

**City of Ottawa Environmental Impact Study  
Barrhaven Conservancy East  
Phases 3 & 4**

**Updated Report**

**April 11, 2024**

**Submitted To:**

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## **List of Acronyms and Abbreviations**

AMO – Atlas of the Mammals of Ontario  
DFO – Department of Fisheries and Oceans Canada  
ECCC - Environment and Climate Change Canada  
EIS – Environmental Impact Statement  
EMP – Environmental Management Plan  
ESA – Endangered Species Act, 2007  
FWCA - Fish and Wildlife Conservation Act  
JRSWS – Jock River Reach One Subwatershed Study  
KAL – Kilgour & Associates Ltd.  
MBCA - Migratory Bird Convention Act  
MNR – Ministry of Natural Resources  
MNRF – Ministry of Natural Resources and Forestry  
OBBA – Ontario Breeding Bird Atlas  
OP – Official Plan  
OPA – Official Plan Amendment  
PPS – Provincial Policy Statement  
RVCA – Rideau Valley Conservation Authority  
SAR – Species at Risk  
SARA - Species at Risk Act  
SC – Special Concern  
TCR – Tree Conservation Report  
THR - Threatened  
y - Year



## 1.0 INTRODUCTION

Barrhaven Conservancy Development Corporation (BCDC) is proposing a new residential subdivision, named the Barrhaven Conservancy East (the “Site”) located in the Barrhaven Conservancy Community area of Ottawa, Ontario (Figure 1). The Site is bordered by the Jock River floodplain to the south and the Fraser-Clarke watercourse to the east and north. The future Chapmans Mills Bus Rapid Transit Corridor is located opposite the Fraser Clark corridor north of the Site. The western boundary of the Site had previously extended west to the Foster Watercourse, with lands between the Foster Watercourse and Borrisokane Road identified as Phase 5. Phase 5 lands have now been reassigned to BCDC’s proposed Barrhaven Conservancy West community and are no longer included as part of the current Site. As such, Borrisokane Road now constitutes the western Site boundary.

This Environmental Impact Study (EIS) provides an update to the general EIS for the broader Site (issued July 21, 2021; KAL, 2021) specific to Phases 3 and 4 (i.e. the development areas between Phase 2 and the Borrisokane Road; Figure 1), and draws from the more-current site details established in within the Phase 2-specific EIS (issued August 25, 2023; KAL, 2023).

### 1.1 Property Information

Phases 3 and 4, along with the entire Barrhaven Conservancy Community, are owned by BCDC. The full Barrhaven Conservancy Community is comprised of seven contiguous property parcels at 3285, 3288, 3300, and 3305 Borrisokane Road, and 4305, 4345, and 4375 McKenna Casey Drive, is located on Concession 3 Lots 13 – 14 and Concession 4 Lots 13-15 and covers approximately 168 ha. Phase 3-4 covers an area of approximately 14 ha. The Site is zoned as mix of Residential (R3) and Open Space Zone (O1).

Phases 3 and 4 are entirely within the City of Ottawa Urban Area and was largely dominated historically by agricultural land uses. Land across Phases 3 and 4, like most of the Barrhaven Conservancy lands, was subject to an extensive cut-and-fill program in 2019, which removed all of the natural cover except along the edges of waterways.

### 1.2 Current Proposal

The full build-out of the community is anticipated to take several years to complete. The subject of this application for Phases 3 and 4 of Barrhaven Conservancy East is a proposed residential development to take place between Borrisokane Road to the west, the Fraser-Clarke watercourse to the north and east, and the Jock River to the south.

Accompanying this new residential community is the proposed re-naturalization of the Jock River corridor including the installation of: (1) natural features such as wetlands and forest/canopy cover; and (2) recreational infrastructure (e.g. pathways). Plans for the restoration are currently being developed through consultation with Rideau Valley Conservation Authority (RVCA) and the City. The restoration is anticipated to include areas of wetland habitat, forest habitat, and meadow habitat, increasing the ecological diversity of the corridor.



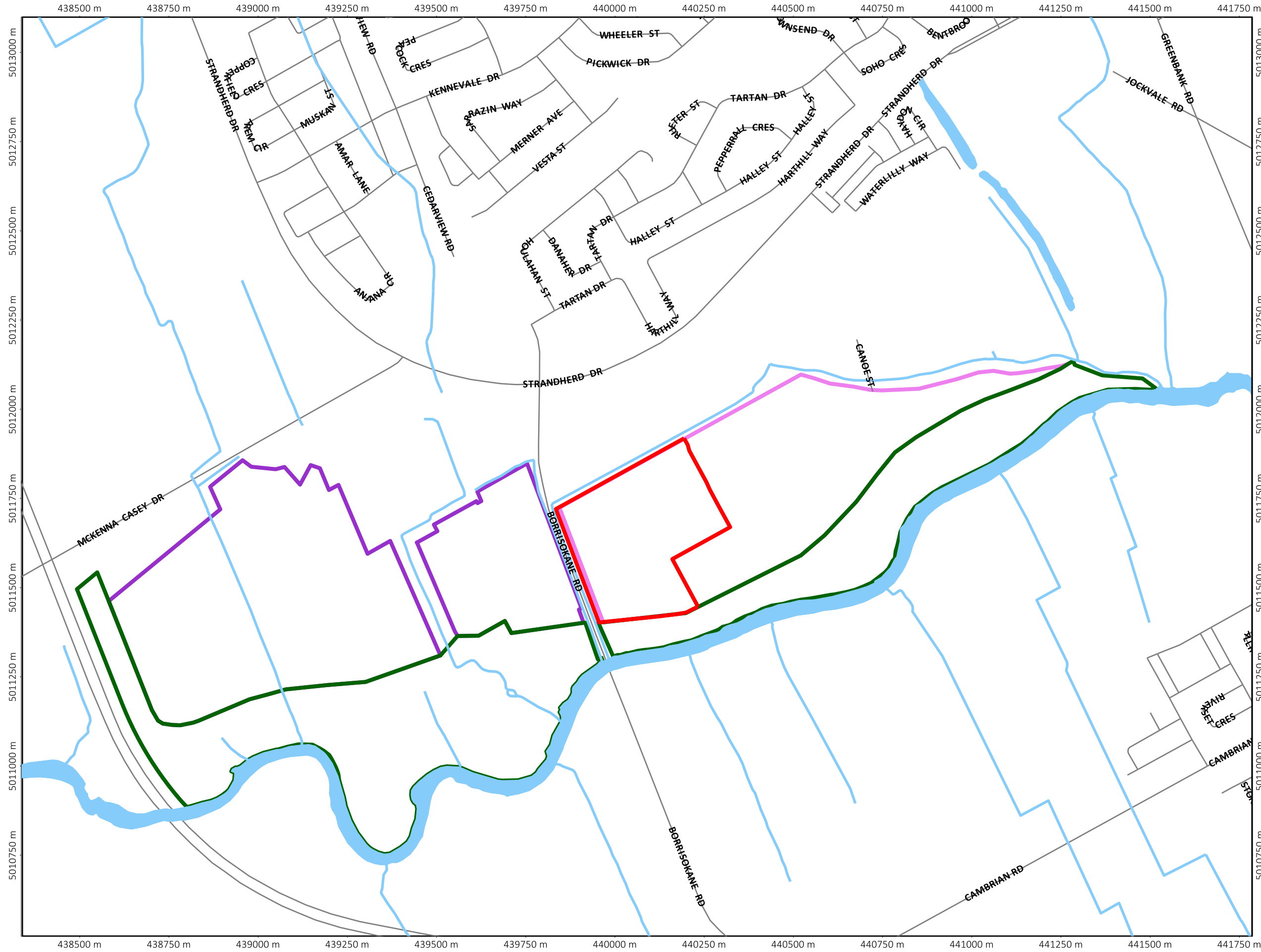


Figure 1 Site Context

**Legend**

- Development Areas
  - BC East
  - BC West
  - Jock Corridor
  - Phases 3 & 4
- Water Features
  - Headwater Channel

N

0 >100 m

Project: BCDC977  
 Map File: BCDC 977 New Maps Feb 2024.map  
 Universal Transverse Mercator - Zone 18 (N)  
 Printed on: 2024-02-23  
 Drawn by: MN



### 1.3 Objective

This report is the EIS for the proposed Phases 3 and 4 of the Barrhaven Conservancy East development. The purpose of this document is to review the overall development concept for the Site from a natural heritage perspective. The report includes a detailed review of both the natural heritage features currently present on the Site and the relevant natural heritage regulations under which site development would proceed. The report is intended to determine potential impacts of proposed site development on existing natural heritage features, provide mitigation and/or design considerations to protect those elements, and highlight relevant regulations as detailed planning proceeds to allow the developer to remain compliant.

This EIS is structured generally following City of Ottawa *Environmental Impact Statement Guidelines* (City of Ottawa, 2023). The Environmental Policy Context provided in Section 2 identifies the relevant natural heritage regulations under which site development and planning would proceed. Section 3 details the process by which existing site natural heritage conditions were determined and Section 4 details the existing natural heritage conditions within the Site. Section 5 describes the proposed project. Designs at this stage are still conceptual rather than detailed, but the section outlines major components and general design elements to be considered in the review of potential natural heritage impacts. Section 6 reviews the likely impacts of the overall proposed community design, while Section 7 provides recommended mitigation for likely impacts on the natural environment.

During the pre-consultation meeting for the proposed project (February 13, 2020), the City requested the following points be included in the EIS in addition to the usual components of an EIS (Appendix A):

- 1) Where discrepancies between the proposed development and recommendations Jock River Reach One Subwatershed Study (Stantec, 2007a) exist, provide both a rationale and explanation of how goals for the subwatershed will be achieved;
- 2) Describe how previous compensation works for development south and north of the river (e.g. the fish habitat compensation) will be protected; and,
- 3) Provide appropriate setbacks around natural features and surface water resources.

This report also includes the Tree Conservation Report (TCR) for the proposed project (Appendix B).



## **2.0 ENVIRONMENTAL REGULATORY CONTEXT**

Natural heritage policies and legislation relevant to this EIS are outlined below.

### **2.1 Provincial Policy Statement, 2020**

The Provincial Policy Statement (Government of Ontario, 2020) was issued under Section 3 of the Planning Act (Government of Ontario, 1990). The latest revision of the PPS was approved by the Ministry of Municipal Affairs and Housing on February 28, 2020, and came into effect on May 1, 2020. Natural features are afforded protections under Section 2.1 of the PPS. Protections may include maintenance, restoration, and improved function of diversity, connectivity, ecological function, and biodiversity of natural heritage systems. These protections restrict development and site alteration in significant natural areas (e.g. woodlands, wetlands, wildlife habitat) unless it can be demonstrated that there will be no negative effects on the features and ecological functions of those natural areas. Technical guidance for implementing the natural heritage policies of the PPS is found in the second edition of the *Manual for Natural Heritage Policies of the Provincial Policy Statement* (MNR, 2010). This manual recommends the approach and technical criteria for protecting natural heritage features and areas in Ontario.

### **2.2 City of Ottawa Official Plan**

The City Official Plan (OP) provides direction for future growth in the City and is a land use policy framework to guide growth and development to 2046 (City of Ottawa, 2021). The OP was first approved in 2003 and is updated every five years. The most recent update was approved by City Council in November 2021. This EIS is limited to the natural environment (e.g. natural heritage system) and land use designations related to the natural environment. Two major document classes developed under the OP provide more specific direction for large-scale development activities: subwatershed studies and secondary plans.

#### **2.2.1 Jock River Reach One Subwatershed Study, 2007**

The Jock River Reach One Subwatershed Study (JRSWS; Stantec, 2007b) is a planning document that describes existing environmental conditions throughout the lower Jock River subwatershed and provides recommendations for environmental protection, conservation and restoration to be incorporated into land development and land use practices to ensure long-term ecological sustainability of the subwatershed.

The JRSWS (Stantec, 2007b) notes that while the Jock River and its riparian lands provide the main wildlife corridor through the broader area, the forest cover and riparian vegetation throughout the subwatershed is limited and there is a lack of riparian vegetation along the river. The JRSWS indicates specific woodland and wetland areas to be preserved, though none of the features specifically addressed are located within or adjacent to the proposed development area. The JRSWS does not provide specific targets for forest or wetland coverage within development areas. To improve natural heritage conditions within the subwatershed, the JRSWS does provide three major categories of recommendations for development related to fish habitat compensation, stormwater management planning, and natural environment planning.





### 2.2.1.1 Fish Habitat Compensation

Fish habitat compensation requirements were only specifically prescribed for developments south of the Jock River within the JRSWS (Stantec, 2007b), as that report did not directly consider development on the north side. The intent, however, was to improve fish habitat where water features were altered. Alterations to the Corrigan Drain, the Todd Drain and the East and West Clarke Drains as part of development projects on the south side of the Jock River resulted in losses of fish habitat (Stantec, 2007b). Those losses were compensated for through the construction of the “Compensation Pond” (Stantec, 2007a) and improvement to the Foster Pond (City of Ottawa, 2013), both located on City-owned land south of the west of Borrisokane Road, between the Jock River and the southern boundary of lands owned by BCDC.

### 2.2.1.2 Stormwater Management Planning

The JRSWS (Stantec, 2007b) defines objectives for stormwater management planning for this project that will be addressed in detail through the functional servicing studies for the proposed development. The key points include:

For the Jock River:

- No quantity control storage is required for flood control purposes as the hydrograph from the subwatershed will peak before the upstream peak in the Jock River;
- No erosion control storage is required to maintain the predevelopment in-stream erosion condition; and,
- Quality control volume as per the Ministry of Environment Enhanced Treatment (80% TSS removal).

For existing drainage channels to the north bank of the Jock River (i.e. through the proposed development area):

- Quantity control storage as required to meet constraints within existing channels and/or at existing crossings (quantity control/level of control requirements to be determined through further detailed study);
- Erosion control storage as required to maintain stability and geomorphic function of the existing tributaries, as determined through further detailed study;
- Quality control storage as per the Ministry of Environment Enhanced Treatment (80% TSS removal); and,
- All stormwater management facility outlets will be designed to augment low flows to the extent possible.

Through the development area generally:



- Implement structural infiltration practices in areas of suitable soil; implement non- structural best management practices (i.e. reduced grading, disconnected impervious areas, promotion of open space and park lands, maximizing vegetative cover) elsewhere in the system to reduce the magnitude of runoff volume.

### 2.2.1.3 Natural Environment Planning

Individual recommendations from the JRSWS (Stantec, 2007b) associated with natural environment planning apply specifically to the catchments of drainage channels through the development area and/or of the Jock River itself. These recommendations have been numbered here so that they may be directly referenced as they are addressed throughout this EIS (Table 1).

**Table 1 Natural Environment Planning Recommendations from the JRSWS**

Feature	Recommendation	Recommendation Number
<b>Foster Catchment</b>		
Ditch/Tributary Corridor	Preserve and enhance the aquatic habitat and riparian zone of the tributary through future restoration opportunities.	JRSWS-1
Watercourse Setback Requirement	Setback the greater of the 100-y flood-line elevation/meander belt/aquatic setback (i.e. geotechnical, 15 m top of defined bank or 30 m from normal high-water mark)	JRSWS-2
<b>Fraser Clarke Catchment</b>		
Ditch/Tributary Corridor	Preserve and enhance the aquatic habitat and riparian zone of the tributary through future restoration opportunities.	JRSWS-3
Watercourse Setback Requirement	Setback the greater of the 100-y flood-line elevation/meander belt/aquatic setback (i.e. geotechnical, 15 m top of defined bank or 30 m from normal high-water mark).  NB: These setback guidelines were determined based on the form and habitat functionality of the Fraser Clark Drain system as it existed in 2007. At that time, the Fraser-Clark Drain was a permanent watercourse with its source well upstream of the current development Site. Reaches along the north side of Barrhaven Conservancy East have since been significantly altered in both form and function. All previous reaches further upstream from that point have since been fully removed.	JRSWS-4
<b>Jock River Corridor</b>		
Floodplain	Maintain the regulatory floodplain by not permitting active development within its limits. Some reduced-risk uses such as sports fields and trails may be considered subject to RVCA approval.	JRSWS-5
Riparian Corridor	Prepare a Jock River Corridor Riparian Planting Plan to improve and enhance riparian vegetation coverage along the banks and shoreline of the river.	JRSWS-6
Aquatic Habitat	Protect critical fish habitat and spawning areas along the Jock River and tributary mouths.	JRSWS-7
Creation of Aquatic Habitat (city lands)	Create pike spawning habitat area adjacent to Foster Dry Pond as compensation for the loss of fish habitat in tributaries within Barrhaven South.	JRSWS-8 Note: previously completed
Setback Requirement	Development setback for the Jock River will be the greater of: floodplain, meander belt width, geotechnical, 15 m top of defined bank or 30 m from normal high water mark	JRSWS-9
Erosion Investigations	Further detailed studies are required to confirm bank erosion areas, causes and to recommend bank stabilization and erosion protection measures	Objective for the City/RVCA
Recreational Pathway	Provide a recreational trail along the Jock River as per OP and Greenspace Master Plan.	JRSWS-10



## **2.2.2 South Nepean Urban Area Secondary Plan – Area 8**

The City provides policies and an approach to guide the future development of the area bounded by Strandherd Drive on the north, the Jock River on the south, Borrisokane Road on the west and the Kennedy-Burnett Stormwater facility to the east in the *South Nepean Secondary Plan for Area 8* (City of Ottawa, 2003).

With respect to the general development of the area, the secondary plan recommended that the Jock River floodplain provide the divide between the “building intensive” and “land intensive” (e.g. conservation lands) categories of land use. Conservation lands were deemed to occur within the regulatory flood line for the Jock River together with any additional land required by the City or the Conservation Authority for flood mitigation or stormwater control facilities. The conservation lands were to be re-naturalized, while areas of mid- to high-density residential development with some areas of commercial development were to occur outside of the naturalized area (City of Ottawa, 2003). The floodplain on the Site was modified through a cut-and-fill program under Official Plan Amendment (OPA) 212. OPA 212 confirms areas of Conservation designation and Residential designation (removing areas of commercial development) separated by the new regulatory flood line for the Jock River.

The City requires that future design of stormwater management facilities shall provide for pedestrian and cycling paths that connect to the adjacent areas and the Jock River. Whenever the stormwater facilities are reconstructed or new facilities are built, their design should have a more natural shoreline and vegetation than existing facilities. The rural landscape of the Jock River floodplain should also be conserved (City of Ottawa, 2003).

## **2.3 Species at Risk Act, 2002**

The federal Species at Risk Act (Government of Canada, 2002) is administered by Environment and Climate Change Canada (ECCC) and provides direction to protect and ensure the survival of wildlife species in Canada. The purpose of the SARA is to prevent populations of wildlife from becoming Extirpated, Endangered, or Threatened, provide recovery Endangered or Threatened species, and to manage other species to prevent them from becoming Endangered or Threatened.

All species listed on Schedule 1 of SARA are afforded protection on federal lands. Aquatic species and species of migratory birds protected by the Migratory Birds Convention Act (Government of Canada, 1994) and listed as Endangered, Threatened, or Extirpated under Schedule 1 of SARA are protected wherever they occur in Canada, regardless of land ownership.

## **2.4 Endangered Species Act, 2007**

The provincial Endangered Species Act (Government of Ontario, 2007) is administered by the Ministry of Environment, Conservation, and Parks (MECP) and provides protection for species at risk (SAR) and their habitat. The Act prohibits killing, harming, harassing, possessing, transporting, buying, or selling Extirpated, Endangered, and Threatened species. Species listed as Endangered, Threatened, or Extirpated and their habitats (e.g. areas essential for breeding, rearing, feeding, hibernation, and migration) are automatically afforded legal protection under the ESA.



## **2.5 Fisheries Act, 1985**

The federal Fisheries Act (Government of Canada, 1985) is administered by Fisheries and Oceans Canada (DFO) and provides protections to fish, fish habitat, and fisheries. Specifically, the Fisheries Act provides:

- Protection for all fish and fish habitat
- Prohibition against the "harmful alteration, disruption or destruction of fish habitat"
- Prohibition against causing "the death of fish by means other than fishing"

Projects having a scope that does not fall within DFO-defined standards and codes of practice require submission of a request for review to DFO.

## **2.6 Migratory Birds Convention Act, 1994**

The Migratory Birds Convention Act (MBCA) is legislation administered by the ECCC that provides protection for migratory birds listed in the Act. The disturbance, destruction, take and killing of migratory birds, their eggs, and their nests are prohibited in the Act. The "incidental take" and work that would result in the destruction of active nests, or the wounding or killing of bird species protected under the MBCA and/or associated regulations (e.g. SARA) is prohibited.

## **2.7 Fish and Wildlife Conservation Act, 1997**

The provincial Fish and Wildlife Conservation Act (Government of Ontario, 1997) governs the hunting and trapping of a variety of wildlife including mammals, birds, reptiles, amphibians, and fish in Ontario, thereby facilitating the protection of wildlife and their habitat. The FWCA outlines the prohibition of hunting or trapping specially protected species and the requirement for provincially issued licenses for the hunting or trapping of "fur-bearing" or "game" animals.

## **2.8 Conservation Authorities Act, 1990**

Conservation Authorities were created to address erosion, flooding, and drought concerns regionally by managing at the watershed level. Conservation Authorities were given the ability to regulate under Section 28 of the Conservation Authorities Act. The act provides mechanisms to regulate works and site alterations that have potential to affect erosion, flooding, land conservation, and alterations to waterbodies within their jurisdiction. It is the obligation of all Conservation Authorities to implement their local Ontario *Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*.

## **3.0 METHODOLOGY**

### **3.1 Background Data Review**

A detailed review of the available background information was completed and is summarized for the proposed development. Much of the existing published information pertaining to natural systems is out of date since the Site has been cleared and re-graded as part of a previous earthworks program.



### **3.1.1 Agency Consultation**

#### **3.1.1.1 RVCA**

Consultations with the RVCA have been ongoing with respect to the restoration of the north shore of the Jock River. Discussions generally focused on natural features for the restoration works (e.g. wetland and forest cover, meadow), recreational uses (e.g. paths/trails, access, parking), and public safety.

The RVCA provided the following input with respect to restoration designs:

- Ponds and wetland features should have a variety of slopes (e.g. 4:1, 3:1 2:1);
- Natural areas should have a diversity of aquatic and terrestrial vegetation;
- Ponds and wetland features should have woody structure in significant abundance at a variety of elevations (root wads, sweeper trees, basking logs); and,
- Ponds should have shallow, moderate and deep zones broken down by percentage.

#### **3.1.1.2 City of Ottawa**

City staff participated in the February 19, 2020 meeting to scope the restoration concept, and provided verbal input (Appendix A) on the design at that time which is reflected in the concept (Appendix C).

#### **3.1.1.3 MECP**

MECP was consulted in the earlier stages of site development planning to review the list of SAR potentially occurring in the vicinity (Appendix A). MECP, however, no longer offers this review service. This study considers all SAR currently considered to occur within the City regardless (Appendix D).

### **3.1.2 Records Review**

The description of the existing natural environment is partially based on a review of previously completed studies, including:

- Barrhaven Conservancy Cut and Fill Environmental Impact Statement (Kilgour & Associates Ltd., 2017a); and,
- Jock River Restoration Project: Aquatic and Ecological Site Assessment Supporting Document (Kilgour & Associates Ltd., 2018).

On-line databases queried for SAR, provincially rare species, and natural heritage features including the following:

- DFO SAR Mapping (DFO, 2023);
- Ontario MNRF;
  - Natural Heritage Information Centre (MNRF, 2023);



- Land Information Ontario (LIO) Make a Topographic Map (MNRF, 2023);
- Species at Risk in Ontario (SARO) List (MECP, 2023); and,
- SARA, Schedule 1 (Government of Canada, 2002);
- Ontario Breeding Bird Atlas (Birds Canada et al., 2009);
- Ontario Reptile and Amphibian Atlas (ORAA; (Ontario Nature, 2019);
- Atlas of the Mammals of Ontario (AMO; (Dobbyn, 1994);
- RVCA Mapping Geoportal (Rideau Valley Conservation Authority, 2023); and,
- City of Ottawa;
  - Official Plan (City of Ottawa, 2021);
  - GeoOttawa Mapping database (City of Ottawa, 2024); and,
  - Characterization of Ottawa’s Watersheds (City of Ottawa, 2011).

## **4.0 PROPERTY INFORMATION**

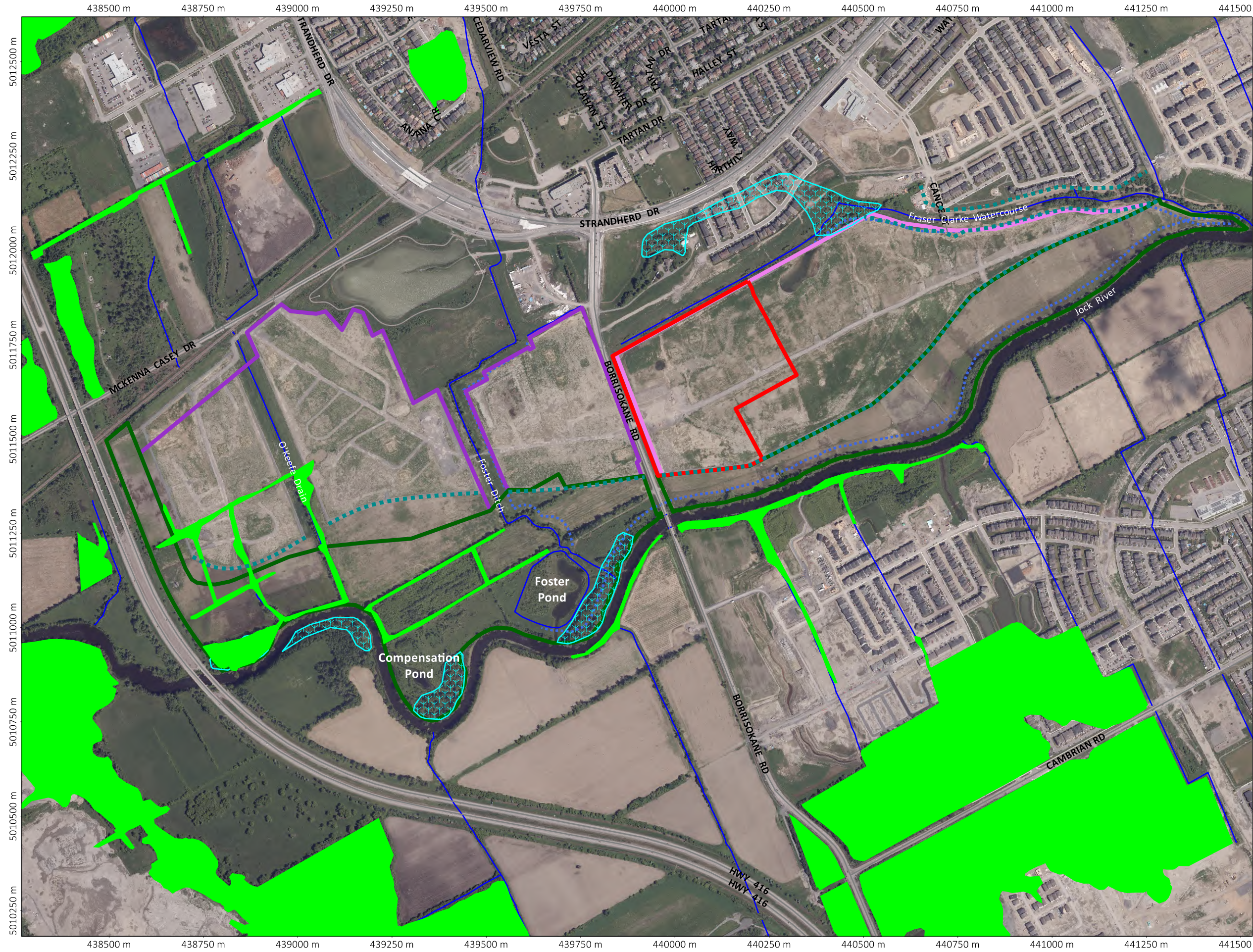
### **4.1 Description of the Site and the Natural Environment**

The Barrhaven Conservancy Community lands are entirely within the City’s Urban Boundary (City of Ottawa, 2024). Natural Heritage Features and Core Natural Areas are absent on the Site (City of Ottawa, 2024; MNRF, 2023). Mapping resources identify the Site as being a natural corridor, riparian corridor, floodplain with unstable slopes, and Major Open Space (Figure 2; City of Ottawa, 2021). These mapping resources are out of date and do not accurately represent the current conditions on the site. A revised 100-year floodplain boundary was approved by the RVCA in the spring of 2020 (Rideau Valley Conservation Authority, 2023; Figure 3).

Major Open Spaces within the Barrhaven Conservancy Community generally follow the Jock River and Highway 416 corridor. The City (2021) states that Major Open Spaces are “large parks..., open space corridors along the Ottawa and Rideau Rivers and the Rideau Canal, parkway corridors and corridors reserved for rapid-transit and major roads.” The Major Open Space identified by the City OP is not a park, located along the Ottawa River or Rideau River, nor are they likely reserved for future rapid transit or major roads.

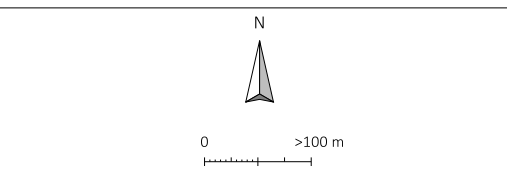
The City further states “Major Open Spaces are a key component of the Greenspace Network (see Section 2.4), which contributes to the quality of life in neighbouring communities as well as to the overall integrity of the natural environment”. The current conditions within the Barrhaven Conservancy Community contain few natural features.





**Figure 2** Results of Initial Agency Database Search

- Legend**
- Edge of Regulatory Floodplain
  - 30 m from Top-of-Bank
  - Development Areas**
    - BC East
    - BC West
    - Jock Corridor
    - Phases 3 & 4
  - Watercourses / Drainage Features
  - Forest / Treed Areas
  - Wetland features (non-evaluated)



Project: BCDC977  
 Map File: BCDC 977 New Maps Feb 2024.map  
 Universal Transverse Mercator - Zone 18 (N)  
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The immediate corridor of the river is defined as a primary natural area that maintains natural features and functions in an urban context: lands in the flood plain beyond the riparian edge are further flagged as contributing passive recreational lands that can shape the character of communities and the perception of the quality of open space (City of Ottawa, 2006).

No Provincially or locally Significant Wetlands, wetlands found in association with Significant Woodlands, Significant Valleylands, or Areas of Natural and Scientific Interest occur on or adjacent to the Site (City of Ottawa, 2024; MNRF, 2023). The nearest Provincially Significant Wetland is the Stoney Swamp Wetland Complex, greater than 3 km away.

The City identifies an unevaluated wetland within the City-owned lands on the south of the Site and west of Borrisokane Road adjacent to the Jock River (City of Ottawa, 2024). The MNRF identifies wetlands along the southern border of the Site adjacent to the Jock River (MNRF, 2023).

The nearest designated natural features to the Site include the Cambrian Road Complex and the Twin Elm Moraine Earth Science Area of Natural and Scientific Interest. The Cambrian Road Complex occurs to the south of the Jock River approximately 250 m west of Highway 416. The Twin Elm Moraine Earth Science Area of Natural and Scientific Interest (ANSI) is categorized as of moderate significance.

Woodlands occur in the riparian areas along the Jock River and as tree lines separating agriculture fields in the south and west areas of the Site (Figure 2; Figure 3; (MNRF, 2023). Riparian buffer areas within the Barrhaven catchment of the Jock River are dominated by natural stream network types with a small amount of altered riparian cover (Rideau Valley Conservation Authority, 2016). Stream erosion in this catchment is relatively low with one area of significant erosion adjacent to City lands. Two water courses occur within Barrhaven Conservancy East, i.e., the Fraser-Clarke Watercourse and the Foster Municipal Drain (Figure 3). City of Ottawa mapping resources still indicate the presence of three other small branch channels on the Site though this information is out of date; the three branch channels are not present on the Site (City of Ottawa, 2024).

Natural features on the Site include the forested edge of the Jock River (approximately 10-20 m wide), vegetation cover within 30 m of the two drain features on the site (i.e. the Foster and Fraser-Clarke Watercourses), and City lands in the southern portion of the Site (Figure 1). All other areas within the Site have been regraded and consist of newly seeded bare soil.

## **4.2 Landforms, Soils and Geology**

The Site is located within the Ottawa Valley Clay Plains physiographic region which is composed of Champlain Sea deposits, and specifically the Piperville, North Gower and Dalhousie soil associations. The Piperville association is a group of soils developed in slightly acid to neutral, moderately coarse to medium-textured, marine, estuarine, and fluvial materials, and are composed of Gleyed Melanic Brunisols, Orthic Humic Gleysols, and Rego Gleysols (Schut & Wilson, 1987). These soils are poorly drained Orthic Humic Gleysols found on level to very gently sloping topography (between 0% to 2%).

The Dalhousie association consists of soils developed in fine-textured, modified marine materials with soil profiles that include Gleyed Orthic Melanic Brunisols, Orthic Humic Gleysols, and Rego Gleysols (Schut & Wilson, 1987). These soils are dominantly poorly drained Orthic Humic Gleysols found on level to very gently sloping topography (between 0% and 2%).



The North Gower association is made up of soils developed in moderately fine-textured, modified marine parent materials, and includes Humic Gleysols, Rego Gleysols, and Gleyed Gray Brown Luvisols soil profiles (Schut & Wilson, 1987). These soils are poorly drained Orthic Humic Gleysols found on level to very gently sloping topography (between 0% and 2%).

### **4.3 Surface Water, Groundwater and Fish Habitat**

#### **4.3.1 Jock River**

The Jock River flows from west to east along the southern boundary of the Barrhaven Conservancy Community, including the Barrhaven Conservancy East lands, for approximately 3 km to its confluence with the Rideau River (Figure 1). The Site is entirely within Reach 1 of the Jock River Subwatershed. The Jock River adjacent to the Site has a meandering channel with moderate macrophyte coverage and relatively steep banks. The river is largely 'run' habitat with substrate dominated by clay and muck/silt. Water velocities are relatively slow and depths at mid-channel are 3 to 4 m. Areas of coarse substrate (i.e. cobble, boulder, gravel) with shallower depths and higher flow velocities occur on the west end of the Site at Highway 416 and east of the Site at Greenbank Road (KAL, 2018).

Instream vegetation in the Jock River adjacent to the Barrhaven Conservancy Community is dominated by algae (RVCA, 2016). Small patches of submerged plants and broad-leaved emergent plants are present at the upstream and downstream ends of the Site.

Riparian features within the Site have been significantly altered by anthropogenic changes. The existing riparian area along the Jock River contains a band of mature forest as a natural riparian buffer. The buffer is widest on the west side of the Site (approximately 60 m maximum) to approximately 10 m wide on the east side of the Site.

The Jock River is classified as a warm/warm-cool water system that is home to a baitfish and recreational fishery of approximately 40 species (RVCA, 2016). Thirty-six species are known to occur in the section of the Jock River and its tributaries within and adjacent to the Site, including eight sportfish species: Bluegill (*Lepomis macrochirus*), Largemouth Bass (*Micropterus salmoides*), Muskellunge (*Esox masquinongy*), Northern Pike (*Esox lucius*), Pumpkinseed Sunfish (*Lepomis gibbosus*), Rockbass (*Ambloplites rupestris*), Smallmouth Bass (*Micropterus dolomieu*) and Walleye (*Sander vitreus*; RVCA, 2016).

Twenty-five fish species were captured during the electrofishing efforts in 2018 with 72% of the individuals caught being from five species: Blacknose Shiner (*Notropis heterolepis*; 34%), Common Shiner (*Notropis cornutus*; 16%), Pumpkinseed (*Lepomis gibbosus*; 11%), Golden Shiner (*Notemigonus crysoleucas*; 6%), and Banded Killifish (*Fundulus diaphanus*; 5%; Table 2; KAL, 2018).



**Table 2 Fish species identified in the Jock River and tributaries within and near the Site (KAL, 2018)**

MNR Species Code	Common Name	Taxonomic Name	Location												
			Todd Channel and Pond Jock River	Fraser Clarke and Pond	Fraser Clarke Tributary	West Clarke Drain	Drain 2/ Center Drain	Borrisokane Drain	Borrisokane Ditch	Fish Habitat Pond Foster Drain	O'Keefe Drain				
131	Northern Pike	<i>Esox lucius</i>	X											X	
132	Muskellunge	<i>Esox masquinongy</i>	X												
136	White Sucker	<i>Catostomus commersonii</i>	X	X				X					X	X	
141	Central Mudminnow	<i>Umbra limi</i>	X	X				X					X	X	
182	Northern Redbelly Dace	<i>Phoxinus eos</i>	X	X				X							
183	Finescale Dace	<i>Phoxinus neogaeus</i>	X												
186	Common Carp	<i>Cyprinus carpio</i>	X												
189	Brassy Minnow	<i>Hybognathus hankinsoni</i>	X	X											
192	Hornyhead Chub	<i>Nocomis biguttatus</i>	X												
194	Golden Shiner	<i>Notemigonus crysoleucas</i>	X	X										X	
198	Common Shiner	<i>Luxilus cornutus</i>	X	X			X	X					X	X	X
199	Blackchin Shiner	<i>Notropis heterodon</i>	X	X				X							
200	Blacknose Shiner	<i>Notropis heterolepis</i>	X										X	X	
201	Spottail Shiner	<i>Notropis hudsonius</i>		X										X	
206	Spotfin Shiner	<i>Cyprinella spiloptera</i>	X												
208	Bluntnose Minnow	<i>Pimephales notatus</i>	X	X									X	X	
209	Fathead Minnow	<i>Pimephales promelas</i>	X	X				X					X	X	X
210	Blacknose Dace	<i>Rhinichthys atratulus</i>	X										X		
211	Longnose Dace	<i>Rhinichthys cataractae</i>	X												X
212	Creek Chub	<i>Semotilus atromaculatus</i>	X	X			X	X				X	X		X
213	Fallfish	<i>Semotilus corporalis</i>	X												
214	Pearl Dace	<i>Margariscus margarita</i>	X					X							
233	Brown Bullhead	<i>Ameiurus nebulosus</i>	X	X										X	
235	Stonecat	<i>Noturus flavus</i>	X												
261	Banded Killifish	<i>Fundulus diaphanous</i>	X	X			X						X	X	X
281	Brook Stickleback	<i>Culaea inconstans</i>	X	X				X	X				X		
311	Rockbass	<i>Ambloplites rupestris</i>	X	X				X					X	X	
313	Pumpkinseed Sunfish	<i>Lepomis gibbosus</i>	X	X									X	X	X
314	Bluegill Sunfish	<i>Lepomis macrochirus</i>	X					X						X	
316	Smallmouth Bass	<i>Micropterus dolomieu</i>	X	X											
317	Largemouth Bass	<i>Micropterus salmoides</i>	X												
334	Walleye	<i>Sander vitreus</i>	X												
341	Johnny Darter	<i>Etheostoma nigrum</i>		X										X	
342	Logperch	<i>Percina caprodes</i>	X											X	
361	Brook Silverside	<i>Labidesthes sicculus</i>	X	X										X	
381	Mottled Sculpin	<i>Cottus bairdii</i>	X	X									X	X	X



### 4.3.2 Tributaries

One municipal drain and two decommissioned municipal drains occur in the broader Barrhaven Conservancy Community and flow to the Jock River: the Foster Watercourse, the Fraser-Clarke Watercourse, and the O’Keefe Drain (Figure 3). The Fraser-Clarke Watercourse occurs adjacent to the Barrhaven Conservancy East Phase 2 lands. The Foster Watercourse and O’Keefe Drain are located outside of Phase 2 of the Barrhaven Conservancy East lands and are not part of the current application. Most of the tributaries to the Jock River support tolerant warm water fishes with some of the larger tributaries, such as the Todd Pond and Channel and Fraser-Clarke Watercourse, supporting more diverse fish assemblages. Fish community surveys identified three species of small-bodied fish in this feature (Table 2; KAL, 2018).

For clarity, while the JRSWS requires that no site alterations will occur within 30m of fish habitat compensation projects completed in accordance with JRSWS (Table 1), the specific compensation projects referred to are located ~800 m southwest of the current project area on the other side of Borrisokane. As such, they are not relevant to the current project.

The Fraser-Clarke Watercourse is a former municipal drain that was decommissioned by the City. It is now a watercourse and no longer subject to the *Drainage Act*. Fish community surveys identified three species of small-bodied fish in this feature (Table 2), but only in the lower reaches adjacent to Phase 2. The Fraser-Clarke Watercourse previously received flows from a tributary that had existed on development lands to the north of Barrhaven Conservancy East, as well as from areas west of Borrisokane Road. Both of these sources have now been removed. The current uppermost reach of the feature, located adjacent to the north side of Barrhaven Conservancy East and east of Borrisokane Road, is an ephemeral swale, with no water source other than spring melt water. It does not currently provide habitat for fish or amphibians (Kilgour & Associates Ltd., 2017b).

### 4.3.3 Headwater Drainage Features

A Headwater Drainage Features Assessment (HDFA; Kilgour & Associates Ltd., 2017b) reviewed 16 surface water features, including the permanent features addressed above in Section 4.3.2, on the Site prior to RVCA approved earthworks project (Kilgour & Associates Ltd., 2017a). Other than the three permanent watercourses, the remaining headwater features consisted of small agricultural drains, roadside ditches, wet depressions, or shallow swales. These features contained water during the spring but were dry or early summer or shortly thereafter. Being located directly with active agricultural fields, they had limited natural vegetation and did not provide habitat for fish or amphibians. The management recommendations from the HDFA did not indicate any requirement for these small, ephemeral features to be retained or compensated for as part of the cut/fill exercise that removed them from the site.

### 4.3.4 Groundwater

Indicators of groundwater discharge (e.g. springs/seeps, watercress, iron staining, significant temperature change, rainbow mineral film) were observed in two locations in some proximity to the Site (Rideau Valley Conservation Authority, 2016), though the specific locations of these observations were not provided other than that they correspond with City lands along the Jock River. There is no way from the original source material to determine the location of the noted discharge locations. In the five years of field studies and site works (including the substantial regrading of the entire site) subsequent to the 2016 RVCA report,



no apparent/or groundwater discharge has been observed on the BCDC property. The Jock River-Barrhaven drainage catchment is considered to have a Highly Vulnerable Aquifer (Rideau Valley Conservation Authority, 2016).

#### 4.4 Vegetation Communities

The Site was historically agricultural lands with treed hedgerows between fields, a treed buffer along the southern boundary of the property, and some areas of regenerating scrubland in the south-west corner (Figure 2; City of Ottawa, 2024). The previously existing hedgerows were primarily composed of deciduous trees species such as Manitoba Maple (*Acer negundo*), Crack Willow (*Salix fragilis*), Glossy Buckthorn (*Rhamnus frangula*), Trembling Aspen (*Populus tremuloides*), American Elm (*Ulmus americana*), Green Ash (*Fraxinus pennsylvanica*), Black Cherry (*Prunus serotina*), Sugar Maple (*Acer saccharum*), Bur Oak (*Quercus macrocarpa*), and American Basswood (*Tilia americana*; KAL, 2018). The largest trees were approximately 20 - 50 cm DBH. Many of the American Elm and Green Ash were dead or in visibly poor health.

Most of these hedgerows have been removed as part of the earthworks project (Figure 3). Currently, the only trees remaining located near Phases 3 and 4 are located within the Fraser Clarke Watercourse corridor north of the area. The original Tree Conservation Report (TCR) for the broader Site is included for reference (Appendix B), but no trees are present within, or directly abut, the boundaries of Phases 3 or 4. As such, no update specific to Phases 3 and 4 is warranted.

##### 4.4.1 Site Land Cover

The Site was a mosaic of cultivated cropland bordered by hedgerows and drain features (Figure 2). Land Cover in this reach of the Jock River was 20% Crop and Pasture and 11% Woodland in 2014 with the densities of these Land Covers significantly less than in 2008 (Rideau Valley Conservation Authority, 2016). Vegetation diversity within the Site was limited to a few small, wooded areas, shrubland area, and a farmyard. Many of the trees within the hedgerows and wooded areas on site were greater than 40 years old (City of Ottawa, 2024).

There is no Crop and Pasture on the Site and tree cover only occurs along drainage corridors and within floodplain lands (Figure 3). Site trees are further detailed within the TCR for the proposed project (Appendix B).

##### 4.4.2 Ecological Land Classification

Prior to the 2019 Cut – Fill project, most of the Site was relatively dry with a few lowland areas holding water during spring freshet and immediately after precipitation events. The most abundant habitat type on site was open agriculture (Figure 2). Observed crops on site were primarily corn (*Zea mays*) and soybeans (*Glycine max*), and alfalfa (*Medicago sativa*).

The ELC completed for the Cut – Fill project identified seven distinct vegetation communities within the Site (Table 3). Many of these features no longer occur on the Site since the Cut – Fill Project (Figure 3).

#### **Table 3 Ecological Land Classification vegetation communities within the Barrhaven Conservancy Area prior to 2019**



Ecological Land Classification Type	Community Description
OAG	Agricultural lands remaining on the Site are limited to narrow edges of previously larger fields located between the edges of the Cut-Fill site and site drains. The fields had been used primarily for corn and soybean crops but will not be planted with anything this year.
FOD3 Dry – Fresh Poplar – White Birch Deciduous Forest	Dominant trees are Manitoba Maple and Trembling Aspen with subordinate species of American Elm, Basswood, Green Ash, Balsam Poplar ( <i>Populus balsamifera</i> ), and Crack Willow. Trees in this woodland patch were on average between 20 and 50 cm. Some large Green Ash and Trembling Aspen snags (greater than 50 cm) were observed on site, and a few large Manitoba Maple, Crack Willow, and Trembling Aspen were also present.
MAM2 Mixed Mineral Meadow Marsh	Contains various meadow species including goldenrod ( <i>Solidago</i> sp.), Swamp Milkweed ( <i>Asclepias incarnata</i> ), Wild Parsnip ( <i>Pastinaca satvia</i> ), Wild Carrot ( <i>Daucus carota</i> ), sedge species ( <i>Carex</i> sp.), cattail ( <i>Typha</i> sp.), and others.
SWT2 Willow Mineral Deciduous Thicket	Contains willow ( <i>Salix</i> sp.), Manitoba Maple, Common apple ( <i>Malus</i> sp.), and other shrub species combined with grass and forb species. Butternut saplings were identified in this portion of this ecosite east of the Fraser-Clarke Watercourse and were subject to a <i>Notice of Impact</i> submitted to the MNRF in 2018.
SWD2 Ash Mineral Deciduous Swamp	Composed mainly of Green Ash and Manitoba Maple, with subordinate species of Bur Oak, Basswood, Crack Willow, and Silver Maple ( <i>Acer saccharinum</i> ). Green Ash, Crack Willow, and Silver Maple were the largest trees observed and on average were between 30 and 50 cm DBH.
CUT1 Mineral Cultural Thicket	An area of approximately 2.6 ha in the southwest corner of the Site. This area was not actively cultivated and had become revegetated with shrubs and saplings mimicking surrounding communities.

Following the 2019 Cut and Fill program, Phases 3 and 3 have been continuously subject to active regrading and construction work. As such, current existing conditions on the Site are cannot be considered to provide habitat for wildlife.

## 4.5 Wildlife

### 4.5.1 Amphibians

Five species of amphibians had been identified during amphibian surveys, including Northern Leopard Frog (*Lithobates pipiens*), American Toad (*Anaxyrus americanus*), Green Frog (*Rana clamitans*), American Bullfrog (*Lithobates catesbeianus*), and Gray Treefrog (*Hyla versicolor*; Figure 3; KAL, 2018). Amphibian observations were generally associated with existing drain features, off-property stormwater management ponds, and a swale through the west side of the Site. These areas did not support enough individual amphibians and amphibian species to constitute Significant Wildlife Habitat (MNRF, 2015a).



## 4.5.2 Birds

A total of 52 species had been observed during the breeding bird surveys (BBS; Table 4; Figure 3; KAL, 2018). Most of the birds observed on the Site were common species and had a reasonable likelihood of breeding on or nearby the Site with a few likely limited use of the Site for foraging or refuge. Red-winged Blackbird (*Agelaius phoeniceus*) were the most abundant species on site followed by Song Sparrow (*Melospiza melodia*) and Cedar Waxwing (*Bombycilla cedrorum*).

**Table 4 Breeding birds observed during field surveys in 2017**

Common Name	Scientific Name	Breeding Probability	Common Name	Scientific Name	Breeding Probability
American Crow	<i>Corvus brachyrhynchos</i>	Likely	Indigo Bunting	<i>Passerina cyanea</i>	Likely
American Goldfinch	<i>Carduelis tristis</i>	Probable	Killdeer	<i>Charadrius vociferus</i>	Probable
American Kestrel	<i>Falco sparverius</i>	Likely	Least Flycatcher	<i>Empidonax minimus</i>	Likely
American Redstart	<i>Setophaga ruticilla</i>	Likely	Lesser Yellowlegs	<i>Tringa flavipes</i>	Possible
American Robin	<i>Turdus migratorius</i>	Likely	Mallard	<i>Anas platyrhynchos</i>	Possible
Baltimore Oriole	<i>Icterus galbula</i>	Likely	Mourning Dove	<i>Zenaida macroura</i>	Possible
Barn Swallow *	<i>Hirundo rustica</i>	Probable	Northern Flicker	<i>Colaptes auratus</i>	Likely
Belted Kingfisher	<i>Ceryle alcyon</i>	Likely	Northern Cardinal	<i>Cardinalis cardinalis</i>	Likely
Black-and-White Warbler	<i>Mniotilta varia</i>	Likely	Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	Likely
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	Probable	Osprey	<i>Pandion haliaetus</i>	Possible
Black-capped Chickadee	<i>Poecile atricapillus</i>	Likely	Purple Finch	<i>Carpodacus purpureus</i>	Likely
Brown-headed Cowbird	<i>Molothrus ater</i>	Likely	Red-breasted Nuthatch	<i>Sitta canadensis</i>	Likely
Canada Goose	<i>Branta canadensis</i>	Possible	Red-eyed Vireo	<i>Vireo olivaceus</i>	Likely
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Likely	Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Likely
Chipping Sparrow	<i>Spizella passerina</i>	Likely	Ring-billed Gull	<i>Larus delawarensis</i>	Unlikely
Common Grackle	<i>Quiscalus quiscula</i>	Likely	Rock Pigeon	<i>Columba livia</i>	Likely
Common Yellowthroat	<i>Geothlypis trichas</i>	Likely	Savannah Sparrow	<i>Passerculus sandwichensis</i>	Probable
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	Low	Song Sparrow	<i>Melospiza melodia</i>	Likely
Downy Woodpecker	<i>Picoides pubescens</i>	Likely	Spotted Sandpiper	<i>Actitis macularius</i>	Likely
Eastern Kingbird	<i>Tyrannus tyrannus</i>	Likely	Swamp Sparrow	<i>Melospiza georgiana</i>	Likely
Eastern Phoebe	<i>Sayornis phoebe</i>	Likely	Tree Swallow	<i>Tachycineta bicolor</i>	Likely
European Starling	<i>Sturnus vulgaris</i>	Possible	Turkey Vulture	<i>Cathartes aura</i>	Probable
Gray Catbird	<i>Dumetella carolinensis</i>	Likely	Warbling Vireo	<i>Vireo gilvus</i>	Likely
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	Likely	White-breasted Nuthatch	<i>Sitta carolinensis</i>	Likely
Green Heron	<i>Butorides virescens</i>	Likely	Wild Turkey	<i>Meleagris gallopavo</i>	Likely
Hairy Woodpecker	<i>Picoides villosus</i>	Possible	Willow Flycatcher	<i>Empidonax traillii</i>	Likely
House Sparrow	<i>Passer domesticus</i>	Probable	Wood Duck	<i>Aix sponsa</i>	Likely
House Wren	<i>Troglodytes aedon</i>	Likely	Yellow Warbler	<i>Setophaga petechia</i>	Likely

\* = Species at Risk under the ESA of Ontario (2007) and SARA of Canada (2002).

Breeding potential = Likely: Species showing breeding behaviour and preferred breeding habitat observed. Possible: preferred breeding habitat observed on site. Probable: preferred breeding habitat is possible on or adjacent to the site. Unlikely: species not showing breeding behaviour and preferred breeding habitat not observed on site.

Barn Swallow (*Hirundo rustica*) is listed as threatened under the ESA and SARA and was observed on the site during the BBS. This species was observed foraging occasionally over the hayfields of the northwest



corner of the Site as well as the stormwater ponds to the northeast of the Site. No Barn Swallow nests were found on site.

### 4.5.3 Turtles

Turtle basking surveys associated with the on-site drain features were completed on the Site in 2016 and 2017 (Figure 3; Kilgour & Associates Ltd., 2018). Most turtles observed during the surveys were basking on logs along the Jock River or were basking on the bank of the river. Some (Snapping) turtles were observed in mating behaviour along the banks of the mainstem river. No turtles were observed at any time nesting in the study area, nor have there been any remnant turtle nests observed. Three species of turtles were identified: Snapping Turtle (*Chelydra serpentina*), Painted Turtle (*Chrysemys picta*) and Northern Map Turtle (*Graptemys geographica*). The Painted Turtle was the most observed species (Kilgour & Associates Ltd., 2018). Blanding’s Turtles are known to occur in the Jock River closer to (upstream of) the Village of Richmond, but focused studies in 2016 and 2017 (Kilgour & Associates Ltd., 2018) did result in observations near the Site.

It is unlikely that the drainage features on the Site function as overwintering habitat because they are too shallow and have flowing water. Blanding’s Turtles specifically prefer ponds with > 1 m of water and an organic bottom. They need a still (lentic) environment to overwinter otherwise risk being moved by flows (MNRF, 2015b). Blanding’s and other species hibernate in areas that do not freeze (COSEWIC, 2016; Environment and Climate Change Canada, 2018), and therefore need free-standing water between the substrate they rest on and the overlying ice. The drainage features on the site, however, could serve as movement corridors for any of the four species observed.

### 4.5.4 Mammals

Three mammals were observed during the site visits: Beaver (*Castor canadensis*), Muskrat (*Ondatra zibethicus*), and Mink (*Neovison vison*). None of these mammals are protected under the ESA but they are regulated under the Fish and Wildlife Conservation Act (Government of Ontario, 1997) as fur-bearing mammals.

## 4.6 Habitat for Species at Risk

The City identified 69 SAR that are known to occur or have historically occurred within the City (City of Ottawa, 2019). Of those, fourteen SAR under ESA and SARA were initially identified with high or moderate potential interaction with the Project (Table 5). Four species listed on the ESA were observed within the broader Barrhaven Conservancy lands.

**Table 5 Species at Risk with potential to occur in the vicinity of the Site**

Common Name	Taxonomic Name	ESA Status	SARA Schedule 1 Status	Source
Bank Swallow	<i>Riparia riparia</i>	Threatened	Threatened	OBBA
Barn Swallow*	<i>Hirundo rustica</i>	Special Concern	Threatened	NHIC, OBBA, KAL
Bobolink	<i>Dolichonyx oryzivorus</i>	Threatened	Threatened	OBBA
Chimney Swift	<i>Chaetura pelagica</i>	Threatened	Threatened	OBBA





Eastern Meadowlark	<i>Sturnella magna</i>	Threatened	Threatened	OBBA
Eastern Wood-pewee	<i>Contopus virens</i>	Special Concern	Special Concern	NHIC, OBBA
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	No status	Special Concern	OBBA
Short-eared Owl	<i>Asio flammeus</i>	Special Concern	Special Concern	OBBA
Wood Thrush	<i>Hylocichla mustelina</i>	Special Concern	Threatened	OBBA
Blanding's Turtle	<i>Emydoidea blandingii</i>	Threatened	Threatened	Ontario Nature
Northern Map Turtle*	<i>Graptemys geographica</i>	Special Concern	Special Concern	Ontario Nature, KAL (2018)
Snapping Turtle*	<i>Chelydra serpentina</i>	Special Concern	Special Concern	NHIC, RVCA, KAL (2018)
Western Chorus Frog	<i>Pseudacris triseriata</i>	Not at Risk	Threatened	Ontario Nature
Butternut*	<i>Juglans cinerea</i>	Endangered	Endangered	Observed by KAL (2018)

\* Species observed on or near the Site. Grasshopper Sparrow is listed on Schedule 1 of SARA but has no status in Ontario. Migratory bird species that are listed on SARA are protected wherever they occur in Canada. Grasshopper Sparrow will be considered as a SAR in this document.

Western Chorus Frog is listed on Schedule 1 of SARA but has no status in Ontario and is therefore only protected on federal lands. There are no federal lands on the Site and therefore the Western Chorus Frog will not be considered further in this document.

- Bank Swallow - Colonial nesters that build nests near water in steep sand, dirt, or gravel banks, in burrows dug near the top of the bank, including road embankments, materials stockpiles, and other man-made settings. Areas suitable for nesting may occur on Site in association with aggregate (sand, earth) piles.
- Barn Swallow - Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; typically feeds in open country near bodies of water. There are no suitable structures on the Site.
- Bobolink / Eastern Meadowlark - Open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent open grassy areas. The Site has been seeded with a grass mix that will be manicured and maintained leaving no suitable nesting areas on site for these species.
- Chimney Swift - Commonly found in urban areas near buildings; less commonly, nests in large hollow trees (>60 cm diameter at breast height), crevices of rock cliffs, chimneys; highly gregarious; feeds over open water. These features do not occur on Site.
- Eastern Wood-pewee - Open, deciduous, mixed or coniferous forest; predominated by oak with little understory; forest clearings, edges; farm woodlots, parks. This habitat does not occur on site.
- Grasshopper Sparrow - Nests in open grasslands, hayfields, pastures, alvars, and prairies. Preferably areas that are sparsely vegetated. The Site has been seeded with a grass mix that will be manicured and maintained leaving no suitable nesting areas on site for this species.



- Short-eared Owl - Grasslands, open areas or meadows that are grassy or bushy; marshes, bogs or tundra; both diurnal and nocturnal habits; ground nester; requires 75-100 ha of contiguous open habitat. This habitat does not occur on site.
- Wood Thrush - Undisturbed moist mature deciduous or mixed forest with deciduous sapling growth; near pond or swamp; hardwood forest edges; must have some trees higher than 12 m. This habitat does not occur on site.
- Blanding's Turtle - Shallow water marshes, bogs, ponds or swamps, or coves in larger lakes with soft, muddy bottoms and aquatic vegetation; basks on logs, stumps, or banks. Prefers quiet lakes, streams, and wetlands with abundant emergent vegetation; also, frequently occurs in adjacent upland forests. There is potential for this species to occur in or adjacent the Jock River.
- Northern Map Turtle - Large bodies of water with soft bottoms, and aquatic vegetation; basks on logs or rocks or on beaches and grassy edges, will bask in groups; uses soft soil or clean dry sand for nest sites; may nest at some distance from water. Known to occur near the Site.
- Snapping Turtle- The preferred habitat is slow-moving water with a soft mud bottom and dense aquatic vegetation. Nest in soft gravel, including gravel roadside shoulders. Known to occur near the Site.
- Butternut - Mainly encountered as a minor component of deciduous stands, growing best in rich, moist, and well-drained soils often found along streams and often grows in sunny openings and near forest edges. Butternut was observed on other portions of the Site (KAL 2021), but none are present within or adjacent to Phase 2. There is currently no potential for Butternut to interact with the project.

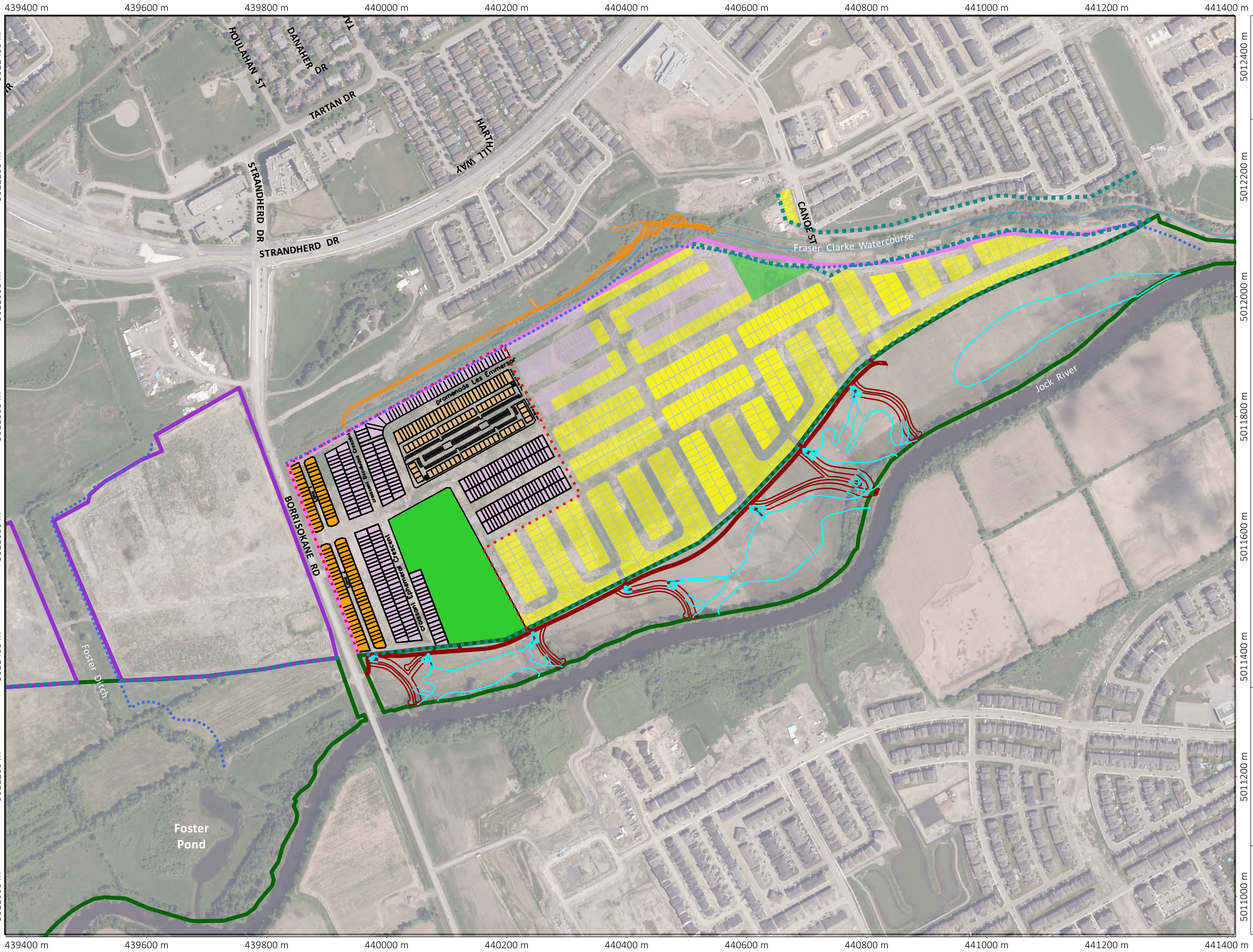
The identified SAR with a potential to occur on or near the Site, or otherwise interact with the current development project are limited to Bank Swallow, Northern Map Turtle, Snapping Turtle, and Blanding's Turtle.

## **5.0 DESCRIPTION OF THE PROPOSED PROJECT**

### **5.1 Phases 3 and 4**

The Barrhaven Conservancy East development, broadly, will be a residential community consisting of detached and multiple attached dwellings and ~3.6 ha of park space (Figure 4). The Phases 3 and 4 portion currently addressed this EIS will include 204 stacked condo units, 87 rear lane townhomes, 296 standard townhomes, and a 3.09 ha park.

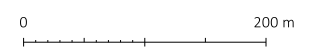




**Figure 4** Site Plan for Barrhaven Conservancy East Phases 3 & 4

**Legend**

- Development Areas**
- BC East
- BC West
- Jock Corridor
- Phase 3-4
  
- Conservancy East
- Single Home
- Townhouse
- Rear Lot Townhomes
- Stacked Condo
- Park
  
- Edge of Regulatory Floodplain
- Watercourse Setback
  
- Jock River Corridor**
- Drainage Channels and Pathway
- Future Wetland Features
  
- Fraser Clarke Corridor**
- Fraser Clarke (Existing)
- Fraser Clarke (Future Realignment)



Project: BCDC977  
 Map File: BCDC Maps 2024-04a.map  
 Universal Transverse Mercator - Zone 18 (N)  
 Printed on: 2024-04-02



## 5.2 Upper Fraser Clarke Corridor

Along their northern boundary, Phases 3 and 4 will abut the corridor of the upper reaches of the Fraser Clarke Watercourse. The existing water course there will be realigned in keeping with the City's Draft Approval for the area (File: D07-16-20-0021 – Paragraph 102) and under permit from the RVCA (Permit #RV5-2022; Figure 4, Appendix E). The realigned channel will be located 30 m from the new bus rapid transit corridor to the north. The upstream-most portions of the realigned channel will be a heavily grassed swale to maximize the natural filtration function. The landscape plan for the corridor includes tree and shrub cover along the south side to provide shading to minimize solar heating as well as allochthonous inputs. The eastern end of the new channel will be widened and deepened into a series of pools. These pools are anticipated to remain wetted through the year to generate improved turtle and frog habitat. Setbacks along some portions of the grassed swale will be ~25m. Setbacks to the adjacent community along the ponds are more than 30 m. The corridor will be separated from the rear of properties along the south edge of the corridor by a 1.5 m black vinyl-coated chain link fence with no gates permitted.

A Fisheries Act Authorization for this project was not deemed to be required by DFO (per DFO File: 22-HCAA-01266, Appendix F).

## 5.3 Jock River Floodplain Corridor

### 5.3.1 Restoration Concept

The proposed restoration concept for the Jock River Floodplain Corridor was detailed within the EIS supporting the broader Barrhaven Conservancy East community (KAL, 2021).

The riparian areas of the Jock River corridor adjacent to Phases 2-4 previously consisted of active agricultural lands with a narrow hedgerow separating them from the Jock River. The new regulatory flood plain line along the entire Barrhaven Conservancy Community (East and West; City of Ottawa, 2024) will allow lands between 80 and 200 m wide to be re-established as a natural Jock River open space corridor (Figure 4). While both the secondary plan and JRSWS (Stantec, 2007b) permit the development of recreational areas within portions of the floodplain (Table 1), the major focus of broader flood plain redevelopment is on the creation of conservation lands including wetland space. For the broader Barrhaven Conservancy area, the proposed Jock River corridor space area will include the development of ~5 ha of wetland and ~32 ha of forest cover. Features to support public recreation will include a recreational pathway system along the northern edge of the floodplain (Table 1), and a canoe-launch west of Borrisokane Road (KAL, 2021).

The full re-naturalization of the Jock River Corridor will be completed under a separate project for which the design is being developed under consultation with the City and the RVCA. Adjacent to Phases 2-4, this will eventually include two major types of wetland features: three large, naturalized ponds covering ~3 ha (Wetland Features A – C in Figure 4), and a ~2 ha Silver Maple swamp (Wetland Feature D in Figure 4) (KAL, 2021). Naturalized pond features (i.e. Wetland Features A – C) will be connected directly to the Jock River via deeper channels. The ponds and main inlet and outlet channels to the ponds would be approximately 2.5 - 3 m deep during spring high water levels, with gently-rising grades to the shoreline (KAL, 2021). The depth of these features is anticipated to provide year-round, open-water, accessible connections to the Jock River for aquatic life (e.g. fish, turtles, and amphibians), with minimum depths



between 0.5 and 1 m at their lowest, late-summer levels. This landscape design is intended to protect and enhance critical fish habitat, in particular spawning and rearing areas along the Jock River for esocids (i.e., Northern Pike and Muskellunge), in accordance with JRSWS (Stantec, 2007; see Table 1 in this document).

Ponds A, B and C (Figure 4) were intended to receive water inputs from the community (KAL, 2021) with water quality control for stormwater runoff to be fully managed by “stormwater water quality treatment “units”. The ponds, as receivers, are intended and will be designed to function solely as ecological habitat features and are not to provide, or be required to provide, quality control services for runoff.

The topography of the eastern end of the Jock River riparian area will be lowered further to allow the forest there to eventually develop as a Silver Maple swamp ecosite (i.e. feature D in Figure 4). The elevations would slope along the centerline of its length from the two-year flood level at the west end, down to summer water levels at the east end. Being open to the river at the downstream end, the feature will be a seasonal backwater area sufficient to support frogs, but the feature is not intended to otherwise receive water inputs from the adjacent residential community (KAL, 2021).

### **5.3.2 Planned Works Associated with Phases 3 and 4**

Ponds A, B and C (Figure 4), and their five associated channels, are intended to provide natural habitat for aquatic life including fish, turtles, and amphibians. Per the restoration concept (Section 5.2.1) they are intended to be hydrated in part by stormwater outputs from the adjacent community, but they will not constitute part of the stormwater management (SWM) system for the community. Quality control for the stormwater outputs from the community is to be completed within residential areas, such that only treated water crosses the floodplain and enters the Jock River (KAL, 2021).

The ponds and their outlets will provide conveyance across the floodplain but, not being part of the SWM system, are not intended to be subject to regular maintenance or to be otherwise “cleaned out” by City drainage staff. This restriction will be in place to limit potential disturbance to the habitat elements (e.g., fish spawning grounds, turtle nesting and basking structures, etc.) within the features. To ensure the continued potential for the conveyance of stormwater outflows across the floodplain, the overall design of the area has been updated to include bypass channels connecting outlet points from the community directly to the river. The bypass channels will include small berms at their upstream ends, directing treated water from outlet points along the south edge of the community through the Ponds A, B and C under normal circumstances (once they are completed), but providing an alternative conveyance route if outflow from a pond is impeded. The bypass swales will be subject to regular maintenance. These channels will be routed around the eventual locations of Ponds A, B, and C and will discharge into their outlets at the riverbank.

For the development of Phases 3 and 4 addressed by this current EIS, the construction of the associated bypass channels 1 and 2 are currently underway and will be fully completed by the late summer of 2024. Bypass channels 3-6 within the development of Phase 2 were completed in late summer 2023. The bypass channels will provide the initial connection between stormwater outlet points along the south edge of Phases 2-4 and the Jock River. As the bypass channel outlets will be integrated components of the ultimate pond outlets, the combined structures will be excavated through the raised ridge along the riverbank as part of that construction effort under a permit from the RVCA (Permit #RV5-3922; Appendix C).



The final designs for ponds A, B and C (Figure 4), and the remainder of the channel lengths not associated with the bypass channels (i.e. other than the combined outlet structures) will be excavated from the surrounding floodplain, following a separate review process with ongoing design consultation with DFO, RVCA and the City. The final design final design for wetland feature D (Figure 4), will also be included in this process; this feature is not associated with and does not require any bypass channels.

## 6.0 IMPACT ASSESSMENT

The assessment of impacts is based on the proposed development compared to the Site conditions following the Cut and Fill program in 2019 (Figure 3).

### 6.1 Impacts to Surface Water Features

No residential development will occur within the newly defined floodplain or within 30 m of the normal high-water mark of the Jock River, other than the outlet swales as described in Section 5.3.2. The construction of the combined openings for the channels and swale outlets necessitated excavation within the existing banks of the Jock River at the outlet openings. The outstanding work on bypass channels 1 and 2 is being completed in the late summer when water levels in the river are at their lowest and work areas isolated from fish-bearing waters by silt curtains installed parallel to the bank. The completed outlet areas will be revegetated and re-naturalized and will provide small bays increasing the net availability of fish habitat. As such, this initial stage of construction is not anticipated to cause a negative impact on the fish habitat of the Jock River. The work is being completed under RVCA permit RV5-3922 (Appendix E). All works will be completed in accordance with the RVCA permit. As the excavation will extend below the normal high-water mark of the river, however, a *Request for Review* (RFR) of the proposed design and construction plan was submitted to DFO, as discussed below.

Existing roadside ditches along Borrisokane Road will be maintained but do not require setbacks.

The uppermost reach of the Fraser Clarke Watercourse (adjacent to the northern Site boundary, east of Borrisokane Road) is currently situated approximately 8 m beyond the edge of the proposed development. This portion of the channel had previously been hydrated by overland flows from the west side of Borrisokane but is now dry after the spring freshet. This feature will be realigned towards center of the corridor between the Barrhaven Conservancy East site and the Bus Rapid Transit (BRT) route under RVCA Permit #RV5-2022, but will maintain a 30 m setback from the BRT. At its closest point, the channel will be setback 25 m from the rear yards of Phase 3 though the channel for at that point consist only of an ephemeral drainage swale not intended provide fish, amphibian, or turtle habitat. The realignment plan, however, includes an increase in riparian vegetation along the entire corridor, with considerations for improved to the channel hydration towards the eastern end of Phase 3 (e.g. lot level drainage). The channel design towards the eastern end of the corridor will provide new habitat features to support fish, amphibian, or turtle habitat. The portion of the upper Fraser Clarke including these habitat enhancements will be set back from both the BRT and the adjacent Phase 3 residential units by >30m. As such, the proposed realignment is anticipated to provide a net improvement to the overall habitat of the feature.

Site runoff from the developed areas will be collected via stormwater conveyance systems and treated by passage through oil/grit separator units (OGS) to MECP water quality standards for such residential developments (J. F. Sabourin and Associates Inc. (JFSA), 2021).



RFR's were submitted to DFO addressing works along the Fraser Clarke Watercourse and adjacent to the Jock River. The purpose of an RFR is to determine whether or not the proposed work requires authorization from DFO to remain compliant with the Fisheries Act (Government of Canada, 1985). Submitted RFR's relevant to Phases 3 and 4 include:

- The realignment of the upstream reach of the Fraser Clarke; and
- The temporary drainage channels installed across the Jock River floodplain along the south side of the community.
  - DFO responded that no authorization was required for either project (Appendix F).

Subsequent excavation of the Jock River ponds and the remainder of the channel structures will require the submission of a second RFR closer to the time that work would commence.

There are no predicted negative impacts to surface water features on or adjacent to the Site related to Site development given the application of conventional construction-phase mitigations, proposed stormwater treatment, and proposed enhancements to the corridor adjacent to the Jock River and associated tributaries.

## 6.2 Impacts to Trees/ Significant Woodlands

All trees previously existing within Phase 3 and 4 were removed as part of the earthworks undertaken in preparation for development of the broader Site. For the Phases 3 and 4 area, the only remaining trees nearby are located within the retained Fraser Clark corridor in close proximity to the watercourse (i.e. well away from planned residential construction; Figures 3 and 4).

Tree planting to be completed across the entire Site (i.e. the Barrhaven Conservancy East community including the future renaturalization of the Jock River floodplain) is anticipated to provide 52% cover at maturity (NAK Design Strategies, 2024).

## 6.3 Impacts to Species at Risk

Fourteen (14) SAR have been identified with the potential to occur on the broader Barrhaven Conservancy lands and four (4) of those species were observed prior to the earthworks project. Species include the Bank Swallow (*Riparia riparia*), Northern Map Turtle (*Graptemys geographica*), Blanding's Turtle (*Emydoidea blandingii*), and Snapping Turtle (*Chelydra serpentina*). In its current condition, work on Phases 3 and 4 have potential to interact with these four species, as discussed below.

### 6.3.1 Bank Swallow

Nesting habitat of Bank Swallow (*Riparia riparia*, THR) is frequently associated with flowing water. Though the species has not been observed nesting anywhere on the BCDC East Site, Bank Swallow had been documented by KAL biologists nesting at former aggregate quarry sites located ~1.5 km south of the site. These quarries have now been closed and regraded, removing their nesting potential. New Bank Swallow nests may be dug near the top of steep sand, dirt, or gravel banks along the edge of inland waterways, in gravel pits, and in road embankments. This suggests that future occurrences of the species on the Site are



possible (though not expected). The banks of the Jock River adjacent to the BCDC East site, however, have maximum a height of under 3 m and are thus considered very unlikely to support the species should they search for new nest sites in the vicinity. Road edges along Borrisokane Road are similarly limited in their nest-supporting potential. The greatest likelihood of new nesting colonies occurring on Site is associated with fill piles that may be unintentionally created during construction activities.

Suitable mitigation measures including the rounding of fill piles (i.e. avoiding the creation of vertical edges) will be provided to address Bank Swallow and other migratory birds. The implementation of these mitigation measures will minimize the risk resulting in no impacts to Bank Swallow.

### 6.3.2 Turtles

Northern Map Turtle (*Graptemys geographica*, SC) and Snapping Turtle (*Chelydra serpentina*, SC) have been observed near the Site in the mainstem river (KAL, 2018).

Blanding's Turtle (*Emydoidea blandingii*, THR) prefers shallow water marshes, bogs, ponds or swamps, or coves in larger lakes with soft, muddy bottoms and aquatic vegetation; basks on logs, stumps, or banks (MNR, 2015). The species prefers quiet lakes, streams, and wetlands with abundant emergent vegetation. There is potential for this species to occur in or adjacent to the Jock River. The species has been documented in the Jock River near (upstream of) the Village of Richmond (Rob Hallett, KAL Biologist, personal communication).

The Snapping Turtles are most likely to occur in the Jock River or the drain features on the Site. The development will be at least 30 m from any water feature and is not anticipated to alter any of these features. The planned pond, wetland, and nesting features will extend higher-quality habitat areas for turtles. The implementation of suitable mitigation measures will minimize the risk resulting in no impacts on Snapping Turtles, other SAR turtles (i.e. Blanding's or Map), or Painted Turtles (though this species is not listed).

## 6.4 Impacts to Wildlife

The previous agricultural, and the current post-cut/fill, composition of the Site made it unlikely to support wildlife. Limited habitat potential for amphibians and turtles occurs along Fraser Clarke Watercourse, and no habitat potential is currently present along the upper Fraser Clark adjacent to Phases 3 and 4. The planned realignment of the upstream portion of this feature, however, is anticipated to improve its potential to support both groups.

Migratory birds have limited potential to occur and nest on the Site. The implementation of suitable mitigation measures (per Section 7.4) will minimize the risk resulting in no impacts to migratory birds.

Wildlife species common to the Ottawa area were observed on the site during the field surveys. These species may continue to use or cross the Site. The riparian forest along the Jock River functions as a wildlife corridor and will remain in place during and after site development. The implementation of mitigation measures per Section 7.4 will minimize the risk resulting in no impacts to wildlife.





## 6.5 “No Negative Impact”

Historical land uses on the Site were largely agricultural and contained few natural features that had marginal ecological function. The recent earthworks project has resulted in the clearing and alteration of the marginal habitats (e.g. hedgerows) within the Site. Consideration of features of higher importance (e.g. Jock River and associated drain features, SAR) were included in the EIS for the earthworks project (Kilgour & Associates Ltd., 2017a) to ensure these features were protected appropriately.

Protection of the remaining natural features within the development will be carried forward for this project with minimal impacts from the post-earthworks conditions. Additionally, natural feature enhancements will be incorporated into the development to meet or exceed the City targets for the natural environment, where and as they exist. These enhancements will include diverse environmental conditions to support multi-trophic habitats such as constructed wetlands, grasslands, and forests, resulting in a “net positive” impact to the environment.

## 7.0 MITIGATION

General mitigation measures to consider for all existing features include:

- Ensure machinery is in good working condition, free of fluid leaks;
- Refueling of equipment should be conducted away from slopes and at least 30 m away from any surface water. A designated refueling area should be implemented for the Site;
- Operate, store, and maintain (e.g. re-fuel, lubricate) all equipment and associated materials in a manner that prevents the entry of any deleterious substance into waterbodies;
- Ensure the Site and all disturbed areas are stabilized following construction;
- Vegetation that is removed should be replaced with an appropriate native mix of vegetation endemic to the area and compatible with the existing land features;
- Temporarily store, handle, and dispose of all materials used or generated (e.g. organics, soils, woody debris, temporary stockpiles, construction debris such as concrete, sheet pile, wood forms, etc.) during site preparation, construction and clean-up in a manner that prevents their use by ground-nesting birds (e.g. cover with sheeting); and
- Ensure a Spills Management Plan (including materials, instructions regarding their use, education of contract personnel, and emergency contact numbers) on-site at all times for implementation in the event of an accidental spill during construction.

### 7.1 Mitigation for Surface Water Features

For the upper Fraser Clarke corridor, the landscape plan for the corridor includes tree and shrub cover along both sides of the channel to provide allochthonous inputs, but mainly along the south side to maximize shading to limit solar heating. The corridor will be separated from the rear of properties along



the south edge of the corridor by a 1.5 m black vinyl-coated chain link fence with no gates permitted. Per RVCA Permit #RV5-2022, the realigned watercourse will be subject to a 5-year monitoring plan.

The potential for construction-related impacts to surface water features can be managed with the implementation of appropriate mitigation measures, such as:

- Implementation of natural channel design principals in the design process;
- Design and implement erosion and sediment controls to contain/isolate the construction zone, manage site drainage/runoff and prevent erosion of exposed soils and migration of sediment; and
- An Erosion and Sediment Control Plan outlining mitigation measures to limit the potential for sediment and erosion to enter these watercourses. Mitigation measures will include silt fencing, stone and/or straw bale check dams, monitoring frequency, and reporting requirements.

## 7.2 Mitigation for Trees

- There are no remaining trees on the within Phases 3 or 4. To minimize impact to trees near Phases 3 and 4 during future site development:
  - Erect a fence beyond the critical root zone (CRZ; i.e. 10 x the trunk diameter) of trees. The fence should be highly visible (e.g. orange construction fence) and paired with erosion control fencing. Pruning of branches is recommended in areas of potential conflict with construction equipment;
  - There must be a sign attached to the CRZ fence every 6.0 m indicating:
    - a) the fencing is to protect the tree's CRZ; and
    - b) that the fence must not be moved.
  - Do not place any material or equipment within the CRZ of the tree;
  - Do not attach any signs, notices, or posters to any tree;
  - Do not raise or lower the existing grade within the CRZ without approval;
  - Tunnel or bore when digging within the CRZ of a tree;
  - Do not damage the root system, trunk or branches of any tree; and
  - Ensure that exhaust fumes from all equipment are NOT directed toward any tree's canopy.

Tree planting plans will be created as part of the landscape plan for the development (KAL, 2020). The tree planting plan for floodplain areas of the Site to subject re-naturalization is to include directives that will lead to ~15 ha of forested cover (i.e. within both forest and swamp features) at maturity. The tree planting plan for the residential areas of the Site is to include directives that will lead to increased canopy cover at maturity (i.e. considering trees planted on private lots and in common areas). Trees and other plants identified in landscape plans must be non-invasive and locally appropriate native species.

## 7.3 Mitigation for Species at Risk

Impacts to SAR can be managed with the implementation of appropriate mitigation measures, such as:



- All on-site staff should undergo environmental awareness training to be able to identify the potential SAR that may be encountered;
- If the proposed works are to occur between April 1<sup>st</sup> – October 30<sup>th</sup>, consider isolating the Site with suitable fencing prior to commencing work;
- Removal of vegetation suitable as nesting habitat should occur outside of the breeding bird season (April 1<sup>st</sup> to August 31<sup>st</sup>); and
- Perform daily pre-work searches of the construction area to ensure no wildlife has entered the work area overnight.

Bank Swallows and turtles have some (limited) potential for transient occurrence on the Site. General wildlife mitigation measures will be sufficient to protect these species.

#### **7.4 Mitigation for Wildlife**

The following mitigation measures shall be implemented during construction of the project on site:

- Isolate work areas to prevent wildlife from entering the active work area;
- Perform daily pre-work searches of the construction area to ensure no wildlife has entered the work area overnight;
- Construction activities should not occur during sensitive times of the year for wildlife, unless appropriate mitigation measures are implemented and/or the habitat has been inspected by a qualified biologist;
- If removal of vegetation must occur within the breeding bird season (April 1<sup>st</sup> to August 31<sup>st</sup>), a qualified biologist should be retained to provide guidance on how to avoid impact to breeding birds. If active migratory bird nests are discovered within the construction area, further alteration should be postponed allowing young birds time to fledge;
- Do not harm, feed, or unnecessarily harass wildlife;
- Food wastes and other garbage – effective mitigation measures include waste control (prevent littering); keeping all trash secured in wildlife-proof containers, and prompt removal from the Site (especially in warm weather);
- Cover and/or contain piles of soil, fill, brush, rocks, and other loose materials; capping ends of pipes where necessary to keep out wildlife, ensuring that trailers, bins, boxes, and vacant buildings are secured at the end of each workday to prevent access by wildlife;
- Checking the work area for wildlife prior to beginning work each day;
- Inspecting protective fencing or other installed measures regularly and after each rain event to ensure their integrity and continued function; and
- Monitoring construction activities to ensure compliance with the project-specific protocol (where applicable) or any other requirements.



## 8.0 SUMMARY AND RECOMMENDATIONS

### 8.1 Concordance with Jock River Reach One Subwatershed Study

No discrepancies occur between the proposed development and recommendations in the Jock River Reach One Subwatershed Study (Stantec, 2007; Table 6)

**Table 6 Natural Environment Planning Recommendations from the Jock River Reach One Subwatershed Study (Stantec, 2007b)**

Recommendation Number	Recommendation	Concordance
<b>Fraser-Clarke Catchment</b>		
JRSWS-3	Preserve and enhance the aquatic habitat and riparian zone of the tributary through future restoration opportunities	The corridor of the upper half of the Fraser-Clarke Watercourse will be realigned to increase wetland space and will be subject to enhancements of the riparian vegetation.
JRSWS-4	Setback greater of the 100-year flood line elevation/meander belt/aquatic setback (i.e. geotechnical, 15 m top of defined bank or 30 m from normal high-water mark)	The upper reaches of the watercourse as addressed within the JRSWS were fully disconnected from their source, then removed entirely, before the commencement of the Barrhaven Conservancy development through unrelated projects. The current channel serving as the upper reach was initially constructed in ~2011 separate from the recommendations of JRSWS for the Fraser Clarke. Regardless, the reach, following its realignment and enhancement, will be roughly centered within a corridor with minimum setbacks of 30 m to the future BRT line and 25 m to the rear yards of Phases 3-4.
<b>Jock River Corridor</b>		
JRSWS-5	Maintain the regulatory floodplain by not permitting active development within its limits. Some reduced-risk uses such as sports fields and trails may be considered subject to RVCA approval.	Development is not proposed within the floodplain. The floodplain corridor will be naturalized.
JRSWS-6	Prepare a Jock River Corridor Riparian Planting Plan to improve and enhance riparian vegetation coverage along the banks and shoreline of the river.	A detailed planting plan will be developed as part of the final landscape plan for the area to fully detail the proposed design for new forest and wetland areas along the floodplain.
JRSWS-7	Protect critical fish habitat and spawning areas along the Jock River and tributary mouths.	The banks of the Jock River and the tributaries to it have been and will be maintained intact retaining their existing vegetation. Riparian areas previously consisting of bare soil and/or agricultural crops will be revegetated.
JRSWS-8*	Create a pike spawning habitat area adjacent to Foster Dry Pond as compensation for the loss of fish habitat in tributaries within Barrhaven South.	The Compensation Pond and Foster Pond, previously developed as compensatory fish habitat, are located on City-owned land and will not be altered by the proposed development.
JRSWS-9	Development setback for the Jock River will be the greater of: floodplain, meander belt width, geotechnical, 15 m top of defined bank or 30 m from normal high water mark	The setback to the Jock River for Phase 2 corresponds with the 100-year floodplain, which provides a setback of 80-400m from the top of defined bank.
JRSWS-10	Provide recreational a trail along the Jock	The proposed re-naturalization of the Jock River



Recommendation Number	Recommendation	Concordance
	River as per OP and Greenspace Master Plan.	floodplain will include a trail system along its northern boundary.

\* Outside of Phase 2

## 8.2 Conclusions

The proposed residential development and corridor restoration was designed to be consistent with the goals of the Jock River Subwatershed Study. Key features of the design that are consistent with the subwatershed study goals include a 30 m setback for the Fraser Clarke Watercourse, a naturalized corridor along the Jock River of between 80 and 400 m width, a significant increase in wetland habitat, and recreational pathways within the corridor.

The development of this community will support a re-established and re-naturalized riparian corridor in the floodplain lands that is between 80 and 400 m wide. This area will include the creation of ~5 ha of wetland and ~32 ha of forest cover, and with a recreational pathway system along its northern edge. Requirements from the subwatershed study related to stormwater management will be addressed under functional servicing studies for the area.

Previously developed natural features (i.e. fish habitat compensation pond and the Foster Dry pond) will not be impacted by the proposed residential or corridor restoration designs, but rather can be a focus for integration with the restored corridor. The proposed restoration development will represent a significant increase in the diversity of natural features within the Site, as well as for the broader communities of Barrhaven and the City of Ottawa. The natural feature improvements to the existing ecological features (e.g. wetlands, meadow habitats, fish habitat) and the creation of new features (e.g. habitat for Species at Risk), will benefit the ecological diversity of the Site while simultaneously creating recreational opportunities for the public.

The identified SAR with some potential to interact with the proposed development project are: Bank Swallow, Northern Map Turtle, Snapping Turtle, and Blanding’s’ Turtle. The risk of harm to transient individuals during construction can be mitigated through the appropriate and conventional mitigations and there is currently no suitable habitat for these species on the Site. Therefore, the proposed project is not anticipated to impact SAR. The restored corridor has the potential to provide habitat for turtle species that previously did not occupy the area.

It is our professional opinion that no significant negative impacts are anticipated to species at risk or their habitats, or to significant natural heritage features present in the broader project vicinity under the proposed project.



## 9.0 CLOSURE

This report was prepared for exclusive use by Barrhaven Conservancy Development Corporation and may be distributed only by Barrhaven Conservancy Development Corporation. Questions relating to the data and interpretation can be addressed to the undersigned.

Respectfully submitted,

**KILGOUR & ASSOCIATES LTD.**



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[https://kilgourassociates.com.sharepoint.com/sites/kilgouractivea-f/shared documents/bcdc/977 jock river restoration/5 reports/6 eis east area/submission 5 - 230609/bcdc-east eis\\_2023 06 15.docx](https://kilgourassociates.com.sharepoint.com/sites/kilgouractivea-f/shared%20documents/bcdc/977%20jock%20river%20restoration/5%20reports/6%20eis%20east%20area/submission%205%20-%20230609/bcdc-east%20eis_2023%2006%2015.docx)



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## **Appendix A- Agency Correspondence**



## Anthony Francis

---

**From:** Gervais, Melanie <Melanie.Gervais@ottawa.ca>  
**Sent:** February 13, 2020 1:53 PM  
**To:** Hugo Lalonde  
**Cc:** Rehman, Sami; Shillington, Jeffrey; Rogers, Christopher; Xu, Lily; Krabicka, Jeannette; Giampa, Mike; Simpson, Colin; Eric Lalande  
**Subject:** Barrhaven Conservancy pre-consult

Good afternoon Hugo,

As a follow up to the pre-application consultation meeting held in December, please find below a recap of the requirements. The list of required plans and studies is attached.

### I. Planning:

- a. The following application will be required: plan of subdivision application with a current fee of \$91,031.11 plus the Initial Engineering Fee (\$5,000 or \$10,000) and the Conservation Authority Fee (\$3,760).
- b. Ensure that the Enhanced Planning Rationale addressed policies from the OP, the secondary plan, Building Better and Smarter Suburbs (BBSS), Greenfield development guidelines, Collectors Design Guidelines and all applicable design guidelines. Notable BBSS elements that we will look for include: a fully-connected street grid; a Parking Options plan that emphasizes the retention of as much curbside parking as possible; and an outline of how dwelling types are proposed to be mixed within blocks to avoid having entire blocks of a single typology.
- c. Part of the Planning Rationale should take the form of a Concept Plan(s) for all conservancy lands to identify and illustrate (but not limited to): General land use and density; Greenspace network; Transportation facilities – transit, cycling, and pedestrian; Public facilities – schools, library, etc.; Street network and hierarchy; and other elements as applicable.
- d. The Planning Rationale must include statistical information – land use distribution, block areas, a total number of dwelling units, a breakdown of the potential units by type, overall density in units per net hectare.
- e. Include Community Design Guidelines with guiding principles for the physical built form of all the Conservancy land, can be included in the Planning Rationale or as a separate document with the Concept Plans.
- f. Include an Existing Conditions component which should consolidate findings of existing conditions that are related to (but not limited to) land use context, approval context, natural environment, geotechnical, hydrogeology, transportation, and infrastructure, etc.
- g. Bring in all the master plans/reports conclusions into one document.

- h. Please note that the City is no longer encouraging 16.5m cross-sections as they create too many conflicts between trees & utilities and trees & sidewalks. Local streets should be shown with an 18-metre right-of-way.
- i. Please specify if proposed rear lanes are intended as publicly or privately owned. If privately owned, the City will welcome narrower (6-metre) cross-sections than the standard width of 8.5 m for City-owned lanes. We encourage the use of rear lanes for residential blocks as a way to eliminate curb cuts and façade garages and maintain a high capacity of curbside parking to accommodate visitors and other temporary parking needs, in addition to providing more soft surface landscaping and tree planting potential along streets.
- j. Please identify proactive traffic calming measures for the entire community (including 30 km/h local streets, bulb-outs, intersection narrowings, etc.) which will be built as part of the development.
- k. I recommend that you reach out to the four school boards to identify their preliminary needs before you submit an application.

## II. Infrastructure:

- a. As discussed during the meeting, Infrastructure Planning Unit requires the consultant to prepare a Terms of Reference (TOR) for a Master Servicing Study (MSS) which should cover a broader area beyond the Conservancy land for City/CA staff to review and approve. The TOR should include but not limited to the following key tasks:
  - Identify appropriate study area
  - Inventory of existing conditions
  - Identify development context scenarios
  - Evaluation of servicing alternatives for different development scenarios
  - Selection of preferred servicing alternative

Please feel free to contact staff for clarification on the TOR requirements.

- b. Following the TOR, a Master Servicing Study will be required, plus any other items identified through the TOR. Please note that the study must also satisfy Class EA requirements for the infrastructure recommendations.
- c. Infrastructure Services are expecting that there will likely be a lot of submerged sewers due to the lack of available grade to stormwater outlets on the Jock River. The evaluation of alternatives should consider options to minimize the length and depth of submerged sewers, as well as an impact mitigation plan to address the operational challenges that the City will be stuck with, i.e. sediment build-up that reduces effective capacity of the system. Mitigation could include infrastructure to make clean out easier.

Note that the City's design guidelines include the following:

*Outfalls to natural watercourses should discharge at or above the normal water elevation of the watercourse. If high water levels cause the submergence of the outlet, the impact of the submergence on the sewer system must be assessed... When assessing the HGL in the system, the design must also check the impact on the system assuming that these pipes are 25% filled with sediment.*

- d. Please note that the infrastructure supporting the development is not in the current Development Charges By-law nor the Background Study. Caivan is required to identify infrastructure costs and funding strategies, which need to fit into the City's spending plan. Various options will need to be suggested and examined, e.g. area specific DC charges, DC by-law amendment, etc.

### **III. Environmental (Environmental Planner and Natural Systems Unit):**

- a. This is a unique project which warrants unique requirements. While the other City departments are requesting a Master Studies, we don't think an Environmental Management Plan (EMP) is required. However, we are requiring a comprehensive and integrated environmental study that exceeds the normal requirements for a subdivision. This Enhance Environmental Impact Statement (EEIS) will need to address several matters that are typically dealt with in EMPs, Integrated Environmental Studies (IER) and usual Environmental Impact Statements (EIS). Central for this study will be to explain, how the proposed development will achieve the Jock River Reach One Subwatershed Study's (2007) objectives for the area, and to demonstrate no negative impacts to the ecological features and functions.
- b. This study will address and include:
  - a section or table explaining the discrepancies between the propose development and SWS's recommendations, by including 1) rationale for each and 2) how the goals of the SWS will still be achieved through the changes.
  - protection of previous compensation works for development south and north of the river (e.g. the fish habitat compensation).
  - appropriate setbacks around natural features and surface water resources
  - the usual components of an EIS (identifying existing conditions, assessing environmental impacts, informing design and recommending mitigations to demonstrate no negative impacts)
- c. Based on the presentation at the meeting, it appears that the proposed development's large scale, diverse issues and many competing interests/goals may require trade-offs. Suggest including a set of trade-off principles to help navigate analysis and decision making towards the best sustainability recommendations.
- d. For next steps, staff recommends the proponent draft a terms of reference (TOR) for the proposed EEIS to share with City staff. We anticipate the proponent and City staff will work iteratively to finalize the study's scope and breadth to ensure a common understanding of expectations. A proper study area should cover lands beyond the Conservancy lands as will be discussed with staff.

### **IV. Transportation:**

- a. A Transportation Master Study (TMS) or similar as agreed upon with transportation staff will be required. A larger study area is required, similar to the following Cambrian, Greenbank, Strandherd, Dealership Way. This can be done through the forecasting phase of the TIA. We also need confirmation that the work already done as part of the initial TIA is still valid. Ensure that the Chapman Mills Drive EA is included in the TIA. The EA only shows a grey arrow west of Borrisokane. How it will continue past Borrisokane Rd must be determined. You will need to identify solutions given the

transitway extension and widening of Borrisokane is not in our Long Range Financial Plan.

- b. CGH has already started the TIA process, please respond to the forecasting comments while proceeding to Step 4.

## V. Parks :

- a. Please provide an overall Parkland Strategy to identify parkland provision (size and location), hierarchy, potential programs and phasing of all parklands within all Conservancy lands. This can also be combined with Planning Rational.

- b. Parkland Dedication:

As part of the Planning Rationale to be submitted for circulation, please include a separate section titled "Parkland Dedication" in the document. This section is to provide an explanation of how the proposed development will address the Parkland Dedication requirements, as per the City of Ottawa Parkland Dedication By-law No 2009-95.

To be included :

- the number and type of residential units proposed;
- the gross land area of all apartment blocks proposed;
- the gross land area of all commercial/industrial blocks proposed;
- the gross land area and type of all other development blocks proposed;
- the total area of Parkland Dedication (in square meters) that is required for the subdivision as calculated using the Parkland Dedication By-law; and
- the total area of parkland conveyance (in square meters) that is being proposed in the Plan of Subdivision.

Please note:

- Parks and Facilities Planning will be looking for full land conveyance of the required parkland dedication.
- Land within the floodplain and other required environmental and/or constrained lands will not be counted towards the parkland dedication requirements.

- c. Information required for land conveyance of a park block:

Please include, in the First Submission for Draft Plan Approval, for each park block proposed:

- A brief rationale regarding the proposed location of the park block.
- A preliminary grading plan of the proposed park block – showing proposed elevations on all sides of the park, as well as spot elevations, in an appropriately spaced grid pattern, within the park block. Grading must show positive surface drainage of the park block. This plan must also include any existing and proposed 100-year floodplain mapping, if applicable.
- A discussion on the Geotechnical Report, and how it affects the park block. Ensure that the text includes the suitability of the soils for construction and load bearing, and any potential required amendments to make it suitable (if required).
- If tree preservation is proposed, delineate the area on a plan and include a discussion of why the tree preservation is being proposed.

- A plan showing the pedestrian connections to the park block within the proposed development, as well as the existing pedestrian connections throughout the greater neighbourhood.
- Confirmation that there are no existing or proposed encumbrances on the proposed park block.

d. Developer Requirements for Land Conveyance of a Park Block

Parks and Facilities Planning will be reviewing the suitability of the proposed park block(s) using the criteria as set out by the City of Ottawa Park Development Manual, 2nd edition. The Owner is encouraged to review this document.

Below is brief summary of some of the required park location criteria to be considered when developing the Plan for Draft Approval:

- A minimum of 50% street frontage.
- A continuous sidewalk is required along all park street frontages.
- Designed with safety in mind, and adhering to CPTED principles.
- Have multiple entry points located for convenient access.
- Should be a focal point in the neighbourhood.

As per the standard conditions, a park block must also:

- Have no encumbrances (ex: retaining walls, utility lines or easements of any kind) which are located on, or in front of, dedicated park blocks.
- Be fully developable for its intended use based on a geotechnical report (soils testing must be done for both the contamination of the soils, as well as the structural stability of the soils)
- Be rough graded to match the final elevations of the surrounding proposed neighbourhood (providing positive surface drainage to the perimeter of the park block; and generally not exceeding slopes of 5%, or as approved by Parks and Facilities Planning).
- Have the required services installed at 2.0m inside the park property line. The services must be shown on the subdivision servicing and/or composite utility plans; their locations are to be discussed with, and approved by, the Park Planner during the development of the drawings. The required services are to be:
  - 300mm diameter storm sewer CB / MH
  - 150mm diameter sanitary sewer and MY
  - A 120/240 volt, 200 ampere single phase hydro service.
  - 50mm diameter water line complete with standpost.

e. Area Parks Plan & Fit Plans

An Area Parks Plan will be required for Draft Approval of the proposed development. Please refer to the Park Development Manual (2nd Edition) for more information.

## VI. RVCA :

- a. The RVCA has approved a cut/fill permit for the subject lands. The RVCA will be looking for permit conditions to be completed prior to draft approval, or through conditions included as part of any draft approval process. The RVCA will be providing input into proposed draft conditions, as per normal review procedures.

- b. Stormwater Management: The RVCA requires a water quality protection of 80% TSS removal. Additionally, O'Keefe Creek is identified as a cold-water system, which will require thermal mitigation.
- c. Wetland Creation: The RVCA will look for the opportunity to provided comments into the proposed creation of wetlands/open space, as part of this proposal through the required "Enhanced EIS".
- d. RVCA permits/clearance: RVCA permits will be required for alteration to water courses, for creation of new outlets, and any modifications proposed to accommodate.
- e. The RVCA reserves the opportunity to provide additional comments as we work through the process.

Staff will continue to consult with RVCA on the progress with the cut/fill permit and related activities and approvals prior to deeming the development applications complete.

Regards,

***Mélanie Gervais MCIP, RPP***

*Planner / Urbaniste*

*Development Review /*

*Examen des demandes d'aménagement*

*Planning, Infrastructure and Economic Development Department /*

*Services de la planification, de l'infrastructure et du développement économique*

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Ed Malindzak &lt;emalindzak@kilgourassociates.com&gt;

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## Preliminary SAR screening for the Barrhaven Conservancy Residential Development

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Ed Malindzak &lt;emalindzak@kilgourassociates.com&gt;

Tue, May 5, 2020 at 1:36 PM

To: SAROntario@ontario.ca

Cc: Bruce Kilgour &lt;bkilgour@kilgourassociates.com&gt;, Anthony Francis &lt;afrancis@kilgourassociates.com&gt;

Good afternoon,

Please find attached a letter outlining a preliminary species at risk (SAR) screening in support of a proposed development in the Barrhaven area of Ottawa, Ontario. The attached letter outlines the project background and our findings with respect to SAR to date. We are seeking confirmation of the identified potential SAR as well as input related to potential restoration works.

We look forward to hearing from you soon. Please do not hesitate to contact us if you have any questions or concerns.

Kind regards,

Ed

Ed Malindzak, MSc  
Senior Project Manager  
**KILGOUR & ASSOCIATES LTD.**  
Ottawa: 613-260-5555  
Mobile: 343-998-2254  
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 **BCDC MECP SAR Screening Letter\_20200505\_fnl.pdf**  
522K

May 5, 2020

Our File: BCDC977

Carolyn Hann, Management Biologist  
Ontario Ministry of Environment, Conservation and Parks  
10-1 Campus Drive  
Kemptville, ON K0G 1J0

**Reference: Preliminary Species at Risk screening for the Barrhaven  
Conservancy Residential Development**

Ms. Hann:

**1.0 INTRODUCTION**

Kilgour & Associates Ltd. (KAL) have been retained by Caivan Communities to undertake agency consultations and provide input into their proposed redevelopment plan for lands along the north side of Jock River, located between Ontario Highway 416 and the Fraser Clarke watercourse (~400 m west of Greenbank Road) in the Barrhaven area of Ottawa, Ontario (i.e., “the site”, Figure 1).

The new residential subdivision, named the Barrhaven Conservancy, will include three broad areas, each currently subject to different planning efforts. Lands located adjacent to the Jock River (i.e., ranging to within 70 - 250 m of the north bank) are proposed to be re-naturalized with the inclusion of some recreational infrastructure (e.g. pathways). Plans for the re-naturalization are currently being developed. Lands north of the riparian corridor and located east of the Foster Municipal Drain (situated approximately 350 m west of Borrisokane Road), will be subject to residential development in the near future. Lands to the west of the Foster Municipal Drain have also been proposed to be developed as a residential community, though planning of for this area is still in the conceptual phase. We are submitting these Species at Risk (SAR) screening results for the proposed developments.

Review of natural areas within this area for potential development was initiated in 2017 and consultation related to SAR was completed through the Ministry of Natural Resources and Forestry (MNR) at that time. Since then the Ministry of Environment, Conservation, and Parks (MECP) has assumed the role of administrator for SAR in Ontario. The site, which was predominantly used for agriculture, had previously been considered to be undevelopable as the entire area was within the regulatory floodplain of the Jock River. A cut-and-fill program was approved by the City of Ottawa and by the Rideau Valley Conservation Authority in 2019. That program was approved independently of the current application for development. Under that program the land elevations across most of the

site have been altered. The cut-and-fill works will allow the regulatory floodplain line to move southward and allow lands on the north side of the site to be considered for development, though no development of the site has yet been approved. If development is approved here, the full build-out would take approximately 10 years to complete.

The objectives of this letter are to: (1) notify the MECP of the project; (2) provide a summary of the proposed project; and (3) request confirmation that we have identified known SAR concerns associated with the site. Additionally, as KAL is providing input into the planning for the re-naturalization of the Jock River riparian corridor, we would welcome and appreciate any input from the MECP with regards to enhancements the MECP would consider a priority for this area.

## **1.1 Site Overview**

The site is approximately 168 ha in size and is in the Barrhaven area of Ottawa, Ontario (Figure 1). The Barrhaven Conservancy site covers seven contiguous property parcels: 3285, 3288, 3300, and 3305 Borrisokane Road, and 4305, 4345, and 4375 McKenna Casey. The site is bordered by the Jock River to the south and Highway 416 to the west. The eastern border is bounded by the Frasier-Clarke Drain on the south east edge, Borrisokane Road in the mid-east edge, and a stormwater management facility on the north east edge. The northern border includes the Canadian National Smiths Falls Rail Corridor, a stormwater management facility, and the future Chapmans Mills Bus Rapid Transit Corridor. The site is zoned Developmental Reserve (DR) with a small portion zoned as Parks and Open Space Zone (O1).

Three municipal drains occur in the site (i.e., Foster Drain, O’Keefe Drain, and the Fraser-Clarke Drain) and most of the site is within the 100-year floodplain for the Jock River.

The site was historically dominated by agricultural uses but has now largely been cleared under the cut-and-fill program with very almost no natural land-cover remaining on the site. The banks of the Jock River and the band of trees located there (generally within ~10-20 m of the water’s edge) have been retained. Vegetation cover within 30 m of drains crossing the site has similarly been preserved as has the land west of Borrisokane Road (Figure 1), which is owned by the City. All other areas are currently being regraded and consist of bare dirt (though they are being seeded with a grass mix for stability as part of the erosion sediment control plan for cut-and-fill program).

Kilgour & Associates Ltd. has undertaken the following studies in support of the cut-and-fill program:

- Barrhaven Conservancy Cut and Fill Environmental Impact Statement (November 20, 2019)
- Barrhaven Conservancy Phase 1 Integrated Environmental Review (August 27, 2019)
- Butternut Health Assessment report number 731-001 (August 8, 2019)



- Request for Review of works associated with the Fraser Clarke Tributary Restoration at 3285 Borrisokane Rd., Ottawa, ON (January 9, 2019)
- Jock River Restoration Project: Aquatic and Ecological Site Assessment Supporting Document (September 28, 2018)
- Barrhaven Conservancy Headwater Drainage Feature Assessment (September 8, 2017)

Those studies will ultimately support the development proposal.

## **1.2 Project Overview**

The resulting development at full build out is proposed to include single family homes, commercial properties, greenspace, and park lands with enhanced ecological features meant to re-create environments that are under-represented in this part of the City. The ecological feature enhancements along the Jock River will be developed in consultation with various stakeholders (e.g., City of Ottawa, Rideau Valley Conservation Authority, MECP) to develop opportunities to advance regional targets (e.g., forest cover, wetlands) while providing access and recreation opportunities to the local communities.

## **2.0 SPECIES AT RISK RESOURCES REVIEW AND RESULTS**

The following resources were reviewed to identify potential SAR species that may interact with the project.

- Aquatic Species at Risk Map (Fisheries and Oceans Canada, 2020)
- Make a Map: Natural Heritage Areas (MNRF, 2020)
- Land Information Ontario (Government of Ontario, 2020)
- Atlas of the Breeding Birds of Ontario (OBBA; Bird Studies Canada et al., 2009)
- Ontario Nature (2020)
- eBird (Cornell Lab of Ornithology, 2020)
- iNaturalist (California Academy of Sciences and National Geographic Society, 2020)
- Rideau Valley Conservation Authority (2016)

We note that the *Client's Guide to Preliminary Screening for Species at Risk* (MECP, 2019) recommends consulting the Ontario Reptile Amphibian Atlas (Ontario Nature, 2019) as a SAR resource. This Atlas was discontinued in December 2019 and now operates via the 'Herps of Ontario' project on iNaturalist.





Figure 1 Jock River Restoration Approximate Extent of Construction



**Table 1 Identified Species at Risk with potential to occur in the vicinity of the Site**

Common Name	Taxonomic Name	Source
Bank Swallow	<i>Riparia riparia</i>	OBBA
Barn Swallow	<i>Hirundo rustica</i>	NHIC, OBBA
Bobolink	<i>Dolichonyx oryzivorus</i>	OBBA
Chimney Swift	<i>Chaetura pelagica</i>	OBBA
Eastern Meadowlark	<i>Sturnella magna</i>	OBBA
Eastern Wood-pewee	<i>Contopus virens</i>	NHIC, OBBA
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	OBBA
Short-eared Owl	<i>Asio flammeus</i>	OBBA
Wood Thrush	<i>Hylocichla mustelina</i>	OBBA
Blanding's Turtle	<i>Emydoidea blandingii</i>	Ontario Nature
Northern Map Turtle	<i>Graptemys geographica</i>	Ontario Nature
Snapping Turtle	<i>Chelydra serpentine</i>	NHIC, RVCA
Western Chorus Frog	<i>Pseudacris triseriata</i>	Ontario Nature
Butternut	<i>Juglans cinereal</i>	Observed by KAL

### 3.0 ANTICIPATED IMPACTS TO SPECIES AT RISK

The site was previously used for agricultural purposes and contained few natural features, including habitat suitable for Species at Risk. The project is currently under construction and will contain even fewer natural features upon completion.

KAL has completed extensive studies on the site to identify Species at Risk and habitat suitable for Species at Risk. Butternut (*Juglans cinereal*) was identified on City-owned land along Jock River, west of Borrisokane Road and south of the ongoing groundworks. Trees that were impacted by the groundworks were subject to Butternut Health Assessments. Appropriate mitigation measures are in place to limit interaction between the project and other Species at Risk.



## 4.0 CLOSURE

We look forward to any comments you may have related to Species at Risk as well as input for enhancements for future developments. Questions relating to the contents of this letter can be addressed to the undersigned.

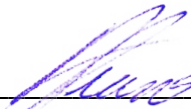
Respectfully submitted,

**KILGOUR & ASSOCIATES LTD.**



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## Appendix B- Tree Conservation Report



# City of Ottawa Tree Conservation Report for the Barrhaven Conservancy East

July 29, 2020

## Submitted To:

Hugo LaLonde, Director, Land Development  
Caivan Communities  
2934 Baseline Road, Suite 302  
Ottawa, ON K2H 1B2

**KILGOUR & ASSOCIATES LTD.**  
[www.kilgourassociates.com](http://www.kilgourassociates.com)



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**List of Acronyms and Abbreviations**

- BCDC – Barrhaven Conservancy Development Corporation
- CRZ – Critical Root Zone
- DBH – Diameter at Breast Height
- EIS – Environmental Impact Statement
- KAL – Kilgour & Associates Ltd.
- TCR – Tree Conservation Report



## 1.0 INTRODUCTION

Barrhaven Conservancy Development Corporation (BCDC) is proposing a new residential subdivision, named the Barrhaven Conservancy East (the “Site”) located in the Barrhaven Conservancy Community area of Ottawa, Ontario. The Site is divided into two sections divided by Borrisokane Road. The east parcel is bordered by the Jock River to the south and the Fraser-Clarke Watercourse and future Chapmans Mills Bus Rapid Transit Corridor to the north. The west parcel extends out to the Foster Ditch to the west and is bounded on the south by a City of Ottawa property along the Jock River and the Foster stormwater management facility on the northeast edge.

This report by Kilgour & Associates Ltd. (KAL) is the Tree Conservation Report (TCR) for the proposed Barrhaven Conservancy East development.

## 2.0 TREE CONSERVATION REPORT

### 2.1 Inventory of the trees currently on site

Descriptions of trees within this report are per the Environmental Impact Statement (EIS) supporting the Barrhaven Conservancy cut and fill project (KAL, 2019) that was completed in the spring of 2020. During the cut and fill, trees over much of the property were removed, though trees occurring along the Jock River, the Foster Ditch, and the south edge of BCDC lands west of Borrisokane were preserved (Figure 1). These trees are addressed in this report. The Fraser Clarke Watercourse is located beyond the eastern edge of the project area. Existing trees within the corridor of this feature are all situated sufficiently back from the edge of development area such that their critical root zones (CRZ) do not extend into proposed work areas. As such trees along this feature are not addressed within this report.

Remaining trees on or near the site are associated with five hedgerows (Figure 1).

#### 2.1.1 Hedgerow H1

Hedgerow H1 runs for 1.7 km along the north bank of the Jock River east of Borrisokane Road. The southern boundary of groundworks associated with the cut and fill program was set to beyond the northern edge of the drip line of all trees within this hedgerow so that the feature was fully retained. This feature is similar in composition to other hedgerows on site consisting of mainly Green Ash (*Fraxinus pennylvanica*) and Manitoba Maple (*Acer negundo*), with subordinate species of Bur Oak (*Quercus macrocarpa*), Basswood (*Tilia americana*), Crack Willow (*Salix fragilis*), and Silver Maple (*Acer saccharinum*). No Butternuts (*Juglans cinerea*) are present within this feature.

#### 2.1.2 Hedgerows H2 and H3

Hedgerows H2 and H3 are associated with the Foster Ditch. Tree growth along this ~575 m corridor is more sparse than along other site hedgerows, consisting of small patches of trees with grasses and forbs growing in between. Manitoba Maple and Green Ash are dominant with a few American Elm (*Ulmus americana*) and a Silver Maple also present. The majority of the trees were small at a range of 20 to 40 cm diameter at breast



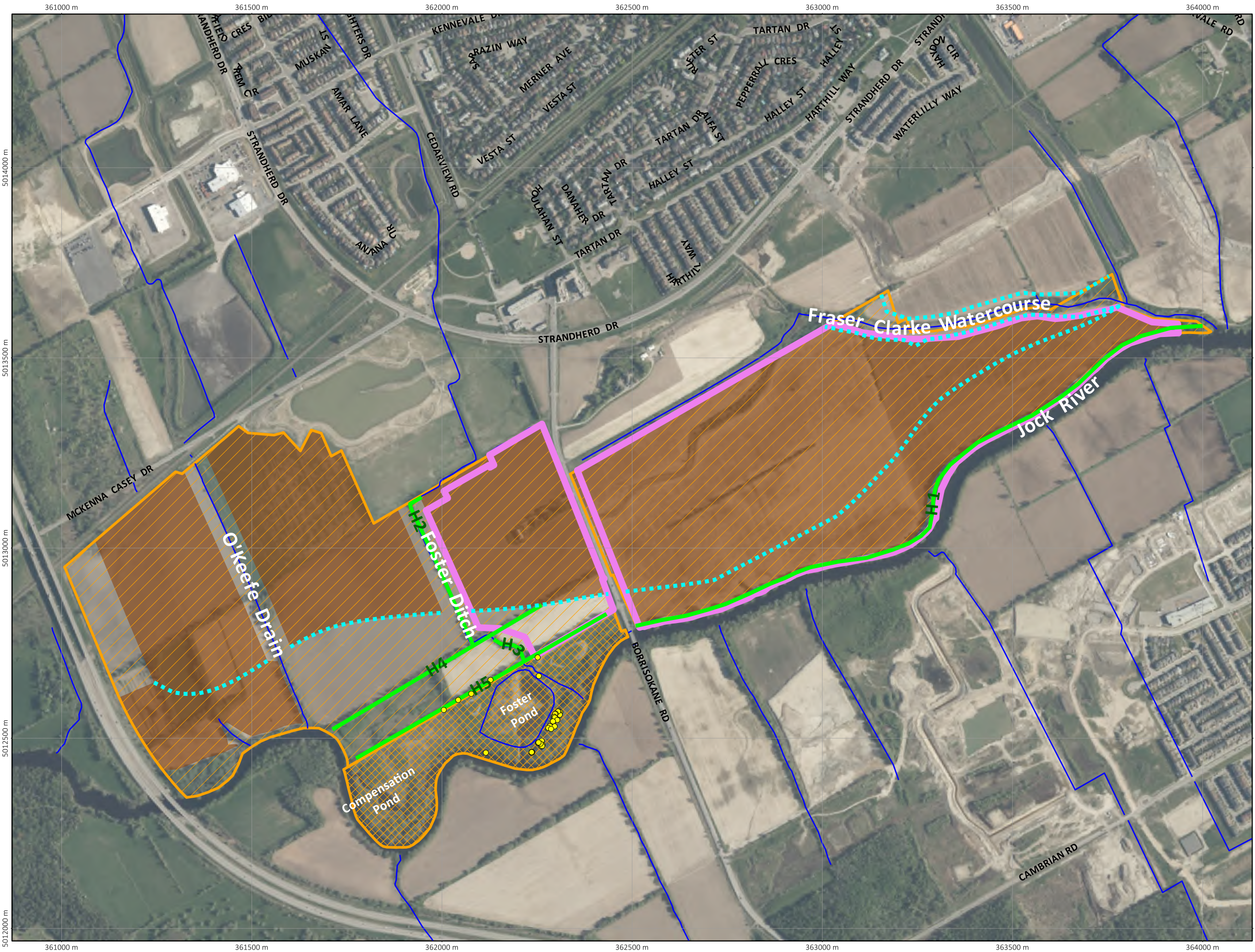
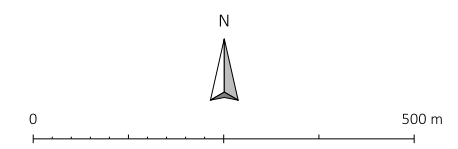


Figure 1 Existing Conditions

**Legend**

-  Property Parcels
-  BCDC
-  City of Ottawa
-  Barrhaven Conservancy East
-  Edge of Regulatory Floodplain
-  Lands cleared through cut/fill
-  Watercourses / Drainage Features
-  Hedgerow
-  Butternut



Project: Barrhaven Conservancy Development Corporation  
 Created By: AF  
 MTM Zone 9  
 (NAD 83)  
 Printed on: 2020-07-29



height (DBH) with small numbers of saplings present. Larger Green Ash along the corridor all showed signs of significant dieback. No Butternuts are located along these hedgerows.

### **2.1.3 Hedgerows H4 and H5**

Hedgerows H4 and H5 (640 m and 760 m in length, respectively) are located along the north and south edges of a former farm field on the southern edge of BCDC-owned lands, though only the eastern-most ends of the features extend into Site. Green Ash and Manitoba Maple are the dominant species, with subordinate species of American Elm, Basswood, and apple (*Malus* sp.). Small numbers of Crack Willow, Silver Maple, and Trembling Aspen (*Populus tremuloides*), were observed in both hedgerows. Five Butternuts occur along H5. Four of the Butternuts are saplings and are located in the central portion of the hedge, more than 100 m from the edge of the Site. A single Butternut with two stems (15 cm and 16 cm DBH) is located near within 5 m of the Site boundary. All of the Butternuts are located more than 50 m from the planned cut-fill work.

A survey of trees by KAL within City of Ottawa- owned lands south of the Site on August 14 and 19, 2019, noted the presence of 27 additional Butternut trees. All of these trees are located more than 50 m from the edge of the Site (Figure 1).

## **3.0 OTHER NATURAL ELEMENTS CONSIDERED**

### **3.1 Surface water features, including wetlands and watercourses**

The Foster Ditch is located on the west side of the Site. The Fraser Clarke Watercourse is located on the east side of the Site. Both features will have setbacks of 30 m from the normal high water mark. The Jock River is located along the southern boundary of the Site, east of Borissokane Road. The floodplain of the river extends >80 m on to the Site (Figure 1).

### **3.2 Steep slopes, including valleys and escarpments**

No steep slopes are identified within the City of Ottawa Official Plan and none were observed on or directly adjacent to Site.

### **3.3 Valued woodlots**

There are no valued woodlots designated as Urban Natural Features or Natural Environment Areas, areas evaluated in the Urban Natural Areas Environmental Evaluation Study (UNAEES), or other areas that meet the criteria used in the UNAEES

### **3.4 Significant Woodlands**

There are no significant woodlands on or adjacent the Site.

### **3.5 Greenspace linkages**

The Jock River plain is considered a greenspace linkage.



### **3.6 High quality, specimen trees**

None of the Site trees, other than the observed Butternuts, are considered high-quality specimen trees. Most trees are less than 40 cm DHB and no uncommon species are present. The largest trees on Site are Green Ash, though these trees have mostly been negatively impacted by Emerald Ash Borer (*Agrilus planipennis*; EAB).

### **3.7 Rare communities or other unique ecological features**

None present on or directly adjacent to Site

### **3.8 Species at Risk and their habitat**

A single Butternut is situated adjacent to the Site. A BHA has not been completed for this individual. This individual, however, is located ~160 m from the edge of the regulatory floodplain. Lands on the Site between that tree and the floodplain edge (i.e. former farmland) will be subject to tree planting as a part of a renaturalization program, but will not otherwise be developed. As such, the Butternut will be retained with no negative impacts.

## **4.0 PROPOSED DEVELOPMENT (WITHIN AREAS OF EXISTING TREE COVER)**

The riparian areas of the Jock River corridor on the Site previously consisted of active agricultural lands with a narrow hedgerow separating them from the Jock River. The new regulatory flood plain line along the entire Barrhaven Conservancy Community (east of the Foster Ditch currently and, in subsequent development phases, to the west) will allow lands between 80 and 400 m wide to be re-established as a natural Jock River open space corridor (Figure 2). The major focus of flood plain redevelopment is on the creation of conservation lands including wetland space. This area will include the development of ~5 ha of wetland and ~32 ha of forest cover. All other enhancements discussed below will occur on lands owned by BCDC. No site alterations will occur within in >30 m of the Foster Ditch or Fraser Clarke Watercourse.

Wetland areas will include two major types of features: three large naturalized ponds covering ~3 ha, and a ~2 ha Silver Maple swamp, in accordance with the RVCA directives for increased wetland space. Naturalized pond features will be connected directly to the Jock River via deeper channels. The ponds and main inlet and outlet channels to the ponds would be approximately 2.5-3 m deep, with gently rising grades to the shoreline. The depth of these features is anticipated to ensure they remain accessible with open connections to the Jock River for aquatic life (e.g., fish, turtles, and amphibians) throughout the year. A forested buffer will occur between the natural ponds and the Jock River. Woody material could be included on the banks of the natural ponds and their outlet channels at the Jock River. This landscape design is intended to protect and enhance critical fish habitat and spawning areas along the Jock River.

### **4.1 Vegetation to be retained**

Existing trees on the Site all occur within areas subject to renaturalization and will be almost fully retained. The only proposed areas of tree removal will occur within Hedgerow H1 where entrance channels will need to be excavated to provide hydrological connections between new pond features and the Jock River.







Figure 2 Proposed development



## **4.2 How will the design conserve vegetated areas**

All areas currently including trees are will be subject to reanaturalization. Anticipated canopy cover across the site is expected to exceed 30% at tree maturity.

## **4.3 Description of the area and nature of vegetation loss.**

No currently-vegetated areas will be subject to vegetation loss And there will be no affect the natural systems on site and on the surrounding landscape.Impact of the development on the conserved portions of vegetation

should be examined and outlined, including and not limited to the impacts of grade change, changes to drainage patterns, effects of impervious surfaces and new buildings, and changes in the water table.

Areas outside of the floodplain proposed for residential development, and much of the floodplain area, are currently devoid of vegetation. The proposed reanaturalization of the floodplain will provide and expanded natural buffer between the Jock River and new residential communities. There are no anticipated impacts of the development on the conserved portions of vegetation related to grade change, drainage patterns, impervious surfaces and new buildings, and the water table.

## **5.0 MITIGATION MEASURES**

The proposed reanaturalization of the floodplain will provide an expanded natural buffer between the retained trees along Jock River and new residential communities, resulting in the long-term survival of retained trees and woodlands.

### **5.1 Protection measures during construction for trees and woodlands**

Vegetation being retained may be impacted by the proposed construction.

The following standard measures area to be applied during construction when working near retained trees:

- erect a fence at the CRZ is established as being 10 cm from the trunk of a tree for every cm of trunk DBH. The CRZ is calculated as DBH x 10 cm.) of trees;
- do not place any material or equipment within the CRZ of the tree;
- do not attach any signs, notices or posters to any tree;
- do not raise or lower the existing grade within the CRZ without approval;
- tunnel or bore when digging within the CRZ of a tree;
- do not damage the root system, trunk or branches of any tree;
- ensure that exhaust fumes from all equipment are NOT directed towards any tree's canopy.



## 5.2 Protection of fauna or rare species during and after construction

Common wildlife species were observed on the Site, all of which are represented throughout the developed adjacent landscape. The following mitigation measures shall be implemented during construction of the project to generally protect wildlife:

1. Areas shall not be cleared during sensitive times of the year for wildlife (i.e. breeding season, which for species potentially occurring on the Site is April 15<sup>th</sup> to August 15<sup>th</sup>); unless mitigation measures are implemented and/or the habitat has been inspected by a qualified Biologist within five days of clearing (City of Ottawa, 2015).
2. Do not harm, feed, or unnecessarily harass wildlife.
3. Manage waste to prevent attracting wildlife to the Site. Effective mitigation measures include litter prevention and keeping all trash secured in wildlife-proof containers and promptly removing it from the Site, especially during warm weather.
4. Drive slowly and avoid hitting wildlife.
5. Manage stockpiles and equipment on Site to prevent wildlife from being attracted to artificial habitat. Cover and contain any piles of soil, fill, brush, rocks and other loose materials and cap ends of pipes where necessary to keep wildlife out. Ensure that trailers, bins, boxes, and vacant buildings are secured at the end of each workday to prevent access by wildlife.
6. Check the entire work site for wildlife prior to beginning work each day.
7. Inspect protective fencing and/or other installed wildlife exclusion measures daily and after each rain event to ensure their integrity and continued function.
8. Monitor construction activities to ensure compliance with the project-specific protocol (where applicable) or any other requirements.
9. If SAR are encountered on the worksite, immediately stop all work and comply with the project-specific SAR protocol (where applicable; e.g., contact project Biologist to determine next steps).

## 5.3 Tree planting recommendations

The landscape plan will be developed as part of the detailed design. The EIS for this project (KAL, 2020), however, addresses the following:

- The species to be used for the given site conditions;
- The required use of native tree species;
- Where tree planting is required to provide protection for watercourses and steep slopes; and
- Proposed tree planting across the site.

The landscape plans for the floodplain areas of the Site to subject reaturalization are to include tree planting directives that will lead to at least 14.8 ha of forested area (including the swamp) at maturity. The landscape plans for residential areas of the Site are to include tree planting directives that will lead to 6% canopy cover at maturity (i.e. considering trees planted on private lots and in common areas).



## **6.0 OTHER REQUIRED INFORMATION**

### **6.1 Owner contact information**

Barrhaven Conservancy Development Coronation  
2934 Baseline Road, Suite 302  
Ottawa, ON K2H 1B2

Representative Contact:  
Hugo LaLonde, Director, Land Development  
Phone: 613-518-1864 ext. 503  
Email: hugo.lalonde@caivan.com

### **6.2 Applicant contact information**

Same as the owner

### **6.3 Consultant contact information**

Kilgour & Associates Ltd.  
Contact: Anthony Francis, Senior Ecologist

2285C St. Laurent Blvd. Unit C16  
Ottawa, ON  
K1G 4Z6

613-277-4027  
afrancis@kilgourassociates.com

### **6.4 Contractor contact information**

Not applicable.

### **6.5 Municipal address and legal description of the land**

The full Barrhaven Conservancy Community is comprised of seven contiguous property parcels at 3285, 3288, 3300, and 3305 Borrisokane Road, and 4305, 4345, and 4375 McKenna Casey Drive are located on Concession 3 Lots 13 – 14 and Concession 4 Lots 13-15, and covers approximately 168 ha. The Site itself includes all portions of this area east of the Foster Ditch, covering an area of approximately 79 ha.

### **6.6 Official Plan and zoning designations, and the status of any planning applications on the property**

The Site is zoned Developmental Reserve (DR) with a small portion along the Fraser Clarke corridor zoned as Parks and Open Space Zone (O1)



## 6.7 Purpose of this Tree Conservation Report

This report is a TCR prepared by KAL in support of the proposed residential development on the Site by BCDC.

## 6.8 Schedule of the proposed works

Site preparation is anticipated to begin by late summer of 2020, with home construction to begin in the fall of the same year. House closing will begin by spring of 2021 with final house sales to be completed by 2025.

## 6.9 Applications affecting the land


None.


## 7.0 CLOSURE


This report was prepared for exclusive use by Barrhaven Development Corporation and may be distributed only by Barrhaven Development Corporation. Questions relating to the data and interpretation can be addressed to the undersigned.

Respectfully submitted,

**KILGOUR & ASSOCIATES LTD.**

  
\_\_\_\_\_  
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Senior Ecologist

  
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Principal

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## **8.0 LITERATURE CITED**

Kilgour & Associates Ltd. 2019. Environmental Impact Statement - Barrhaven Conservancy Cut and Fill. November 20, 2019.

Kilgour & Associates Ltd. 2020 City of Ottawa Environmental Impact Statement for the Barrhaven Conservancy Development, July 22, 2018. Submitted to Barrhaven Conservancy Development Corporation.

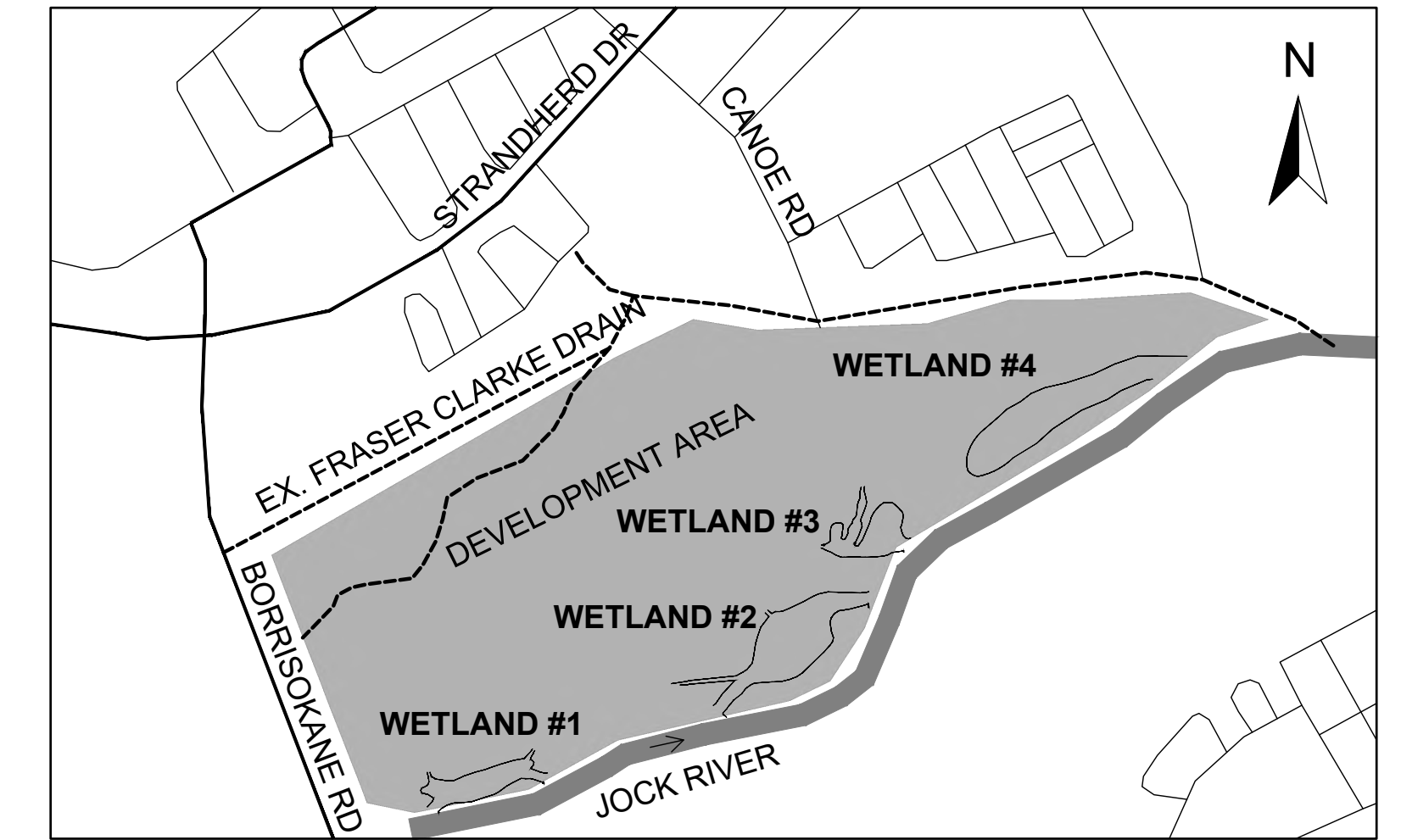


## **Appendix C- Jock River Corridor Concept and Permits to Date**



# BARRHAVEN CONSERVANCY DEVELOPMENT CORPORATION

## JOCK RIVER CORRIDOR RESTORATION AND WETLAND DESIGN



**KEY MAP**  
N.T.S.

**GENERAL NOTES**

**TIMING OF WORKS**

- WORKS SHALL BE COMPLETED BETWEEN JULY 1 TO MARCH 31, OR AS SET OUT BY MNRF AND MECF.
- TREE CLEARING SHOULD BE COMPLETED OUTSIDE THE BIRD NESTING SEASON APRIL 1ST TO AUGUST 1ST TO COMPLY WITH THE FEDERAL MIGRATORY BIRDS CONVENTION ACT. ANY TREES THAT REQUIRE REMOVAL OUTSIDE OF THIS TIMING WINDOW MUST FIRST BE INSPECTED BY A QUALIFIED BIOLOGIST TO DETERMINE THE PRESENCE OF NESTING BIRDS.
- THE WEATHER FORECAST SHOULD BE CONTINUALLY MONITORED TO ENSURE THAT WORKS ARE UNDERTAKEN ONLY DURING FAVOURABLE WEATHER CONDITIONS.
- COMPLETE THE WORKS WITH MINIMAL AVOIDABLE INTERRUPTIONS ONCE THEY COMMENCE.

**SITE AND MATERIAL MANAGEMENT**

- ALL CONSTRUCTION EQUIPMENT AND MATERIALS (IMPORTED OR EXCAVATED) MUST BE STORED AT LEAST 30 m AWAY FROM ANY WATERBODY IN A STABLE AREA ABOVE THE ACTIVE FLOODPLAIN, OR IN A DESIGNATED STAGING/STORAGE AREA.
- IN THE EVENT OF AN UNEXPECTED STORM, ALL UNFIXED ITEMS THAT HAVE THE POTENTIAL TO CAUSE A SPILL OR AN OBSTRUCTION TO FLOW MUST BE MOVED A STABLE AREA ABOVE ACTIVE FLOODPLAIN.
- STOCKPILES MUST BE LOCATED OUTSIDE THE ISOLATED WORK AREAS.
- STABILIZE, TEMPORARILY OR PERMANENTLY, ANY DISTURBED AREAS AS WORK PROGRESSES, OR SOON AS CONDITIONS ALLOW.
- MINIMIZE THE AREA OF DISTURBANCE TO THE EXTENT POSSIBLE. ALL DISTURBED GROUND LEFT INACTIVE FOR MORE THAN 30 DAYS SHALL BE STABILIZED USING APPROPRIATE EROSION CONTROL MEASURES AND AN APPROPRIATE SEED MIX AS NOTED WITHIN THE FINAL APPROVED RESTORATION PLAN.
- ALL VEGETATION, ADJACENT TO THE WORK AREA, MUST BE PROTECTED AND DELINEATED WITH CONSTRUCTION FENCING OR TREE PROTECTION BARRIERS.
- ALL GRADES IN THE AREA REGULATED BY THE CONSERVATION AUTHORITY MUST BE MAINTAINED OR MATCHED, UNLESS OTHERWISE AUTHORIZED IN THE APPLICABLE PERMIT.
- AN AFTER-HOURS CONTACT NUMBER IS TO BE VISIBLY POSTED ONSITE FOR EMERGENCIES. ALL THE PLANS SHOULD HAVE NAME AND CONTACT INFO OF THE PERSON RESPONSIBLE FOR ESC MEASURES.

**EROSION AND SEDIMENT CONTROL**

- ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES MUST BE INSTALLED PRIOR TO START OF WORKS. FOLLOWING INSTALLATION OF THE PROPOSED ESC MEASURES, A QUALIFIED AGENT OF THE PROPONENT, PREFERABLY AN ENVIRONMENTAL MONITOR, WILL CONDUCT REGULAR SITE VISITS TO MONITOR ALL WORKS. PARTICULARLY THE CONDITION OF THE ESC MEASURES, DEWATERING, AND IN- OR NEAR-WATER WORKS. SHOULD CONCERNS ARISE, THE ENVIRONMENTAL MONITOR WILL CONTACT THE PROPONENT, THE CONSERVATION AUTHORITY, AND ANY OTHER APPROPRIATE PARTIES.
- EROSION AND SEDIMENT CONTROLS MUST BE MAINTAINED DURING CONSTRUCTION, AND ANY REQUIRED REPAIRS OR REPLACEMENTS MUST BE COMPLETED WITHIN 24 HOURS AFTER THEY HAVE BEEN IDENTIFIED DURING THE MONITORING.
- EROSION AND SEDIMENT CONTROLS MAY REQUIRE PERIODIC ADJUSTMENTS TO REFLECT CHANGING SITE CONDITIONS. THE CONTRACTOR WILL BE RESPONSIBLE FOR THESE ADJUSTMENTS TO ENSURE PROPER FUNCTION.
- ANY CHANGES TO THE EROSION AND SEDIMENT CONTROL PLAN BEYOND MINOR ADJUSTMENTS MUST BE APPROVED BY THE SITE SUPERVISOR.
- ADDITIONAL EROSION AND SEDIMENT CONTROL SUPPLIES MUST BE KEPT ON SITE IN ORDER TO FACILITATE IMMEDIATE REPAIRS AND/OR UPGRADES AS NEEDED.
- ALL TEMPORARY SEDIMENT CONTROLS MUST BE REMOVED AFTER THE SITE SUPERVISOR DEEMS THE SITE TO BE STABLE.
- THE PROJECT PROPONENT OR THEIR REPRESENTATIVE IS ULTIMATELY RESPONSIBLE FOR CONTROLLING SEDIMENT AND EROSION WITHIN THE CONSTRUCTION SITE FOR THE TOTAL PERIOD OF THE CONSTRUCTION.
- IF EXCESSIVE SILTATION RESULTS FROM THE CONSTRUCTION ACTIVITIES, THE ONSITE SUPERVISOR/INSPECTOR AND/OR THE CONSERVATION AUTHORITY RESERVE THE RIGHT TO REQUEST ADDITIONAL ESC MEASURES WHICH WOULD BE INSTALLED PRIOR TO FURTHER CONSTRUCTION ACTIVITIES.

**DELETERIOUS SUBSTANCE CONTROL/SPILL MANAGEMENT**

- PREVENT THE RELEASE OF SEDIMENT, SEDIMENT-LADEN WATER, RAW CONCRETE, CONCRETE LEACHATE OR ANY OTHER DELETERIOUS SUBSTANCES INTO ANY WATERBODY, RAVINE OR STORM SEWER SYSTEM.
- ENSURE EQUIPMENT AND MACHINERY ARE IN GOOD OPERATING CONDITION (POWER WASHED), FREE OF LEAKS, EXCESS OIL, AND GREASE.
- NO EQUIPMENT REFUELLING OR SERVICING SHOULD BE UNDERTAKEN WITHIN 30 m OF ANY WATERCOURSE OR SURFACE WATER DRAINAGE.
- A SPILL CONTAINMENT KIT MUST BE READILY ACCESSIBLE ON SITE IN THE EVENT OF A RELEASE OF A DELETERIOUS SUBSTANCE TO THE ENVIRONMENT. ONSITE STAFF MUST BE TRAINED IN ITS USE.
- THE SITE SUPERVISOR MUST BE NOTIFIED IMMEDIATELY IN THE EVENT OF A SPILL OF DELETERIOUS SUBSTANCE. ANY SEDIMENT SPILL FROM THE SITE SHOULD BE REPORTED TO MINISTRY OF ENVIRONMENT (SPILL ACTION CENTER) AT 1-800-268-6060.

**WORK AREA ISOLATION**

- ALL WORK IN ISOLATED WORK AREAS MUST BE COMPLETED IN THE DRY. AN ADEQUATE NUMBER OF PUMPS MUST BE USED FOR UNWATERING.
- CROSSING AN ACTIVE WATERCOURSE OR WETLAND BY EQUIPMENT, VEHICLES, PERSONNEL, ETC. IS NOT PERMITTED UNLESS APPROVED BY THE CONSERVATION AUTHORITY. ALL ACCESS TO WORK SITES SHALL BE FROM EITHER SIDES OF THE WATERCOURSE OR WETLAND.
- THE UNWATERING DISCHARGE LOCATION MUST BE LOCATED AT LEAST 30 M FROM ANY WATERCOURSE OR WETLAND IN AN AREA WITH DENSE VEGETATIVE GROUND COVER, AND WHERE THE DISCHARGE CAN RETURN TO THE WATERBODY DOWNSTREAM OF THE WORK AREA OVER THE GROUND COVER.
- FISH MUST BE REMOVED FROM THE WORK AREA ONCE ISOLATED. FISH SALVAGE MUST BE COMPLETED BY A QUALIFIED TECHNICIAN WITH A LICENSE FROM THE ONTARIO MINISTRY OF NATURAL RESOURCES AND FORESTRY.

**CLEAN EQUIPMENT PROTOCOL**

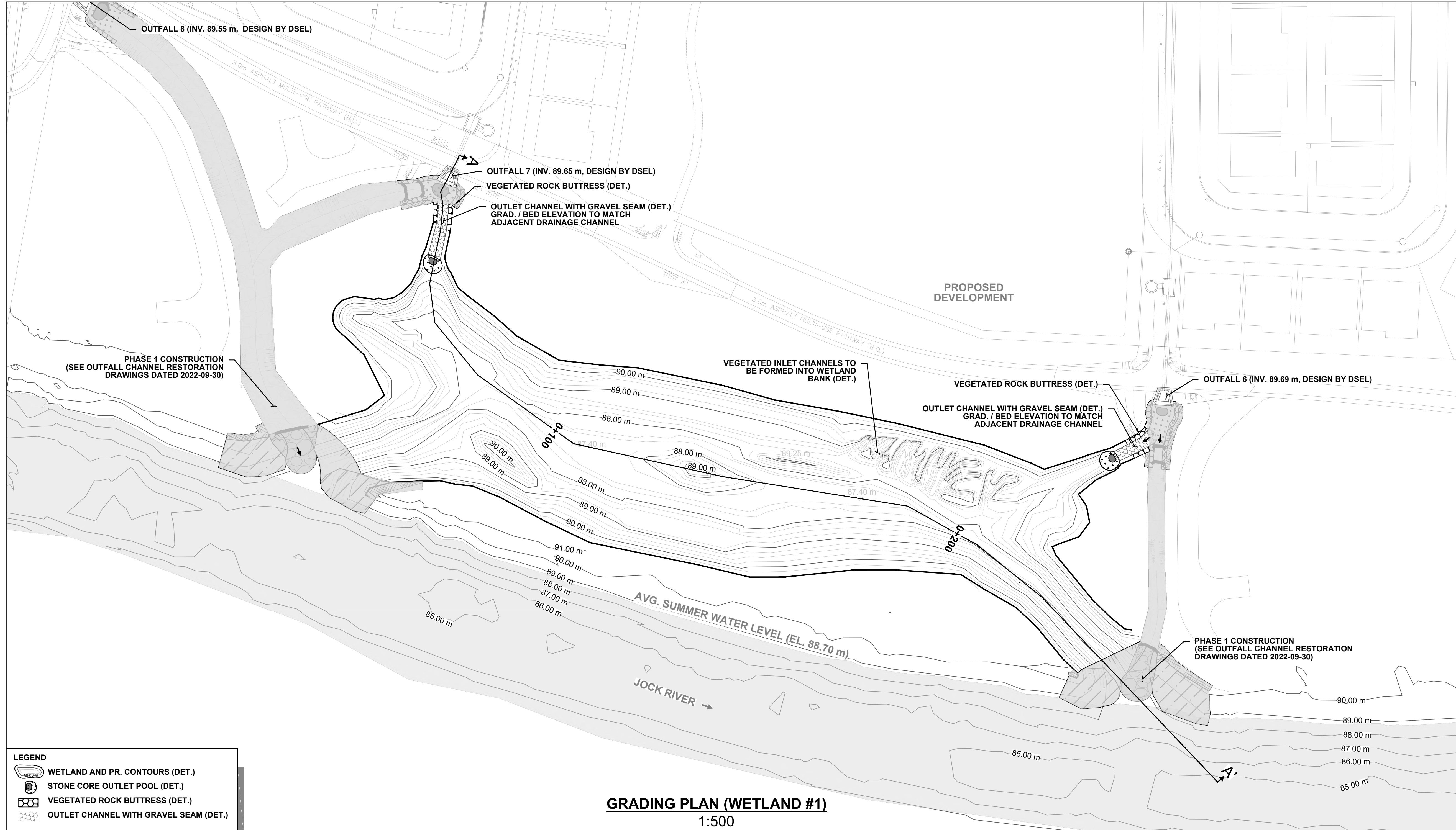
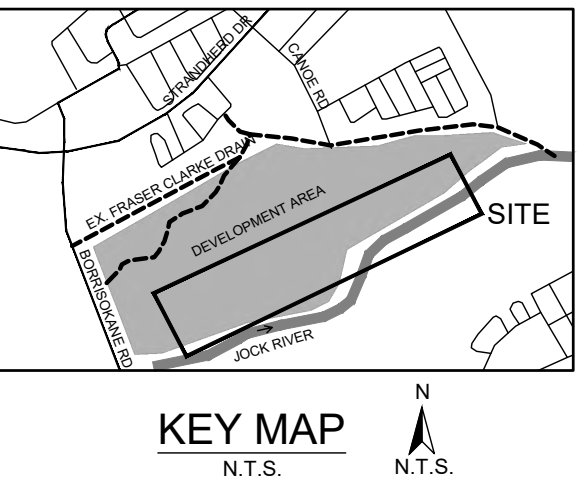
- INSPECTION AND CLEANING OF ALL MACHINERY AND EQUIPMENT SHOULD BE PERFORMED IN ACCORDANCE WITH THE PROCEDURES, CHECKLISTS, AND DIAGRAMS PER THE "CLEAN EQUIPMENT PROTOCOL FOR INDUSTRY" DOCUMENT.



**DRAWING SHEET LIST INDEX**

SHEET #	SHEET NAME	DETAILS
0	COVER	COVER SHEET, DRAWINGS INDEX
EROSION CONTROL DRAWINGS		
1	GEO-1	WETLAND #1 - GRADING PLAN AND PROFILE
2	RES-1	WETLAND #1 - RESTORATION PLAN
3	GEO-2	WETLAND #2 - GRADING PLAN AND PROFILE
4	RES-2	WETLAND #2 - RESTORATION PLAN
5	GEO-3	WETLAND #3 - GRADING PLAN AND PROFILE
6	RES-3	WETLAND #3 - RESTORATION PLAN
7	GEO-4	WETLAND #4 - GRADING PLAN AND PROFILE
8	RES-4	WETLAND #4 - RESTORATION PLAN
9	DET-1	OUTFALL CHANNEL RESTORATION DETAILS
10	DET-2	WETLAND RESTORATION DETAILS





**LEGEND**

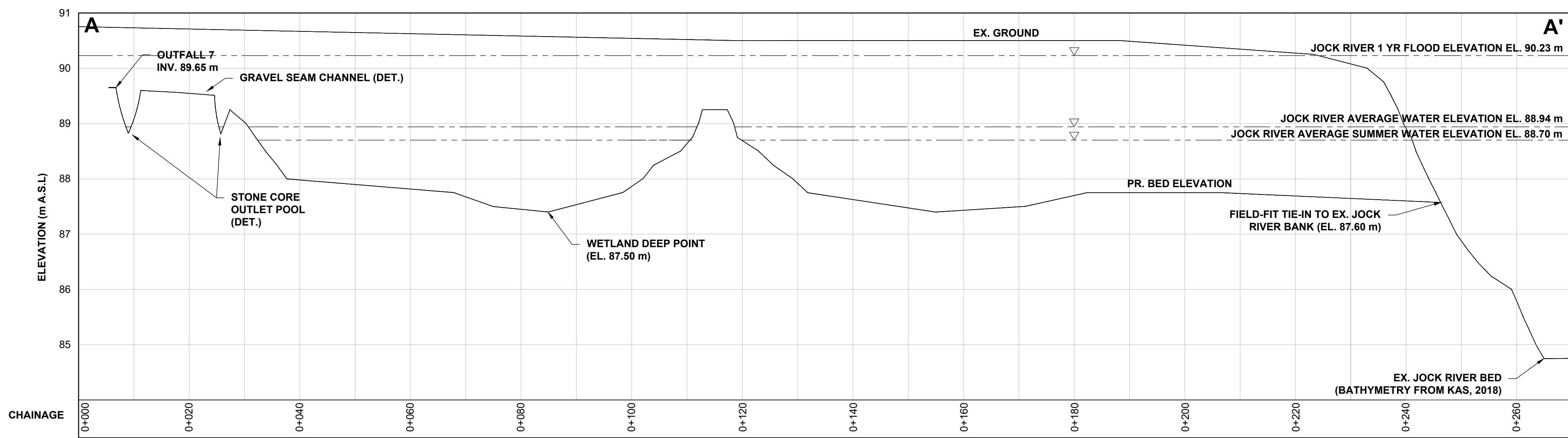
	WETLAND AND PR. CONTOURS (DET.)
	STONE CORE OUTLET POOL (DET.)
	VEGETATED ROCK BUTTRESS (DET.)
	OUTLET CHANNEL WITH GRAVEL SEAM (DET.)

**GRADING PLAN (WETLAND #1)**  
1:500

- EXISTING GROUND TOPOGRAPHIC SURVEY BY JD BARNES LTD
- JOCK RIVER BATHYMETRIC SURVEY BY KILGOUR AND ASSOCIATES LTD (2018)
- MODELLED WATER LEVELS BY KILGOUR AND ASSOCIATES LTD (2022)

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1.	2022-09-14	BM	DESIGN CONCEPT SUBMISSION #1

DESIGNED BY: P.V.      CHECKED BY: P.V.  
DRAWN BY: B.M.      DATE: 2023-03-07



**SECTION A-A'**  
1:500 - V.E. 10x

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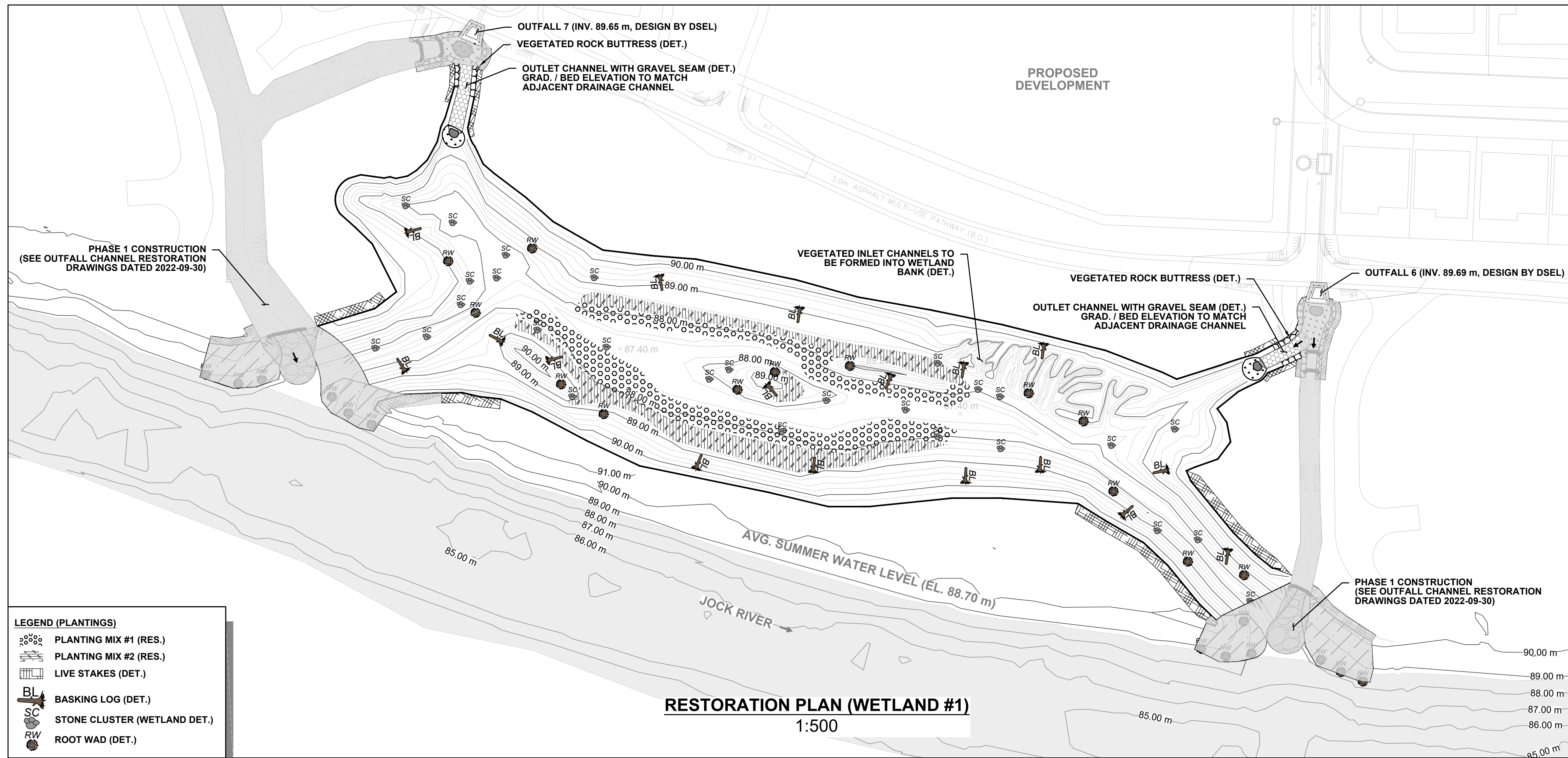
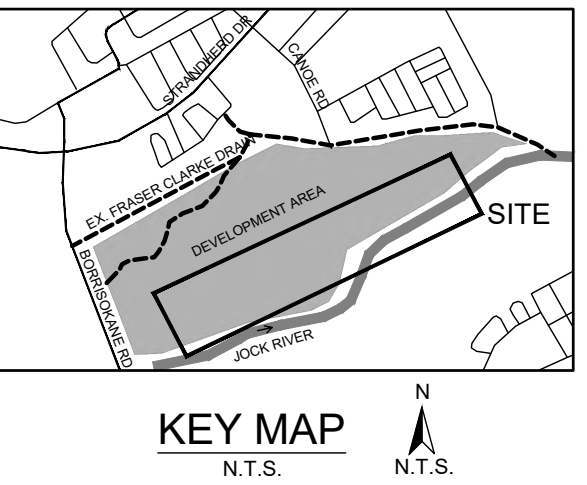
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**WETLAND DESIGN (PHASE 2)**  
**GRADING PLAN AND PROFILE**  
**(WETLAND #1)**

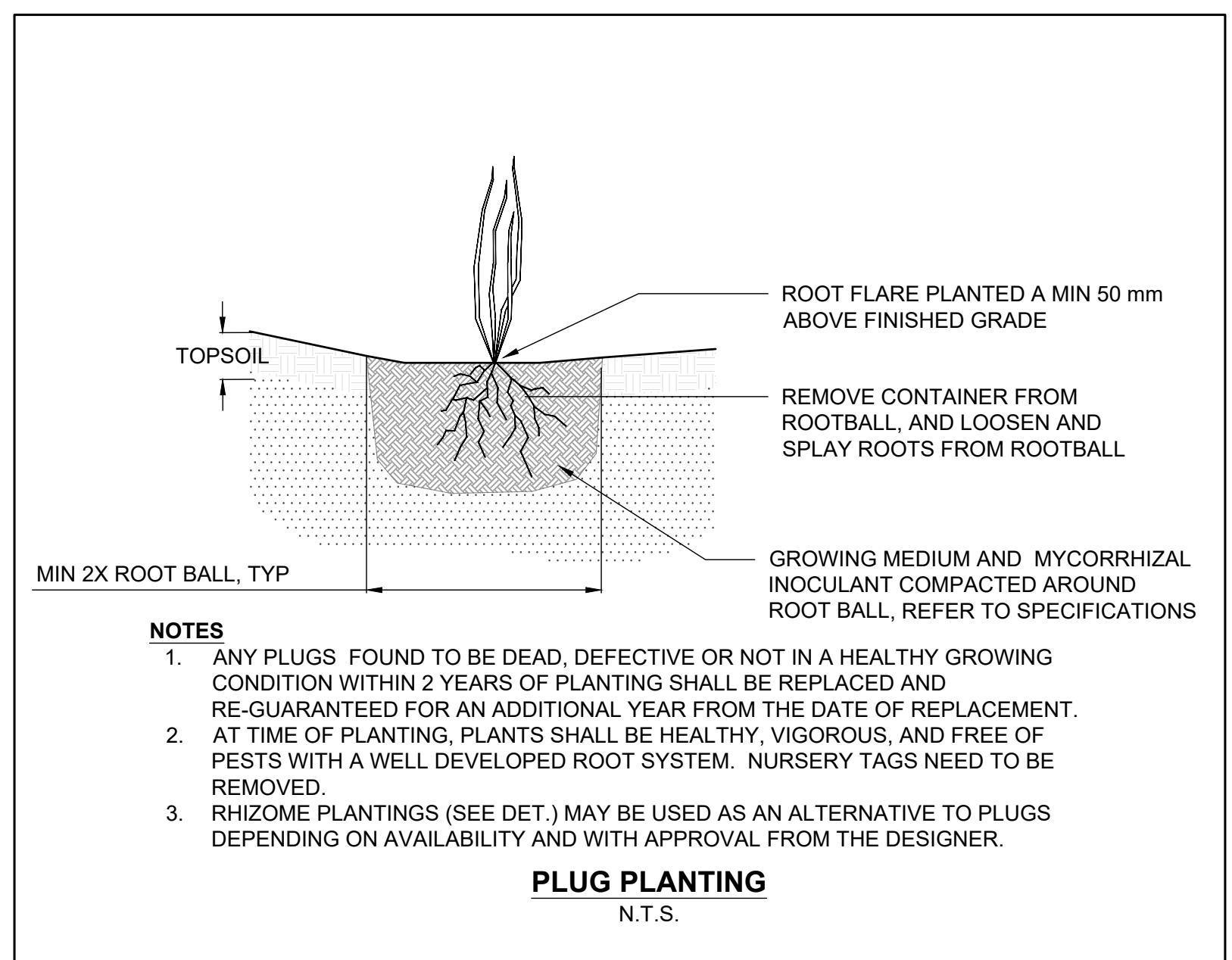
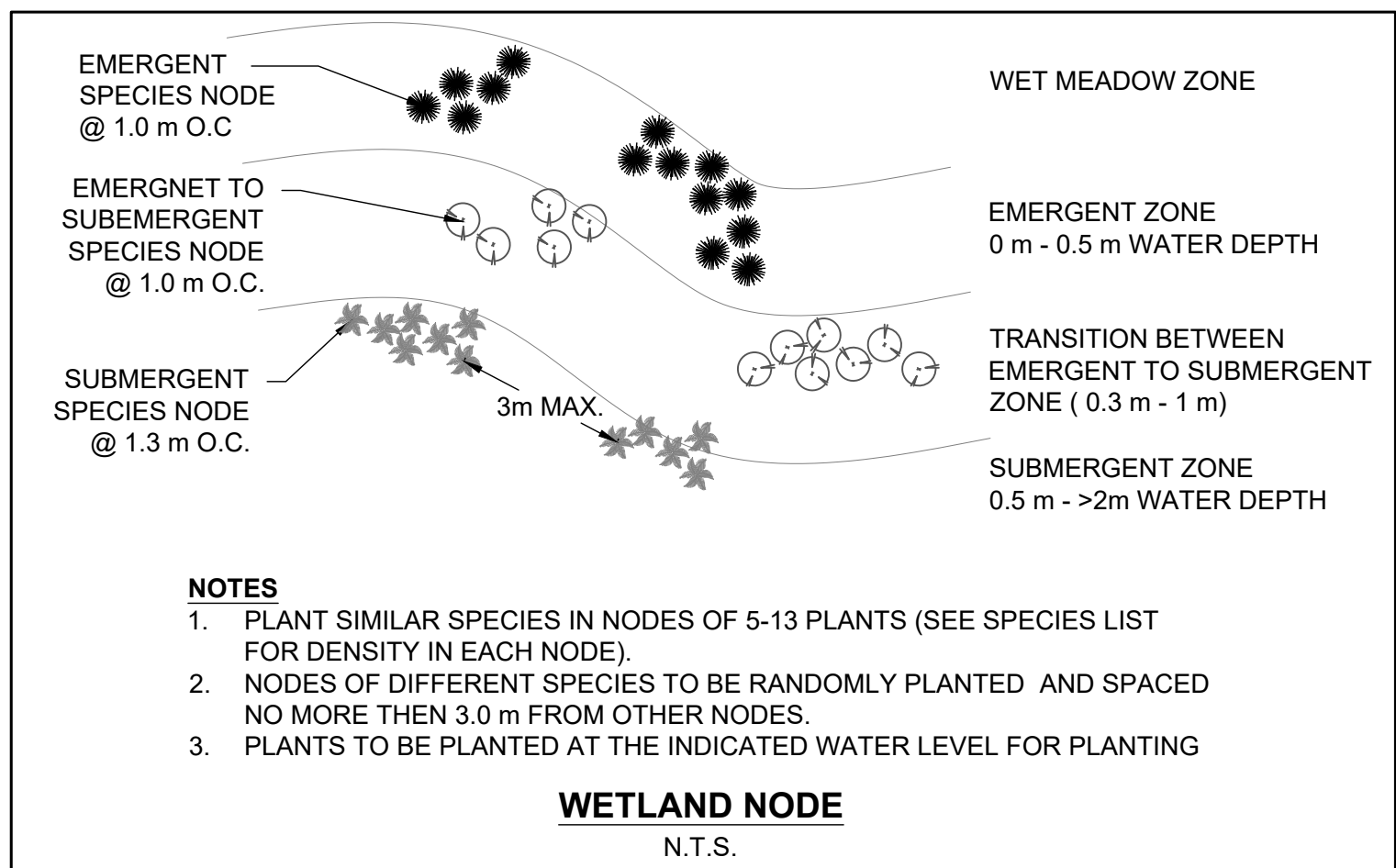


**LEGEND (PLANTINGS)**

- PLANTING MIX #1 (RES.)
- PLANTING MIX #2 (RES.)
- LIVE STAKES (DET.)
- BASKING LOG (DET.)
- STONE CLUSTER (WETLAND DET.)
- ROOT WAD (DET.)

**WETLAND #1 PLANTS**

BOTANICAL NAME	COMMON NAME	QTY	PREFERRED WATER DEPTH	CONDITION
<b>SUBMERGENT PLANT MIX = 544 PLANTS</b>				
<i>Ceratophyllum demersum</i>	COONTAIL	65	0.6 m	PLUG @130 cm O.C.
<i>Elodea canadensis</i>	COMMON WATERWEED	76	2.0 m	PLUG @130 cm O.C.
<i>Nuphar variegata</i>	BULLHEAD LILY	109	1.0 m	PLUG @130 cm O.C.
<i>Nymphaea odorata</i>	FRAGRANT WATER LILY	109	1.0 m	PLUG @130 cm O.C.
<i>Sagittaria rigida</i>	SESSILE-FRUITED ARROWHEAD	109	0.6 m	PLUG @130 cm O.C.
<i>Vallisneria americana</i>	TAPE-GRASS	76	2.0 m	PLUG @130 cm O.C.
<b>SUBMERGENT - EMERGENT PLANT MIX = 561 PLANTS</b>				
<i>Alisma triviale</i>	COMMON WATER-PLANTAIN	84	0.3 m	PLUG @100 cm O.C.
<i>Hydrocotyle americana</i>	MARSH PENNYWORT	79	0.3 m	PLUG @100 cm O.C.
<i>Pontederia cordata</i>	PICKERELWEED	112	0.3 m	PLUG @100 cm O.C.
<i>Sagittaria latifolia</i>	COMMON ARROWHEAD	95	0.3 m	PLUG @100 cm O.C.
<i>Sparganium eurycarpum</i>	GREAT BURREED	112	0.3 m	PLUG @100 cm O.C.
<i>Typha latifolia</i>	BROAD-LEAVED CATTAIL	79	0.3 m	PLUG @100 cm O.C.



**WETLAND #1 HABITAT RESTORATION FEATURES**

FEATURE	QTY.
BASKING LOG	17
ROOT WAD	29
STONE CLUSTER	27

NOTE: REFER TO DET-2 FOR HABITAT RESTORATION DETAILS.

**WETLAND #1 SEED MIX APPLICATIONS**

MIX	QTY.
RIPARIAN SEED MIX	2000 m <sup>2</sup>
NATURALIZED WETLAND SEED MIX	6000 m <sup>2</sup>

NOTE: REFER TO DET-1 FOR SEED MIX DETAILS.

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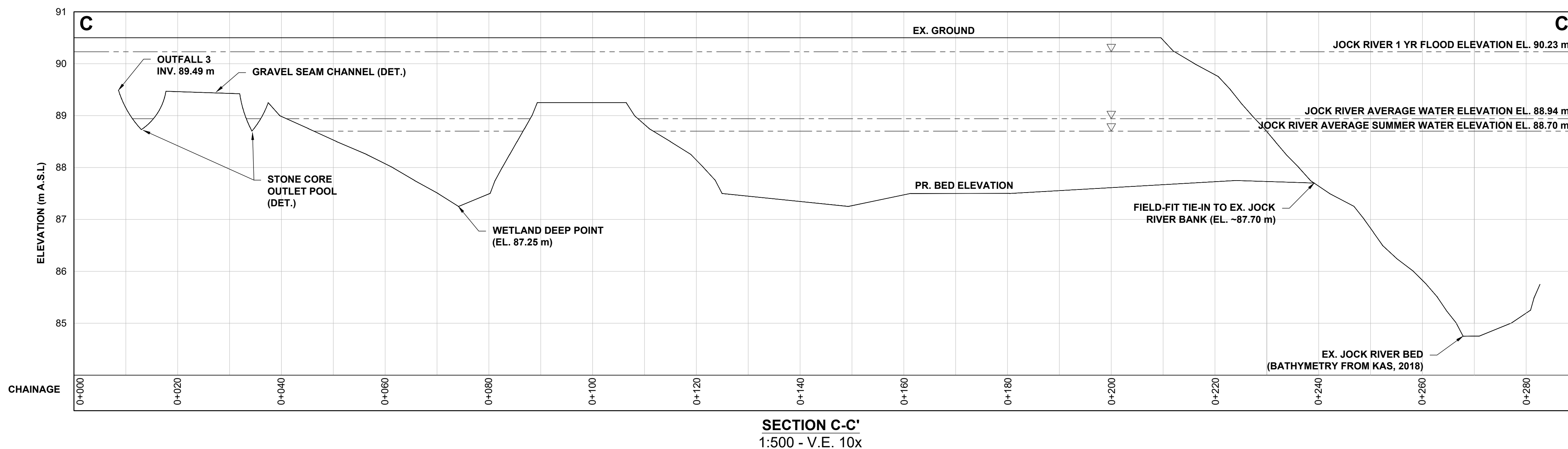
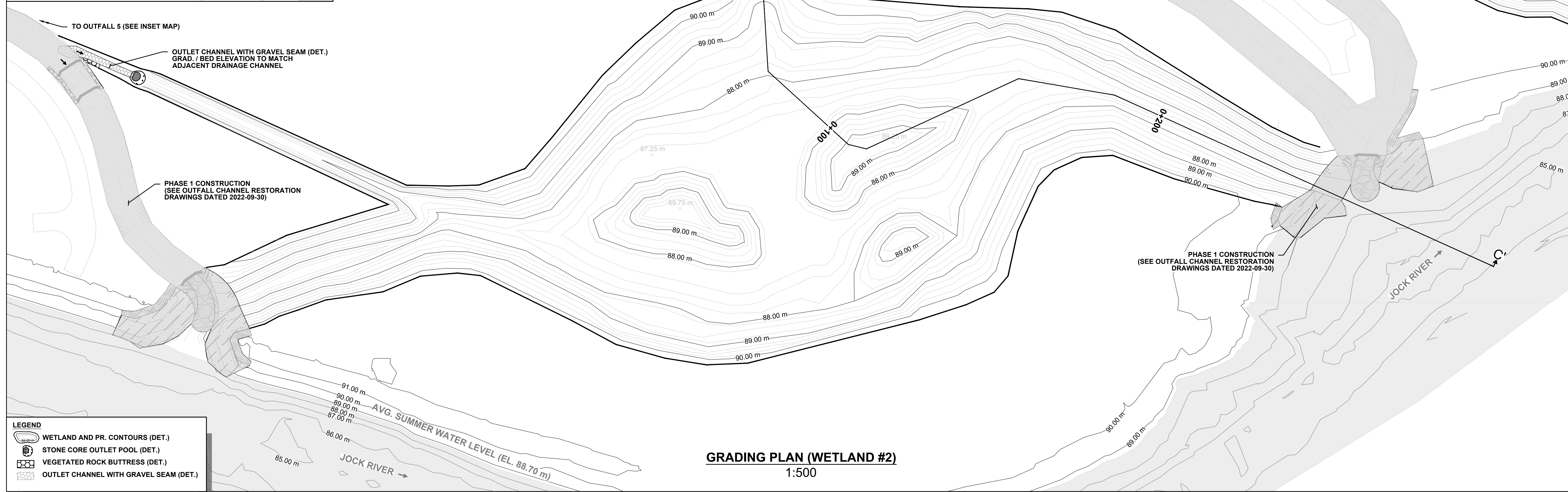
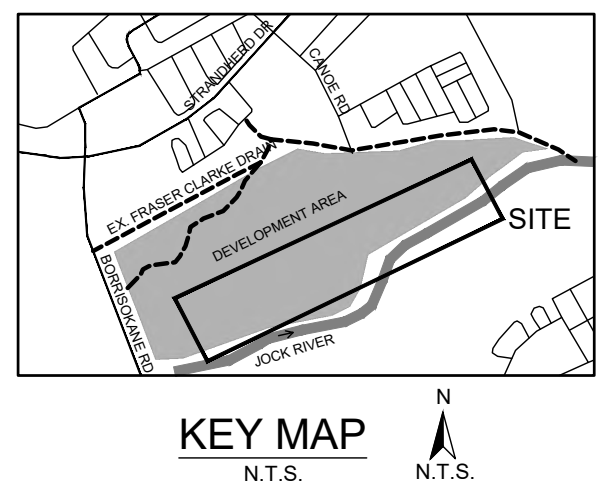
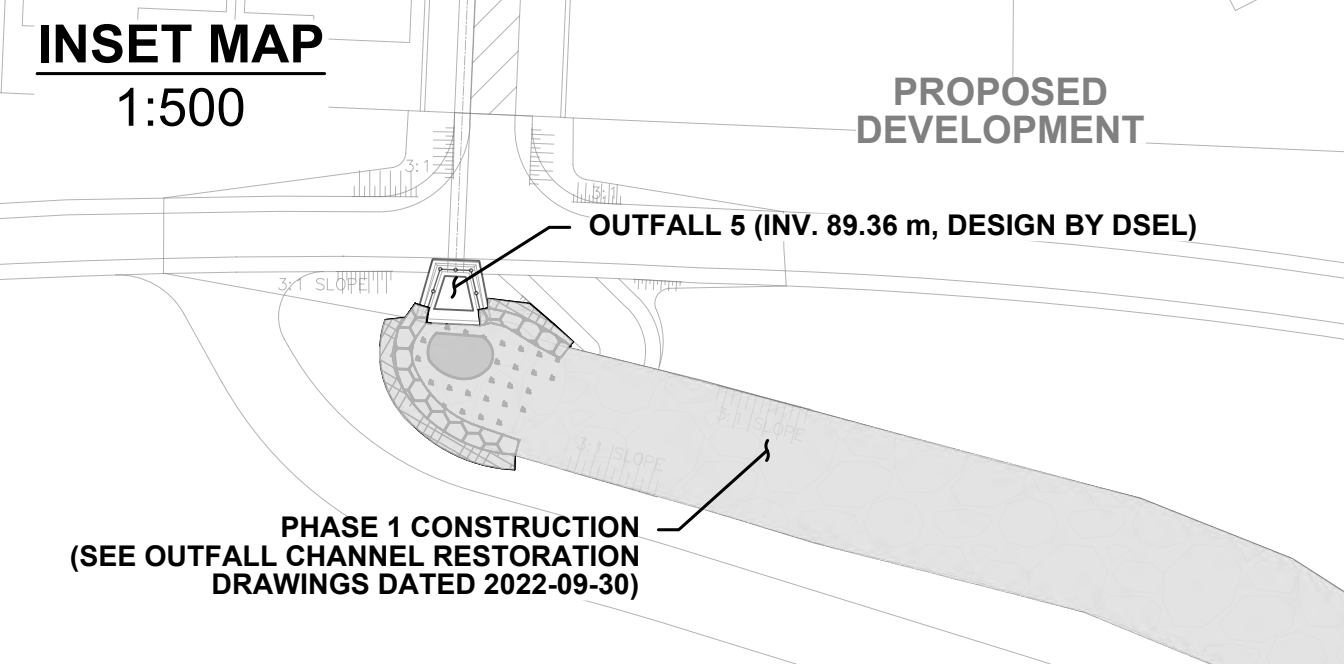
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JOCK RIVER  
WETLAND DESIGN (PHASE 2)  
RESTORATION PLAN (WETLAND #1)



- EXISTING GROUND TOPOGRAPHIC SURVEY BY JD BARNES LTD
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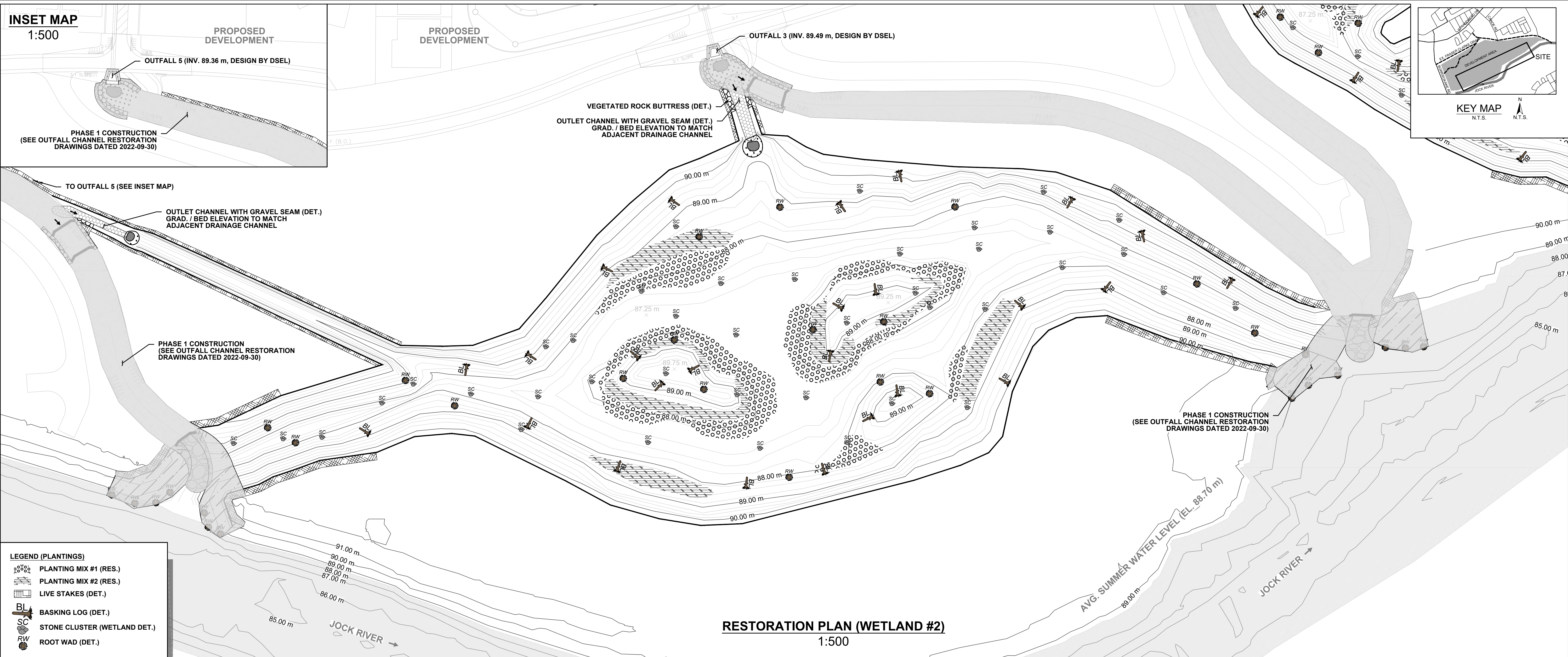
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**JOCK RIVER  
WETLAND DESIGN (PHASE 2)  
GRADING PLAN AND PROFILE  
(WETLAND #2)**

PROJECT No.: PN18056 DRAWING No.: GEO-2  
SCALE: AS NOTED SHEET 3 OF 10



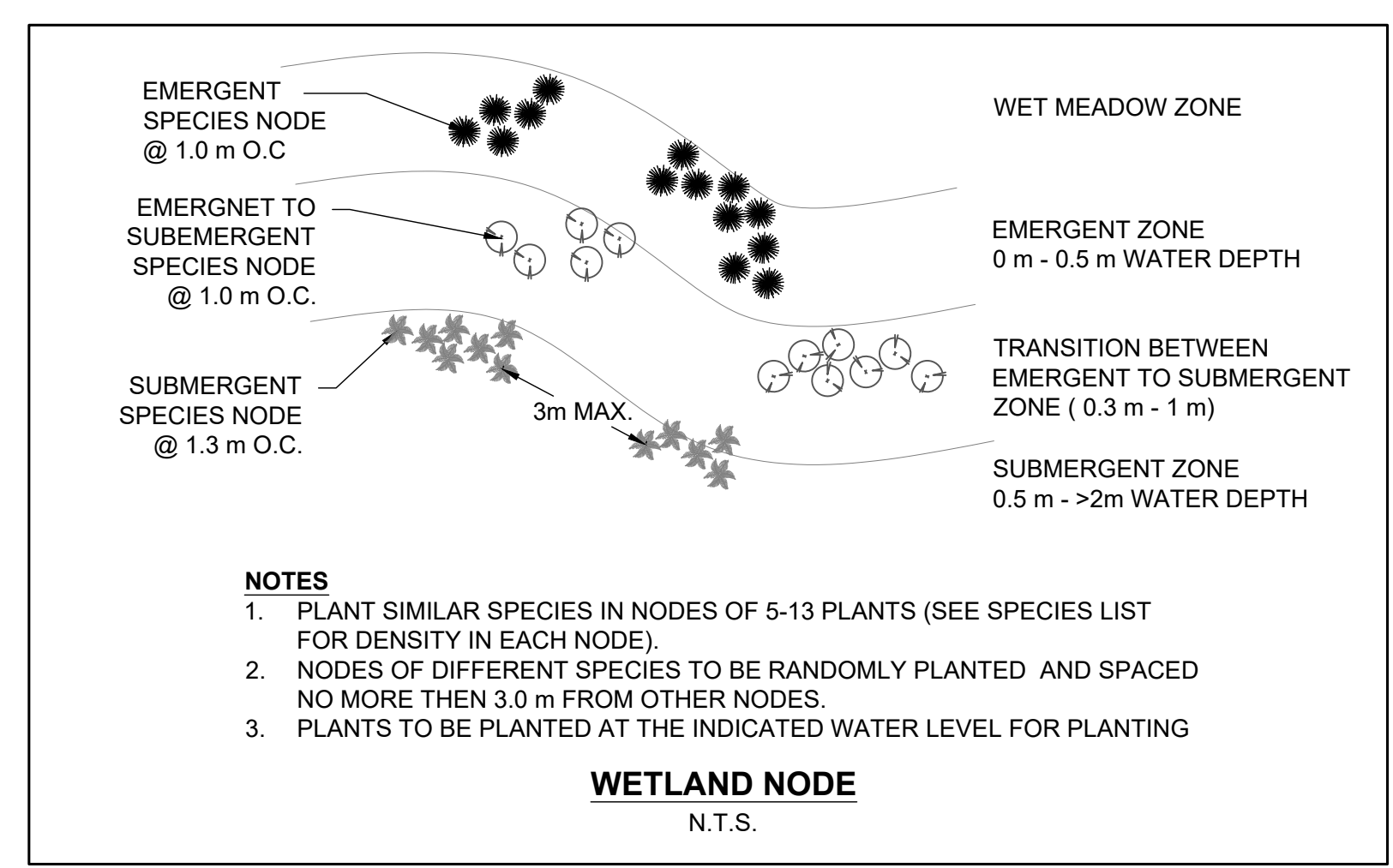
**RESTORATION PLAN (WETLAND #2)**  
1:500

**LEGEND (PLANTINGS)**

- PLANTING MIX #1 (RES.)
- PLANTING MIX #2 (RES.)
- LIVE STAKES (DET.)
- BASKING LOG (DET.)
- STONE CLUSTER (WETLAND DET.)
- ROOT WAD (DET.)

**WETLAND #2 PLANTS**

BOTANICAL NAME	COMMON NAME	QTY	PREFERRED WATER DEPTH	CONDITION
<b>SUBMERGENT PLANT MIX = 1094 PLANTS</b>				
<i>Ceratophyllum demersum</i>	COONTAIL	120	0.6 m	PLUG @130 cm O.C.
<i>Elodea canadensis</i>	COMMON WATERWEED	164	2.0 m	PLUG @130 cm O.C.
<i>Nuphar variegata</i>	BULLHEAD LILY	219	1.0 m	PLUG @130 cm O.C.
<i>Nymphaea odorata</i>	FRAGRANT WATER LILY	219	1.0 m	PLUG @130 cm O.C.
<i>Sagittaria rigida</i>	SESSILE-FRUITED ARROWHEAD	219	0.6 m	PLUG @130 cm O.C.
<i>Vallisneria americana</i>	TAPE-GRASS	153	2.0 m	PLUG @130 cm O.C.
<b>SUBMERGENT - EMERGENT PLANT MIX = 1015 PLANTS</b>				
<i>Alisma triviale</i>	COMMON WATER-PLANTAIN	152	0.3 m	PLUG @100 cm O.C.
<i>Hydrocotyle americana</i>	MARSH PENNYWORT	142	0.3 m	PLUG @100 cm O.C.
<i>Pontederia cordata</i>	PICKERELWEED	203	0.3 m	PLUG @100 cm O.C.
<i>Sagittaria latifolia</i>	COMMON ARROWHEAD	173	0.3 m	PLUG @100 cm O.C.
<i>Sparganium eurycarpum</i>	GREAT BURREED	203	0.3 m	PLUG @100 cm O.C.
<i>Typha latifolia</i>	BROAD-LEAVED CATTAIL	142	0.3 m	PLUG @100 cm O.C.



**WETLAND #2 HABITAT RESTORATION FEATURES**

FEATURE	QTY.
BASKING LOG	25
ROOT WAD	33
STONE CLUSTER	40

NOTE: REFER TO DET-2 FOR HABITAT RESTORATION DETAILS.

**WETLAND #2 SEED MIX APPLICATIONS**

MIX	QTY.
RIPARIAN SEED MIX	4600 m <sup>2</sup>
NATURALIZED WETLAND SEED MIX	13800 m <sup>2</sup>

NOTE: REFER TO DET-1 FOR SEED MIX DETAILS.

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DRAWN BY: B.M.		DATE: 2023-03-07	

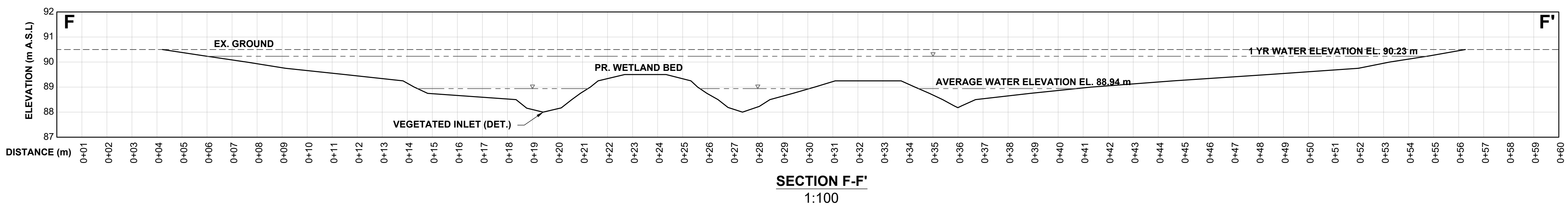
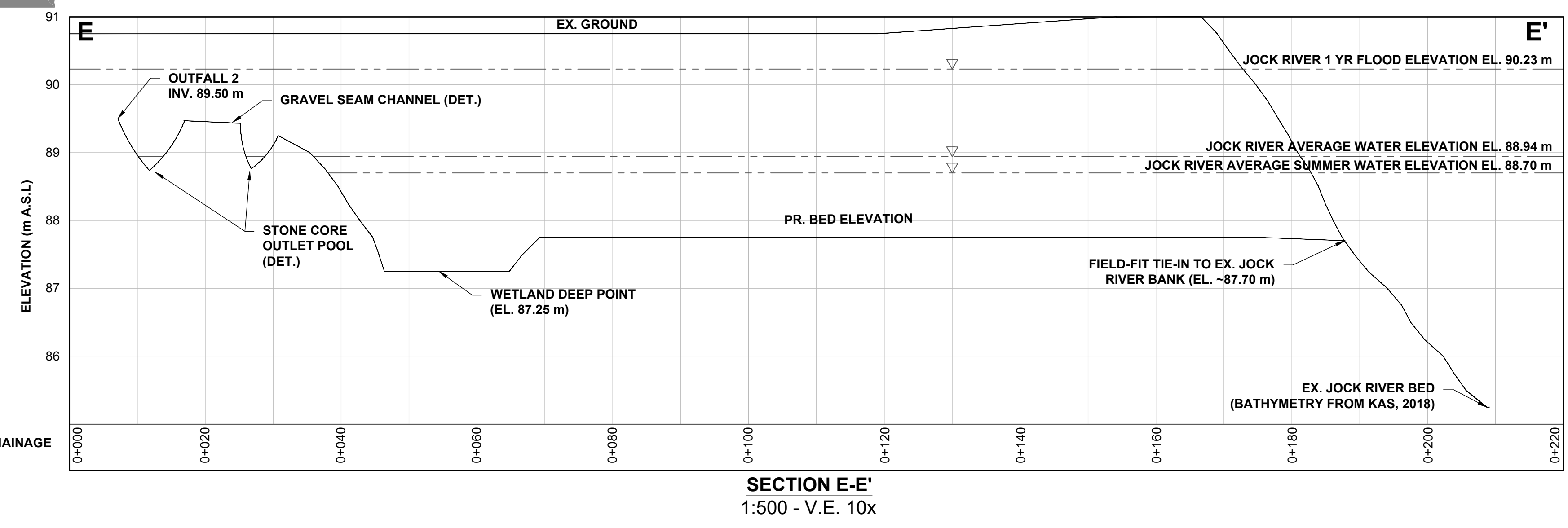
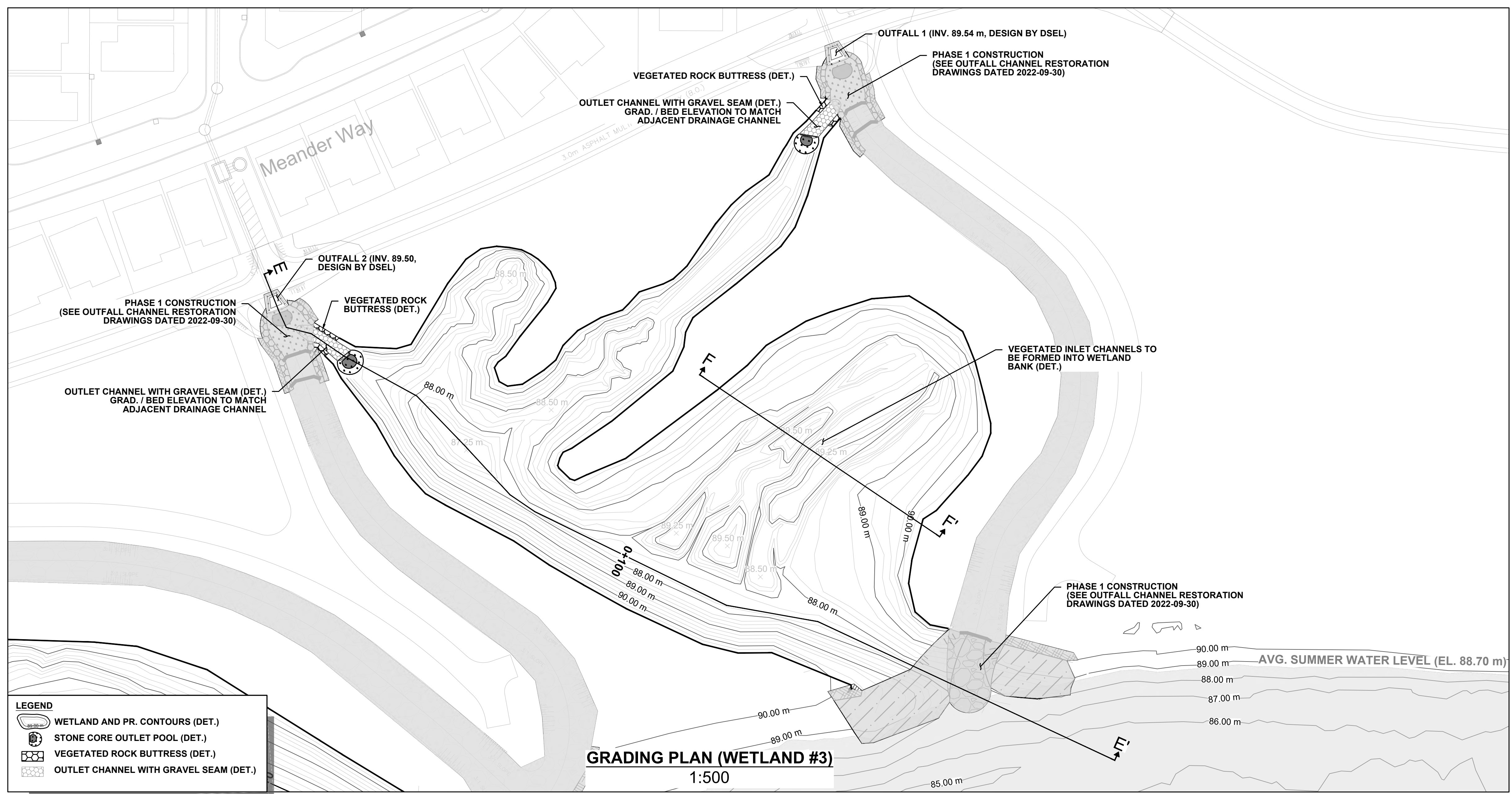
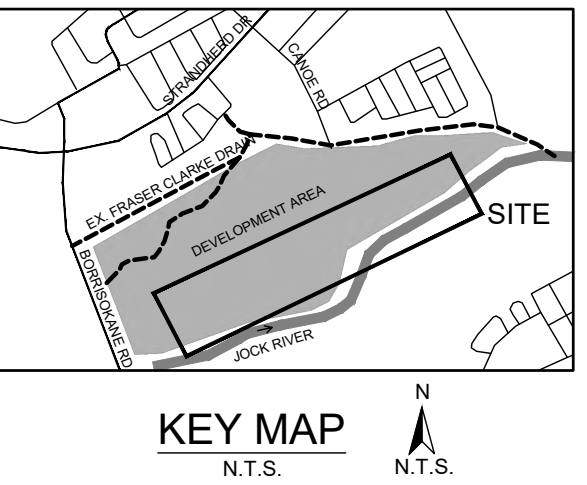
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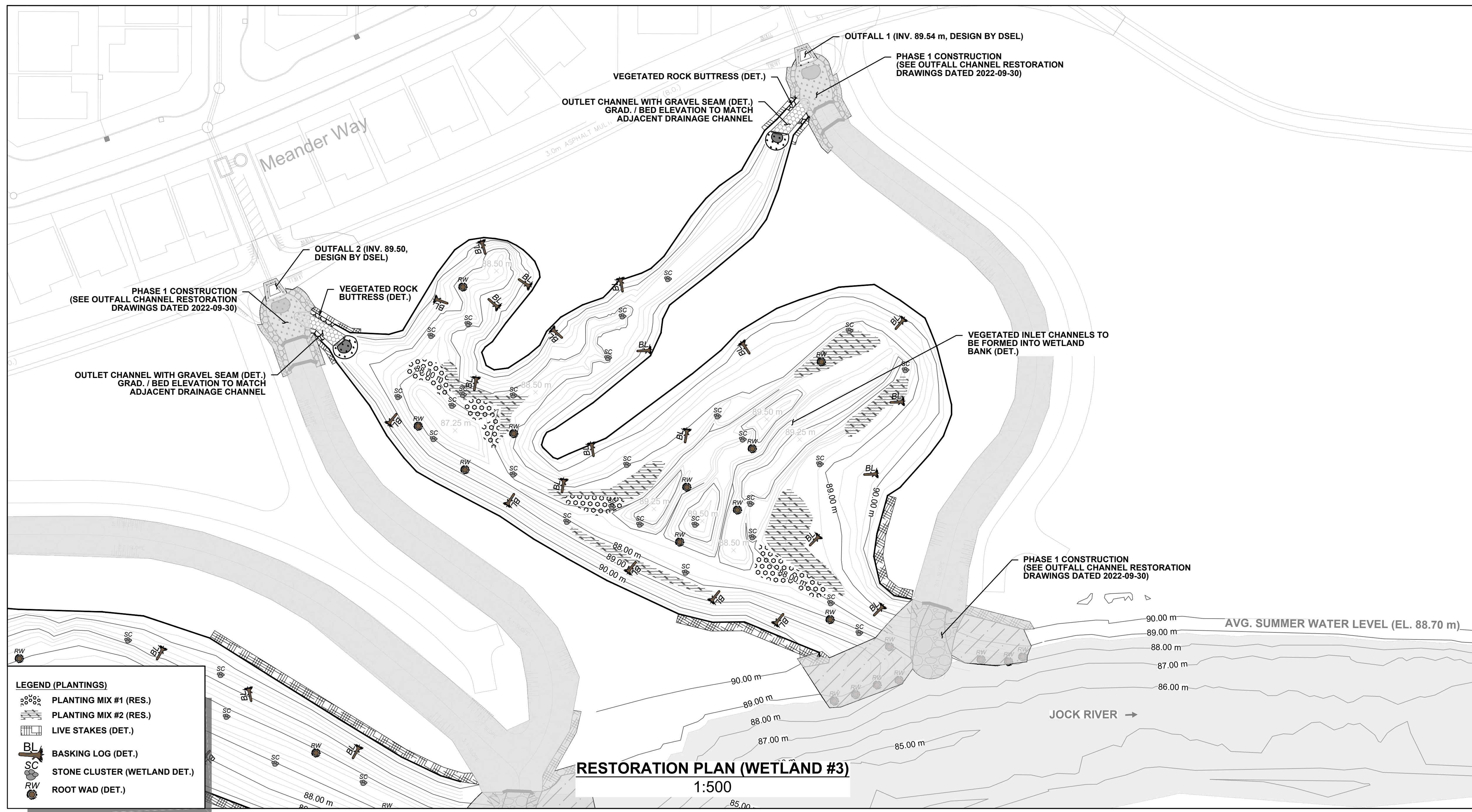
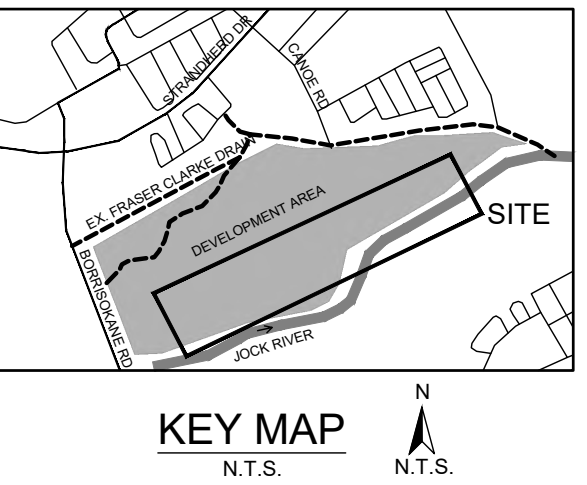
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**WETLAND DESIGN (PHASE 2)  
 GRADING PLAN AND PROFILE  
 (WETLAND #3)**



**LEGEND (PLANTINGS)**

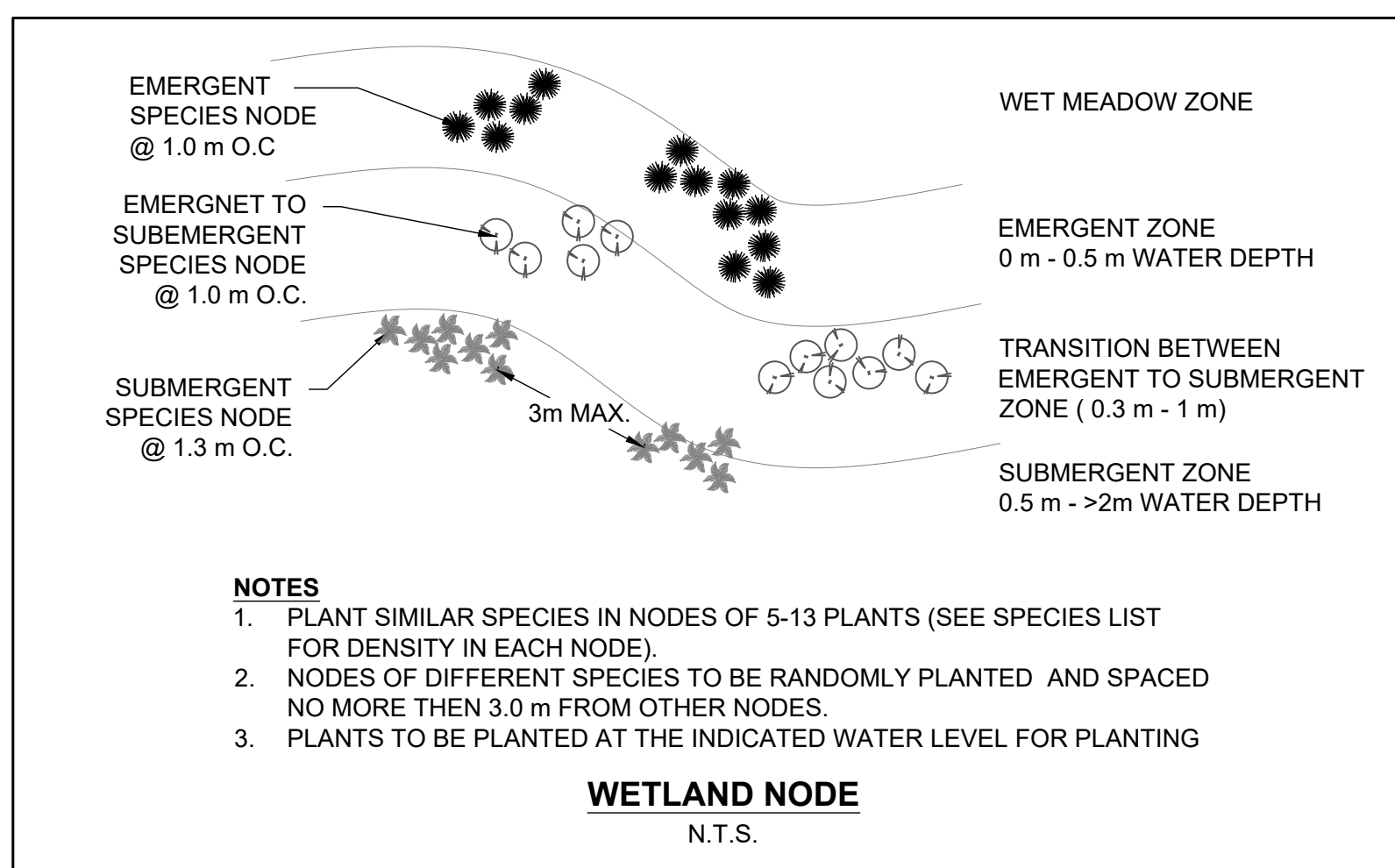
- PLANTING MIX #1 (RES.)
- PLANTING MIX #2 (RES.)
- LIVE STAKES (DET.)
- BASKING LOG (DET.)
- STONE CLUSTER (WETLAND DET.)
- ROOT WAD (DET.)

**RESTORATION PLAN (WETLAND #3)**  
1:500

- EXISTING GROUND TOPOGRAPHIC SURVEY BY JD BARNES LTD
- JOCK RIVER BATHYMETRIC SURVEY BY KILGOUR AND ASSOCIATES LTD (2018)
- MODELLED WATER LEVELS BY KILGOUR AND ASSOCIATES LTD (2022)

**WETLAND #3 PLANTS**

BOTANICAL NAME	COMMON NAME	QTY	PREFERRED WATER DEPTH	CONDITION
<b>SUBMERGENT PLANT MIX = 235 PLANTS</b>				
<i>Ceratophyllum demersum</i>	COONTAIL	26	0.6 m	PLUG @130 cm O.C.
<i>Elodea canadensis</i>	COMMON WATERWEED	33	2.0 m	PLUG @130 cm O.C.
<i>Nuphar variegata</i>	BULLHEAD LILY	47	1.0 m	PLUG @130 cm O.C.
<i>Nymphaea odorata</i>	FRAGRANT WATER LILY	47	1.0 m	PLUG @130 cm O.C.
<i>Sagittaria rigida</i>	SESSILE-FRUITED ARROWHEAD	47	0.6 m	PLUG @130 cm O.C.
<i>Vallisneria americana</i>	TAPE-GRASS	35	2.0 m	PLUG @130 cm O.C.
<b>SUBMERGENT - EMERGENT PLANT MIX = 771 PLANTS</b>				
<i>Alisma triviale</i>	COMMON WATER-PLANTAIN	116	0.3 m	PLUG @100 cm O.C.
<i>Hydrocotyle americana</i>	MARSH PENNYWORT	108	0.3 m	PLUG @100 cm O.C.
<i>Pontederia cordata</i>	PICKERELWEED	154	0.3 m	PLUG @100 cm O.C.
<i>Sagittaria latifolia</i>	COMMON ARROWHEAD	131	0.3 m	PLUG @100 cm O.C.
<i>Sparganium eurycarpum</i>	GREAT BURREED	154	0.3 m	PLUG @100 cm O.C.
<i>Typha latifolia</i>	BROAD-LEAVED CATTAIL	108	0.3 m	PLUG @100 cm O.C.



**WETLAND #3 HABITAT RESTORATION FEATURES**

FEATURE	QTY.
BASKING LOG	22
ROOT WAD	18
STONE CLUSTER	26

NOTE: REFER TO DET-2 FOR HABITAT RESTORATION DETAILS.

**WETLAND #3 SEED MIX APPLICATIONS**

MIX	QTY.
RIPARIAN SEED MIX	2075 m <sup>2</sup>
NATURALIZED WETLAND SEED MIX	6225 m <sup>2</sup>

NOTE: REFER TO DET-1 FOR SEED MIX DETAILS.

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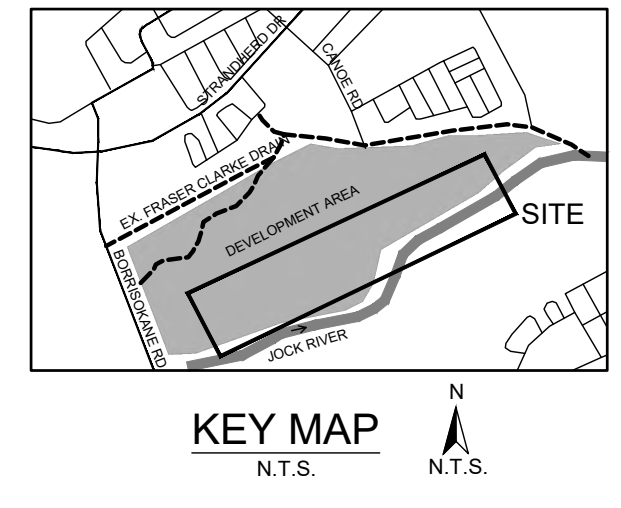
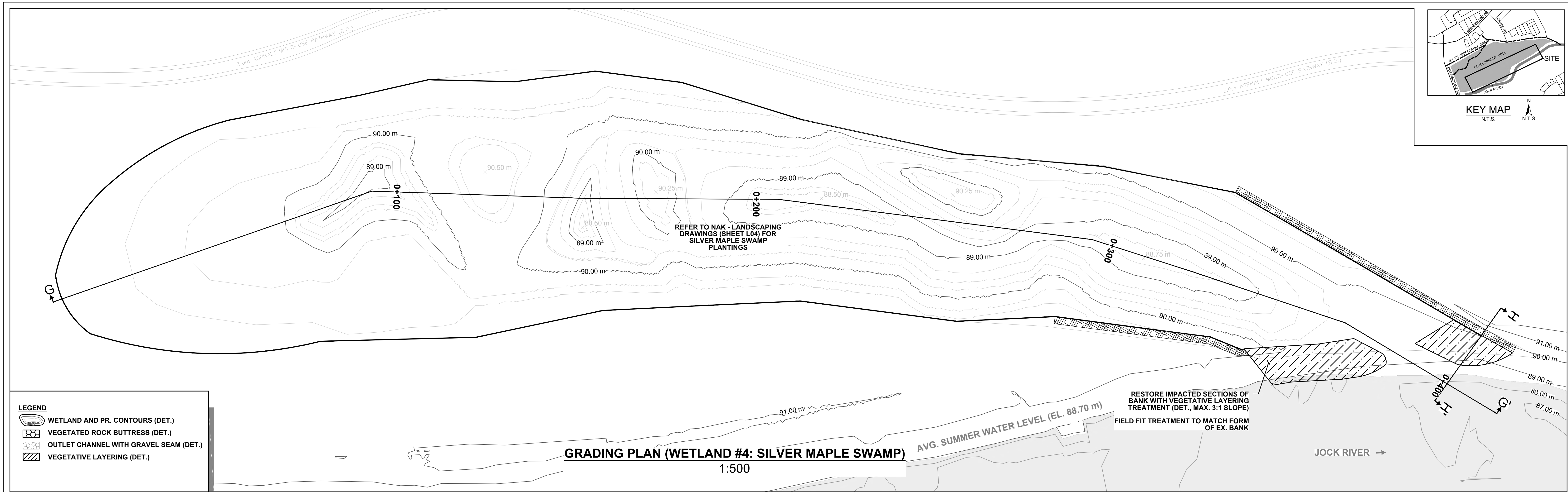
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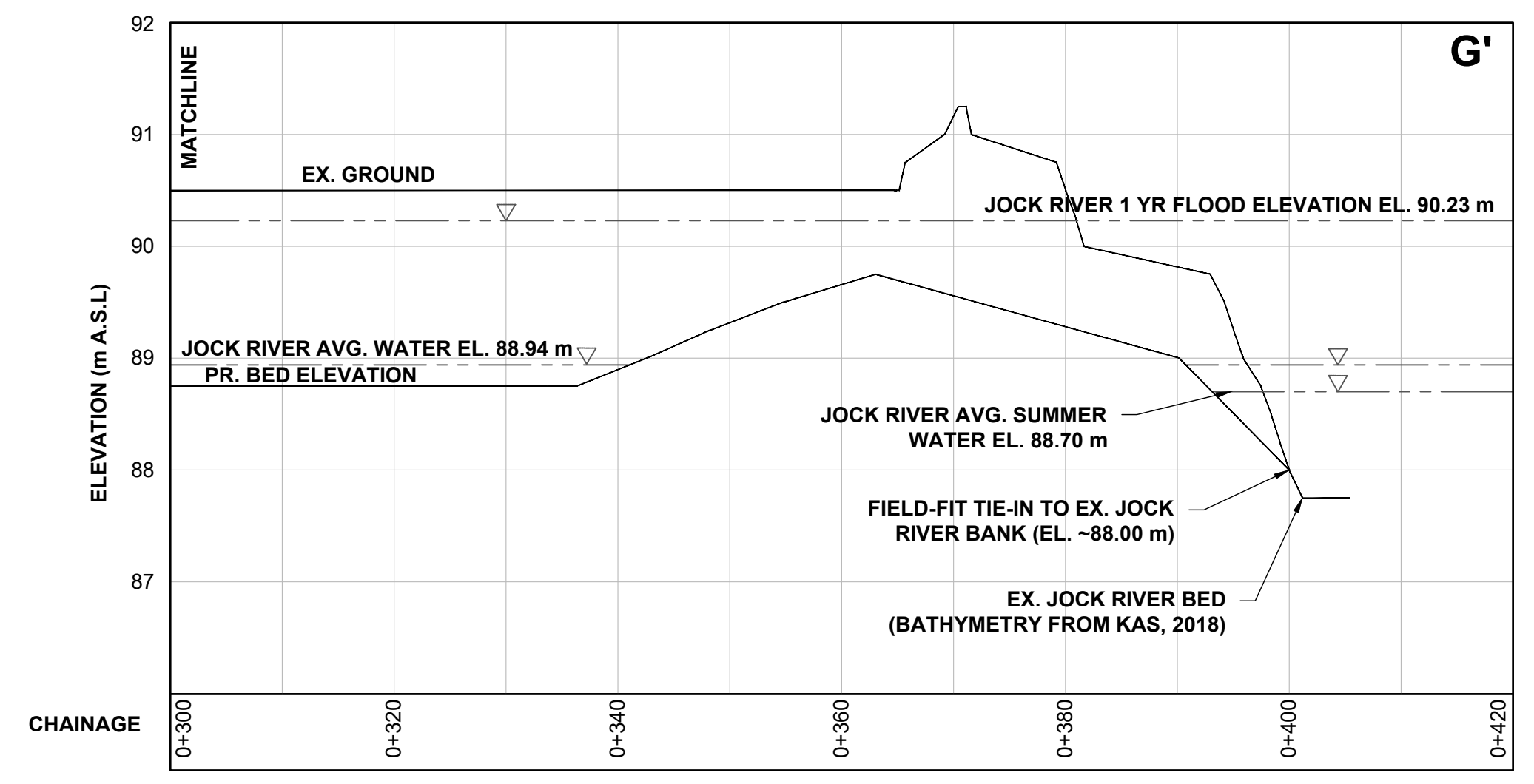
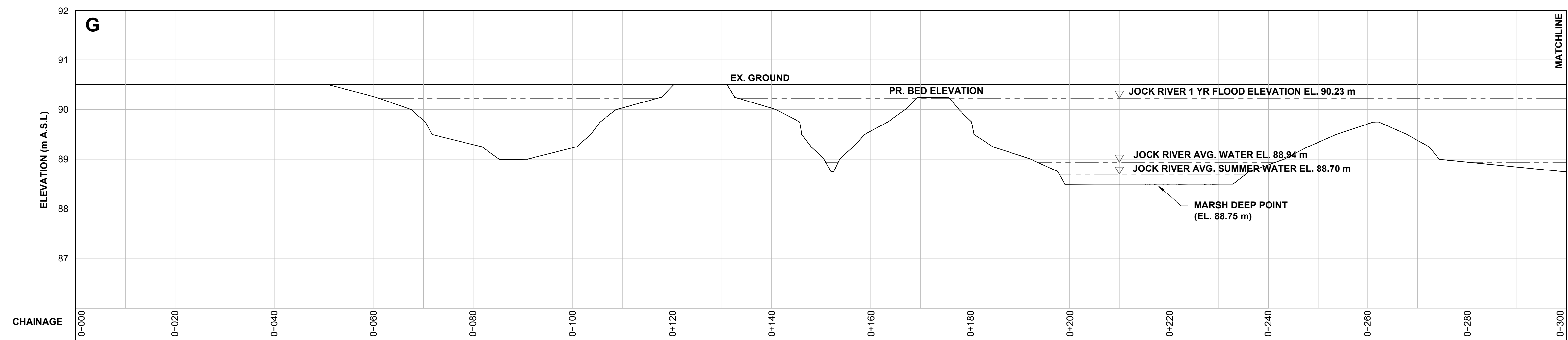
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**JOCK RIVER  
WETLAND DESIGN (PHASE 2)  
RESTORATION PLAN (WETLAND #3)**

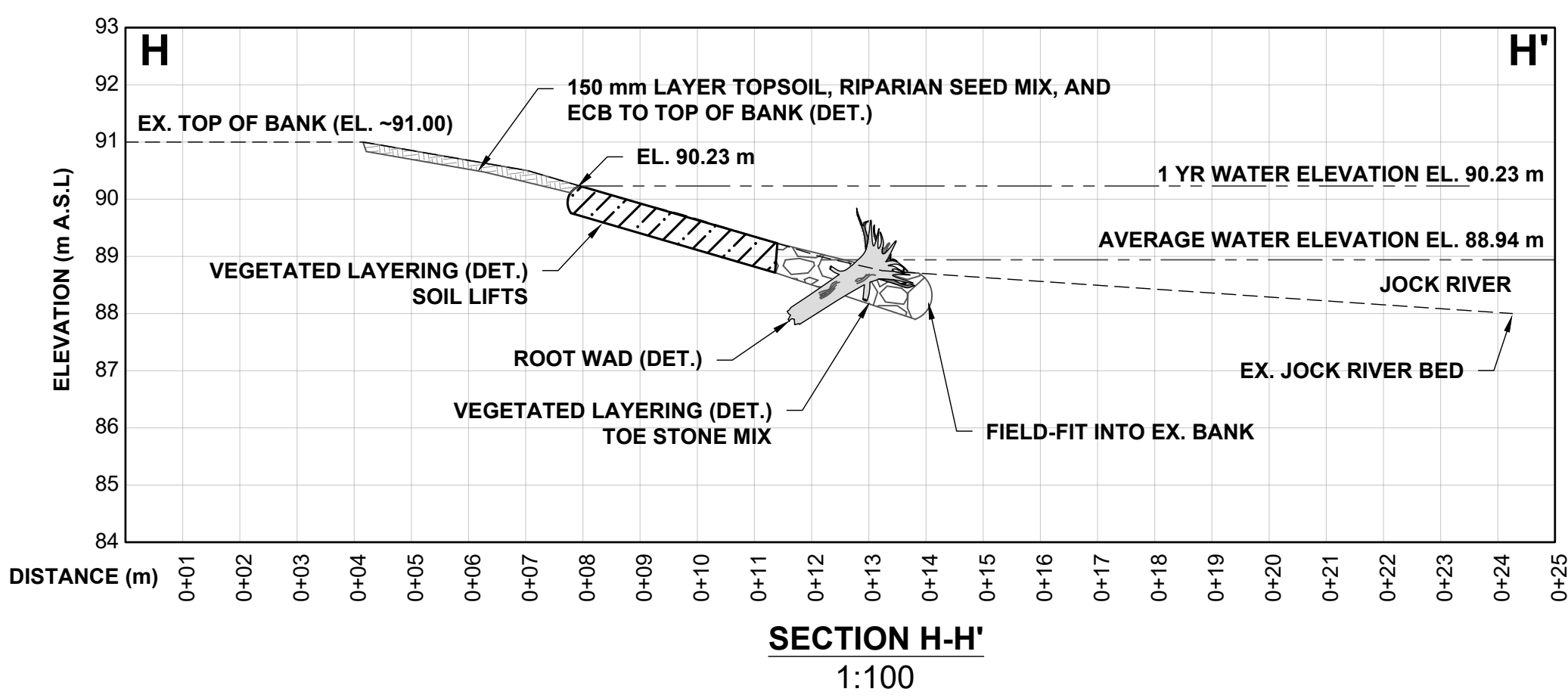


**LEGEND**

- WETLAND AND PR. CONTOURS (DET.)
- VEGETATED ROCK BUTTRESS (DET.)
- OUTLET CHANNEL WITH GRAVEL SEAM (DET.)
- VEGETATIVE LAYERING (DET.)



**SECTION G-G'**  
1:500 - V.E. 10x



**SECTION H-H'**  
1:100

- EXISTING GROUND TOPOGRAPHIC SURVEY BY JD BARNES LTD
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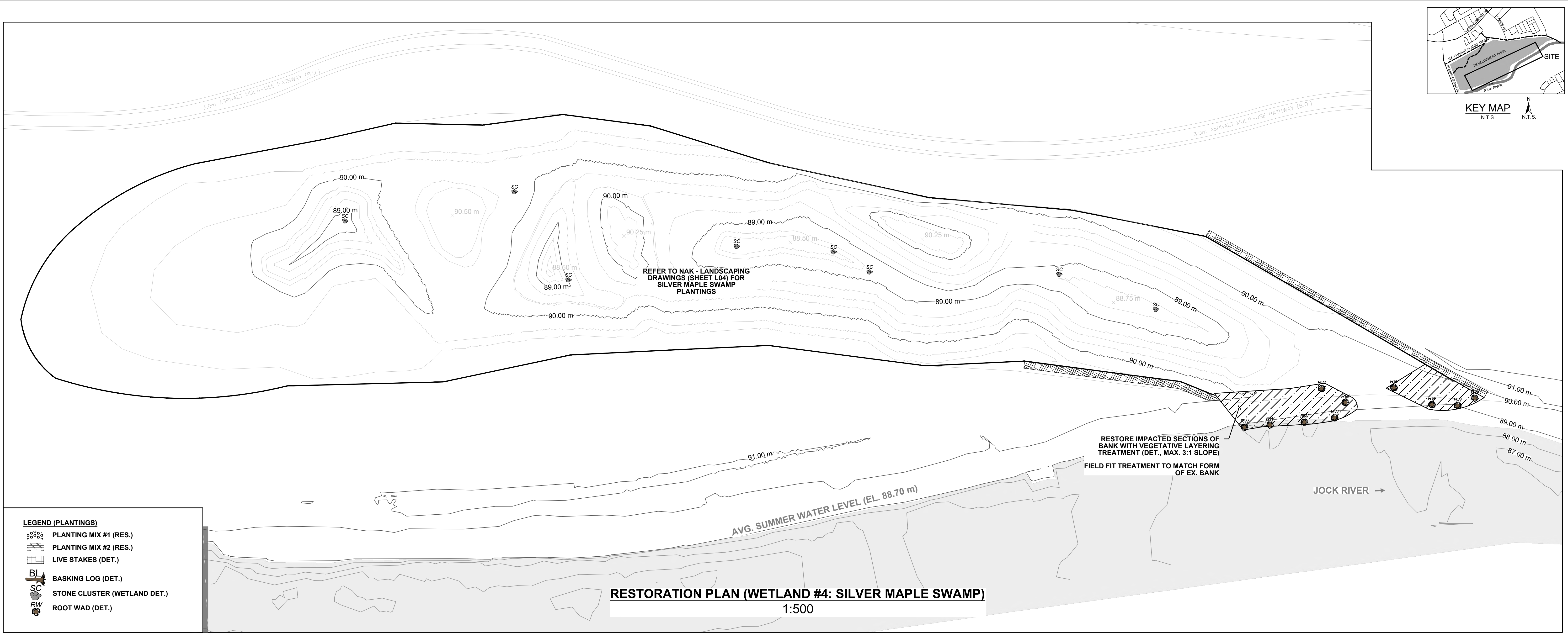
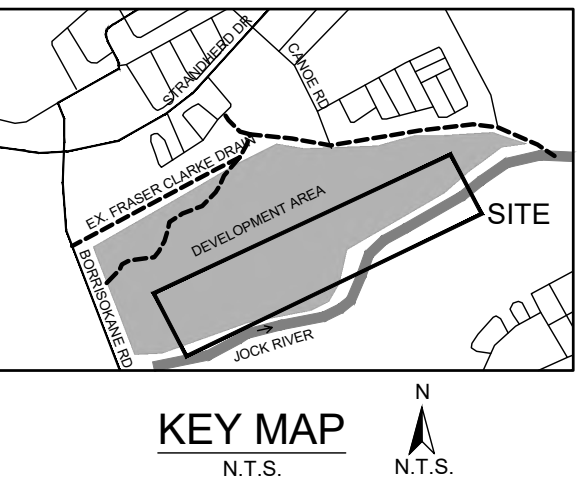
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BARRHAVEN CONSERVANCY EAST  
CITY OF OTTAWA

**JOCK RIVER  
WETLAND DESIGN (PHASE 2)  
GRADING PLAN AND PROFILE  
(WETLAND #4 - SILVER MAPLE SWAMP)**

PROJECT No.: PN18056 DRAWING No.: GEO-4  
SCALE: AS NOTED SHEET 7 OF 10



**LEGEND (PLANTINGS)**

	PLANTING MIX #1 (RES.)
	PLANTING MIX #2 (RES.)
	LIVE STAKES (DET.)
	BASKING LOG (DET.)
	STONE CLUSTER (WETLAND DET.)
	ROOT WAD (DET.)

**WETLAND #4 HABITAT RESTORATION FEATURES**

FEATURE	QTY.
ROOT WAD	10
STONE CLUSTER	8

NOTE: REFER TO DET-2 FOR HABITAT RESTORATION DETAILS.

**WETLAND #4 SEED MIX APPLICATIONS**

MIX	QTY.
RIPARIAN SEED MIX	4700 m <sup>2</sup>
NATURALIZED WETLAND SEED MIX	14100 m <sup>2</sup>

NOTE: REFER TO DET-1 FOR SEED MIX DETAILS.

- EXISTING GROUND TOPOGRAPHIC SURVEY BY JD BARNES LTD
- JOCK RIVER BATHYMETRIC SURVEY BY KILGOUR AND ASSOCIATES LTD (2018)
- MODELLED WATER LEVELS BY KILGOUR AND ASSOCIATES LTD (2022)

#	DATE	BY	REVISIONS
3.	2023-03-07	BM	DESIGN TRANSMITTAL FOR INTERNAL COORDINATION
2.	2022-09-29	BM	DESIGN TRANSMITTAL FOR INTERNAL COORDINATION
1.	2022-09-14	BM	DESIGN CONCEPT SUBMISSION #1

DESIGNED BY: P.V.      CHECKED BY: P.V.  
 DRAWN BY: B.M.      DATE: 2023-03-07

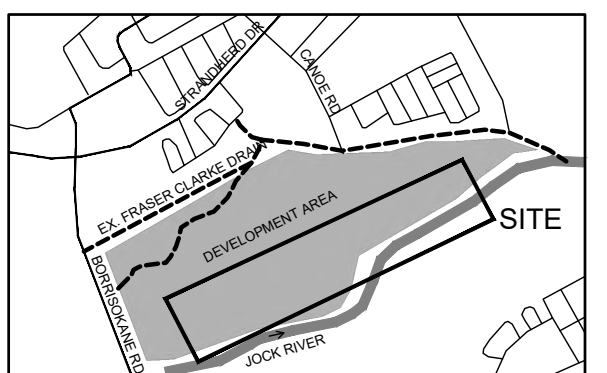
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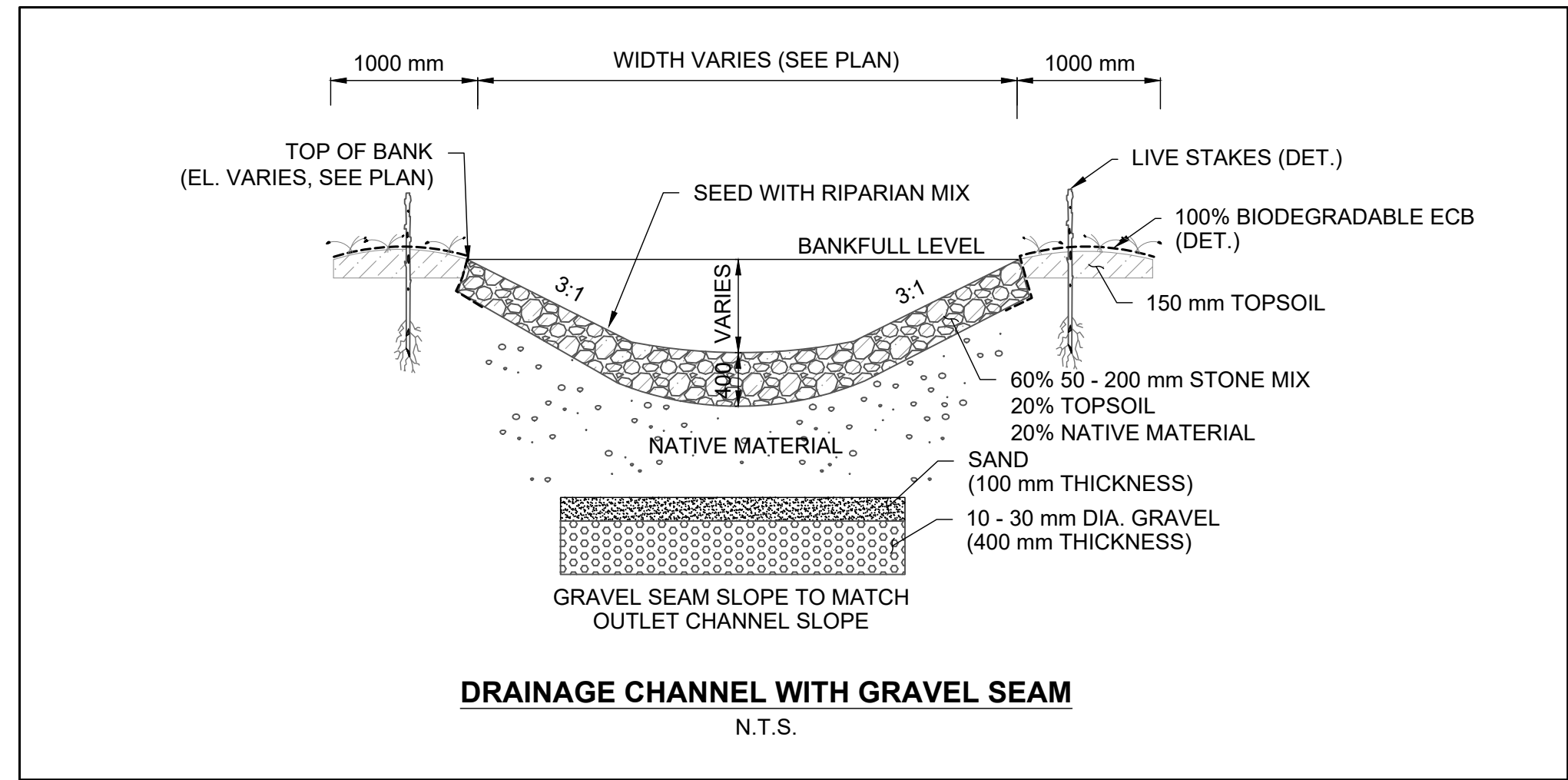
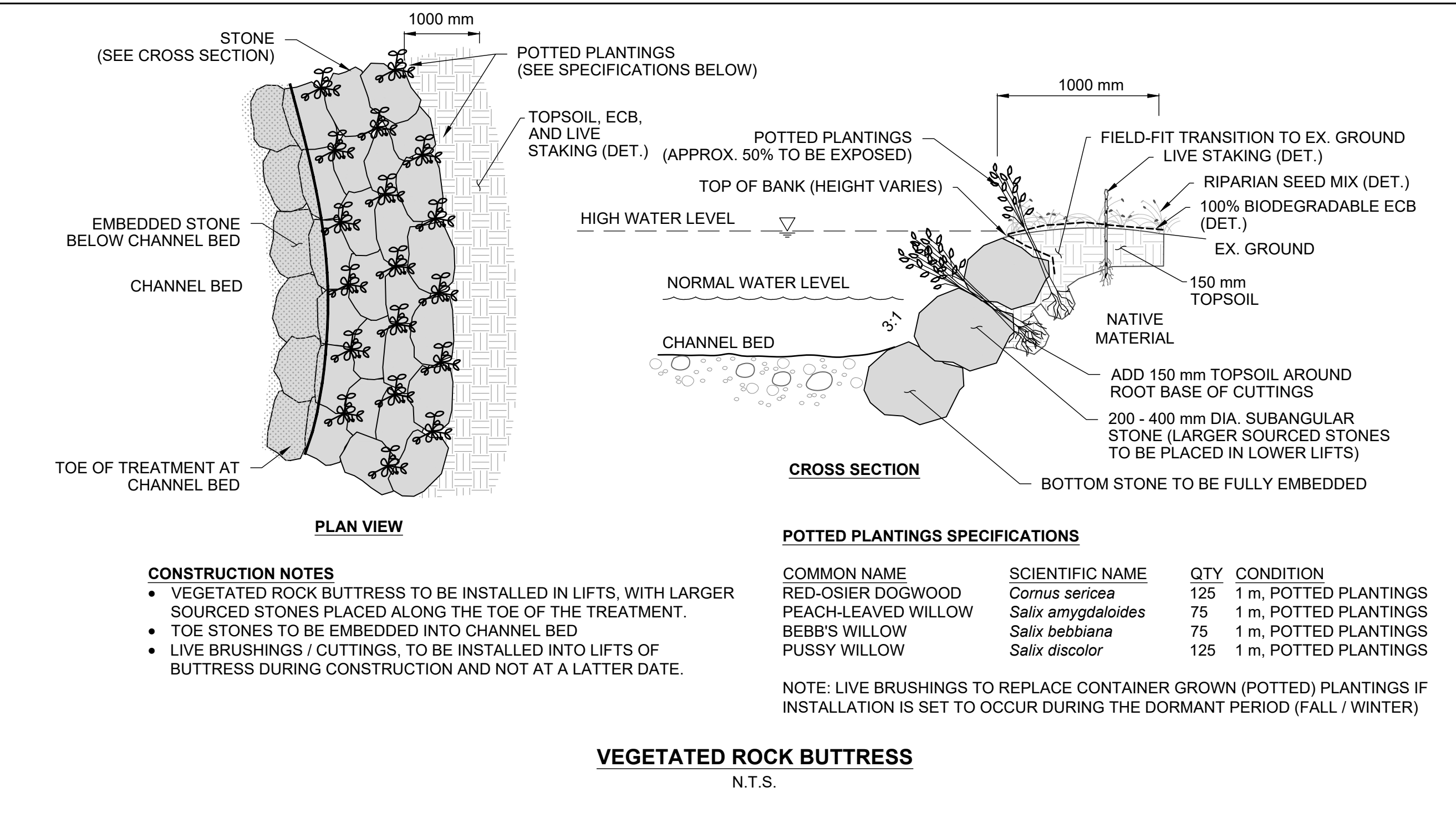
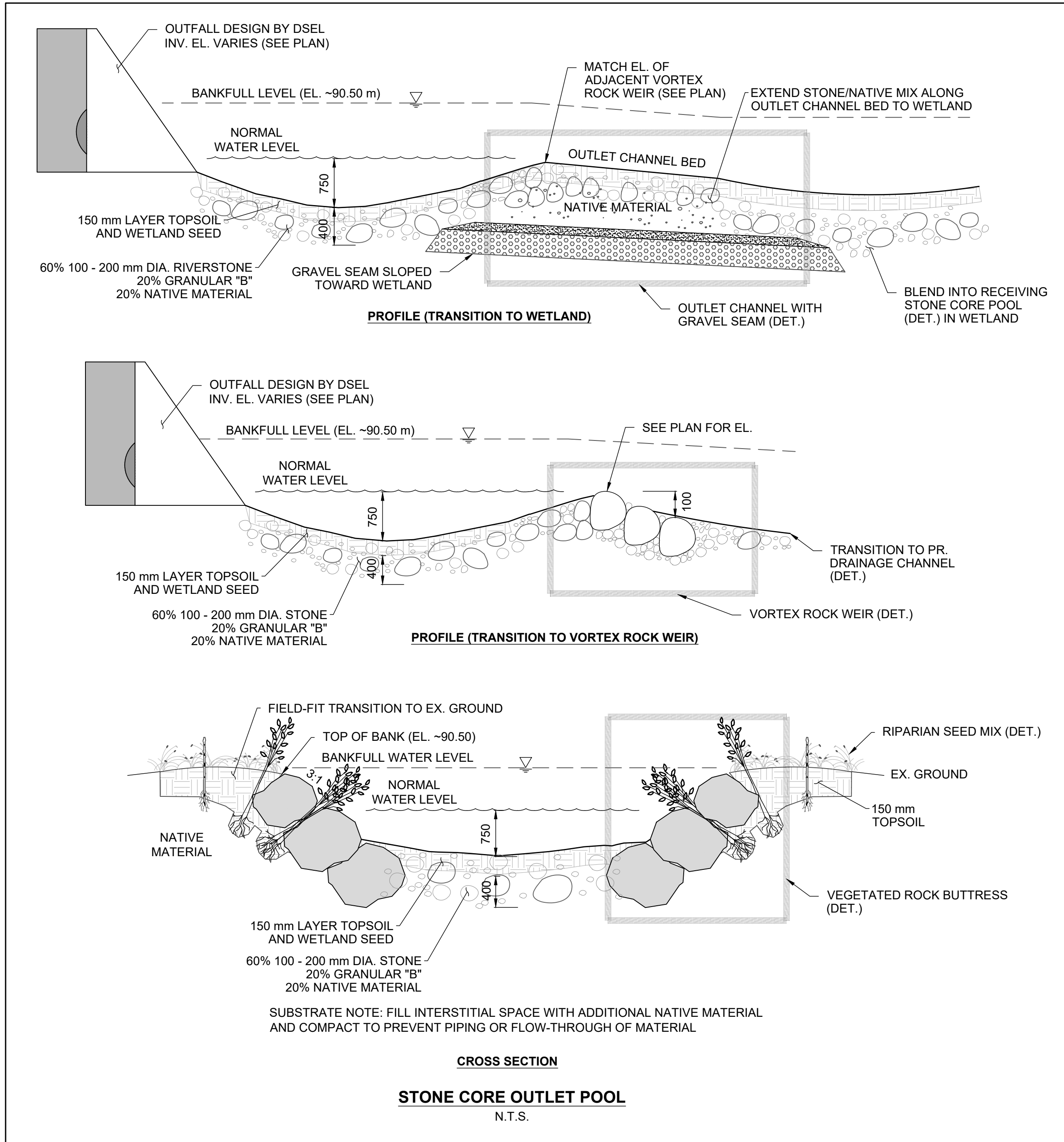
BARRHAVEN CONSERVANCY DEVELOPMENT CORPORATION      BARRHAVEN CONSERVANCY EAST CITY OF OTTAWA

**JOCK RIVER  
WETLAND DESIGN (PHASE 2)  
RESTORATION PLAN  
(WETLAND #4 / SILVER MAPLE SWAMP)**





KEY MAP  
N.T.S.



**NATURALIZED WETLAND MIX**

COMMON NAME	SPECIES	% OF MIX
BEBB'S SEDGE	<i>Carex bebbii</i>	5
BONESET	<i>Eupatorium perfoliatum</i>	1
FOWL BLUEGRASS	<i>Poa palustris</i>	25
FOX SEDGE	<i>Carex vulpinoidea</i>	40
DARK GREEN BULRUSH	<i>Scirpus atrovirens</i>	5
NODDING BUR MARIGOLD	<i>Bidens cernua</i>	1
PURPLE STEMMED ASTER	<i>Aster puniceus</i>	1
RICE CUTGRASS	<i>Leersia oryzoides</i>	7
SOFT RUSH	<i>Juncus effusus</i>	10
SPOTTED JOE PYE WEED	<i>Eupatorium maculatum</i>	1
STALK-GRAIN SEDGE	<i>Carex stipata</i>	2
SWAMP MILKWEED	<i>Asclepias incarnata</i>	1
TALL MANNAGRASS	<i>Glyceria grandis</i>	1

**NOTES**

- FOR PLACEMENT ALONG BED AND DEEPER SECTIONS OF WETLAND (ASSUMED TO CONSTITUTE 75% OF WETLAND SURFACE).
- APPLY SEED MIX AT A RATE OF 25 KG PER HECTARE.
- SEEDING SHALL OVERLAP ADJACENT GROUND COVER BY 300 mm.
- APPLY COMMON OAT (AVENA SATIVA) NURSE CROP AT A RATE OF 22 KG PER HECTARE.
- WATER SOIL AFTER SEED APPLICATION.
- DEPENDING ON AVAILABILITY, ALTERNATIVE NATIVE WETLAND SEED MIXES MAY BE APPROVED FOR USE BY DESIGNER

**RIPARIAN SEED MIX**

COMMON NAME	SPECIES	% OF MIX
FOWL MANNA GRASS	<i>Glyceria striata</i>	2
FOWL BLUEGRASS	<i>Poa palustris</i>	30
FOX SEDGE	<i>Carex vulpinoidea</i>	30
PATH RUSH	<i>Juncus tenuis</i>	8
VIRGINIA WILD RYE	<i>Elymus virginicus</i>	30

**NOTES**

- FOR PLACEMENT ALONG BANKS OF WETLAND (ASSUMED TO CONSTITUTE 25% OF TOTAL WETLAND SURFACE AREA)
- APPLY SEED MIX AT A RATE OF 25 kg PER HECTARE.
- SEEDING SHALL OVERLAP ADJACENT GROUND COVER BY 300 mm.
- APPLY COMMON OAT (AVENA SATIVA) NURSE CROP AT A RATE OF 22 kg PER HECTARE.
- WATER SOIL AFTER SEED APPLICATION.
- DEPENDING ON AVAILABILITY, ALTERNATIVE NATIVE RIPARIAN SEED MIXES MAY BE APPROVED FOR USE BY DESIGNER

**EROSION CONTROL BLANKET SPECIFICATIONS**

- A BIODEGRADABLE EROSION CONTROL BLANKET (ECB) SHALL BE INSTALLED ON ALL DISTURBED NATURAL SURFACES FOLLOWING THE PLACEMENT OF TOPSOIL AND APPLICATION OF THE NATIVE SEED MIX.
- THE ECB MUST BE CONSTRUCTED OF 100% WOVEN COCONUT FIBRE (E.G., COIR) OR STRAW MAT WITHIN A GEOJUTE NETTING (TOP AND BOTTOM) WITH BIODEGRADABLE THREAD. NON-BIODEGRADABLE MATERIAL INCLUDING POLYPROPYLENE OR PLASTICS WITH A BIODEGRADABLE RATING ARE NOT ACCEPTABLE. THE MINIMUM WEIGHT OF THE ECB MUST BE 400 g/m<sup>2</sup> (12 oz./yd<sup>2</sup>).
- TO INSTALL, THE ECB MUST BE UNROLLED DOWNSLOPE OR IN DIRECTION OF WATER FLOW. ADJACENT ECBS SHOULD OVERLAP A MINIMUM OF 150 mm ALONG THE EDGES. AT THE END OF EACH ROLL, FOLD BACK 100 mm TO 200 mm OF THE ECB. OVERLAP THIS 100 mm TO 200 mm OVER THE START OF THE NEXT ROLL. SECURE THE TWO LAYERS TO THE GROUND SECURELY.
- BIODEGRADABLE OR TAPERED WOODEN STAKES SHALL BE USED TO SECURE THE BLANKET. STAKES SHALL BE INSTALLED AT THE SPACING RECOMMENDED BY THE ECB MANUFACTURER TO PREVENT SURFACE RUNOFF FROM ERODING THE UNDERLYING SOIL.

- EXISTING GROUND TOPOGRAPHIC SURVEY BY JD BARNES LTD
- JOCK RIVER BATHYMETRIC SURVEY BY KILGOUR AND ASSOCIATES LTD (2018)
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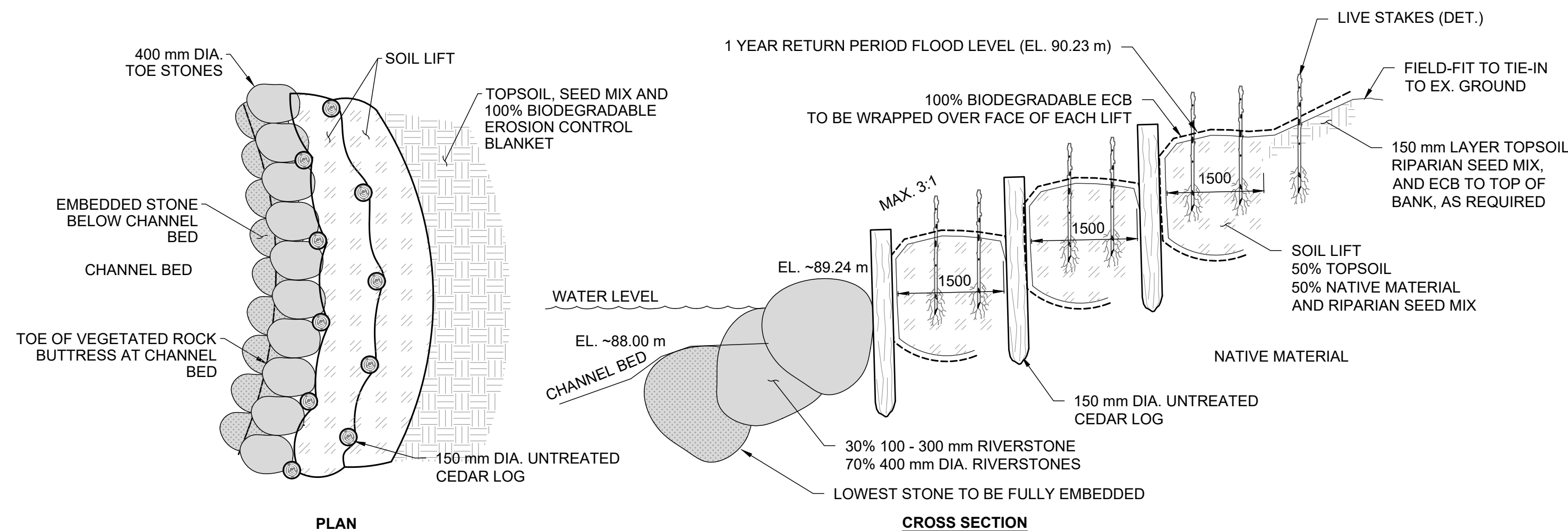
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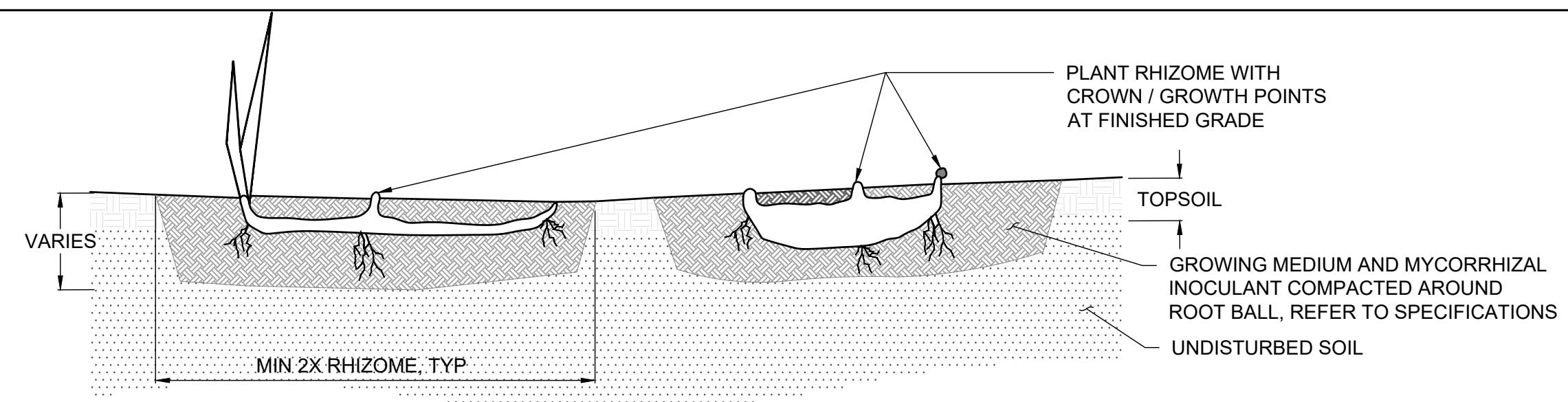
JOCK RIVER  
WETLAND DESIGN (PHASE 2)  
WETLAND RESTORATION DETAILS

PROJECT No.: PN18056 DRAWING No.: DET-1  
SCALE: AS NOTED SHEET 9 OF 10



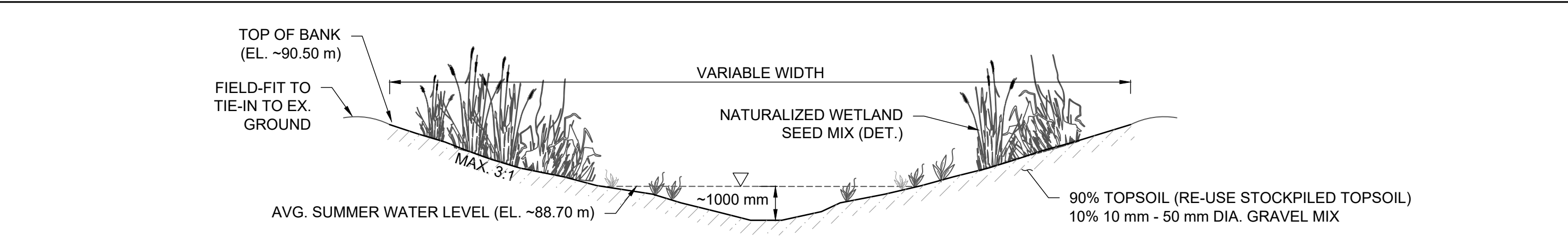
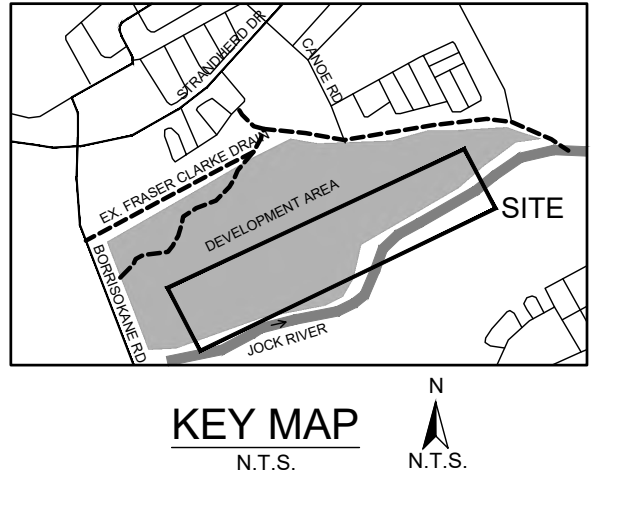
- PLAN**
- CROSS SECTION**
- NOTES**
- TREATMENT TO BE FORMED TO MATCH FORM OF EXISTING BANK. FIELD FIT WILL BE REQUIRED TO ENSURE SMOOTH TRANSITION BETWEEN CONSTRUCTED AND EXISTING BANKS.
  - PREFERRED GRADE FOR BANK TREATMENT IS 3:1 (WHERE POSSIBLE).
  - TOE STONES TO BE EMBEDDED INTO CHANNEL BED
  - LOGS TO BE INSTALLED INTO LIFTS OF SOIL DURING CONSTRUCTION AND NOT AT A LATER DATE
  - LIVE STAKE QUANTITIES PLACED ALONG FACE OF TREATMENT ARE SHOWN IN LIVE STAKE DETAIL

**VEGETATED LAYERING BANK TREATMENT**  
N.T.S.

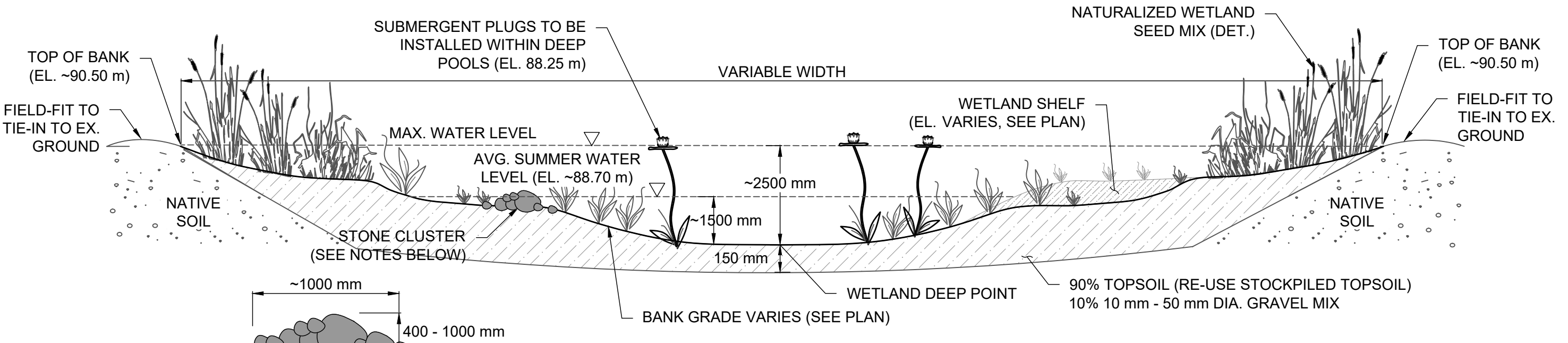


- NOTES**
- RHIZOME PLANTINGS MAY BE USED IN-PLACE OF PLUGS DEPENDING ON AVAILABILITY AND AS APPROVED BY THE DESIGNER.
  - ANY RHIZOMES FOUND TO BE DEAD, DEFECTIVE OR NOT IN A HEALTHY GROWING CONDITION WITHIN 2 YEARS OF PLANTING SHALL BE REPLACED AND RE-GUARANTEED FOR AN ADDITIONAL YEAR FROM THE DATE OF REPLACEMENT.
  - AT TIME OF PLANTING, PLANTS SHALL BE HEALTHY, VIGOROUS, AND FREE OF PESTS WITH A WELL DEVELOPED ROOT SYSTEM. NURSERY TAGS NEED TO BE REMOVED.
  - PLANTING DEPTH WILL VARY WITH SPECIES AND RHIZOME TYPE.

**RHIZOME PLANTING (PROVISIONAL)**  
N.T.S.

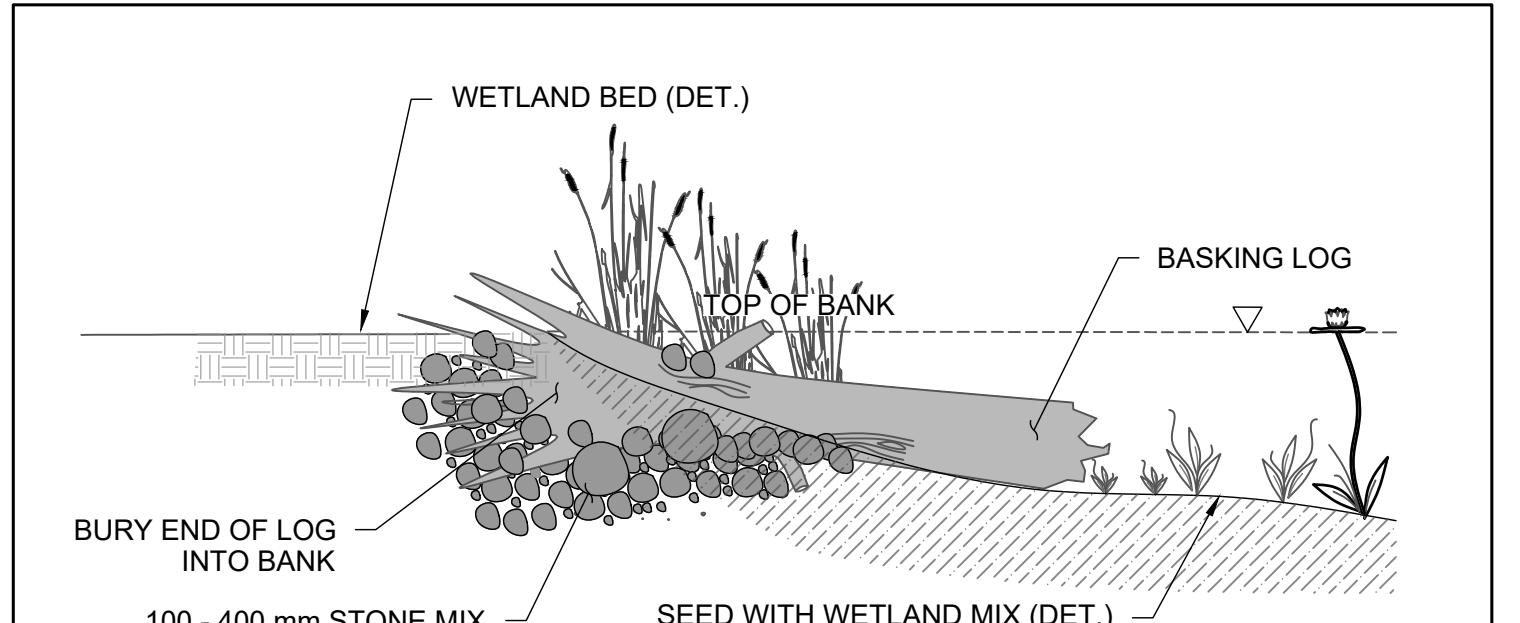


**CROSS SECTION (AT CONFLUENCE WITH JOCK RIVER)**



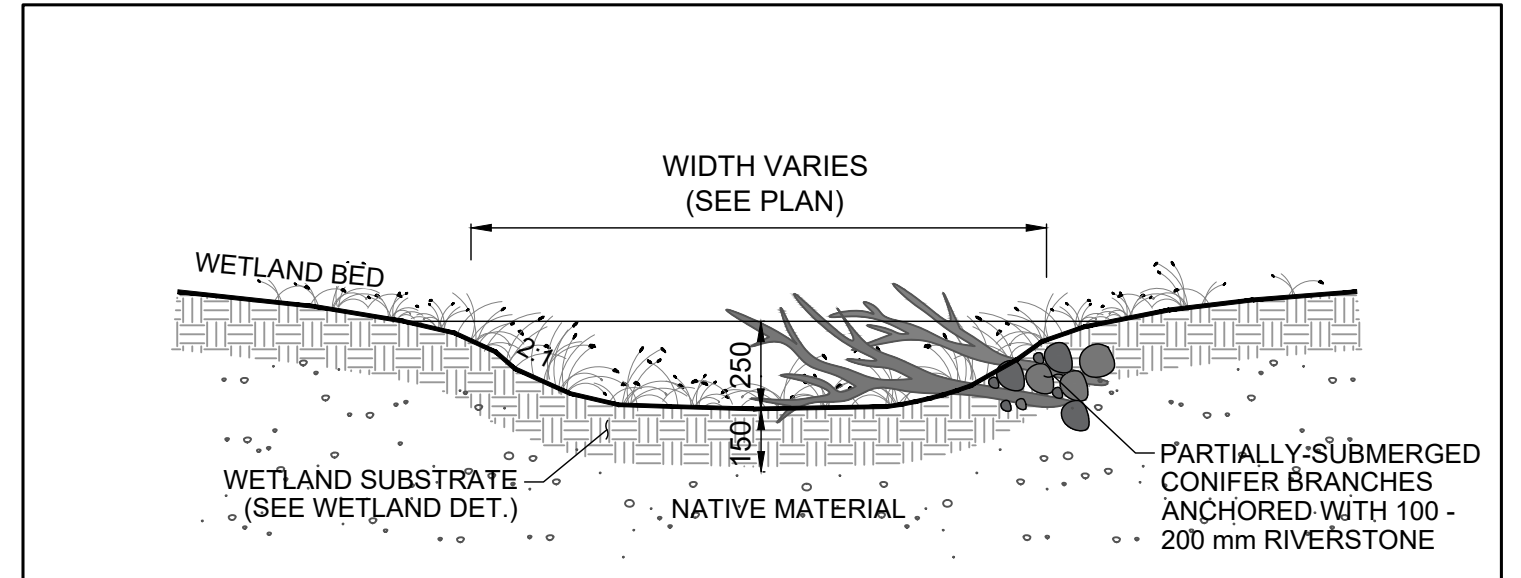
- WETLAND PLANTINGS**
- WETLAND TO BE SEEDED WITH NATURALIZED WETLAND SEED MIX (DET.), WHICH IS TO BE RAKED INTO WETLAND SURFACE
  - SUBMERGENT AND EMERGENT-TYPE PEAT POT PLUGS TO BE PLANTED AT 2000 mm O.C. WITHIN WETLAND (SEE RES SHEETS FOR PLANTINGS SPECIFICATIONS AND LOCATIONS) TO SUPPLEMENT SEED MIX
  - SUBMERGENT PLANTINGS TO BE INSTALLED IMMEDIATELY UPON RECEIPT

**WETLAND**  
N.T.S.



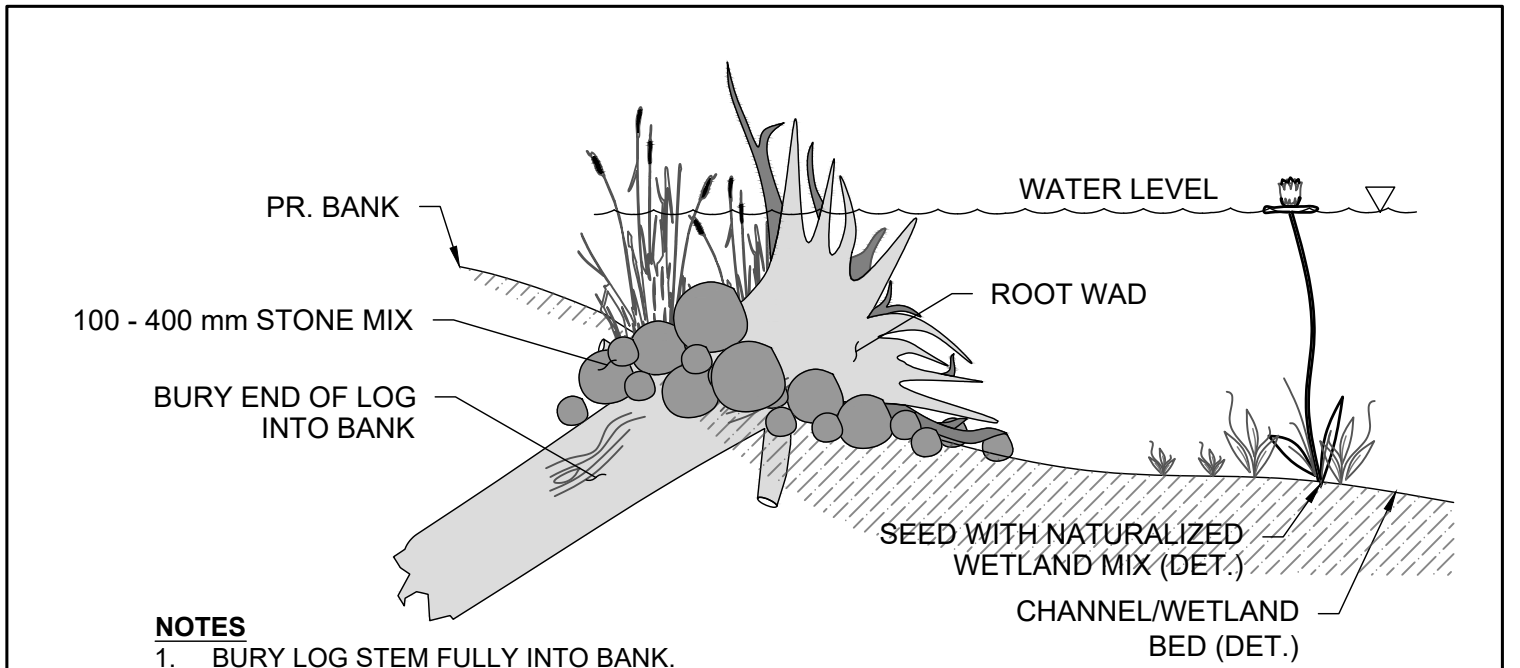
- NOTES**
- ANCHOR AND SUPPORT BASKING LOGS WITH 100 mm - 400 mm STONE MIX.
  - FIRMLY COMPACT STONE MIX TO PREVENT THROUGH FLOW.
  - BURY 1/3 OF LOG INTO BANK.
  - LENGTH OF BASKING LOGS ARE TO BE INSTALLED 1000 - 1500 mm INTO WET AREA.
  - LOGS TO BE SOURCED ON SITE AS AVAILABLE/APPROVED BY THE DESIGNER OR DESIGNER REPRESENTATIVE.
  - PREFERRED LOG DIMENSIONS/TYPES:
    - BASKING LOGS TO BE A MINIMUM 500 mm IN DIAMETER AND 2000 - 2500 mm IN LENGTH.
    - BASKING LOGS SHOULD BE A MIXTURE OF SUITABLE HARDWOOD AND SOFTWOOD SPECIES.

**BASKING LOG**  
N.T.S.



- NOTES**
- VEGETATED INLETS TO BE GRADED INTO WETLAND SHELF.
  - VEGETATED INLET SURFACE TO BE SEEDED WITH WETLAND MIX.
  - TAPER END OF VEGETATED INLET
  - CONIFER BRANCHES TO BE 1 - 2 m IN LENGTH.
  - ONE BUNDLE OF BRANCHES TO BE PLACED AT 10 m INTERVALS ALONG VEGETATED INLETS.
  - CONIFER BRANCHES TO BE BURIED IN BANK ~500 mm AND ANCHORED WITH 100 - 200 mm DIA. RIVERSTONE MIX.

**VEGETATED INLET / NORTHERN PIKE SPAWNING HABITAT**  
N.T.S.

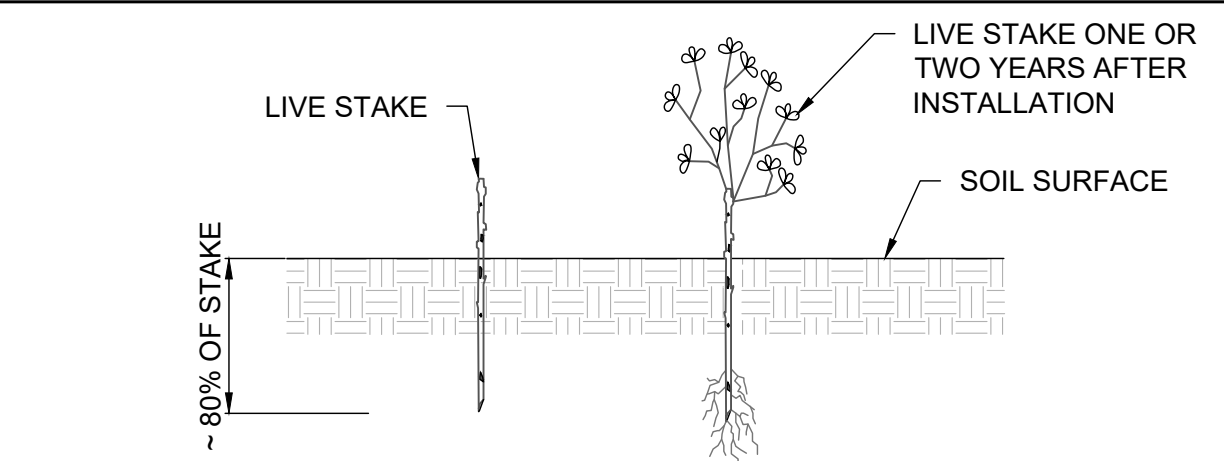


- NOTES**
- BURY LOG STEM FULLY INTO BANK.
  - ANCHOR ROOTWADS WITH 100 mm - 400 mm STONE MIX.
  - FIRMLY COMPACT STONE MIX TO PREVENT THROUGH FLOW.
  - ROOT WADS TO BE SOURCED ON SITE AS AVAILABLE/APPROVED BY THE DESIGNER OR DESIGNER REPRESENTATIVE.
  - PREFERRED ROOT WAD DIMENSIONS:
    - BASKING LOGS TO BE A MINIMUM 500 mm IN DIAMETER AND 2000 - 2500 mm IN LENGTH WITH A MINIMUM 1000 mm DIAMETER ROOT BALL.

**ROOT WAD**  
N.T.S.

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- NOTES**
- QUANTITY TO BE DETERMINED BASED ON AREA OF DISTURBANCE TO BE RESTORED
  - LIVE STAKES SHOULD BE FROM AT MINIMUM 2-YEAR OLD STOCK.
  - LIVE STAKES ARE TO BE INSTALLED AT A DENSITY OF 3 STAKES PER SQUARE METRE.
  - LIVE STAKES SHOULD BE PRE-SOAKED (SUBMERGED IN WATER) FOR AT LEAST 24 HOURS AFTER HARVESTING AND IMMEDIATELY BEFORE INSTALLATION.
  - LIVE STAKES SHOULD NOT BE STORED FOR A PERIOD LONGER THAN 2 DAYS, UNLESS THEY ARE BEING SOAKED.
  - THE CONTRACTOR SHALL PROTECT PLANT MATERIALS FROM DRYING FROM THE TIME OF HARVEST UNTIL INSTALLED.
  - LIVE STAKES ARE TO BE A MINIMUM OF 25 mm IN DIAMETER AND CUT TO A LENGTH OF 1000 mm.
  - CUT ANGLE AT THE BOTTOM OF THE STAKE AND FLAT ON THE TOP.
  - TRIM ALL SIDE BRANCHES WHILE TAKING CARE NOT TO DAMAGE THE BARK.
  - INSTALL STAKES WITH BUDS POINTING UPWARDS AND THICKER STEM IN THE BED.
  - LIVE STAKES SHOULD BE INSTALLED USING A LARGE RUBBER Mallet.
  - 80% OF THE STAKE IS TO BE BELOW SURFACE.
  - TAMP THE LIVE STAKE INTO THE GROUND AT RIGHT ANGLE TO THE SURFACE.
  - IN COMPACT SOIL A PILOT HOLE SHOULD BE USED TO LIMIT DAMAGE TO THE STAKES.
  - IF USING A PILOT HOLE REPACK SOIL AROUND THE LIVE STAKE.
  - LIVE STAKES SHOULD STAND FIRM FROM THE SOIL FOLLOWING INSTALLATION.
  - ALL STAKES NOT PLANTED TO THE SPECIFICATIONS ABOVE WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

**LIVE STAKE**  
N.T.S.

**SPECIES AND QUANTITIES**

COMMON NAME	BOTANICAL NAME	QTY	CONDITION
RED OSIER DOGWOOD	<i>Cornus sericea</i>	740	1 m, LIVE STAKE
COMMON NINEBARK	<i>Physocarpus opulifolius</i>	500	1 m, LIVE STAKE
BEBB'S WILLOW	<i>Salix bebbiana</i>	500	1 m, LIVE STAKE
PUSSY WILLOW	<i>Salix discolor</i>	740	1 m, LIVE STAKE
SANDBAR WILLOW	<i>Salix exigua</i>	500	1 m, LIVE STAKE
COMMON ELDERBERRY	<i>Sambucus canadensis</i>	500	1 m, LIVE STAKE

**VEGETATED LAYERING (WETLAND #4)**

RED OSIER DOGWOOD	<i>Cornus sericea</i>	200	1 m, LIVE STAKE
COMMON NINEBARK	<i>Physocarpus opulifolius</i>	125	1 m, LIVE STAKE
BEBB'S WILLOW	<i>Salix bebbiana</i>	125	1 m, LIVE STAKE
PUSSY WILLOW	<i>Salix discolor</i>	200	1 m, LIVE STAKE
SANDBAR WILLOW	<i>Salix exigua</i>	125	1 m, LIVE STAKE
COMMON ELDERBERRY	<i>Sambucus canadensis</i>	125	1 m, LIVE STAKE

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**BARRHAVEN CONSERVANCY DEVELOPMENT CORPORATION**

**BARRHAVEN CONSERVANCY EAST CITY OF OTTAWA**

**JOCK RIVER WETLAND DESIGN (PHASE 2) WETLAND RESTORATION DETAILS**

PROJECT No.: PN18056	DRAWING No.: DET-2
SCALE: AS NOTED	SHEET 10 OF 10

# RVCA Letter of Permission —

Ont. Reg. 174/06, S. 28 *Conservation Authorities Act*  
1990, As Amended.



Date: December 2, 2022  
File: RV5-3922  
Contact: eric.lalande@rvca.ca; 613-692-3571 x1137

3889 Rideau Valley Drive  
PO Box 599, Manotick ON K4M 1A5  
T 613-692-3571 | 1-800-267-3504  
F 613-692-0831 | www.rvca.ca

Applicant: Barrhaven Development Corporation  
2934 Baseline Road #302  
Ottawa, ON K2H 1B2

**Permit for: Alteration to a Watercourse Under Section 28 of the Conservation Authorities Act for the installation and construction of stormwater outlets associated with the Barrhaven Conservancy Development East, at 3305 Borrisokane Road, Lot 13, Concession 3, former Township of Nepean, now in the City of Ottawa.  
PIN: 04595-0059**

Dear Ms. Murphy,

The Rideau Valley Conservation Authority has reviewed the application and understands the proposal to be for:

- a) **Seven (7) stormwater outlet headwall structures**
- b) **Six (6) drainage channels**
- c) **Six (6) reinforced grass maintenance access roads**
- d) **Five (5) connections to an existing watercourse**

This proposal was reviewed under Ontario Regulation 174/06, the "*Development, Interference with Wetlands, and Alteration to Watercourse and Shorelines*" regulation and the RVCA Development Policies (approved by the RVCA, Board of Directors), specifically Section 1.0 General Principles and section 3.0 Policies regarding alterations to waterways applications. The proposal is not expected to impact the control of flooding, pollution, erosion or conservation of land providing conditions are followed.

## PERMISSION AND CONDITIONS

By this letter the Rideau Valley Authority hereby grants you approval to undertake this project as outlined in your permit application but subject to the following conditions:

1. Approval is subject to the understanding of the project as described above and outlined in the application and submitted plans as submitted dated November 17, 2022:
  - Detailed General Plans 7,8,13,14,16, & 17 prepared by DSEL.
  - Detailed Storm Outlet drawings 53, 55, 56, 66, 71, & 72, prepared by DSEL.
  - Detailed Future Storm Outlet drawing 87, prepared by DSEL.
  - Detailed Grading Plans 94, 95, 100, 101, & 104 prepared by DSEL.
  - Detailed Ultimate Grading Plan – Borrisokane drawing 108, prepared by DSEL.

• Erosion and Sediment Control Plans 123 & 124, prepared by DSEL.

2. All excavated material not utilized as backfill (if appropriate material) must be removed from the site to a suitable disposal site outside the 1:100-year floodplain and regulated area.
3. A finished grading plan will be submitted as soon as the work is complete to confirm the grading and elevation of outlets, drainage channels, headwalls on the property conform to the approved drawings. A refundable deposit of \$3190 is required to be submitted prior to commencement of the work. Satisfactory review of the finished grading plan and compliance with other conditions of approval will result in the return of the deposit (less 10% administrative fee).
4. No in-water work is to occur between March 15 and June 30.
5. The Rideau Valley Conservation Authority is provided two-day's notice of the start of the project.
6. The applicant agrees that Authority staff may visit the subject property before, during and after project completion to ensure compliance with the conditions as set out in this letter of permission.
7. That the current municipal zoning will permit this development and no variances and/or amendments to the current zoning will be necessary in order to proceed with the development. Any Planning application will require further review and may not receive supportive comments.
8. Sediment control will be established to ensure no sediment migration from the site. All grubbing and equipment storage and operation will be limited to the development envelope. All areas located outside the development envelope will be left untouched. No fill including topsoil, sand, etc. will be placed outside the development envelope for any reason purpose. No equipment will be permitted to disturb area outside the development envelope.
9. A new application must be submitted should any work as specified in this letter be ongoing or planned for or after December 2, 2024

All other approvals as might be required from the Municipality, and/or other Provincial or Federal Agencies must be obtained prior to initiation of work. This includes but is not limited to the Drainage Act, the Endangered Species Act, the Ontario Water Resources Act, Environmental Protection Act, Public Lands Act, or the Fisheries Act

By this letter the Rideau Valley Conservation Authority assumes no responsibility or liability for any flood, erosion, or slope failure damage which may occur either to your property or the structures on it or if any activity undertaken by you adversely affects the property or interests of adjacent landowners. This letter does not relieve you of the necessity or responsibility for obtaining any other federal, provincial or municipal permits. This permit is not transferable to subsequent property owners.

Should you have any questions regarding this letter, please contact Eric Lalande, Planner, at the contact information above.



Terry K. Davidson P.Eng  
Conservation Authority S. 28 Signing delegate  
O. Reg. 174/06

- Pursuant to the provisions of S. 28(12) of the *Conservation Authorities Act* (R.S.O.1990, as amended.) any or all of the conditions set out above may be appealed to the Executive Committee of the Conservation Authority in the event that they are not satisfactory or cannot be complied with.
- Failure to comply with the conditions of approval or the scope of the project may result in the cancelling of the permission and/or initiation of legal action under S. 28(16) of the Act.
- Commencement of the work and/or a signed and dated copy of this letter indicates acknowledgement and acceptance of the conditions of the RVCA's approval letter concerning the application and the undertaking and scope of the project.

Name: HUGO LALANDE (print)

Signed: Hugo Lalande Date: Dec 2/2022

## Appendix D- Initial SAR Review



## Species at Risk Screening Table

This table is adapted from the initial SAR review for teh Barrhaven Conseracny East development area (KAL, 2020)

Species Name (Taxonomic Name)	Status under Ontario Endangered Species Act (ESA)	Status under federal Species at Risk Act (SARA)- Schedule 1	Habitat Description	Potential to Occur in the Project Area (Yes / No)	Probability of Interaction with the Project (None, Low, Moderate, High)
<b>Avian</b>					
Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	Special Concern	No Status	Nest in mature forests near open water. In large trees such as Pine and Poplar.	Yes	Low, no known occurrences in this area
Bank Swallow ( <i>Riparia riparia</i> )	Threatened	Threatened	Colonial nester; burrows in eroding silt or sand banks, sand pit walls, and human-made settings, which are often found on banks of rivers and lakes.	Yes	Moderate
Barn Swallow ( <i>Hirundo rustica</i> )	Special Concern	Special Concern	Nests on barns and other structures; forages in open areas for flying insects. Live in close association with humans and prefer to nest in structures such as open barns, under bridges, and in culverts.	Yes	Low, preferred habitat does not occur in the Project Area
Black Tern ( <i>Chlidonias niger</i> )	Special Concern	No Status	Build floating nests in loose colonies in shallow marshes, especially cattails.	No	None, habitat does not occur in the Project Area
Bobolink ( <i>Dolichonyx oryzivorus</i> )	Threatened	Threatened	Live in tall grass prairie and other open meadows. With major clearing of prairies, Bobolink are moving to hayfields. Build nests on the ground in dense grasses.	Yes	Low, preferred habitat does not occur in the Project Area
Canada Warbler ( <i>Cardellina canadensis</i> )	Special Concern	Threatened	Prefers wet forests with dense shrub layers. Nests located on or near the ground on mossy logs or roots, along stream banks or on hummocks.	Yes	Low, preferred habitat does not occur in the Project Area
Cerulean Warbler ( <i>Setophaga cerulea</i> )	Threatened	Endangered	Prefers mature deciduous forests with an open under storey.	No	None, habitat does not occur in the Project Area
Chimney Swift ( <i>Chetura pelagica</i> )	Threatened	Threatened	Nests in traditional-style open brick chimneys (and rarely in hollow trees). Tend to stay close to water	No	None, habitat does not occur in the Project Area
Common Nighthawk ( <i>Chordeiles minor</i> )	Special Concern	Threatened	Nests in wide variety of open sites, including beaches, fields and gravel rooftops with little to no ground vegetation. They also nest in cultivated fields, orchards, urban parks, mine tailings and along gravel roads/railways but tend to occupy more natural sites.	Yes	None, habitat does not occur in the Project Area
Eastern Meadowlark ( <i>Sturnella magna</i> )	Threatened	Threatened	Typically nest in tall grasslands (pastures/hayfields) but also found in alfalfa fields, weedy borders of croplands, roadsides, orchards, airports, shrubby overgrown fields, or other open areas. Often use trees, shrubs, or fence posts to elevate song perches.	Yes	Low, preferred habitat does not occur in the Project Area
Eastern Whip-poor-will ( <i>Antrostomus vociferus</i> )	Threatened	Threatened	Nests on the ground in open deciduous or mixed woodlands with little underbrush.	Yes	Low, preferred habitat does not occur in the Project Area
Eastern Wood-pewee ( <i>Contopus virens</i> )	Special Concern	Special Concern	Woodland species, often found in the mid-canopy layer near clearings and edges of deciduous and mixed forests.	Yes	Low, preferred habitat does not occur in the Project Area
Golden Eagle ( <i>Aquila chrysaetos</i> )	Endangered	No Status	Nest in remote, undisturbed areas, usually building their nests on ledges on a steep cliff/riverbank or large trees if needed. Most hunting is done near open areas such as large bogs or tundra.	Yes	Low, likely only as a fly-through migrant
Golden-winged Warbler ( <i>Vermivora chrysoptera</i> )	Special Concern	Threatened	Ground nesting in areas of young shrubs surrounded by mature forest. Often areas that have recently been disturbed such as field edges, hydro or utility right-of-ways, or logged areas.	Yes	None, habitat does not occur in the Project Area
Grasshopper Sparrow ( <i>Ammodramus savannarum</i> )	Special Concern	Special Concern	Lives in open grassland areas with well-drained sandy soil. Will also nest in hayfields and pastures, as well as alvars, prairies and occasionally grain crops such as barley. It prefers areas that are sparsely vegetated and its nests are well hidden in the field, woven from grasses in a small cup-like shape.	Yes	None, habitat does not occur in the Project Area
Evening Grosbeak ( <i>Coccothraustes vespertinus</i> )	Special Concern	Special Concern	Nest in trees or large shrubs; prefer mature coniferous forests but will also use deciduous forests, parklands and orchards.	Yes	None, habitat does not occur in the Project Area
Henslow's Sparrow ( <i>Ammodramus henslowii</i> )	Endangered	Endangered	Tends to avoid fields that have been grazed or are crowded with trees and shrubs. Prefers extensive, dense, tall grasslands where it can more easily conceal its small ground nest.	Yes	Low, preferred habitat does not occur in the Project Area
Horned Grebe ( <i>Podiceps auritus</i> )	Special Concern	No Status	Nest in small ponds, marshes and shallow bays that contain areas of open water and emergent vegetation.	Yes	None, habitat does not occur in the Project Area
Least Bittern ( <i>Ixobrychus exilis</i> )	Threatened	Threatened	Found in a variety of wetland habitats, but strongly prefers cattail marshes with a mix of open pools and channels.	Yes	None, habitat does not occur in the Project Area
Loggerhead Shrike ( <i>Lanius ludovicianus</i> )	Endangered	Endangered	The Loggerhead prefers pasture or other grasslands with scattered low trees and shrubs. Lives in fields or alvars (areas of exposed bedrock) with short grass, which makes it easier to spot prey.	Yes	None, habitat does not occur in the Project Area
Olive-sided Flycatcher ( <i>Contopus cooperi</i> )	Special Concern	Threatened	Found along natural forest edges and openings. Will use forests that have been logged or burned, if there are ample tall snags and trees to use for foraging perches.	Yes	None, habitat does not occur in the Project Area
Peregrine Falcon ( <i>Falco peregrinus</i> )	Special Concern (as of January 2013)	Special Concern	Nest on tall, steep cliff ledges close to large bodies of water. Urban peregrines raise their young on ledges of tall buildings, even in busy downtown areas.	Yes	None, habitat does not occur in the Project Area
Red Knot ( <i>Calidris canutus rufa</i> )	Endangered	Endangered	Prefer open beaches, mudflats, and coastal lagoons, where they feast on molluscs, crustaceans, and other invertebrates.	Yes	None, habitat does not occur in the Project Area
Red-headed Woodpecker ( <i>Melanerpes erythrocephalus</i> )	Special Concern	Threatened	Lives in open woodland and woodland edges, and is often found in parks, golf courses, and cemeteries. These areas typically have many dead trees, which the birds use for nesting and perching.	Yes	Low
Rusty Blackbird ( <i>Euphagus carolinus</i> )	Special Concern	Special Concern	Prefers wet wooded or shrubby areas (nests at edges of boreal wetlands and coniferous forests). These areas include bogs, marshes and beaver ponds.	Yes	Low
Short-eared Owl ( <i>Asio flammeus</i> )	Special Concern	Special Concern	Lives in open areas such as grasslands, marshes and tundra where it nests on the ground and hunts for small mammals.	Yes	Low
Wood Thrush ( <i>Hylocichla mustelina</i> )	Special Concern	Threatened	Lives in mature deciduous and mixed (conifer-deciduous) forests. They seek moist stands of trees with well-developed undergrowth and tall trees for singing and perches. Usually build nests in sugar maple or American beech.	Yes	None, habitat does not occur in the Project Area
<b>Fish</b>					
American Eel ( <i>Anguilla rostrata</i> )	Endangered	No Status	Primarily nocturnal, hiding in soft substrate or submerged vegetation during the day.	No	None, habitat does not occur in the Project Area

Bridle Shiner ( <i>Notropis bifrenatus</i> )	Special Concern	Special Concern	Prefers clear water with abundant vegetation over silty or sandy substrate.	No	None, habitat does not occur in the Project Area
Channel Darter ( <i>Percina copelandi</i> )	Special Concern	Threatened	Prefers clean streams and lakes with moderate current over sandy or rocky substrate.	No	None, habitat does not occur in the Project Area
Lake Sturgeon ( <i>Acipenser fulvescens</i> )	Endangered	No Status	Only found in large lakes and rivers. Forages in cool water, 4-9 m deep over soft substrate; spawns in shallower, fast-flowing areas over rocks or gravel.	No	None, habitat does not occur in the Project Area
Northern Brook Lamprey ( <i>Ichthyomyzon fossor</i> )	Special Concern	Special Concern	Non-parasitic species; prefers shallow areas with warm water. Larvae live in burrows in soft substrate for up to 7 years.	No	None, habitat does not occur in the Project Area
Northern Sunfish ( <i>Lepomis peltastes</i> )	Special Concern	No Status	Lives in shallow vegetated areas of quiet, slow flowing rivers and streams, as well as warm lakes and ponds, with sandy banks or rocky bottoms.	No	None, habitat does not occur in the Project Area
River Redhorse ( <i>Moxostoma carinatum</i> )	Special Concern	Special Concern	Prefers fast-flowing, clear rivers over rocky substrate.	No	None, habitat does not occur in the Project Area
Silver Lamprey ( <i>Ichthyomyzon unicuspis</i> )	Special Concern	Special Concern	Require clear water for they can find fish hosts, relatively clean stream beds of sand and organic debris for larvae to live in, and unrestricted migration routes for spawning. Larvae live 4-7 years in burrows (prefer soft substrates); filter-feed on plankton.	No	None, habitat does not occur in the Project Area
<b>Molluscs</b>					
Hickorynut ( <i>Obovaria olivaria</i> )	Endangered	Endangered	Live on sandy beds in large, wide, deep rivers. Usually more than two or three metres deep. Larval host believed to be Lake Sturgeon.	No	None, habitat does not occur in the Project Area
<b>Mammals</b>					
Algonquin Wolf ( <i>Canis sp.</i> )	Threatened	Special Concern	Not restricted to any specific habitat type but typically occurs in deciduous and mixed forest landscapes.	Yes	Low, no known recent occurrences
Eastern Cougar ( <i>Puma concolor</i> )	Endangered	No Status	Live in large, undisturbed forests or other natural areas where there is little human activity	No	None
Eastern Small-footed Myotis ( <i>Myotis leibii</i> )	Endangered	No Status	In the spring and summer, eastern small-footed bats will roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. Overwinters in caves and abandoned mines.	Yes	Low, no known recent occurrences
Gray Fox ( <i>Urocyon cinereoargenteus</i> )	Threatened	Threatened	Live in deciduous forests and marshes. Their dens are usually found in dense shrubs close to a water source but they will also use rocky areas, hollow trees, and underground burrows dug by other animals.	Yes	Low, preferred habitat does not occur in the Project Area
Little Brown Myotis ( <i>Myotis lucifugus</i> )	Endangered	Endangered	During the day they roost in trees and buildings. They often select attics, abandoned buildings and barns for summer colonies where they can raise their young. They can squeeze through very tiny spaces (as small as six millimetres across) allowing them access to many different roosting areas.	Yes	Low, preferred habitat does not occur in the Project Area
Northern Myotis / Northern Long-eared Bat ( <i>Myotis septentrionalis</i> )	Endangered	Endangered	Associated with boreal forests, choosing to roost under loose bark and in the cavities of trees.	Yes	Low, preferred habitat does not occur in the Project Area
Tri-coloured Bat / Eastern Pipistrelle ( <i>Perimyotis subflavus</i> )	Endangered	Endangered	Roosts mainly in trees during summer; overwinters in caves and mines along with other species, but often uses deeper parts of the hibernaculum.	Yes	Low, preferred habitat does not occur in the Project Area
<b>Amphibians</b>					
Western Chorus Frog ( <i>Pseudacris triseriata</i> )	No Status	Threatened	Inhabits forest openings around woodland ponds but can also be found in or near damp meadows, marshes, bottomland swamps and temporary ponds in open country, or even urban areas.	Yes	Low, preferred habitat does not occur in the Project Area
<b>Reptiles</b>					
Blanding's Turtle ( <i>Emydoidea blandingii</i> )	Threatened	Threatened	Quiet lakes, streams and wetlands with abundant emergent vegetation; also frequently occurs in adjacent upland forests.	Yes	Moderate
Eastern Musk Turtle / Stinkpot ( <i>Sternotherus odoratus</i> )	Special Concern	Special Concern	Found in ponds, lakes, marshes, and rivers that are generally slow-moving have abundant emergent vegetation and muddy bottoms that they burrow into for winter hibernation.	Yes	Low, preferred habitat does not occur in the Project Area
Eastern Ribbonsnake ( <i>Thamnophis sauritus</i> )	Special Concern	Special Concern	Found in marshy edges of wetlands and watercourses. Livebearer (does not lay eggs).	Yes	Low, preferred habitat does not occur in the Project Area
Milksnake ( <i>Lampropeltis triangulum</i> )	No Status	Special Concern	Found in variety of open, scrubby or edge habitats, including pastures.	Yes	Not applicable as this species is not protected on private lands
Northern Map Turtle ( <i>Graptemys geographica</i> )	Special Concern	Special Concern	Lives in rivers and lakeshores where it basks on emergent rocks and fallen trees throughout the spring and summer. In winter, they hibernate on the bottom of deep, slow-moving sections of river.	Yes	Moderate
Snapping Turtle ( <i>Chelydra serpentina</i> )	Special Concern	Special Concern	Spend most of their lives in the water. Prefer shallow waters so they can hide under the soft mud and leaf litter with only their noses exposed to the surface to breathe.	Yes	Moderate
Spiny Softshell ( <i>Apalone spinifera</i> )	Endangered	Threatened	Found primarily in rivers and lakes but also in creeks, ditches and ponds near rivers. Habitat requirements are open sand or gravel nesting areas, shallow muddy or sandy areas to bury in, deep pools for hibernation, areas for basking, and suitable habitat for crayfish and other food species.	Yes	Low, no known recent occurrences
Spotted Turtle ( <i>Clemmys guttata</i> )	Endangered	Endangered	Semi-aquatic and prefers ponds, marshes, bogs, and even ditches with slow-moving, unpolluted water and an abundant supply of aquatic vegetation.	Yes	Low
Wood Turtle ( <i>Glyptemys insculpta</i> )	Endangered	Threatened	The wood turtle prefers clear rivers, streams, or creeks with a slight current and sandy or gravelly bottom. Wooded areas are essential habitat for the Wood Turtle, but they are found in other habitats, such as wet meadows, swamps, and fields.	Yes	Low, preferred habitat does not occur in the Project Area
<b>Plants</b>					
American Chestnut ( <i>Castanea dentata</i> )	Endangered	Endangered	Typical habitat is upland deciduous forests on sandy acidic soils, occurring with red oak, black cherry, sugar maple and beech.	No	Low
American Ginseng ( <i>Panax quinquefolius</i> )	Endangered	Endangered	Grows in rich, moist, but well-drained, and relatively mature, deciduous woods dominated by Sugar Maple, White Ash, and American Basswood.	No	Low
Butternut ( <i>Juglans cinerea</i> )	Endangered	Endangered	Commonly found in riparian habitats, but is also found on rich, moist, well-drained loams, and well-drained gravels, especially those of limestone origin.	Yes	High
Eastern Prairie Fringed-orchid ( <i>Platanthera leucophaea</i> )	Endangered	Endangered	Populations are found in three main habitat types: fens (peat-forming wetlands fed by groundwater), tallgrass prairie, and moist old fields	No	None
<b>Lichens</b>					



Flooded Jellyskin ( <i>Leptogium rivulare</i> )	No Status	Threatened	It grows in seasonally flooded habitats, typically on the bark of deciduous trees and rocks along the margins of seasonal ponds and on rocks along shorelines and stream/riverbeds.	No	Low
Pale-bellied Frost Lichen ( <i>Physconia subpallida</i> )	Endangered	Endangered	Typically grows on the bark of hardwood trees such as White ash, Black walnut, and American elm. Could also be found growing on fence posts and boulders.	No	Low, no known recent occurrences
<b>Insects</b>					
Bogbean Buckmoth ( <i>Hemileuca</i> sp. 1)	Endangered	Endangered	Restricted to open, chalky, low shrub fens containing large amounts of bogbean, an emergent wetland flowering plant.	No	None, habitat does not occur in the Project Area
Gypsy Cuckoo Bumble Bee ( <i>Bombus bohemicus</i> )	Endangered	Endangered	Live in diverse habitats including open meadows, mixed farmlands, urban areas, boreal forest and montane meadows. Host nests occur in abandoned underground rodent burrows and rotten logs.	Yes	Low, no known recent occurrences
Monarch butterfly ( <i>Danaus plexippus</i> )	Special Concern	Special Concern	Milkweeds are the sole food plant for Monarch caterpillars. These plants predominantly grow in open and periodically disturbed habitats such as roadsides, fields, wetlands, prairies, and open forests.	Yes	None, habitat does not occur in the Project Area
Mottled Duskywing ( <i>Erynnis martialis</i> )	Endangered	No Status	Requires host plants such as the New Jersey Tea and the Prairie Redroot. These plants grow in dry, well-drained soils or alvar habitat within oak woodland, pine woodland, roadsides, riverbanks, shady hillsides and tall grass prairies.	No	None
Nine-spotted Lady Beetle ( <i>Coccinella novemnotata</i> )	Endangered	No Status	Occur within agricultural areas, suburban gardens, parks, coniferous forests, deciduous forests, prairie grasslands, meadows, riparian areas and isolated natural areas.	Yes	Low, no known recent occurrences
Rapids Clubtail ( <i>Gomphus quadricolor</i> )	Endangered	Endangered	Inhabit a wide variety of riverine habitats ranging in size from the St. Lawrence River to small creeks Larvae are typically found in microhabitats with slow to moderate flow and fine sand or silt substrates where they burrow into the stream bed. Adults disperse from the river after emerging and feed in the forest canopy and other riparian vegetation.	No	Low, no known recent occurrences
Rusty-patched Bumble Bee ( <i>Bombus affinis</i> )	Endangered	Endangered	Can be found in open habitat such as mixed farmland, urban settings, savannah, open woods, and sand dunes.	No	Low, no known recent occurrences
Transverse Lady Beetle ( <i>Coccinella transversoguttata</i> )	Endangered	Special Concern	Able to live in a wide range of habitats, including agricultural areas, suburban gardens, parks, coniferous forests, deciduous forests, prairie grasslands, meadows and riparian areas.	Yes	Low, no known recent occurrences
West Virginia White butterfly ( <i>Pieris virginensis</i> )	Special Concern	No Status	Lives in moist, deciduous woodlots. Requires a supply of toothwort, a small, spring-blooming plant that is a member of the mustard family, since if it the only food source for larvae.	No	Low, no known recent occurrences and habitat is no present
Yellow-banded Bumble Bee ( <i>Bombus terricola</i> )	Special Concern	Special Concern	Forage and habitat generalist, able to use a variety of nectaring plants and environmental conditions.	Yes	Low

## Appendix E- Fraser Clarke Plans and Permits



# RVCA Letter of Permission —

Ont. Reg. 174/06, S. 28 *Conservation Authorities Act*  
1990, As Amended.



Date: August 31, 2022.  
File: RV5-2022 related files RV5-2122 & RV5-2222  
Contact: hal.stimson@rvca.ca (613) 692-3571 Ext 1127

3889 Rideau Valley Drive  
PO Box 599, Manotick ON K4M 1A5  
T 613-692-3571 | 1-800-267-3504  
F 613-692-0831 | www.rvca.ca

Susan Murphy  
Barrhaven Conservancy Development Corporation  
2934 Baseline Road, # 302  
Ottawa, Ontario  
K2H 1B2

**Permit for: Alteration to a Watercourse under Section 28 of the Conservation Authorities Act for watercourse re-alignment, culvert and stormwater outlets at Lots 13/14, Concession 3 former City of Nepean, now the City Ottawa known as the Fraser-Clarke Drain**

Dear Susan Murphy,

The Rideau Valley Conservation Authority has reviewed your application on behalf of the Barrhaven Conservancy Development Corporation and understands the proposal to be for:

**The re-alignment of the existing watercourse known as the Fraser-Clarke Drain. The existing channel will be relocated and enhanced with naturalization and wetland restoration. Two new stormwater outlets are included with the work. A post effectiveness monitoring plan will be implemented to monitor and ensure the effectiveness of the changes.**

This proposal was reviewed under Ontario Regulation 174/06, the “Development, Interference with Wetlands, and Alteration to Watercourse and Shorelines” regulation and the RVCA Development Policies (approved by the RVCA, Board of Directors), specifically Section 3 Alteration to Waterways. The proposal is not expected to impact the control of flooding, pollution, erosion or conservation of land providing conditions are followed.

## PERMISSION AND CONDITIONS

By this letter the Rideau Valley Authority hereby grants you approval to undertake this project as outlined in your permit application but subject to the following conditions:

1. Approval is subject to the understanding of the project as described above and outlined in the application and submitted plans including:
  - **Memo dated July 15, 2022 from T. Eisner, M. PI. of JFSA confirming details of the project and providing revised design drawings.**
  - Report titled Fraser-Clarke Drain Restoration Technical Design Brief (28 pgs.) dated July 15, 2022, as prepared by GeoMorphix.

- Sheet No. 55 titled Storm Outlet 12 dated 22-04-22 Revision 2 by DSEL and stamped by W. Liu, P. Eng.
  - Sheet No. 86 titled Storm Outlet 13 dated 22-04-22 Revision 2 by DSEL and stamped by W. Liu, P. Eng.
  - Report with Memo (51 pgs.) dated July 13, 2022 subject Fraser-Clarke Watercourse Crossing - Hydrologic and Hydraulic Analysis by J.F. Sabourin and Associates stamped by J. J. Burnett, P. Eng.
  - Memo Proposed Channel Works along the Fraser-Clarke Watercourse dated April 28, 2022 (5 pgs.) by A. Francis PhD of Kilgour & Associates Ltd.
  - Report Titled Monitoring Program for the Realignment of the Upper Reach Fraser- Clarke Watercourse at Barrhaven Conservancy East (11 pgs.) dated July 11, 2022 by Kilgour & Associated Ltd.
  - Drawings Nos. CH-1, CH-2, CH-3 and D1 (total 5 sheets) titled Fraser-Clarke Creek Restoration Phase 2, all dated 22-06-22, all revision No.3 and stamped by Silvano Tardella, L.A. of NAK Design Strategies,
  - **No conditions are subject to change/revision by the on-site contractor(s).**
2. **A Sediment and Erosion Control Plan and De-watering plan must be prepared and submitted by the contractor to RVCA prior to commencement.**
  3. Any changes to the proposed work must be submitted in writing to the Conservation Authority for review and approval prior to implementation.
  4. Upon completion of the work a post effectiveness monitoring program is to be undertaken with monitoring and reporting after years 1, 3 and 5 to ensure the compensation works are functioning as intended.
  5. Any excess excavated material, as a result of the work, must be disposed of in a suitable location outside any regulatory floodplain and fill regulated area.
  6. Only clean non-contaminated fill material will be used, and all work is to occur on your property or on other property with permission of the owners.
  7. **There will be no in-water works between March 15 and June 30, of any given year to protect local aquatic species populations during their spawning and nursery time periods.**
  8. Work in-water shall not be conducted at times when flows are elevated due to local rain events, storms or seasonal floods.
  9. All in-stream work should be completed in the dry by de-watering the work area and diverting and/or pumping any flows around cofferdams placed at the limits of the work area. Silt or debris that has accumulated around the temporary cofferdams should be cautiously removed prior to their withdrawal.

10. Sediment barriers should be used on site in an appropriate method according to the Ontario Provincial Standard Specifications (OPSS) for silt barriers as a minimum. In-water work will require the use of a properly secured silt curtain. Soil type, slope of land, drainage area, weather, predicted sediment load and deposition should be considered when selecting the type of sediment/erosion control.
11. Sediment and erosion control measures shall be in place before any excavation or construction works commence. All sediment/erosion control measures are to be monitored regularly by experienced personnel and maintained as necessary to ensure good working order. In the event that the erosion and sedimentation control measures are deemed not to be performing adequately, the contractor shall undertake immediate additional measures as appropriate to the situation to the satisfaction of the Conservation Authority.
12. Activities such as equipment refueling and maintenance must be conducted away from the water to prevent entry of petroleum products, debris, or other deleterious substances into the water. Operate machinery from outside the water, or on the water in a manner that minimizes disturbance to the banks or bed of the watercourse. Equipment shall not be cleaned in the watercourse or where wash-water can enter any watercourse. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.
13. Any aquatic species (fish, turtles) trapped within an enclosed work area are to be safely relocated outside of the enclosed area to the main watercourse downstream of the work zone.
14. All disturbed soil areas must be appropriately stabilized to prevent erosion.
15. It is recommended that you ensure your contractor(s) are provided with a copy of this letter to ensure compliance with the conditions listed herein.
16. It is recommended that you retain the services of a professional engineer to conduct on-site inspections to ensure adequacy of the work, verify stability of the final grade and slopes and confirm all imported fill is of suitable type and has been adequately placed and compacted.
17. The applicant agrees that Authority staff may visit the subject property, before, during and after project completion, to ensure compliance with the conditions as set out in this letter of permission.
18. A new application must be submitted should any work as specified in this letter be ongoing or planned for or after August 31, 2024.
19. The RVCA is to receive 48 hours notice of the proposed commencement of the works to ensure compliance with all conditions. The applicant agrees that Authority staff may visit the subject property, before, during and after project completion, to ensure compliance with the conditions as set out in this letter of permission.

All other approvals as might be required from the Municipality, and/or other Provincial or Federal Agencies must be obtained prior to initiation of work. This includes but is not limited to the Drainage Act, the Endangered Species Act, the Ontario Water Resources Act, Environmental Protection Act, Public Lands Act, or the Fisheries Act.

By this letter the Rideau Valley Conservation Authority assumes no responsibility or liability for any flood, erosion, or slope failure damage which may occur either to your property or the structures on it or if any activity undertaken by you adversely affects the property or interests of adjacent landowners. This letter does not relieve you of the necessity or responsibility for obtaining any other federal, provincial or municipal permits. This permit is not transferable to subsequent property owners.

Should you have any questions regarding this letter, please contact Hal Stimson.



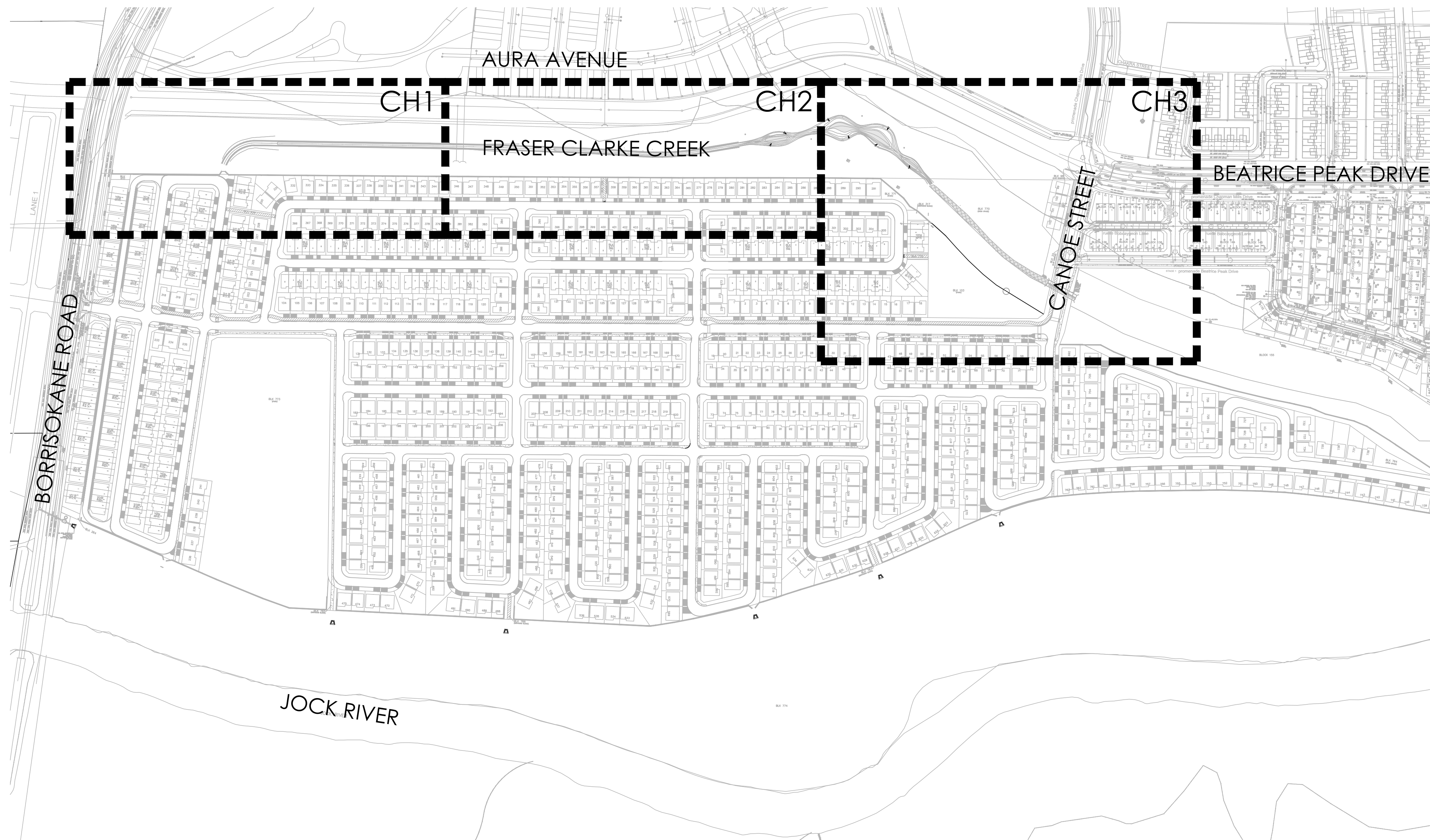
Terry K. Davidson P.Eng  
Conservation Authority S. 28 Signing delegate  
O. Reg. 174/06

c.c. J. Chandler, M. Pl. JFSA  
T. Eisner, M. Pl. JFSA

- Pursuant to the provisions of S. 28(12) of the *Conservation Authorities Act* (R.S.O.1990, as amended.) any or all of the conditions set out above may be appealed to the Executive Committee of the Conservation Authority in the event that they are not satisfactory or cannot be complied with.
- Failure to comply with the conditions of approval or the scope of the project may result in the cancelling of the permission and/or initiation of legal action under S. 28(16) of the Act.
- Commencement of the work and/or a signed and dated copy of this letter indicates acknowledgement and acceptance of the conditions of the RVCA's approval letter concerning the application and the undertaking and scope of the project.

Name: Hugo Lalonde (Print)

Signed: Hugo Lalonde Date: September 1 2022



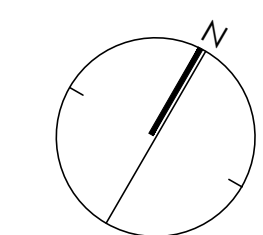
BARRHAVEN CONSERVANCY  
DEVELOPMENT CORPORATION

## FRASER-CLARKE CREEK RESTORATION PHASE 2

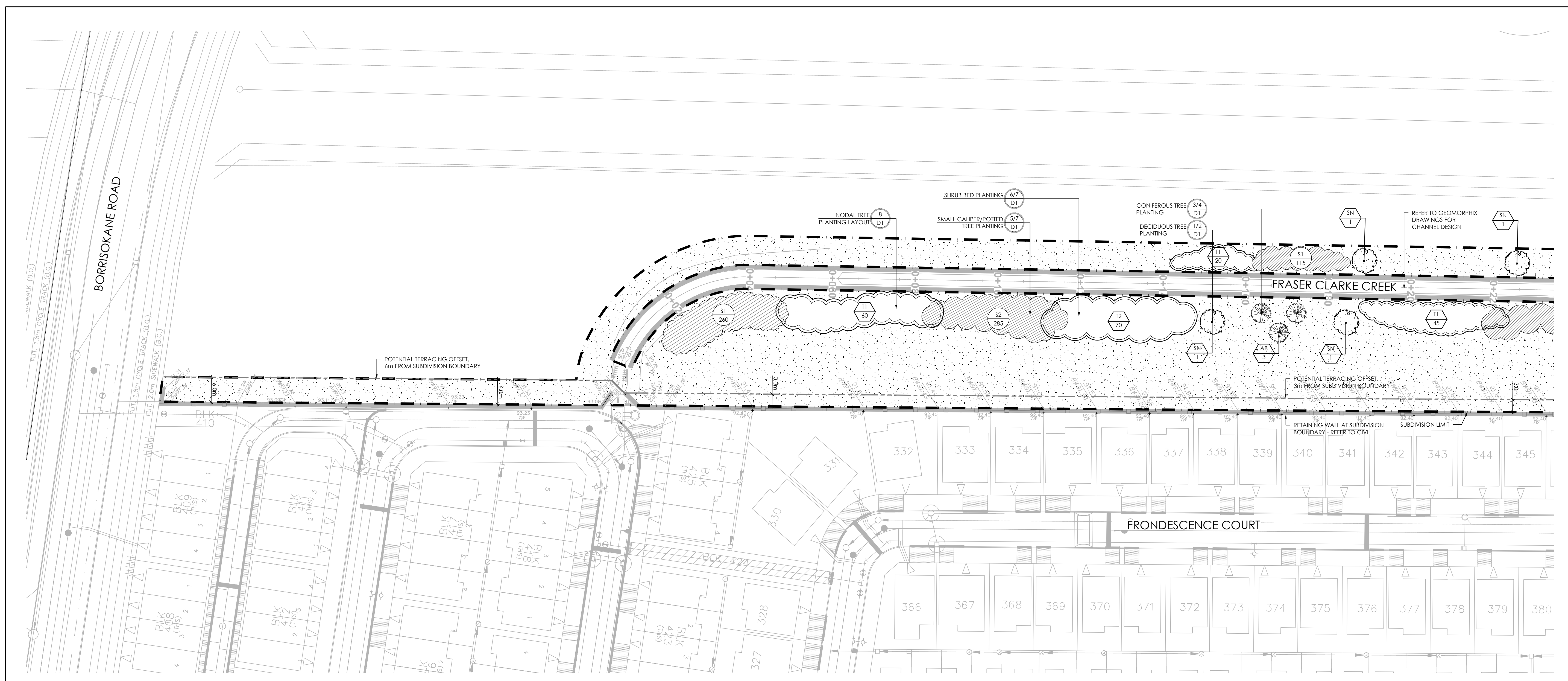


**LIST OF DRAWINGS:**

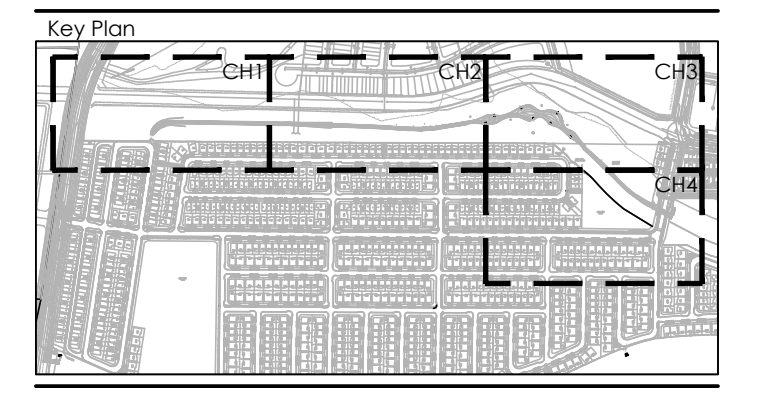
- CH1 - LANDSCAPE PLAN
- CH2 - LANDSCAPE PLAN
- CH3 - LANDSCAPE PLAN
- D1 - DETAILS



KEYMAP  
NTS



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**LEGEND**

- LIMIT OF LANDSCAPE WORK
- POTENTIAL TERRACING OFFSET
- FENCING (BY OTHERS)
- 1.5m HT. CHAIN LINK FENCE
- POST AND RAIL FENCE

**PLANTING**

- DECIDUOUS TREE
- CONIFEROUS TREE
- DRY-MESIC MEADOW SEED MIX
- RIPARIAN HYDROSEED MIX
- TREE MIX IN MULCHED BED
- SHRUB MIX IN MULCHED BED

**CHANNEL FEATURES (REFER TO GEOMORPHIX)**

- STATION NUMBER
- CHANNEL CENTRE LINE
- LIVE STAKES
- RAPTOR POLE
- PALLET TYPE WOOD PILE
- BASKING LOG

**PLANTING KEY**

- TREE SPECIES
- SHRUB SPECIES
- QUANTITY

**DETAIL KEY**

- DETAIL NO.
- SHEET NO.

03	ISSUED FOR SECOND SUBMISSION	22-06-22
02	ISSUED FOR FIRST SUBMISSION	22-04-20
01	ISSUED FOR CLIENT REVIEW	22-04-12
No.	Description	Date
Revision		
City Approval Stamp		

**GENERAL PLANTING NOTES:**

- CONTRACTOR TO VERIFY LOCATION OF ALL SERVICES PRIOR TO ANY EXCAVATION.
- ALL IDENTIFIED TREES FOR TRANSPLANTING SHALL BE MAINTAINED AND PRESERVED UNTIL RELOCATION.
- ALL PLANT MATERIAL SHALL BE NURSERY GROWN STOCK UNLESS OTHERWISE NOTED.
- ALL PLANT MATERIAL SHALL BE WARRANTED FOR TWO YEARS FROM THE DATE OF PERFORMANCE ACCEPTANCE AS DETERMINED BY THE CITY OF OTTAWA.
- CONTRACTOR TO MAKE GOOD ALL EXISTING AREAS DAMAGED BY HIS WORK TO THE SATISFACTION OF THE CITY OF OTTAWA.
- PERIODIC REVIEWS OF PLANTING SHALL BE CARRIED OUT BY THE LANDSCAPE ARCHITECT.
- PLANT ALL TREES 1.0M MIN. FROM TOP OF SWALES AND OVER LAND FLOW ROUTES.
- QUERCUS RUBRA, AND ACER SACCHARINUM TO BE SPRING DUG SPECIMENS AND PLANTED IN THE SPRING ONLY.
- LOCATION OF ALL PLANT MATERIALS TO BE STAKED BY THE CONTRACTOR AND VERIFIED IN THE FIELD BY LANDSCAPE ARCHITECT & CITY OF OTTAWA PRIOR TO EXCAVATION.
- PLANTING SHALL BE SUPERVISED BY AN ECOLOGIST TO ENSURE AND APPROPRIATE NATURALIZED AREA IS ESTABLISHED.
- THE FOLLOWING TREE PROTECTION MEASURES WILL BE PROVIDED TO ENSURE THE PRESERVATION OF THE TREES IDENTIFIED IN THE DETAILED TREE PLANTING AND CONSERVATION PLAN TO THE SATISFACTION OF FORESTRY SERVICES:
  - THE OWNER SHALL INSTALL PRESERVATION TREE FENCING AS OUTLINED IN LANDSCAPE PLANS.
  - EQUIPMENT SHALL NOT BE ALLOWED TO OPERATE, PARK, BE REPAIRED OR REFUELED; NOR SHALL CONSTRUCTION MATERIALS BE STORED OR ANY EARTH MATERIALS BE STOCKPILED; WITHIN THE BARRICADES OR WITHIN THE CRITICAL ROOT ZONE OF A TREE. WASTE OR VOLATILE MATERIALS, SUCH AS MINERAL SPIRITS, OIL OR PAINT THINNER SHALL NOT BE DISPOSED OF ON SITE.
  - WHEN EXCAVATION MUST TAKE PLACE WITHIN THE CRITICAL ROOT ZONE OF A TREE, A TRENCH SHALL BE DUG CAREFULLY BY HAND OR WITH A ROOT-CUTTING (STUMP GRINDER) OR STONE CUTTING (CUT-OFF) MACHINE ALONG THE FURTHEST REACH OF THE CUT.
  - IF ANY TREE ROOTS ARE EXPOSED DURING CONSTRUCTION, THEY SHALL BE IMMEDIATELY REBURIED WITH SOIL OR COVERED WITH FILTER CLOTH OR WOOD CHIPS AND KEPT MOIST UNTIL THEY CAN BE BURIED PERMANENTLY. FLOODING OR DEPOSITION OF SEDIMENT SHALL BE PREVENTED WHERE TREES ARE LOCATED.
  - IN ORDER TO ELIMINATE SAFETY HAZARDS, THE OWNER SHALL PRUNE AND/OR REMOVE ANY FUTURE CITY-OWNED TREES PRIOR TO CITY TAKEOVER. ALL SUCH WORK MUST BE APPROVED AND SUPERVISED BY FORESTRY STAFF.
  - TREES TO BE TRANSPLANTED SHALL BE TAGGED AND ASSESSED BY THE CITY OF OTTAWA FOR SIZE AND HEALTH.
  - AFTER THE TREE HAS BEEN CAREFULLY DUG FROM ITS ORIGINAL LOCATION, IT IS CRITICAL THAT EXTREME CARE IS TAKEN TO PREVENT ROOT DEATH. MAKE SURE THAT ROOTS ARE KEPT MOST AS THEY ARE EASILY DAMAGED UNDER CONDITIONS OF HIGH TEMPERATURE AND LOW HUMIDITY.
  - ALL NEW TRANSPLANTS SHOULD BE WATERED AND MULCHED IMMEDIATELY; THEN FERTILIZED AT THE END OF THE FIRST GROWING SEASON.
  - CONTRACTOR TO MONITOR HEALTH INCLUDING TREAT TREE INSECTS AND DISEASES.

**PLANTING NOTES:**

- CONTRACTOR TO VERIFY LOCATION OF ALL SERVICES PRIOR TO ANY EXCAVATION.
- ALL PLANT MATERIAL SHALL BE NURSERY GROWN STOCK UNLESS OTHERWISE NOTED.
- ALL PLANT MATERIAL SHALL BE WARRANTED FOR TWO YEARS FROM THE DATE OF PERFORMANCE ACCEPTANCE AS DETERMINED BY THE CITY OF OTTAWA.
- CONTRACTOR TO MAKE GOOD ALL EXISTING AREAS DAMAGED BY HIS WORK TO THE SATISFACTION OF THE CITY OF OTTAWA.
- PERIODIC REVIEWS OF PLANTING SHALL BE CARRIED OUT BY THE LANDSCAPE ARCHITECT.
- ACER RUBRUM TO BE SPRING DUG SPECIMENS AND PLANTED IN THE SPRING ONLY.
- LOCATION OF ALL PLANT MATERIALS TO BE STAKED BY THE CONTRACTOR AND VERIFIED IN THE FIELD BY LANDSCAPE ARCHITECT & CITY OF OTTAWA PRIOR TO EXCAVATION.
- PLANTING SHALL BE SUPERVISED BY AN ECOLOGIST TO ENSURE AND APPROPRIATE NATURALIZED AREA IS ESTABLISHED.
- FOR SHRUB STOCK:
  - INSTALL PLANTS IN LATE FALL OR EARLY SPRING.
  - DO NOT ALLOW ROOTS TO DRY - PLANTS THAT CAN'T BE INSTALLED IMMEDIATELY SHALL BE HEELED INTO MOIST SOIL.
- PLANTING TRENCH OR HOLE SHALL BE WIDE ENOUGH TO PERMIT THE ROOTS TO SPREAD OUTWARD AND DOWNWARD; SPREAD THE ROOTS OUT WELL.
  - PLACE THE SHRUB AS UPRIGHT AS POSSIBLE, NO MORE THAN 10 DEGREES FROM VERTICAL.
  - SELECT THE BEST MICROSITE I.E. DO NOT PLANT SEEDLINGS NEAR WATER HOLES, STUMPS, OR ROCKS.
  - PLANT THE SHRUB AT THE PROPER DEPTH. FOR SHRUBS, THE ROOT COLLARS SHOULD BE AT GROUND LEVEL, WHILE FOR CONTAINER STOCK, THE TOP OF THE SOIL PLUG SHOULD BE 1-2cm BELOW GROUND LEVEL.
  - NEVER LEAVE ROOTS EXPOSED TO THE AIR, AND NEVER BURY THE BRANCHES.
  - DO NOT TRIM OR PRUNE SHRUB ROOTS.
  - PLACE THE SOIL WELL TO REMOVE AIR POCKETS; DO NOT OVER-PACK.
  - PLACE SPECIES ACCORDING TO INDICATED QUANTITIES AND SPACING.
  - MULCH THE SOIL SURFACE.
  - WATER PLANTS THOROUGHLY FOLLOWING PLANTING.
- THE FOLLOWING TREE PROTECTION MEASURES WILL BE PROVIDED TO ENSURE THE PRESERVATION OF THE TREES IDENTIFIED IN THE DETAILED TREE PLANTING AND CONSERVATION PLAN TO THE SATISFACTION OF FORESTRY SERVICES:
  - THE OWNER SHALL INSTALL PRESERVATION TREE FENCING AS OUTLINED IN LANDSCAPE PLANS.
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  - WHEN EXCAVATION MUST TAKE PLACE WITHIN THE CRITICAL ROOT ZONE OF A TREE, A TRENCH SHALL BE DUG CAREFULLY BY HAND OR WITH A ROOT-CUTTING (STUMP GRINDER) OR STONE CUTTING (CUT-OFF) MACHINE ALONG THE FURTHEST REACH OF THE CUT.
  - IF ANY TREE ROOTS ARE EXPOSED DURING CONSTRUCTION, THEY SHALL BE IMMEDIATELY REBURIED WITH SOIL OR COVERED WITH FILTER CLOTH OR WOOD CHIPS AND KEPT MOIST UNTIL THEY CAN BE BURIED PERMANENTLY. FLOODING OR DEPOSITION OF SEDIMENT SHALL BE PREVENTED WHERE TREES ARE LOCATED.
  - IN ORDER TO ELIMINATE SAFETY HAZARDS, THE OWNER SHALL PRUNE AND/OR REMOVE ANY FUTURE CITY-OWNED TREES PRIOR TO CITY TAKEOVER. ALL SUCH WORK MUST BE APPROVED AND SUPERVISED BY FORESTRY STAFF.

**SEED NOTES:**

- SEEDS SHALL HAVE A MINIMUM 150mm TOPSOIL.
- ALL SEED MUST BE FROM A RECOGNIZED SEED FIRM, MEETING THE REQUIREMENTS FOR THE SEEDS ACT FOR CANADA NO. 1 SEED. SEED SHALL BE CERTIFIED NO. 1 GRADE. A GERMINATION TEST MAY BE REQUESTED AND ALL LAWN SEED MUST COMPLY WITH FEDERAL AND PROVINCIAL SEED LAWS.
- INSTALL STANDARD MIXTURE (BY TERRASERING MIX), USE BIODEGRADABLE EROSION CONTROL MAT AS DIRECTED BY CONTRACT ADMINISTRATOR TO RETAIN SEED ON STEEP SLOPES (OVER 3:1 UNTIL ESTABLISHED).
- WET MEADOW SEED MIX SHALL BE INSTALLED BELOW 100YEAR W.L. AND THE DRY-MESIC MEADOW MIX SEED MIX SHALL BE INSTALLED ABOVE THE 100YEAR W.L.
- SURVEY THE PLANTING SITE FOR INVASIVE WEEDS AND REMOVE ALL OR AS MUCH UNDESIRABLE VEGETATION AS POSSIBLE.
- PLANT SEED AT A DEPTH EQUAL TO THE WIDEST THICKNESS OF THE SEED. GENERALLY THIS IS 6 MM (1/4") OR LESS.
- FIRM THE SOIL, GENTLY TAMP OR ROLL THE SEEDBED. DO NOT COMPACT THE SOIL. EXCESSIVE FORCE WILL DESTROY THE SOIL STRUCTURE AND INHIBIT GERMINATION.

**SEED MIX**

- APPLY SEED AT A RATE OF 30kg/ha.
- SEEDING SHALL OVERLAP ADJACENT GROUND COVER BY 300mm.
- SIMULTANEOUSLY APPLY ANNUAL OATS (Avena sativa) NURSE CROP AT A RATE OF 60kg/ha.
- WATER SOIL AFTER SEED APPLICATION.

**RIPARIAN HYDROSEED MIX - 30,000m<sup>2</sup>**

- 20% CANADA BLUE JOINT GRASS
- 20% FOWL MANNAGRASS
- 20% PRAIRIE CORNDOGGRASS
- 20% RIVERBANK RYE
- 20% SWITCHGRASS

**DRY-MESIC MEADOW SEED MIX - 20,000m<sup>2</sup>**

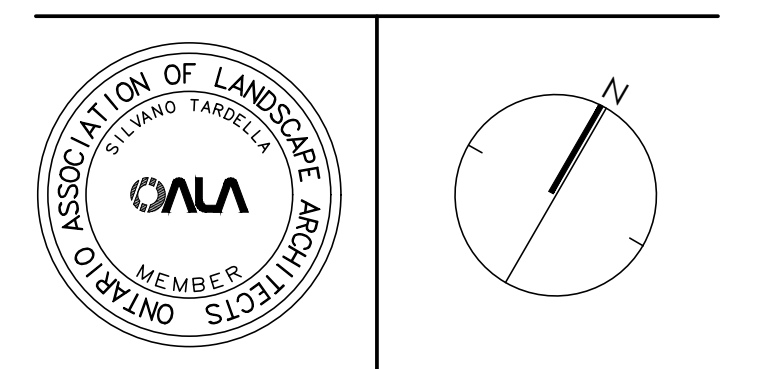
- 20% CANADA BLUE GRASS
- 20% CREEPING RED FESCUE
- 25% PERENNIAL RYEGRASS
- 10% RED CLOVER
- 10% BLACK-EYED SUSAN
- 5% NEW ENGLAND ASTER

**SHRUB NOTES:**

- PLANTING TRENCH OR HOLE SHALL BE WIDE ENOUGH TO PERMIT THE ROOTS TO SPREAD OUTWARD AND DOWNWARD; SPREAD THE ROOTS OUT WELL.
- PLACE THE SHRUB AS UPRIGHT AS POSSIBLE, INCLUDING ON SLOPES.
- SELECT THE BEST MICROSITE AND SHRUBS SHOULD NOT BE PLANTED NEAR WATER HOLES, STUMPS, INVASIVE WEEDS, OR ROCKS.
- PLANT SHRUBS AT THE PROPER DEPTH AS INDICATED ON THE DRAWINGS.
- NEVER LEAVE ROOTS EXPOSED TO THE AIR, AND NEVER BURY THE BRANCHES.
- DO NOT TRIM OR PRUNE SHRUB ROOTS. SHRUBS NEED EVERY ROOT TO ABSORB MOISTURE AND NUTRIENTS FROM THE GROUND TO ENSURE PROPER ESTABLISHMENT.
- PACK THE SOIL WELL AROUND THE PLANT BASE TO REMOVE AIR POCKETS, BUT DONT OVER PACK IT. PRESS GENTLY BUT FIRMLY TO PREVENT SHOCKING THE ROOTS.
- PLACE SPECIES ACCORDING TO THE QUANTITIES AND SPACING AS INDICATED ON THE DRAWINGS.
- MULCH THE SOIL SURFACE AS INDICATED ON DRAWINGS.
- WATER PLANTS THOROUGHLY FOLLOWING PLANTING.
- REFER TO SPECIFICATIONS FOR MAINTENANCE REQUIREMENTS

**PLANT LIST**

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL./HT.	ROOT
<b>DECIDUOUS TREES</b>					
AS	5	ACER SACCHARINUM	SILVER MAPLE	40mm	W.B.
QM	4	QUERCUS MACROCARPA	BUR OAK	40mm	W.B.
SN	7	SALIX NIGRA	BLACK WILLOW	40mm	W.B.
<b>CONIFEROUS TREES</b>					
AB	3	ABIES BALSAMEA	BALSAM FIR	150cm	B&B
LL	3	LARIX LARICINA	TAMARACK	150cm	B&B
PS	3	PINUS STROBUS	EASTERN WHITE PINE	150cm	B&B
<b>TREE MIX T1 - 300 TREES</b>					
10%	30	ACER SACCHARINUM	SILVER MAPLE	40mm	W.B.
18%	54	ACER SACCHARINUM	SILVER MAPLE	150cm	POT
12%	36	ACER SACCHARINUM	SILVER MAPLE	100cm	POT
9%	27	QUERCUS ALBA	WHITE OAK	150cm	POT
6%	18	QUERCUS ALBA	WHITE OAK	100cm	POT
6%	18	BETULA ALLEGHANENSIS	YELLOW BIRCH	150cm	POT
4%	12	BETULA ALLEGHANENSIS	YELLOW BIRCH	100cm	POT
9%	27	LARIX LARICINA	TAMARACK	150cm	B&B
6%	18	LARIX LARICINA	TAMARACK	60cm	B&B
12%	36	SALIX NIGRA	BLACK WILLOW	150cm	POT
8%	24	SALIX NIGRA	BLACK WILLOW	100cm	POT
<b>TREE MIX T2 - 330 TREES</b>					
9%	30	ABIES BALSAMEA	BALSAM FIR	150cm	B&B
6%	20	ABIES BALSAMEA	BALSAM FIR	60cm	B&B
12%	40	POPULUS GRANDIDENTATA	BIG TOOTHED ASPEN	150cm	POT
8%	26	POPULUS GRANDIDENTATA	BIG TOOTHED ASPEN	100cm	POT
6%	20	QUERCUS ALBA	WHITE OAK	150cm	POT
4%	13	QUERCUS ALBA	WHITE OAK	100cm	POT
10%	33	QUERCUS MACROCARPA	BUR OAK	40mm	W.B.
18%	58	QUERCUS MACROCARPA	BUR OAK	150cm	POT
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<b>SHRUB MIX S1 - 1,590m<sup>2</sup> @ 1.0m SPACING (1,590 PLANTS)</b>					
20%	318	AMELANCHIER ALNIFOLIA	SASKATOON BERRY	40cm	1 GAL.
20%	318	ALNUS RUGOSA	SPECKLED ALDER	40cm	1 GAL.
15%	239	CORNUS STOLONIFERA	RED OSIER DOGWOOD	40cm	1 GAL.
15%	239	PHYSOCARPUS OPILOPOUS	COMMON HIBERNARI	40cm	1 GAL.
15%	238	SAMBUCUS NIGRA	COMMON ELDERBERRY	40cm	1 GAL.
15%	238	VIBURNUM LENTAGO	NANNYBERRY	40cm	1 GAL.
<b>SHRUB MIX S2 - 1,325m<sup>2</sup> @ 1.0m SPACING (1,325 PLANTS)</b>					
40%	530	CORNUS STOLONIFERA	RED OSIER DOGWOOD	40cm	1 GAL.
10%	133	CORNUS AMOMUM	SILKY DOGWOOD	40cm	1 GAL.
10%	133	SALIX CORDATA	HEARTLEAVED WILLOW	40cm	1 GAL.
10%	133	SALIX DISCOLOR	PUSSY WILLOW	40cm	1 GAL.
10%	132	SALIX EXIGUA	SANDBAR WILLOW	40cm	1 GAL.
10%	132	SALIX LUCIDA	SHINING WILLOW	40cm	1 GAL.
10%	132	VIBURNUM TRILOBUM	HIGHBUSH CRANBERRY	40cm	1 GAL.



**NAK**  
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1285 WELLINGTON STREET WEST, OTTAWA, ON K1J 3A8 CANADA  
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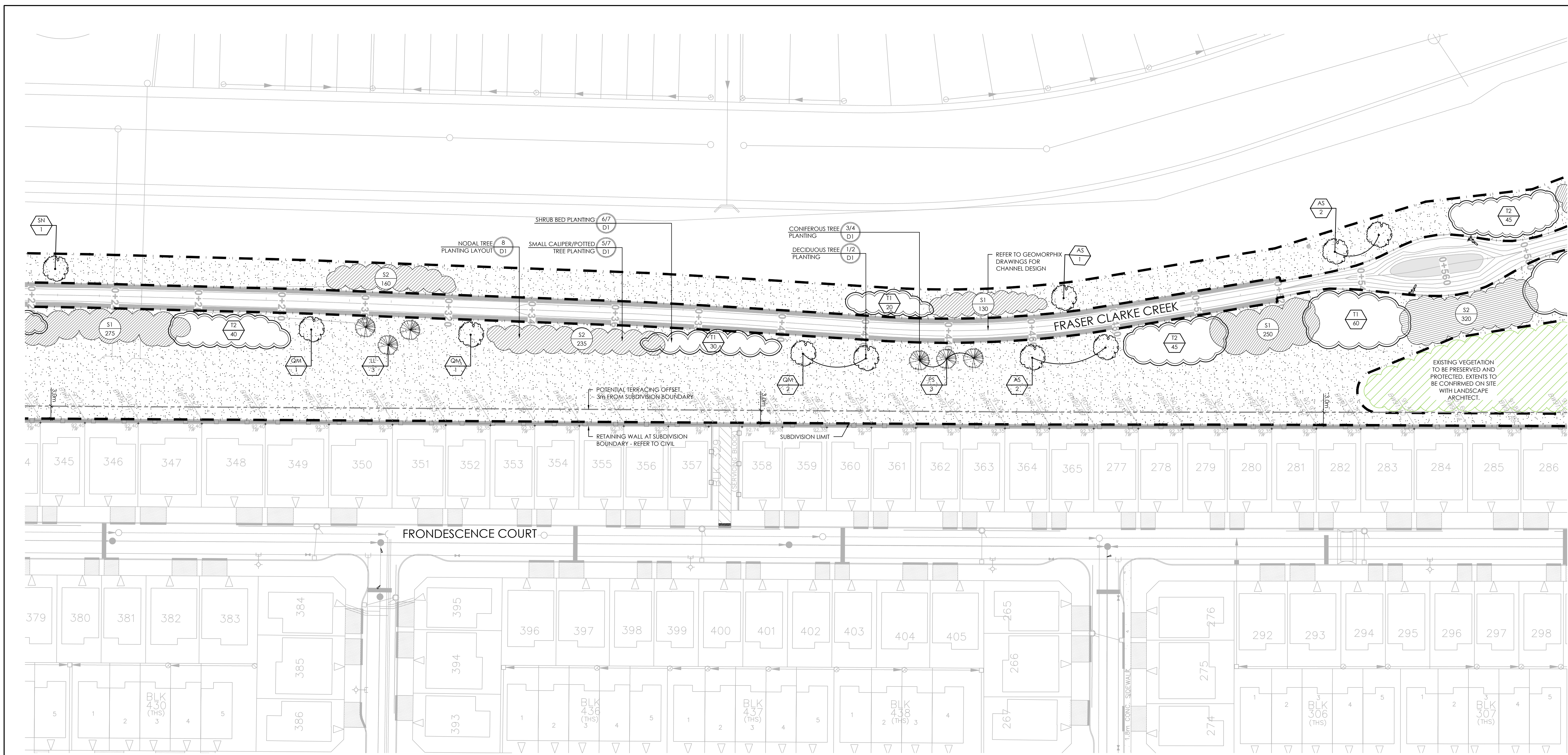
Barrhaven Conservancy Development Corporation  
**FRASER-CLARKE CREEK RESTORATION PHASE 2**

Title: LANDSCAPE PLAN

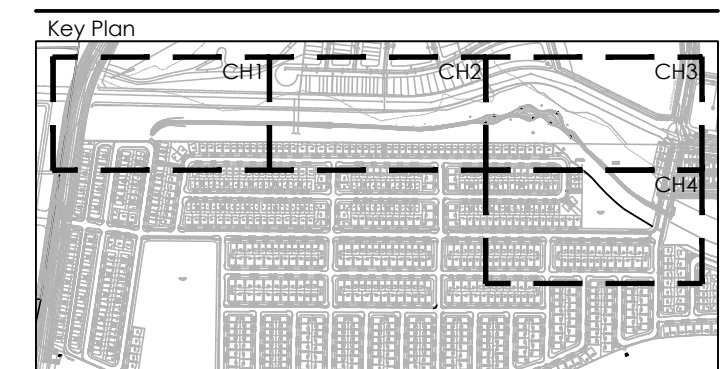
Date: March 2022  
Scale: 1:500  
Drawn: JK  
Checked: MK  
Job No.: 22-055

Sheet: CH1





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**LEGEND**

- LIMIT OF LANDSCAPE WORK
- - - - - POTENTIAL TERRACING OFFSET

**FENCING (BY OTHERS)**

- 1.5m HT. CHAIN LINK FENCE
- POST AND RAIL FENCE

**PLANTING**

- DECIDUOUS TREE
- CONIFEROUS TREE
- +□+ DRY-MESIC MEADOW SEED MIX
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**CHANNEL FEATURES (REFER TO GEOMORPHIX)**

- STATION NUMBER
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- LIVE STAKES
- RAPTOR POLE
- PALLET TYPE WOOD PILE
- BASKING LOG

**PLANTING KEY**

- XX TREE SPECIES
- 00 QUANTITY
- XX SHRUB SPECIES
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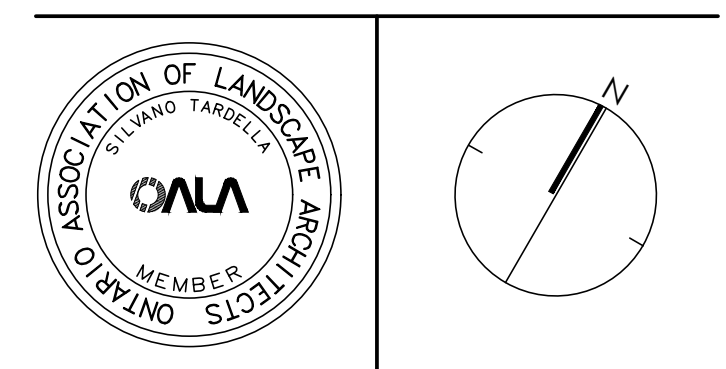
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- 1 DETAIL NO.
- D1 SHEET NO.

03	ISSUED FOR SECOND SUBMISSION	22-06-22
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<b>TREE MIX T1 - 300 TREES</b>						
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design strategies

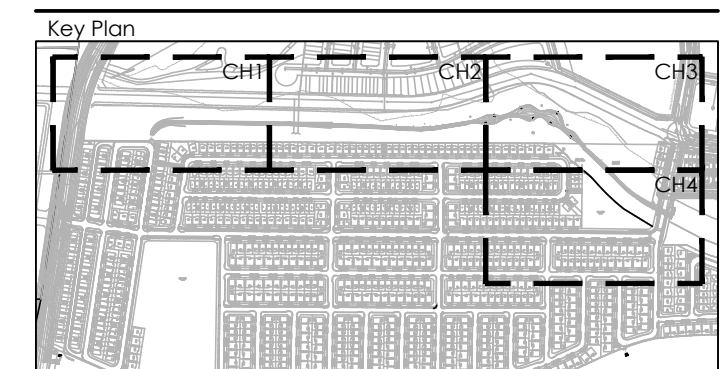
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Project  
Barrhaven Conservancy Development Corporation  
**FRASER-CLARKE CREEK RESTORATION PHASE 2**

Title: LANDSCAPE PLAN

Date: March 2022	Sheet:
Scale: 1:500	CH2
Drawn: JC	
Checked: MK	
Job No.: 22-055	

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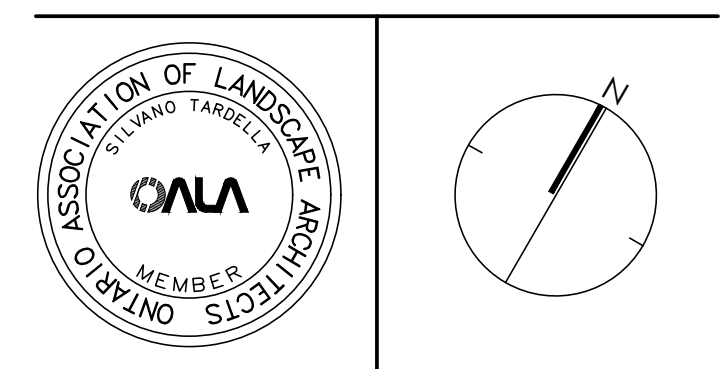
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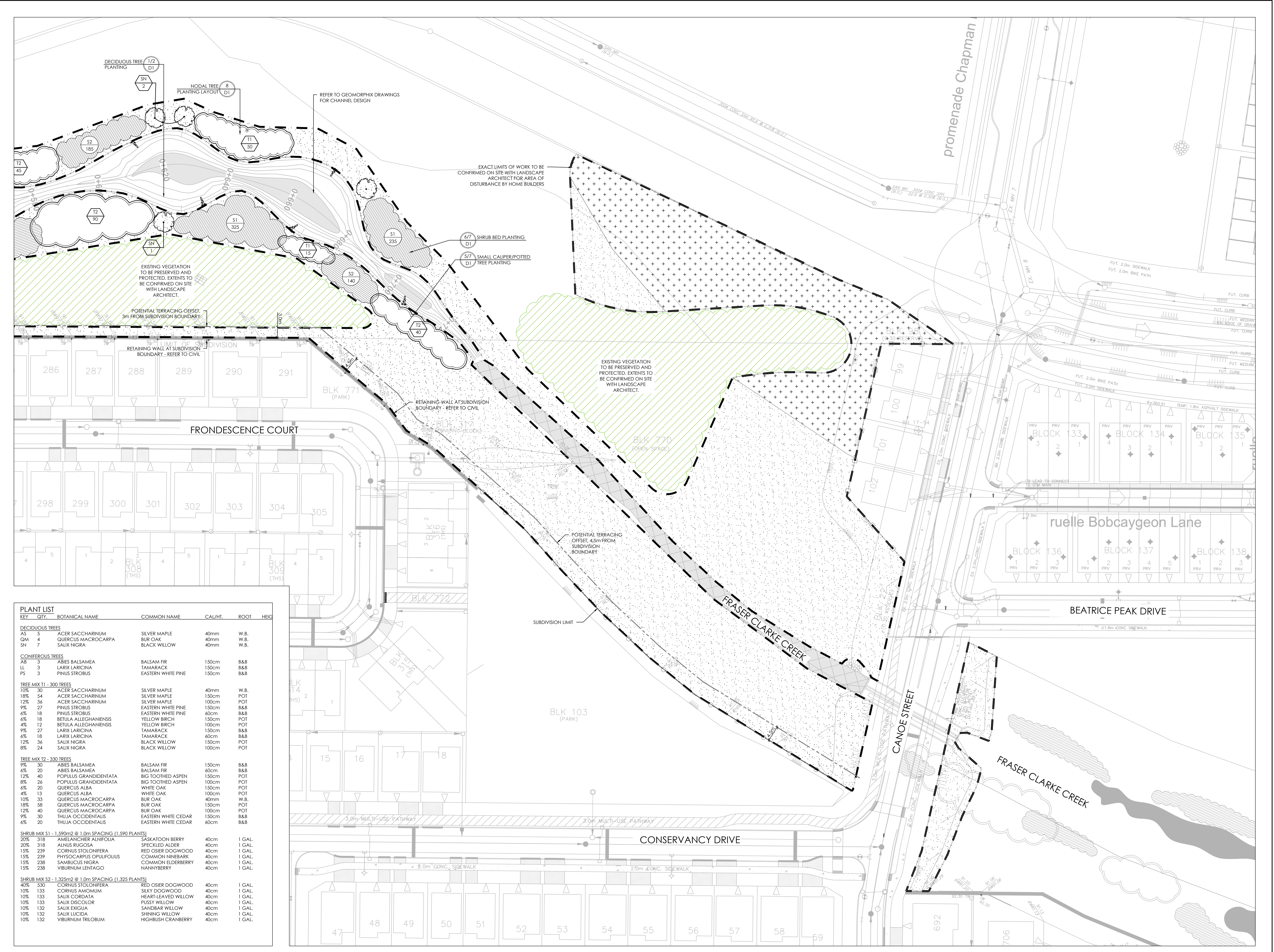
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1285 WELLINGTON STREET WEST, OTTAWA, ON K1Y 3A8 CANADA  
T 613.237.2345 F 613.237.6423 NAKDESIGNSTRATEGIES.COM

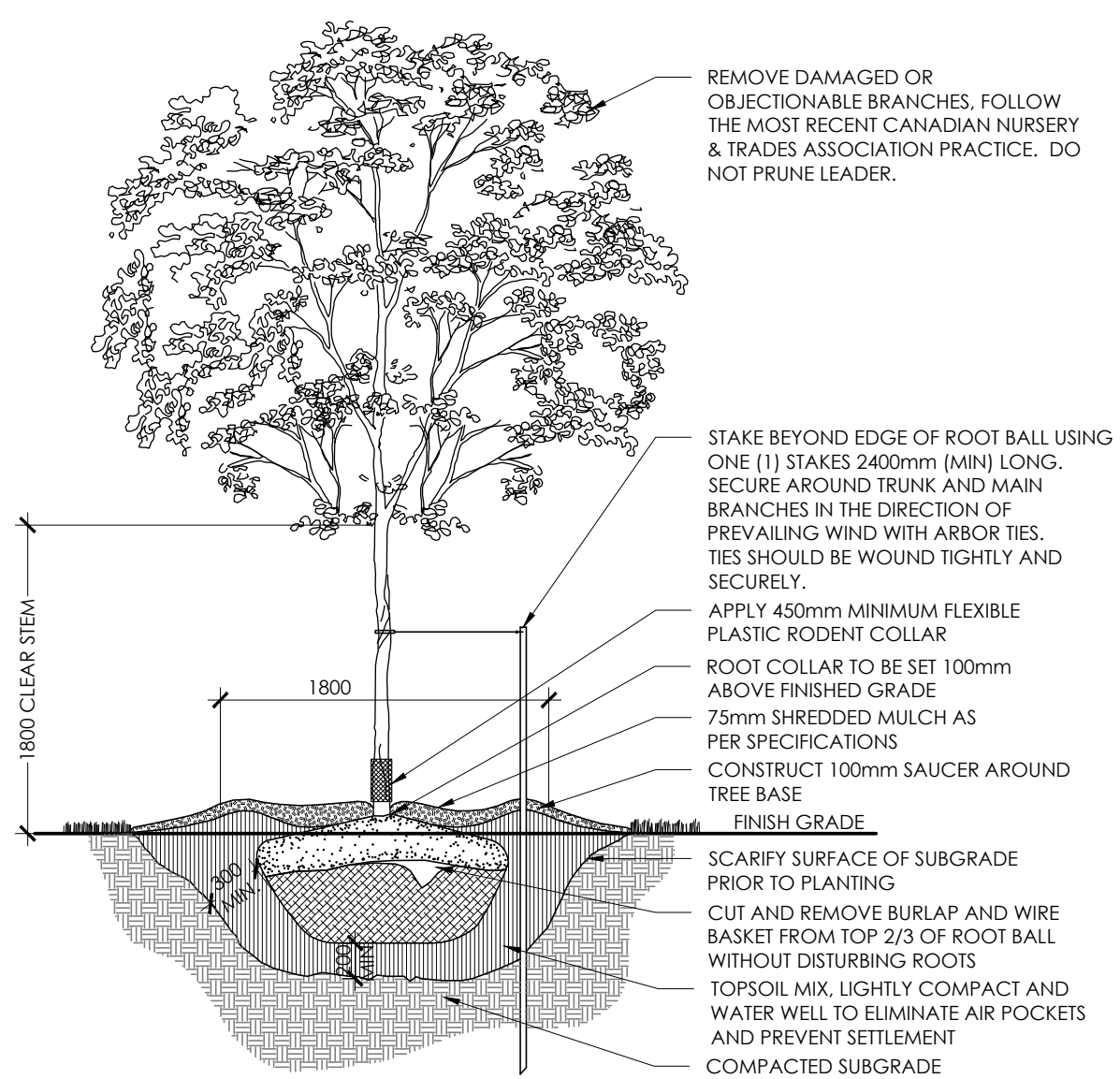
Barhaven Conservancy Development Corporation  
**FRASER-CLARKE CREEK RESTORATION PHASE 2**

Title LANDSCAPE PLAN	
Date March 2022	Sheet CH3
Scale 1:500	Drawn JC
Checked MK	Job No. 22-055



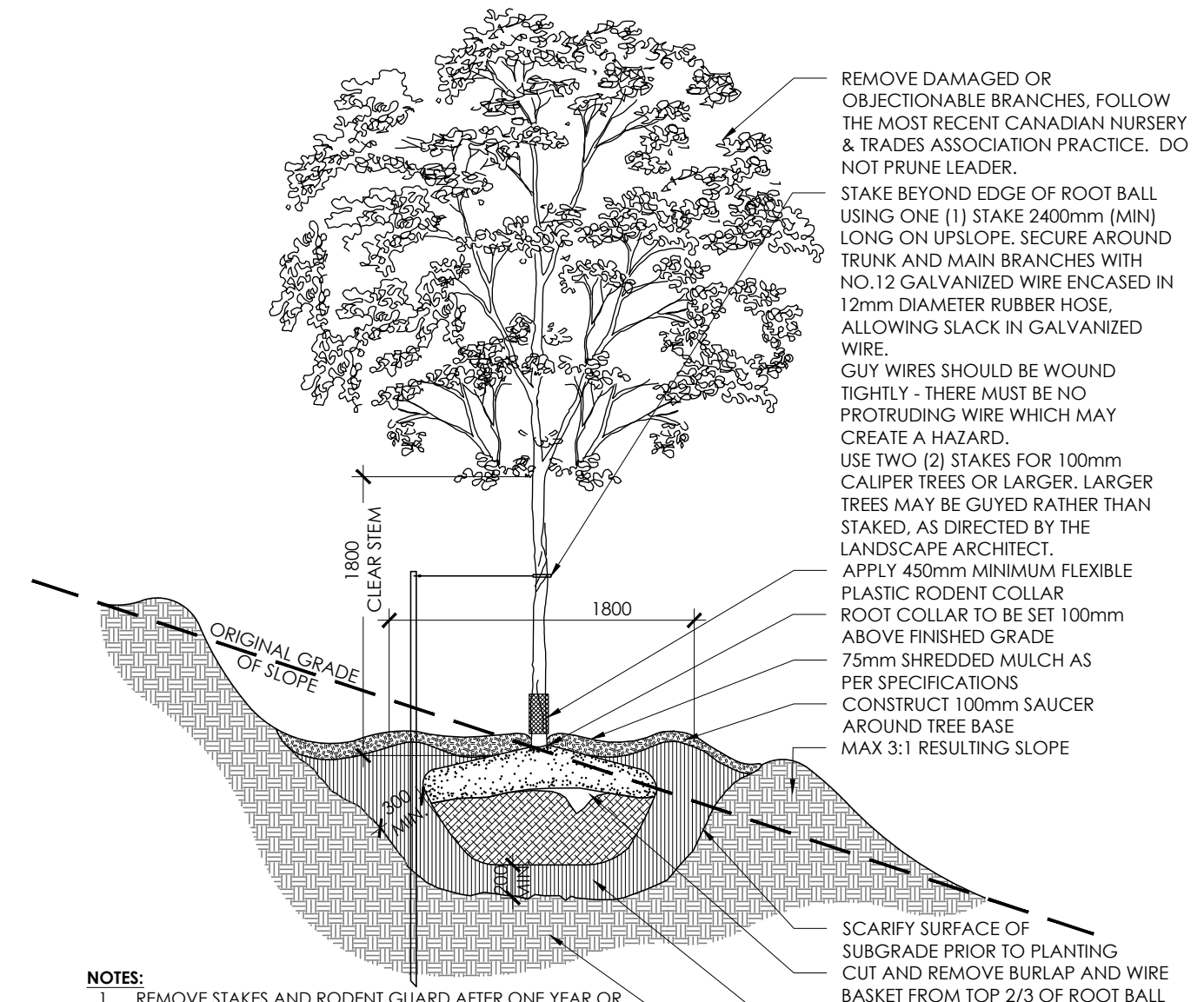
**PLANT LIST**

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAI/HT.	ROOT	HEIG.
<b>DECIDUOUS TREES</b>						
AS	5	ACER SACCHARINUM	SILVER MAPLE	40mm	W.B.	
QM	4	QUERCUS MACROCARPA	BUR OAK	40mm	W.B.	
SN	7	SALIX NIGRA	BLACK WILLOW	40mm	W.B.	
<b>CONIFEROUS TREES</b>						
AB	3	ABIES BALSAMEA	BALSAM FIR	150cm	B&B	
LL	3	LARIX LARICINA	TAMARACK	150cm	B&B	
PS	3	PINUS STROBUS	EASTERN WHITE PINE	150cm	B&B	
<b>TREE MIX T1 - 300 TREES</b>						
10%	30	ACER SACCHARINUM	SILVER MAPLE	40mm	W.B.	
18%	54	ACER SACCHARINUM	SILVER MAPLE	150cm	POT	
12%	36	ACER SACCHARINUM	SILVER MAPLE	100cm	POT	
9%	27	PINUS STROBUS	EASTERN WHITE PINE	150cm	B&B	
6%	18	PINUS STROBUS	EASTERN WHITE PINE	60cm	B&B	
6%	18	BETULA ALLEGANIENSIS	YELLOW BIRCH	150cm	POT	
4%	12	BETULA ALLEGANIENSIS	YELLOW BIRCH	100cm	POT	
9%	27	LARIX LARICINA	TAMARACK	150cm	B&B	
6%	18	LARIX LARICINA	TAMARACK	60cm	B&B	
12%	36	SALIX NIGRA	BLACK WILLOW	150cm	POT	
8%	24	SALIX NIGRA	BLACK WILLOW	100cm	POT	
<b>TREE MIX T2 - 350 TREES</b>						
9%	30	ABIES BALSAMEA	BALSAM FIR	150cm	B&B	
6%	20	ABIES BALSAMEA	BALSAM FIR	60cm	B&B	
12%	40	POPULUS GRANDIDENTATA	BIG TOOTHED ASPEN	150cm	POT	
8%	26	POPULUS GRANDIDENTATA	BIG TOOTHED ASPEN	100cm	POT	
6%	20	QUERCUS ALBA	WHITE OAK	150cm	POT	
4%	13	QUERCUS ALBA	WHITE OAK	100cm	POT	
10%	33	QUERCUS MACROCARPA	BUR OAK	40mm	W.B.	
18%	58	QUERCUS MACROCARPA	BUR OAK	150cm	POT	
12%	40	QUERCUS MACROCARPA	BUR OAK	100cm	POT	
9%	30	THUJA OCCIDENTALIS	EASTERN WHITE CEDAR	150cm	B&B	
6%	20	THUJA OCCIDENTALIS	EASTERN WHITE CEDAR	60cm	B&B	
<b>SHRUB MIX S1 - 1,590m<sup>2</sup> @ 1.0m SPACING (1,590 PLANTS)</b>						
20%	318	AMELANCHIER ALNIFOLIA	SASKATOON BERRY	40cm	1 GAL.	
20%	318	ALNUS RUGOSA	SPECKLED ALDER	40cm	1 GAL.	
15%	229	CORNUS STOLONIFERA	RED OSIER DOGWOOD	40cm	1 GAL.	
15%	239	PHYSOCARPUS OPUFOLIUS	COMMON NINEBARK	40cm	1 GAL.	
15%	238	SAMBUCUS NIGRA	COMMON ELDERBERRY	40cm	1 GAL.	
15%	238	VIBURNUM LENTAGO	HANNYBERRY	40cm	1 GAL.	
<b>SHRUB MIX S2 - 1,325m<sup>2</sup> @ 1.0m SPACING (1,325 PLANTS)</b>						
40%	530	CORNUS STOLONIFERA	RED OSIER DOGWOOD	40cm	1 GAL.	
10%	133	CORNUS ANOMALUM	SILKY DOGWOOD	40cm	1 GAL.	
10%	133	SALIX CORDATA	HEART-LEAVED WILLOW	40cm	1 GAL.	
10%	133	SALIX DISCOLOR	PUSSY WILLOW	40cm	1 GAL.	
10%	132	SALIX EXIGUA	SANDBAR WILLOW	40cm	1 GAL.	
10%	132	SALIX LUCIDA	SHINING WILLOW	40cm	1 GAL.	
10%	132	VIBURNUM TRILOBUM	HIGHBUSH CRANBERRY	40cm	1 GAL.	



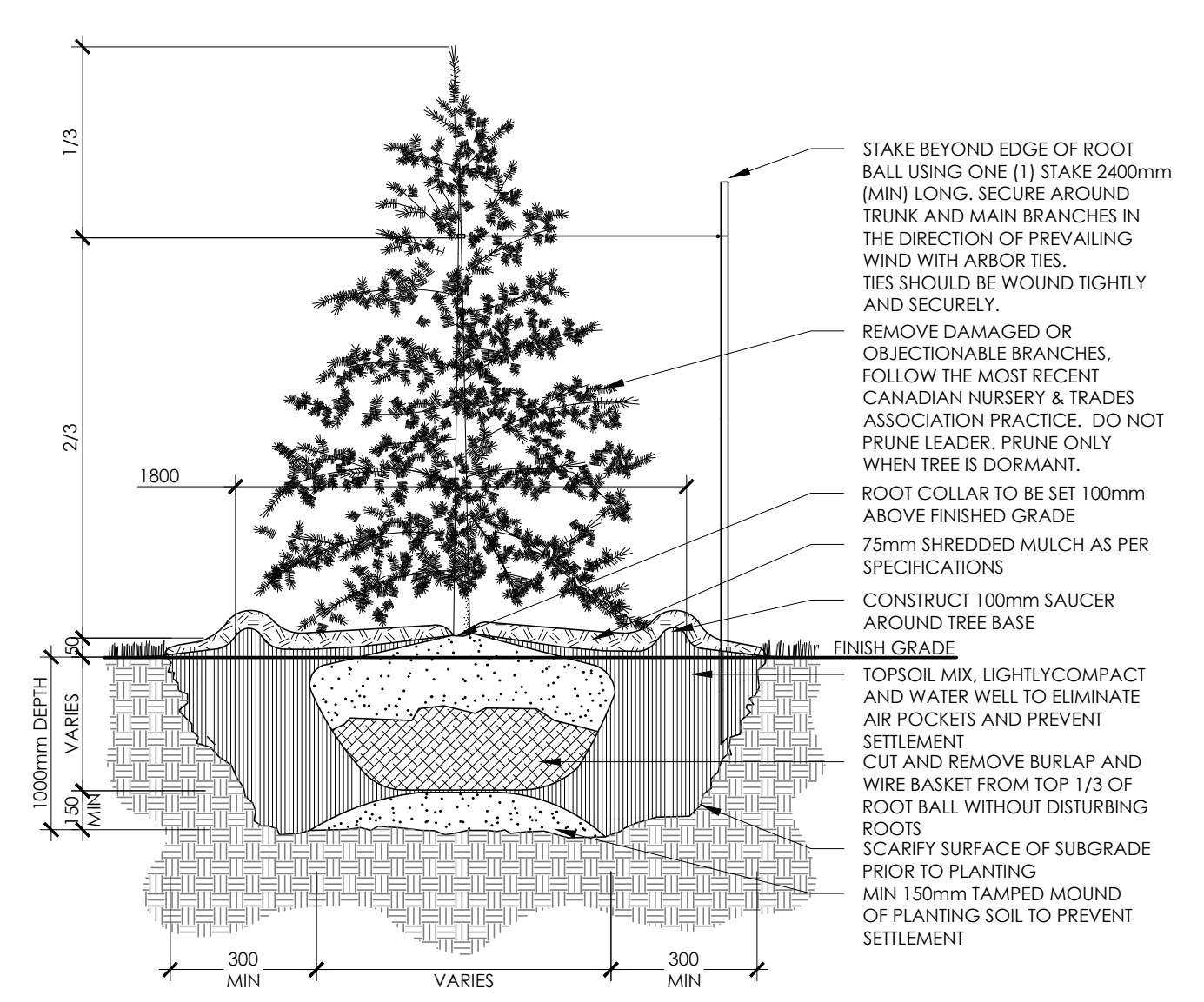
- NOTES:**
1. REMOVE STAKE AFTER ONE YEAR OR UNTIL TAKEOVER, UNLESS OTHERWISE DIRECTED BY THE LANDSCAPE ARCHITECT.
  2. TOPSOIL MIXTURE AND SHREDDED MULCH AS PER SPECIFICATION
  3. REMOVE TREE WRAP AFTER PLANTING
  4. CALIPER TO BE MEASURED AT THE BASE OF TREE AT ROOT BALL.

**1** DECIDUOUS TREE PLANTING (ONE STAKE W/ARBOR TIES)  
N.T.S.



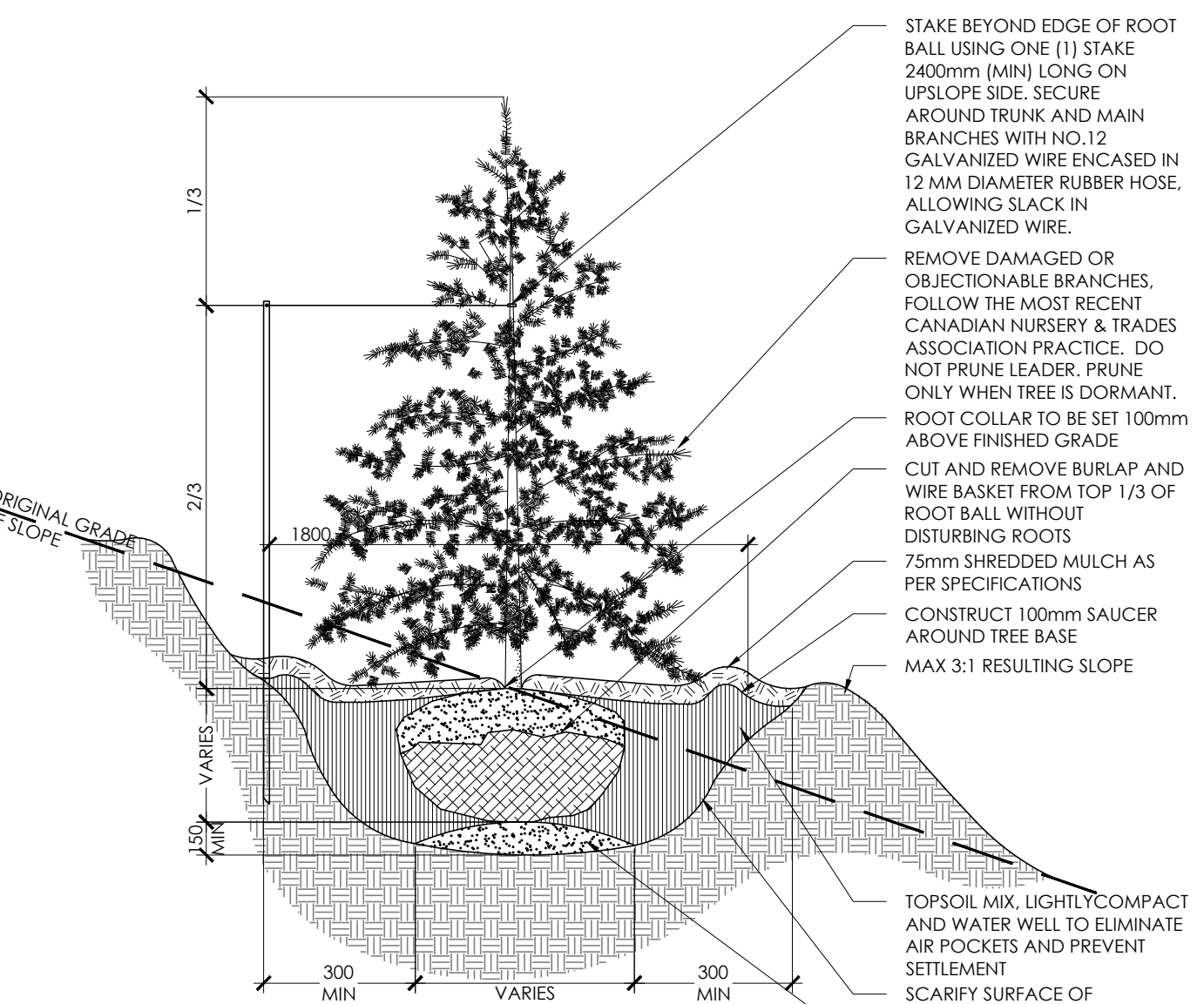
- NOTES:**
1. REMOVE STAKES AND RODENT GUARD AFTER ONE YEAR OR UNTIL TAKEOVER, UNLESS OTHERWISE DIRECTED BY THE LANDSCAPE ARCHITECT.
  2. TOPSOIL MIXTURE AND SHREDDED MULCH AS PER SPECIFICATION
  3. REMOVE TREE WRAP AFTER PLANTING
  4. CALIPER TO BE MEASURED AT THE BASE OF TREE AT ROOT BALL.

**2** DECIDUOUS TREE PLANTING ON A SLOPE (ONE STAKE)  
N.T.S.



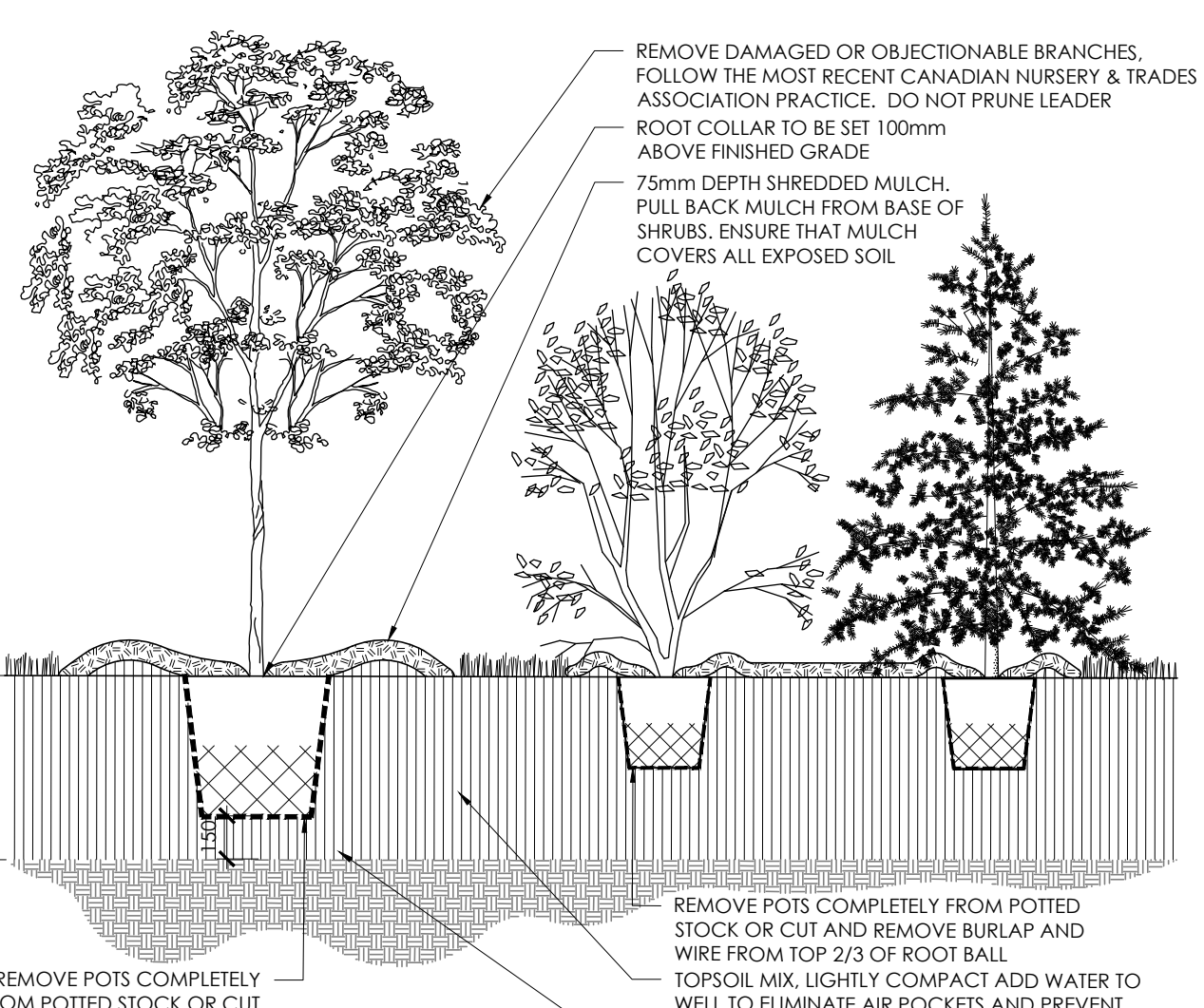
- NOTES:**
1. REMOVE STAKE AFTER ONE YEAR OR UNTIL TAKEOVER UNLESS OTHERWISE DIRECTED BY THE LANDSCAPE ARCHITECT.
  2. TOPSOIL MIXTURE AND SHREDDED MULCH AS PER SPECIFICATION

**3** CONIFEROUS TREE PLANTING (ONE STAKE W/ARBOR TIES)  
N.T.S.



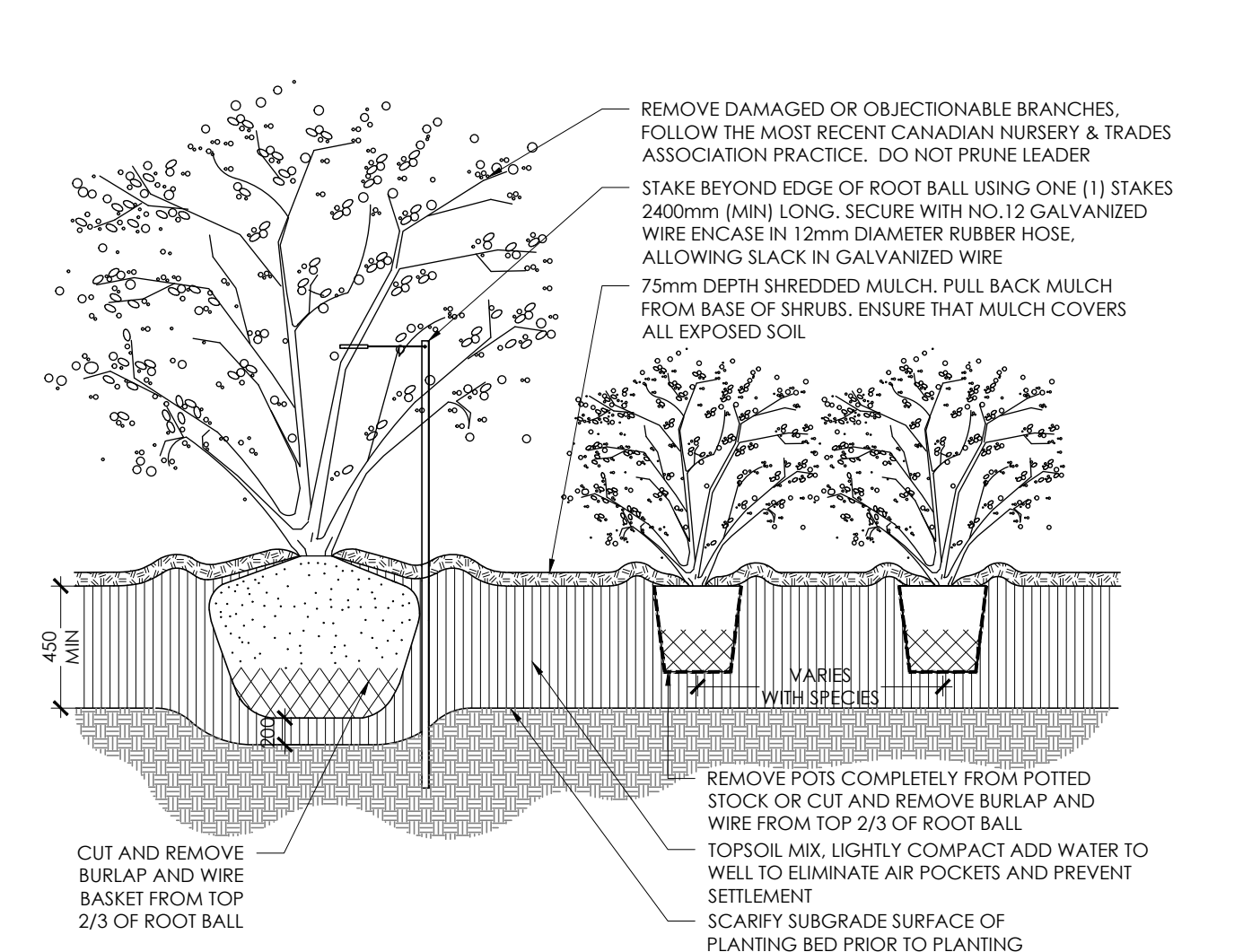
- NOTES:**
1. REMOVE STAKES AFTER ONE YEAR OR UNTIL TAKEOVER UNLESS OTHERWISE DIRECTED BY THE LANDSCAPE ARCHITECT.
  2. TOPSOIL MIXTURE AND SHREDDED MULCH AS PER SPECIFICATION
  3. STAKES TO BE REMOVED AT COMPLETION OF TWO YEAR WARRANTY PERIOD.

**4** CONIFEROUS TREE PLANTING ON A SLOPE (ONE STAKE)  
N.T.S.



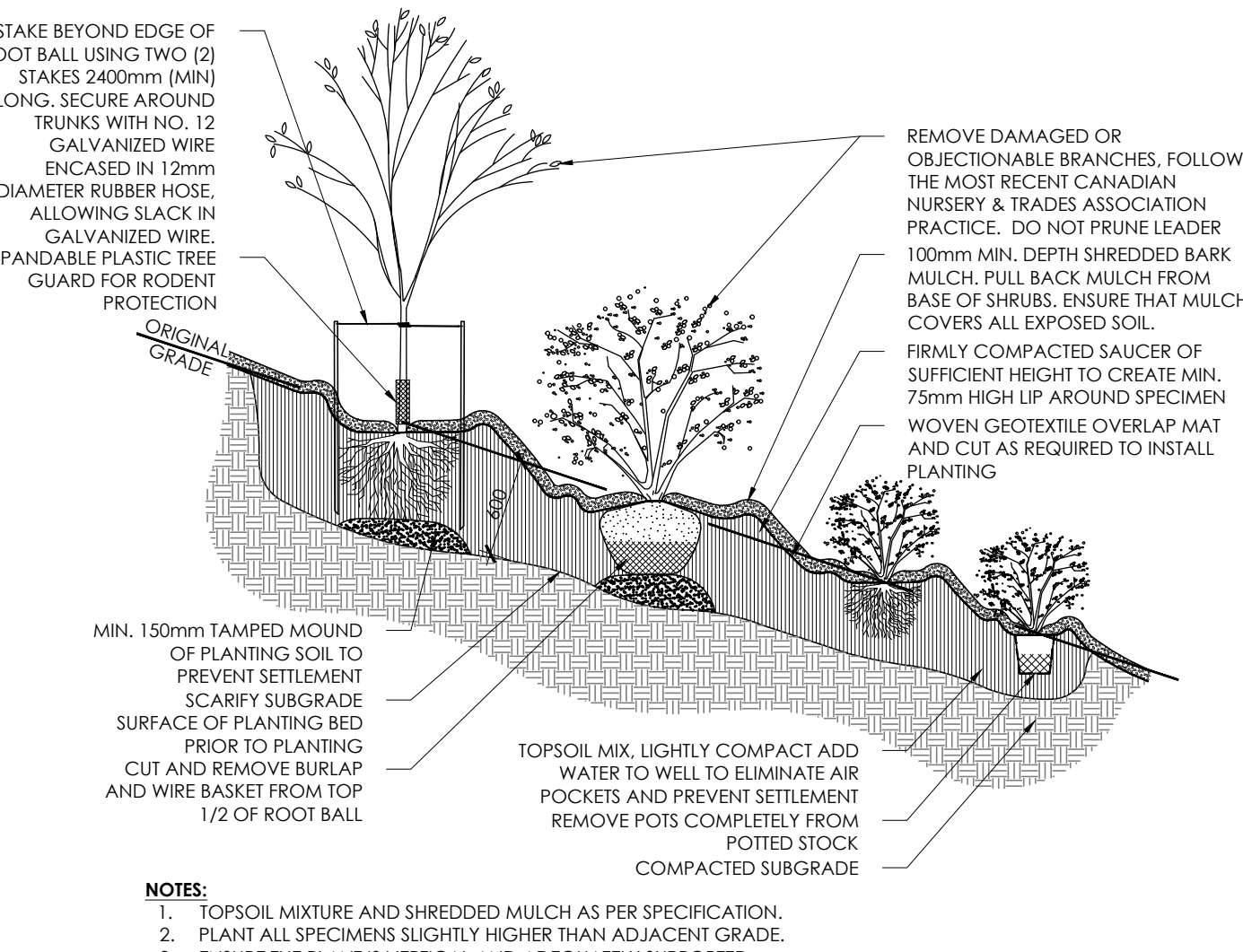
- NOTES:**
1. TOPSOIL MIXTURE AND SHREDDED MULCH AS PER SPECIFICATION.
  2. PLANTS SPECIFIED TO BE PLACED SO THAT ROOTS ARE FULLY EXTENDED IN PLANTING HOLE WITH SOIL MIX BACKFILLED CAREFULLY TO PREVENT ROOT DAMAGE.
  3. PROVIDE 100mm HIGH EARTH SAUCER AROUND PLANTING.

**5** SMALL CALIPER/POTTED TREE PLANTING  
N.T.S.



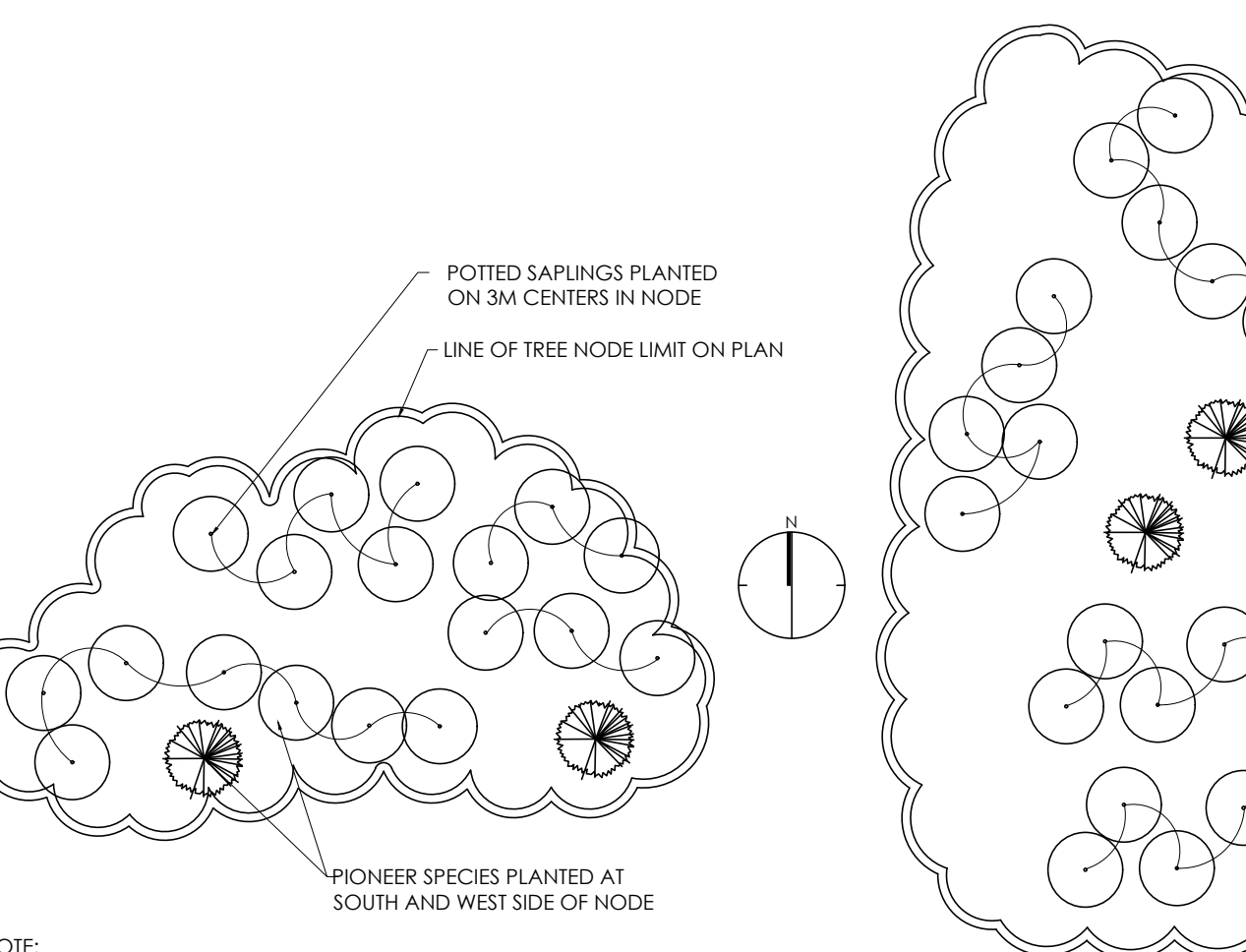
- NOTES:**
1. TOPSOIL MIXTURE AND SHREDDED MULCH AS PER SPECIFICATION.
  2. SHRUBS SPECIFIED BARE ROOT (B.R.) TO BE PLANTED SO THAT ROOTS ARE FULLY EXTENDED IN PLANTING HOLE WITH SOIL MIX BACKFILLED CAREFULLY TO PREVENT ROOT DAMAGE.
  3. PROVIDE 100mm HIGH EARTH SAUCER AROUND SHRUB BED.
  4. STAKES TO BE REMOVED AFTER ONE YEAR OR UNTIL TAKEOVER UNLESS OTHERWISE DIRECTED BY LANDSCAPE ARCHITECT.

**6** SHRUB BED PLANTING  
N.T.S.



- NOTES:**
1. TOPSOIL MIXTURE AND SHREDDED MULCH AS PER SPECIFICATION.
  2. PLANT ALL SPECIMENS SLIGHTLY HIGHER THAN ADJACENT GRADE.
  3. ENSURE THE PLANT IS VERTICAL AND ADEQUATELY SUPPORTED.
  4. BARE ROOT (B.R.) SPECIMENS:
    - INSTALL PLANT MATERIAL SO THAT ROOTS ARE FULLY EXTENDED IN PLANTING HOLE WITH SOIL MIX BACKFILLED CAREFULLY TO PREVENT ROOT DAMAGE.
    - PROTECT ROOTS FROM WIND AND SUN EXPOSURE, AND BE KEPT MOIST.
    - SOAK ROOTS COMPLETELY PRIOR TO PLANTING AND PLANTED IMMEDIATELY
    - PLANT DURING THE DORMANT SEASON, PREFERABLY PLANT ON CLOUDY, COOL HUMID DAYS.
  5. STAKES AND RODENT GUARD TO BE REMOVED AFTER ONE YEAR UNLESS OTHERWISE DIRECTED BY LANDSCAPE ARCHITECT.

**7** POTTED TREE/SHRUB BED PLANTING ON SLOPE  
N.T.S.

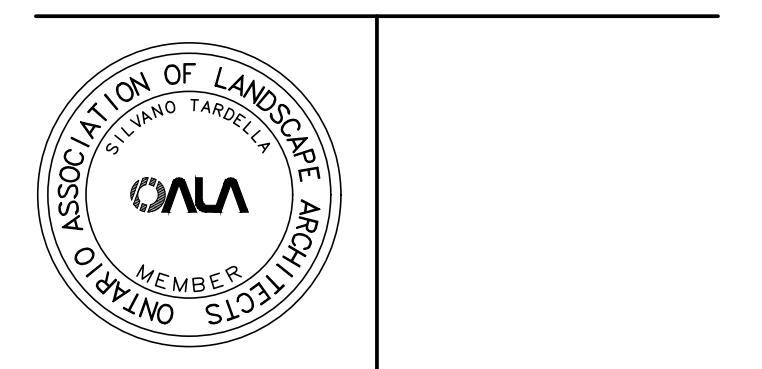


- NOTE:**
1. PLANT SAPLINGS (SIZES REFER TO PLAN) IN GROUPS OF 3 OF ANY SINGLE SPECIES
  2. NODAL TREE PLANTING AREAS ARE BASED ON 1 TREE/ 10M<sup>2</sup> (3.3M CENTERS)

**8** NODAL TREE PLANTING LAYOUT  
N.T.S.

Contractor shall check all dimensions on the work and report any discrepancy to the Landscape Architect before proceeding. All drawings and specifications are the property of the Landscape Architect and must be returned at the completion of the work. This drawing is not to be used for construction until signed by the Landscape Architect.

No.	Description	Date
03	ISSUED FOR SECOND SUBMISSION	22-06-22
02	ISSUED FOR FIRST SUBMISSION	22-04-20
01	ISSUED FOR CLIENT REVIEW	22-04-12
Revision		
City Approval Stamp		



**NAK**  
design strategies  
1285 WELLINGTON STREET WEST, OTTAWA, ON K1Y 3A8 CANADA  
T 613.237.2345 F 613.237.6423 NAKDESIGNSTRATEGIES.COM  
Project

Barrhaven Conservancy Development Corporation  
**FRASER-CLARKE CREEK RESTORATION**  
PHASE 2

Date	March 2022	Sheet
Scale	1:500	D1
Drawn	JC	
Checked	MK	
Job No.	22-055	

# RVCA Letter of Permission —

Ont. Reg. 174/06, S. 28 *Conservation Authorities Act*  
1990, As Amended.



Date: December 2, 2022  
File: RV5-3922  
Contact: eric.lalande@rvca.ca; 613-692-3571 x1137

3889 Rideau Valley Drive  
PO Box 599, Manotick ON K4M 1A5  
T 613-692-3571 | 1-800-267-3504  
F 613-692-0831 | www.rvca.ca

Applicant: Barrhaven Development Corporation  
2934 Baseline Road #302  
Ottawa, ON K2H 1B2

**Permit for: Alteration to a Watercourse Under Section 28 of the Conservation Authorities Act for the installation and construction of stormwater outlets associated with the Barrhaven Conservancy Development East, at 3305 Borrisokane Road, Lot 13, Concession 3, former Township of Nepean, now in the City of Ottawa.  
PIN: 04595-0059**

Dear Ms. Murphy,

The Rideau Valley Conservation Authority has reviewed the application and understands the proposal to be for:

- a) **Seven (7) stormwater outlet headwall structures**
- b) **Six (6) drainage channels**
- c) **Six (6) reinforced grass maintenance access roads**
- d) **Five (5) connections to an existing watercourse**

This proposal was reviewed under Ontario Regulation 174/06, the "*Development, Interference with Wetlands, and Alteration to Watercourse and Shorelines*" regulation and the RVCA Development Policies (approved by the RVCA, Board of Directors), specifically Section 1.0 General Principles and section 3.0 Policies regarding alterations to waterways applications. The proposal is not expected to impact the control of flooding, pollution, erosion or conservation of land providing conditions are followed.

## PERMISSION AND CONDITIONS

By this letter the Rideau Valley Authority hereby grants you approval to undertake this project as outlined in your permit application but subject to the following conditions:

1. Approval is subject to the understanding of the project as described above and outlined in the application and submitted plans as submitted dated November 17, 2022:
  - Detailed General Plans 7,8,13,14,16, & 17 prepared by DSEL.
  - Detailed Storm Outlet drawings 53, 55, 56, 66, 71, & 72, prepared by DSEL.
  - Detailed Future Storm Outlet drawing 87, prepared by DSEL.
  - Detailed Grading Plans 94, 95, 100, 101, & 104 prepared by DSEL.
  - Detailed Ultimate Grading Plan – Borrisokane drawing 108, prepared by DSEL.

• Erosion and Sediment Control Plans 123 & 124, prepared by DSEL.

2. All excavated material not utilized as backfill (if appropriate material) must be removed from the site to a suitable disposal site outside the 1:100-year floodplain and regulated area.
3. A finished grading plan will be submitted as soon as the work is complete to confirm the grading and elevation of outlets, drainage channels, headwalls on the property conform to the approved drawings. A refundable deposit of \$3190 is required to be submitted prior to commencement of the work. Satisfactory review of the finished grading plan and compliance with other conditions of approval will result in the return of the deposit (less 10% administrative fee).
4. No in-water work is to occur between March 15 and June 30.
5. The Rideau Valley Conservation Authority is provided two-day's notice of the start of the project.
6. The applicant agrees that Authority staff may visit the subject property before, during and after project completion to ensure compliance with the conditions as set out in this letter of permission.
7. That the current municipal zoning will permit this development and no variances and/or amendments to the current zoning will be necessary in order to proceed with the development. Any Planning application will require further review and may not receive supportive comments.
8. Sediment control will be established to ensure no sediment migration from the site. All grubbing and equipment storage and operation will be limited to the development envelope. All areas located outside the development envelope will be left untouched. No fill including topsoil, sand, etc. will be placed outside the development envelope for any reason purpose. No equipment will be permitted to disturb area outside the development envelope.
9. A new application must be submitted should any work as specified in this letter be ongoing or planned for or after December 2, 2024

All other approvals as might be required from the Municipality, and/or other Provincial or Federal Agencies must be obtained prior to initiation of work. This includes but is not limited to the Drainage Act, the Endangered Species Act, the Ontario Water Resources Act, Environmental Protection Act, Public Lands Act, or the Fisheries Act

By this letter the Rideau Valley Conservation Authority assumes no responsibility or liability for any flood, erosion, or slope failure damage which may occur either to your property or the structures on it or if any activity undertaken by you adversely affects the property or interests of adjacent landowners. This letter does not relieve you of the necessity or responsibility for obtaining any other federal, provincial or municipal permits. This permit is not transferable to subsequent property owners.

Should you have any questions regarding this letter, please contact Eric Lalande, Planner, at the contact information above.



Terry K. Davidson P.Eng  
Conservation Authority S. 28 Signing delegate  
O. Reg. 174/06

- Pursuant to the provisions of S. 28(12) of the *Conservation Authorities Act* (R.S.O.1990, as amended.) any or all of the conditions set out above may be appealed to the Executive Committee of the Conservation Authority in the event that they are not satisfactory or cannot be complied with.
- Failure to comply with the conditions of approval or the scope of the project may result in the cancelling of the permission and/or initiation of legal action under S. 28(16) of the Act.
- Commencement of the work and/or a signed and dated copy of this letter indicates acknowledgement and acceptance of the conditions of the RVCA's approval letter concerning the application and the undertaking and scope of the project.

Name: HUGO LALANDE (print)

Signed: Hugo Lalande Date: Dec 2/2022



## Appendix F- DFO Requests for Review







Fisheries and Oceans  
Canada

Pêches et Océans  
Canada

Ontario and Prairie Region  
Fish and Fish Habitat Protection Program  
867 Lakeshore Rd.  
Burlington, ON  
L7S 1A1

Région de l'Ontario et des Prairies  
Programme de protection du poisson et de son habitat  
867 chemin Lakeshore  
Burlington, ON  
L7S 1A1

September 20, 2022

*Our file*      *Notre référence*  
**22-HCAA-02166**

Hugo Lalonde  
Barrhaven Conservancy Development Corporation (BCDC)  
2934 Baseline Road, Suite 302  
Ottawa, ON.  
K2H 1B2

**Subject: Channel Realignment, Channel Realignment, Fraser Clarke Watercourse, Jock River, Ottawa (22-HCAA-02166) – Implementation of Measures to Avoid and Mitigate the Potential for Prohibited Effects to Fish and Fish Habitat**

Dear Hugo Lalonde:

The Fish and Fish Habitat Protection Program (the Program) of Fisheries and Oceans Canada (DFO) received your proposal on June 16, 2020. We understand that you propose to:

- Realign 700 meters (m) length of the upper Fraser Clarke Watercourse, resulting in a 1400 square meter (m<sup>2</sup>) footprint below the high water mark, by;
  - Moving the swale area of the watercourse ~15 m north; and
  - Adding deeper ponds to the eastern end of the realigned watercourse.
- Work in isolation of flow to avoid sedimentation of the watercourse.

Our review considered the following information:

- Request for Review form and associated documents received June 16, 2022.

Your proposal has been reviewed to determine whether it is likely to result in:

- the death of fish by means other than fishing and the harmful alteration, disruption or destruction of fish habitat which are prohibited under subsections 34.4(1) and 35(1) of the *Fisheries Act*; and,
- effects to listed aquatic species at risk, any part of their critical habitat or the residences of their individuals in a manner which is prohibited under sections 32, 33 and subsection 58(1) of the *Species at Risk Act*.

The aforementioned impacts are prohibited unless authorized under their respective legislation and regulations.

To avoid and mitigate the potential for prohibited effects to fish and fish habitat (as listed above), we recommend implementing the measures outlined in your plan(s), in addition to the following listed below:

- Plan in-water works, undertakings and activities to respect [timing windows](#) to protect fish, including their eggs, juveniles, spawning adults.
  - No in-water work **March 15<sup>th</sup> to June 30<sup>th</sup>**.
- Capture, relocate and monitor for fish trapped within isolated, enclosed, or dewatered areas.
  - Dewater gradually to reduce the potential for stranding fish.
- Conduct in-water undertakings and activities during periods of low water levels.
- Screen intake pipes to prevent entrainment or impingement of fish.
  - Use the [code of practice](#) for water intake screens.
- Limit impacts on riparian vegetation to those approved for the work, undertaking or activity.
  - Limit access to banks or areas adjacent to waterbodies.
  - Construct access points and approaches perpendicular to the watercourse or waterbody.
  - Re-vegetate the disturbed area with native species suitable for the site.
- Develop and implement an erosion and sediment control plan to avoid or minimize the introduction of sediment into any waterbody during all phases of the work, undertaking or activity.
  - Conduct all in-water works, undertakings or activities in isolation of open or flowing water to reduce the introduction of sediment into the watercourse.
  - Monitor the watercourse to observe signs of sedimentation during all phases of the work, undertaking or activity and take corrective action.
- Develop and implement a response plan to avoid a spill of deleterious substances.

Provided that you incorporate these measures into your plans, the Program is of the view that your proposal will not require an authorization under the *Fisheries Act*, the *Species at Risk Act*.

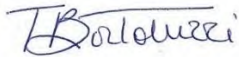
Should your plans change or if you have omitted some information in your proposal, further review by the Program may be required. Consult our website (<http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>) or consult with a qualified environmental consultant to determine if further review may be necessary. It remains your responsibility to remain in compliance with the *Fisheries Act* or the *Species at Risk Act*.

It is also your *Duty to Notify* DFO if you have caused, or are about to cause, the death of fish by means other than fishing and/or the harmful alteration, disruption or destruction of fish habitat. Such notifications should be directed to (<http://www.dfo-mpo.gc.ca/pnw-ppe/CONTACT-eng.html>).

We recommend that you notify this office at least 10 days before starting your project and that a copy of this letter be kept on site while the work is in progress. It remains your responsibility to meet all other federal, territorial, provincial and municipal requirements that apply to your proposal.

If you have any questions with the content of this letter, please contact Tara Bortoluzzi at (204)-806-1316 or by email at [Tara.Bortoluzzi@dfo-mpo.gc.ca](mailto:Tara.Bortoluzzi@dfo-mpo.gc.ca). Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,

A handwritten signature in cursive script that reads "T. Bortoluzzi".

Tara Bortoluzzi  
Biologist, Triage and Planning  
Fish and Fish Habitat Protection Program

CC: Anthony Francis, Kilgour & Associates Ltd.



Fisheries and Oceans  
Canada

Pêches et Océans  
Canada

Ontario and Prairie Region  
Fish and Fish Habitat Protection Program  
867 Lakeshore Rd.  
Burlington, ON  
L7S 1A1

Région de l'Ontario et des Prairies  
Programme de protection du poisson et de son habitat  
867 chemin Lakeshore  
Burlington, ON  
L7S 1A1

June 23, 2023

*Our file*      *Notre référence*  
22-HCAA-01980

Barrhaven Conservancy Development Corporation

**Attention: Hugo Lalonde**

2934 Baseline Road, Suite 302  
Ottawa, ON K2H 1B2

**Subject: Storm Water Outlet Channels, Jock River, Ottawa (Barrhaven)–  
Implementation of Measures to Avoid and Mitigate the Potential for  
Prohibited Effects to Fish and Fish Habitat**

Dear Hugo Lalonde:

The Fish and Fish Habitat Protection Program (the Program) of Fisheries and Oceans Canada (DFO) received your proposal on July 26, 2022. We understand that you propose to:

- Construct 5 outlet channels in the floodplain of the Jock River to convey stormwater flows from the proposed Barrhaven Conservancy development;
- Connect outlet channels to the Jock River by excavating the bank and installing a rock weir, lining the channel outlet with 300mm angular stone, and stabilizing the disturbed banks with a mix of vegetative layering, erosion control blanket and riparian seeding;
- Complete all channel connections in isolation of the flow by installing a silt curtain swept outward from shore to exclude fish; and,
- Install and maintain erosion and sediment controls to prevent sedimentation of the watercourse.

Our review considered the following information:

- Request for Review form and associated documents submitted on July 26, 2022.

Your proposal has been reviewed to determine whether it is likely to result in:

- the death of fish by means other than fishing and the harmful alteration, disruption or destruction of fish habitat which are prohibited under subsections 34.4(1) and 35(1) of the *Fisheries Act*; and
- effects to listed aquatic species at risk, any part of their critical habitat or the residences of their individuals in a manner which is prohibited under sections 32, 33 and subsection 58(1) of the *Species at Risk Act*.

The aforementioned impacts are prohibited unless authorized under their respective legislation and regulations.

To avoid and mitigate the potential for prohibited effects to fish and fish habitat (as listed above), we recommend implementing the measures listed below:

- Plan in-water works, undertakings and activities to respect [timing windows](#), or as agreed upon by the Ministry of Natural Resources and Forestry (MNR), to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed and migrate;
- Limit the duration of in-water works, undertakings and activities so that it does not diminish the ability of fish to carry out one or more of their life processes (spawning, rearing, feeding, migrating);
- Capture, relocate and monitor for fish trapped within isolated, enclosed, or dewatered areas;
- Limit impacts on riparian vegetation to those approved for the work, undertaking or activity;
- Replace/restore any other disturbed habitat features and remediate any areas impacted by the work, undertaking or activity;
- Develop and implement an erosion and sediment control plan to avoid the introduction of sediment into any waterbody during all phases of the work, undertaking or activity;
  - Install effective erosion and sediment control measures prior to beginning work, undertaking or activity in order to stabilize all erodible and exposed areas;
  - Conduct all in-water works, undertakings or activities in isolation of open or flowing water to reduce the introduction of sediment into the watercourse;
  - Monitor the watercourse to observe signs of sedimentation during all phases of the work, undertaking or activity and take corrective action;
  - Schedule work to avoid wet, windy and rainy periods (and heed weather advisories) that may result in high flow volumes and/ or increase erosion and sedimentation;
  - Operate machinery on land in stable dry areas; and,
- Develop and implement a response plan to avoid a spill of deleterious substances.

Provided that you incorporate these measures into your plans, the Program is of the view that your proposal is not likely to result in the contravention of the above mentioned prohibitions and requirements.

Should your plans change or if you have omitted some information in your proposal, further review by the Program may be required. Consult our website (<http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>) or consult with a qualified environmental consultant to determine if further review may be necessary. It remains your responsibility to remain in compliance with the *Fisheries Act* and the *Species at Risk Act*.

It is also your *Duty to Notify* DFO if you have caused, or are about to cause, the death of fish by means other than fishing and/or the harmful alteration, disruption or destruction of fish habitat. Such notifications should be directed to [FisheriesProtection@dfo-mpo.gc.ca](mailto:FisheriesProtection@dfo-mpo.gc.ca) or 1-855-852-8320.

**Please notify this office at least 10 days before starting any in-water works.** Send your notification to the assessor (contact information below) and the DFO 10 notification mailbox: [DFO.OP.10DayNotification-Notification10Jours.OP.MPO@dfo-mpo.gc.ca](mailto:DFO.OP.10DayNotification-Notification10Jours.OP.MPO@dfo-mpo.gc.ca). We recommend that a copy of this letter be kept on site while the work is in progress. It remains your responsibility to meet all other federal, territorial, provincial and municipal requirements that apply to your proposal.

If you have any questions with the content of this letter, please contact Kyle Mataya at (289) 795-2419 or by email at [Kyle.Mataya@dfo-mpo.gc.ca](mailto:Kyle.Mataya@dfo-mpo.gc.ca). Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,



Kyle Mataya  
Biologist, Triage and Planning  
Fish and Fish Habitat Protection Program

cc: Anthony Francis – Kilgour & Associates Ltd.  
Shona Derlukewich – Fisheries and Oceans Canada