Appendix ‘A’

Agency Advisory Committee Report

One River Environmental Assessment Agency Advisory Committee Report

Prepared for the

Agency Advisory Committee

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Acronyms and Abbreviations

CAA	Conservation Authorities Act
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
COSSARO	Committee on the Status of Species at Risk in Ontario
COTTFN	Chippewas of the Thames First Nation
DFO	Department of Fisheries and Oceans Canada
EA	Environmental Assessment
EBR	Environmental Bill of Rights
ECA	Environmental Compliance Approval
ECCC	Environment and Climate Change Canada
END	Endangered Species
EPA	Environmental Protection Act
ESA	Endangered Species Act, 2007
LRIA	The Lakes and Rivers Improvement Act
LTVCA	Lower Thames Valley Conservation Authority
MEA	Municipal Engineers Association
MIRR	Ministry of Indigenous Relations and Reconciliation
MMA	Ministry of Municipal Affairs
MNRF	Ministry of Natural Resources and Forestry
MOECC	Ministry of the Environment and Climate Change
NHIC	Natural Heritage Information Centre
NPA	Navigation Protection Act
O. Reg.	Ontario Regulation
OWRA	Ontario Water Resources Act
PLA	Public Lands Act
PPS	Provincial Policy Statement
PTTW	Permit to Take Water
SAR	Species at Risk
SARA	Species at Risk Act
SC	Species of Special Concern
TC	Transport Canada
THR	Threatened Species
UTRCA	Upper Thames River Conservation Authority

SECTION 1

Introduction

1.1 Purpose

The purpose of this report is to provide a summary of the presentations and discussion from the initial three meetings of the One River Master Plan Environmental Assessment (EA) Agency Advisory Committee. The first three meetings were established to allow an opportunity for the committee to provide guidance to the One River project team in regards to the potential requirements for permitting and approvals associated with the alternatives for the Springbank Dam.

1.2 Background

The One River Master Plan EA will follow the Approach #1 process outlined in the Municipal Engineers Association's (MEA's) Municipal Class EA document and meet Phases 1 and 2 of the process as outlined in the MEA's Municipal Class EA document (as amended in 2007 and 2011, and 2015). The objective of this Master Plan-level EA is to develop a comprehensive plan for integration and implementation of various projects and plans already defined to varying degrees for the One River study area, as well as new projects and plans developed as part of this EA. The overall purpose of the EA is to develop a comprehensive plan, through engagement with First Nations and Métis, and in consultation with the public, and agency stakeholders, for implementing various projects being considered within the One River study area. These projects will represent both infrastructure needs and the community's recreational and ecological vision for the River. As part of the EA process, findings from other studies, plans, and projects will be taken into consideration in order to create various approaches and select preferred options on the basis of their net social/cultural, environmental, technical, and economic impacts. For all projects identified in the Master Plan that trigger the criteria for a Schedule B or C project, further assessment, consultation and documentation will be required to meet the requirements of the MEA Class EA.

1.2.1 Problem/Opportunity Statement

The problem/opportunity statement developed through initial consultation prior to the commencement of the EA has been maintained throughout the initial phases of the study:

"The river that flows through London's downtown has many names: Deshkan Ziibiing (known to the Anishnaabeg and Lenape of the Great Lakes); Kahwyˆhatati (ONYOTA:KA); and, The Thames (John Graves Simcoe).

This river is both our inheritance and our living legacy. It is our collective responsibility to maintain and enhance this shared natural, cultural recreational and aesthetic resource. The One River Master Plan EA will consider the area historically influenced by the Springbank Dam and will provide a plan that coordinates critical infrastructure projects in ways that improve the overall health of the river, identifies and creates an understanding of potential impacts these projects may have on downstream communities, species at risk and/or endangered species and where possible avoids them and respects the vision of Back to the River's "The Ribbon of the Thames" concept plan. This study, in the context of many other ongoing initiatives, will preserve for future generations this valuable resource and allow people of all abilities to enjoy and access this designated Canadian Heritage River."

1.3 One River Master EA Plan Process

As a first step in the Master Plan EA process, background information will be reviewed and the problem opportunity/problem definition will be confirmed (Class EA Phase 1). It is recognized that there are numerous alternatives to be evaluated in order to select and develop the overall strategy that will best allow for the protection and enhancement of the Thames River in the One River Study Area. The approach for evaluating these alternatives involves the following:

- Stage 1: The ultimate selection of an option for the Springbank Dam will be a determining factor in the identification and evaluation of river management strategies including various infrastructure projects as defined in the study Terms of Reference and the design of the Back to the River elements. It is necessary, therefore, to first determine the preferred option for the dam so that the option selected can inform the decision-making process on the river management strategies.
- Stage 2: Once the option for the Springbank dam is selected, alternative strategies for river management, which consist of different types of projects, will be developed and assessed. A preferred strategy will be selected based on environmental, social, technical and economic criteria.
- Stage 3: The preferred strategy will be developed in detail, including for each individual project estimated costs, schedule for implementation, and additional approval and assessment requirements.

Figure 1-1 illustrates the One River Master Plan approach and how it fits within the requirements of Phase 1 and Phase 2 of the MEA process.

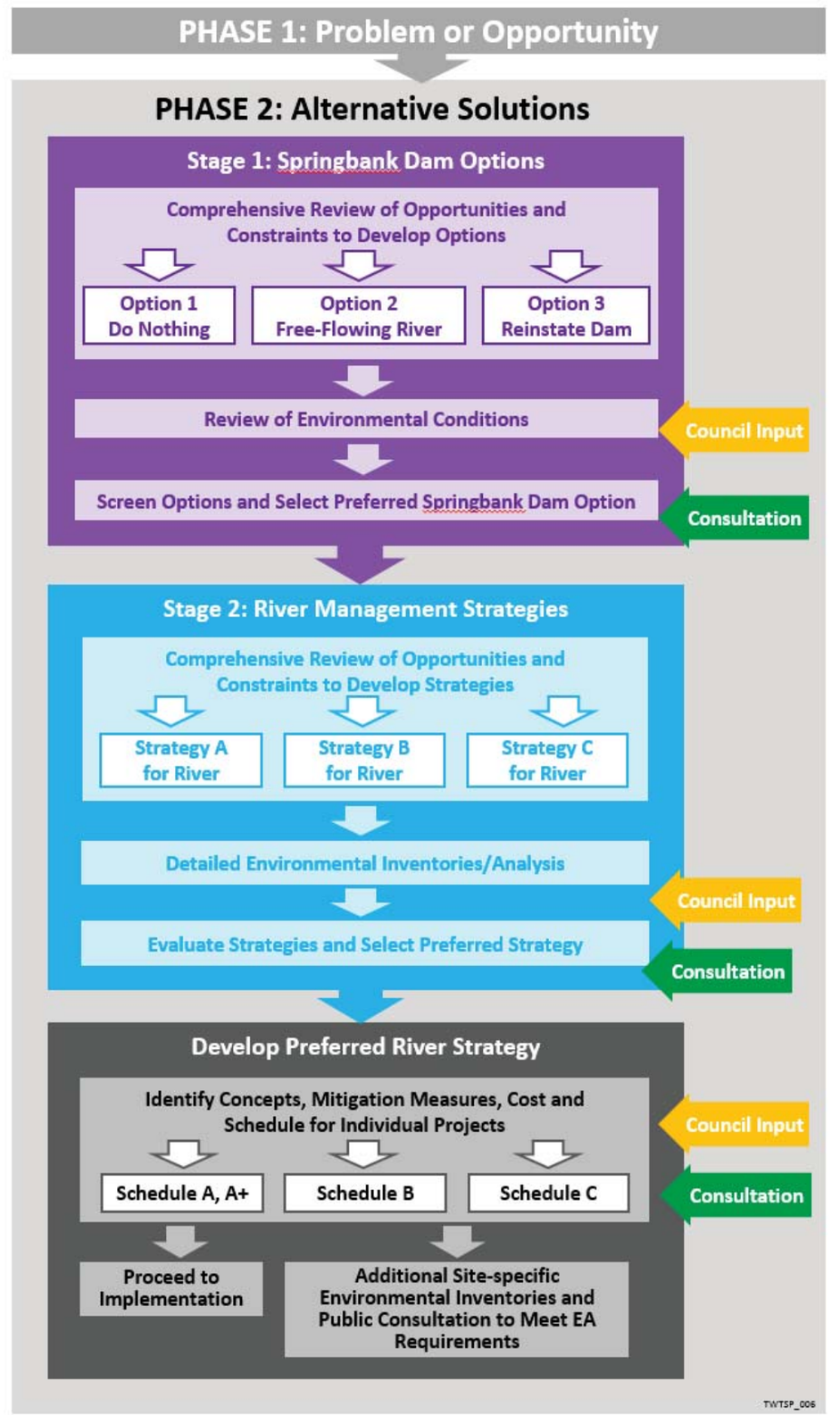

Figure 1-1. One River Master Plan EA Approach

1.4 Springbank Dam Alternatives

Stage 1 of the process will see the determination of a preferred alternative for the Springbank Dam, through the identification and description of the alternatives, review of existing conditions, assessment of impacts, and selection of a preferred option.

The Springbank Dam alternatives include:

- **Do Nothing** so that the dam is kept in its current condition by completing a safety and operations review and on-going maintenance with no repurposing. Minor work would be completed to salvage appropriate dam components and obtain applicable permits.
- **Free Flowing River** so that the dam is decommissioned and no longer provides a water retention function. Dam decommissioning may include options for repurposing the dam structure and various river enhancements, ecological enhancements and recreational enhancements upstream. These enhancements are to work within the hydrologic and hydraulic limitations associated with lower water levels during the summer months when, otherwise, the dam may have been operated to increase water depths upstream. Work to be completed in addition to salvaging dam components and obtaining applicable permits could include removing gates to provide a live bottom to the river and stabilizing the required components and shore structures.
- **Reinstating the Dam** so it provides a water retention function, operating at a similar capacity as it has previously. Dam repair or reconstruction allows for dam operation during months when higher water levels upstream would promote additional recreational opportunities associated with higher water levels. Reinstating the dam does not preclude adding options like those for repurposing the dam.

1.5 Role and Membership of the Agency Advisory Committee

1.5.1 Role

The main objective of the Agency Advisory Committee is to provide guidance and feedback to the project team on environmental, social/cultural, technical and regulatory issues and challenges that could impact the decision making in regard to alternatives evaluations for the One River EA project. The initial three meetings with the Agency Advisory Committee were established specifically to examine the issues and challenges associated with the evaluation of alternatives for Springbank Dam.

1.5.2 Membership

The Agency Advisory Committee is comprised of the following representatives from a variety of agencies, including the Ministry of Environment and Climate Change (MOECC), Ministry of Natural Resources and Forestry (MNRF), Upper Thames River Conservation Authority (UTRCA), Lower Thames Valley Conservation Authority (LTVCA) and the Department of Fisheries and Oceans (DFO):

- Scott Abernethy - Surface Water Group Leader MOECC
- Emmilia Kuisma - Issues Project Coordinator, MOECC
- Craig Newton - Regional Environmental Planner, MOECC
- Jason Lehouillier- Acting District Manager, MOECC
- Mary Alikakos- Senior Advisor, Outreach and Program Support, MOECC (Formerly with Chippewas of the Thames First Nations for initial meeting)
- Claire Paller - Aylmer District Planner, MNRF

- Chris Tasker - Manager, Water and Information Management UTRCA
- Mark Snowsell- Land Use Regulations Officer, UTRCA
- Don Pearson- General Manager, LTVCA
- Jennie Ryman- Fisheries Protection Biologist, DFO

Project Team:

- Andrew Macpherson - Manager, Parks Planning & Design, City of London
- Linda McDougall - Ecologist Planner, City of London
- Ashley Rammeloo – Acting Division Manager, Stormwater Engineering, City of London
- Daniel Hsia – Water Demand Manager, Water Engineering, City of London
- Tom Mahood - Project Manager, CH2M

The project team presents study information to the Agency Advisory Committee at key milestones for input, guidance and feedback. All input will be considered in the decision-making process. Inputs and responses received will be tracked in a comments-response log and included in the final Master Plan. The Committee will issue Discussion Summary reports at key points in the EA process. These reports will be drafted by the project team based on the overall discussion and will be issued upon group consensus. This current report is the discussion summary report for the initial three Agency Advisory Committee meetings.

SECTION 2

Additional Perspectives from Meeting No. 1

2.1 Chippewas of the Thames First Nation

Mary Alikakos, Senior Environmental Officer and Fallon Burch, Consultation Coordinator for the Chippewas of the Thames First Nation (COTTFN), were asked to attend the initial Agency Advisory Committee meeting to share the perspective of the COTTFN on the Springbank Dam. COTTFN was invited as they have been involved from the very beginning of the Springbank Dam discussions. They were invited to speak on their own interests and did not speak to the interests of other First Nations communities. The purpose in requesting their participation in the first Agency Committee meeting was to highlight to the committee the COTTFN's interest in the project, highlighting the importance of the river to the downstream First Nations from both a functional and spiritual perspective.

At Agency Advisory Committee Meeting No. 1, Mary expressed appreciation to the City of London for reaching out to the COTTFN to join the discussion regarding the Springbank Dam and the One River EA and advised the agencies present to consider COTTFN throughout this Master Plan and specifically during the Springbank Dam discussion. A recommendation was made to engage the First Nations communities early and often to allow for full participation in the EA discussion. The First Nations Engagement Plan is included in Attachment 1- Additional Documentation.

Current Environmental and Ecological Context

Understanding the current environmental and ecological setting of the Thames River is critical to the evaluation of the Springbank Dam alternatives. The following sections outlines the current environmental and ecological context shared with the Agency Committee by various subject matter experts and the consulting team.

3.1 The Thames River: Background

The Thames River is located in southwestern Ontario within the Carolinian Zone (Eco Region 7E), and hosts more species than any other region in Canada (Carolinian Canada, 2017). Because of its warmer climate, this region of Canada also contains more endangered and threatened species, making it uniquely situated for protection and conservation directed regulatory measures. Specific federal and provincial legislation that apply to Species-at-Risk (SAR), such as the Species at Risk Act (SARA) and Endangered Species Act (ESA) impact the regulatory process associated with the Springbank Dam alternatives.

A summary of historical surveys, assessment, and sampling efforts have been used to develop the Background Ecological Data Summary Report (Matrix, 2017). Information from this report, as well as ongoing 2017 fisheries surveys, habitat mapping, and geomorphology assessments are being used to update the current conditions of the One River study area and functional corridor. A summary of the information gathered thus far is provided in the following sections.

3.2 Geomorphology and Aquatic Habitat

The Thames River consists of a wide, low gradient, fairly homogenous channel that is confined by urbanized land use and flood protection measures throughout the City of London (Parish, 2012). Barriers within the river, such as the Springbank Dam, have historically controlled the conveyance of water and limited the downstream mobility of sediment. During times of operation, the Dam created a low-energy environment, extending upstream for several kilometers, reducing the channel's capacity to convey sediment in the downstream direction.

Since the non-operation of Springbank Dam in 2006, a free-flowing system has formed, allowing sediment to mobilize and a low-flow channel to become better defined as lateral bars have developed along the margins. These in-channel features have since been naturalized with approximately 10 hectares of native and non-native types of vegetation including perennials, grasses, shrubs, and small trees, adding roughness and enhancing stability through root cohesion. Mid-channel bars in wider, multi-threaded sections of the River have similarly vegetated, forming more permanent island features which will divert flows and accumulate sediment under low-flow or normal flow conditions. Because of this, the riparian corridor is expanding and creating a larger functional habitat along the channel margins. In some areas, the habitat changes associated with change to a Free-Flowing River system have been well documented. The non-operation of the dam has altered many biophysical and geomorphic components of the natural environment including the riverine function of the aquatic habitat and terrestrial corridor. The river function, morphology and upstream vegetation has changed to allow riverine adapted species to colonize the formerly impounded areas of the river.

Based on 2017 field reconnaissance observations, it was determined that the river is still in a state of transition, providing a more diverse setting for various terrestrial and aquatic habitats to form. Vegetation establishment along the banks have developed into dense shrub growths, creating a littoral zone in areas that were formerly submerged and bordered by retaining walls and dykes. A more

detailed geomorphology assessment will be completed in the summer of 2017 to further characterize the channel form and aquatic habitat throughout the study area.

3.3 Species at Risk

3.3.1 SAR

Over 70 different SAR have been identified as occurring, or have the potential of occurring within the study area based on previous studies, regional databases (NHIC, Atlases etc.) and input from applicable agencies (UTRCA, MNRF and DFO). Although the majority of SAR are birds (25) and flora (16), resident wildlife SAR which are more likely to use the river and valley corridor for functional needs have also been identified.

An initial screening for known SAR in the study area was provided by the MNRF as part of an August 26 2016 correspondence which is attached to this report as Attachment 1 (Additional Documentation). The SAR screened include species of Special Concern (SC), and Threatened (THR) and Endangered (END) species. The SAR identified during the MNRF screening included:

- Sliver Shiner (THR)- general habitat protection
- Eastern Spiny Softshell Turtle (END)- general habitat protection
- Queensnake (END)- regulated habitat protection
- Eastern Hog-nosed Snake (THR)- general habitat protection
- Salamander (Mudpuppy) Mussel (END) – general habitat protection
- Northern Map Turtle (SC)
- Snapping Turtle (SC)
- Black Redhorse- (THR)- general habitat protection
- Wavy-rayed Lampmussel (THR)- regulated habitat protection

A summary list of 17 SAR fish, mussel and herpetofauna that have been observed or mapped near the One River Study Area is outlined in Table 3.1., building on the MNRF screening level inventory. This summary details the current federal and provincial status and notes about the presence of the species within the study area. Six of the SAR documented in the study area are listed as “Endangered” under the Federal Committee on the Status of Endangered Wildlife in Canada (COSEWIC) including Spiny Softshell Turtle, Queensnake, and Salamander (Mudpuppy) Mussel. Additionally, species are also listed provincially under the Committee on the Status of Species at Risk in Ontario (COSSARO) and include designations of “Threatened” and “Special Concern”.

3.3.2 SAR Critical Habitat

As noted in Table 3.1., at least 17 SAR have been observed or mapped near the One River study area, upstream of the Springbank Dam. While some species may use the study area on a transient basis for migration or foraging, some species are considered “resident species” and use the habitat to fulfil their life-cycle needs to maintain a viable population. If a SAR is considered a resident, then the area is considered critical habitat.

SAR habitat is protected by both federal and provincial legislation by the *Species at Risk Act* and *Endangered Species Act* respectively. The following discussion explains how SAR habitat is protected under these regulations.

3.3.2.1 Species at Risk Act (SARA)

SARA defines critical habitat as habitat that is vital to the survival or recovery of wildlife species. The habitat may be an identified breeding site, nursery area or feeding ground. For SAR, these habitats are of crucial importance, and must be identified and included in recovery strategies or action plans.

Critical habitat for some mussel and fish species has already been mapped, or is under consideration within the study area by DFO. The attached DFO maps (Attachment 2-Distribution of Fish Species at Risk and Distribution of Mussel Species at Risk Maps) highlight the most recent distribution of critical habitat that has been protected under SARA, is under consideration for listing, or listed as special concern for fish and mussels. For other species, the critical habitat has not yet been formally defined. In these cases, the precautionary principle is invoked under SARA, and errs on the side of conservatism for the species.

Critical habitat will be considered destroyed if part of the critical habitat is degraded, either permanently or temporarily, such that it would not serve its function when needed by the species. Although the current fisheries and mussel distribution have not been fully or formally mapped within the former reservoir footprint, the effect of Springbank Dam's non-operation has resulted in the removal of barriers and critical habitat, by extension, has become established. Field evidence from more recent studies has indicated that more SAR are using this area for life cycle needs. Given this new information, in conjunction with the DFO mapping, the study area should be considered as critical habitat for Endangered, Schedule 1 listed species for all intents and purposes.

Based on the known information related to the observed/potential SAR in the study area and the designation of critical habitat, re-establishing the Springbank Dam and allowing conditions to revert back to its former impounded habitat condition would negatively affect the SAR by destroying critical habitat.

3.3.2.2 Endangered Species Act (ESA)

All END and THR species under the ESA receive habitat protection. Some of the species known to occur in the Thames River have regulated habitat protection (Queensnake, Wavy-rayed Lampmussel), while the others have general habitat protection. MNRF has created general habitat descriptions to define habitat for some species, such as Silver Shiner.

Under the ESA, habitat is defined as either:

- General Habitat: an area on which a species depends directly or indirectly to carry out its life processes (under clause 2(1)(b) of the Act) or,
- Regulated Habitat: the area prescribed for a species in a habitat regulation (under clause 2(1)(a) of the Act). A habitat regulation may prescribe an area as the habitat of a species by describing the boundaries of the area, the features of the area, or by describing the area in any other manner. Regulated habitat may be smaller or larger than general habitat. As well, unlike the general habitat of a species, regulated habitat may include areas currently unoccupied by the species, such as areas where the species formerly occurred or areas where there is the potential for the species to become re-established. These areas are commonly referred to as "recovery habitat".

As in the case of SARA, potential impacts to protected habitat (either regulated or general) under ESA 2007 need to be considered when evaluating alternatives for Springbank Dam. Under the ESA, damage and destroy determinations will be based on the best scientific information, including Aboriginal and traditional knowledge, available to MNRF. A lack of scientific certainty in making damage and destroy assessments is not considered a justifiable reason to postpone assessment decisions. Knowledge gaps due to substantial scientific uncertainty may highlight research, monitoring and stewardship opportunities that can help to increase understanding of a species and the effects a specific activity may have on a species or its habitat.

MNRF uses a risk management approach that is inherently incorporated in the categorization of species' habitat through the application of the factors such as use of habitat and characteristics of habitat in determining whether an activity is likely to damage or destroy habitat. In some cases, there will be a moderate to high level of understanding of a species at risk and the effects that a proposed activity will have on its habitat. In others, this understanding will be very limited. The MNRF first and foremost encourages activity proponents to look for opportunities to carry out their activities in ways that will avoid any adverse effects on a species at risk or its habitat. If adverse effects are predicted on the

function of the habitat for supporting one or more of the species' life processes may become impaired or eliminated, these activities could be regarded as contravening subsection 10(1) of the ESA and would require authorization under the Act prior to proceeding.

Table 3.1. Summary of Aquatic and Terrestrial Species Identified within the One River Study Area

Common Name	Scientific Name	S-RANK	COSEWIC	COSSARO	Notes
Herpetofauna (5)					
Eastern Spiny Softshell	(*Apalone spinifera*)	S2	END	END	Observed in the study area (UTRCA). Identified by MNRF, July 8, 2016.
Northern Map Turtle	(*Graptemys geographica*)	S3	SC	SC	Observed in the study area (UTRCA), Identified by MNRF, July 8, 2016.
Snapping turtle	(*Chelydra serpentina*)	S3	SC	SC	Observed in the study area (UTRCA), Identified within the study area by MNRF, July 8, 2016.
Eastern Milksnake	(*Lampropeltis triangulum*)	S4	SC	NAR	Observed in the in the study area (UTRCA)
Queensnake	(*Regina septemvittata*)	S2	END	END	Observed in the study area (UTRCA). Identified by MNRF, July 8, 2016.
Mussels (8)					
Wavy-rayed Lampmussel	*(Lampsilis fasciola)*	S1	SC	THR	UTRCA/DFO/EC Sampling Records 2004, 2013 and 2015. Possible to occur within study area (UTRCA, 2017a), Identified by MNRF, July 8, 2016.
Salamander (Mudpuppy) Mussel	*(Simpsonaias ambigua)*	S1	END	END	UTRCA/DFO/EC Sampling Records 1998, relic shell found. Critical SARA habitat mapped (DFO, 2016). Identified by MNRF, July 8, 2016.
Mapleleaf mussel	*(Quadrula quadrula)*	S2	SC	THR	UTRCA/DFO/EC Sampling Records 1998, live species found. Critical SARA habitat mapped (DFO, 2016)
Rainbow mussel[a]	*(Villosa iris)*	S2S3	SC	SC	Found upstream of study area 2003/2004 sampling records, likely to occur (UTRCA, 2017b). Critical SARA habitat mapped (DFO, 2016)
Rayed bean[a]	*(Villosa fabalis)*	S1	END	END	Found upstream of study area 2003/2004 sampling records, possible to occur (UTRCA, 2017b). Critical SARA habitat mapped (DFO, 2016)
Round pigtoe [a]	*(Pleurobema sintoxia)*	S1	END	END	Found upstream of study area 2003/2004 sampling records, South Thames Branch, likely to occur (UTRCA, 2017b). Critical SARA habitat mapped (DFO, 2016)
Kidneyshell [a]	*(Ptychobranchus fasciolaris)*	S1	END	END	Unlikely to occur in study area (UTRCA, 2015). Critical SARA habitat mapped (DFO, 2016)
Fish (5)					
Silver shiner	*(Notropis photogenis)*	S2S3	THR	THR	UTRCA/DFO/MNR Sampling Records 2011/2015 throughout study area. Critical habitat under consideration (DFO, 2016). Identified within the study area by MNRF, July 8, 2016.
Black Redhorse	*(Moxostoma duquesnei)*	S2	THR	THR	UTRCA/DFO/MNR Sampling Records 2004/2005 throughout study area. Likely to be present within the study area (UTRCA, 2017a), Identified by MNRF, July 8, 2016.
Northern Brook Lamprey	*(Ichthyomyzon fossor)*	S3	SC	SC	Found in 2003 Springbank Dam EA near Forks area (Arces, 2003). Critical habitat mapped (DFO, 2016)
Spotted Sucker	*(Minytrema melanops)*	S2	SC	SC	UTRCA/DFO/MNR Sampling Records 2005. Critical habitat mapped (DFO, 2016)
Pugnose Minnow[b]	*(Opsopoeodus emiliae)*	S2	THR	THR	Observed downstream of the study area (City, 2003). Critical habitat mapped (DFO, 2016)

Notes:

[a.] Included in critical habitat mapped for several mussel species in the study area (DFO 2016)

[b.] Included in critical habitat mapped for fish species under consideration in the study area (DFO, 2016)

SECTION 4

Planning and Permitting Considerations

4.1 Permitting Approvals Framework

A review of all relevant legislation, regulations and permits has been done to identify the regulatory approvals affecting the alternatives for the Springbank Dam, which are considered Do Nothing, Free-Flowing River, or Reinstate the Dam.

This section details the expectations for approvals based on the review. Table 4.1. outlines the relevant policy initially considered.

Table 4.1. Relevant Legislation Considered
Legislation Relevant to One River EA Springbank Dam Alternatives

Policy or Act	Administrative Body
Conservation Authorities Act	UTRCA
Provincial Policy Statement	MMA
Environmental Protection Act	MOECC
Ontario Water Resources Act	MOECC
Lakes and Rivers Improvement Act	MNRF
Public Lands Act	MNRF
Endangered Species Act	MNRF
Species at Risk Act	DFO
Fisheries Act	DFO
Navigation Protection Act	Transport Canada (TC)

The following sections provide a summary of the primary areas of legislation potentially affecting the selection of the Springbank Dam alternative.

4.1.1 Conservation Authorities Act

In the UTRCA watershed, the local *Conservation Authorities Act* (CAA) regulation is Ontario Regulation 157/06 (O. Reg. 157/06). The purpose of this regulation is ensuring public safety and preventing property damage and social disruption due to natural hazards such as flooding and erosion. The UTRCA implements the regulation by issuing permits for works in or near watercourses, valleys, wetlands, or shorelines when required. Property owners must obtain permission from the UTRCA before beginning any development, site alteration, construction, or placement of fill within the regulated area. Permits are also required for any wetland interference, or for altering, straightening, diverting or interfering in any way with the existing channel of a creek, stream or river.

4.1.2 Provincial Policy Statement

The Province of Ontario's Provincial Policy Statement (PPS) is the overarching policy that defines provincial interests for matters affecting planning. Two key aspects guiding this project include natural

heritage and water resources. Provincial policy requires that natural features and areas shall be protected for the long term. The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.

The City of London's Official Plan, the London Plan, is consistent with the Province of Ontario's PPS. Therefore the policy provided in the PPS is followed by following the London Plan, which will be adhered to, where applicable, during the One River EA.

4.1.3 Environmental Protection Act

The *Environmental Protection Act* (EPA) addresses the protection and conservation of land in Ontario. Regulations under the EPA require approvals issued where permitted activities may impact air, water and/or the environment as a whole. Approvals under this Act cover emissions and discharges related to air, noise, waste or sewage. The approval is achieved through an *Environmental Compliance Approval* (ECA). The Springbank dam does not currently require an ECA, and none of the three alternatives are expected to require an ECA for implementation.

4.1.4 Ontario Water Resources Act

The objective of the *Ontario Water Resources Act* (OWRA) is to provide for the conservation, protection and management of Ontario's waters and for their efficient and sustainable use, in order to promote Ontario's long-term environmental, social and economic well-being. Permits are provided for taking water to support projects both during construction and for long term purposes.

4.1.5 Lakes and Rivers Improvement Act

The *Lakes and Rivers Improvement Act* (LRIA) provides the MNRF with the legislative authority to govern the design, construction, operation, maintenance and safety of dams in Ontario. The MNRF administrates application review, approval, and guidance to applicants who are seeking approval under sections (14, 16 and 17.2) of the LRIA.

4.1.6 Public Lands Act

The *Public Lands Act* (PLA) defines the term "public lands" as those designated as Crown lands. The PLA outlines the use, planning, management, development, and sale of public lands and forests and the control that MNRF has over such lands. Occupational authority may be required prior to constructing any permanent or temporary structures on Crown lands (including the bed of the River). Work permits may be required for filling Crown lands or other shoreline related activities on private shore lands or Crown lands. A Memorandum of Understanding, or a similar type of agreement, may be required for assigning responsibility to another agency for some types of structures (i.e. bridges over the bed of Crown lands).

4.1.7 Endangered Species Act

The ESA prohibits the harm and harassment of protected species and the damage or destruction of their habitat. Permits for activities that are acceptable under this Act are administered by the MNRF. The permit process applies to projects that can be considered to fall into one of the following categories:

- Health or safety
- Protection or recovery
- Social or economic benefit to Ontario
- Aboriginal
- Overall benefit

It needs to be demonstrated that reasonable alternatives to the proposed project activity have been considered. Projects must also take reasonable steps to minimize the adverse effects of the activity on the species at risk and their habitat that are likely to be affected by the activity. Projects that are uncomplicated may successfully achieve the permit requirements within a 6-12 month timeframe. This would not be typical of a process that affects multiple species and habitat and that is not an economic priority project.

4.1.8 Species at Risk Act

The purposes of the *Species at Risk Act* (SARA) are to prevent wildlife species in Canada from disappearing, to provide for the recovery of wildlife species that are extirpated (no longer exist in the wild in Canada), endangered, or threatened as a result of human activity, and to manage species of special concern to prevent them from becoming endangered or threatened. A series of measures applicable across Canada provides the means to accomplish these goals. Some of these measures establish how governments, organizations, and individuals in Canada work together, while others implement a species assessment process to ensure the protection and recovery of species. Some measures provide for sanctions for offences under SARA. The Habitat Stewardship Program supports the public's habitat protection and species at risk recovery initiatives.

The SARA also provides for the issuing of permits or the conclusion of agreements for certain scientific or educational activities and for the implementation of special emergency measures. Due to the high number of SAR present in the study area, it is important to consider the impact of project activities on SAR.

4.1.9 Fisheries Act

The *Fisheries Act* contains three key provisions on conservation and protection of fish habitat essential to sustaining freshwater and marine fish species. The DFO administers section 35, the key habitat protection provision, prohibiting any work or undertaking that would cause the harmful alteration, disruption or destruction of fish habitat. The DFO also administrates Section 20, which requires a fish-pass to be provided by the owner of any obstruction across or in any stream, should the minister determine it to be necessary for the free passage of fish.

The Department of Environment and Climate Change Canada (ECCC) administers Section 36, the key pollution prevention provision, prohibiting the deposit of deleterious substances into waters frequented by fish, unless authorized by regulations under the Fisheries Act or other federal legislation. A deleterious substance can be any substance that, if added to any water, would degrade or alter its quality such that it could be harmful to fish, fish habitat, or the use of fish by people.

4.1.10 Navigation Protection Act

The *Navigation Protection Act* (NPA) is an Act that authorizes and regulates interferences with the public right of navigation. A primary purpose of the NPA is to regulate works and obstructions that risk interfering with navigation in the navigable waters listed on the schedule to the Act. The NPA also prohibits the depositing or throwing of materials that risk impacting navigation in navigable waters and the dewatering of navigable waters.

4.2 Permitting Considerations Related to Dam Alternatives

Approvals required for the three options, which include Do Nothing, Free-Flowing River, and Reinstate the Dam, were considered.

Review of the permitting details with the Agency Review Committee confirmed the requirement for a Permit to Take Water (PTTW) under the *Ontario Water Resources Act*, and the Navigable Waters Permit

process and *Lakes and Rivers Improvement Act* permit process expected for the dam options. No permit would be required under Ministry of Northern Development and Mines (MNDM) in this region.

Critical habitat, as defined by DFO exists within the area that would be affected by flooding. The presence of multiple species at risk and the significance of water quality and habitat to those species also affects the subject area. Table 4-1 identifies the anticipated approvals based on further review and consideration in consultation with the agencies review committee. Summary expectations of the complexity of these approvals follow.

Table 4.2. Complexity of Approvals Anticipated

Act	Administrative Body	Permit Required	Dam Alternatives											
			Do Nothing				Free-Flowing River				Reinstate the Dam			
			[a]Cost	[b]Time	[c]Tech	[d]Complexity	Cost	Time	Tech	Complexity	Cost	Time	Tech	Complexity
CAA	UTRCA	Permit under section 28	N/A				$	Short	Medium	Medium	$$$	Long	Medium	High
OWRA	MOECC	Permit To Take Water	N/A				N/A				$	Short	Medium	Medium
LRIA	MNRF	MNRF Dam Construction Regulation Permit	$	Long	Low	Medium	$$	Long	High	High	$$$	Long	Extreme	Extreme
ESA	MNRF	Overall Benefit Permit	N/A				$	Short	Medium	Medium	$$$	Long	Extreme	Extreme
SARA	DFO	Permit	$	Long	Low	Low	$	Long	Low	Low	$$$	Long	High	High
NPA	TC	Navigable Waters Permit	N/A				$	Long	Low	Low	$	Long	Medium	Medium

Table Notes

[a] Cost to implement solutions to meet permit requirements- based on $$$ scale ($- Low Cost, $$- Medium Cost, $$$- High Cost)

[b] Time Considerations for permitting (Short or Long)

[c] Technical Consideration Level (Low, Medium, High, Extreme)

[d] Total Complexity based on cost, time and technical considerations (Low, Medium, High, Extreme)

4.2.1 Upper Thames Conservation Authority Approval

A permit under Section 28 of the *Conservation Authorities Act*, provided by the UTRCA is anticipated under the options for the Dam except the "Do Nothing" option. The focus of a permit in this project would include protection of life and property as a recreation function, not for flood control. The CA would coordinate with the MNRF, in consideration of how operation could affect flooding. The CA also provides a supporting role and local knowledge relative to federal and provincial responsibilities for Species at Risk.

4.2.2 Ontario Water Resources Act- Permit to take Water

Water takings in Ontario are governed by the OWRA and the Water Taking Regulation (O. Reg. 387/04) a regulation under the Act. Section 34 of the OWRA requires anyone taking more than a total of 50,000 litres of water in a day, with some exceptions, to obtain a Permit from a Director appointed by the Minister for the purposes of Section 34. Approval for a PTTW is required from the MOECC. It is anticipated that reinstatement of the Dam will require a permit to take water for construction and operation. A permit may also be required to remove the dam.

4.2.3 Lakes and Rivers Improvement Act Permit

Approval under the LRIA by the MNRF would be required for all alternatives. O. Reg. 454/96 defines the types of structures or works requiring approval under Section 14 and Section 16 of the LRIA, to include channelization, water crossings, enclosures, pipeline installations (except for the installation of heat loops, water intakes and services cables for private residences) and dams. The terms channelize and water crossing are defined in O. Reg. 454/96.

In addition, a 'dam' is more narrowly referred to in O. Reg. 454/96 as a structure that holds back water in a river, lake, pond or stream to raise the water level, create a reservoir to control flooding or divert the flow of water. A permit would be required to pursue any of the three options. Any repair or alteration to the structure itself would require an application under LRIA for review and depending on the reapir, subsequent approval. Further approval relative to the construction of a dam would be required to reinstate the dam.

4.2.4 Public Lands Act

As of 2015, the UTRCA maintained a License of Occupation for the right to occupy the riverbed by Springbank Dam. This existing authorization under the PLA will need to be reviewed, and possibly cancelled, modified or extended depending on the chosen alternative.

4.2.5 Permit Requirements under SARA and ESA

SARA is a federally administrated piece of legislation while ESA is provincially administrated. While both are in place to protect SAR, the federal government generally looks to the province first to provide management, enforcement and administration. In considering dam alternatives, both the ESA and SARA permits are applicable to aquatic species, while ESA permits will also be applicable for terrestrial species.

The ESA provides protection for SAR individuals and their habitat, and an ESA permit would be required to reinstate the dam. In addition, impacts to individual species listed under SARA such as kill, harm or harassment will also need to be considered.

As noted above in section 4.1.7, a project can be considered for an ESA permit for five different reasons. The primary purpose of operating the Springbank Dam is for recreational purposes; therefore an alternative option to reinstate the Springbank Dam would require an authorization under clause 17(2)c of the ESA 2007, commonly referred to as an "Overall Benefit Permit" from MNRF (Ministry of Natural

Resources and Forestry, 2015). This permit is authorized if the applicant can demonstrate to the Minister that:

(i) an overall benefit to the species will be achieved within a reasonable time through requirements imposed by conditions of the permit;

(ii) reasonable alternatives have been considered, including alternatives that would not adversely affect the species, and the best alternative has been adopted; and,

(iii) reasonable steps to minimize adverse effects on individual members of the species will be undertaken.

The overall benefit to Ontario permit type requires a number of in-depth assessment, consultation and reporting steps including a preliminary submission of information to address ESA legal requirements, independent expert reports describing possible adverse effects, and a notice of permit application on the Environmental Bill of Rights (EBR). The permitting decision at this level of permitting is made by the Minister of Natural Resources and Forestry.

Should an overall benefit permit be issued, mitigations measures are also required. These mitigation measures are to minimize the adverse effects on SAR in the study area. A mitigation plan is to be created and followed as per conditions outlined on the overall benefit permit. Monitoring of the effectiveness of the plan is to be completed and reported to the MNRF District Manager. Mitigation plans typically require as much as a 5 to 1 ratio of compensation for impacts to habitat and SAR. Given the complexity of the environmental habitat conditions that support the SAR and the number of SAR that have been observed or mapped in the One River study area there would be very little opportunity to develop a mitigation plan that would satisfy the permitting requirements.

Another permitting option that could be considered to reinstate the Springbank Dam would be to acquire ESA authorization under section 17(2)(d) of the ESA (also called a D permit). The MNRF may issue a permit to authorize an activity that will result in a significant social or economic benefit to Ontario, under section 17(2)(d) of the ESA.

An example of a project that may be eligible for a D permit is an international crossing that increases trade and investment between Canada and the United States, creates thousands of construction jobs in Ontario and increases border crossing capacity. To date, only two D permits have been issued in the province – both are associated with the Rt. Hon. Herb Gray Parkway project in the Windsor-Essex region that impact cross border traffic and trade.

Requirements and conditions to receive a social or economic benefit to Ontario permit include:

- The activity must result in a significant social or economic benefit to Ontario.
- The ministry must consult with an expert on the possible effects of the activity on the species. The expert must submit a written report to the Minister, including his or her opinion on whether the activity will jeopardize the survival or recovery of the species in Ontario.

In approving a permit for overall benefit, the Minister must be of the opinion that:

- The activity will not jeopardize the survival or recovery of the species in Ontario.
- Reasonable alternatives have been considered, including those that wouldn't adversely affect the species, and the best alternative has been adopted.
- Reasonable steps to minimize adverse effects on individual members of the species are required by conditions of the permit.

4.2.6 Fisheries Act Approvals

The existing structure has an approval under Section 20 of the *Fisheries Act*. This approval is to ensure fish passage and expires December 2017. It is anticipated that the option of repurposing the Dam would first include consideration of the existing permit and then completing the project review evaluation process for applicability of the *Fisheries Act* enforced by the DFO.

Reinstating the Dam or removing the structure would require a project review and anticipates the complete authorization process under the *Fisheries Act*. An authorization is required if it is determined that a project will cause serious harm to fish or are part of or that support a commercial, recreational or Aboriginal fishery. An Authorization would be provided by DFO in accordance with Section 35(2)(*b*) *Fisheries Act*.

4.2.7 Navigable Waters Permit

The permit process for the options to allow a Free-Flowing River would include an application for a permit under the NPA if any alterations to the river were made to make the river more geomorphically stable. In the case of the re-instatement of the dam, an application for a permit under the NPA would be required since the dam would represent a significant change in the navigable condition in the river.

4.3 Ministry of Indigenous Relations and Reconciliation (MIRR)

There is no approval required relative to the MIRR. An important part of this project is engagement of First Nations, and input received will be considered relative to the three options for the Dam. Ontario, as the Crown, has a legal obligation to consult with Aboriginal peoples where it contemplates decisions or actions that may adversely impact asserted or established Aboriginal or treaty rights. Ontario is committed to meeting its duty to consult with First Nations and Métis communities. The duty to consult, and where appropriate accommodate, is rooted in the following.

- The Honour of the Crown (a legal principle that commits government to act with integrity).
- The protection of Aboriginal and treaty rights under section 35 of the Constitution Act, 1982.

Engagement and consultation with First Nations and Metis is an important and legislated part of this project. The goals of the MIRR relative to this project are considered to:

- Promote collaboration and coordination across ministries on Indigenous policy and programs in partnership with First Nations, Métis and Inuit;
- Set priorities for, and track the progress of, Ontario's Indigenous agenda, enhance government awareness of Indigenous people, issues and best practices for consulting and engaging with Indigenous people;
- Help Indigenous people access Ontario government programs, services and information; and
- Reform the land claims process to help address historical grievances.

The consideration of the options for the Dam will take into account the input relative to the three options for the Dam from engagement with First Nations and Metis.

4.4 Municipal Class Environmental Assessment (MCEA)

Section A.3.7 of the MCEA Manual recommends municipalities contact MOECC, MIRR and Indigenous and Northern Affairs Canada (INAC) for direct consultation with First Nation communities. Further, a

Companion Guide to be used in conjunction with the MCEA Manual highlights the importance of rights-based consultation with First Nation, Metis and Inuit.

SECTION 5

Comment Summary and Next Steps

5.1 Comment Summary

The discussions that took place at the initial three Agency Advisory Meetings was facilitated through the presentation of information from a number of subject matter experts including members of the consultant team, City of London Environmental and Parks Planning Division, and UTRCA staff.

The comments that have been provided as part of the discussions are:

- Subject Matter Expert Comments
  - There has been more habitat available and an increase in populations of numerous important native species of fish, mussels and reptiles since the failure of the dam.
  - Repair of the Springbank Dam would lead to habitat loss for a number of endangered and threatened species at risk.
  - Reinstating the dam would negatively impact turtle population recovery due to direct loss of habitat. Also, acting as a barrier, the dam would limit movement between interconnected habitat for the turtles (nesting, laying, and feeding areas).
  - There is more information available for Spiny Softshell turtles relative to other species, so it's the best indicator species we have in terms of the success of other species.
  - A reinstated operational dam would create additional habitat for zebra mussels and other invasive species.
  - Based on the available data, not reinstating the dam and allowing the river to return to a more natural state would benefit most native species.
  - Other dams like the Fanshawe Dam offer flood control essential for life and property protection, while the Springbank Dam only provides a recreational benefit.
  - Social (e.g. canoeing and rowing) factors are important considerations for dam decision.
  - The Recovery Strategies created under SARA identifies critical habitat, such as the 8 km stretch of the river in the study area.
  - An overall net benefit permit would be required to reinstate the dam.
  - Current critical habitat mapping for the stretch of the Thames in much of the study area from just below the dam to the upstream sections of the river at the forks are not based on an assessment of critical habitat that has developed since the dam failed.
  - Many areas within the study area would now qualify as critical habitat for a number of species.
  - The Silver Shiner, an endangered species of minnow, has been identified in the Thames river study area through the current One River field program, and has been identified previously when the dam was operational. Creating artificial reservoirs along the river is contradictory to natural processes, which can result in significant disturbance and mortality to aquatic and semi-aquatic species that depend on the river for survival.
  - Barriers are not appropriate for river-adapted wildlife, especially species at risk within the watershed. Thus, it is important to limit the number of such barriers to only those that are deemed essential.

  - Given the number of listed species at risk that occupy the study area, the extent the species at risk utilize the corridor and the mosaic of habitat needed to maintain their life cycle needs, replication of this habitat on another suitable location is in a practical sense not feasible. As such it would be extremely difficult to impossible to justify a net benefit for the Springbank Dam repair option.
  - It will be a tremendous challenge to provide the opportunity for habitat compensation in one of the largest and most southern Ontario Rivers in a growing urbanized landscape that is shown to be improving since the non-operation of the Springbank Dam.
  - Permit requirements for the option of reinstating the Springbank Dam are considered substantially more complex and significantly more difficult to obtain or unlikely to be approved when compared with the option of a Free-Flowing River.

- Specific Agency Comments
  - To reinstate the dam, a net benefit permit would be required to be signed off by the Minister of the MNRF. That process would be a considerable undertaking and could be very difficult to show the required net benefit for approvals. While the Springbank dam is not for flood control, it still impacts flooding through operation if it was reinstated. Repurposing the Dam would, therefore, also have an impact on flooding.
  - It is important to look at the critical habitat, water quality, and species in the area in question as holistically as possible.
  - If dam is reinstated fish passage must be provided.
  - A PTTW would be required if dam is reinstated. PTTW was issued when dam was constructed; current status unknown.
  - While the Spiny Softshell turtle is a terrestrial animal overseen by Environment Canada, its residence is in the water and destruction of residence is prohibited.
  - The MNRF issues permits to authorize an activity that will result in a significant social or economic benefit to Ontario, under section 17(2)(d) of the ESA, also known as D permits.
    - To date, only two D permits have been issued in the province – both are associated with the Rt. Hon. Herb Gray Parkway project in the Windsor-Essex region.
  - Requirements and conditions to receive a social or economic benefit to Ontario permit:
    - the activity must result in a significant social or economic benefit to Ontario
    - the ministry must consult with an expert on the possible effects of the activity on the species. The expert must submit a written report to the Minister, including his or her opinion on whether the activity will jeopardize the survival or recovery of the species in Ontario.
    - the Minister must be of the opinion that:
      - the activity will not jeopardize the survival or recovery of the species in Ontario
      - reasonable alternatives have been considered, including those that wouldn't adversely affect the species, and the best alternative has been adopted
      - reasonable steps to minimize adverse effects on individual members of the species are required by conditions of the permit
  - ECCC clarifications regarding the Spiny Softshell Turtle:

- Spiny Softshell Turtles fall under Federal Minister of the Environment and Climate Change (ECCC).
- SARA protections for Spiny Softshell only automatically apply on federal lands.
- Springbank Dam does not appear to be on or in vicinity of federal lands.
- Federal Government generally looks first to Province to protect species at risk; hence MNRF should be consulted regarding permit under ESA.

– DFO Comments:

- DFO works with all proponents to review their projects and, through mitigation and offsetting, minimize the serious harm to fish while still allowing progress and development.
- Reinstating the dam would require a consideration of mitigation measures, and also a large monitoring project.
- DFO is mainly concerned about fish passage; if the current status of the Dam impacting the waterway doesn't change (i.e. only repurpose the surface/walkway), then DFO has no concerns.
- If the Dam is to be removed, DFO sees it as a good thing for fish passage, but still needs to be given the opportunity to provide oversight on the removal process.
- DFO & MNRF generally work concurrently; but permits applications will be required for both since they are separate processes. There will be some overlap in requirements.

5.2 Next Steps

The Agency Advisory Committee meetings will continue to provide additional guidance to the Project Team as the EA proceeds into the next steps of a decision on the preferred alternative for the Springbank dam. Following the decision on the Springbank Dam, Stage 2 will begin which will evaluate the preferred alternatives associated with the river management options including the elements of "Back to the River".

SECTION 6

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Attachment 1- Additional Documentation

Effects of Barriers on Species At Risk Along the Upper Thames River

UPPER THAMES RIVER CONSERVATION AUTHORITY

Scott D. Gillingwater, Species At Risk Biologist
Upper Thames River Conservation Authority

Wildlife Found Along The Thames River

The Thames River is one of Canada's most southern watercourses. The river and its many tributaries are rich in aquatic life, with approximately:

- **90 species of fish**
- **30 species of freshwater mussels and**
- **30 species of reptiles and amphibians**
- **Countless birds, mammals and invertebrates also depend on the existence and health of the Thames River**

Fishes At Risk and Game Fish

- **The Thames River is home to the most diverse fish fauna in Ontario, with more than 90 fish species recorded in the Thames River Watershed**
- **Ten species of fish found in the Thames are at-risk**
- **Generally, species that prefer clear, fast flowing water are declining, while more common species that favour turbid (less clear) conditions are increasing**

Threats to fish populations include:

- **pollution**
- **impoundments (dams, weirs)**
- **siltation/sedimentation**
- **habitat alteration and destruction**
- **invasive species (e.g., common carp)**
- **disease**

Freshwater Mussels At Risk

- **Historically, the Thames River supported one of the richest communities of freshwater mussels in Canada, though there has been a significant decline in freshwater mussel diversity in recent years**
- **The mussel species that have disappeared were characteristic of a healthy aquatic environment, so their loss is an indication that conditions in the river may be deteriorating.**

Threats to mussel populations include:

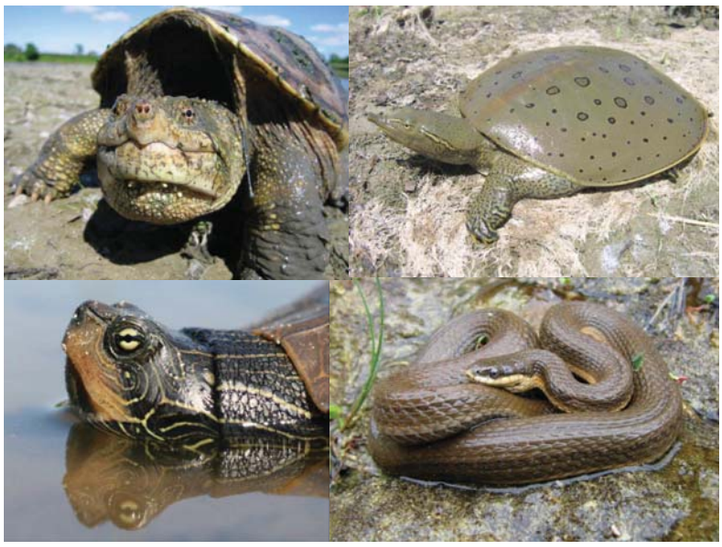
- **pollution, sedimentation and siltation**
- **impoundments (dams, weirs)**
- **invasive species (e.g., zebra mussels)**
- **channelization**
- **loss of larval host species (e.g., fish, mudpuppy)**
- **habitat loss, fragmentation and alteration**

Reptiles At Risk

- Globally, many reptiles are experiencing rapid declines.
- In Ontario, 7 of our 8 native turtles and 11 of our 18 native snakes are listed as at-risk both provincially and federally.
- Of Ontario's 26 snakes and turtles, 17 can be found along the Thames River Watershed, 12 of these are listed at-risk.
- In April 2016, COSEWIC up-listed the Spiny Softshell Turtle from Threatened to Endangered, due to significant declines across the species' limited range in Canada.

Threats to reptile populations include:

- habitat loss, fragmentation and alteration
- road mortality
- invasive species (e.g. European Reed, Zebra Mussel)
- impoundments (dams)
- pollution, siltation and sedimentation
- collection for food or as pets
- persecution



Threats to Wildlife

- Species at risk are sensitive to human-caused environmental changes. Aquatic species at risk require clean water and a healthy river to survive. River-adapted species are especially susceptible to change, including alteration of critical habitat features necessary for survival.

- Habitat loss, alteration and fragmentation are primary threats for most wildlife in this region, though many other threats also exist.

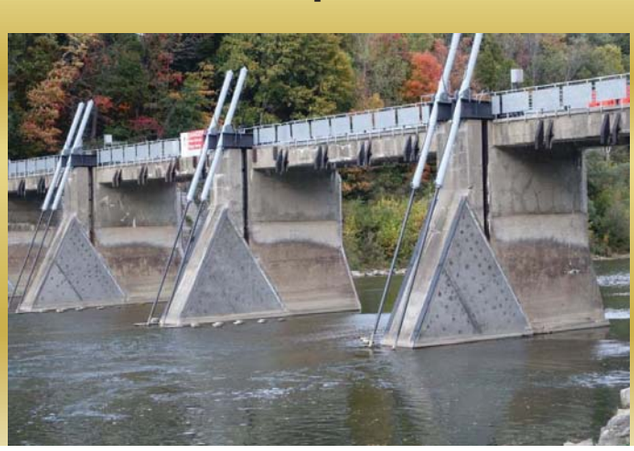
Research and Recovery Efforts: Populations, Movement, Reproduction, Habitat Selection, Threats and Behaviour

Spiny Softshell Turtle

Threatened/Endangered

- Approximately 1000-2000 adults are thought to remain in Canada
- The Thames River is the stronghold for the species in Canada, maintaining the bulk of the population, this is due in part to recovery work over the past 23 years
- The Spiny Softshell Turtle only occurs in pockets along the Thames River, one of which is within the City of London
- Lake Erie populations appear to have declined by between 30 and 50% over the past 20 years.
- Habitat loss is a primary factor in Spiny Softshell Turtle decline
- UTRCA runs the largest and longest-running research and recovery program for the species in North America

Barriers and Species At Risk



Spiny Softshell Turtle 1994-2006

- UTRCA's Spiny Softshell Turtle Research began in 1994, including regular surveys throughout the City of London
- Habitat throughout the Springbank Reservoir area was generally not appropriate for most reptiles at risk due to the Springbank Dam and associated reservoir
- Unnatural water fluctuation caused by Springbank Dam resulted in the loss of nesting, thermoregulation, foraging, brumation and nursery habitats for the Spiny Softshell Turtle and the dam blocked movement during the active season.
- Secondary issues caused by reservoirs include changes in water temperature, clarity, quality, and species diversity

Spiny Softshell Turtle 2007-2016

- With the failure of Springbank Dam in 2006, water levels decreased, and more natural flows returned within the footprint of the former reservoir.
- This has resulted in a significant increase in turtle habitat availability over the past decade
- Spiny Softshell observations have increased ten-fold throughout the area and well-established nesting, brumation, thermoregulation, foraging and nursery habitats now exist
- The changes in this 8km stretch of river have been exceptional, and have greatly benefitted recovery efforts for the Spiny Softshell Turtle in Canada

Spiny Softshell - Future Potential

- If the Springbank Dam were put back into operation, Spiny Softshell Turtle recovery efforts would be significantly impacted
- Nesting, Nursery, Foraging, Brumation and Thermoregulation Habitats would be lost and individuals would be lost outright or their survival greatly compromised due to unnatural water depths, changes to flow and loss of critical/significant habitat features
- Over a decade of habitat renaturalization would be lost and a barrier to movement would again limit important migratory opportunities and potential for population expansion.
- Downstream habitats would again be unnaturally influenced by a barrier and impacts from the reservoir

Spiny Softshell – Future Potential

- **Artificial compensation of habitat is not viewed as feasible with this species in this area, as a mosaic of interconnected habitat types are necessary for survival, some of which would be impossible to replicate in this area.**
- **Timing dam operations around critical activities, such as nesting, cannot be effectively accomplished since nesting, incubation and hatching times can extend from May to October.**
- **Current nesting sites would be lost if the dam were in operation, and any nests laid before the water levels increased would be lost due to flooding.**

Other Species

- Reptiles, Fish, Mussels and a variety of other wildlife species benefit from more natural, unimpeded flows within the City of London
- Provincial and Federal Status Reports and Recovery Strategies clearly illustrate the negative impact of barriers on wildlife

Wavy-rayed Lampmussel Threatened

- Inhabits clear rivers and streams with steady flows and stable substrates and is typically found in gravel or sand substrates in and around riffle areas.
- Occupied habitats in Ontario are generally characterized as clean sand/gravel substrates, often stabilized with cobble or boulders, in steady currents at depths of up to 1 metre.

- Damming of the stream channel has been shown to detrimentally affect mussels in many ways.
- Reservoirs alter downstream flow patterns and disrupt the natural thermal profiles of the watercourse while impoundments act as physical barriers potentially separating mussels from their host fish.
- Impoundments also act to increase water retention times thereby making river systems more susceptible to invasion by exotics such as the zebra mussel.

Fawnsfoot Mussel Endangered

- It is important to ensure that planning and management agencies recognize the importance of fluvial processes, the flow and substrate composition requirements of Fawnsfoot, as well as the ecological needs of its host fish(es) when planning development activities.

- Dams/barriers can result in direct loss of habitat or fragmentation, which can limit the reproductive capabilities of mussels by eliminating or decreasing the number of hosts available.

Black Redhorse Threatened

- In Ontario, availability of suitable habitat, including breeding habitat, is the main limiting factor to the Black Redhorse. It requires clean, clear water and does not do well in rivers that are muddy or polluted.

- Dams and other barriers that can limit fish movement are also considered a threat.

Silver Shiner Threatened

- Silver Shiner populations in the Grand and Thames river watersheds are fragmented by dams.
- Across North America, hydrological and ecological changes associated with dams have contributed to the loss or reduction of migratory and smaller - bodied riverine fish.
- Habitat changes, such as altered downstream water temperatures and the creation of reservoir lakes, also favour the invasion or introduction of exotic species

Northern Map Turtle Special Concern

- Construction of dams presents a serious threat to map turtles in several ways.
- Female map turtles exhibit nest fidelity, and water levels that are artificially raised could flood and destroy traditional nesting sites
- Flow regulation also reduces the availability of sandbars and beaches, and map turtle declines have been noted in the Missouri River due to loss of such habitats.

- Dams could also change the temperature and depth requirements of hibernation sites and cause earlier ice-off dates which may lead to premature emergence from hibernation

- Furthermore, given this species' preference for shallow water areas and a dietary preference for benthic invertebrates, dams could greatly reduce the quality of foraging habitat and food availability as a result of changes in sedimentation and increased water depths

Queensnake Endangered

- Although legally protected in Missouri, the Queensnake has been extirpated from the state due to habitat loss from the construction of dams.

- Dams, urban discharge, water use and other anthropogenic alterations can cause changes in the hydrology of southern Ontario rivers, likely affecting all riparian species through reduced base - flows and/or rapid influx of water.

- Dams may permanently fragment suitable habitat and /or create a barrier for Queensnake to access suitable habitat.

- Alteration of the hydrology through the creation of dams or other water control structures may lead to degradation or elimination of hibernacula, thermoregulation, gestation, and live - birthing sites.

- High water levels can temporarily or permanently saturate various suitable habitats affecting the possibility of their use by Queensnakes.

Barriers and Impoundments

- Not appropriate for many river-adapted species that occur along the Thames River
- Aquatic wildlife that migrate are either permanently blocked or seasonally blocked by barriers, which can result in decreased population viability and eventual extirpation
- Artificially raised water caused by dams can change the thermal properties of the water, can limit flushing of toxins and changes or destroys the aquatic and terrestrial habitats necessary for the survival of many species.

Barriers, Impoundments and Low Flow

Waterways without dams and impoundments maintain natural riffles and pools which produce an oxygenated substrate that supports abundant life, including microbes and invertebrates, which form the basis of the food chain.

Dams and impoundments often favour tolerant “common” species, including many invasive species such as Zebra Mussel and Eurasion Carp.

A flowing system without a dam can serve as a natural biological water filter, better able to metabolize pollutants and nutrients as it flows.

Barriers, Impoundments and Low Flow

Barriers tend to partition habitat, often eliminating species or reducing population levels.

Low water levels are common throughout much of the Upper Thames River, and it is the natural process of low water periods and relatively short high water periods, that the countless species that use the Thames River have evolved with and require to survive.

People often associate fish and other aquatic wildlife with deep water, though in reality areas of highest biodiversity are often more closely associated with shallow water systems.

Barriers, Impoundments and Low Flow

Creating artificial reservoirs along the river is contradictory to natural processes, which can result in significant disturbance and mortality to aquatic and semi-aquatic species that depend on the river for survival.

Barriers are not appropriate for river-adapted wildlife, especially species at risk within the watershed. Thus, it is important to limit the number of such barriers to only those that are deemed essential.

Questions?

Attachment 1- Additional Documentation

One River Environmental Assessment: First Nations Engagement Plan

Recognizing that First Nations and Metis feedback is essential to the One River EA process, The City of London (City) is proactively engaging and seeking input from First Nations communities near the study area on the One River EA. Multiple First Nations communities have already expressed interest in the EA, including a written notice in the form of a letter from the Chippewas of the Thames First Nations (COTTFN) requesting to be involved in the discussion.

Other First Nations communities within the project area of the One River EA include Oneida Nation of the Thames Settlement (Oneida), Munsee-Delaware Nation, Aamjiwnaang First Nation, Delaware Nation (Moravian of the Thames), Bkejwanon Territory (Walpole Island), Caldwell First Nation, and Chippewas of Kettle and Stony Point First Nations.

A variety of strategies and engagement tools are to be used to ensure widespread and accessible participation in the First Nations engagement process. The approaches listed in Table 1 are planned to be used to engage First Nations communities to promote collaboration, receive input, and actively address concerns regarding the One River EA. All correspondence to First Nations communities will be directly from the City.

Table 1. Strategies for First Nations Engagement

Task	Details	Schedule
Notice of Commencement	A formal notice to announce the commencement of the EA process to be sent to all nearby First Nations communities.	July 2017
Initial Contact	Chief's Office of each First Nations to be contacted and provided with project background, details and City project contact information.	July/August 2017
First Nations Committee Meetings	The creation of a First Nations Committee to provide feedback and comment on the EA as project updates are provided.	September 2017
Meetings	Co-ordinate meetings with representatives from each individual First Nations Community to get feedback and address concerns.	August/September 2017
First Nations Public Meetings	Hold public engagement forums at individual First Nations Communities, at both local (less than an hour) and non-local (1-2 hours) communities.	October 2017

A detailed communication log will be kept throughout the First Nations Engagement Process. This log will detail:

- What efforts were made to notify and contact First Nations communities.
- What information was provided to them by which they can determine whether there is an interest in the project.
- What the responses to that information was.

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Ministère des Richesses naturelles et des Forêts

615, rue John Nord
Aylmer ON N5H 2S8
Tél: 519-773-9241
Téléc: 519-773-9014

Ontario

August 26, 2016

Attn. Scott Mathers, Manager *(via email only)*
City of London, Stormwater Mangaement
300 Dufferin Avenue
PO BOX 5035
London, ON, N6A 4L9

Dear Mr. Mathers,

RE: One River Master Plan EA

The Ministry of Natural Resources and Forestry (MNRF) has been asked to provide a list of species for consideration on the development of a Terms of Reference for the One River Environmental Assessment (EA) Master Plan in London, Ontario.

Species at Risk (SAR)
The Species at Risk in Ontario (SARO) List is Ontario Regulation 230/08 issued under the *Endangered Species Act*, *2007* (ESA 2007). The ESA 2007 came into force on June 30, 2008, and provides both species protection (section 9) and habitat protection (section 10) to species listed as endangered or threatened on the SARO List. The current SARO List can be found on e-laws (http://www.e-laws.gov.on.ca/navigation?file=home&lang=en).

Based on the map provided on July 8, 2016 outlining a potential study area for the EA, an initial species at risk (SAR) screening has been completed for the One River Master Plan. This list may be amended throughout the EA process. There are known occurrences of SAR in the proposed project location including:

Springbank Dam AOI

- Silver Shiner (THR) – general habitat protection
- Eastern Spiny Softshell - (END) – general habitat protection
- Queensnake - (END) – regulated habitat protection
- Eastern Hog-nosed Snake - (THR) – general habitat protection
- Salamander (Mudpuppy) Mussel - (END) – general habitat protection
- Northern Map Turtle – (SC)
- Snapping Turtle – (SC)
- Green Dragon – (SC)

Forks of the Thames (Back to the River project area)

- Eastern Spiny Softshell - (END) – general habitat protection
- Silver Shiner - (THR) – general habitat protection
- Black Redhorse - (THR) – general habitat protection
- Wavy-rayed Lampmussel - (THR) – regulated habitat protection
- Black Redhorse – (SC)
- Northern Map Turtle – (SC)
- Snapping Turtle - (SC)

Please be advised that the South branch of the Thames river contains sensitive species as identified by the Department of Fisheries and Oceans (DFO). It is recommended that DFO is contacted to ensure compliance with relevant legislation.

Please note that this is an initial screening for SAR and the absence of an element occurrence does not indicate the absence of species. The province has not been surveyed comprehensively for the presence or absence of SAR, and MNRF data relies on observers to report sightings of SAR. Field assessments by a qualified professional may be necessary if there is a high likelihood for SAR species and/or habitat to occur within the project footprint. MNRF recommends that further study of SAR be completed as part of the EA process.

It is important to note that changes may occur in both species and habitat protection which could affect whether proposed projects may have adverse effects on SAR. The Committee on the Status of Species at Risk in Ontario (COSSARO) meets regularly to evaluate new species for listing and/or re-evaluate species already on the SARO List. As a result, species designations may change, which could in turn change the level of protection they receive under the ESA 2007. Also, habitat protection provisions for a species may change if a species-specific habitat regulation comes into effect.

If an activity or project will result in adverse effects to endangered or threatened species and/or their habitat, additional action would need to be taken in order to remain in compliance with the ESA 2007. Additional action could be applying for an authorization under section 17(2)c of the ESA 2007, or completing an online registry for an ESA 2007 regulation, if the project is eligible.

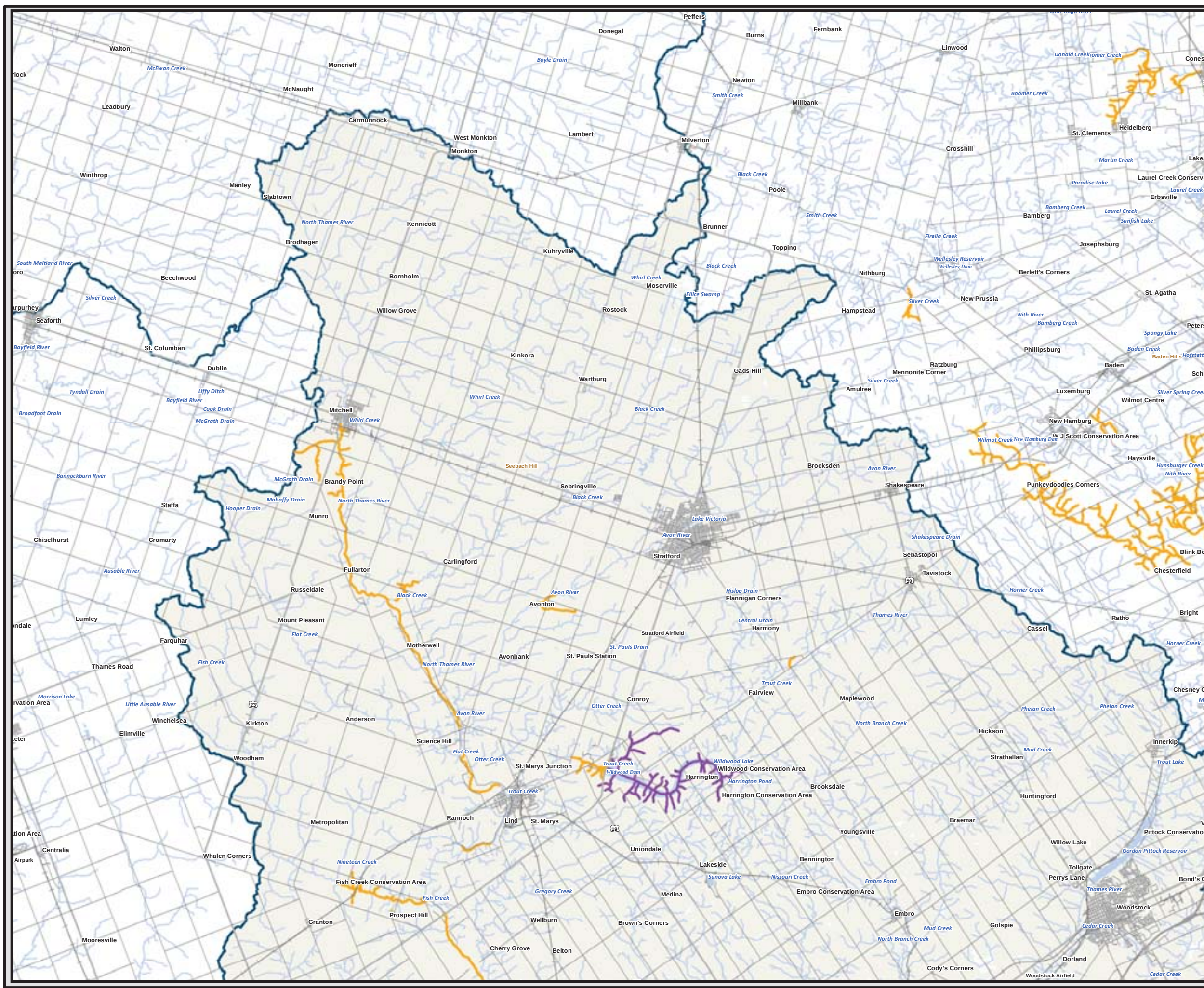
We look forward to working with you as the City moves through this process.

Sincerely,

Andrea Fleischhauer
District Planner
Ministry of Natural Resources and Forestry
Aylmer District
519-773-4750

Cc Heather Riddell (MNRF)

Attachment 2- Maps



Distribution of Fish Species at Risk

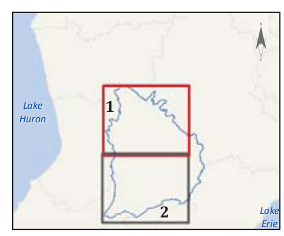
Upper Thames River Conservation Authority

(Map 1 of 2)

- Protected under SARA (Extirpated, Endangered, Threatened)
- Under consideration for listing (Endangered, Threatened)
- Special Concern Species (including under consideration for listing)
- Area within which Critical Habitat is found or proposed*

* Note: Within the delineated areas, only those areas that meet the functional habitat requirements of one or more life stages of the species are considered Critical Habitat. For more information on Critical Habitat please refer to the Reference Guide and thespecies-specific Recovery Strategies. Species are listed with * in table below.

- River/Stream
- Conservation Authority Boundary
- Wetland
- First Nations Land Claim
- Urban Area



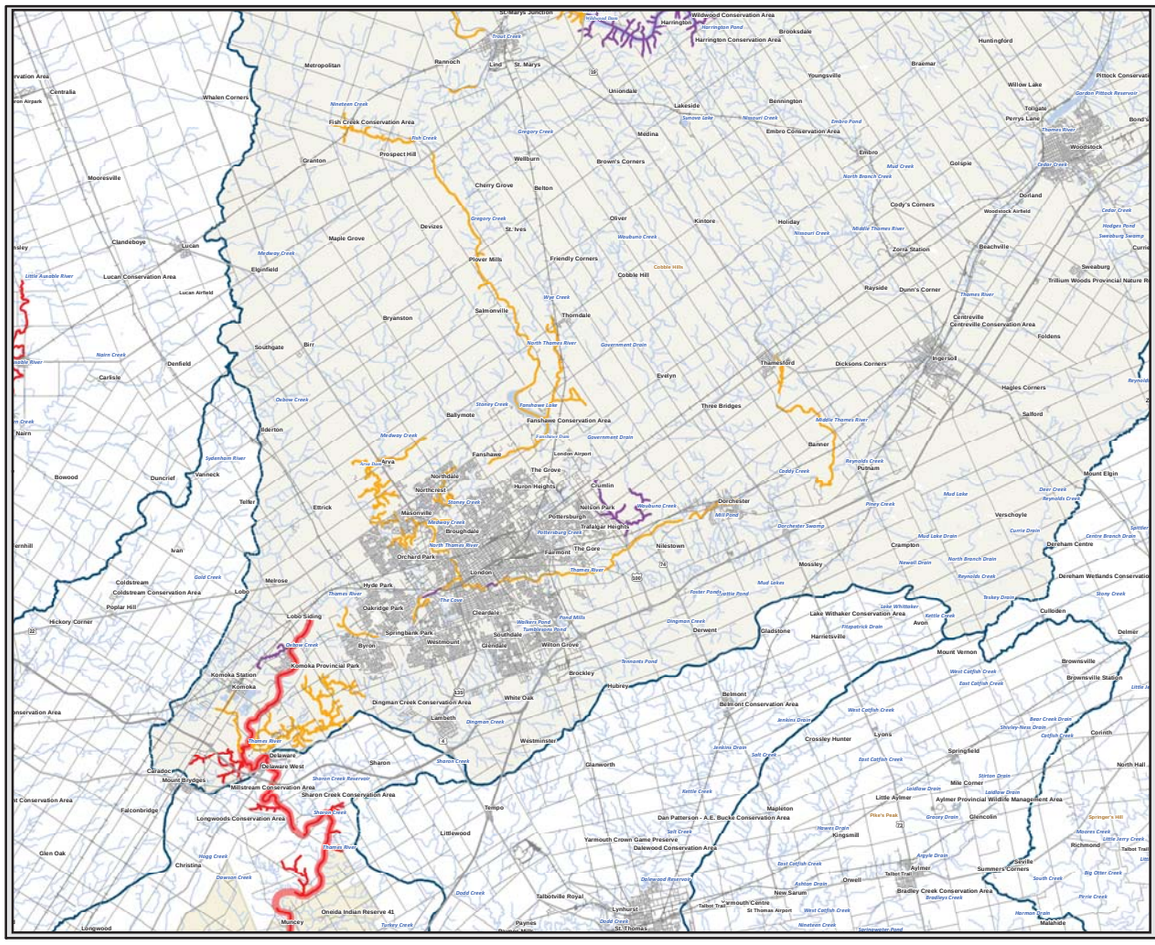
Conservation Authority Fish SAR Listing

Common Name (Population)	Colour
*Eastern Sand Darter (Ontario)	Red
Pugnose Minnow	Orange
Silver Shiner	Orange
Northern Brook Lamprey (Grt Lakes/Upper St. Lawrence)	Purple
Spotted Sucker	Purple

0 2.5 5 10 km

Base Map Sources: Ontario Ministry of Natural Resources, Natural Resources Canada, Conservation Ontario
Aussi disponible en francais.
Map produced May 2015.
Valid until May 2016.

Fisheries and Oceans Canada Pêches et Océans Canada



Distribution of Fish Species at Risk

Upper Thames River Conservation Authority

(Map 2 of 2)

- Protected under SARA (Extirpated, Endangered, Threatened)
- Under consideration for listing (Endangered, Threatened)
- Special Concern Species (including under consideration for listing)
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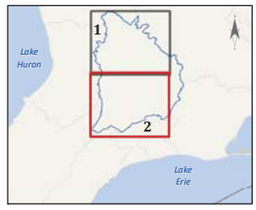

Conservation Authority Fish SAR Listing

Common Name (Population)	Colour
*Eastern Sand Darter (Ontario)	Red
Pugnose Minnow	Orange
Silver Shiner	Orange
Northern Brook Lamprey (Grt Lakes/Upper St. Lawrence)	Purple
Spotted Sucker	Purple

0 2.5 5 10 km

Base Map Sources: Ontario Ministry of Natural Resources, Natural Resources Canada, Conservation Ontario

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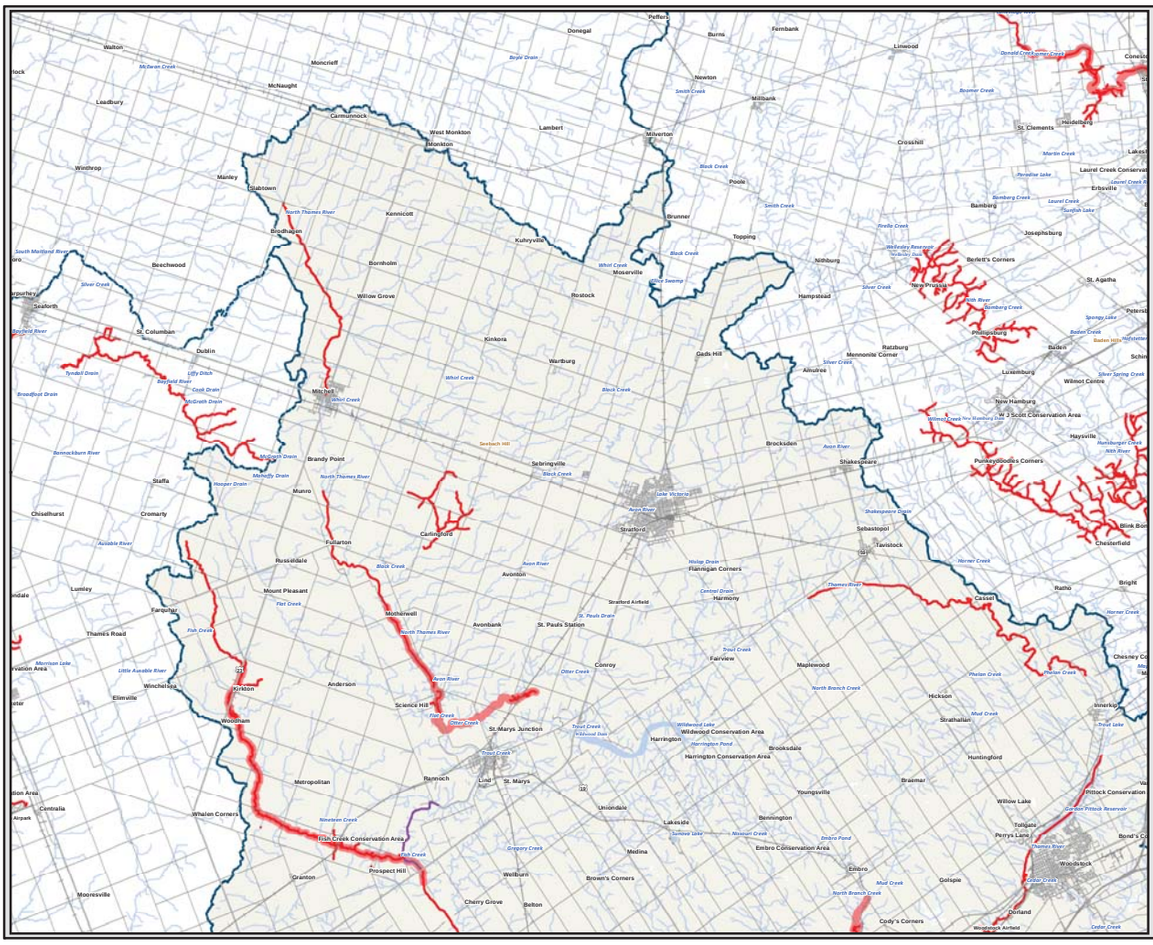


Distribution of Mussel Species at Risk

Upper Thames River Conservation Authority

(Map 1 of 3)

- Protected under SARA (Extirpated, Endangered, Threatened)
- Under consideration for listing (Endangered, Threatened)
- Special Concern Species (including under consideration for listing)
- Area within which Critical Habitat is found or proposed*

* Note: Within the delineated areas, only those areas that meet the functional habitat requirements of one or more life stages of the species are considered Critical Habitat. For more information on Critical Habitat please refer to the Reference Guide and thespecies-specific Recovery Strategies. Species are listed with * in table below.

- River/Stream
- Conservation Authority Boundary
- Wetland
- First Nations Land Claim
- Urban Area

Conservation Authority Mussel SAR Listing

Common Name (Population)	Colour
*Kidneyshell	Red
*Mapleleaf (Great Lakes - Western St. Lawrence)	Red
*Rainbow	Red
*Rayed Bean	Red
*Round Pigtoe	Red
*Salamander Mussel	Red
Wavyrayed Lampmussel	Purple

0 2.5 5 10 km

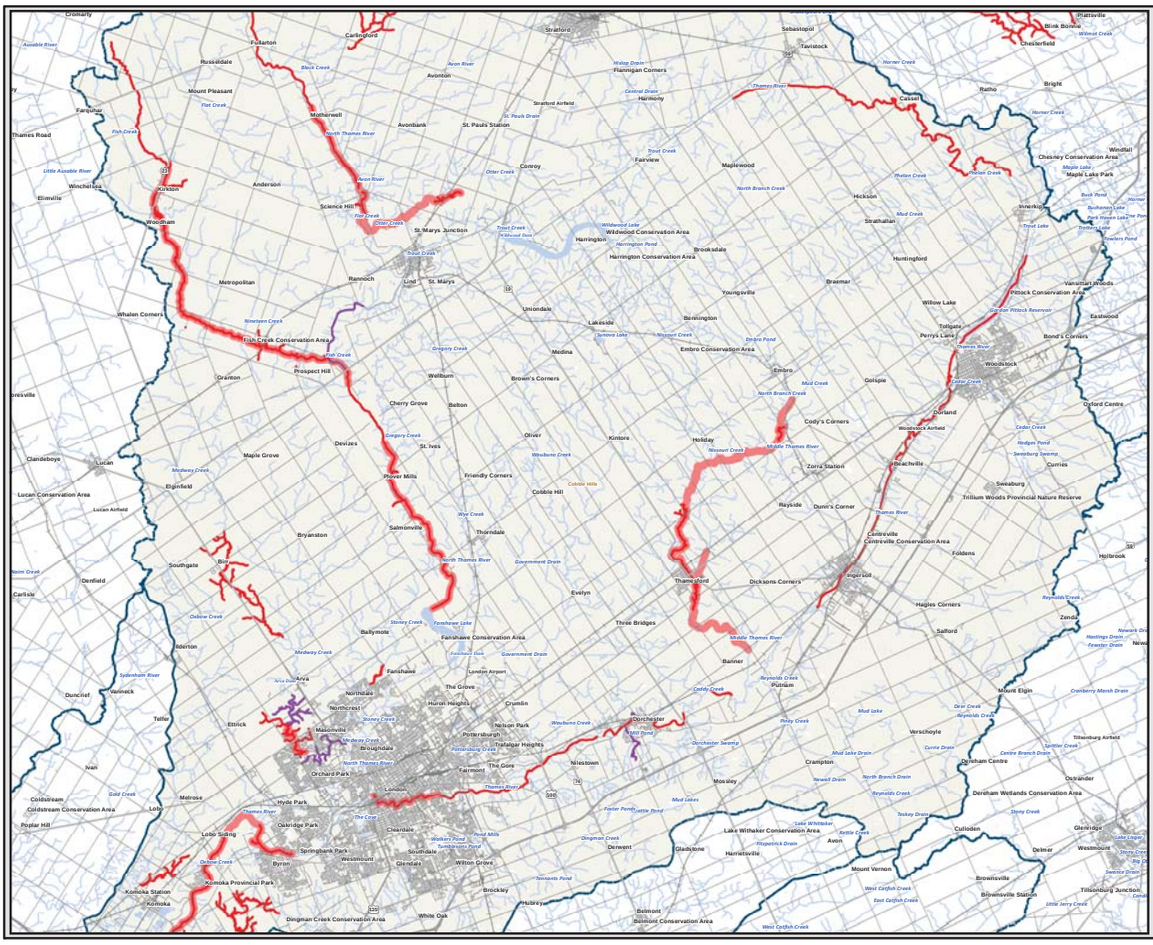
Base Map Sources: Ontario Ministry of Natural Resources, Natural Resources Canada, Conservation Ontario

Aussi disponible en francais.

Map produced May 2015.

Valid until May 2016.

Fisheries and Oceans Canada | Pêches et Océans Canada



Distribution of Mussel Species at Risk

Upper Thames River Conservation Authority

(Map 2 of 3)

- Protected under SARA (Extirpated, Endangered, Threatened)
- Under consideration for listing (Endangered, Threatened)
- Special Concern Species (including under consideration for listing)
- Area within which Critical Habitat is found or proposed*

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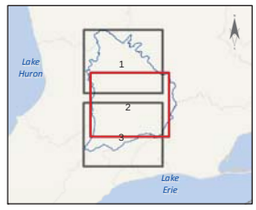
- First Nations Land Claim
- Urban Area



Conservation Authority Mussel SAR Listing

Common Name (Population)	Colour
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*Mapleleaf (Great Lakes - Western St. Lawrence)	Red
*Rainbow	Red
*Rayed Bean	Red
*Round Pigtoe	Red
*Salamander Mussel	Red
Wavyrayed Lampmussel	Purple

0 2.5 5 10 km

Base Map Sources: Ontario Ministry of Natural Resources, Natural Resources Canada, Conservation Ontario
Aussi disponible en francais.
Map produced May 2015.
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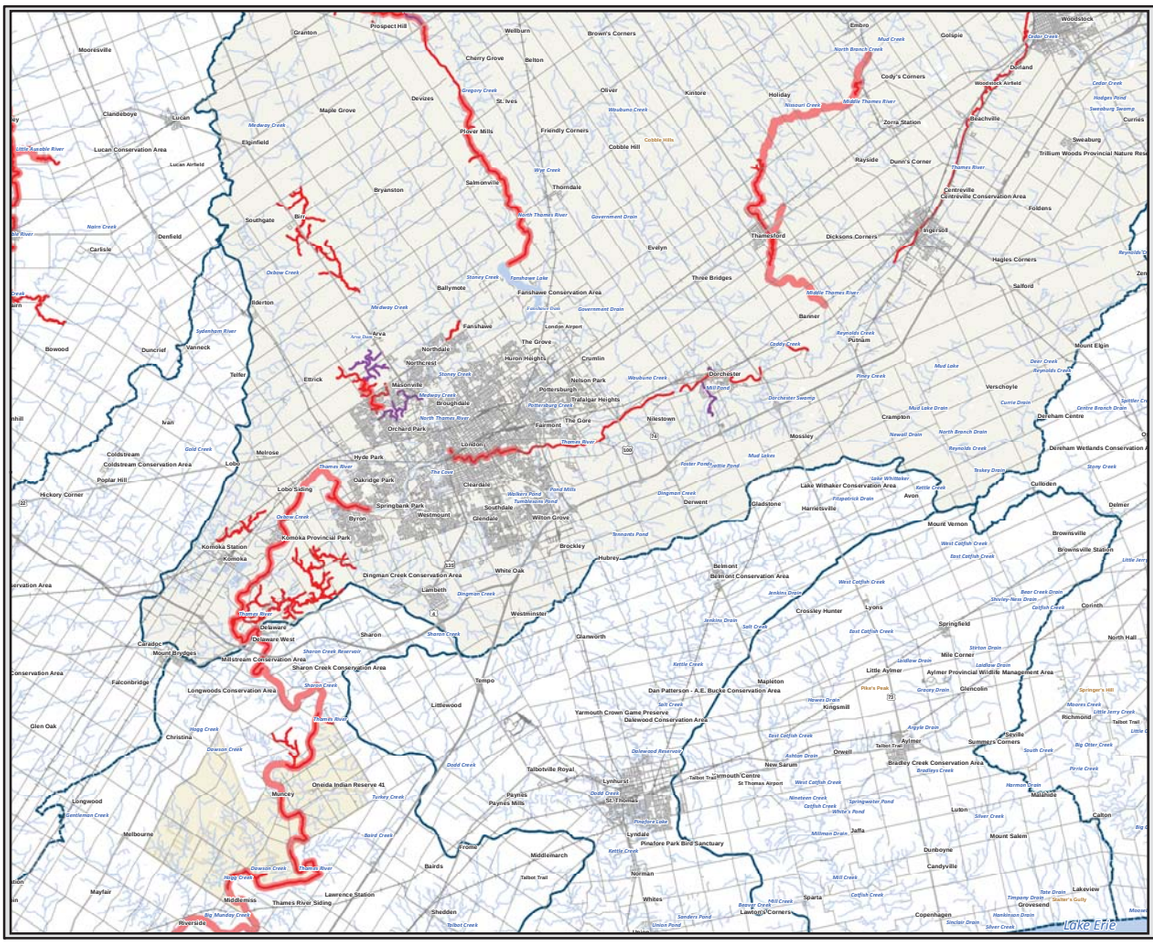
Fisheries and Oceans Canada / Pêches et Océans Canada



Distribution of Mussel Species at Risk

Upper Thames River Conservation Authority

(Map 3 of 3)

- Protected under SARA (Extirpated, Endangered, Threatened)
- Under consideration for listing (Endangered, Threatened)
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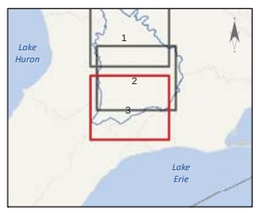

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0 2.5 5 10 km

Base Map Sources: Ontario Ministry of Natural Resources, Natural Resources Canada, Conservation Ontario

Aussi disponible en francais.

Map produced May 2015.

Valid until May 2016.

Fisheries and Oceans Canada | Pêches et Océans Canada

October 22nd, 2017

Feedback from Thames River Anglers Association regarding: STAFF REPORT - One River Environmental Assessment Update: Agency Advisory Committee Report

Via email:

Jackie Martin jmartin@london.ca City Clerk's office

Members of the Civic Works Committee:
Councillor M. van Holst (Chair), Councillor B. Armstrong, Councillor P. Squire, Councillor P. Hubert, Councillor V. Ridley
Coped: Daniel Hsia, Ashley Rammaloo, Scott Mathers, Kelly Scherr,

Presented By:
Robert Huber – (President, TRAA)

The Thames River Anglers Association (TRAA) has been dedicated to protecting and sustaining a viable multi-species fishery within our namesake watershed for over 25 years through education, environmental advocacy and grassroots projects that help to rehabilitate the river.

Objective:
To provide feedback on the Staff Report – One River Environmental Assessment Advisory Panel Report submitted to the Civic Works Committee agenda for September 26th, 2017.

Comments:
Our organization is encouraged to see the progress with the agency reports. We appreciate the opportunity extended to the stakeholders and members of the public to review and consider the preferred options for Springbank Dam along with the more extensive One River Municipal Class Master Environmental Assessment. Having reviewed the documents submitted in detail there are a few concerns and questions that we would like to submit for your consideration.

a) Enhanced clarity regarding preferred options:

For the upcoming PIC sessions, we would ask for a better breakdown of the different options[1] to be communicated regarding the different approaches that may be considered within the options of "decommissioning" or "doing nothing" with Springbank Dam. It would be helpful to have a brief summary to clarify what decommissioning could potentially include - does it mean a full removal of the structure or repurposing as a bridge. If simply removing the metal doors and hydraulic arms is what is meant by the phase "salvage appropriate dam components", then please communicate which preferred option this would be aligned with to eliminate any confusion.

b) More emphasis needed on fisheries impact

When Springbank Dam was repaired under the 2003 Environmental Assessment, a requirement to maintain the status quo for fish passage was included.

[1] Appendix 'A' – Agency Advisory Committee Report, One River Environmental Assessment Agency Advisory Committee Report. Section 1.4.

As a condition of approval for a Work Permit from Ministry of Natural Resources for the dam rehabilitation, a stated requirement is to maintain "status quo" regarding fish passage. This was required since the new gate installation will increase the bottom elevation of the river slightly at the dam. The overall footprint of the dam remains unchanged. [2]

Subsequent reports resulting from a 3 year post-construction study commissioned by the City of London and completed by Biotactic Inc. indicated that fish passage over the lowered doors of Springbank Dam negatively impacted tagged smallmouth bass, white sucker and shorthead redhorse.[3]

Passage Efficiency

Fish Species	2006 (Pre-construction)	2010 (Post-construction)	2008, 2009 and 2010 (Post-construction)
White sucker	94% (74% - 99%)	68% (46% - 85%)	48% (34% - 62%)
Shorthead redhorse	94% (72% - 99%)	35% (18% - 57%)	53% (41% - 65%)
Smallmouth bass	89% (69% - 97%)	50% (30% - 70%)	44% (31% - 58%)

The report also stated,

There was evidence in 2008 and 2009 that flow reversals and back-eddys created by the movement of water over the downstream lip of each gate may have negatively affected fish passage. In 2010 a sand wedge formed downstream from each gate that may have negated the back-eddy and flow reversal conditions previously observed. White suckers and shorthead redhorse were observed foraging on invertebrates that have colonized algae growing on the gates in 2010.[4]

Additionally, Section 4.1.9 Fisheries Act states,

The Fisheries Act contains three key provisions on conservation and protection of fish habitat essential to sustaining freshwater and marine fish species. The DFO administers section 35, the key habitat protection provision, prohibiting any work or undertaking that would cause the harmful alteration, disruption or destruction of fish habitat. The DFO also administrates Section 20, which requires a fish-pass to be provided by the owner of any obstruction across or in any stream, should the minister determine it to be necessary for the free passage of fish.

The Department of Environment and Climate Change Canada (ECCC) administers Section 36, the key pollution prevention provision, prohibiting the deposit of deleterious substances into waters frequented by fish, unless authorized by regulations under the Fisheries Act or other federal legislation. A deleterious substance can be any substance that, if added to any water, would degrade or alter its quality such that it could be harmful to fish, fish habitat, or the use of fish by people.

In particular, fixing the dam may require the building of a costly fish ladder to mitigate passage issues. The Thames River has a vast array of species; therefore, it could be very complex to design a fish ladder structure that works effectively with warmwater species, as compared to the trout & salmon fish ladders that are common. The TRAA would like to see additional information presented to committee for the PIC sessions, to demonstrate that this is still an important issue when considering the preferred options of whether to repair the dam or do nothing.

[2] http://council.london.ca/CouncilArchives/Agendas/Environment%20and%20Transportation%20Committee%20Agendas/ETC%20Agendas%202006/2006-10-30%20Agenda/item%204.pdf

[3] http://www.biotactic.com/Springbank_Dam_and_Fish_Movement_2010.htm

[4] ditto.

c) Further Involvement of Upstream and Downstream Stakeholders in feedback and decision process.
As illustrated by the maps outlining critical and general habitat areas with identified threatened and endangered species at risk, there is a substantial amount of the watershed throughout the core of the city and upstream into Oxford county that needs to be protected.

> *Current critical habitat mapping for the stretch of the Thames in much of the study area from just below the dam to the upstream sections of the river at the forks are not based on an assessment of critical habitat that has developed since the dam failed.*[5]

We would like to see continued effort to act on previous recommendations to inventory, monitor and enhance the habitat and protection of the river corridor. It is important to engage groups and communities outside of London in this process including the Oxford Stakeholders Association, communities in Chatham-Kent, and First Nations, that continue to share a common interest in the health of the Thames River and the species within it.

In Conclusion:

We would like to thank the staff, consultancy firms and members of council, in their availability and responsiveness to questions and concerns expressed by stakeholders. Our organization will continue to be actively involved in the One River Municipal Class Environmental Assessment after the fate of Springbank Dam is determined and appreciate the opportunity to be engaged directly in the process.

Thank you,
Robert

Robert Huber
President, Thames River Anglers Association
www.anglers.org
619-630-1892

[5] Appendix 'A' – Agency Advisory Committee Report, One River Environmental Assessment Agency Advisory Committee Report, Prepared for the Agency Advisory Committee, September 2017. P 5-1