Navan Wetland Enhancement Project

Environmental Assessment

September 2016

Prepared for:

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1.0 INTRODUCTION

The present report is an Environmental Assessment (EA) written by South Nation Conservation (SNC; the project proponent) regarding the enhancement of a wetland located in Navan, City of Ottawa (herein referred to as the "City"). The trigger for this EA is part of SNC's due diligence prior to altering a proposed project site. Additionally, the project involves excavation within a regulated floodplain and there is potential for provincially protected species-at-risk (SAR) on the site or in proximity to it. The property assessment for flora and fauna was undertaken by SNC staff in August 2016. Further, the surveying of the site and recommendations for wetland enhancement was carried out by Ducks Unlimited Canada. An examination of alternative projects was completed and staff determined this was the project site providing the best environmental return on investment.

1.2 Executive Summary

South Nation Conservation staff were approached by residents of Navan in 2009/10, concerned with the loss of wetland habitat south of the village and north of the existing Prescott-Russell Recreational Trail. The project site was chosen in early 2016 as it is a great candidate site for ecological enhancement, provides both recreational and environmental opportunities and is scheduled to encompass a community pathway for residents to view the wetland enhancement. The project objectives are to:

- Enhance wetland habitat; and
- Enhance biodiversity.

2.0 PROPERTY INFORMATION

The project site is located on City of Ottawa property and permission to move forward with a wetland enhancement at this site was granted by Nick Stow via email (May 2016). The City of Ottawa and SNC are working on a license of occupation with SNC (for wetland enhancement), which will be authorized prior to construction commencing.

2.1 Property Location

The project site is located on City of Ottawa owned property in the village of Navan. The property (999 Smith Road, Navan, ON, CON 9, LOT 11, Roll No: 061450070117200, X Co-ord: -75.4312, Y Co-ord: 45.4156) is a 6.13 hectare lot, as shown in Figure 1. The property is zoned as 'O1 Parks and Open Space Zone' within the City of Ottawa Zoning Bylaw. The property land use does include some wooded area, but the direct vicinity of the construction site is largely cattail monoculture. McKinnon's Creek flows through the property on the east side away from the construction.

Figure 1: Map outlining the property boundaries (in yellow) at 999 Smith Road.

2.1.1 Directions to Site

From Highway 417

Take exit 88 at Ch. Rockdale Road. Turn north onto County Road 33. Turn left onto Frank Kenny Road. Turn left onto Russell Road. Turn right onto Milton Road. Turn right onto Smith Road. From Smith Road turn right onto Forest Lea Drive and then make a right onto Birchtree Crescent. Site access is through the easement located between residential house addresses 3570 and 3580 Birchtree Crescent.

2.1.2 Access to Site

For the purpose of this project and for construction the site will only be accessed via the easement on Birchtree Crescent as described above. Alternately, the site can be accessed via the Prescott-Russell Recreational Trail (small parking lot off Smith Road or parking on edge of Trim Road).

2.2 Dates of Site Visits

March 31st, 2016 – Site reconnaissance visit by SNC staff to obtain site photographs from the Prescott-Russell recreational trail.

May 19th, 2016 – Initial site visit (onsite walk around) with Ducks Unlimited Canada to design wetland enhancement project.

August 2nd & 3rd, 2016 – Site visit by SNC staff to carry out preliminary Butternut survey of the property.

August 5th, 2016 – Site visit by SNC Butternut Health Assessor (Joel Martineau BHA#539) to audit site and prepare a report.

August 22nd, 2016 – Site visit by SNC Staff to complete a fauna and flora inventory of the site.

August 31st, 2016 – Site visit by SNC Staff, Nicholas Stow (City of Ottawa), Tracy Smith (City of Ottawa) and Philip Berthiaume (City of Ottawa) to ensure project aligns with the City of Ottawa's Tree and Natural Areas Protection By-Law.

September 23rd, 2016 – Site visit with SNC staff and interested bidders (mandatory site visit) for wetland enhancement construction.

2.3 Identification of Adjacent Landowners

Directly to the north of the project property there is a residential subdivision as well as pedestrian access through the easement to Birchtree Crescent. To the south of the project property is the Prescott-Russell recreational trail and beyond that, there are agricultural fields. Landowners with properties to the north of the project property and to south will be contacted prior to project construction and their comments and concerns will be documented and addressed.

2.4 Local First Nations Reserves or Communities

The project site falls within traditional Algonquin land. No known sites of significance are within the direct vicinity of the project location. The project site shows historical evidence of previous disturbance based on the aerial imagery from the Geo Ottawa showing the excavation of a drainage feature that had been dug sometime between 1976 and 1991 in close proximity to the planned wildlife pond excavations. Based on historical excavation at this site, the likelihood of discovering artifacts of archaeological significance is low. If any artifacts or objects of interest are discovered during construction, work will be halted immediately and the proper authorities will be notified.

2.5 Permit Requirements

An investigation into the permits required prior to construction was undertaken. This investigation revealed that a South Nation Conservation Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (Regulation 170/06) permit is required. Staff also reviewed Natural Heritage Information Centre (NHIC) data internally as well as contacting the Ontario Ministry of Natural Resources and Forestry (OMNRF) to obtain information regarding the presence of species at risk on the property. It was determined that no species at risk registrations or permits were required for this project.

3.0 ENVIRONMENTAL DESCRIPTION

3.1 Physical Environment

3.1.1 Site Description and Spatial Boundaries

The present project is to be completed at the property site addressed 999 Smith Road in Navan owned by the City of Ottawa. Currently the property is vacant land and is characterized by dominant cattail monoculture vegetation, making it a great candidate site for wetland enhancement work.

The boundaries of this project will include those areas highlighted in yellow and orange as depicted in Figure 1. Since the entirety of the project is to be undertaken on City of Ottawa owned land, the delineation of the land will act as a physical extent of the undertaking and the areas of land to be evaluated for this assessment. Also, the boundaries of the site access via the easement (orange area shown in Figure 1) will be the only means of construction access to and from the project site to ensure that the work remains on City property and off privately owned land.

3.1.2 Site Designations

The project location was evaluated in order to determine if the site has any special designations within the site boundaries. Upon evaluation, it was determined that there is a wetland area to the south-western corner of the property overlapping McKinnon's Creek which is, however, not evaluated as per the Ontario Wetland Evaluation System (OWES). Also, there are no Areas of Natural and Scientific Interest (ANSI) within the site boundaries.

3.1.3 Landforms, Soils and Geology

Part of Eastern Ontario is located on Leda clay, SNC's site assessment included the review of natural hazard mapping specific to Leda clay and the proposed project site is not located within the hazard mapping zone. There are no significant or prominent topographical landforms within the site boundaries, nor is the site a part of any significant larger scale topographical landform.

The majority of soils on the project property are classified as a Manotick soil. This soil exhibits a 0 stoniness and a Canada Land Inventory (CLI) ranking of 2. Drainage is well and texture is considered a fine sandy loam. The second most common soil is a Scarp soil with a stoniness of N/A and CLI of 5. Drainage is well and texture is N/A. The site access easement is soil type St. Thomas with a CLI of 4 and stoniness of 0. Drainage is well and texture is loamy fine sand. The distribution and extent of soils within the site boundaries are illustrated in Figure 2 below.

This project site is suitable and preferred for the work proposed by this project.

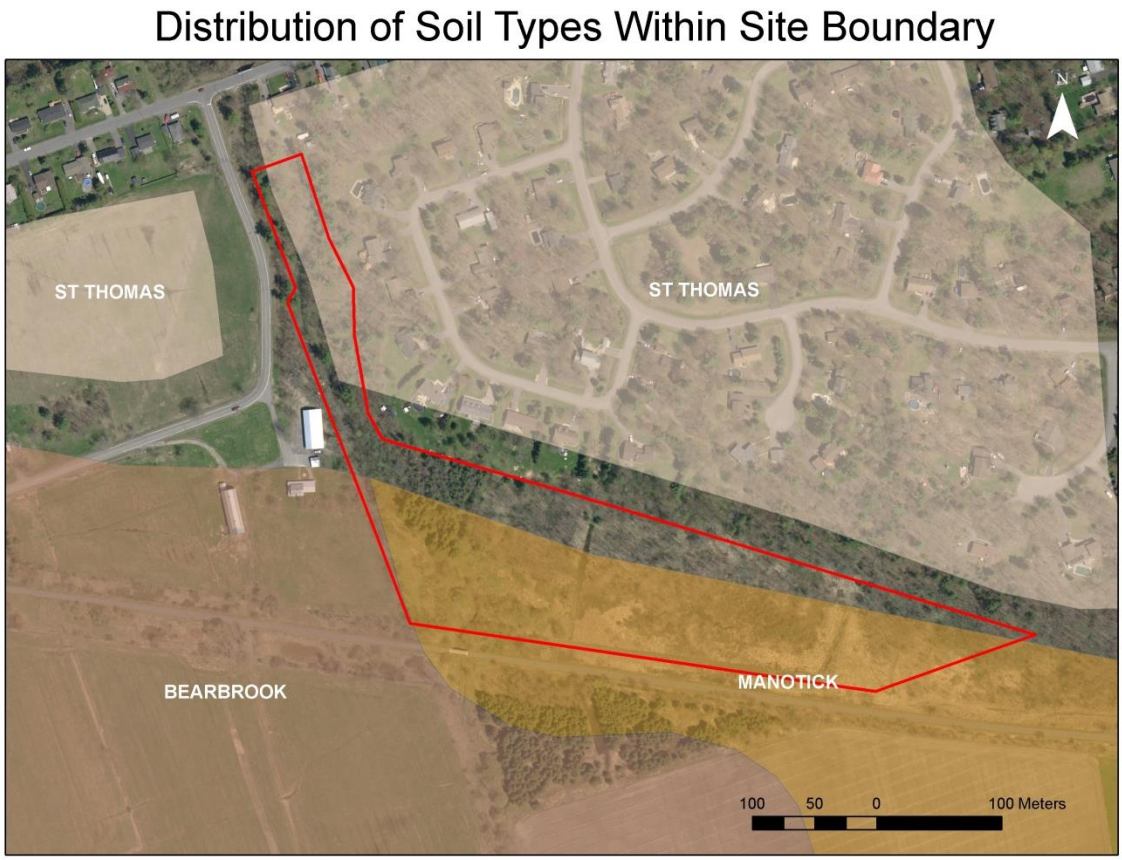

Figure 2: The distribution and extent of soil types within the site boundaries.

3.1.4 Historical Land Usage

Historical aerial photography and correspondences with the present landowners has revealed that the land surrounding the project site to the south has been in agricultural production since the 1960's at the latest. It is likely that the surrounding land has been used for agriculture much earlier than the 1960's. The land to the north of the project site was forested up until sometime between 1976 and 1991 when the residential neighbourhood (which remains today) was built. Portions of the forested land cover of the present day are visible in historical imagery from the 1960's suggesting that these sections of surrounding land have never been disturbed or cleared.

3.1.5 Buried Infrastructure

There is a buried fibre optic cable running parallel to the southern extent of the property boundary. The vendor awarded the contract for construction of the wetland restoration is responsible for verifying the location of all buried infrastructure prior to the commencement of work and to ensure that it is not damaged during construction.

3.1.6 Overhead Infrastructure

There is a hydro pole and some existing overhead cables at the entrance of the site access easement. The vendor awarded the contract for construction of the wetland enhancement is responsible for verifying the location of all overhead infrastructure prior to the commencement of work and to ensure that it is not damaged during construction.

3.1.7 Noise, Vibration and Air Quality Levels

During the construction of the wetland restoration, heavy machinery will be required to undertake the work. The construction will produce higher than natural levels of noise, vibration and air pollution from the machinery within the project site and locale. However, the effects of the noise, vibration, and air pollution will not be present for a significant amount of time at the site and no significant environmental perturbations are expected from this routine construction exercise. As previously mentioned, landowners within the immediate area of the enhancement will be notified of the planned construction work.

3.1.8 Agricultural Tile and Surface Drains

The project site within its boundaries does not contain any agricultural tile drains, however, privately owned land to the south of the project site is tile drained. There is an existing surface drainage feature within the project site boundaries as shown in Figure 3.

Figure 3: The location and extent of existing drainage feature on site.

3.1.9 Floodplain Designations

Floodplain status was investigated on the project site and in the vicinity of the planned wildlife pond excavations. This investigation found that work is to be completed within the modeled floodplain of a 100 year flood event (see Figure 3). Consequently, work will be completed in such a way that the areas within the floodplain are sufficiently and properly protected from sedimentation and erosion post-construction. Construction plans include straw bale check dams, silt fencing as well as cut and fill excavation (all material remains on site) methods with strategically placed and graded spoil piles.

3.1.10 Water Quality and Quantity

Water temperature was monitored in stream from July to October 2016 using a TidBit placed upstream of the footbridge over McKinnon's Creek, which forms part of the Prescott-Russell recreational trail. A thermal stability analysis (Stoneman and Jones, 1996) indicates that the site is part of a warm water stream as shown in Figure 4 below.

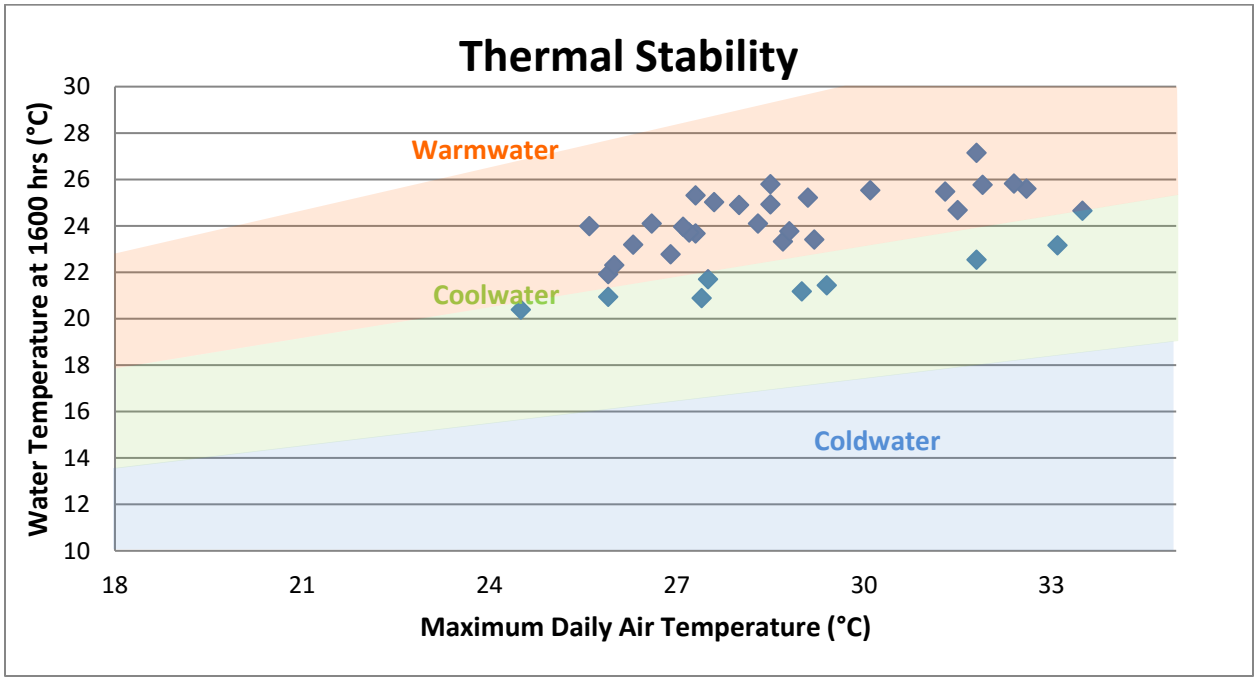

Figure 4: Thermal stability measurements taken from McKinnon's Creek

3.1.11 Existing Transportation Routes

The site is accessible via an easement located on Birchtree Crescent between home addresses 3570 and 3580. The site can be seen from the existing Prescott-Russell recreational trail located along the southern extent of the project site. This recreational trail is the result of a 2009 agreement between the City of Ottawa and VIA Rail Canada (the owner of the trail corridor), this trail extends east from the City's eastern border and continues through the United Counties of Prescott and Russell all the way to Rigaud, Quebec. The project site boundaries are inclusive

of a north – south stretch of McKinnon's Creek, however, the creek is not large enough for commercial vessels to traverse and is not a reliable transportation route to the site. As indicated on signage located along the existing Prescott-Russell recreational trail, snowmobilers with a valid snowmobile license and permit (issued through the Ontario Federation of Snowmobile Clubs) may utilize the recreational trail between the dates of December 1st and March 31st. However, this trail provides users with a view of the project site, it does not include snowmobile trails on the project property.

3.2 Biological Environment

The project location is situated in Ecodistrict 6E-12 (Kemptville), a region within the Mixedwood Plains Ecozone. Consequently, there is a diverse community of plants and animals within the direct area around and within the project site. For the purposes of this project, bird, mammal, amphibian and reptile, fish, and insect accounts were taken by two SNC field trained staff on August 22nd, 2016.

3.2.1 Birds

The following bird species were observed on site:

- Gray Catbird (*Dumetella carolinensis*)
- American Crow (*Corvus brachyrhynchos*)
- Common Yellowthroat (*Geothlypis trichas*)
- Goldfinch (*Spinus sp.*)
- White-breasted Nuthatch (*Sitta carolinensis*)
- Black-capped Chickadee (*Poecile atricapillus*)
- Eastern Wood-Pewee (*Contopus virens*)
- Hairy Woodpecker (*Picoides villosus*)
- Blue Jay (*Cyanocitta cristata*)
- Turkey Vulture (*Cathartes aura*)
- Pileated Woodpecker (*Dryocopus pileatus*)

3.2.2 Mammals

An American Red Squirrel (*Tamiasciurus hudsonicus*) was seen during the assessment. Further, there is evidence of past and present beaver (*Castor Canadensis*) activity on the project site. Although, no active beaver were observed during the August species inventory, there are existing dams and one existing lodge (located on the existing drainage feature at the site). Further site visits into the fall of 2016 confirmed that there were active beaver on the project site.

3.2.3 Amphibians and Reptiles

An Eastern Garter Snake (*Thamnophis sirtalis*) and Green Frog (*Rana clamitans*) were observed during the assessment on site.

3.2.4 Fish

Fish sampling was completed in McKinnon's Creek south east of Smith Road in Navan north of the footbridge. A summary of all the fish species and abundances can be found in Table 1 below and a summary of individual fish lengths and weights are described in Table 2.

Please note, Table 2 provides a summary of individual fish that were 10 centimeters or longer.

Table 1: Summary of fish species, abundance, and bulk weight caught in McKinnon's Creek.

Species	Count	Bulk Weight (g)
Creek Chub	116	733
Longnose Dace	46	127
White Sucker	56	700
Rock Bass	1	2
Johnny Darter	31	50
Bluntnose Minnow	37	101
Common Shiner	70	329
Northern Redbelly Dace	1	1
Trout Perch	4	25
Brassy Minnow	3	7
Fathead Minnow	1	4

Table 2: Summary of individual fish species, length, and weight caught in McKinnon's Creek.

Species	Length (mm)	Weight (g)
White Sucker	200	86
White Sucker	190	71
White Sucker	180	66
White Sucker	180	63
White Sucker	155	42
Creek Chub	180	48
Creek Chub	140	33
Creek Chub	165	45
Creek Chub	160	43
Creek Chub	165	54

3.2.5 Insects and Arachnids

Insects and arachnids observed on site include:

- Cabbage White (*Pieris brassicae*)
- Small Milkweed Bug (*Lygaeus kalmia*)
- Bumblebee (*Bombus sp.*)
- Mud Dauber *(Sceliphron sp.)*
- Stink Bug *(Halyomorpha sp.)*
- Dragonfly *(Odonate sp.)*
- Damselfly *(Odonate sp.)*
- Grasshopper *(Orthoptera sp.)*
- Cellar Spider (*Pholcus phalangioides*)

- Yellow Garden Spider (*Agriope aurantia*)
- Shamrock Orbweaver (*Araneus trifolium*)

3.3 Vegetation Communities

Within the project boundaries, there are a mixture of vegetative communities. Noteworthy communities include treed swamp, thicket swamp, meadow marsh and cattail marsh. Flora observed on site include:

- Field horsetail
- Fragrant bedstraw
- Canada goldenrod
- Goldenrod
- Queen Anne's lace
- Milkweed
- Wild red raspberry
- Nightshade
- Cow vetch
- Lilac
- Cattail
- Jewelweed
- Grape woodbine
- Wild grape
- Joe pye weed
- Anemone spp.
- Virginia creeper
- Wild ginger
- Shaggy moss
- Wild black currant
- Wild burdock
- Common quackgrass
- Marsh vetchling
- Rough bedstraw
- Blackberry spp.
- Panicled aster
- Blue vervain
- Sensitive fern
- Spikerush
- Marginal wood fern
- Fall meadowrue
- May flower
- Purple stemmed aster
- Glossy moss

- Perwinkle
- Alternate-leaved dogwood
- Northern wild raisin
- Common strawberry
- Woodland strawberry
- Red osier dogwood
- Dandelion
- Dutchmans breeches
- Reed canary grass
- Purple angelica
- Nettle spp.
- Naked mitrewort
- Red berried elder
- Honeysuckle spp.
- Prickly gooseberry
- Purple loosestrife
- Bladder campion
- Arrowhead
- Common burreed
- Wild rice
- Duckweed
- Bullrush
- Yarrow
- Wild parsnip
- Elecampagne
- Highbush cranberry
- Smartweed
- Northern blue flag iris
- Silvery spleenwort
- Swamp black currant
- Trillium spp.
- Hog peanut
- Ostrich fern
- Foam flower
- Hobblebush
- Nannyberry
- Elderberry
- White turtle head
- Norway spruce
- Balsam fir
- Manitoba maple

- Red maple
- Pincherry
- Black walnut
- White pine
- Willow spp.
- American elm
- Tamarack
- Bur oak
- Silver maple
- Crab apple
- White spruce
- Basswood
- White ash
- Sugar maple
- Ironwood
- Eastern white cedar
- White birch

3.4 Species at Risk

In order to ensure any species at risk are not harassed, harmed, or killed during project implementation, an investigation of possible species at risk at the site was undertaken, including, information on possible species at risk within the City of Ottawa.

An investigation into the permits required prior to construction was undertaken. Staff reviewed Natural Heritage Information Centre (NHIC) data internally as well as contacting the Ontario Ministry of Natural Resources and Forestry (OMNRF) to obtain information regarding the presence of species at risk on the property. A Butternut tree survey was carried out on site which revealed that no Butternut trees occurred on site, however, there were some hybrids found on site. A report containing the results of the Butternut survey was completed and provided to the OMNRF for review and or audit purposes. It was determined that no species at risk registrations or permits were required for this project.

Further, as a precautionary measure, South Nation Conservation Staff will be on site during all construction activities and monitoring for species at risk.

4.0 EXAMINATION OF ALTERNATIVES

Possible alternative methods of carrying out the project described in this report will be investigated in this section. As a consequence of examining alternatives, any possible alternative methodologies for achieving greater positive environmental benefits to the site are identified. For each of the alternative remedial measures identified in Table 3 below, the following parameters, evaluations, and considerations were taken into account:

- No viable measures are overlooked
- The effectiveness of other methods is evaluated
- The technical feasibility of other methods is evaluated
- The associated costs of other methods is evaluated
- The advantages and disadvantages of each method is evaluated
- The temporary as well as the permanent impacts of each method is evaluated
- The positive benefits and negative impacts to the environment is evaluated
- The 'Do Nothing' method was considered and investigated

Table 3: Summary of alternative remedial measures and their evaluation to complete the Navan Wetland Enhancement Project. H=High, M=Medium, L=Low.

Alternative Remedial Measures	Example of Alternative Method/Design	Overall Rating of Potential Effect							Notes
		-H	-M	-L	NIL	+L	+M	+H	
Berm with excavation	Construct a U-shaped berm to capture runoff from the north and excavate 3 ponds to provide 1.3 hectares of wetland habitat						●		High costs in construction and permitting, potential of flooding proposed new trails and long term maintenance costs. Meets all project goals and more wetland is created for the investment.
Excavation only	Three contoured ponds can be excavated without a berm and modified based on budget.							●	Less costly than constructing a berm. Excavation is flexible in location and footprint and there are lower construction costs. Meets all project goals and no maintenance is required.
'Do nothing'	Leave wetland as is.		●						Least costly. Wetland habitat and biodiversity will not be improved.

Cumulatively, the investigation into the other possible alternatives and the incorporation of their positive and negative aspects into the decision making leads the project proponent to decide that construction of wildlife ponds only, is the appropriate action for this project and will lead to the greatest amount of positive environmental benefits.

5.0 EFFECTS MONITORING

5.1 Construction Monitoring

Throughout the construction process, SNC staff will be on site at all times. Hence, the machinery operator can be directed in their work to ensure that all construction and engineering drawings are being followed. Any erosion and sediment control measures that were installed prior to construction beginning will be continually monitored to ensure they are working as planned and that negligible sedimentation and turbidity is caused downstream of the work site. Finally, all construction waste uncovered or created will be removed from the site in the appropriate manner by the contractor.

5.2 Post-construction Monitoring

After construction has taken place and the wildlife ponds are constructed, post-construction monitoring will be undertaken to attempt to quantify the level of change brought to the site through the project. Specifically, SNC staff will visit the site at least 2 additional times to take photographs of the site, observe water levels, take measurements, and evaluate the projects ability of meeting the enhancement goals. A photographic record of all activities on site during and post-construction will allow future projects to reflect on and learn from any challenges associated this project.

6.0 MITIGATIONS FOR IMPACTS

6.1 Mitigations for Impacts to Trees

The proposed project requires the removal and trimming of select trees and shrubs from the site access point and the enhancement area. To ensure no other trees are impacted, SNC staff met onsite with the City of Ottawa tree cutting by-law staff as well as the contractor retained for the construction and the landowner to each side of the site access. This visit ensured that all parties agreed and understood and flagged the trees that were to be removed. Further, as part of the requirement to remove as few trees as possible for site access, SNC will plant trees to offset those lost as per the direction of City by-law forestry staff.

6.2 Mitigations for Impacts to Water Quality

Attention must be paid to impacts to water quality throughout the project construction and implementation. As the ponds are being excavated, it is inevitable that sedimentation and turbidity levels will increase instream as the sediment has loosened. Consequently, sediment and erosion controls will be utilized throughout the project construction. Further, erosion control measures will stay in place until vegetation is re-established.

6.3 Mitigations for Impacts to Species at Risk

Although no species at risk were identified during site visits, special attention will be awarded to any species that are noted on site during construction and monitoring. If a species at risk is identified, work will be halted immediately until the proper authorities are notified and an order to continue work is awarded.

7.0 SUMMARY AND RECCOMENDATIONS

It is the opinion of South Nation Conservation that if the mitigation measures recommended within this report and the site features identified are implemented and taken into account, no negative impacts are anticipated to any species at risk, natural heritage features, or other environmental features within or adjacent to the current project sites.

Appendix 1: References

Stoneman, C.L., and M.L. Jones. 1996. A simple method to classify stream thermal stability with single observations of daily maximum water and air temperatures. *North American Journal of Fisheries Management* 16:728-737.

Appendix 2: Supplemental Figures

Figure 5: McKinnon's Creek during 2016 monitoring.

Figure 6: Proposed wetland enhancement project site 'before' photo.

Appendix 3: Qualifications of Report Authors

Karen Paquette, Project Lead

Karen Paquette has over 5 years experience leading environmental enhancement projects with South Nation Conservation. She holds a dual diploma in Ecosystem Management and Fish & Wildlife Technician. Her environmental experience includes leading a 3 year biodiversity project as well as SNC's rare turtle project.

Brent Harbers, Science & Research Assistant

Brent Harbers has 2 years of experience working on restoration and habitat improvement projects at South Nation Conservation. His work includes completing species at risk surveys and vegetation inventories at South Nation Conservation. He has contributed to multiple site and environmental assessments for terrestrial and aquatic projects for South Nation Conservation in Eastern Ontario. His education background is in Natural Resource Management where he attended the University of Guelph.

Mesha Sagram, Stewardship Assistant

Mesha Sagram has a background in ecology and GIS studies. She completed a Bachelor's of Science degree with Honors in Environmental Science as well as an Advanced Diploma in GIS Applications and a Graduate Certificate in Ecosystem Restoration. Mesha has taken courses in flora and fauna identification and is skilled in ecological monitoring. She currently works at South Nation Conservation as a Stewardship Student where she has participated in several environmental assessments.