

# **Waste Discharge Permit Application for Groundwater Remediation and Construction Excavation Sites**

Greater Vancouver Sewerage & Drainage District  
Sewer Use Bylaw No. 299, 2007 (as amended)



**\*\*\* IMPORTANT: BEFORE STARTING THIS APPLICATION \*\*\***

The GVS&DD sanitary sewer was neither designed for, nor intended to be used for the conveyance and treatment of contaminated groundwater or storm water, and as such, both are restricted from discharge to the sanitary sewer under GVS&DD Sewer Use Bylaw No. 299, 2007 (as amended). However, in 1996, a policy was developed in consultation with stakeholders that made provisions for the acceptance of contaminated groundwater from site remediation projects and storm water from excavations in the sanitary sewer through the issuance of a Waste Discharge Permit, subject to numerous conditions, including available hydraulic capacity of both the municipal and GVS&DD sanitary sewer systems.

**\*\*\* FEES \*\*\***

<b>NEW PERMIT APPLICATION FEES</b>	
New Permit	\$500 – if the requested maximum instantaneous flow $\leq$ 6 L/s \$1000 – if the requested maximum instantaneous flow $>$ 6 L/s

<b>PERMIT AMENDMENT APPLICATION FEES</b>	
Minor Amendment	\$250
Major Amendment	\$500

<b>PERMIT ADMINISTRATION FEE</b>	
Administration	You must pay an administration fee for each Groundwater Permit. Invoices are issued at the time of a Permit's issuance. The fee is determined in accordance with Schedule "C" of <i>Sewer Use Bylaw 299, 2007</i> (as amended) available at: <a href="https://metrovancover.org/boards/Bylaws/GVSDD_Bylaw_299_Consolidated.pdf">https://metrovancover.org/boards/Bylaws/GVSDD_Bylaw_299_Consolidated.pdf</a>

**\*\*\*GENERAL INSTRUCTIONS\*\*\***

Send the completed application form, attachments, and the application fee to the address below. Electronic versions can be sent by e-mail. The application fee can be paid either by cheque or by credit card. If paying by credit card, an officer will contact you with the instructions for payment after we have received the application. Cheques for application fees should be made payable to the Greater Vancouver Sewerage and Drainage District (GVS&DD) and delivered, with the application, to the address below.

Metro Vancouver  
Environmental Regulation & Enforcement Division  
4515 Central Boulevard  
Burnaby, BC V5H 0C6  
Attn: Sewage Control Manager

Telephone: 604-432-6200  
Email: [regulationenforcement@metrovancover.org](mailto:regulationenforcement@metrovancover.org)

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**SECTION A: CONTACT INFORMATION**

**1. APPLICANT**

The applicant should be the person or business that is the owner of the waste and responsible for Permit compliance. If issued, the Waste Discharge Permit will name the applicant as the “Permittee.” The Permittee will be the subject of enforcement measures, if required. If more than one person or business is responsible for the waste, or if the applicant engages another party or parties to be responsible for operation and monitoring of the authorized treatment works in compliance with the Waste Discharge Permit, then the co-applicant(s) can also be named as a Permittee.

Attach the results of a *BC Company Summary* for each applicant and any co-applicants, conducted within 30 days of this application’s submission date. The *BC Company Summary* shows that the applicant business has been registered with the BC Ministry of Finance.

Corporate registry searches can be obtained for a nominal fee from:

- BC Online at: <http://www.bconline.gov.bc.ca/>.
- Small Business BC at <http://www.smallbusinessbc.ca/>.
- By using the services of companies listed in the yellow pages under “Title Service”.

BUSINESS NAME (Registered Company Name):
INCORPORATION NUMBER:
<b>BUSINESS MAILING ADDRESS</b>
Street:
City/Province:
Postal Code:
<b>Applicant Primary Contact</b>
Name and job title:
Business telephone number:
Business cell number:
Business fax number:
Business e-mail:

If there is more than one applicant, please attach the above-noted information on a separate page for each applicant.

**2. CONSULTANT**

The person or business completing the application form on behalf of the applicant. If the person or business completing this application is acting as an Agent and is expressly authorized to act on behalf of the Applicant, then Section F.3 of this application form must also be completed.

Same as contractor:      Yes  No . If No, then please complete the table below.

BUSINESS NAME (Registered Company Name):
INCORPORATION NUMBER:
<b>BUSINESS MAILING ADDRESS</b>
Street:
City/Province:
Postal Code:
<b>Consultant Primary Contact</b>
Name and job title:
Business telephone number:
Business cell number:
Business fax number:
Business e-mail:

**3. CONTRACTOR**

The person or business that will supply and operate the treatment works specified in the terms and conditions of the Waste Discharge Permit.

BUSINESS NAME (Registered Company Name):
INCORPORATION NUMBER:
<b>BUSINESS MAILING ADDRESS</b>
Street:
City/Province:
Postal Code:
<b>Prime Contractor Contact</b>
Name and job title:
Business telephone number:
Business cell number:
Business fax number:
Business e-mail:



**4. PROPERTY OWNER**

Is the property owner the same as applicant: Yes  No .

If No, then please complete the table below and provide proof that the property owner is aware of and has given consent for the proposed activities.

BUSINESS NAME (Registered Company Name):
INCORPORATION NUMBER:
<b>BUSINESS MAILING ADDRESS</b>
Street:
City/Province:
Postal Code:
<b>Property Owner Contact</b>
Name and job title:
Business telephone number:
Business cell number:
Business fax number:
Business e-mail:

**SECTION B: PROJECT INFORMATION**

**1. SITE LOCATION**

Host Municipality:
<b>Project Address</b>
Street:
City/Province:
Postal Code:

Attach the results of a recent land title search for the subject property. The Land Title and Survey Authority of British Columbia (LTSA) is responsible for administering these records. Anyone with a myLTSA account (<https://apps.ltsa.ca/iam/login>) can conduct the land title search or staff at Land Title Offices in New Westminster, Kamloops and Victoria can respond to in-person or mail-in requests with the appropriate fee.

**2. PROJECT OVERVIEW**

Provide a brief description of the project and explain why discharge to the sanitary sewer is required. Summarize the remedial and/or excavation activities planned for the site. Attach a site plan and cross section showing the horizontal and vertical extents of the excavation(s) relative to the water table.

(Use additional pages if necessary)

**3. DISCHARGE SOURCE(S)**

Is the discharge from a groundwater remediation program?

Yes  No

Is the discharge from a combination groundwater remediation program and excavation?

Yes  No

Is the discharge from a construction excavation?

Yes  No

## SECTION C: CONTAMINANT ASSESMENT

### 1. SITE INVESTIGATION REPORTS

Has a phase 1/stage 1 preliminary site investigation been conducted?

Yes  No

Has a phase 2/stage 2 preliminary and/or detailed site investigation been conducted?

Yes  No

Has a BC *Contaminated Sites Regulation Site Profile* been provided to the host municipality?

Yes  No

### 2. SUBSURFACE CONDITIONS

Summarize soil and hydro-geological conditions described by a geotechnical or contaminant investigation report prepared for the site. Include a description of the soil layers, depths to groundwater and the estimated or measured hydraulic conductivities. Please attach a site plan and cross section drawings showing the depth to groundwater, or selected logs of boreholes, wells, and/or piezometers.

(Use additional pages if necessary)

### 3. INFILTRATION RATES

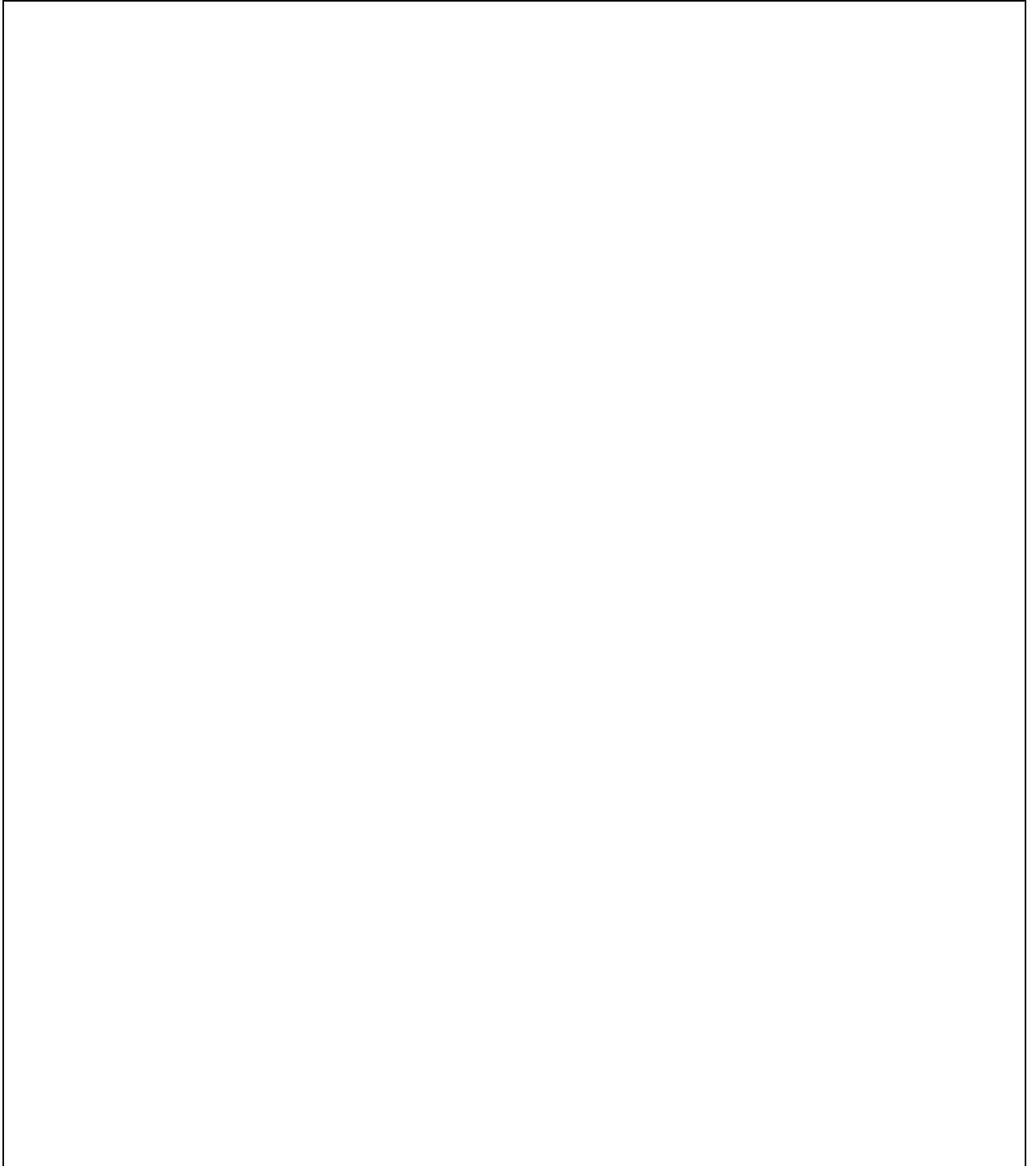
The expected yield from recovery wells and/or infiltration rates to collection trenches, sumps and/or open excavations must be determined or estimated in order to appropriately size treatment works proposed for the site. Precipitation falling directly on the excavation must also be included in the estimate. Please describe the methods used to calculate the yield from wells or the expected infiltration rates to sumps, trenches and excavations and attach the calculations.

### 4. ANALYTICAL RESULTS

Identify and list all expected contaminants in the proposed discharge to sanitary sewer, including, but not limited to, any **Prohibited Wastes** and/or **Restricted Wastes**, as described in Schedules "A" and "B" of *Sewer Use Bylaw No. 299, 2007* (as amended). If Hazardous Wastes are being treated, detail the provisions taken to comply with Column 3 of Schedule 1.2 of the *BC Hazardous Waste Regulation*.

Please attach:

- A site plan and cross sections showing soil and groundwater sample locations.
- Tabulated analytical results for groundwater or pre-treatment samples compared to the limits established by Schedule B of *Sewer Use Bylaw No. 299, 2007* (as amended).



(Use additional pages if necessary)

**SECTION D: FLOW INFORMATION**

**1. REQUESTED PERMIT TERM**

Please indicate below the length of time that you will require a Waste Discharge Permit (Note: the maximum term for an excavation or groundwater remediation Permit is one year).

Less than 7 days	<input type="checkbox"/>	91 - 180 days	<input type="checkbox"/>
7 - 30 days	<input type="checkbox"/>	181 - 270 days	<input type="checkbox"/>
31 - 90 days	<input type="checkbox"/>	271 - 365 days	<input type="checkbox"/>

**2. REQUESTED DISCHARGE FLOW RATES**

The requested flow rates must consider the predicted well yield and/or the excavation dewatering requirements, including precipitation falling directly on the open excavation. Estimate the dewatering requirements and attach the calculations.

The following flow information is required to complete both Municipal sewer line and GVS&DD trunk sewer line hydraulic loading capacity evaluations.

Total discharge volume over the requested term of the Permit	m <sup>3</sup>
Maximum daily discharge date during dry weather conditions	m <sup>3</sup> /day
Maximum daily discharge rate during wet weather conditions	m <sup>3</sup> /day
Maximum instantaneous peak flow rate during dry weather conditions	L/s
Maximum instantaneous peak flow rate during wet weather conditions	L/s

*Wet weather conditions are defined as a day when the rainfall forecast at Vancouver International Airport is 15 mm or more.*

**3. OPERATING PERIOD**

Specify the proposed period during which wastewater is discharged to the sanitary sewer:

Hours/Day	Days/Week	Weeks/Year

Specify the typical number of hours of discharge to the sanitary sewer during the following periods:

08:00 to 16:00	16:00 to 24:00	0:00 to 08:00

**4. DISCHARGE FLOW RATE PROFILE**

Please provide a graphic representation of a 24 hour profile of the instantaneous flow rate from your remediation/excavation activities on both average and high discharge days. An example is provided in Attachment B.

**5. DISCHARGE POINT**

Attach a plan showing location of the proposed discharge point to sanitary sewer. Please also identify the connection point to the Greater Vancouver Sewerage and Drainage District trunk sewer line. You may need to contact your host municipality to assist in obtaining this information.

GVS&DD District Drawing No.:		Sheet No.:	
GVS&DD Sewer Branch:			
GVS&DD Manhole No.:		Chainage:	m
Municipal Connection ID:			

**6. EMERGENCY CONTACTS**

In the event of excess hydraulic loading to the sanitary sewerage facilities, the Permit holder may be required to immediately curtail or cease the discharge to sewer, including normal working hours, evenings, weekends and holidays. Please provide the contact information for a person and an alternate that are capable of curtailing or stopping the discharge to sanitary sewer.

	Primary	Alternate
Contact person		
Company name		
Title or position		
24 hour emergency telephone number(s)		
Business telephone		
Business cell number		
E-mail		

(Use additional pages, if necessary)

**SECTION E: WASTEWATER TREATMENT WORKS**

**1. DESCRIPTION OF TREATMENT WORKS**

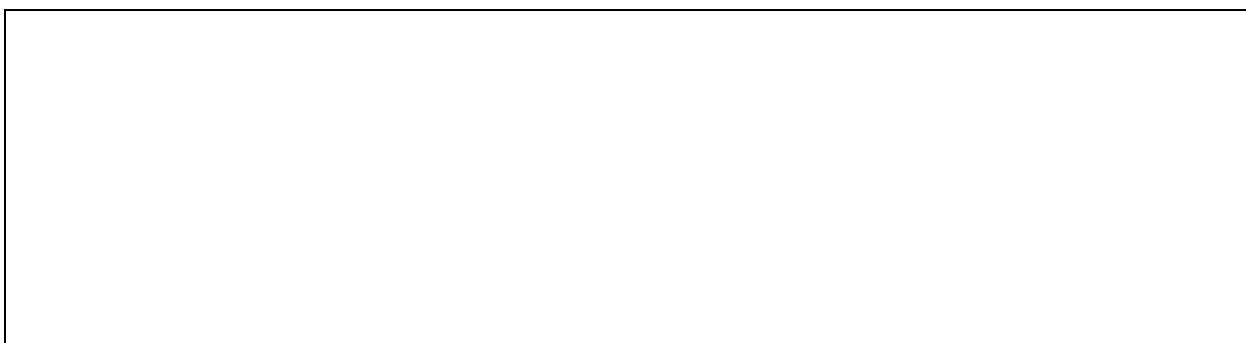
Metro Vancouver requires a minimum level of treatment as described by [Minimum Treatment for Groundwater from Remediation and/or Construction Excavation Projects](#). The treatment works must be appropriately sized to ensure protection of the sanitary sewer infrastructure from excessive contaminant and hydraulic loading. The treatment works must also include a means to continuously monitor, regulate and record discharge rates to the sanitary sewer system. An electronic flow meter and data logger are recommended for this purpose.

Describe the wastewater treatment system that will be utilized and discuss the basic chemical and physical processes involved.



(Use additional pages if necessary)

List the primary components of the proposed treatment works. Attach a schematic flow diagram identifying the size and capacity of the various tanks, filters, pumps, piping, sample ports, and the point of connection to sewer (Example in Attachment A). This flow diagram will be included in the body of the Permit.



(Use additional pages if necessary)

List the flocculants, coagulants and/or other process chemicals that will be used. Attach the MSDS sheets for these products.

(Use additional pages if necessary)

**2. BASIC DESIGN CRITERIA**

The treatment works need to be properly sized for the expected flow rate. Therefore, provide the basic design values used for the proposed treatment system. Discuss any assumptions or approximations used and attach the calculations. You may need to engage the services of an environmental professional for assistance with this work.

Theoretical adsorption capacities, as described by [Basic Design Criteria for Remediation and Constructions Excavation Permit Applications](#) can be used for simplified design of fixed bed activated carbon columns. Please note that the adsorption isotherm constants  $K_f$  and  $1/n$  can have a wide range of values, depending on the characteristics of the activated carbon and methodology used to obtain the equilibrium data. Contact the carbon manufacturer for the appropriate isotherms for your application. Provide the following design information for the primary fixed bed activated carbon column(s).

<b>Empty bed contact time</b>	$\frac{\text{Volume of GAC}}{\text{Volumetric flow rate}} = \frac{V_b}{Q}$		Minutes
<i>V<sub>b</sub> is calculated using the bulk density and mass of GAC in the vessel, it is not the volume of the entire vessel. Q is the maximum flow rate requested in the permit application.</i>			

<b>Theoretical adsorptive capacity at breakthrough</b>	$\left(\frac{x}{m}\right)_b = K_f C_b^{\frac{1}{n}}$		$\frac{\text{mg}}{\text{g}}$
<i>To account for 25% adsorption efficiency, divide the result by four.</i>			

<b>Time to breakthrough</b>	$t_b = \frac{\left(\frac{x}{m}\right)_b m_{GAC}}{Q \left(C_i - \frac{C_b}{2}\right)} = \frac{K_f C_i^{\frac{1}{n}} m_{GAC}}{Q \left(C_i - \frac{C_b}{2}\right)}$		Days
<i>To apply the required safety factor multiply C<sub>i</sub> by four for 25% efficiency.</i>			



Where:

- $x/m$  = Mass of adsorbate adsorbed per unit mass of carbon (mg/g)
- $C_i$  = liquid phase influent contaminant concentration
- $C_b$  = liquid phase breakthrough contaminant concentration
- $K_f$  = Freundlich capacity factor
- $1/n$  = Freundlich intensity parameter
- $V_b$  = volume of GAC in the contactor bed
- $Q$  = volumetric flow rate through the GAC bed
- $m_{GAC}$  = mass of GAC in the contactor bed
- $(x/m)_b$  = breakthrough adsorption capacity of GAC
- $q_e$  = adsorbent phase contaminant concentration at equilibrium
- $t_b$  = time to breakthrough

### 3. MONITORING PROGRAM

Based on the predicted time to breakthrough at the primary carbon vessel, specify the analytical testing frequency and lab turn-around time for key monitoring points as required to ensure replacement prior to breakthrough (i.e. inlet, before the primary carbon vessel, before the secondary carbon vessels and/or other treatment systems, the outlet).

Sample Location (from flow diagram)	Sample Frequency	Lab Turn-around	Analytical Parameters

Describe how the applicant will ensure the permitted maximum daily discharge volume, the maximum instantaneous peak flow rate and total permitted discharge volume over the term of the Permit will not be exceeded.

(Use additional pages if necessary)

<b>SECTION F: DECLARATION</b>
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**1. APPLICANT DECLARATION**

<b>I declare that the information given on this form is correct and accurate to the best of my knowledge.</b>	
Company Name:	
Name and Position (please print):	
Telephone:	
E-mail:	
Applicant Signature:	Date:

If there is more than one applicant, please attach the above-noted information, with signature(s) on a separate page for each applicant.

**2. DESIGNATED PRIMARY COMPANY CONTACT**

<b>If you elect to appoint an employee as the primary contact for this application, please complete the following.</b>	
Contact Name and Title (please print):	
Company Name:	
<b>BUSINESS MAILING ADDRESS</b>	
Street:	
City/Province:	
Postal Code:	
Telephone:	
Cell Number:	
Fax Number:	
E-mail:	
Primary Contact Signature:	Date:
Applicant Signature:	Date:

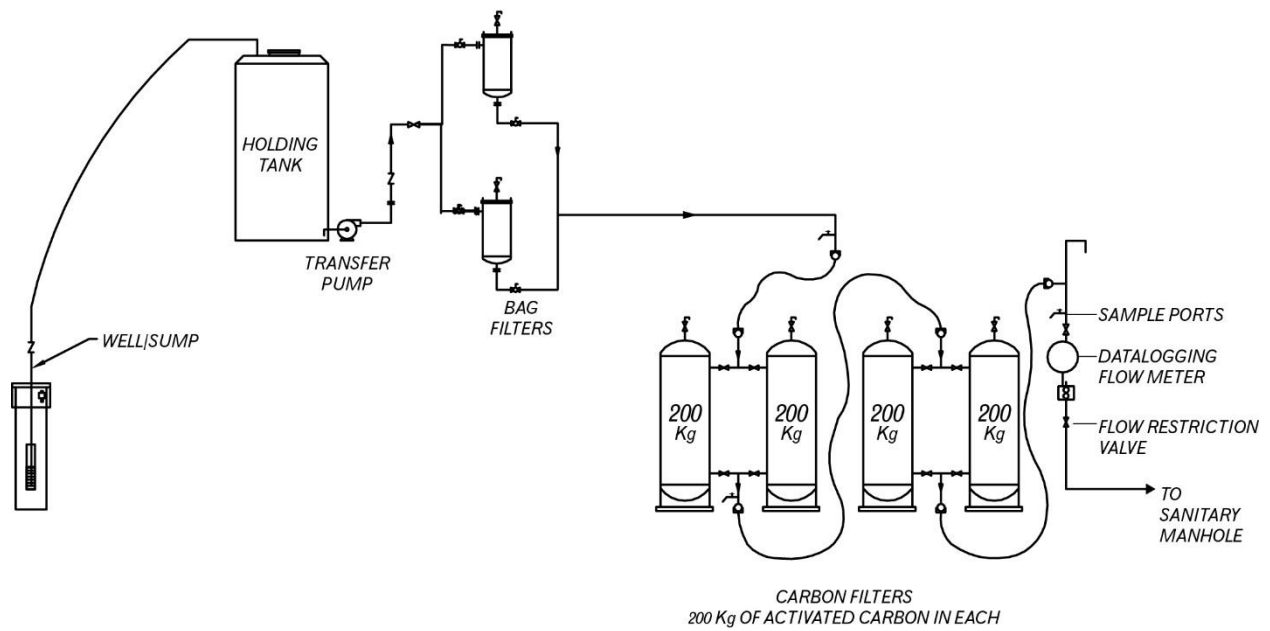
**3. DESIGNATED AGENT**

<b>If you elect to appoint an AGENT expressly authorized to act on behalf of the applicant, please complete the following.</b>	
Agent Name and Title (please print):	
Company Name:	
<b>AGENT BUSINESS MAILING ADDRESS</b>	
Street:	
City/Province:	
Postal Code:	
Telephone:	
Cell Number:	
Fax Number:	
E-mail:	
Agent Signature:	Date:
Applicant Signature:	Date:

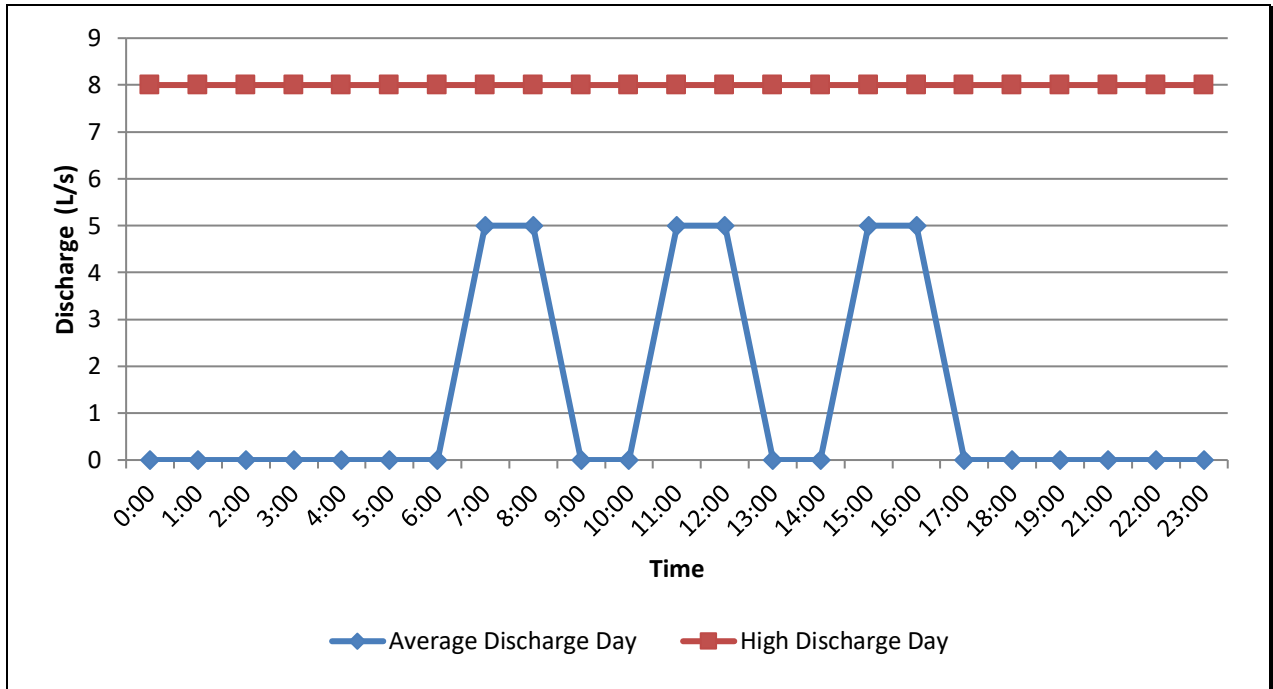
## **ATTACHMENTS**

**ATTACHMENT A: EXAMPLE OF SCHEMATIC FLOW DIAGRAM**

*Example Process Flow Diagram*



**ATTACHMENT B: EXAMPLE OF 24 HOUR FLOW RATE PROFILE**



**ATTACHMENT C: CHECKLIST FOR COMPLETED APPLICATION**

<input type="checkbox"/>	Permit application fee
<input type="checkbox"/>	Contact information for additional applicants
<input type="checkbox"/>	Applicant BC Company Summary
<input type="checkbox"/>	Land title(s)
<input type="checkbox"/>	Property owner consent
<input type="checkbox"/>	Site plan and cross section drawings showing:
	<ul style="list-style-type: none"> <li>• soil and groundwater conditions</li> </ul>
	<ul style="list-style-type: none"> <li>• groundwater sample locations and depths</li> </ul>
	<ul style="list-style-type: none"> <li>• the dimensions of the proposed excavation</li> </ul>
	<ul style="list-style-type: none"> <li>• extraction wells or well point configuration</li> </ul>
	<ul style="list-style-type: none"> <li>• groundwater sample locations</li> </ul>
	<ul style="list-style-type: none"> <li>• sanitary sewer discharge point or connection</li> </ul>
<input type="checkbox"/>	Excavation dewatering rate calculations or report
<input type="checkbox"/>	Tabulated analytical results compared with the criteria in Sewer Use Bylaw No. 299, 2007 (as amended)
<input type="checkbox"/>	Documentation that other disposal options have been denied by Municipal or Provincial authority
<input type="checkbox"/>	A schematic flow diagram of proposed treatment works in JPEG format
<input type="checkbox"/>	Calculations of estimated carbon usage rates /usage rates for other reactive media
<input type="checkbox"/>	MSDS sheets for flocculants and other consumables
<input type="checkbox"/>	A 24 hour flow rate profile
<input type="checkbox"/>	Section F of the application is signed by the applicant