

MANITOBA INFRASTRUCTURE

OE DESIGN BUILD OF PTH 100 AND PR 200 (ST. MARY'S ROAD) INTERCHANGE TARGETED SPECIES AT RISK SURVEYS

AUGUST 23, 2021

FINAL





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MANITOBA INFRASTRUCTURE

FINAL REPORT

PROJECT NO.: 211-00229-00

CLIENT REF: MP-2020-01

DATE: AUGUST 23, 2021

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August 23, 2021

Final Report

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Erin Waterman, Environmental Site Assessment Coordinator

Subject: OE PTH 100 and PR 200 (St. Mary's Road) – Targeted SAR Surveys

Client ref.: MP-2020-01

Please find enclosed a copy of the final report summarizing the results of the Targeted Species at Risk Surveys completed in support of the OE PTH 100 and PR 200 (St. Mary's Road) project.

The report includes a summary of the methodologies employed, findings, conclusions and recommendations as well as supporting documents including figures and data tables.

Should you have any questions or concerns regarding this report, please contact the undersigned at your convenience.

Yours sincerely,

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The report is intended to be used in its entirety. No excerpts may be taken to be representative of the findings in the assessment.

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The content and opinions contained in the present report are based on the observations and/or information available to WSP at the time of preparation, using investigation techniques and engineering analysis methods consistent with those ordinarily exercised by WSP and other engineering/scientific practitioners working under similar conditions, and subject to the same time, financial and physical constraints applicable to this project.

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This limitations statement is considered an integral part of this report.

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1 INTRODUCTION

1.1 BACKGROUND

Manitoba Infrastructure (MI) commissioned the South Perimeter Highway Design Study (SPHDS) in 2017 which involved the completion of a Functional Design Study to upgrade PTH 100 from PTH 1W (Portage Avenue) to PTH 1E (Fermor Avenue) to a freeway standard with a six-lane cross-section and elimination of all at-grade intersections and rail crossings.

Prior to completing the SPHDS, MI undertook a Functional Roadway Design and Preliminary Structure Design for an Interim Interchange at PTH 100 and PR 200. Three conceptual design alternatives were investigated for PTH 100 and PR 200 – a Diamond Interchange, a Parclo Interchange, and a Diverging Diamond Interchange (DDI). The DDI was selected as the preferred alternative, and a functional roadway design was prepared and presented to the public. Subsequent to the preferred ultimate stage DDI being selected, MI investigated whether a staged approach could be employed for the recommended DDI for PTH 100 and PR 200. This resulted in the completion of a functional roadway design for an Interim Interchange. In the summer of 2020, Manitoba announced that the PTH 100 and PR 200 (St. Mary’s Road) Interim Interchange was its first priority in implementing the recommendations of the SPHDS with construction commencing in Fall 2021.

During the development of the Environment Act Proposal (EAP) for the PTH 100 and PR 200 interchange project (WSP, 2021), the desktop review identified the high potential for seven plant Species at Risk (SAR) to occur within the natural areas to the north and south of the existing intersection, as well as the potential for two bird SAR and one mammal SAR within on-site buildings at 2433 St. Mary’s Road, the site of a former dairy farm. Subsequently, MI commissioned WSP to complete a targeted SAR survey for plant, bird and mammal (bat) species to supplement information submitted in the EAP for licensing approval of the project under *The Environment Act* of Manitoba.

1.2 STUDY OBJECTIVES

The surveys were completed to determine the presence/absence of the plant, bird and bat SAR within natural areas associated with the project area and the historic dairy farm site at 2433 St. Mary’s Road. The SAR surveys were completed to supplement information included in the EAP submitted to Manitoba Conservation and Climate (MCC), Environmental Approvals Branch by MI in April 2021 in support of obtaining an environmental license for the project. Findings of the survey will also be used to develop mitigation measures as applicable to minimize impact to SAR for inclusion in the project construction Tender Special Provisions.

1.3 STUDY AREA

The study area (Figure 1) for the targeted SAR species focused on the three natural areas that will be impacted by the project; natural areas are those defined by the City of Winnipeg Naturalist Services Branch as numbers 1093, 395 and 544. The former dairy farm site, located between natural areas 1093 and 395, was also included in the survey as the historic on-site farm buildings were anticipated to have high potential for roosting and nesting sites for bird and bat SAR. A summary of the general site characteristics is provided in Table 1-1. Additional details are provided in Section 3.1 and **Appendix C**.

Table 1-1. Summary of General Characteristics of Sites Surveyed

Site ID#	Site Name	Area (hectares)	Legal Location / Property Ownership	General Description
1093	Dairy Farm Creek	0.60	Portion of Plan No. 14846 W.L.T.O. PT. Parcel B Certificate of Title (CT) No. 1122637/1) Owner: Her Majesty The Queen In Right Of The Province of Manitoba	Undeveloped, deciduous forest, consisting of miscellaneous hardwoods. The soil is anticipated to be mesic in nature, nutrient rich with imperfect drainage. Dominant tree species include Manitoba maple, green ash and trembling aspen.
395	St. Norbert 7	2.72	Eastern half – Portion of Plan No. 14846 W.L.T.O. PT. Parcel B CT No. 1122637/1) / Her Owner: Majesty The Queen In Right Of The Province of Manitoba	Undeveloped, deciduous forest, consisting of miscellaneous hardwoods. The soil is anticipated to be mesic in nature, nutrient rich with imperfect drainage. Dominate tree species include bur oak and trembling aspen overstory mixed with green ash and Manitoba maple.
		2.38	Western half – Plan No. 14846 W.L.T.O. Parcel F CT No. 341235/1 Owner: The City of Winnipeg	Undeveloped, deciduous forest, consisting of miscellaneous hardwoods. The soil is anticipated to be mesic in nature, nutrient rich with imperfect drainage. Dominate tree species include bur oak and trembling aspen overstory mixed with green ash and Manitoba maple. A Class II (temporary) wetland dominated by reed canary grass and Canada bluejoint grass is also located within this site.
544	St. Norbert 10	1.85	Portion of S.P. Plan No. 20175 W.L.T.O. CT No. 1604659/1 Owner: The City of Winnipeg	Undeveloped, deciduous forest, consisting of miscellaneous hardwoods. The soil is anticipated to be mesic in nature, nutrient rich with imperfect drainage. Dominate tree species include green ash and Manitoba maple.
2433 St. Mary's Road	Historic Dairy Farm	1.15	Plan No. 24198 W.L.T.O. Parcel A CT No. 1122637/1 Owner: Her Majesty The Queen In Right Of The Province of Manitoba	Developed site that consists of a residence (house and garage) with historic dairy farm out buildings including a barn, granary, machine shop and metal grain bins,

1.4 ENVIRONMENTAL SETTING

1.4.1 CLIMATE, TERRAIN, BIOPHYSICAL SETTING

1.4.1.1 CLIMATE

Climate for the study area can be characterized by review of the most current climate normal data (years 1981 to 2010) from the Environment Canada representative climate station located at the Winnipeg Richardson International Airport. Based on the Environment and Climate Change Canada (ECCC) climate normal data, temperatures in the study area are below freezing between November and March. The mean daily temperature in the study area is approximately 3.0 degrees Celsius (°C); the coldest month from the record is January, with an average temperature of -16.4°C, while the warmest month is July, with an average temperature of 19.7°C. Mean annual precipitation (snowfall and rainfall) is approximately 521.1 mm. Snowfall accounts for approximately 22% of the precipitation total. Winds are predominantly from the south, averaging approximately 17.1 km/hr during the year (ECCC, 2020).

1.4.1.2 SOILS AND TERRAIN

Soils and terrain associated with the study area include the following:

Red River Series

The Red River series comprises most of the soils within the study area. Soils in the Red River series are characterized by imperfectly drained Gleyed Rego Black Chernozem soils that have developed on moderately to strongly calcareous, uniform, deep, clay lacustrine deposits (Manitoba Agriculture, Food and Rural Initiatives, 2010). Permeability in these soils is slow and they exhibit slow to moderate surface run off and a medium water table during the growing season. The soils are found in level areas and on the level position of very gentle slopes (Manitoba Agriculture, Food and Rural Initiatives, 2010).

Osborne Series

Osborne soils consist of poorly drained Rego Humic Gleysol soils that have developed on clayey lacustrine deposits that are moderately to strongly calcareous, uniform and deep. These soils are found in lower/depressional areas of the landscape and have very slow permeability and slow to very slow surface runoff (Manitoba Agriculture, Food and Rural Initiatives, 2010). These soils have low stoniness, are non-eroded and may be saline. Most of these soils are used for crop production as they have a high available water holding capacity, medium organic matter content, and medium natural fertility; however, they often have a high-water table during the growing season which requires improved surface drainage for agricultural production. Native vegetation associated with Osborne soils often includes meadow grasses, reeds, sedges and willow (Manitoba Agriculture, Food and Rural Initiatives, 2010)

Surficial geology of the study area consists primarily of offshore glaciolacustrine surficial deposits. These deposits consist of clays, silts and minor sand and are often between one and 20 m thick. These sediments were deposited while in suspension in glacial Lake Agassiz in deep water and scouring of, and homogenization due to icebergs often occurred. In areas adjacent to the Red River, alluvial sediments are more common and consist of sand, gravel, silt, clay and detritus of organic nature. They are reworked within the existing rivers and deposited as bars. These deposits can also be between one and 20 m in thickness (Matile and Keller, 2004).

1.4.1.3 ECOLOGICAL CLASSIFICATION

The study area is located within the Winnipeg Ecodistrict of the Lake Manitoba Plains Ecoregion, which is covered by the broader Prairie Ecozone. The Winnipeg Ecodistrict is dominated by a cool to cold, subhumid to humid moisture conditions and is located within the southern portion of the Grassland Transition Ecoclimatic Region (Smith et al., 1988). The general geology within the Lake Manitoba Plains Ecoregion includes Paleozoic limestone

bedrock which is overlain by glacial tills and Lake Agassiz deposited silts and clays. The soils in the area are developed on glaciolacustrine sediments and are primarily imperfectly drained Gleyed Humic Vertisols and Gleyed Vertic Black Chernozems (Smith et al., 1988).

Tall grass prairie and meadow prairie vegetation originally found within the Winnipeg Ecodistrict has largely been replaced due to agricultural activities, altered drainage patterns and urban development. Tree cover was historically minimal in the Ecodistrict but continues to be found primarily along stream channels and in pockets further away from channels where sites are better drained. These improved drainage sites often include tree species such as bur oak and trembling aspen and understory species of snowberry, hazelnut and red-osier dogwood (Smith et al., 1988).

1.5 REGULATORY SETTING

Table 1-2 outlines regulatory requirements applicable to SAR and wetland area that were investigated as part of the survey. It should be noted that no handling or capture of SAR were completed as part of this survey (i.e., only passive visual survey methodologies were employed); **Appendix E** provides further details of these regulatory requirements.

Table 1-2 Applicable Regulatory Requirements

Statute	Regulatory Agency	Summary of Regulation	Regulatory / Approval / Permit Requirements
Federal Legislation			
<i>Migratory Birds Convention Act, 1994</i>	ECCC	Prohibits the taking of nests or eggs of migratory game, insectivorous, or nongame birds, including loss of nests or eggs through tree removal during the bird breeding season. Activities which may disturb nests and nesting birds include land disturbance, infrastructure construction and demolition of existing structures, sensory disturbance and emergency incidents (i.e., spills).	Due diligence approach required. Clearing of vegetation (trees, shrubs, grass) and old structures for the Project must adhere to the Act, (i.e., clearing should be conducted outside of the breeding bird window [April 15 to August 31 for Winnipeg area]). If clearing and grubbing is to occur within the breeding bird window a pre-construction migratory bird nesting survey needs to be completed by a qualified avian biologist.
<i>Species at Risk Act</i>	ECCC DFO	Protects species and their residences making it an offense to kill, harm, harass, capture, collect, possess, buy, etc., an individual of a listed endangered, threatened or extirpated species, or damage or destroy its residence for species listed on Schedule 1 of the Act. The Act automatically applies on provincial / territorial lands and waters for species covered under the <i>Migratory Bird Convention Act</i> and the <i>Fisheries Act</i> . Generally, provinces and territories work in-conjunction with the federal government and the Act to protect species and critical habitat on non-federal lands.	Due diligence approach required. Permits from ECCC or DFO may be required should any handling / capture of SAR be required as part of future mitigation measures for the project. It is the responsibility of a project proponent to ensure compliance with SARA through demonstration / documentation of a due diligence approach (e.g., development of mitigation measures).

Statute	Regulatory Agency	Summary of Regulation	Regulatory / Approval / Permit Requirements
Provincial Legislation			
<i>The Wildlife Act</i>	Agriculture and Resource Development, Fish and Wildlife Branch (ARD)	In Manitoba, protection of wildlife and their habitat is covered under the Act, the scope of which includes the management of wildlife, wildlife research and the protection of property and persons. This is achieved through the regulating / permitting of activities. Under the Act it is also prohibited to possess or destroy the nest or eggs of any game birds or any bird listed in Division 6 of Schedule A of the Act including raptor species (e.g. owls, eagles, hawks, ospreys).	Due diligence approach required. Authorization may be required under the Act to capture, handle or harasses wildlife as part of the project (e.g., mitigation measures). Proponents are required to ensure they are in compliance with the Act during planning, construction and operation and maintenance of a project.
<i>Endangered Species and Ecosystems Act</i>	ARD	The purposes of the Act “are to ensure the protection and enhance the survival of threatened and endangered species, as well as species of special concern in Manitoba”. The Act designates species as special concern, threatened, endangered, extirpated or extinct and ecosystems as endangered or threatened.	Due diligence approach required. It is the responsibility of a project proponent to ensure compliance with the Act through demonstration / documentation of a due diligence approach (e.g., development of mitigation measures).
<i>The Water Rights Act (as amended by the Sustainable Watersheds Act)</i>	MCC	Provides greater protections to sensitive wetlands through a no net loss of wetland benefits for sensitive wetlands, ensuring that any loss or alteration of these wetlands requires compensation through wetland restoration or enhancement efforts.	Under the Act, Class 1 and 2 wetlands are eligible for drainage through the Drainage and Water Control Licensing Section, registration process.
<i>Noxious Weeds Act and Regulations</i>	ARD; Act implemented by Manitoba Weed Supervisors Association	The purpose of the Act is to aid in controlling the spread of noxious weeds in Manitoba. Under the Act occupants or owners of lands are required to destroy all noxious weeds growing on their land as often as necessary to prevent the growth, maturing and dispersion of weeds or weed seeds. Refer to Section 3.1.1. for additional information.	It is the responsibility of MI and their contractors to ensure compliance with the Act through the control of noxious weeds on construction sites and ensuring equipment utilized at a project site is cleaned appropriately to prevent transfer of noxious weeds. A Manitoba Pesticide Use Permit may be required prior to the use of herbicide to control noxious weeds in the project area.

2 STUDY METHODS

For the purposes of this report, SAR were identified as those:

- Listed under the Federal *Species at Risk Act* (SARA);
- Regulated under the Manitoba Provincial *Endangered Species and Ecosystems Act* (MB ESEA); and,
- Those listed by the Manitoba Conservation Data Centre (MBCDC) as having an S-rank of S1, S2 or S3. S1 to S3 species are tracked by the MBCDC, are considered to be of conservation concern and require monitoring for occurrences (Government of Manitoba, n.d.a., Personal Communication, November 19, 2020, MBCDC).

Definitions of the conservation status ranks used by the MBCDC for SAR is provided below in Table 2-1.

Table 2-1 Subnational Conservation Status Rank for MBCDC Listed Plant SOCC

Rank	Definition
S1	Critically imperiled – At a very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats or other factors.
S2	Imperiled – At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, very steep declines, severe threats or other factors.
S3	Vulnerable - At a moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats or other factors
S4	Apparently Secure - At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats or other factors.
S5	Secure - At a very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.
SU	Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SX	Presumed Extirpated —Species or ecosystem is believed to be extirpated from the jurisdiction (i.e., nation, or state/province). Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered. [equivalent to “Regionally Extinct” in IUCN Red List terminology].
SH	Possibly Extirpated – Known from only historical records but still some hope of rediscovery. There is evidence that the species or ecosystem may no longer be present in the jurisdiction, but not enough to state this with certainty. Examples of such evidence include (1) that a species has not been documented in approximately 20-40 years despite some searching and/or some evidence of significant habitat loss or degradation; (2) that a species or ecosystem has been searched for unsuccessfully, but not thoroughly enough to presume that it is no longer present in the jurisdiction.
SNR	Unranked – National or subnational conservation status not yet assessed.
SNA	Not Applicable - A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities (e.g., long distance aerial and aquatic migrants, hybrids without conservation value, and non-native species or ecosystems).

2.1 TARGETED RARE PLANT SURVEY

Plant surveys were completed on May 31 and July 13 to capture an inventory of both early and mid - late flowering species. Survey methods followed the *Species Detection Survey Protocol for Rare Vascular Plants* (Saskatchewan Ministry of Environment, 2019) as there are no provincially administered protocols for Manitoba. The survey was conducted in targeted survey areas within the project area by using a randomized transect approach. Transects were 100 metres (m) in length, by 8 m wide (open understory level allowed for two biologists to survey 4 m on either side of the transect line) and a minimum distance of 10 m apart. During the first survey timing the start and end of each transect was marked as a georeferenced waypoint using a handheld Garmin 64st GPS (UTM coordinates), and the same transects were revisited during the second survey timing.

During the stick nest survey completed on May 19, 2021 observations of general vegetation cover in the natural areas #395, 1093 and 544 aided in defining the number and locations of transects for the rare plant survey. An ArcGIS program was used to randomly place transects oriented in an east-west direction within each survey area with one transect in each of Natural Areas 544 and 1093 and five transects in Natural area 395 (refer to Figures 2A, 2B, 2C, **Appendix A**).

- Natural area #1093 was determined to be uniform throughout in terms of tree and shrub species present with a moderate level of disturbance from an introduced species (caragana shrub). Based on the relative uniformity of the site and the small size (less than one hectare (ha)), the survey was completed with one transect placed perpendicular to St. Mary's Road, bisecting the entire width of the forested area (including crossing of the drainage swale).
- Natural area #544 had been assessed as part of the South Perimeter Highway Design Study in 2018 (two survey dates) with no occurrences of rare plants observed. Based on the results of the prior survey and size of the forested area (less than 2 ha) the survey was completed with one transect perpendicular to St. Mary's Road to supplement the previous survey.
- The natural area #395 was treated as one site consisting of 5.1 ha. Vegetation cover within the site was observed to have more variability in terms of tree species dominance at the north end of the area and the site also included a wetland on the western portion. As such, the number of transects to be surveyed was determined based on the formula provided in the *Species Detection Survey Protocol for Rare Vascular Plants* (Saskatchewan Ministry of Environment, 2019):

$y = (0.8x/z) + (40/z)$, where:

“y” is the number of 100 metre (m) transects;

“z” is the total transect width) in metres (for a two-person team = 8 m; 4 m survey swath on either side of the transect by the two surveyors);

“x” is the area of each habitat location in hectares (ha).

Thus for site #395: $y = (0.8 * 5.1 / 8) + (40 / 8) = 5.5$ transects. Transect location for site #395 was further refined to include one transect within the wetland area and four other transects placed to capture dominate tree cover (and potentially understory) variability.

Field survey information was used to characterize the vegetation cover types present within the project area and document any listed and weed species found in the area.

A list of plant SAR (“cheat sheet”) that had the potential to occur in the study area along with their preferred habitats was compiled prior to the field survey (**Appendix F**). A field booklet with pictures, botanical descriptions, and key characteristics from various plant identification resources was created to enable WSP biologists to easily identify SAR species in the field. A review of all similar species that could be mistaken for known and potential plant SAR was also reviewed.

Two WSP biologists walked parallel to the transect with each surveyor assessing approximately a 4 m width on each side of the transects. All plant species observed (including weed and invasive species) were recorded at each survey location until no new species were found. Plants were identified in the field based on key vegetative characteristics. If plants were unable to be identified to species, they were identified to genus. Any plant SAR that was identified had their location recorded with a GPS waypoint, detailed notes recorded, and photographs of diagnostic features taken.

2.2 BARN SWALLOW SURVEY

The barn swallow survey was a visual survey of previously identified nests and potential nest sites (under eaves of, or within open buildings) associated with the historic farm buildings located at 2433 St. Mary's Road (Figure 4, **Appendix A**). The initial survey plan was for two survey timings with one scheduled for mid to late May (dependent upon weather) and one in early to mid June. However, during the first survey, the weather was cool and there was little activity observed and only minimal foraging; therefore, a third survey was added to the schedule. The second and third surveys were completed on June 18 and July 8, respectively. Surveys were completed between 9 and 11 am (within protocol survey timings for sensitive bird species including barn swallows as outlined by the Government of Alberta's *Sensitive Species Inventory Guidelines* (April 2013). According to the Guidelines to Reduce Risk to Migratory Birds (Government of Canada, 2019), active nest search techniques are not recommended due to potential for disturbing or damaging nests. As per Government of Saskatchewan's Nest Searches for Migratory Birds Policy (May 2015), the detection of birds demonstrating breeding behaviour such as singing, territorial defense, carrying nesting material, food or fecal sacs is considered sufficient evidence to confirm breeding.

Biologists arrived on-site in the morning of each date to complete a visual survey of the buildings and surrounding farmyard site for evidence of barn swallows using the buildings for nesting including: visual observations of adults flying in the area or using nearby perches (overhead powerlines, trees, rooftops, etc.), nest building activities, or presence of chicks including carrying of nesting materials or food to/into buildings. Based on these visual cues, closer inspections of the buildings were made to identify location of active nests.

A review of potential habitat for barn swallows in the surrounding project study area was also completed and included driving through Maple Grove Park and on the local roads south of the existing PTH 100/PR 200 intersection to determine potential abundance and availability of other areas of suitable habitat for this species. This information was subsequently utilized to determine if any additional mitigation measures are required based on loss of habitat associated with the historic buildings at 2433 St. Mary's Road.

2.3 CHIMNEY SWIFT SURVEY

The survey for chimney swifts followed the protocol published by the Manitoba Chimney Swift Initiative (MSCI) (2021). Three visual survey timings were completed on May 31, June 14 and June 24 at 2433 St. Mary's Road. Two biologists were stationed at the site with a clear view of the chimneys: one masonry chimney located on the barn building and one chimney present on the granary building (Figure 5, **Appendix A**). Each monitoring session started at least 20 minutes before official sunset time and ran until at least 10 minutes after the official sunset time, for a total minimum survey time of 30 minutes. The surveys were conducted during the roosting hour which is the time that chimney swifts come into roost, or rest, for the night; the birds leave the site within ½ hour of sunrise the following morning (MCSI, 2021). Surveys were not be completed during cold (<13°C), windy or rainy weather. Identification of chimney swifts was to be made through visual and vocal observations (as outlined in the MCSI, 2021). Observations of other insectivorous bird species (e.g. common nighthawk, bank swallow) were recorded if observed.

2.4 BAT SURVEY

The bat detection survey protocol utilized for this survey was developed based on those published by Vonhof (2006) and the *Bat Colony Validation Protocol* published by Batwatch.ca. Information from Vonhof (2006) incorporated into the survey protocol included: timing of surveys (June-July for lactating females in a roost); suitable environmental conditions to conduct surveys; and, field procedures for roost counts (establishment of viewpoints one half hour before dusk, collection of emergence data on more than one night and identification and monitoring of all exists from the roost sites).

The property had two main structures including an old barn and an old granary that had potential to provide roosting habitat for bats. During the first survey it was determined that a hill at the back of the property near the granary allowed an advantage point for observers with clear views of the roof tops and cupolas on both buildings. At the time of the surveys, the doors and loft windows on the barn and granary were shuttered and the only egress points for bats was determined to be the two cupolas on the barn and the cupolas and the open door of the granary. A total of three visual bat survey timings were completed at 2433 St. Mary's Road with the first survey completed on June 10, the second on June 14 and a final survey completed on June 24, 2021. At the first and second survey date two biologists were stationed on the hill with one observer viewing one building and the second observer viewing the other building. Each biologist observed egress points on their designated building for bats. During the third survey evening, only one biologist was present on the site to monitor for bats. Each monitoring session commenced 20 minutes before official sunset time and ran until 20 minutes after official sunset time, for a total of 40 minutes. This is the time that bats leave roosts/maternity den to forage for the night. A visual identification of bats leaving the buildings was to be recorded. Surveys were not completed during cold (<10⁰C), windy or rainy weather. Each observer was to use a click counter to count the number of bats observed.

During the bat surveys, it was decided to complete a visual assessment of the interior of the barn and granary for the presence of bats and / or guano as a secondary check. The assessment was completed on July 13, 2021 at dusk to assess the accessible interior roofs of the granary and barn buildings at 2433 St. Mary's Road. Due to safety factors (deteriorated nature of buildings), accessing the lofts/cupolas of the buildings was not possible. Instead, a high-powered flashlight was used to illuminate the ceiling rafters and take photographs to make any possible visual observations. Accessibility was gained through extending the flashlight and camera through openings in the wood siding of the buildings and where the doors and windows of the hayloft in the barn had been removed.

Acoustic monitoring was also conducted between June 10 and July 8. Bats were detected by deploying two Wildlife Acoustics Song Meter SM4BATFS ultrasonic recorders (automated recording units [ARUs]) with SMM-U2 ultrasonic microphones capable of recording calls by bats at two locations at 2433 St. Mary's Road. The intent was to provide a "second check" for the presence of bats at the site. The two ARUs were placed in proximity to the two historic farm buildings on-site where it was anticipated to be the most likely place for roosting or maternity sites for bat species (Figure 6, **Appendix A**). The ARUs were labelled as BAT1 and BAT2 both of which had the capability of detecting bats within 30 m of the units. BAT1 was located on the southside of the granary building and was secured to a tree with the microphone extended upward approximately 4 m using a telescoping rod. BAT2 was mounted to an old bird house pole, located to the southeast of the barn building. This ARU was then cranked up the pole approximately 5 m using a winch that was attached to the pole.

The two ARUs were programmed to record bat activity specifically for bat species native to Manitoba and to record continuously starting 30 minutes before sunset to 30 minutes after sunrise. The default audio settings were used as follows:

- Gain: 12dB
- Sample rate: 256 kHz
- Minimum call duration: 1.5 milliseconds

- Minimum trigger frequency: 16 kHz
- Trigger level: 12 dB

Recordings on the ARUs were stored as WAV files. At each location, data was recorded including time of deployment, UTM coordinates, and photos of the surrounding habitat. The monitoring stations were visited during the bat surveys completed on June 14 and June 24 to check the condition of the recording unit and assess battery levels by viewing the light indicator on each unit that flashes to indicate that the unit is recording (i.e. batteries still viable). The ARUs were observed to be in good working order (i.e. no damage visible on outer protective box and indicator lights still lit) at each check date and on July 8 when they were removed from the site

Kaleidoscope v. 5.4.2 is used to view and analyze raw data from the ARUs. Kaleidoscope software has the capability of completing automatic species identification for each recording. However, the Auto-ID function does not consider variables such as the locations of the monitoring stations and the number of bats surrounding it which can affect the accuracy of identification (Russo and Voight, 2016; Rydell et al., 2017). Therefore, an experienced biologist should manually verify a portion of the identifications to check the quality of the Auto-ID results (Reichert et al., 2018). Kaleidoscope's Auto-ID function was applied to the .WAV files collected from each of the ARUs with the location selected for known Manitoba species only. A manual vetting process was completed for quality control of the Auto-ID function whereby an experienced WSP bat biologist reviewed and manually vetted the data. This involved comparison of known echolocation sonogram graphs to the sonogram data collected and analysed by the Kaleidoscope software. The vetting included:

- All the NoID were manually vetted;
- All autoID *Myotis* calls were manually vetted; and,
- Manually vetted all other calls starting with those with the smallest matching ratio until 25% of all sonograms (excluding noise) were reviewed.

2.5 STICK-NEST SURVEY

Prior to full tree leaf-out, a ground-based reconnaissance survey of the natural areas within the project area (including areas 395, 1093 and 544) was completed on May 19, 2021 to identify the presence of any active stick nests/multi-generational stick nests. The survey was conducted during daylight hours when visibility and light conditions are the highest and during seasonal temperatures, low wind speeds (3 or less on the Beaufort scale) and in the absence of precipitation.

The ground-based stick nest survey was based on the methods for *Boreal and Foothills Raptors* outlined in the *Alberta Sensitive Species Inventory Guidelines* (Government of Alberta, 2013). Georeferenced transect lines were established for each of the three natural areas in the study area. A WSP biologist walked transects to look for signs of stick nests including presence of pellets, feathers and prey remains at the base of trees (Figure 3, **Appendix A**). Where feasible, identification of species using stick nests and the georeferenced location, habitat type and details of tree used (species, condition, height, diameter at breast height) as well as any incidental raptor sightings in association with the nest were recorded.

3 STUDY RESULTS

A summary of the targeted SAR survey results is provided in the following sections and survey summary sheets are provided in **Appendix C**. Further descriptions of the SAR species assessed during the surveys is provided in **Appendix D**.

3.1 TARGETED RARE PLANT SURVEY

A review of the City of Winnipeg’s (City) Naturalist Services Branch (NSB) and the MBCDC records for rare plants within the PTH 100/St. Mary’s Road project study area that was completed in support of the recent EAP (WSP, 2021) submission identified historical occurrences of seven plant SAR. These seven species include false indigo (*Amorpha fruticosa*), climbing bittersweet (*Celastrus scandens*), succulent hawthorne (*Crataegus succulenta*), graceful mannagrass (*Glyceria pulchella*), heart-leaf arnica (*Arnica cordifolia*), Canada moonseed (*Menispermum canadense*) and blunt-fruited sweet cicely (*Osmorhiza depauperata*). None of these species is listed under the *Manitoba Endangered Species and Ecosystems Act* nor under the federal *Species at Risk Act*. Additional details on these species is provided in Table 3-1 and Appendix D.

Table 3-1. Summary of Rare Plants Previously Observed in the Project Area

Species	S-Rank	Bloom Period	Habitat
False indigo (<i>Amorpha fruticosa</i>),	S1/S2	June-July	Moist soils along shores, riverbanks and at edges of wooded areas
Climbing bittersweet (<i>Celastrus scandens</i>)	S3/S4	June-July	Thickets, margins of woodlands and on roadsides and is often associated with rich soils
Succulent hawthorne (<i>Crataegus succulenta</i>)	S3/S4	May-June	Forest edges, forests, meadows and fields
Graceful mannagrass (<i>Glyceria pulchella</i>)	S2/S3	June	Wet areas and meadows of Boreal forest
Heart-leaf arnica (<i>Arnica cordifolia</i>)	S1	June-July	Forests, thickets and stream-sides
Canada moonseed (<i>Menispermum canadense</i>)	S3	June-July	Woodland edges, thickets and streambanks
Blunt-fruited sweet cicely (<i>Osmorhiza depauperata</i>)	S2	June-July	Rich woods

The targeted rare plant surveys were conducted on June 1 and July 13, 2021 to capture early and mid-late flowering plants, respectively. It should be noted that the drought conditions in the study area during the time of the surveys may have reduced the number of species present during the surveys, in particular as observed during the July 13 survey.

A description of the vegetation type located at each transect site is summarized below and location details can be found in Table 1, **Appendix C**:

1093_T1: This location consists of deciduous forest, classified as V3 – (Miscellaneous Hardwoods) under the Manitoba Forest Ecosystem Classification (MB FEC) (Zoladeski et al, 1995) system. It is bisected by a drainage channel flowing eastward to the Red River beneath St. Mary’s Road. The soil is anticipated to be mesic in nature, nutrient rich with imperfect drainage. Dominant tree species include Manitoba maple (*Acer negundo*), green ash (*Fraxinus pennsylvanica*) and trembling aspen (*Populus tremuloides*). Large portions of the western end of the transect consisted of thick caragana (*Caragana arborescens*) shrub and contained very little forb or graminoid species (refer to Photographs 1 & 8, **Appendix B**).

395_T1: This location consists of deciduous forest, classified as V3 – (Miscellaneous Hardwoods) under the MB FEC system. The transect had a level surface expression and the soil was anticipated to be mesic in nature, nutrient rich with imperfect drainage. This transect is dominated by a bur oak (*Quercus macrocarpa*) and trembling aspen overstory mixed with green ash and Manitoba maple. The groundcover consists of extensive leaf litter with very few species present in the understory or ground level (refer to Photograph 2 & 9, **Appendix B**).

395_T2: This location is similar to transect 395_T1 and terminates in a weedy / grassy area to the west. Significant amounts of common milkweed (*Asclepias syrica*) were observed in this area along with monarch butterflies (refer to Photographs 3 & 10, **Appendix B**).

395_T3: This location is similar to transect 395_T1 and 395_T2 (refer to Photographs 4 & 11, **Appendix B**).

395_T4: This location primarily consists of a Class II wetland (as per the Stewart and Kantrud (1971) wetland classification system) with dominant grass species of reed canary grass (*Phalarus arundinaceae*) and Canada bluejoint (*Calamagrostis canadensis*). Surface expression is slightly depressional and soil type is anticipated to be mesic, nutrients medium and imperfect drainage (refer to Photographs 5 & 12, **Appendix B**).

395_T5: This location is similar to transect 395_T1, 395_T2 and 295_T3 (refer to Photographs 6 & 13, **Appendix B**).

544_T1: This location consists of deciduous forest, classified as V3 – (Miscellaneous Hardwoods) under the MB FEC system. The transect had a level surface expression and the soil was anticipated to be mesic in nature, nutrient rich with imperfect drainage. The central portion of this transect consisted of a dense canopy of green ash and Manitoba maple with lots of deadfall and very little diversity in the understory or in ground cover (refer to Photographs 7 & 14, **Appendix B**). The edges of the transect were dominated by grasses such as Kentucky bluegrass (*Poa pratensis*), commonly observed forbs such as dewberry (*Rubus pubescens*) and weeds such as Canada thistle (*Cirsium arvense*).

A total of 76 plant species (Table 2, **Appendix C**) were identified to genus or species and consisted of eight tree species, 19 shrub species, 41 forbs and eight graminoid species. Of these species, 19 are not native and seven are listed under Tier 3 of the *Noxious Weeds Act* (refer to Section 3.1.1. for details on weed tiers).

Two species that are provincially ranked as S3S4 were identified during the site visits. The succulent hawthorn (*Hawthorn succulenta*) that was observed within natural area 395 at three of the transects. It was identified from the more common round-leaved hawthorn (*Crataegus rotundifolia*), also found in natural area 395, by the lack of dark glandular tips on the leaf teeth (Looman and Best, 1979). The second species observed was common milkweed (*Asclepias syrica*). It was prevalent throughout the natural areas where the canopy was open or along the edges of the forest margins. A large patch was observed on the east side of natural area #395, south of natural area #544 and within the farmyard site. This species is important to the monarch butterfly despite it being listed as a Tier 3 noxious weed.

No other plant SAR were identified at the time of the site visits.

3.1.1 NOXIOUS WEEDS

The *Noxious Weeds Act* (C.C.S.M.c. N110) of Manitoba outlines control or destruction measures for noxious weeds that are regulated under the Act. Control of noxious weeds is the responsibility to anyone owning or occupying land in Manitoba on which a noxious weed is located. The *Noxious Weeds Regulation* (Man.Reg. 42/17) provides a listing of noxious weeds that are ranked according to their threat level and provides the location within the province for which the threat levels apply. A noxious weed is defined as a plant that is designated as a Tier 1, Tier 2 or Tier 3 weed in the Regulation. Levels of weed management under the Act vary by Tier level and include:

- Tier 1 weeds are considered a significant threat and must be eradicate without conditions.
- Tier 2 weeds must be managed according to the infestation size.
- Tier 3 weeds must be controlled if the weed’s uncontrolled growth or spread can negatively impact the economy, environment or well being of local residents (Manitoba Agriculture, 2016).

A copy of the noxious weeds listed by Tier are provided in Section 1.2.4 of **Appendix E**.

The seven Tier 3 noxious weeds identified during the SAR plant survey included common burdock (*Arctium minus*), wormwood (*Artemisia absinthium*), creeping bluebell (*Campanula rotundifolia*), Canada thistle (*Cirsium arvense*), field sow-thistle (*Sonchus arvensis*), common dandelion (*Taraxacum officinale*) and field pennycress (*Thlaspi arvense*). No Tier 1 or 2 weed species were observed during any of the SAR surveys.

3.1.2 WETLAND CLASSIFICATION

During the SAR plant survey, the classification of the wetland located within the Natural Area #395 was confirmed to be a Class II (Temporary) wetland as per the Stewart and Kantrud (1971) wetland classification system. Class II wetlands contain water only after snowmelt or rainfall events with standing water present for a week to a month. They can be flooded in wet years and contain wetland species such as fine stemmed grasses, sedges and forbs. The wetland was dominated by reed canary grass and Canada bluejoint (refer to Photograph 5 & 12, **Appendix B**). During the early and late plant surveys, there was no standing water within the wetland. Under the *Water Rights Act*, Class II wetlands are eligible for drainage through the registration process and do not require mitigation/compensation for loss of the wetland. The wetland is 0.36 hectares in size.

3.1.3 BARN SWALLOW SURVEY

A search conducted of the Manitoba Breeding Bird Atlas in support of the EAP for the project identified barn swallows with a recorded presence in the project area. As well, during a reconnaissance site visit of the historic dairy farm site located at 2433 St. Mary’s Road, completed in February of 2021 in support of the project, barn swallow nests were identified on existing buildings at the site including: multiple previous years nests observed on an old grain storage building, including a deceased chick inside one of the nests; a nest outline from a previous year’s nest observed in the existing garage on-site; and, a nest observed on the old barn structure. This species inhabits agricultural areas that contain available buildings and/or bridges for nest construction. Nests are constructed from mud and any structure with a large opening or over-hanging roof can provide a suitable nesting site for these birds. The conservation status rank of barn swallows in Manitoba is S4B (“apparently secure” but with possible concern due to recent population declines) by the MBCDC but are listed as “Threatened” under Schedule 1 of SARA.

During a site visit, the previous owner of the property indicated that historically, when the site was an active dairy farm, there was a large colony regularly nesting under the former barn’s eaves where the current grain bins are located.

Barn swallow surveys were conducted on May 26, June 18 and July 8, 2021. During each of the three surveys, two pairs of barn swallows were observed foraging at the farmyard site. Figure 4, **Appendix A** and **Appendix C** show/describe locations of the non-active and active swallows' nests observed during the survey.

During the first survey, a pair of barn swallows were observed entering the granary building and perching on timbers at its entrance (refer to Photograph 19, **Appendix B** for a visual of the granary building). Two nests (Nest1, Nest2) (refer to Photograph 16, **Appendix B**) are present in the granary building, one with a deceased bird. The second nest appeared to be active as the pair was perched nearby. Two additional nests were observed: one on the eastern wall under the eaves of the barn (Nest3) and one on the north interior wall of the barn (Nest4) (refer to Photograph 20, **Appendix B** for visual of the barn building). Both appeared inactive at the time.

At the second survey Nest3 was considered active as a pair of barn swallows was observed regularly visiting the location. The second pair of swallows continued to visit the granary building; however, no observed nesting behaviour was recorded as they were only perching inside. During the second site visit, WSP conducted a limited assessment of the surrounding area to determine whether any structures would be suitable for swallows and make additional observations of the species. Areas assessed included Maple Grove Park to the southwest of the farmyard site and St. Mary's Road, Viking Road and Paul Boulevard to the south of the existing intersection. Most land surrounding the project area is privately owned and therefore access to property to conduct observations was limited. At Maple Grove Park, there are several buildings present however no barn swallows were observed foraging in the vicinity of these sites. No additional swallows were observed during the extended assessment.

The third survey confirmed the presence of young-of-the-year in Nest3 (refer to Photograph 15, **Appendix B**), the pair of swallows was actively foraging and returning food to the nest. Nests 1 and 2 in the granary building were considered non-active as no birds were seen entering the granary building and no nest activity was observed within. A fifth nest (Nest5) was confirmed and considered active and is located within the northern most hay-loft of the barn (refer to Photograph 17, **Appendix B**). A pair of swallows was observed carrying food in and out through an old window.

During a site visit in support of additional environmental work for the project, as many as ten barn swallows were observed foraging at the easternmost end of Viking Road. It is anticipated that there may be successful swallow roosting present on private residential properties or in outbuildings of the various commercial greenhouses south of the existing PTH 100/PR 200 (St. Mary's Road) intersection. These sites may provide alternate nesting locations for barn swallows that may be displaced from their nesting sites on the buildings at 2433 St. Mary's Road once these structures are removed.

3.1.4 CHIMNEY SWIFT SURVEY

A search conducted of the Manitoba Breeding Bird Atlas in support of the EAP for the project identified chimney swifts with a recorded presence in the project area. As well, during a reconnaissance site visit completed in February 2021 in support of the project, an old masonry chimney was identified in association with the old barn (Figure 5, **Appendix A**). This bird historically would have nested within large deciduous tree cavities but is now most commonly associated with urban brick chimneys to carry out nesting and appears to prefer non-residential chimneys. Chimney swift numbers have declined, and it may be attributed to a reduction in flying insects from the use of insecticides and the capping or removal of brick chimneys. Based on the historical presence of chimney swifts in the general project area, there is the potential for this species to be present/use the chimney of the on-site building. Chimney swifts are listed as "Endangered" under the MB ESEA and is provincially ranked as S2B (breeding populations listed as "imperiled" at high risk for extirpation in the jurisdiction) by the MBCDC as well as "threatened" under SARA.

Three visual chimney swift surveys were conducted at 2433 St. Mary's Road on May 31, June 14 and June 24, 2021. No chimney swift observations were made either visually or auditorily. In addition, no chimney swifts were observed while conducting other SAR surveys in the study area (**Appendix C**).

No other aerial insectivores were observed during the surveys with the exception of the two pairs of barn swallows.

3.1.5 BAT SURVEY

Bats were identified as having the potential to occur within the study area based on the proximity to the Red River and existence of old farm buildings at 2433 St. Mary's Road that could be used as either summer roosting or maternity den locations (Figure 6, **Appendix A**) (refer to Photograph 5, **Appendix B** for a visual of the cupola with potential to house bats). There are no known bat surveys previously completed in this area to confirm the presence or absence of bats. Since the arrival of White Nose Syndrome in Manitoba and Canada, some non-migratory bats (i.e., hibernating bats) have been classified as a "Endangered" under both SARA and the MB ESEA. Species listed as endangered in Manitoba include the little brown *Myotis (Myotis lucifugus)* and northern *Myotis (Myotis septentrionalis)* due to their recent declines.

Three bat visual bat surveys were completed at 2433 St. Mary's Road on June 10, June 14 and June 24, 2021. During these surveys no bat species were observed. (**Appendix C**). In addition, no visual observations of bats or evidence of guano were identified during the site visit or after reviewing the photographs of the barn loft and building roofs.

The two ARUs that were installed on-site on June 10 were retrieved on July 8, 2021 (refer to Photographs 22 and 23, **Appendix B** for visuals of ARUs). The data that was collected was downloaded and processed through the Kaleidoscope Pro software and analyzed using the Bat Auto-ID function. Table 3-2 and

Table 3-3 summarize the data collected from each ARU including the Bat Auto ID. The number of recordings are the total number of calls that were detected by the ARU over the course of their deployment and does not reflect the number of bats present (i.e., 702 silver-haired bat recordings could be the same individual).

Table 3-2 Bat Auto-ID Summary from BAT1

Bat species ¹	Big brown bat (<i>Eptesicus fuscus</i>) (S4/S5)	Eastern red bat (<i>Lasiurus borealis</i>) (S3B)	Hoary bat (<i>Lasiurus cinereus</i>) (S3B)	Silver-haired bat (<i>Lasionycteris noctivagans</i>) (S3/S4B)	Little brown myotis (<i>Myotis lucifugus</i>) (S2N/S5B)	Northern myotis (<i>Myotis septentrionalis</i>) (S3/S4N, S4B)	No ID ³	Noise ⁴
Number of recordings	15	0	357	702	1	0	165	449
Presence P-value ²	1	1	0	0	0.0194979	1	-	-

¹ Bats of North America; Manitoba Species

² The calculated presence P-values based on a Maximum Likelihood Estimator.

³ Bat detected but program unable to confidently identify recorded call to bat species (may be due to ambiguity of call, distance, background noise interference)

⁴ Files unlikely to be bats.

Table 3-3 Bat Auto-ID Summary from BAT2

Bat species ¹	Big brown bat <i>Eptesicus fuscus</i>	Eastern red bat <i>Lasiurus borealis</i>	Hoary bat <i>Lasiurus cinereus</i>	Silver-haired bat <i>Lasionycteris noctivagans</i>	Little brown myotis <i>Myotis lucifugus</i>	Northern myotis <i>Myotis septentrionalis</i>	No ID ³	Noise ⁴
Number of recordings	8	7	648	720	0	0	93	180
Presence P-value ²	1	0	0	0	1	1	-	-

¹ Bats of North America; Manitoba Species

² The calculated presence P-values based on a Maximum Likelihood Estimator.

³ Bat detected but program unable to confidently identify recorded call to bat species (may be due to ambiguity of call, distance, background noise interference)

⁴ Files unlikely to be bats.

Of the bats known to occur in Manitoba, five out of six species were auto-identified by Kaleidoscope (with verification of 25% of the recordings by an experienced biologist). The most commonly identified species was silver-haired followed by hoary bat. Both of these species are migratory. Additional bats that were identified by the program included the non-migratory big brown bat and the migratory eastern red bat. One recording was identified as little brown myotis (including through the manual vetting process), a SAR bat species.

The Probability value or P-value is the number that can describe how likely it is that the data would have occurred by a random chance. For the purposes of the Auto-ID function a high P-value is not proof of absence but may mean there is not sufficient statistical evidence of presence. While a low P-value does not conclude proof of presence, it simply means the null hypothesis of absence cannot be explained by the data which may indicate presence (Wildlife Acoustics, 2021).

Only potential presence conclusions may be drawn from the analyzed ARU data and the vetting process (refer to **Appendix C** for summary of vetted bat data results), which indicated that big brown, eastern red, silver-haired and hoary bats as well as little brown myotis are likely present in the area. Quantitative numbers of bats cannot be determined, e.g., hoary bats are likely present, but all calls recorded may have been made by one or more bats. The bats recorded may be flying through the site for nightly foraging along the Red River or other areas, or may be foraging at the site, and roosting areas may be in the surrounding forest or further afield. Evidence of bats (evening emergence survey and visual survey of building interiors for bat roosting and presence of guano) were not observed in the two on-site buildings targeted for this survey.

3.1.6 STICK-NEST SURVEY

Due to the proximity of the study area to the Red River (~150 m to the west), and to deciduous forest areas and open fields to the south, the three natural areas associated with the study area may provide suitable nesting habitat for raptor species.

During the ground-based stick-nest survey, a meandering pedestrian survey was completed following loosely based transects to maximize coverage of the natural areas. This survey occurred on May 19, 2021 and included all three natural areas present in the study area. Transects were separated by approximately 50-100 m which allowed for the WSP biologist to capture the majority of the tree canopy.

Five potential stick-nests were observed ([REDACTED]) and are summarized in Table 3-4.

Table 3-4 Summary of ground-based stick-nest survey on May 19, 2021

Nest ID	Tree Species	Comments
Nest 1	Bur Oak 91 cm diameter at breast height (DBH) Approximately 10 – 15 m in height	Nest appeared in poor condition although some “whitewash” was observed beneath. There was no evidence of bird species present and the nest appeared non-active. Potential species: American crow
Nest 2	Bur oak 120 cm DBH Approximately 10 – 15 m in height	Located in a fork approximately halfway up the tree. No bird evidence was present nearby, and the nest appeared to have some leaves present indicating it may be a squirrel nest.
Nest 3	Bur oak 115 cm DBH Approximately 10 m in height	Active: Swainson’s hawk nest. Observed sitting on the nest and was flushed while measuring the DHB.
Nest 4	Green ash 66 cm DBH Approximately 7 - 10 m in height	Squirrel nest.
Nest 5	Green ash 70 cm DBH Approximately 7 – 10 m in height	Squirrel nest.

One active raptor nest (Nest 3) was occupied by a Swainson’s hawk (*Buteo swainsoni*) (refer to Photographs 26 and 27, **Appendix B**). Additional raptors observed included a northern harrier (*Circus hudsonius*) foraging over the undeveloped site to the east. No other raptor species were observed. One nest (Nest 1) may have been previously occupied by American crow (*Corvus brachyrhynchos*) with the remaining nests considered non-active and likely occupied by squirrels.

3.2 INCIDENTAL WILDLIFE

During the SAR surveys, any incidental wildlife observed were also recorded and is summarized in Table 3-5 below.

Table 3-5 Incidental Wildlife Identified During 2021 Targeted SAR Surveys

Type	Common Name	Scientific Name	S-Rank	Breeding Bird Evidence
Arthropod	Hummingbird hawk-moth	Family Sphingidae	-	-
Arthropod	Monarch butterfly	<i>Danaus plexippus</i>	S3S4B	-
Arthropod	Swallowtail butterfly sp.	Family Papilionidae	-	-
Bird	American crow	<i>Corvus brachyrhynchos</i>	S5B,SUN	-
Bird	American goldfinch	<i>Spinus tristis</i>	S5B	Singing male; Pair observed
Bird	American robin	<i>Turdus migratorius</i>	S5B	Food carry
Bird	Black-capped chickadee	<i>Poecile atricapillus</i>	S5	-
Bird	Blue jay	<i>Cyanocitta cristata</i>	S5	-
Bird	Brewer’s blackbird	<i>Euphagus cyanocephalus</i>	S4B	-
Bird	Canada goose	<i>Branta canadensis</i>	S5B	-

Type	Common Name	Scientific Name	S-Rank	Breeding Bird Evidence
Bird	Chipping sparrow	<i>Spizella passerina</i>	S5B	-
Bird	Clay-coloured sparrow	<i>Spizella pallida</i>	S5B	Male singing
Bird	Grey catbird	<i>Dumetella carolinensis</i>	S5B	Male singing
Bird	Hairy woodpecker	<i>Leuconotopicus villosus</i>	S5	-
Bird	House wren	<i>Troglodytes aedon</i>	S5B	-
Bird	Mallard	<i>Anas platyrhynchos</i>	S5B	-
Bird	Mourning dove	<i>Zenaida macroura</i>	S5B	Pair observed
Bird	Northern harrier	<i>Circus hudsonius</i>	S5B	-
Bird	Red-winged blackbird	<i>Agelaius phoeniceus</i>	S5B	Pair
Bird	Savannah sparrow	<i>Passerculus sandwichensis</i>	S5B	Male singing
Bird	Song sparrow	<i>Melospiza melodia</i>	S5B	Male singing
Bird	Swainson's hawk	<i>Buteo swainsoni</i>	S4B	-
Bird	Tree swallow	<i>Tachycineta bicolor</i>	S4B	-
Bird	Western meadow-lark	<i>Sturnella neglecta</i>	S3S4B	Male singing
Bird	White-breasted nuthatch	<i>Sitta carolinensis</i>	S5	-
Herptile	Grey treefrog	<i>Dryophytes versicolor</i>	S4S5	-
Mammal	Eastern cottontail	<i>Sylvilagus floridanus</i>	S5	-
Mammal	Grey squirrel	<i>Sciurus carolinensis</i>	S5	-
Mammal	Red squirrel	<i>Tamiasciurus hudsonicus</i>	S5	-
Mammal	White-tailed deer	<i>Odocoileus virginianus</i>	S5	-

4 DISCUSSION AND RECOMMENDATIONS

The following sections present a discussion of the results of the SAR information collected in the study area. It should be noted that this study was completed between May and July 2021 with surveys occurring at discrete times. Therefore, the observations are limited to the plant and wildlife species being present or not present at the time of the surveys. As the data collected was at select points temporally, it is possible that additional SAR species may be present within/use the study area. If not observed, we can only conclude they were not detected.

4.1 VEGETATION

During the targeted rare plant survey, two timings were conducted, the first in the spring and the second in mid-summer. Three natural areas were assessed consisting of Miscellaneous Hardwood forest (Vegetation Type V3) by the FEC for Manitoba (Zodaleski et al., 1995) with one area in Natural Area 395 that consisted of a Class II wetland as per the Stewart and Kantrud (1971) wetland classification system.

Two species that are provincially ranked as S3S4 were identified during the site visits: succulent hawthorn and common milkweed. Noxious weeds that were identified on-site included: common burdock, wormwood, creeping bluebell, Canada thistle, field sow-thistle, common dandelion and field pennycress.

The two SAR species are likely present within the regional area as there is similar habitat to the southwest of the existing intersection, within Maple Grove Park and along the banks of the Red River. Common milkweed is likely to continue to persist within the vicinity of the Manitoba Hydro substation and in grassed areas within the existing PTH 100 and PR 200 road rights-of-way.

The presence of noxious weeds should be mitigated during construction by including the requirement for a Weed Management Plan in the Tender documents.

4.2 WILDLIFE

4.2.1 BARN SWALLOWS

Two pairs of nesting barn swallows were identified at 2433 St. Mary's Road at the barn destined to be demolished in support of the project. Although this represents a loss of habitat for the birds, it is anticipated that barn swallows will be able to find suitable habitat within the regional area as other pairs of barn swallows were observed to the south of the existing PTH 100/PR 200 intersection in association with natural areas, homes and greenhouse/plant nursery businesses located along PR 200 (St. Mary's Road) south.

Given that barn swallows typically build their nests on artificial habitat such as buildings and infrastructure, they can be difficult to manage once individuals begin to establish nests and nesting colonies. Due to their migratory nature, it is recommended that the on-site buildings are demolished outside of the breeding bird window (i.e., before April 1 and after August 31), or once barn swallow young have fledged, and the nests are no longer being used. Failure to demolish the buildings outside of the breeding bird window could lead to schedule conflicts at the time of construction. Additionally, all clearing and grubbing of vegetation within the project area should be conducted outside of the breeding bird window so as to ensure compliance with the *Migratory Birds Convention Act*.

4.2.2 CHIMNEY SWIFTS

No chimney swifts were identified during the surveys at 2433 St. Mary's Road and it is unlikely that they are present on-site.

4.2.3 BATS

Of the bats known to occur in Manitoba, five of the six species were auto-identified by the Kaleidoscope Auto-ID program. The most commonly identified species was silver-haired bat followed by hoary bat, both of which are migratory. Additional bats that were identified by the program included the non-migratory big brown bat and the little brown myotis and the migratory eastern red bat.

The silver-haired bat is listed as S3S4B by the MB CDC while both the eastern red bat and hoary bat are listed as S3B. These three species are migratory and may be using the surrounding natural areas or residential areas (e.g. bat houses setup by local residents, sheds) for daytime roosting and the farmyard site/Red River area for foraging for insects at night. There was no evidence of bat use in any of the historic farmyard structures at 2433 St. Mary's Road.

The big brown bat is a non-migratory species known to inhabit urban areas and commonly roosts in buildings. It exhibits different hibernacula compared to the humid caves that the *Myotis* species prefer, and can commonly be found hibernating in heated houses, barns, storm sewers as well as tree cavities in temperate areas. The big brown bat is listed as S4S5B. A research article (Michalski et al., 2014) described evidence of the big brown bat being resistant to white-nose syndrome (WNS) based on field studies conducted over two winters at known WNS affected hibernacula. No evidence of this species utilizing the on-site buildings was made during the bat surveys.

One little brown myotis were auto-identified by the Kaleidoscope program/vetting program. As there was only a single call identified, and no presence of this bat was observed in the on-site buildings, it is unlikely that little brown myotis are using the on-site structures for daytime roosting, maternity roosts nor using the farmyard site for foraging in any significant way.

Although no visual evidence of bats using the on-site buildings at 2433 St. Mary's Road were made, not all portions of the on-site buildings were visually inspected due to lack of access and health and safety risks (e.g. suitable roosting area in loft of barn and granary that were not easily accessible/safe to access). The acoustic bat data collected suggests that several bat species may be in the area (either roosting in the natural areas around the site or in adjacent neighbourhoods or use/fly through the site during nightly foraging activity). It is unlikely that any non-migratory bat species would utilize the onsite buildings or tree cavities that may exist in the surrounding forested areas for overwintering as the unheated buildings and small tree cavities would not provide enough heat insulation during Manitoba winters. As such, it is recommended that the on-site buildings and tree clearing of the natural areas occur in the fall or winter, after the migratory bats have flown south to overwinter and non-migratory bats have moved to their overwintering sites (e.g. limestone caves in the Interlake Region of Manitoba for the *Myotis* species).

4.2.4 RAPTORS

During the ground-based stick-nest survey, an active Swainson's hawk nest was observed in natural area #395. While this species and its nest are protected by *The Wildlife Act*, it is not a SAR and does not have any recommended setback distances or mitigation measures for nest removal by the MBCDC and the Manitoba Wildlife and Fisheries Branch (personal communication with a Habitat Mitigation Biologist, ARD, August 10, 2021). Clearing of the tree in which the nest resides should be completed after the young have fledged/the nest has been abandoned for the year by the adults after the breeding season (outside breeding bird season). A permit for nest removal is not required (pers. comm.). Swainson's hawks arrive at their nesting sites in March to April and begin building nests shortly after (Canadian Raptor Conservancy, n.d). As such, it is recommended that clearing and grubbing of vegetation in the project area should be conducted between October 1 and March 1.

5 CONCLUSION

Targeted surveys for seven plant, and two bird and one bat SAR were completed in support of the OE PTH 100 / PR 200 (St. Mary's Road) project between May and July of 2021. Although two S3/S4 plant SAR (succulent hawthorn and common milkweed) were confirmed to be present within the study area, it is anticipated that similar habitat to support these species exists elsewhere within the regional area and as these two species are not protected under provincial legislation, no further mitigation measures are required (personal communication with a Conservation Specialist with, Manitoba Conservation Data Centre, August 17, 2021). In addition, one S4B bird species (barn swallow) was observed to be utilizing the abandoned buildings at 2433 St. Mary's Road for breeding. With appropriate mitigation measures, the impact to the two nesting pairs of barn swallows can be minimized (i.e., demolition of historic buildings at 2433 St. Mary's Road to be completed outside of the breeding bird window).

Mitigation measures that should be included in the Tender Special Provisions for the construction of the project include:

- Development of a weed management plan for control of weed species during construction including those Tier 3 weed species observed.
- To meet regulatory requirements for the protection of barn swallows and bats, on-site buildings located at 2433 St. Mary's Road should be demolished in the fall or winter period after barn swallows and bats have migrated/moved to their overwintering sites (between October 1 and March 1 of a given year).
- Clearing and grubbing of vegetation in the vicinity of the stick nest observed in natural area #395 should be conducted during the fall and winter (between October 1 to March 1 of any given year) to ensure compliance with regulatory requirements as raptor species may begin nesting in Manitoba as early as March. A permit for nest removal is not required.
 - If possible, coordinate with the Agriculture and Resource Development's Species at Risk (SAR) Biologist at least two weeks prior to removal of the forested area surrounding the Swainson's hawk nest to allow the SAR Biologist to obtain the sticks from the Swainson's hawk nest for reuse in a project involving the construction of Ferruginous hawk nesting platforms.

BIBLIOGRAPHY

- Batwatch.ca. n.d. Bat Colony Validation Protocol. Retrieved on May 14, 2021 from: https://batwatch.ca/sites/default/files/pdf/Bat_Colony_Validation_Update_2017_08_18.pdf
- Canadian Raptor Conservancy. n.d. Swainson's Hawk. Retrieved on August 10, 2021 from: <https://canadianraptorconservancy.com/swainsons-hawk>.
- Environment and Climate Change Canada. 2020. Canadian Climate Normals 1981-2010 Station Data. Retrieved on February 5, 2021 from: https://climate.weather.gc.ca/climate_normals/results_1981_2010_e.html?searchType=stnName&txtStationName=Winnipeg&searchMethod=contains&txtCentralLatMin=0&txtCentralLatSec=0&txtCentralLongMin=0&txtCentralLongSec=0&stnID=3698&dispBack=1
- Government of Alberta. 2013. Sensitive Species Inventory Guidelines. Retrieved on May 14, 2021 from: <https://open.alberta.ca/dataset/93d8a251-4a9a-428f-ad99-7484c6ebabe0/resource/f4024e81-b835-4a50-8fb1-5b31d9726b84/download/2013-sensitive-species-inventory-guidelines-apr18.pdf>
- Government of Canada. 2019. Guidelines to Reduce Risk to Migratory Birds. Environment and Natural Resources. Retrieved on August 9, 2021 from: <https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/reduce-risk-migratory-birds.html#toc3>
- Government of Manitoba (2016). Declaration of Noxious Weeds in Manitoba. Retrieved on August 9, 2021 from: <https://www.gov.mb.ca/agriculture/crops/weeds/declaration-of-noxious-weeds-in-mb.html>
- Looman, J. and Best, K.K.. 1979. Budd's flora of the Canadian prairie provinces. Publication 1662. *Agriculture Canada, Research Branch, Hull, Canada*.
- Manitoba Agriculture, Food and Rural Initiatives. 2010. Soil Series Descriptions. Retrieved on February 21, 2021 from: https://www.manitoba.ca/agriculture/soil/soil-survey/pubs/description_of_soil_series_in_mb.pdf
- Manitoba Chimney Swift Initiative. 2021. Manitoba Chimney-side Monitoring Protocol (for COVID-19). Retrieved on May 14, 2021 from: <https://www.mbchimneyswift.com/Documents/CHIMNEY%20SIDE%20MONITORING%20PROTOCOL%202021.pdf>
- Matile, G., and Keller, G. 2004. Surficial geology of the Winnipeg map sheet (NTS 62H), Manitoba. Manitoba Industry, Economic Development and Mines, Manitoba Geological Survey, Surficial Geology Compilation Map Series, SG-62H, scale 1:250 000.
- Saskatchewan Ministry of Environment. 2019. Rare Vascular Plant Survey Protocol 20.0 March 2019 – Update. Fish, Wildlife and Lands Branch. Retrieved on May 14, 2021 from: <https://publications.saskatchewan.ca/#/products/79238>
- Smith, R., Veldhuis, H., Mills, G., Eilers, R., F. G., & & and Lelyk, G. 1988. Terrestrial Ecozones, Ecoregions, and Ecodistricts, An Ecological Stratification of Manitoba's Landscapes. Technical Bulletin 98-9E. Winnipeg, Manitoba, Canada.: Land Resources Unit, Brandon Research Centre, Research Branch, Agriculture and Agri-Food Canada. Report and Map at 1:1 500 000 scale. CD-ROM 2001.
- Stewart, R.E. and H.A. Kantrud. 1971. Classification of Natural Ponds and Lakes in the Glaciated Prairie Region. Resource Publication 92, Bureau of Sport Fisheries and Wildlife, U.S. Fish and Wildlife Service, Washington D.C. Jamestown, ND.
- Reichert, B., Lausen, C., Loeb, S., Weller, T., Allen, R., Britzke, E., Hohoff, T., Siemers, J., Burkholder, B., Herzog, C., & Verant, M. 2018. A Guide to Processing Bat Acoustic Data for the North American Bat Monitoring Program (NABat).
- Russo, D. and C. Voigt. 2016. The Use of Automated Identification of Bat Echolocation Calls in Acoustic Monitoring: A Cautionary Note for a Sound Analysis. *Ecological indicators*, 66: 598-602.

- Rydell, J., S. Nyman, J. Eklöf, G. Jones and D. Russo. 2017. Testing the Performances of Automated Identification of Bat Echolocation Calls: A Request for Prudence. *Ecological Indicators*, 68: 416-420.
- Vonhof, M. 2006. Handbook of Inventory Methods and Standard Protocols for Surveying Bats in Alberta. Alberta Fish and Wildlife Division Edmonton Alberta. 63p.
- Wildlife Acoustics. 2021. Kaleidoscope Pro 5: User Guide.
- WSP. 2020. South Perimeter Highway Design Study (SPHDS). Prepared for Manitoba Infrastructure.
- WSP. 2021. Design and Construction of Interchange at Provincial Trunk Highway (PTH) 100 and Provincial Road (PR) 200 (St. Mary's Road) – Environment Act Proposal. Prepared for Manitoba Infrastructure. PO 4501203835. WSP Project: 211-00229-00.
- Zoladeski, C.A., Wickware, G.M., Delorme, R.J., Sims, R.A., and Corns, I.G.W. 1995. Forest ecosystem classification for Manitoba: field guide. *Nat. Resour. Can., Can. For. Serv., Northwest Reg., North For. Cent., Edmonton, Alberta. Spec. Rep. 2.*