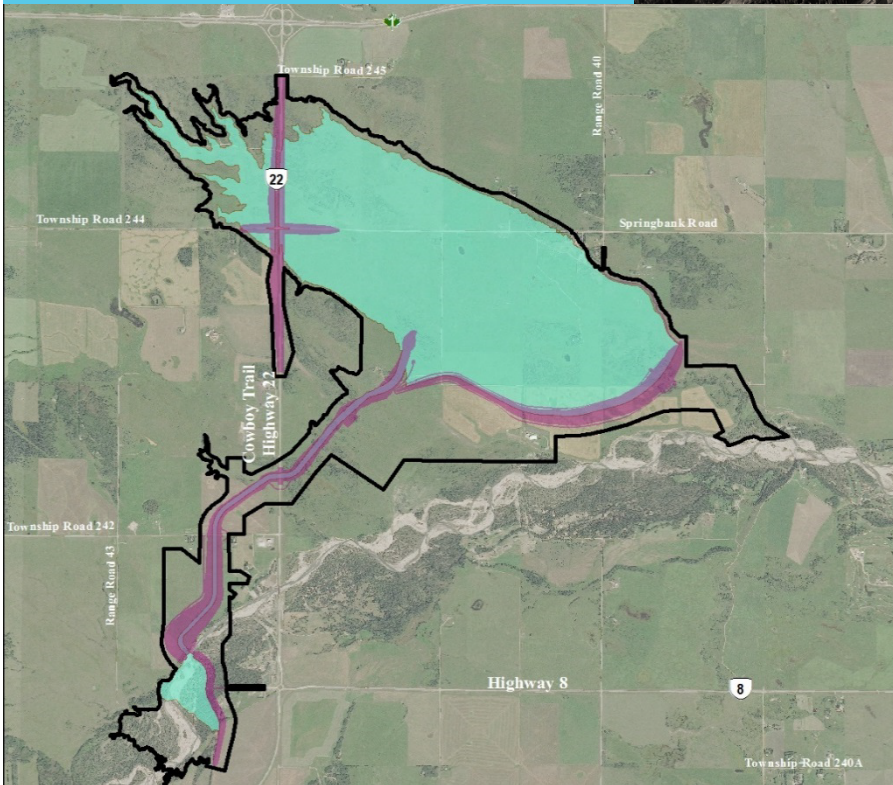


# Springbank Off-stream Reservoir Project



## Migratory Bird and Species at Risk Salvage Plan

November 2021

# SPRINGBANK OFF-STREAM RESERVOIR PROJECT WILDLIFE MITIGATION AND MONITORING PLAN

Appendix C Migratory Bird and Species at Risk Salvage Plan  
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## APPENDIX C      MIGRATORY BIRD AND SPECIES AT RISK SALVAGE PLAN

### C.1      INTRODUCTION

The primary objective of the Migratory Bird<sup>1</sup> and Amphibian Species at Risk Salvage Plan is to reduce mortality risk during flood operations. The approach and criteria described in this salvage protocol is designed to demonstrate due diligence and to comply as best as possible with the *Migratory Birds Convention Act* (MBCA) and the *Species at Risk Act* (SARA) during a flood response.

This protocol describes nest search methods for migratory birds designed to: (i) find active nests; and (ii) salvage nests with eggs or chicks prior to a flood event. In addition, this protocol describes field methods to salvage adult amphibian species at risk listed as Special Concern on Schedule 1 of SARA including northern leopard frog (*Lithobates pipiens*), western toad (*Anaxyrus boreas*), and western tiger salamander (*Ambystoma mavoritium*) prior to a flood event. Migratory bird nest salvage refers to relocating a migratory bird nest that contains eggs or chicks to a rehabilitation center, these nests and their occupants that would otherwise be negatively affected during flood operations. Similarly, amphibian salvage refers to moving an amphibian species at risk that would otherwise be negatively affected during flood operations to a release site outside the flood inundation area (e.g., Randall et al. 2018).

### C.2      APPROVAL CONDITIONS

The migratory bird nest and amphibian species at risk salvage program has been developed in accordance with the Impact Assessment Agency of Canada (IAAC) Approval Conditions 4.9 and subsections, 4.10 and 5.5. The IAAC approval conditions related to rescue (salvage) of migratory birds and amphibian species at risk prior to a flood event are listed in Table C.1.

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<sup>1</sup> Migratory bird defined as per Government of Canada's list of migratory birds protected under the *Migratory Birds Convention Act*. Available at: <https://www.canada.ca/en/environment-climate-change/services/migratory-birds-legal-protection/convention-act.html>

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**Table C.1 Summary of Approval Conditions for Migratory Birds and Amphibian Species at Risk during Flood Operations**

Reference	Approval Condition
IAAC Condition 4.9	<ul style="list-style-type: none"> <li>The Proponent shall develop and implement, in consultation with Indigenous groups and relevant authorities, a protocol to prevent harm to migratory birds, including migratory bird species at risk identified in Table 3 of the environmental assessment report, within the project development area. The Proponent shall develop the protocol prior to construction and implement it prior to flood operation. The protocol shall include:</li> </ul>
IAAC Condition 4.9.1	<ul style="list-style-type: none"> <li>– flood forecasting undertaken prior to inventories conducted in accordance with condition 4.10; and</li> </ul>
IAAC Condition 4.9.2	<ul style="list-style-type: none"> <li>– measures to rescue migratory birds, chicks and eggs.</li> </ul>
IAAC Condition 4.10	<ul style="list-style-type: none"> <li>The Proponent shall conduct, in consultation with Indigenous groups, inventories of potential migratory bird habitat, including the collection of information on breeding bird densities and the presence of ground nesting birds, as well as mapping of important habitat features, shrub lands, wetlands and grassland within the project development area every five years starting the first year of operation, and update the migratory bird protocol referred to in condition 4.9 based on the results of the inventories.</li> </ul>
IAAC Condition 5.5	<ul style="list-style-type: none"> <li>The Proponent shall develop and implement, in consultation with Indigenous groups and relevant authorities, a protocol to prevent the mortality of amphibians, including northern leopard frog (<i>Lithobates pipiens</i>), western toad (<i>Anaxyrus boreas</i>), and western tiger salamander (<i>Ambystoma mavoritium</i>) during flood operation within the reservoir footprint. The Proponent shall develop the protocol prior to construction, taking into account the flood forecasting undertaken in accordance with condition 4.9.1. The protocol shall include measures to rescue and relocate northern leopard frog (<i>Lithobates pipiens</i>), western toad (<i>Anaxyrus boreas</i>), and western tiger salamander (<i>Ambystoma mavoritium</i>) to suitable habitat outside the reservoir footprint.</li> </ul>

**C.3 MIGRATORY BIRD NEST AND AMPHIBIAN SPECIES AT RISK SALVAGE PROTOCOL**

The following sections outline the salvage protocols and logistics necessary to rescue salvaged bird nests and relocate amphibian species at risk. The primary purpose of the migratory bird nest salvage is to find active ground-nesting bird nests with eggs, chicks or fledglings and rescue them prior to a flood event. As feasible, all chicks (i.e., hatchling, nestling, fledgling) and eggs found will be rescued and transported to a local wildlife rescue center(s) (see Section C.4). The primary purpose of the amphibian salvage is to capture and move any amphibian species at risk encountered in wetlands or other habitats in the inundation flood area out of harms way.

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### **C.3.1 Survey Planning**

#### **C.3.1.1 Flood Forecast for Elbow River and Reservoir Filling**

Flood forecasting for Project operations will be provided by Alberta Environment and Parks (AEP) River Engineering and Technical Services. Forecasts will be based on modelled predictions that consider hydrometric, snowpack, precipitation and meteorological forecast. A reliable forecast from AEP River Engineering and Technical Services that flows in Elbow River of 160 m<sup>3</sup>/s or greater (the flows at which the project could be activated), and indication that the activation of the project is likely, will initiate migratory bird salvage in the reservoir area. Limiting the implementation of the salvage program to the advance flood warning period will reduce the uncertainty associated with salvaging in areas that may not receive flood waters (i.e., salvaging prior to the best available advance warning could result in unnecessary salvage efforts because there is uncertainty associated with predicting a future flood). Salvage efforts themselves also have the potential to harm birds and eggs, so there is a desire to limit the risk of harm that may be caused by undertaking salvage in areas that do not have flooding.

Salvage efforts will be considered if the predicted flood event is anticipated to occur during the migratory bird breeding period for nesting Zone B4 with consideration of species at risk, which extends from April 1 to August 31). The likelihood that the salvage program would be implemented will increase during the peak flood season (May 15 to July 15). However, the safety of the salvagers will take precedence over salvage efforts as necessary.

#### **C.3.1.2 Logistics**

AEP Operations will be responsible for coordinating the Migratory Bird and Amphibian Species at Risk Salvage Plan, when required. AEP Operations will contact the Contractor responsible for completing the bird nest search and amphibian salvage to inform them that there is a flood event and project activation are predicted to occur. AEP Operations will notify ECCC that a predicted flood event (advanced warning) has been issued, and the Migratory Bird and Amphibian Species at Risk Salvage Plan will be executed.

The Contractor will be responsible for implementing the salvage plan as described in this protocol. The Contractor(s) would be responsible for maintaining communication with AEP Operations, confirming existing salvage capacity (i.e., number of individual eggs, chicks and fledglings) at each rehabilitation center, coordinating field crews, travel and field equipment and ensuring the appropriate bird/amphibian salvage permits (see Section C.3.5) are in place, as required. Given the relatively quick response required to carry out the salvage plan once the advanced warning has been issued, it is recommended wildlife permits be in place well before the flood season every spring to ensure permit approval is obtained and prevent any delays in salvage efforts.

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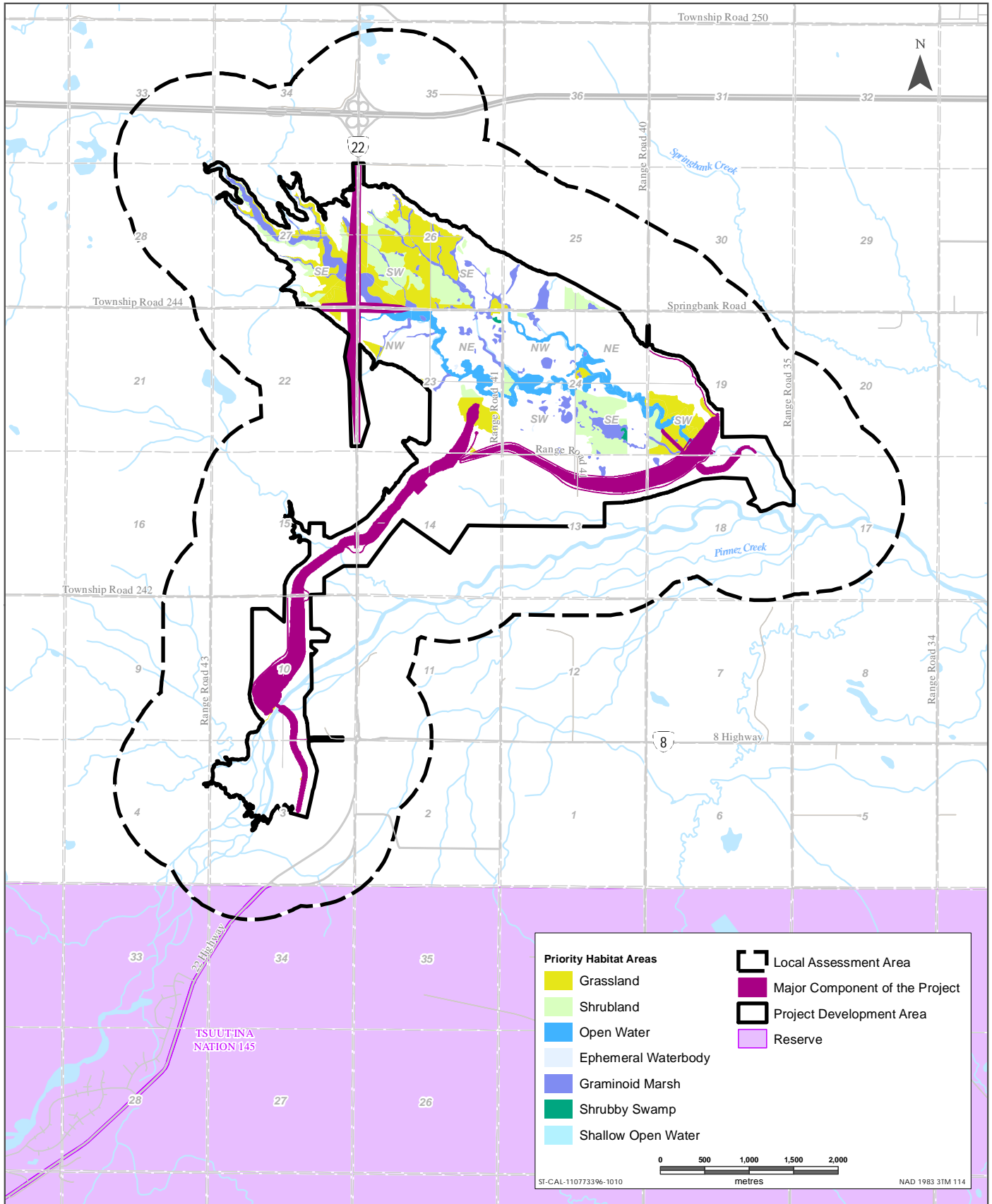
### **C.3.1.3 Search Area**

Spatial and forecasting constraints, combined with estimated bird densities will be used as criteria to identify where in the reservoir's footprint potential bird salvage could occur while protecting worker safety and feasibility of success.

#### ***Migratory Bird Priority Habitat Areas***

Based on the estimated breeding bird densities and habitat types available within the offstream reservoir (see response to CEAA Conformity IR1-07), there are areas that are expected to contain relatively higher densities of bird nests compared to other habitat types (i.e., "hotspots"). Although results from the breeding bird baseline surveys indicated forested areas contained relatively higher breeding bird densities (357 to 587 territories/100 ha) (see response to CEAA Conformity IR1-07) compared to other habitat types, ground nesting birds are most at risk during flood operations. Therefore, shrublands, wetlands and grassland (i.e., native and reclaimed grassland) will be focused on during bird nest search efforts and salvage operations within the reservoir (see Figure B.1). These priority habitat areas are expected to contain moderate densities of breeding birds (220 territories/100 ha to 357 territories/100 ha) based on previous baseline breeding bird surveys (see Volume 4, Appendix H, Section 3.0 of the EIA.).

The priority habitat areas of grassland, wetlands and shrublands along the unnamed creek will be targeted for nest salvage, based on estimated bird densities. However, the exact locations of bird salvage efforts will depend on the rate of reservoir filling: salvage efforts will be focused on priority habitats located in the lower portions of the reservoir nearest to the dam where the risk of mortality to ground-nesting birds will be relatively higher because those areas contain an abundance of high priority habitats and will be inundated relatively early during reservoir filling (e.g., SW-19-24-03W5M, SE-24-24-04W5M; see Figure C.1). However, these areas will only be targeted for salvage efforts if it is safe to do so (i.e., prior to inundation of the reservoir). Where possible (or if necessary), salvage efforts may include the middle and upper portions of the reservoir, depending on the rate of reservoir filling.



Sources: Base Data - Government of Alberta, Government of Canada, Thematic Data - Stantec Ltd.

Priority Habitat Areas within the Reservoir and Potential Locations of Migratory Bird and Species at Risk Salvage Efforts

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### C.3.2 Migratory Bird Nest Search Methods

Bird nest surveys completed prior to a predicted flood event will focus on identifying and rescuing nesting migratory birds including migratory bird species at risk that are at greatest risk of potential mortality due to nest flooding and drowning (i.e., ground or shrub nesters). Based on previous baseline breeding bird surveys (see Volume 4, Appendix H of the EIA), bird species that are most likely to be encountered and potentially salvaged include:

- Savanna sparrow (*Passerculus sandwichensis*)
- clay colored sparrow (*Spizella pallida*)
- Lincoln's sparrow (*Melospiza lincolnii*)
- yellow warbler (*Setophaga petechia*)

As well as three species of management concern:

- sora (*Porzana carolina*)
- alder flycatcher (*Empidonax alnorum*)
- eastern kingbird (*Tyrannus tyrannus*)

In addition, waterfowl such as mallard (*Anas platyrhynchos*) and Canada goose (*Branta canadensis*) are potential candidates for bird rescue if their nests or eggs are encountered.

Nest searches will be completed using a combination of passive detection techniques (observing bird behaviour and listening for bird song or calls) and systematically walking the salvage area to identify nests and observe nesting behaviour. A nest can be confirmed by:

- physically observing the nest structure (often identified by a flushing bird)
- observation of breeding behaviour (e.g., auditory signs [singing males, alarm calls, defense calls, screeching, begging vocalizations by nestlings])
- distraction displays
- nest defense behaviours (e.g., diving)
- birds carrying nesting material, food or fecal sacs
- observation of nestlings or fledglings
- repeated flying towards a specific location

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To maximize the probability of finding a nest, transects must be close enough together that nests and/or nesting behaviour is not obscured from view by vegetation. Recommended spacing between parallel transects is approximately 5 m in open and grassland areas, but in particularly dense vegetation (e.g., low shrub) salvagers may reduce this spacing as necessary.

- Surveyors will use industry best practices to accomplish the nest searches.
- Surveyors can use a sweeping stick (e.g., 1.5 m long) that is swept back and forth across the top of the vegetation to flush birds from their nests (Winter et al. 2003).

If an active nest is found, the area will be marked with flagging tape and communicated to the person responsible for transfer to the rehabilitation transport vehicle. The biologists will identify the bird species and number of individuals rescued including the stage of nesting (egg, hatchling, nestling, fledgling) and record existing body condition, and nest location, as well as take photographs of the nest and birds.

Each nest or individual egg/chick will be transferred to a portable incubator or transfer box and marked with a unique identification number. It is assumed field crews will be able to access salvage areas by foot or UTV. Rehabilitation transport vehicles will be parked at the closest access trail or road to facilitate efficient transfer of rescued birds to a rehabilitation facility.

### **C.3.3 Amphibian Salvage Methods**

Wetlands and other waterbodies that may contain amphibian species at risk will also be searched in conjunction with migratory bird nest searches. Although these habitat types are distributed throughout the PDA, they are largely associated with the unnamed creek that passes through the middle of the reservoir (see Figure B.1). The unnamed creek contains riparian areas dominated by sedge marsh, grasslands and low shrub communities. Salvage efforts will be limited to amphibian species at risk including:

- tiger salamander
- western toad
- northern leopard frog

Although no amphibian species at risk were observed during baseline wildlife surveys completed in 2016 or 2021, any amphibian species at risk listed above will be relocated out of harm's way to suitable habitat outside of the inundated reservoir.

Amphibians will be captured and relocated using dip nets. Plastic ziplock bags or containers will be used to transport individual amphibians. Handling will follow the Alberta Wildlife Animal Care Committee Class Protocol #003 - Capture and Handling of Amphibians (GOA 2012), the Canadian Council on Animal Care (CCAC) Guidelines: Amphibians (CCAC 2021), and *Guidelines for Mitigation Translocations of Amphibians: Applications for Canada's Prairie Provinces* (Randall et al. 2018).



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The release site will be outside the inundation footprint and should meet the needs of all life stages of the relocated amphibians (Randall et al. 2018). Amphibians will be released into similar habitat to the collection site and released into emergent vegetation, if available, so that they can evade predators (Randall et al. 2018).

### **C.3.3.1 Time of Day**

Migratory bird nests searches, and amphibian salvages should be completed during daylight hours. Although, survey time will be limited prior to a flood event (see below), migratory bird nest searches should be completed between 0600 and 1100, where possible. This time period is when most nests are typically found (Winter et al. 2003); light conditions before 0600 are often unfavorable for spotting a flushed bird and for finding nests, and after 1100, adult birds spend more time off their nest, such that nest-searching becomes less efficient. High winds (>20km/hour) or steady precipitation can reduce the ability to detect nesting birds (visual or auditory), which would be addressed in the summary report as required.

### **C.3.4 Survey Effort**

The migratory bird nest and amphibian species at risk salvage program will occur in daylight hours and based on the estimated advance flood warning received. The total number of nests potentially salvaged will depend on nest densities within priority habitat areas and relative survey effort (i.e., number of field staff and the success of nest searches) and number of amphibian species at risk encountered within the constraints of worker safety.

A three-person crew will be responsible for completing the nest search and transfer of salvaged birds to a rehabilitation vehicle. A minimum of two qualified wildlife biologists will complete the bird nest searches following the protocols described above with the third field assistant responsible for transferring salvaged bird nests to a nearby rehabilitation transport vehicle. Eggs will be placed in portable incubators and young birds placed in a warm environment (e.g., transport box) with suitable heat, food and water and transported to the nearest available rehabilitation centre. The number of birds transferred will be limited by the number of incubators available and the rehabilitation capacity of each centre.

Overall, the number of nests salvaged, and amphibians relocated may be limited to only the areas that can be safely searched within the time constraints and the combined capacity of rehabilitation centers for birds. For example, the Calgary Wildlife Rehabilitation Society (CWRS) currently has capacity to raise approximately 100 individuals at any given time based on 2 incubators (Whelan 2020, pers. comm.). The capacity of the other two rehabilitation centres (see Section 4.0) needs to be confirmed by the Contractor.

Based on the predicted areal extent (ha) of inundation, a 1:10 year flood event would inundate approximately 21 ha. It is possible that two 3-person crews could complete the bird nest salvage within one 12-hour day.; however, extending the salvage into a second day could still be within

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the estimated early warning time period depending on approval from AEP Operations. One 2-person crew would be deployed to complete the amphibian salvage in conjunction with the 3-person bird rescue crew.

The search areas included in flood events larger than a 1:10 year event will be surveyed within the constraints of worker safety, which will likely be limited to priority habitat areas north of Springbank Road (see Figure B.1). A larger number of field crews would be required to search the areas of inundation during a 1:100 year (481 ha) and a 2013 design flood (816 ha), and the total number of birds rescued will be limited by each rehabilitation center's capacity as mentioned above.

### **C.3.5 Wildlife Permits**

Alberta Transportation and AEP (as applicable) will obtain any necessary provincial wildlife permits (e.g., collection license) to allow public handling and collecting of authorized wildlife species in consultation with AEP (Fish and Wildlife). A collection license to salvage bird nests and amphibian species at risk is required prior to salvage efforts (e.g., Alberta Wildlife Animal Care Committee Class Protocol #003 - *Capture and Handling of Amphibians* [GOA 2012]). Although Environment and Climate Change Canada (ECCC) does not issue salvage permits for migratory birds, they will be notified of any planned salvage program once the advance flood warning has been issued by AEP.

## **C.4 WILDLIFE REHABILITATION CENTRES**

A key component of the migratory bird salvage program is the rehabilitation necessary to increase the chances of survival following field salvage efforts, which will require expertise from local wildlife rescue and rehabilitation centres. Alberta Transportation and AEP (Operations) will continue to establish and maintain working relationships with local wildlife rescue centers to facilitate rehabilitation of salvaged birds. Depending on each facilities capacity as well as the number of bird nests and individuals successfully found during the bird nest search, coordination with the CWRS, Cochrane Ecological Institute (CEI) and Alberta Institute for Wildlife Conservation (AIWC) will be required during each salvage operation.

Following salvage from the field, rehabilitation methods will be based on standard incubation and hand-rearing protocols at each participating rehabilitation centre using trained staff and volunteers. Birds successfully rehabilitated will be released back into suitable habitat within the Project LAA in consultation with ECCC.

Contact information for local wildlife rehabilitation centers that service the Calgary area is provided in Table C.1.

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**Table C.1 Contact Information for local Wildlife Rehabilitation Centres in Calgary and Surrounding Areas**

<b>Wildlife Rehabilitation Centre</b>	<b>Contact Person</b>	<b>Phone</b>	<b>Email</b>	<b>Location</b>	<b>Approximate Distance from SR1</b>
Calgary Wildlife Rehabilitation Society	Melanie Whelan (Director of Animal Care)	(403) 214-1312	<a href="mailto:admin@calgarywildlife.org">admin@calgarywildlife.org</a>	11555 85th St NW, Calgary	29 km
Cochrane Ecological Institute		(403) 932-5632	<a href="mailto:cei@nucleus.com">cei@nucleus.com</a>	Township Road 280 and Range Road 51, Cochrane, AB	41 km
Alberta Institute for Wildlife Conservation	Holly Lillie (Executive Director)	(403) 946-2361	<a href="mailto:info@aiwc.ca">info@aiwc.ca</a>	Township Road 282 and Range Road 30, Madden, AB	50 km

**C.5 FOLLOW-UP AND MONITORING**

This WMMP has been developed in accordance with approval condition 4.11, which includes the development of a follow-up program to verify the accuracy of the environmental assessment and to determine the effectiveness of all mitigation measures to avoid harm to migratory birds, including migratory birds species at risk, their eggs and nests as well as amphibian species at risk.

Priority habitat areas to identify potential nesting locations will be further refined during preconstruction bird nest search surveys. These surveys will be completed to provide additional information related to bird species occurrence and nest densities in each of the priority habitat types (i.e., grassland, wetland, shrubland).

Although some of the areas affected during a 1:100 year flood and design flood occur outside the Project construction area (i.e., construction footprint and temporary workspace), the habitat types affected during construction and flood operations are the same. Therefore, results of pre-construction bird nest surveys will be used to refine potential bird nesting priority areas that might be affected during a flood. To account for changes in habitat over time, the reservoir will be surveyed at regular intervals of approximately five years to update the understanding of habitat conditions and to re-characterize high priority areas in accordance with IAAC approval condition 4.10.

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**C.5.1 Performance Indicators**

The success or release rate of rehabilitated wildlife varies with several factors including taxonomic group (e.g., precocial versus altricial), body condition and age (Kelly and delBarco-Trillo 2020; Whelan 2020, pers. comm.). The ground-nesting birds most likely to be encountered and rescued during salvage efforts include primarily passerines and waterfowl. Preliminary discussions with the CWRS indicated approximately 40% of the birds rescued are successfully released as an average across all bird species with slightly higher success rates for precocial bird species like ducks and geese (Whelan 2020, pers. comm.). This is consistent with other published release rates for rehabilitated birds, which have reported an overall success rate of 48% across a range of taxonomic groups (Kelly and delBarco-Trillo 2020). It is recommended AEP Operations keep in contact with the rehabilitation centres to monitor successful bird rehabilitations rescued from the PDA to evaluate overall program success. No post-release monitoring of birds is recommended, at this time.

The performance indicators and targets (see Section 7.4 of WMMP) used to evaluate success of the migratory bird and amphibian salvage are provided in Table C.2.

**Table C.2 Performance Indicators and Targets used to Evaluate Mitigation Effectiveness of the Migratory Bird and Amphibian Species at Risk Salvage Plan**

<b>Residual Effect</b>	<b>Performance Indicator</b>	<b>Target</b>	<b>Adaptative Management</b>
Change in Mortality Risk	<ul style="list-style-type: none"> <li>Number of birds and eggs salvaged prior to each flood event.</li> <li>Number of amphibian species at risk relocated to nearby waterbody or wetland prior to each flood event.</li> </ul>	<ul style="list-style-type: none"> <li>Total number of birds, and eggs salvaged is maximized relative to estimated bird densities for each habitat type and within the constraints of worker safety.</li> <li>No injury or mortality of migratory birds or amphibian species at risk in the salvage area while activities are occurring.</li> <li>Amphibian species at risk still occupy the translocation area and/or other suitable habitat in the PDA in subsequent seasons or years.</li> </ul>	<ul style="list-style-type: none"> <li>Any bird or species at risk amphibian mortality directly related to flood operations will trigger a review of mitigation measures/salvage plan.</li> <li>Additional mitigation measures will be considered if any mortality occurs, or the amphibian relocation site(s) are not occupied in subsequent seasons or years.</li> </ul>

Presence/absence surveys are recommended to determine if amphibian species at risk still occupy suitable habitat in the PDA. Surveys could be completed during the post-flood habitat assessment, which will occur immediately after draining of the off-stream reservoir and the following spring. Subsequent amphibian surveys are recommended during the priority bird habitat surveys every five years.

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The habitat that migratory birds and amphibian species at risk were rescued from (i.e., salvage areas) because of a flood forecast will be confirmed during the post-flood wildlife habitat assessment (see Section 7.4.1 of the WMMP). The post-flood habitat assessment will determine if the salvage areas were inundated, and species-specific habitats rendered temporarily unsuitable. A report detailing the results of the migratory bird and amphibian species at risk salvage will be made available to Indigenous groups, AEP and ECCC following each salvage effort.

### C.6 REFERENCES

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#### C.6.2 Personal Communications

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