14
1-2019	Nelson River	Split Lake	14 V 682158 6224858	Poplar	10	10
7-2019	Nelson River	Split Lake	14 V 662493 6221592	Spruce	12	12
8-2019	Nelson River	Split Lake	14 V 657695 6219760	Poplar	12	12
9-2019	Nelson River	Split Lake	14 V 658045 6218971	Spruce	10	10
10-2019	Nelson River	Split Lake	14 V 661114 6226270	Spruce	10	10
11-2019	Nelson River	Split Lake	14 V 669963 6229782	Spruce	10	10
12-2019	Nelson River	Split Lake	14 V 672103 6230752	Spruce	12	12
1-2021	Off-system	Cygnat Lake	15 V 386537 6293363	Aspen	5	3
2-2021	Off-system	Butnau lake	15 V 358053 6231361	Aspen	4	4
3-2021	Off-system	Butnau Lake	15 V 368828 6233280	Aspen	5	4
4-2021	Nelson River	Stephens Lake	15 V 365786 6247903	Spruce	15	15
5-2021	Off-system	Kettle Lake	15 V 381433 6214677	Aspen	10	9
6-2021	Off-system	Fox Lake	15 U 379692 6207136	Aspen	15	14
7-2021	Off-system	Cyril Lake	15 U 367032 6205369	Spruce	12	12
8-2021	Off-system	Little Kettle Lake	15 V 354418 6222249	Birch	5	4
9-2021	Nelson River	Split Lake	15 V 317365 6241398	Spruce	15	15
10-2021	Nelson River	Split Lake	14 V 669963 6229782	Aspen	10	8
11-2021	Nelson River	Split Lake	14 V 682644 6226890	Spruce	10	10
12-2021	Nelson River	Split Lake	14 V 674529 6223403	Spruce	12	11
1-2022	Nelson River	Stephens Lake	15 V 354138 6265478	Aspen	10	7
2-2022	Off-system	Unnamed Lake	15 V 378357 6293108	Aspen	10	8
3-2022	Off-system	Fox Lake	15 U 382874 6205739	Spruce	8	8
4-2022	Off-system	Fox Lake	15 V 383209 6211170	Aspen	10	8
5-2022	Nelson River	Clark Lake	15 V 318070 6241367	Spruce	8	8
6-2022	Nelson River	Split Lake	14 V 653377 6219513	Aspen	8	8
7-2022	Nelson River	Split Lake	14 V 684406 6239873	Aspen	5	5
8-2022	Project-affected	Nelson River - Keeyask Reach	15 V 326013 6240403	Aspen	6	5

Nest	Hydraulic Zone	Location	UTM	Nest Tree Type	Tree height (m)	Nest Height (m)
9-2022	Project-affected	Nelson River - Keeyask Reach	15 V 333540 6243250	Aspen	5	5
10-2022	Project-affected	Nelson River - Keeyask Reach	15 V 327136 6240998	Aspen	6	4
11-2022	Nelson River	Nelson River, Downstream of Kettle GS	15 V 401116 6251007	Spruce	8	6
12-2022	Nelson River	Nelson River, Downstream of Kettle GS	15 V 410134 6251167	Spruce	4	4
1-2023	Nelson River	Nelson River, Downstream of Kettle GS	15 V 402920 6249101	Aspen	8	10
5-2023	Nelson River	Split Lake	15 V 318182 6234420	Spruce	8	8
7-2023	Nelson River	Split Lake	14 V 679854 6234759	Spruce	12	15
8-2023	Nelson River	Split Lake	14 V 682581 6226798	Spruce	8	8
9-2023	Nelson River	Split Lake	14 V 675355 6221164	Aspen	10	12
10-2023	Nelson River	Stephens Lake	14 V 673769 6236708	Aspen	8	10
11-2023	Nelson River	Split Lake	14 V 678460 6239348	Aspen	5	5
12-2023	Nelson River	Split Lake	14 V 685438 6240160	Spruce	6	7
101-2015	Nelson River	Stephens Lake	15 V 372381 6248802	Dead Jack pine	19	19
102-2015	Project-affected	Nelson River	15 V 358251 6245905	Spruce	NA	10
105-2017	Off-system	Atkinson lake	15 U 382376 6205969	Spruce	8	8
107-2015	Off-system	Myre Lake	15 V 389577 6302739	Spruce	NA	17
107-2017	Off-system	Cyril River	15 U 381232 6207044	Spruce	14	14
108-2015	Off-system	Cygnat Lake	15 V 380284 6292841	Birch	10	10
111-2017	Off-system	Fox Lake	15 V 384522 6210702	NA	NA	NA
112-2015	Off-system	Atkinson lake	15 U 390456 6207144	Poplar	25	20
113-2017	Off-system	Kettle River	15 V 376411 6227216	Poplar	12	10
115-2015	Off-system	Atkinson lake	15 U 388614 6205029	Poplar	25	20
117-2015	Off-system	Atkinson lake	15 U 383656 6205375	Spruce	20	20
121-2015	Off-system	Fox Lake	15 V 386854 6208149	Spruce	NA	10
122-2015	Off-system	Cyril Lake	15 U 369055 6207763	Poplar	5	5
123-2015	Off-system	Cyril Lake	15 U 367021 6205781	Spruce	NA	11
13-2021	Off-system	Limestone Lake	15 V 328689 6272381	Aspen	12	10
13-2022	Nelson River	Split Lake	14 V 685999 6227588	Aspen	8	5
13-2023	Project-affected	Nelson River - Keeyask Reach	15 V 341994 6243958	Dead Aspen	7	7
134-2015	Off-system	Kettle Lake	15 V 378605 6221132	Aspen	NA	10
141-2015	Off-system	Butnau lake	15 V 358778 6230620	Spruce	15	13
14-2017	Nelson River	Nelson River, Kettle GS	15 V 399644 6250541	Jack Pine	24	22
14-2021	Off-system	Limestone Lake	15 V 320678 6274608	Spruce	10	10
14-2022	Nelson River	Split Lake	14 V 653170 6217853	Aspen	8	6



Nest	Hydraulic Zone	Location	UTM	Nest Tree Type	Tree height (m)	Nest Height (m)
14-2023	Off -system	Butnau lake	15 V 353693 6233594	Spruce	6	6
142-2015	Off-system	Small Unnamed Lake 1 km North of Limestone Lake	15 V 330109 6275194	Poplar	18	18
145-2015	Off-system	Small Unnamed Lake 1 km North of Limestone Lake	14 V 684630 6265004	Poplar	25	19
145-2017	Nelson River	Split Lake	14 V 677291 6231852	Jack Pine	10	17
146-2015	Off-system	Crying Lake	14 V 679546 6260750	Spruce	NA	16
147-2015	Off-system	Crying Lake	14 V 680094 6260013	Spruce	12	18
148-2015	Off-system	Crying Lake	14 V 683758 6261010	Birch	15	8
15-2019	Nelson River	Stephens Lake, West Shore	15 V 365884 6248604	Spruce	10	10
15-2021	Off-system	Crying Lake	14 V 679602 6260608	Spruce	10	10
15-2022	Off-system	Assean River	15 V 314929 6243388	Spruce	8	5
15-2023	Nelson River	Split Lake	14 V 682651 6235909	Spruce	5	5
156-2015	Off-system	Assean Lake	14 V 658680 6233013	Spruce	NA	9
16-2019	Nelson River	Stephens Lake, West Shore	15 V 367409 6249564	Dead spruce	8	8
16-2021	Nelson River	Split Lake	14 V 670216 6219695	Aspen	15	14
16-2022	Off-system	Assean Lake	14 V 677921 6246500	Aspen	7	6
162-2015	Nelson River	Split Lake	14 V 655325 6220967	Spruce	16	15
163-2015	Nelson River	Split Lake	14 V 653324 6220054	Jack pine	20	15
165-2015	Off-system	Assean Lake	14 V 665241 6238987	Dead Poplar	23	20
166-2015	Nelson River	Split Lake	14 V 674251 6228054	Spruce	15	15
17-2019	Project-affected	Nelson River	15 V 342113 6243255	Poplar	10	10
17-2021	Off-system	Assean Lake	14 V 661852 6235512	Aspen	12	10
17-2022	Nelson River	Split Lake	14 V 666894 6223497	Spruce	3	3
176-2015	Nelson River	Nelson River - Split Reach	14 V 683395 6227161	Spruce	NA	15
177-2015	Nelson River	Split Lake	14 V 674005 6222385	Spruce	18	18
178-2015	Project-affected	Nelson River - Keeyask Reach	15 V 328527 6242066	Aspen	NA	11
179-2015	Off-system	Assean Lake	14 V 661620 6238195	Spruce	NA	17
180-2015	Off-system	Small Unnamed Lake 1 km north of Limestone Lake	15 V 315987 6266847	Spruce	21	17
18-2019	Project-affected	Nelson River	15 V 338766 6243978	Poplar	12	12
18-2021	Nelson River	Split Lake	14 V 673807 6236797	Aspen	10	8
18-2022	Nelson River	Split Lake	14 V 665085 6222257	Spruce	5	5
182-2015	Off-system	Little Kettle Lake	15 V 354312 6222230	Birch	4	8
184-2015	Project-affected	Nelson River - Keeyask Reach	15 V 343306 6243780	Aspen	NA	12

Nest	Hydraulic Zone	Location	UTM	Nest Tree Type	Tree height (m)	Nest Height (m)
185-2015	Project-affected	Nelson River - Keeyask Reach	15 V 336216 6244834	Dead spruce	NA	9
187-2015	Nelson River	Nelson River - Split Reach	14 V 660110 6219633	Aspen	NA	13
188-2015	Off-system	Aiken River	15 V 316663 6215706	Dead Spruce	15	15
19-2019	Project-affected	Nelson River	15 V 336976 6244549	Poplar	10	10
19-2022	Nelson River	Split Lake	14 V 681324 6235916	Spruce	6	6
197-2017	Nelson River	Nelson River, Downstream of Kelsey GS	14 V 652944 6218419	Jack Pine	11	9
20-2019	Nelson River	Clark Lake	15 V 317912 6241304	Spruce	10	10
20-2021	Nelson River	Split Lake	14 V 677862 6239486	Aspen	8	7
21-2019	Nelson River	Clark Lake	15 V 318292 6241456	Spruce	12	12
21-2021	Nelson River	Split Lake	14 V 681138 6238502	Aspen	10	8
2-2023-CORA	Project-affected	Gull Lake	15 V 354723 6243460	Aspen	6	10
22-2019	Nelson River	Split Lake	15 V 318126 6237931	Spruce	8	8
222-2017	Nelson River	Nelson River, Downstream of Kelsey GS	14 V 653283 6220828	Jack Pine	10	15
224-2017	Nelson River	Split Lake	14 V 655977 6221555	Spruce	12	14
23-2015	Nelson River	Split Lake	14 V 663636 6220536	Spruce	20	20
23-2019	Nelson River	Split Lake	15 V 320504 6234713	Poplar	10	10
23-2021	Project-affected	Nelson River	15 V 350353 6244445	Spruce	5	5
236-2017	Nelson River	Split Lake	14 V 674846 6233002	Poplar	15	12
24-2021	Project-affected	Nelson River	15 V 345367 6243656	Aspen	12	10
243-2017	Nelson River	Split Lake	15 V 315327 6240803	Spruce	12	12
246-2017	Project-affected	Nelson River, Between Birthday Rapids and Gull Rapids	15 V 354727 6245558	Dead spruce	12	8
248-2017	Project-affected	Gull Lake	15 V 356627 6248525	Poplar	12	6
25-2017	Off-system	Atkinson lake	15 U 386618 6204993	Dead Poplar	10	10
25-2019	Project-affected	Nelson River	15 V 338743 6244928	Spruce	10	10
25-2021	Nelson River	Stephens Lake	15 V 378792 6246835	Aspen	15	13
26-2015	Nelson River	Split Lake	14 V 653365 6217146	Spruce	15	15
26-2021	Nelson River	Split Lake	14 V 684323 6226407	Spruce	15	15
268-2017	Nelson River	Nelson River	15 V 408327 6249812	NA	NA	NA
27-2015	Nelson River	Split Lake	14 V 653439 6217073	Spruce	15	15
27-2019	Off-system	Cyril Lake	15 U 366808 6206441	Birch	8	8
27-2021	Nelson River	Split Lake	14 V 683518 6223144	Spruce	15	15
28-2021	Nelson River	Split Lake	14 V 678663 6219996	Spruce	15	15
288-2017	Nelson River	Nelson River	15 V 408327 6249812	NA	NA	NA
29-2019	Off-system	Myre Lake	15 V 388732 6303481	Tamarack	8	8
29-2021	Off-system	Fox Lake	15 U 383721 6204439	Spruce	8	7

Nest	Hydraulic Zone	Location	UTM	Nest Tree Type	Tree height (m)	Nest Height (m)
30-2019	Nelson River	Stephens Lake, North Shore	15 V 396635 6251473	Spruce	10	10
30-2021	Nelson River	Nelson River	15 V 397970 6251077	Spruce	12	12
31-2019	Nelson River	Nelson River	15 V 403274 6249424	Spruce	12	12
31-2021	Off-system	Myre Lake	15 V 392121 6305555	Aspen	15	13
3-2023-CORA	Project-affected	Nelson River - Keeyask Reach	15 V 329034 6241657	Aspen	8	10
32-2019	Nelson River	Nelson River	15 V 401947 6250462	Spruce	10	10
32-2021	Off-system	Assean Lake	14 V 654151 6231901	Spruce	15	15
33-2019	Off-system	Limestone Lake	15 V 329283 6272613	Spruce	12	12
33-2021	Off-system	Assean Lake	14 V 648143 6231187	Aspen	10	8
339-2017	Off-system	Cyril Lake	15 U 364556 6205708	NA	NA	NA
34-2017	Nelson River	Split Lake	14 V 681769 6238256	Spruce	21	21
34-2019	Off-system	Limestone Lake	15 V 323941 6276081	Spruce	10	10
34-2021	Nelson River	Split Lake	14 V 671506 6230369	Aspen	12	10
35-2017	Nelson River	Split Lake	15 V 317211 6241629	Spruce	15	15
35-2019	Nelson River	Nelson River	15 V 401555 6251251	Spruce	15	15
35-2021	Nelson River	Split Lake	14 V 652767 6224436	Spruce	10	10
36-2019	Nelson River	Nelson River	15 V 405775 6249358	Poplar	15	15
36-2021	Off-system	Little Kettle Lake	15 V 354857 6223967	Hydro Tower	15	13
37-2017	Project-affected	Nelson River, Upstream of Birthday Rapids	15 V 328353 6242063	Poplar	15	15
37-2019	Nelson River	Stephens Lake	15 V 378665 6249295	Spruce	10	10
37-2021	Project-affected	Nelson River	15 V 330704 6242254	Aspen	12	10
374-2017	Nelson River	Stephens Lake	15 V 369091 6252145	Spruce	10	8
376-2017	Project-affected	Nelson River	15 V 326359 6240629	Poplar	12	10
38-2019	Project-affected	Nelson River	15 V 335418 6243959	Poplar	10	10
38-2021	Off-system	Assean Lake	14 V 651407 6230689	Aspen	12	11
39-2015	Nelson River	Nelson River - Split Reach	14 V 667630 6229507	Spruce	NA	9
39-2019	Nelson River	Clark Lake	15 V 319619 6240109	Spruce	12	12
39-2021	Nelson River	Split Lake	14 V 659617 6219909	Spruce	8	8
40-2017	Project-affected	Nelson River, Between Birthday Rapids and Gull Rapids	15 V 345303 6244529	Poplar	18	17
40-2019	Off-system	Aiken River	15 V 313434 6216803	Transmission Tower	20	20
4-2023-CORA	Nelson River	Nelson River - Clark Reach	15 V 319526 6240231	Spruce	4	8
42-2019	Off-system	Assean Lake	14 V 676381 6245669	Poplar	10	10
43-2019	Nelson River	Stephens Lake	15 V 376188 6247244	Spruce	10	10
44-2019	Nelson River	Stephens Lake	15 V 381018 6249126	Poplar	15	15
45-2019	Nelson River	Stephens Lake	15 V 386873 6247984	Dead Spruce	8	8

<b>Nest</b>	<b>Hydraulic Zone</b>	<b>Location</b>	<b>UTM</b>	<b>Nest Tree Type</b>	<b>Tree height (m)</b>	<b>Nest Height (m)</b>
46-2019	Nelson River	Stephens Lake	15 V 387334 6248399	Poplar	15	15
471-2017	Nelson River	Split Lake	14 V 671930 6237600	NA	NA	NA
47-2017	Project-affected	Nelson River, Between Birthday Rapids and Gull Rapids	15 V 351444 6243204	Poplar	15	14
49-2017	Project-affected	Nelson River, Between Birthday Rapids and Gull Rapids	15 V 340108 6243053	Poplar	14	9
504-2017	Off-system	Limestone Lake	14 V 682700 6273844	Spruce	10	8
51-2015	Nelson River	Nelson River - Split Reach	14 V 685522 6240305	White Birch	NA	13
52-2015	Nelson River	Nelson River - Clark Reach	15 V 318195 6242330	Dead spruce	NA	15
526-2017	Project-affected	Nelson River	15 V 355220 6245543	Fallen Spruce	0	0
53-2015	Nelson River	Nelson River - Clark Reach	15 V 320986 6241438	Aspen	NA	12
54-2015	Nelson River	Clark Lake	15 V 322348 6240594	Dead Poplar	12	12
56-2015	Nelson River	Nelson River, Upstream of Birthday Rapids	15 V 323548 6239832	Dead Poplar	8	10
56-2017	Nelson River	Clark Lake	15 V 319532 6240180	Dead Spruce	17	12
57-2015	Project-affected	Nelson River - Keeyask Reach	15 V 324876 6240384	Aspen	NA	13
58-2015	Project-affected	Nelson River, Upstream of Birthday Rapids	15 V 325196 6240113	Spruce	18	18
59-2015	Project-affected	Nelson River, Upstream of Birthday Rapids	15 V 329843 6242553	Poplar	18	16
60-2015	Project-affected	Nelson River, Between Birthday Rapids and Gull Rapids	15 V 333445 6244175	Poplar	15	8
61-2015	Project-affected	Nelson River, Between Birthday Rapids and Gull Rapids	15 V 334823 6244238	Poplar	15	15
61-2017	Nelson River	Split Lake	15 V 314486 6236485	Poplar	24	17
6-2023- CORA	Nelson River	Split Lake	15 V 314626 6234315	Spruce	10	12
62-2015	Project-affected	Nelson River - Keeyask Reach	15 V 336306 6244924	Dead spruce	NA	11
64-2015	Project-affected	Nelson River - Keeyask Reach	15 V 339842 6243587	Spruce	NA	11
64-2017	Nelson River	Split Lake	14 V 677277 6229913	Spruce	15	15
66-2015	Project-affected	Nelson River, Between Birthday Rapids and Gull Rapids	15 V 346126 6245094	Poplar	15	15



<b>Nest</b>	<b>Hydraulic Zone</b>	<b>Location</b>	<b>UTM</b>	<b>Nest Tree Type</b>	<b>Tree height (m)</b>	<b>Nest Height (m)</b>
67-2015	Project-affected	Nelson River - Keeyask Reach	15 V 346802 6244984	Dead Aspen	NA	16
68-2015	Project-affected	Nelson River - Keeyask Reach	15 V 350494 6244389	Aspen	NA	10
69-2015	Project-affected	Nelson River - Keeyask Reach	15 V 355163 6245525	Fallen Dead Spruce	NA	3
72-2017	Nelson River	Split Lake	14 V 655600 6218443	Poplar	20	17
78-2015	Nelson River	Stephens Lake, North shore	15 V 359753 6267215	Spruce	25	25
79-2015	Off-system	Small Unnamed Lake 5 km North of Stephens Lake	15 V 375091 6262798	Spruce	15	15
79-2017	Off-system	Limestone Lake	14 V 684074 6275540	Spruce	19	15
80-2017	Off-system	Limestone Lake	15 V 322842 6274576	Poplar	16	12
82-2015	Nelson River	Stephens Lake, Ferris Bay	15 V 380257 6257025	Spruce	12	12
82-2017	Off-system	Assean Lake	14 V 671532 6242142	Poplar	15	10
83-2017	Nelson River	Stephens Lake	15 V 381119 6256687	NA	NA	NA
86-2015	Nelson River	Nelson River - Stephens Reach	15 V 398576 6251004	Spruce	NA	8
87-2015	Nelson River	Nelson River, Kettle GS	15 V 400115 6250447	Spruce	24	24
88-2015	Nelson River	Nelson River - Long Spruce Reach	15 V 402169 6250771	Spruce	NA	16
92-2015	Nelson River	Nelson River, Downstream of Kettle GS	15 V 406511 6249127	Spruce	20	17
97-2015	Nelson River	Nelson River	15 V 375454 6244746	Spruce	NA	18

## **Appendix 3 : Nest Contents and Outcomes of Bald Eagle Nests**

**Table 1: Bald Eagle Nest Outcomes and Number of Years Nests were Active and Successful from 2015 to 2023. Note: data may not be available for all survey years as nests disintegrated and went missing.**

Nest	Hydraulic Zone	2015	2017	2019	2021	2022	2023	No. Years Active	No. Years Successful
23-2015	Nelson River	Active, Successful	Active, Successful	Active, Successful	Active, Successful	Active, Successful	Active, Successful	6	6
177-2015	Nelson River	Active, Successful	Active, Successful	Active, Not Successful	Active, Successful	Active, Abandoned	Active, Successful	6	4
122-2015	Off-system	Active, Successful	Active, Successful	Active, Successful	Active, Not Successful	Active, Abandoned	Active, Successful	6	4
148-2015	Off-system	Active, Successful	Active, Abandoned	Active, Abandoned	Active, Abandoned	Active, Successful	Active, Successful	6	3
166-2015	Nelson River	Active, Successful	Active, Successful	Active, Successful	Active, Successful	Active, Successful	Inactive	5	5
54-2015	Nelson River	Active, Successful	Active, Abandoned	Active, Successful	Active, Successful	Active, Successful	Inactive	5	4
180-2015	Off-system	Active, Nest Abandoned	Active, Successful	Active, Successful	Active, Successful	Active, Abandoned	Active, Abandoned	5	3
112-2015	Off-system	Active, Nest Abandoned	Active, Successful	Active, Successful	Active, Successful	Active, Successful	Inactive	5	3
504-2017	Off-system	-	Active, Success Unknown	Active, Successful	Active, Successful	Active, Successful	Active, Not Successful	5	3
35-2017	Nelson River	-	Active, Successful	Active, Abandoned	Active, Successful	Active, Successful	Active, Not Successful	5	3
27-2015	Nelson River	Active, Successful	Active, Successful	Active, Successful	Active, Not Successful	Inactive	Active, Not Successful	5	3
7-2017	Nelson River	-	Active, Abandoned	Active, Successful	Active, Successful	Active, Abandoned	Active, Successful	5	3
64-2017	Nelson River	-	Active, Successful	Active, Successful	Active, Abandoned	Active, Abandoned	-	5	2
56-2015	Nelson River	Active, Successful	Active, Successful	Active, Successful	Active, Successful	-	Inactive	4	4
101-2015	Nelson River	Active, Successful	Active, Successful	Active, Successful	Active, Successful	-	-	4	4
45-2019	Nelson River	-	-	Active, Successful	Active, Successful	Active, Successful	Active, Successful	4	4
188-2015	Off-system	Active, Successful	Active, Successful	Active, Not Successful	Active, Successful	-	Inactive	4	3
108-2015	Off-system	Active, Successful	Active, Successful	Active, Successful	Active, Abandoned	-	Inactive	4	3
79-2017	Off-system	-	Active, Successful	Active, Abandoned	Inactive	Active, Successful	Active, Successful	4	3
78-2015	Nelson River	Active, Successful	Inactive	Active, Successful	Inactive	Active, Abandoned	Active, Successful	4	3
44-2019	Nelson River	-	-	Active, Successful	Active, Successful	Active, Abandoned	Active, Successful	4	3
19-2019	Project-affected	-	-	Active, Successful	Active, Successful	Active, Abandoned	Active, Successful	4	3
376-2017	Project-affected	-	Active, Successful	Active, Abandoned	Active, Abandoned	Active, Successful	Inactive	4	2
145-2017	Nelson River	-	Active, Success Unknown	Active, Successful	Active, Successful	Active, Abandoned	Common Raven, Successful	4	2

<b>Nest</b>	<b>Hydraulic Zone</b>	<b>2015</b>	<b>2017</b>	<b>2019</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>No. Years Active</b>	<b>No. Years Successful</b>
25-2017	Off-system	-	Active, Abandoned	Inactive	Active, Successful	Active, Successful	Active, Abandoned	4	2
22-2019	Nelson River	-	-	Active, Successful	Active, Successful	Active, Abandoned	Active, Abandoned	4	2
7-2019	Nelson River	-	-	Active, Successful	Active, Successful	Active, Abandoned	Active, Abandoned	4	2
87-2015	Nelson River	Active, Not Successful	Active, Abandoned	Active, Successful	Inactive	Common Raven, Successful	Active, Successful	4	2
61-2017	Nelson River	-	Active, Successful	Active, Abandoned	Inactive	Active, Abandoned	Active, Successful	4	2
14-2017	Nelson River	-	Active, Abandoned	Active, Successful	Inactive	Active, Abandoned	Active, Abandoned	4	1
59-2015	Project-affected	Active, Successful	Active, Successful	Active, Successful	Inactive	-	-	3	3
36-2019	Nelson River	-	-	Active, Successful	Active, Successful	Active, Successful	Inactive	3	3
141-2015	Off-system	Active, Successful	Active, Successful	Active, Successful	-	-	-	3	3
117-2015	Off-system	Active, Successful	Active, Successful	Active, Successful	-	-	-	3	3
12-2017	Off-system	-	Active, Successful	Active, Successful	Inactive	Active, Successful	Inactive	3	3
29-2021	Off-system	-	-	-	Active, Successful	Active, Successful	Active, Successful	3	3
7-2021	Off-system	-	-	-	Active, Successful	Active, Successful	Active, Successful	3	3
66-2015	Project-affected	Active, Nest Abandoned	Active, Successful	Active, Successful	-	-	-	3	2
236-2017	Nelson River	-	Active, Successful	Active, Abandoned	Active, Successful	Inactive	-	3	2
10-2015	Nelson River	Inactive	Active, Successful	Active, Successful	Active, Abandoned	Inactive	-	3	2
3-2021	Off-system	-	-	-	Active, Successful	Active, Successful	Active, Abandoned	3	2
5-2021	Off-system	-	-	-	Active, Successful	Active, Abandoned	Active, Successful	3	2
4-2021	Nelson River	-	-	-	Active, Abandoned	Active, Successful	Active, Successful	3	2
61-2015	Project-affected	Active, Nest Abandoned	Active, Successful	Active, Abandoned	-	-	-	3	1
60-2015	Project-affected	Active, Successful	Active, Not Successful	Active, Abandoned	Inactive	Inactive	Inactive	3	1
56-2017	Nelson River	-	Active, Abandoned	Active, Successful	Inactive	Active, Not Successful	Inactive	3	1
49-2017	Project-affected	-	Active, Successful	Inactive	Active, Abandoned	Active, Abandoned	Inactive	3	1
17-2019	Project-affected	-	-	Active, Not Successful	Active, Abandoned	Active, Successful	Missing	3	1
145-2015	Off-system	Active, Not Successful	Active, Successful	Active, Abandoned	Inactive	Inactive	Inactive	3	1
35-2021	Nelson River	-	-	-	Active, Successful	Active, Abandoned	Active, Abandoned	3	1
18-2019	Project-affected	-	-	Inactive	Active, Abandoned	Active, Successful	Active, Abandoned	3	1
9-2019	Nelson River	-	-	Active, Successful	Inactive	Active, Abandoned	Active, Abandoned	3	1





<b>Nest</b>	<b>Hydraulic Zone</b>	<b>2015</b>	<b>2017</b>	<b>2019</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>No. Years Active</b>	<b>No. Years Successful</b>
5-2017	Nelson River	-	Inactive	Active, Abandoned	Inactive	Active, Successful	Active, Abandoned	3	1
15-2021	Off-system	-	-	-	Active, Abandoned	Active, Abandoned	Active, Successful	3	1
3-2015	Project-affected	Active, Nest Abandoned	Inactive	Inactive	Active, Not Successful	Inactive	Active, Successful	3	1
111-2017	Off-system	-	Active, Abandoned	Status Unknown	Active, Abandoned	Active, Abandoned	Inactive	3	0
29-2019	Off-system	-	-	Active, Abandoned	Inactive	Active, Abandoned	Active, Abandoned	3	0
222-2017	Nelson River	-	Inactive	Active, Abandoned	Active, Abandoned	Inactive	Active, Abandoned	3	0
72-2017	Nelson River	-	Active, Successful	Active, Successful	Inactive	Inactive	Inactive	2	2
47-2017	Project-affected	-	Active, Successful	Active, Successful	-	-	-	2	2
38-2021	Off-system	-	-	-	Active, Successful	Active, Successful	Inactive	2	2
34-2019	Off-system	-	-	Active, Successful	Active, Successful	-	Inactive	2	2
176-2015	Nelson River	Active, Successful	Active, Successful	-	-	-	-	2	2
156-2015	Off-system	Active, Successful	Active, Successful	-	-	-	-	2	2
107-2015	Off-system	Active, Successful	Active, Successful	-	-	-	-	2	2
9-2015	Nelson River	Inactive	Inactive	Inactive	Active, Successful	Active, Successful	Inactive	2	2
Platform 3	Project-affected	-	Inactive	Inactive	Inactive	Active, Successful	Active, Successful	2	2
30-2021	Nelson River	-	-	-	Inactive	Active, Successful	Active, Successful	2	2
25-2021	Nelson River	-	-	-	Active, Successful	Inactive	Active, Successful	2	2
13-2022	Nelson River	-	-	-	-	Active, Successful	Active, Successful	2	2
92-2015	Nelson River	Active, Successful	Active, Abandoned	Inactive	-	-	-	2	1
82-2017	Off-system	-	Active, Abandoned	Active, Successful	Status Unknown	Inactive	Inactive	2	1
82-2015	Nelson River	Active, Successful	Active, Not Successful	Inactive	-	-	-	2	1
58-2015	Project-affected	Inactive	Inactive	Active, Abandoned	Inactive	Active, Successful	-	2	1
38-2019	Project-affected	-	-	Inactive	Active, Successful	Active, Abandoned	Inactive	2	1
374-2017	Nelson River	-	Status unknown	Active, Successful	Inactive	Active, Abandoned	Inactive	2	1
21-2019	Nelson River	-	-	Active, Not Successful	Active, Successful	-	-	2	1
178-2015	Project-affected	Active, Nest Abandoned	Active, Successful	-	-	-	-	2	1
13-2021	Off-system	-	-	-	Active, Abandoned	Active, Successful	Inactive	2	1
2-2021	Off-system	-	-	-	Active, Successful	Active, Abandoned	-	2	1

<b>Nest</b>	<b>Hydraulic Zone</b>	<b>2015</b>	<b>2017</b>	<b>2019</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>No. Years Active</b>	<b>No. Years Successful</b>
1-2019	Nelson River	-	-	Active, Successful	Inactive	Active, Abandoned	-	2	1
8-2015	Nelson River	Active, Successful	Active, Not Successful	Inactive	Inactive	-	-	2	1
37-2021	Project-affected	-	-	-	Status Unknown	Active, Successful	Active, Not Successful	2	1
162-2015	Nelson River	Inactive	Inactive	Active, Successful	Inactive	Inactive	Active, Abandoned	2	1
16-2019	Nelson River	-	-	Active, Successful	Inactive	Inactive	Active, Not Successful	2	1
79-2015	Off-system	Inactive	Inactive	Status Unknown	Inactive	Active, Abandoned	Active, Successful	2	1
32-2021	Off-system	-	-	-	Inactive	Active, Abandoned	Active, Successful	2	1
24-2021	Project-affected	-	-	-	Inactive	Active, Abandoned	Active, Successful	2	1
1-2021	Off-system	-	-	-	Active, Abandoned	Inactive	Active, Successful	2	1
165-2015	Off-system	Active, Nest Abandoned	Active, Abandoned	Inactive	Inactive	-	-	2	0
Platform 1	Project-affected	-	Inactive	Inactive	Inactive	Active, Abandoned	Active, Abandoned	2	0
34-2021	Nelson River	-	-	-	Inactive	Active, Abandoned	Active, Abandoned	2	0
163-2015	Nelson River	Inactive	Active, Abandoned	Inactive	Inactive	Inactive	Active, Abandoned	2	0
115-2015	Off-system	Inactive	Inactive	Active, Abandoned	Inactive	Common Raven, Successful	Active, Abandoned	2	0
12-2021	Nelson River	-	-	-	Active, Abandoned	Inactive	Active, Not Successful	2	0
83-2019	Nelson River	-	-	Inactive	Active, Successful	-	-	1	1
68-2015	Project-affected	Active, Successful	-	-	-	-	-	1	1
471-2017	Nelson River	-	Active, Successful	-	-	-	-	1	1
43-2019	Nelson River	-	-	Active, Successful	-	-	-	1	1
37-2017	Project-affected	-	Inactive	Inactive	Active, Successful	Inactive	-	1	1
34-2017	Nelson River	-	Active, Successful	Inactive	-	-	-	1	1
288-2017	Nelson River	-	Active, Successful	-	-	-	-	1	1
27-2019	Off-system	-	-	Active, Successful	Inactive	-	-	1	1
248-2017	Project-affected	-	Inactive	Inactive	Inactive	Active, Successful	Inactive	1	1
243-2017	Nelson River	-	Active, Successful	Inactive	-	-	-	1	1
23-2021	Project-affected	-	-	-	Active, Successful	-	-	1	1
18-2021	Nelson River	-	-	-	Active, Successful	-	-	1	1
15-2019	Nelson River	-	-	Active, Successful	Inactive	Inactive	Inactive	1	1



<b>Nest</b>	<b>Hydraulic Zone</b>	<b>2015</b>	<b>2017</b>	<b>2019</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>No. Years Active</b>	<b>No. Years Successful</b>
147-2015	Off-system	Active, Successful	Inactive	Inactive	-	-	-	1	1
123-2015	Off-system	Active, Successful	Inactive	-	-	-	-	1	1
113-2017	Off-system	-	Inactive	Active, Successful	-	Inactive	Inactive	1	1
107-2017	Off-system	-	Inactive	Active, Successful	Inactive	-	-	1	1
10-2021	Nelson River	-	-	-	Active, Successful	-	-	1	1
2-2017	Nelson River	-	Active, Successful	-	-	-	-	1	1
33-2021	Off-system	-	-	-	Inactive	Inactive	Active, Successful	1	1
2-2022	Off-system	-	-	-	-	Inactive	Active, Successful	1	1
3-2022	Off-system	-	-	-	-	Active, Successful	Inactive	1	1
6-2022	Nelson River	-	-	-	-	Active, Successful	-	1	1
9-2022	Project-affected	-	-	-	-	Inactive	Active, Successful	1	1
10-2022	Project-affected	-	-	-	-	Inactive	Active, Successful	1	1
11-2022	Nelson River	-	-	-	-	Inactive	Active, Successful	1	1
14-2022	Nelson River	-	-	-	-	Inactive	Active, Successful	1	1
18-2022	Nelson River	-	-	-	-	Status Unknown	Active, Successful	1	1
10-2023	Nelson River	-	-	-	-	-	Active, Successful	1	1
14-2023	Off-system	-	-	-	-	-	Active, Successful	1	1
5-2023	Nelson River	-	-	-	-	-	Active, Successful	1	1
8-2023	Nelson River	-	-	-	-	-	Active, Successful	1	1
9-2023	Nelson River	-	-	-	-	-	Active, Successful	1	1
97-2015	Nelson River	Active, Nest Abandoned	-	-	-	-	-	1	0
69-2015	Project-affected	Active, Nest Abandoned	-	-	-	-	-	1	0
64-2015	Project-affected	Active, Nest Abandoned	-	-	-	-	-	1	0
57-2015	Project-affected	Active, Not Successful	-	-	-	-	-	1	0
53-2015	Nelson River	Active, Nest Abandoned	-	-	-	-	-	1	0
526-2017	Project-affected	-	Active, Not Successful	-	-	-	-	1	0
52-2015	Nelson River	Active, Nest Abandoned	-	-	-	-	-	1	0
39-2021	Nelson River	-	-	-	Status Unknown	Active, Abandoned	Inactive	1	0
32-2019	Nelson River	-	-	Inactive	Inactive	Active, Abandoned	Inactive	1	0



<b>Nest</b>	<b>Hydraulic Zone</b>	<b>2015</b>	<b>2017</b>	<b>2019</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>No. Years Active</b>	<b>No. Years Successful</b>
31-2021	Off-system	-	-	-	Active, Abandoned	Common Raven, Successful	-	1	0
187-2015	Nelson River	Status Unknown	Active, Abandoned	-	-	-	-	1	0
182-2015	Off-system	Active, Nest Abandoned	Inactive	Inactive	-	-	-	1	0
16-2021	Nelson River	-	-	-	Active, Abandoned	Inactive	Missing	1	0
142-2015	Off-system	Active, Not Successful	Inactive	Inactive	-	-	-	1	0
14-2021	Off-system	-	-	-	Active, Abandoned	-	-	1	0
8-2021	Off-system	-	-	-	Active, Abandoned	Inactive	Inactive	1	0
6-2021	Off-system	-	-	-	Active, Abandoned	Common Raven, Successful	Inactive	1	0
8-2019	Nelson River	-	-	Inactive	Active, Abandoned	-	-	1	0
1-2022	Nelson River	-	-	-	-	Active, Abandoned	-	1	0
5-2022	Nelson River	-	-	-	-	Active, Abandoned	Inactive	1	0
8-2022	Project-affected	-	-	-	-	Inactive	Active, Abandoned	1	0
15-2022	Off-system	-	-	-	-	Inactive	Active, Abandoned	1	0
12-2023	Nelson River	-	-	-	-	-	Active, Abandoned	1	0
Platform 5	Project-affected	-	Inactive	Inactive	Inactive	Inactive	Common Raven, Successful	0	0
Platform 4	Project-affected	-	Inactive	Inactive	Inactive	Common Raven, Successful	Inactive	0	0
Platform 2	Project-affected	-	Inactive	Inactive	Inactive	Inactive	Inactive	0	0
88-2015	Nelson River	Inactive	Inactive	-	-	-	-	0	0
86-2015	Nelson River	Inactive	Inactive	-	-	-	-	0	0
80-2017	Off-system	-	Inactive	Inactive	Inactive	-	-	0	0
67-2015	Project-affected	Inactive	Inactive	-	-	-	-	0	0
62-2015	Project-affected	Inactive	Inactive	-	-	-	-	0	0
51-2015	Nelson River	Inactive	Inactive	-	-	-	-	0	0
46-2019	Nelson River	-	-	Status Unknown	Inactive	Inactive	Inactive	0	0
42-2019	Off-system	-	-	Inactive	Inactive	Inactive	-	0	0
40-2019	Off-system	-	-	Inactive	-	-	-	0	0





<b>Nest</b>	<b>Hydraulic Zone</b>	<b>2015</b>	<b>2017</b>	<b>2019</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>No. Years Active</b>	<b>No. Years Successful</b>
40-2017	Project-affected	-	Inactive	Inactive	-	-	-	0	0
39-2019	Nelson River	-	-	Inactive	-	-	-	0	0
39-2015	Nelson River	Inactive	Status unknown	Status Unknown	-	-	-	0	0
37-2019	Nelson River	-	-	Inactive	-	-	-	0	0
36-2021	Off-system	-	-	-	Status Unknown	Inactive	-	0	0
35-2019	Nelson River	-	-	Inactive	Inactive	Inactive	Inactive	0	0
339-2017	Off-system	-	Status unknown	-	-	-	-	0	0
33-2019	Off-system	-	-	Inactive	Inactive	Inactive	-	0	0
31-2019	Nelson River	-	-	Inactive	Inactive	-	-	0	0
30-2019	Nelson River	-	-	Inactive	-	-	-	0	0
28-2021	Nelson River	-	-	-	Inactive	-	-	0	0
27-2021	Nelson River	-	-	-	Inactive	-	-	0	0
268-2017	Nelson River	-	Status unknown	-	-	-	-	0	0
26-2021	Nelson River	-	-	-	Inactive	-	Inactive	0	0
26-2015	Nelson River	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	0	0
25-2019	Project-affected	-	-	Inactive	-	-	-	0	0
246-2017	Project-affected	-	Inactive	Inactive	-	-	-	0	0
23-2019	Nelson River	-	-	Inactive	-	-	-	0	0
224-2017	Nelson River	-	Inactive	Inactive	Inactive	Inactive	Inactive	0	0
21-2021	Nelson River	-	-	-	Inactive	-	-	0	0
20-2021	Nelson River	-	-	-	Status Unknown	-	-	0	0
20-2019	Nelson River	-	-	Inactive	-	-	-	0	0
197-2017	Nelson River	-	Inactive	Inactive	Inactive	-	-	0	0
185-2015	Project-affected	Status Unknown	Inactive	-	-	-	-	0	0
184-2015	Project-affected	Status Unknown	-	-	-	-	-	0	0
179-2015	Off-system	Status Unknown	-	-	-	-	-	0	0
17-2021	Off-system	-	-	-	Inactive	Inactive	Inactive	0	0
146-2015	Off-system	Inactive	Inactive	-	-	-	-	0	0
134-2015	Off-system	Inactive	-	-	-	-	-	0	0



<b>Nest</b>	<b>Hydraulic Zone</b>	<b>2015</b>	<b>2017</b>	<b>2019</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>No. Years Active</b>	<b>No. Years Successful</b>
121-2015	Off-system	Inactive	-	-	-	-	-	0	0
105-2017	Off-system	-	Inactive	Inactive	Inactive	Inactive	Inactive	0	0
102-2015	Project-affected	Inactive	-	-	-	-	-	0	0
11-2021	Nelson River	-	-	-	Inactive	-	-	0	0
9-2021	Nelson River	-	-	-	Inactive	Inactive	Inactive	0	0
12-2019	Nelson River	-	-	Inactive	Inactive	-	-	0	0
11-2019	Nelson River	-	-	Inactive	-	-	-	0	0
10-2019	Nelson River	-	-	Inactive	-	-	-	0	0
11-2017	Off-system	-	Inactive	-	-	-	-	0	0
6-2017	Nelson River	-	Inactive	Inactive	Inactive	Inactive	Inactive	0	0
4-2022	Off-system	-	-	-	-	Inactive	Common Raven, Abandoned	0	0
7-2022	Nelson River	-	-	-	-	Inactive	Missing	0	0
12-2022	Nelson River	-	-	-	-	Inactive	Inactive	0	0
16-2022	Off-system	-	-	-	-	Inactive	Inactive	0	0
17-2022	Nelson River	-	-	-	-	Inactive	Inactive	0	0
19-2022	Nelson River	-	-	-	-	Status Unknown	Common Raven, Abandoned	0	0
11-2023	Nelson River	-	-	-	-	-	Inactive	0	0
1-2023	Nelson River	-	-	-	-	-	Inactive	0	0
13-2023	Project-affected	-	-	-	-	-	Inactive	0	0
15-2023	Nelson River	-	-	-	-	-	Status Unknown	0	0
7-2023	Nelson River	-	-	-	-	-	Inactive	0	0