SUSTAINABILITY SCHOLARS PROGRAM

Summer 2020

The UBC Sustainability Initiative (USI) is pleased to offer current UBC graduate students the opportunity to work on funded sustainability internship projects. Successful candidates work under the mentorship of a partner organization, and are immersed in real world learning where they can apply their research skills and contribute to advancing sustainability across the region.

- Visit the Sustainability Scholars Program website to learn how the program works and to apply.
- Be sure to review the application guide to confirm your eligibility before applying.
- **Applications close at midnight on Sunday February 2, 2020.**

Research project title: Identification of potential significant dischargers to the wastewater system in the Metro Vancouver region that are not currently captured in the permitting process.

How will this project make a contribution to regional sustainability?
As per Sewer Use Bylaw No. 299, Waste Discharge Permits are issued to allow discharge of non-domestic waste into the wastewater system. Each permitted discharger must comply with discharge limits and restrictions on the types and contaminant concentrations discharged to the wastewater system. This ensures that the wastewater treatment plants and the environment are not significantly impacted. It has been some time since a structured review of all dischargers in the region was conducted. It is likely that some industrial dischargers are currently discharging without a waste discharge permit. Therefore, it is important to identify these potential dischargers for risk assessment and, if necessary, to capture them under the permit process.

The provincially approved Integrated Liquid Waste and Resource Management Plan (ILWRMP) requires Metro Vancouver to *improve source control tools,* and *to review, enhance and increase enforcement of the Sewer Use Bylaw to reduce liquid waste at source*. The current 2019-2022 Board Strategic Plan also encourages Metro Vancouver to *explore the role of new source controls that would prevent the release of contaminants into the liquid waste system*. The Source Control Program's five-year plan includes a review of industries in the region that require a permit. This proposed project will contribute to the sustainable and efficient management of wastewater, enforcement activities and help capture relevant dischargers under the permitting process.

This project will help identify industries that need to be captured under the permit process. In addition to potential dischargers of Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS), the project will also identify industries that use and store metals. Some industries may not need a permit but could have metals on site which could spill or be otherwise accidently discharged to the sewer. Based on the amount and type of metals used or stored on site, the industries that may not require a permit at this time will be prioritized based on risk. This will inform enforcement officers as well as the Source Control Program which industries warrant more attention. This prioritized list will also help inform enforcement staff when responding to unusual influent events at the Wastewater Treatment Plants (WWTPs).

Project description

Some existing industries that discharge to the wastewater system are potentially not permitted, and therefore bypassing regulations that require them to limit and monitor contaminants in their discharge. This project will identify these potential significant dischargers which will be assessed based on risk and prioritized in a structured database. The focus will be on industries that discharge BOD, TSS, and metals that are specified in the Sewer Use Bylaw. The database can be used by the Source Control Program and enforcement staff immediately after completion. The enforcement officers can use the database to ensure all relevant dischargers under the Sewer Use Bylaw are being regulated and to assist with responses to unusual influent events at the WWTPs.

Occasionally, high levels of metals are found in the influent at the wastewater treatment plants. Extensive investigation is required as these unusual influent events are not typically attributed to the currently permitted dischargers. By identifying industries that are not currently permitted, the database can also be valuable for determining potential sources of these unusual influent events.

Key areas of research include: 1) what industrial sectors are top contributors of BOD, TSS, and metals, 2) which North American Industry Classification System (NAICS) code are associated with these sectors, 3) which industries within these sectors may be significant dischargers

The purpose of the project is:

The purposes of this project are to 1) identify industries that need a permit but do not currently have one, and 2) to identify industries that may not need a permit at this time and prioritize them based on risk to the wastewater system, to inform enforcement officers in response to unusual influent events.

Outline the scope of project, including how Metro Vancouver will use the Scholar's work:

- Review existing list of NAICS code provided by Source Control Program staff and research which industries from the list may be significant contributors of BOD, TSS, and the metals listed in the Sewer Use Bylaw. As part of this, the scholar will interview enforcement officers to determine a condensed list of NAICS code and industries likely to discharge BOD, TSS, and metals.
- Using the condensed list of industries, conduct a business directory search (using multiple directories or resources) to look into operations in the region that discharge BOD, TSS, and metals. The scholar may have the opportunity to use the Metro Vancouver library. The scholar will cross reference these businesses/operations with currently permitted dischargers (list provided by Source Control Program staff) and record any non-permitted industries that will be incorporated into the database.
- Create a database in excel to show the list of potential significant dischargers and include metals that may be discharged, as well as other information about the discharger (size of operation, number of employees, description of processes with information available from their webpage, etc.) Source Control Program staff will work with scholar to establish the fields for the database.
- Conduct a risk assessment of these industries and prioritize them based on information gathered on the amount of BOD, TSS, as well as the types and amount of metals potentially discharged.
- Document in a short report (5-10 pages) the research findings and methodology for developing the database.
- Map out each potential dischargers in Google Earth and color coordinate the sewerage areas.

Project Deliverables:

The Scholar will deliver a final report containing a summary of their completed work complemented by a final presentation to key stakeholders. The report should include:

A. Condensed list of NAICS codes and industries that discharge BOD TSS, and metals outlined in the Sewer Use Bylaw
B. Excel database
C. Google Earth Map of dischargers according to sewerage areas
D. Written report (5 to 10 pages) summarizing
    - Methodology for developing the database, including criteria used for the risk assessment
    - Key findings on industries prioritized as high risk from the risk assessment, including a brief explanation for why they are deemed high risk
E. A final report [or Executive Summary] for the UBC Sustainability Scholars online project library.

Time Commitment

- This project will take **250** hours to complete.
- This project must be completed between May 4 and August 14, 2020
- The Scholar is to complete hours between 8 AM – 4:30 PM Monday to Friday, approximately 18 hours per week.
- The scholar is encouraged to present the project and findings at one Source Control Committee meeting (date TBD)

Required/preferred Skills and Background

☒ Excellent research and writing skills
☒ Demonstrated interest in sustainability
☒ Familiarity with research methodologies and survey techniques
☒ Strong analytical skills
☒ Ability to work independently
☒ Deadline oriented
☒ Project management and organizational skills
☒ Demonstrated experience working with Excel and generating pivot tables
☒ Comfortable interacting with strangers to conduct public/in person surveys
☒ Demonstrated experience using Google Earth to display information

- Must be able to travel to Metro Vancouver's head office in Burnaby for monthly check-ins
- Access to own laptop and software (MS Word, Excel, and Google Earth) required

Applications close **midnight Sunday February 2, 2020**.

Apply here: http://sustain.ubc.ca/scholarsapply

Contact Karen Taylor at sustainability.scholars@ubc.ca if you have questions

Useful Resources

Below are some links to useful resources to help you with your resume and cover letter (there are many more online). Some of these resources also provide information on preparing for your interview.

https://students.ubc.ca/career/career-resources/resumes-cover-letters-curricula-vitae

https://www.grad.ubc.ca/current-students/graduate-pathways-success

https://www.grad.ubc.ca/cover-letter-cv-resume-templates-ubc-career-services

The Centre for Student Involvement & Careers will host a resume & cover letter webinar tailored for graduate students on Tuesday, January 21, 2020 from 12:00-1:30. Registration will open approximately two weeks before the webinar, and can be accessed at Careers Online.