



June 1, 2022

WSP Project No: 221-03915-00

City of Parksville  
100 Jensen Ave W.  
Parksville, BC V9P 2H3

**Attention: Belinda Woods, Director of Operations**

Dear Ms. Woods:

**Subject: Reconnaissance Assessment Memo of the Parksville Wetlands, Parksville, BC**

## 1. INTRODUCTION

The City of Parksville (the “City”) has retained WSP Canada Inc. (WSP) to review relevant background information and conduct several site visits as part of a reconnaissance assessment of the possible impacts of 540 m of a new trail system and 105 m of resurfaced trail through the Parksville Wetlands. The area of new impacts in the Parksville Wetlands will hereafter be referred to as the “Project” (Figure 1, Appendix 1). The reconnaissance assessment phase, which considered the ecological and hydrological conditions, is the first step in order to assess potential impacts to the natural drainage and environment associated with the trail building and to identify any potential regulatory requirements.

## 2. BACKGROUND

The Parksville Wetlands is a natural area located within the City of Parksville and covers portions of the Carey Creek and Romney Creek watersheds. Communication provided by the City of Parksville on March 23, 2022 indicated that there is public concern that the Project may have had an impact on the natural drainage of the wetland due to the construction of a new trail system. In addition to the new trail system, concern was also raised about an outlet channel from the wetland to a stormwater drain at Hirst Avenue West and Renz Road.

## 3. OBJECTIVE

The ecological and hydrological assessments identified the approximate extent of wetlands in the area near the new trail and resurfaced trail sections. The desktop review of background information and site visits are the first step in identifying potential impacts caused by the Project works and will identify the nature and extent of future surveys, mitigation and/or regulatory approvals that may be required.

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## 4. METHODS

The desktop review of background information included the following:

- project history;
- existing and site information provided by the City;
- City of Parksville iVault  
(<https://maps.parksville.ca/portal/apps/webappviewer/index.html?id=c108cbb2daa440b0a1e3b794e8669984>)
- a review of hydrological features obtained from the Freshwater Atlas of BC, which for the Parksville Wetlands area includes the stream network and wetland areas;
- online imagery provided ESRI ArcGIS, dated 4 August 2019;
- terrain surface elevation data from LidarBC's Open LiDAR Data Portal database;
- a review of ecological features obtained from the following:
  - iMapBC (DataBC, 2022) <https://maps.gov.bc.ca/ess/hm/imap4m/> ;
  - Habitat Wizard (Government of British Columbia, 2022)  
<https://maps.gov.bc.ca/ess/hm/habwiz/>
  - BC CDC Species and Ecosystem Explorer (BC CDC, 2022)  
<https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/conservation-data-centre/explore-cdc-data/species-and-ecosystems-explorer>

The reconnaissance site assessment on April 13, 2022 included a walk around the entire trail system currently present in the Parksville Wetlands with City of Parksville staff. A sub-meter Arrow GPS unit and digital map were used to take pictures and field notes and record the location of the trail and environmental features. During the assessment, biologists and a hydrologist documented the existing flow paths within the Project focusing on the northwest area of the Project along the newly constructed trail and resurfaced trail. Field observations were made for channel geometric characteristics (depth and width), bank conditions of the streams traversing the Park and other hydrological features (wetland areas), other drainage features (trail side ditch), high water marks, and culvert crossings along the trail. A second visit on May 10, 2022 assessed the approximate extent of the wetlands at the Project and preliminary ecological classifications. Delineation of the extent of each wetland classification was not completed.

## 5. RESULTS

### 5.1 Desktop

The Parksville Wetlands were purchased in 2017 by the City as a natural area to protect the ecosystem while also providing walking/access trails through the entire park system allowing the people of Parksville access and safe thoroughfares to schools and other parts of the City. Maintenance is required in the Parksville Wetlands to maintain the integrity of the trails, manage invasive species and to provide access for potential fire fighting. Ecological inventories and restorative efforts have been undertaken at the Project since 2015 working to protect and rehabilitate previously disturbed areas.

The desktop review revealed that the provincial and municipal web mapping databases do not accurately represent the current location of wetlands and creek features at, or adjacent to, the Project. The desktop data review indicated that the majority of the Parksville Wetlands north of the Railway Tracks are located within the Carey Creek watershed. Only the southeast portion of the park drains towards Romney Creek. The average elevation within the Parksville Wetlands limits is approximately 50 masl. The overall drainage direction within the entire Parksville Wetlands is northeast (Figure 2).



Figure 2: Parksville Wetlands, Baseline Data from BC Freshwater Atlas

Previous baseline information on wildlife potential for the Project is similar to the potential described in the Site Condition Assessment of the Parksville Aquatic and Recreation Centre (WSP, 2021). Fish presence within Carey Creek is not known at this time within Parksville Wetlands. Flows from the Project area enter either the stormwater system at Hirst Avenue West and Renz Road or at the development northeast of the Project.

## 5.2 Site Visits

The total length of the new trail and resurfaced trail was estimated at approximately 550 m. The trail starts at Hirst Avenue West and Renz Road, then heads southwest towards the railroad corridor, and then turns southeast (left) approximately 45 m before the railroad corridor and follows relatively close to the railroad corridor until it connects with the existing trail network system near the City's groundwater production wells. Along this path, the resurfaced trail crosses what appears to be the upper Carey Creek drainage near the railroad alignment, at Culvert 1 (Figures 1 and 3). The crossing on the new trail consists of a HDPE culvert, with a 0.6 m diameter. Along this path the new trail crosses a wetland complex on the northwest side of the Parksville Wetlands, which was inferred from the LiDAR surface elevation to be connected with Carey Creek channel (Figure 3). The Carey Creek flowpath was inferred from the LiDAR surface elevation. After exiting the culvert under the new trail (Culvert 1 on Figure 3) Carey Creek appears to flow through a wetland area before reconnecting and crossing an existing Park trail (Culvert 3 on Figure 3) and then flowing along the nearby residential development (Figure 1).

An existing outlet channel of approximately 75 m, connects the wetland area to a City storm drain at the northwest edge of the park, at the Hirst Ave. West and Renz Road intersection. This outlet channel was present before the Project occurred. The channel was cleared of organic materials around the same time as the new trail construction. At the time of the site visit the channel conveyed flows from the wetland area into the storm drain. It appears that the upstream end of the channel is connected to the side ditch of the new trail (Figure 1).

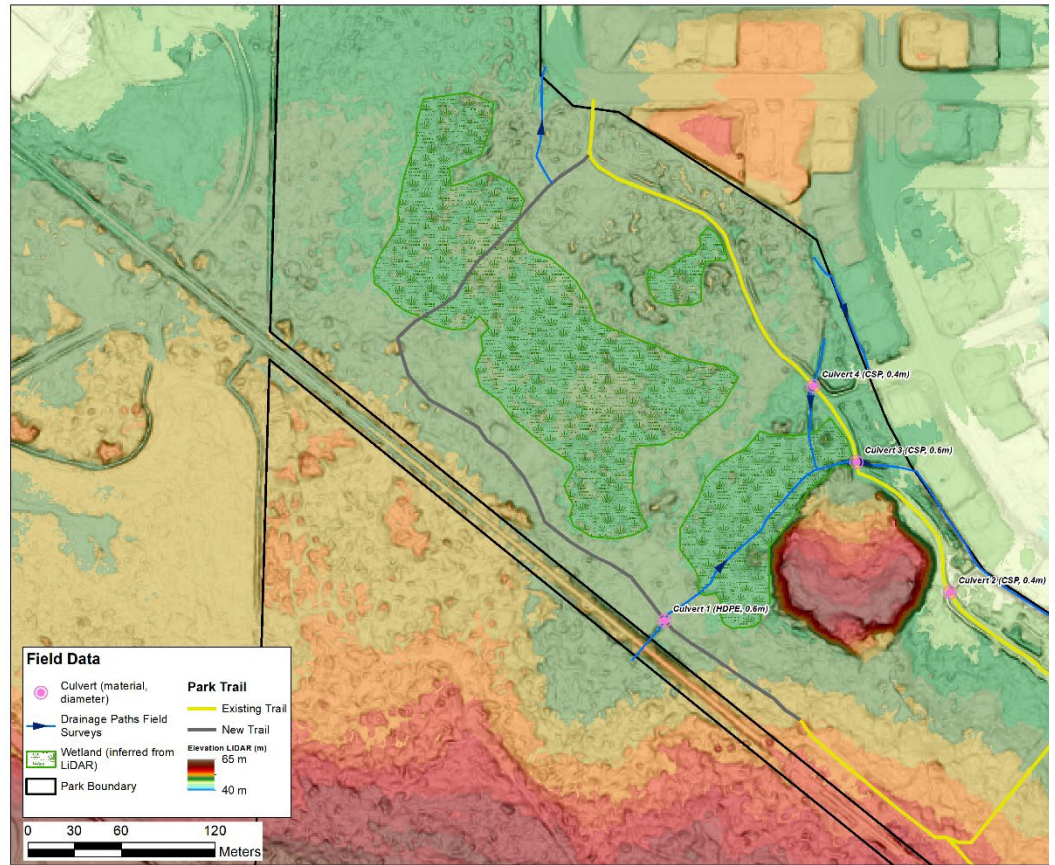


Figure 3: Summary of Hydrological Field Observations and Lidar

The new trail has an average top width of approximately 3 m and was constructed with a coarse base material (between 3 and 6-inch crushed rock) overlaid by finer materials. The large materials at the base of the trail appear to allow for free water flow through the trail (no visible differences in the water level on each side of the trail were observed in the field). A side ditch was built on either side of the new trail, with a variable depth – between 0.2 and 0.6 m measured from the top of the trail to the bottom of the ditch. At the time of visit most of the ditch system was filled with water (at different levels along the trail). The ditch system is connected to the surrounding Project by way of shallow trenches located at selected locations. Fresh organic materials (mostly soils) that resulted from the trail construction was side-casted on either side of the new trail, creating a berm along the trail. The berm varies in height (up to approximately 0.8 m) and includes locations where there is connectivity (by gravity) with the surrounding areas. The berm has been pulled back several meters resulting in excavated soils covering the adjacent vegetation from between 2 to 4 m.

During the second site visit, biologists conducted preliminary wetland classification at three locations (Figure 1, Attachment1). The resulting classifications indicated that the wetlands are similar in extent to those identified using Lidar (Figure 3) but are also potentially present in a disturbed site adjacent to the trailhead near Hirst Avenue West and Renz Road (Figure 1). Based on preliminary findings it appears that the wetlands present on site are a mosaic of both swamp and marsh. A Sitka Sedge – Hemlock - Parsley marsh (Wm50) a Blue-listed ecological community, was identified at Soil Pit No. 2 and occurs adjacent to the Pink Spirea – Sitka Sedge swamp (Ws50) a non-listed ecological community.

The Wm50 marsh ecological community commonly occurs on the south coast along slow-moving shallow water bodies and prefers permanently flooded conditions (McKenzie and Banner, 2004). This wetland tolerates changes in hydrology and disturbance. The Ws50 swamp is also common at low elevations of the Georgia Depression and experiences prolonged saturation and early season flooding. The species diversity is low, and sedges dominate the understory. Soil Pits No. 1 and 3 are both located in previously disturbed areas and were both classified as Ws50 (Figure 1, Attachment 1).

The summary of the Parksville Wetlands hydrological drainage assessment concluded that based on visual observations, along the new trail and resurfaced trail, the water flow is not blocked by the trail, and the materials used to construct the trail base allow for free water flow. Even though the hydrological assessment noted that the flows are not potentially affected, the tall trail and berms are a potential barrier to movement for some wildlife species, in particular amphibians. Amphibian tadpoles were noted in newly created pooled areas in ditches beside the trail during the second visit to the Project.

The outlet channel at the northwest edge of the Project, connects the trail-side ditch and the City storm drain at Hirst Ave West and at the time of first visit, flows were observed draining into the storm drain. Carey Creek flows through a culvert under the resurfaced section of the trail and was observed flowing through the culvert into the wetland complex. No other watercourses were noted flowing into or out of the Project area.

## 6. RECOMMENDED STEPS

Future studies are recommended to provide a more reliable understanding of the Park's hydrology, and these are summarized in the section below:

- A remediation workplan is proposed, which is to be completed by the City to comply with the current requirements of the *Water Sustainability Act (WSA)* and create a drainage plan for the Project that follows best management practices. The following items are recommended to be included in this workplan:
  - Delineation and classification of wetland types in the Project area.
  - Alteration of berms to reduce potential negative impacts to adjacent vegetation.
  - Vegetative restoration plan.
  - Application for a Change Approval under *WSA* Section 11 for the construction of the trail and installation of culverts, and any remediation efforts. Application will require engineering drawings of trail and culverts.

- Authorization Water License under *WSA* Section 10 – referencing the channel draining north at Hirst Avenue, is not necessary because the channel will be removed and the natural terrain gradient will be the primary flow driver.
- As per due diligence, follow requirements and reporting for work within the Development Permit Area No. 13 – Watercourse Protection.
- Monitoring plan to ensure success of remediation work plan including adaptive management protocols.
- Creation of a Construction Environmental Management Plan (CEMP).
- Also, as part of the workplan, future studies are recommended to better understand the hydrological aspects of the Parksville Wetlands and help protect its ecological value. These studies would include:
  - Field measurements and mapping (ground topographic surveys) of the new trail alignment, and will include the trail centreline, the trail edge, side ditch invert elevations, flow directions around the new trail, and ground elevations for the berm constructed on each side of the trail. These measurements will be used to validate the site visit observations and their initial interpretation.
  - Field measurements and mapping of hydrological features (Carey Creek, wetlands and outlet channel) and drainage flow path directions within the Project.
  - Consideration of the requirement of the need for future culverts or small wildlife passage corridors.
  - Fish presence assessment of Carey Creek in Parksville Wetlands.

## 7. CLOSURE

We trust that this memo meets your immediate requirements. Should you have any questions or require additional information or clarification, please contact the undersigned.

Best regards,

**WSP CANADA INC.**

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Per : Dan Ciobotaru, P. Geo.  
Hydrologist

Per: Susan Blundell, M.Sc., R.P.Bio.  
Senior Biologist

Encl. Figure 1



## References

Mackenzie, W., and J. Moran. 2004. Wetlands of British Columbia: a Guide to Identification. Resource Branch of BC Ministry of Forests, Victoria, BC. BC Land Management Handbook No. 52.

WSP. 2021. Site Condition Assessment Parksville Aquatic & Recreation Centre, Parksville BC. September 12, 2021.





## STANDARD LIMITATIONS

WSP CANADA INC. CONDUCTED A RECONNAISSANCE ASSESSMENT (THE “Project”) FOR THE PARKSVILLE WETLANDS, PARKSVILLE, BC (THE “Site”) AS REQUESTED BY THE CITY OF PARKSVILLE. (THE “Client”) AND AGREED UPON IN THE PROPOSAL DATED APRIL 4, 2022 (THE “Proposal”). THE FINDINGS AND CONCLUSIONS ARE DOCUMENTED IN THIS REPORT (THE “Report”). SUCH USE AND RELIANCE BY CLIENT IN THIS Report IS SUBJECT TO THE TERMS, CONDITIONS AND LIMITATIONS SET OUT IN WSP’S TERMS AND CONDITIONS FOR THE PROJECT.

1. The findings and conclusions documented in this Report have been prepared for specific application to this Project and have been developed in a manner consistent with that level of care normally exercised by environmental professionals currently practicing under similar conditions in the area.
2. The findings of this Report are based solely on data collected via publicly available information and pertain only to the locations that have been investigated and on the conditions of the Site during the completion of the work and services. WSP Canada Inc. has relied on good faith on information provided by individuals and sources noted in the Report. No other warranty, expressed or implied, is made.
3. If new information is developed in future work that affects the conclusions of this Report, WSP Canada Inc. should be contacted to re-evaluate the conclusions of this Report and provide amendments as required.
4. The service provided by WSP Canada Inc. in completing this Report is intended to assist the Client in a business decision. The liability of the Site is not transferred to WSP Canada Inc. as a result of such work and services, and WSP Canada Inc. does not make recommendation regarding the purchase, sale, or investment in the property.
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