

# PCSP Arctic Client Portal

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## Step 1 - Confirm organization type

### Disclaimer

This portal collects information such as names, phone numbers, email addresses, mailing addresses, etc. This information is handled by a third party, and although it is safeguarded, privacy cannot be guaranteed.

<b>Client name</b>	Lyle Whyte
<b>First name</b>	Lyle
<b>Last name</b>	Whyte
<b>Email address</b>	Lyle.Whyte@mcgill.ca
<b>Phone number</b>	514-398-7889
<b>Organization type</b>	University
<b>Please select the type of university, if applicable</b>	Canadian university
<b>Name of organization</b>	McGill University

You are associated with the organization type listed above. If this is correct and you have the authority to create a request, select the 'Confirm' box below. To change any of the profile information above, please edit your client profile.

### Confirm



## Step 2 - Principal investigator

**Are you the Principal Investigator for this project?** Yes

NEW: students and post-doctoral fellows are no longer permitted to apply as Principal Investigators. Students and post-doctoral fellows may complete the application on behalf of their supervisor if the supervisor is identified as the Principal Investigator. Please complete the following sections on behalf of the Principal Investigator.

**Applicant's title** Professor

**Gender** Man

**Sub-unit/affiliation**

**Address** 21111 Rue Lakeshore

**City** Sainte-Anne-de-Bellevue

**Country** Canada

**Province/Territory** Quebec

**Postal code** H9X 3V9

**Work phone number** 514-398-7889

**Extension****Work fax** 514-398-7990**Alternate contact number** 514-279-8325**Alternate contact number type**  
(e.g., fax, personal cell)**Career interruptions, parental leave, and impacts of COVID-19 pandemic on research activities**

FOR UNIVERSITY APPLICANTS ONLY:

**Are you an early career researcher (ECR)? ECRs have held an independent academic position for five (5) years or less. For example, a researcher submitting an application in October 2021 would have been hired on or after September 1, 2016. \*NEW: To ensure that individuals with career interruptions (e.g., parental leave) are not disadvantaged during the evaluation process, the time period may be increased by the number of months of the career interruption.**

No

The PCSP recognizes that the COVID-19 pandemic has affected researchers' capacity to conduct their regular research and training activities. PCSP also recognizes that the COVID-19 pandemic has the potential to exacerbate existing inequities within the research community (e.g., inequities related to gender, race, Indigenous identity, geographic location, career stage, family responsibilities, etc.).

If you experienced impacts as a result of the COVID-19 pandemic, please provide a brief summary of any circumstances that have affected your research activities due to the pandemic, dating back to March 1, 2020, and state the duration of these circumstances and describe their impact on your research activities.

Note: Details of a personal nature are not required. The description should address the type of circumstance (e.g., medical, bereavement, family responsibilities, etc.) and duration (e.g. number of weeks or months or specific time period) and be specific about the impact of these circumstances on your research. For example: "I was unable to work or worked at reduced capacity due to medical reasons during a 16-week period from July and Oct 2020, which had the following impacts..."

## Step 3 – General project information

Please provide the following information about your project:

**Project name/title** Developing new technologies to access and investigate the hypersaline, subzero Devon Island Subglacial Lake System, a unique Mars and icy moon analogue

### A brief, plain language project summary (maximum 1,000 characters)

The search for life beyond Earth is a major focus of planetary exploration. The possibility of finding living organisms on Europa and Enceladus in deep hypersaline subsurface oceans has been reported as well as on Mars at potential surface water brines and thick shallow ice sheets. Additionally, recent evidence indicates the presence of hypersaline lakes ~800 meters below Mars' southern ice cap. This unique environment has only one analogue on Earth, the subglacial lake complex ~700m below the Devon Island ice cap. This project aims to develop the technology to study these lakes to, potentially, use on a future space mission to Mars, Europa, or Enceladus. It consists of three approaches: 1) Surface radar surveys to study the geophysical context within the lakes; 2) Advance drilling technologies through the ice and, eventually, into the lakes themselves; and 3) Study the microbiology of these environments. This campaign will serve as the starting point for a multi-year research project.

**Project start date** 2022-04-01

**Project end date** 2025-03-31

**Type of field work** Scientific research

**Project's primary location** Devon Island

**Province/Territory** Nunavut

### Financial contact

<b>First name</b>	Elvie
<b>Last name</b>	Coletta
<b>Email</b>	elvie.coletta@mcgill.ca

### Additional contact

**First name**

**Last name**

**Email**

## Step 4 – Project details

**Please include the ways in which your project's research is important to science and society, the main research question(s) it aims to answer or project objectives, and its field methodology (maximum 6,000 characters).**

Astrobiology and the search for life beyond Earth is a major focus of current and future planetary exploration. Mars' Jezero Crater, Oxia Planum, and Gale Crater show considerable evidence of past fluvial, deltaic, and lacustrine environments, which, based on our current knowledge of extreme microbiology, had the potential to host microbial life before ~3.5 bya, when Mars was much warmer and wetter. Recent evidence obtained through orbital radar sounding indicates the presence of subglacial lakes ~800 meters below Mars' southern ice cap. Such subsurface saline water bodies may support active microbial ecosystems where microbes have the necessary chemical compounds to thrive, together with a more protected environment from the high radiation impacting the surface. Considerable evidence has also been found in the last decade to support the existence of large cold, salty oceans under the ice covers on Europa and Enceladus, where present-day or very recent geologic activity occurs. Analyses of Enceladus's outgassing plumes have shown the presence of other key requirements for habitability, such as a source of energy, carbon and nitrogen and evidence of recent plumes on Europa have been found.

The main goal of this project is to characterize a unique terrestrial analogue environment of these icy worlds: the recently discovered hypersaline lake complex under the Devon Ice Cap of Nunavut, Canada. The Devon Island subglacial lakes, consisting of 3 lakes lie beneath 560-740m of ice, where basal ice temperatures are modelled to be -10.5°C to -12°C, with a commensurate lake salinity of 4-5 times that of sea water (~15%). This contrasts with the numerous subglacial lakes discovered in Antarctica and Greenland which consist of fresh water derived from basal melting, water influx through subglacial connectivity or surface meltwater input. In contrast, the Devon subglacial lakes, characterized by brine-rich fluids and located within a unique geological context, are unprecedented. Due to their hypersaline nature, the Devon subglacial lake complex is a particularly tantalizing analogue for brine bodies inferred to exist on Europa, Enceladus, and Mars, and make it a compelling site to address fundamental questions about how life persists at terrestrial extremes of darkness, temperature, salinity, and pressure. Our 3-year CSA FAST Application (pending) is the first step to access the Devon Island lakes directly by testing and optimizing an ice drilling system, collecting ice samples overlying the lakes for microbiological analyses and optimizing 2 biosignature detection prototypes, and to further constrain the geophysical and geomorphological parameters of the system. As a first step towards the goal of eventually reaching the subglacial lakes, this PCSP application for the 2022 field season has the following objectives:

i) Perform a local reconnaissance of the surface on top of the subglacial lakes to determine optimal drilling sites for the 2023 field season, and identify an optimal site to prepare a base camp for the 2023 and 2024 field seasons to drill 15-20 and ~100 M, respectively. This will be carried out by Whyte, Criscitiello, Zacny and O'Connor. Whyte is the overall leader for the fieldwork.

ii) Using a Kovacs ice corer, obtain 3-4 replicate 1-2 m deep ice core samples for downstream microbial and physicochemical analyses at our lab in Montreal. Analyses will consist of pH measurements, dating of the ice and determination of the major chemical species present within the ice (such as sulfur, sulfate, ammonia, nitrate, iron, carbon dioxide) important for microbial metabolisms. Microbial analyses will include obtaining metagenome-assembled genomes and single-cell assembled genomes to better understand the diversity and metabolic potential of the microbial communities. We will test whether the ice-inhabiting microbes are active or in a dormant state by means of metatranscriptomic sequencing and radiorespiration assays. We will also use a Licor CO<sub>2</sub>/CH<sub>4</sub> Trace Gas analyzer to determine if any in situ microbial activity can be detected and measured

on the surface of Devon Ice Cap, as a proxy for measuring microbial respiration (CO<sub>2</sub>) and methanogenesis (CH<sub>4</sub>). Furthermore, we will attempt to culture and analyze isolates from the ice samples. Overall, these analyses will provide evidence of microbial life in the ice overlaying the subglacial lakes and help determine if such ice is seeding the subglacial lakes when they are eventually sampled and analyzed. Whyte, Criscitiello, Zacny, and O'Connor will collect cores; O'Connor, a PhD and 2 undergrads will perform the microbial analysis.

iii) Ice samples will also be tested on site using the prototype MICRO Life Detection Platform, consisting of the uMAMA (Microfluidic Microbial Activity Microassay), an instrument for nucleic acid extraction (MagLysis) and a nanopore sequencing platform, which aim to characterize any microbes present within the ice overlying the lakes, and determine if any of these are metabolically active. Thus, this will complement the microbial analyses mentioned above, and demonstrate the platform's usefulness as a standalone biosignature detection platform for future astrobiology missions. This objective will be carried out by O'Connor.

iv) As an indirect benefit of our work surface snow samples at the Devon lakes site will be taken for microplastic and environmental contaminant (e.g., per- and polyfluoroalkyl substances) analysis. Recent work has shown long-range transport of various chemicals of concern to the Devon Ice Cap within this chemical class, and updated inventories will add important value to this field season. Criscitiello will perform analyses for this portion of the project.

While fieldwork planned for 2022 will not access the lakes directly, this research will provide invaluable engineering and science data and field research experience to ultimately obtain samples from the subglacial lakes in the future.

**Do you have collaborators who will also apply for support from the PCSP?** No

## Indigenous and local involvement and engagement

**Please indicate how Indigenous and/or local residents and communities will be involved in your project during the upcoming field season. Describe your approaches to and activities that support Indigenous engagement, community consultations and disseminating results. University applicants: Note that this is scored by the Project Review Committee (maximum 2,500 characters).**

There are no communities or permanent inhabitants on Devon Island; however, throughout our research, we remain cognizant that our work brings us through traditional Inuit land and occurs with the generosity of the Nunavummiut. We would be delighted to present our research projects and results to residents of Resolute or Iqaluit as time and funding permit. These presentations could be organized through local Hunters and Trappers Organizations and/or the Nunavut Arctic College (NAC) and, depending on the COVID-19 situation when the field campaign takes place, could occur either in-person or virtually. We would also be excited to teach a hands-on microbiology lesson to residents of Resolute, which could entail using microscopes and Petri dishes to demonstrate the presence and activity of microorganisms in familiar environments (mouths, ponds, high-contact points in buildings, etc.).

Although the project described in this proposal does not directly involve Indigenous or local residents and it is difficult to predict the status and risk of the COVID pandemic in July 2022, we have a history of reaching out to and involving residents of Resolute for some of our other projects in the High Arctic. For example, as part of an ongoing project evaluating hydrocarbon degradation and bioremediation in the Arctic (described in a separate 2022 PCSP proposal), we hired Devon Manik, a resident of Resolute, to help assess field sites in the area. Manik remains active on social networks and enthusiastic about our research, and we will ask for his guidance on how to leverage social media and virtual presentations to share our research with Nunavut communities, schools, and the Nunavut Research Institute. Our 2022 field work at Resolute will also include a student from NAC, and we look forward to continuing that collaboration.

## Licenses and permits

**I understand that it is my responsibility to obtain all permits and licenses for my proposed fieldwork, and I will provide copies of them to the PCSP (as applicable) at least three weeks prior to the start of my field season.**



Question	Answer
<b>Record 1</b>	
License/permit title	Territorial Scientific Research License
Issued by	Nunavut Research Institute

The Government of Canada uses quality of life impacts to evaluate how government programs contribute to the well-being of all Canadians. Data gathered in this section is used for program evaluation purposes only. Responding to this question is optional, and will not affect current or future applications for PCSP support.

Does this project generate or contribute to scientific knowledge on any of the following topics? (Select all that apply)

## Step 5 – In-kind support

The PCSP can, at times, offer direct, in-kind support to projects. Selecting Yes below means you will be considered for such support, which would cover some or all the costs associated with your project, including aircraft hours. If you select No, you will not be considered for direct, in-kind support and, if your project is feasible, you will be invoiced for all costs incurred on behalf of your project. Please note that non-Canadian organizations are not eligible for in-kind support. Please consult the [PCSP website \(https://www.nrcan.gc.ca/science-data/science-research/arctic-science/polar-continental-shelf-program/10003\)](https://www.nrcan.gc.ca/science-data/science-research/arctic-science/polar-continental-shelf-program/10003) for more information or [contact us \(mailto:nrcan.pcspottawa-ppcpottawa.nrcan@canada.ca\)](mailto:nrcan.pcspottawa-ppcpottawa.nrcan@canada.ca).

**Would you like to request direct, in-kind support from the PCSP?** Yes

### PCSP special consideration for support

**Would you like this logistics request to be considered for Canadian Arctic-Antarctic Exchange support? (This option is available to projects that involve collaboration among Canadian Arctic and non-Canadian, Antarctic scientists who want to conduct joint studies in both polar regions. Canadian scientists may apply to sponsor Antarctic partners.)** No

**Would you like this logistics request to be considered for Traditional Knowledge support? (This option is available to projects that support the preservation of the traditional knowledge of Arctic Peoples.)** No

## Step 6 - Participants and Health & safety

Number of participants

4

Question	Answer
<b>Record 1</b>	
First name	Lyle
Last name	Whyte
Email address	lyle.whyte@mcgill.ca
Type of organization	University
Specify other, if applicable	
Please select your federal government department, if applicable	
Specify other, if applicable	
Please select the type of university, if applicable	Canadian university
Name of organization	McGill University
Location of organization: City	Montreal
Country	Canada
Citizenship	Canadian
Specify other, if applicable	
Gender	Man
Student	No
Degree type (e.g., BSc, MSc, PhD)	
Year of study within their academic program, if applicable (e.g., 1 of 2 , 2 of 4)	
Does this participant hold a valid Possession and Acquisition License (PAL)?	No
Is this participant first aid certified?	Yes
Type of certification	
<b>Record 2</b>	
First name	Brady
Last name	O'Connor
Email address	brady.oconnor@mail.mcgill.ca
Type of organization	University
Specify other, if applicable	
Please select your federal government department, if applicable	
Specify other, if applicable	

Please select the type of university, if applicable	Canadian university
Name of organization	McGill University
Location of organization: City	Montreal
Country	Canada
Citizenship	Canadian
Specify other, if applicable	
Gender	Man
Student	Yes
Degree type (e.g., BSc, MSc, PhD)	PhD
Year of study within their academic program, if applicable (e.g., 1 of 2 , 2 of 4)	4
Does this participant hold a valid Possession and Acquisition License (PAL)?	No
Is this participant first aid certified?	Yes
Type of certification	
<b>Record 3</b>	
First name	Kris
Last name	Zacny
Email address	KAZacny@honeybeerobotics.com
Type of organization	Other
Specify other, if applicable	Private, non Canadian company
Please select your federal government department, if applicable	
Specify other, if applicable	
Please select the type of university, if applicable	
Name of organization	Honeybee Robotics
Location of organization: City	Altadena
Country	United States
Citizenship	Other
Specify other, if applicable	
Gender	Man
Student	No
Degree type (e.g., BSc, MSc, PhD)	
Year of study within their academic program, if applicable (e.g., 1 of 2 , 2 of 4)	
Does this participant hold a valid Possession and Acquisition License (PAL)?	No
Is this participant first aid certified?	Yes
Type of certification	
<b>Record 4</b>	
First name	Alison
Last name	Criscitiello
Email address	crisciti@ualberta.ca

Type of organization	University
Specify other, if applicable	
Please select your federal government department, if applicable	
Specify other, if applicable	
Please select the type of university, if applicable	Canadian university
Name of organization	University of Alberta
Location of organization: City	Edmonton
Country	Canada
Citizenship	Canadian
Specify other, if applicable	
Gender	Woman
Student	No
Degree type (e.g., BSc, MSc, PhD)	
Year of study within their academic program, if applicable (e.g., 1 of 2 , 2 of 4)	
Does this participant hold a valid Possession and Acquisition License (PAL)?	Yes
Is this participant first aid certified?	Yes
Type of certification	

#### Participant field dates

Question	Answer
<b>Record 1</b>	
Participant	Lyle Whyte
Date into field	2022-07-03
Date out of field	2022-07-10
Will this person be in charge of the field camp?	Yes
Arctic field experience (years)	19
Describe how and where this experience was obtained	Since 2000, I have organized and led about 19 trips to Ellesmere and Axel Heiberg Islands in the Canadian high Arctic.
<b>Record 2</b>	
Participant	Brady O'Connor
Date into field	2022-07-03
Date out of field	2022-07-10
Will this person be in charge of the field camp?	No
Arctic field experience (years)	1
Describe how and where this experience was obtained	Brady participated in one trip to Axel Heiburg Island in August of 2021.
<b>Record 3</b>	
Participant	Alison Criscitiello
Date into field	2022-07-03
Date out of field	2022-07-10
Will this person be in charge of the field camp?	No
Arctic field experience (years)	8
Describe how and where this experience was obtained	Alison has participated or led 8 field expeditions to the Canadian high Arctic. She has also participated or led 5 field expeditions to the Antarctic.
<b>Record 4</b>	
Participant	Kris Zacny
Date into field	2022-07-03
Date out of field	2022-07-10
Will this person be in charge of the field camp?	No
Arctic field experience (years)	7
Describe how and where this experience was obtained	Kris has done one field expedition to Ellesmere Island, three to Devon Island, and 3 to Greenland. He's also done one field season in Antarctica.

You must select a participant to be in charge of the field camp. Your field party must have at least one person in camp at all times with at least three years of Arctic fieldwork experience.

## Health and safety

The PCSP recommends that every field party member have a valid first aid certificate (at the appropriate level) given the risks involved in your planned field work. The PCSP also recommends that several field party members have valid wilderness first aid training.

**Please describe your field health and safety plan, including your employer's requirements, insurance, training and the use of field equipment. In addition to your standard health and safety plan, please ensure you include a description of the measures you will take to prevent the spread of COVID-19. (Maximum 4,500 characters).**

All members of the field party have a valid wilderness first aid or wilderness first responder certificate or will obtain one prior to entering the field. In addition, participants will be asked to provide relevant information regarding their health and medical history prior to departure from Montreal. Before and during each trip, Dr. Whyte will inform participants of the remoteness of Devon Island, the difficulty in launching an emergency helicopter rescue to/from Devon Island, and thus how proper safety protocols and precautions take priority over all other field activities.

For working on the Devon Island ice cap we will carry a first aid kit, flares, bear repellent/bangers, blankets, an emergency shelter, compass, GPS, SAT phone, a radio, and extra food and water. All team members will be informed of the dangers of glacier/ice cap work (such as falling into crevasses) and no team member will be permitted to venture away from the group without a partner. All team members are required to receive proper training of all field equipment prior to utilization, at either McGill University, PCSP Resolute, and/or at Devon Island. They are also required to wear proper safety equipment (hard hats, etc.) during utilization. Furthermore, because the nature of this fieldwork requires the use of a helicopter to transport members over water from Resolute to Devon Island, all members will be required to complete helicopter underwater escape training. All participants will also be required to read the PCSP Arctic Operations Manual prior to the field campaign.

We acknowledge that the spread of COVID-19 will remain an ongoing concern. To ensure the safety of all participants and the communities we travel through, we will follow all Government of Canada, Nunavut Government, and PCSP Resolute COVID-19 regulations and protocols as required at the time of our field trip to the high Arctic. All participants are already fully vaccinated and will obtain booster shots as required prior to departure. We will wear masks in all indoor settings, minimize contact with external parties, and follow all public health guidelines at the time of the field campaign. While in the field and at PCSP, participants will complete a daily health check and immediately self-isolate from the rest of the field crew if they develop any COVID-19 symptoms. If available by July 2022 and applicable for use in remote field locations, we will bring COVID-19 field test kits to test symptomatic individuals while at PCSP and continue self-isolation if positive.

## Step 7 – PCSP Arctic services

Please select the services you require below:

**PCSP field equipment** Yes

**PCSP Resolute accommodation** Yes

**PCSP Resolute facility usage  
(e.g., laboratory, office space)** Yes

**Air transportation** Yes

**Fuel and lubricants** No

**Fuel caching** No

## Step 8 – Field equipment details

- Please be thorough (assume the maximum requirements for your fieldwork) and reasonable in making your field equipment request. The PCSP supplies field equipment to many projects each year and quantities of some items may be limited. The PCSP will prioritize requests based on application forms. It may not be possible to make changes or requests later on.
- The PCSP does not charge for the use of returnable items (e.g., multiple-use items such as all-terrain vehicles, clothing, tents). The cost of non-refundable items (e.g., garbage bags, matches, batteries) will be charged to your project.
- The costs associated with shipping field equipment will be charged to your project.
- Please note that you are responsible for the replacement costs for any field equipment that's lost or damaged as a result of misuse, abuse or neglect.

Indicate the period for which the equipment you've requested will be required in the field.

**Start date** 2022-07-04

**End date** 2022-07-10

**Would you like to inspect your equipment before using it for your project? If yes, you will be contacted to set up an appointment as close to your requested date as possible.** No

## Field equipment pick-up and shipping details

**Please identify whether the selected field equipment is to be picked-up or shipped and provide the required details.** Pick-up field equipment at the PCSP Resolute depot.

**Pick up date to collect field equipment** 2022-07-04

**Destination location name**

**Contact person at destination**

**Address line 1**

**Address line 2**

**City**

**Postal code**

**Province/Territory**

**Date the order is required at the destination**

**Estimated date that you will return the equipment to the PCSP**                      2022-07-10

**Special handling instructions or other comments**

**Field equipment catalogue**

Question	Answer
<b>Record 1</b>	
Category	Predator Protection
Equipment	Flare Kit, 6 Flares, 6 Bangers
Quantity	1
<b>Record 2</b>	
Category	Communication Equipment & Accessories
Equipment	Telephone, Satellite
Quantity	2
<b>Record 3</b>	
Category	Power Management
Equipment	Generator, 2000 kw, Gasoline.
Quantity	1
<b>Record 4</b>	
Category	Survey, Measuring & Navigating Equipment
Equipment	GPS, Handheld
Quantity	2
<b>Record 5</b>	
Category	Predator Protection
Equipment	Bear Repellent, Aerosol, 225 g.
Quantity	2
<b>Record 6</b>	
Category	Tents / Shelters & Accessories
Equipment	Tent, Lightweight, 4 Season, 2 Person
Quantity	2
<b>Record 7</b>	
Category	Tents / Shelters & Accessories
Equipment	Tarpaulin, Polyester, 6' x 8'
Quantity	2
<b>Record 8</b>	
Category	Safety Equipment
Equipment	Ear Plug, Soft Insert
Quantity	4
<b>Record 9</b>	
Category	Safety Equipment
Equipment	Blanket, Emergency, 2 Person
Quantity	2

**Provide any additional details regarding your field equipment request (e.g., a piece of required equipment required that is not shown in the catalogue).**

Kovacs ice core drill if possible.

## Step 9 – PCSP Resolute accommodation and facility usage

### PCSP Resolute accommodation

Question	Answer
<b>Record 1</b>	
Number of participants	4
Accommodation arrival date	2022-07-03
Accommodation departure date	2022-07-10
Number of nights	7
Number of bed-nights	28
List any accommodation or dietary needs for your project participants (e.g., allergies, celiac disease, lactose intolerant)	
<b>Totals</b>	
Number of bed-nights	28

**Total number of meals** 84

### PCSP Resolute facility usage

Question	Answer
<b>Record 1</b>	
Room	Dry lab
From date	2022-07-04
To date	2022-07-06
Estimate the amount of cooler space you will require in cubic metres (m3)	2
Estimate the amount of freezer space you will require in cubic metres (m3)	2
Number of users	2
Please list any specialized equipment you will bring with you	Kovacs Ice Corer

Please list all chemicals and the amounts you will bring with you (Note: MSDS must be available in the lab for each chemical you bring with you and you must be aware of the safe use, storage and disposal of these chemicals. In addition, upon completion of your lab use, you are responsible for the removal and proper disposal of all chemicals, chemical waste and any other items you bring into the lab.)

**Record 2**

Room	Dry lab
From date	2022-07-08
To date	2022-07-10
Estimate the amount of cooler space you will require in cubic metres (m3)	2
Estimate the amount of freezer space you will require in cubic metres (m3)	2
Number of users	2
Please list any specialized equipment you will bring with you	Kovacs Ice Corer

Please list all chemicals and the amounts you will bring with you (Note: MSDS must be available in the lab for each chemical you bring with you and you must be aware of the safe use, storage and disposal of these chemicals. In addition, upon completion of your lab use, you are responsible for the removal and proper disposal of all chemicals, chemical waste and any other items you bring into the lab.)

**Record 3**

Room	Wet lab
From date	2022-07-04
To date	2021-10-06
Estimate the amount of cooler space you will require in cubic metres (m3)	2
Estimate the amount of freezer space you will require in cubic metres (m3)	2
Number of users	2
Please list any specialized equipment you will bring with you	Kovacs Ice Corer

Please list all chemicals and the amounts you will bring with you (Note: MSDS must be available in the lab for each chemical you bring with you and you must be aware of the safe use, storage and disposal of these chemicals. In addition, upon completion of your lab use, you are responsible for the removal and proper disposal of all chemicals, chemical waste and any other items you bring into the lab.)

**Record 4**

Room	Wet lab
From date	2022-07-08
To date	2022-07-10
Estimate the amount of cooler space you will require in cubic metres (m3)	2

Estimate the amount of freezer space you will require in cubic metres (m3)	2
Number of users	2
Please list any specialized equipment you will bring with you	Kovacs Ice Corer
Please list all chemicals and the amounts you will bring with you (Note: MSDS must be available in the lab for each chemical you bring with you and you must be aware of the safe use, storage and disposal of these chemicals. In addition, upon completion of your lab use, you are responsible for the removal and proper disposal of all chemicals, chemical waste and any other items you bring into the lab.)	
<b>Record 5</b>	
Room	Clean lab
From date	2022-07-04
To date	2022-07-06
Estimate the amount of cooler space you will require in cubic metres (m3)	2
Estimate the amount of freezer space you will require in cubic metres (m3)	2
Number of users	2
Please list any specialized equipment you will bring with you	Kovacs Ice Corer
Please list all chemicals and the amounts you will bring with you (Note: MSDS must be available in the lab for each chemical you bring with you and you must be aware of the safe use, storage and disposal of these chemicals. In addition, upon completion of your lab use, you are responsible for the removal and proper disposal of all chemicals, chemical waste and any other items you bring into the lab.)	
<b>Record 6</b>	
Room	Clean lab
From date	2022-07-08
To date	2022-07-10
Estimate the amount of cooler space you will require in cubic metres (m3)	2
Estimate the amount of freezer space you will require in cubic metres (m3)	2
Number of users	2
Please list any specialized equipment you will bring with you	Kovacs Ice Corer
Please list all chemicals and the amounts you will bring with you (Note: MSDS must be available in the lab for each chemical you bring with you and you must be aware of the safe use, storage and disposal of these chemicals. In addition, upon completion of your lab use, you are responsible for the removal and proper disposal of all chemicals, chemical waste and any other items you bring into the lab.)	
<b>Record 7</b>	
Room	Fume Hood
From date	2022-07-04

To date	2022-07-06
Estimate the amount of cooler space you will require in cubic metres (m3)	2
Estimate the amount of freezer space you will require in cubic metres (m3)	2
Number of users	2
Please list any specialized equipment you will bring with you	Kovacs Ice Corer
Please list all chemicals and the amounts you will bring with you (Note: MSDS must be available in the lab for each chemical you bring with you and you must be aware of the safe use, storage and disposal of these chemicals. In addition, upon completion of your lab use, you are responsible for the removal and proper disposal of all chemicals, chemical waste and any other items you bring into the lab.)	
<b>Record 8</b>	
Room	Fume Hood
From date	2022-07-08
To date	2022-07-10
Estimate the amount of cooler space you will require in cubic metres (m3)	2
Estimate the amount of freezer space you will require in cubic metres (m3)	2
Number of users	2
Please list any specialized equipment you will bring with you	Kovacs Ice Corer
Please list all chemicals and the amounts you will bring with you (Note: MSDS must be available in the lab for each chemical you bring with you and you must be aware of the safe use, storage and disposal of these chemicals. In addition, upon completion of your lab use, you are responsible for the removal and proper disposal of all chemicals, chemical waste and any other items you bring into the lab.)	

Please read the following statement and check the box to confirm agreement with this statement:  
 As Principal Investigator, I affirm that I and all members of my field research team who will use the Dr. Roy M. "Fritz" Koerner Laboratory at the PCSP Resolute facility will read the laboratory manual and review information about the laboratory available on [PCSP Website \(https://www.nrcan.gc.ca/science-data/science-research/arctic-science/polar-continental-shelf-program/10003\)](https://www.nrcan.gc.ca/science-data/science-research/arctic-science/polar-continental-shelf-program/10003), and be fully compliant with all laboratory rules and regulations. I also affirm that my team has all the appropriate training and certification to conduct laboratory work using the chemicals and specialized equipment that we will bring with us. I agree that costs arising from my field party's use of the lab may be added to my invoice at the end of the field season.

I agree

## Step 10 – Camp/work locations

Question	Answer
<b>Record 1</b>	
Location name	PCSP Resolute
Type of site	Staging/Base of operations
Specify other, if applicable	
Province/Territory	Nunavut
Latitude degrees (N)	74
Latitude decimal minutes	43.02
Longitude degrees (W)	94
Longitude decimal minutes	58.17
Field start date	2022-07-03
Field end date	2022-07-10
Field party size	4
<b>Record 2</b>	
Location name	Devon Island lakes site
Type of site	Fieldwork location
Specify other, if applicable	
Province/Territory	Nunavut
Latitude degrees (N)	75
Latitude decimal minutes	18.906
Longitude degrees (W)	82
Longitude decimal minutes	32.792
Field start date	2022-07-04
Field end date	2022-07-05
Field party size	4

## Step 11 - Air transportation and sharing

Question	Answer
<b>Record 1</b>	
From location	PCSP Resolute
Select fixed-wing aircraft	
Configuration	
Specify other, if applicable	
Select rotary aircraft	Bell 206 LR
Configuration	Pop out Floats
Specify other, if applicable	
Do you require any special equipment for the Aircraft? (e.g., helicopter basket, helicopter sling gear, bubble windows, camera hatch, camera mount, etc.)	
Specify, if applicable	
Start date	2022-07-04
End date	2022-07-04
Number of flying hours	4
To location	Devon Island lakes site
Estimated distance – km	740
Number of trips	1
Type of use	Ferrying people to remote field site
Specify other, if applicable	
Additional details regarding planned use	Drop off on Devon Island ice cap for 4 - 6 hours of recon. Then back to Resolute (i.e. day trip). Two trips on separate days have been requested in case of weather issues.
Number of passengers	4 max
Estimated freight – kg	400 kg max plus 4 passengers
Load details	4 people, science equipment, a small ice drill and emergency equipment..
<b>Record 2</b>	
From location	PCSP Resolute
Select fixed-wing aircraft	
Configuration	
Specify other, if applicable	
Select rotary aircraft	Bell 206 LR
Configuration	Pop out Floats
Specify other, if applicable	
Do you require any special equipment for the Aircraft? (e.g., helicopter basket, helicopter sling gear, bubble windows, camera hatch, camera mount, etc.)	
Specify, if applicable	

Start date	2022-07-05
End date	2022-07-05
Number of flying hours	4
To location	Devon Island lakes site
Estimated distance – km	740
Number of trips	1
Type of use	Ferrying people to remote field site
Specify other, if applicable	
Additional details regarding planned use	Drop off on Devon Island ice cap for 4 - 6 hours of recon. Then back to Resolute (i.e. day trip). Two trips on separate days have been requested in case of weather issues.
Number of passengers	4
Estimated freight – kg	400 kg max plus 4 passengers
Load details	4 people, science equipment, a small ice drill and emergency equipment.

**Do you have partners with whom you would like to share aircraft?** No

**Having some flexibility in your plans may increase your project’s chances of receiving support from the PCSP In the box below, discuss your flexibility regarding field dates, aircraft type and aircraft sharing (maximum 2,500 characters).**

Unfortunately we cannot be very flexible in sharing helicopter time except for other projects that need to get to our study site and if there is available room on the helicopter. We are somewhat flexible on field dates however.

**Fuel Caching**

Question	Answer
No data to display	

Reminder: Flights for each fuel cache location (and cleaning up each fuel cache) should be included as an entry in the air transportation requirements section.

## Step 12 - Fuel and lubricants

Please provide your fuel and lubricant requirements. This is for fuel and lubricants that will not need to be pre-positioned and that can be flown into your camp during camp mobilization. Note: These items can only be supplied by the PCSP to projects with flights out of Resolute. All other projects will need to source these items themselves, locally.

Question	Answer
<b>Record 1</b>	
Fuel type	Gasoline (L)
Specify other, if applicable	
Quantity required	small tank est. 5 liters max
Date required	2021-10-04
Location where fuel/lubricants will be used	Devon Island lakes site

## Step 13 – University requirements

The following section is only required for applicants from Canadian and non-Canadian universities. University applicants: please follow the instructions in this form. Failure to do so can negatively affect your evaluation by the Project Review Committee. All other applicants: please proceed to Step 14 – PCSP Terms & Conditions.

### Budget

Question	Answer
<b>Record 1</b>	
Budget item	Chartered helicopter through PCSP
Estimated unit cost	2250
Number required (if applicable)	8
Total cost	18000
Source of funding	Whyte - grants
Comments	
<b>Record 2</b>	
Budget item	Commercial airfare
Estimated unit cost	5000
Number required (if applicable)	4
Total cost	20000
Source of funding	Whyte - grants
Comments	Ottawa to Resolute, return fare
<b>Record 3</b>	
Budget item	Accommodations at PCSP facility in Resolute
Estimated unit cost	200
Number required (if applicable)	28
Total cost	5600
Source of funding	Whyte - grants
Comments	4 people for 7 nights
<b>Record 4</b>	
Budget item	Fuel for equipment
Estimated unit cost	100
Number required (if applicable)	1
Total cost	100
Source of funding	Whyte - grants
Comments	Propane and gasoline
<b>Record 5</b>	
Budget item	PCSP field equipment

Estimated unit cost	1500
Number required (if applicable)	1
Total cost	1500
Source of funding	Whyte - grants
Comments	Expendable items and shipping
<b>Record 6</b>	
Budget item	Field equipment not from PCSP
Estimated unit cost	3000
Number required (if applicable)	1
Total cost	3000
Source of funding	Whyte - grants
Comments	
<b>Record 7</b>	
Budget item	Freight
Estimated unit cost	2000
Number required (if applicable)	1
Total cost	2000
Source of funding	Whyte - grants
Comments	
<b>Record 8</b>	
Budget item	Miscellaneous
Estimated unit cost	400
Number required (if applicable)	1
Total cost	400
Source of funding	Whyte - grants
Comments	License fees, translation costs
<b>Record 9</b>	
Budget item	Emergency Travel Funds in case of weather delays
Estimated unit cost	2000
Number required (if applicable)	1
Total cost	2000
Source of funding	Whyte - grants
Comments	
<b>Totals</b>	
Total cost	52600

Note: to update the amount shown here, please click 'Save' at the bottom of the page

**Total estimated project cost** 52,600

**Grants and awards**

Question	Answer
<b>Record 1</b>	
Name of the grant/award	Canadian Space Agency Fast Program
Name of recipient	Lyle Whyte
Period held in years (e.g., 2020-2023)	2022-2025
Total monetary value secured	pending
Total monetary value anticipated	100 k per year / 3 years
Portion of grant available for the upcoming field season	20,000
Is this grant or award part of a competitive process where scientific excellence is assessed?	Yes
<b>Record 2</b>	
Name of the grant/award	NSTP
Name of recipient	Brady O'Connor
Period held in years (e.g., 2020-2023)	2022
Total monetary value secured	pending
Total monetary value anticipated	est. \$3400
Portion of grant available for the upcoming field season	\$3400
Is this grant or award part of a competitive process where scientific excellence is assessed?	Yes
<b>Record 3</b>	
Name of the grant/award	NSERC NRS
Name of recipient	Lyle Whyte
Period held in years (e.g., 2020-2023)	2017-2023
Total monetary value secured	16000
Total monetary value anticipated	
Portion of grant available for the upcoming field season	4000
Is this grant or award part of a competitive process where scientific excellence is assessed?	Yes

**Student/post-doctoral fellow involvement**

Describe the student/post-doctoral fellow involvement in your project for the 2022 field season, including each person's: (1) academic level; (2) role in the project (e.g., collecting data/samples for their research project, field assistant only, or not going to the field but using field data); and (3) a very brief research project description. To make it easier for the reviewers, please number each student and list them from highest level of education (e.g., Post-Doc, PhD) to lowest (e.g., MSc, undergraduate). (Maximum 2,500 characters).

4 Canadian HQP (1 PDF, 1 PhD, 2 UG summer students) will take part on the project, either in the field or working with the data/samples obtained once back in the lab:

1) PDF #1 will be using samples collected in the field to perform 16S rRNA amplicon sequencing and radiorespiration assays and perform ecological analysis for his/her own research.

2) PhD #1 (Brady O'Connor) will help collect ice cores and run the MICRO life detection platform while in the field. Back in Montreal he will perform metagenomic and metatranscriptomic characterization of the microbial communities within the ice and perform subsequent bioinformatic analysis to obtain metagenome assembled genomes. He will also analyze data generated in the field by the MICRO life detection platform all with the goal to advance his thesis project.

3) Undergrad #1 and undergrad #2 will assist the McGill University research team in laboratory work and data analyses. They will perform basic microbiology analysis, such as culturing on the samples taken by the rest of the group, with the goal of supporting the rest of the project's goals.

## Equity, diversity and inclusion

Explain how you considered equity, diversity and inclusion (EDI) in your research and training program. Do NOT provide personal and confidential details about your team members, such as how a team member self-identifies. See [NSERC guidelines \(https://www.nserc-crsng.gc.ca/\\_doc/EDI/Guide\\_for\\_Applicants\\_EN.pdf\)](https://www.nserc-crsng.gc.ca/_doc/EDI/Guide_for_Applicants_EN.pdf) for incorporating EDI into your research and training program for more information. (Maximum 2,500 characters).

All team members are committed to upholding the highest standards of equity, diversity, and inclusion (EDI) in all aspects of our research and training, as well as in our home communities. Because I work exclusively with microorganisms, my research and analyses do not directly account for sex, gender, or other sociocultural variables; however, all team members are acutely aware of the importance of EDI in the scientific community.

I follow best practices for recruiting highly qualified personnel (HQP) for this project, and over my past almost 20 years of work in the Canadian high Arctic, I have supported more than 30 students from a variety of races, ethnicities, nationalities, gender identities, and socioeconomic and cultural backgrounds. I have also reinforced EDI by providing the training and support needed to bring all HQP to the same level and ensure that they succeed in their studies. This includes formal and informal instruction in both the lab and in the field. In the daily management of my research group, all team members respect policies fostering inclusion: we avoid scheduling meetings after 4:00pm to accommodate daycare pick-up, and we respect the religious holidays of all cultures represented on our team. Members of my field teams are also encouraged to participate in various EDI trainings offered by McGill University, including Social Equity and Diversity Education, Safer Spaces: Sexual Orientation and Gender identity, Setting up an Equitable Community, and Indigenous Perspectives.

All team members are additionally committed to education and outreach activities that provide opportunities for any interested parties to engage with our research. For example, we post on lab profiles in social networks (Twitter, Instagram, Facebook) throughout the year and during field campaigns to highlight how scientific field work is done and share key results. Team members also participate in general outreach activities in Montreal,

including “Pint of Science” festivals, appearances in mainstream media outlets, guest lectures in local schools, and field trips that bring school classes into our lab. Following EDI guidelines, we highlight the role of women and different ethnicities and nationalities in all outreach activities. Lastly, we strive to hire and train Indigenous students from Resolute Bay or through the Nunavut Arctic College to assist in field work including sample retrieval, sample archiving, and data interpretation.

### Publication list

University applicants must provide a list of peer-reviewed publications over the past five years\*, since 2016 for the Principal Investigator, in **PDF format**.

**\*NEW:** To ensure that individuals with career interruptions (e.g., parental leave) are not disadvantaged during the evaluation process, the time period may be increased by the number of months of the career interruption. Identify the dates of the career interruption at the top of the publication list, and the dates that encompass your publication list.

**DO NOT** include “in progress” or “submitted” publications. List only accepted or published publications. Peer-reviewed papers in conference proceedings may be included, but conference presentation abstracts may not. Please include all bibliographic information for each publication and, when possible, provide a web link to any listed publications that are available online. Please **DO NOT** provide a curriculum vitae or attach parts of proposals/forms you have completed for other organizations (e.g., grant applications).

Please be as detailed and organized as possible in your publication list to ease the review process. For example, indicate papers based on Arctic research and those that are relevant to the topic of this application (e.g., put the titles in bold), explain how the authorship is organized (e.g., first author has contributed the most to the paper vs. alphabetical) and use an asterisk if the publication came from past PCSP-supported field work.

Note: PCSP is no longer accepting applications where students or post-doctoral fellows are identified as the Principal Investigator. Students and post-doctoral fellows may complete the form on behalf of their supervisor, provided their supervisor is identified as the Principal Investigator in Step 2 of this application.

Document Type	Document Name	Actions
Publication list	PCSP Pub List for 2022 field season - Whyte.pdf-Lyle Whyte Publication List	

## Step 14 - PCSP Terms & Conditions

If you have questions about any component of the application process or its terms and conditions, [please email the PCSP \(mailto:nrcan.pcspottawa-ppcpottawa.nrcan@canada.ca\)](mailto:nrcan.pcspottawa-ppcpottawa.nrcan@canada.ca).

### Please read the PCSP Terms & Conditions:

#### General

1. Each project supported by the Polar Continental Shelf Program (PCSP) is under the PCSP's jurisdiction in all matters pertaining to PCSP-chartered aircraft operations and safety, the use of PCSP facilities, the use of PCSP-issued field equipment and any other logistics support provided by the PCSP. The PCSP solely reserves the right to withdraw its support to a project if safety is compromised or if the PCSP's logistics support is abused.
2. The PCSP solely reserves the right to curtail or modify or cancel any of its logistics support or access to facilities because of circumstances beyond its control, including, but not limited to, acts of God, inclement weather, local circumstances, emergencies, transportation problems, governmental action or conflicting demands of the various agencies receiving its support.
3. The Client is responsible for all recoverable expenditures associated with their project. The value of PCSP assistance with defraying eligible recoverable expenditures is NOT transferable between categories of support (i.e., accommodations, aircraft, field equipment, fuel, freight or miscellaneous expenses) or between projects. Any savings from unused PCSP assistance reverts to the PCSP.
4. The Client is responsible for ensuring that the PCSP receives all requested documentation (e.g., signed agreement, waivers, itineraries, emergency contacts, copies of licenses, permits and certificates). If this obligation is not met, the PCSP solely reserves the right to modify or cancel the support provided to the Project.
5. Non-federal Clients must sign a waiver that states that the federal government is not responsible for any actions, proceedings, claims, demands, losses, costs, damages and expenses that are in any way related to occupancy of contracted aircraft.
6. The PCSP requests that all publicity materials, presentations, public relations initiatives, media coverage and communications pertaining to, or following from, activities carried out through the PCSP recognize the role and logistics support of the PCSP.

#### Permits and Licences

7. Determining and obtaining all permits, licenses and fees required under land claim agreements, by territorial and federal governments or other agencies, for the Project are the sole responsibility of the Client.

#### Health and Safety

8. The Client is responsible for ensuring the health, safety and preparedness of his or her field party.
9. Every Arctic field party must have at least one person in camp at all times with significant (Footnote 1) experience working in the Arctic.

10. The Client shall ensure that all field equipment is used and operated in accordance with manufacturers' operating procedures and only for the purpose for which it was intended. The Client is accountable for ensuring due diligence in compliance with the health and safety requirements for the use of all field equipment issued and shall ensure that the equipment is operated only by persons who are fully qualified and trained to do so.

11. PCSP-issued satellite phones are to be used to contact the PCSP and for emergency reasons only. Clients are not permitted to use PCSP-issued satellite phones for personal reasons.

### **Firearms**

12. Any person in possession of a firearm must have their Possession and Acquisition License (PAL) with them at all times.

13. Upon arrival at the PCSP facility in Resolute, all firearms must be surrendered to the PCSP's Regional Firearms Custodian Officer for safe storage. A Possession and Acquisition Licence (PAL) certificate must be presented when surrendering and retrieving a firearm.

### **Charter Aircraft**

14. The Client is not permitted to make its own aircraft arrangements (e.g., charter, schedule changes) and charge the expenses to the PCSP. The Client must contact the PCSP to request any changes to the type of aircraft, flying schedule or number of flying hours required for PCSP chartered aircraft.

15. Some aircraft-related prices may increase during the field season. In such circumstances, the PCSP will notify the Client and adjust the estimated costs.

16. Hourly aircraft rates calculated by the PCSP are comprehensive and include, as applicable: positioning of the aircraft to and from aircraft bases (normally in Inuvik in the Northwest Territories and in Resolute, Cambridge Bay, Eureka, and Iqaluit in Nunavut), fuel, landing fees, NAV Canada fees, and pilot accommodation.

17. Many aircraft companies charge a fixed fee called "**daily minimums**," which is based on the cost of a daily minimum number of hours of flight. The PCSP makes every effort to maximize use of aircraft among projects. However, if applied, the Client is responsible for expenditures related to daily minimums for the time period the aircraft was associated with their Project.

18. Any changes to planned aircraft use could result in additional costs for the Project. If the Project is cancelled or aircraft requirements are modified after aircraft commitments have been made, the Client may be invoiced for daily minimums plus **cancellation fees** (if applicable).

19. If a flight is turned back due to inclement weather, the time will be charged to the Project. The Client will be invoiced for the cost of any additional hours flown over and above the total planned hours for its Project.

20. Unless otherwise identified, the Client is responsible for expenditures related to **fuel caching** for its Project.

21. Approval must be received from the PCSP prior to using fuel from commercial sources or existing fuel caches. Client-supplied fuel must meet or exceed aircraft companies' specifications. The Client must also indicate on the daily flight report that client-supplied or commercial fuel was used.

22. All PCSP Clients are responsible for notifying pilots of any cargo with a value exceeding \$50,000.

### **Insurance**

23. All field team members of PCSP-supported Projects should ensure they have adequate insurance coverage for personal travel (including coverage for flying in chartered aircraft), medical emergency evacuation, repatriation and disability.

### **Shipping**

24. The PCSP can arrange shipping of PCSP-issued field equipment to a staging location from a PCSP warehouse, but we will recover **shipping charges** from the Client. For return shipments, the Client is responsible for directly organizing and paying for shipment according to his or her organization's financial practices. The PCSP cannot accept cash on delivery (COD) shipments, nor can shipments be invoiced to the PCSP.

### **Dangerous Goods**

25. In compliance with the *Transportation of Dangerous Goods Act*, 1992 and associated regulations, dangerous goods such as firearms and corrosive materials, transported by commercial carriers, require the completion of specific shipping forms. It is the Client's responsibility to obtain the required documentation through their employer or through consultation with PCSP staff in Ottawa or Resolute. It is illegal to pack hazardous goods in baggage or to carry them on board an aircraft. The Client must ensure that proper procedures are followed, the information is correct and all shipping documents are signed. Refer to the Transportation of Dangerous Goods Act, 1992 and associated regulations for more information.

### **Field Equipment**

26. Title to the Field Equipment (Footnote 2) provided by the PCSP shall, at all times, remain vested in the Natural Resources Canada's Lands and Minerals Sector and nothing contained in this Agreement shall be deemed to confer upon the Client any greater right to or property in the Field Equipment than that of a user.

27. The Client shall not lend or rent the Field Equipment or transfer any right, title or interest in the Field Equipment to any person, including other Clients of the PCSP.

28. The Client shall indemnify and save harmless the PCSP from and against any claim, demand, or action, irrespective of the nature of the cause of the claim, demand, or action, alleging loss, costs, expenses, damages, or injuries (including injuries resulting in death) arising out of the Client's use or possession of the Field Equipment.

29. The PCSP shall not be liable in respect of any claim, demand or action, irrespective of the nature of the cause of the claim, demand or action alleging any loss, injury or damages, direct or indirect, which may result from the Client's use or possession of the Field Equipment. The PCSP shall not be liable in any way for loss of revenue or contracts, or any other consequential loss of any kind resulting from or attributable in any way to the Agreement.

30. The Client shall at all times keep the Field Equipment free of all liens, charges and encumbrances and from distress, seizure, execution or other legal process. If, at any time, the Field Equipment is not free of all liens, charges and encumbrances or from distress, seizure, execution or other legal process, then the Client shall promptly notify the PCSP accordingly and shall forthwith remove and discharge the same at the Client's own expense.

31. The Client shall be responsible for all recoverable expenditures incurred by the PCSP in connection with the use of Field Equipment, including:

- a. Costs of non-refundable (Footnote 3) items (i.e., items that are issued as one-time use only);
- b. Replacement costs for any loss or damage of Field Equipment issued to the Client due to misuse, abuse or neglect;
- c. Fuel and lubricants required to properly operate the Field Equipment during the usage period.

32. Non-refundable items should not be returned to the PCSP at the end of the season. The client is responsible for storing these items for future seasons, or disposing of them based on their organization's policy (e.g., Crown Assets).

33. Non-expendable field equipment may not be left in the field from one season to the next or "transferred" to other individuals or projects. The Client remains responsible for the equipment provided by the PCSP to the Client at all times.

34. The usage period shall commence on and include the date of the actual delivery of the Field Equipment to the Client or the Client's Agent, including any carrier charged with delivering the equipment to the Client.

35. The usage period shall end on and include the date of actual return of the Field Equipment to the PCSP warehouse from which it was issued.

36. The usage period shall not exceed one field season. If the Field Equipment is not returned to the PCSP by the end of the field season, the Client shall be charged the full replacement cost and the Client shall be invoiced accordingly.

37. The Client shall be responsible for the normal care and maintenance of the Field Equipment and ensure that the Field Equipment is kept in a secure area and protected from rot, mildew, rodents and the elements while in its possession.

38. The Client shall not remove, alter, disfigure, mark or cover any numbering, lettering or insignia displayed upon the Field Equipment and shall ensure that the Field Equipment is not subjected to careless or needless rough usage.

39. The PCSP ensures routine maintenance is conducted on Field Equipment as per manufacturers' recommendations. However, if Field Equipment requires maintenance while in the Client's care, the Client shall ensure that the service is conducted by a qualified person (Footnote 4).

40. All Field Equipment maintenance requirements and servicing undertaken by the Client are to be reported immediately to the PCSP.

41. The PCSP shall have the right, upon reasonable notice to the Client, to enter upon the premises where the Field Equipment is kept or used for the purpose of inspecting the Field Equipment, and the Client shall afford the PCSP all necessary facilities for the purpose of such inspection.

42. The Client shall be responsible for loss and damage (normal wear and tear excluded) to the Field Equipment during the usage period and the appraisal of any such loss or damage will be based on the replacement value for the Field Equipment.

43. The Client shall immediately notify the PCSP of any loss or damage to the Field Equipment during the usage period. The risk of loss of or damage to the Field Equipment and all other liabilities of the Client in respect of the Field Equipment shall pass to the Client during the usage period. The foregoing shall be without prejudice to any claims which the Client may have against a common carrier or other third party in respect of such loss or damage.

#### **PCSP trucks and vans**

44. In order to use a PCSP truck or van in Resolute, the Client must seek prior approval from the PCSP. The Client must be in possession of a valid driver's licence. A minimum or daily rate may apply for use of the vehicle. The Client shall be responsible for loss and damage (normal wear and tear excluded) to PCSP vehicles while in his or her possession.

#### **Footnotes**

1. Significant is defined as a depth and breadth of experience normally acquired with having performed a broad range of related activities in the field for a period of at least three years.

2. Field Equipment means any and all equipment (e.g., tents, stoves), clothing, vehicles (e.g., snowmobiles, ATVs) and/or consumables (e.g., toilet paper, bear spray) provided by PCSP to support the Client's field work as set out in Schedule A.

3. PCSP will not credit client accounts for unused or returned non-refundable items.

4. As per the Canada Labour Code Part II, Occupational Health and Safety Regulations, a qualified person means: in respect of a specified duty, a person who, because of knowledge, training and experience, is qualified to perform that duty safely and properly.

**I have read and agree to the  
PCSP Terms and Conditions.**



## Step 15 – PCSP Arctic operations manual

Before submitting your logistics request to the PCSP, please read the [PCSP Arctic Operations Manual](https://www.nrca.gc.ca/sites/www.nrca.gc.ca/files/earthsciences/files/pdf/polar/pcsp_manual_eng.pdf) ([https://www.nrca.gc.ca/sites/www.nrca.gc.ca/files/earthsciences/files/pdf/polar/pcsp\\_manual\\_eng.pdf](https://www.nrca.gc.ca/sites/www.nrca.gc.ca/files/earthsciences/files/pdf/polar/pcsp_manual_eng.pdf)).

**I have read and understand the  
PCSP Arctic Operations Manual:**

## Step 16 - Review and submit

### Attachments

Upload any other files that are relevant to your logistics request.

Document Type	Document Name	Actions
No data to display		

**Do you have a PCSP project number associated with this request?** No

**Failure to confirm your agreement with the following statement will disqualify this application:**

**I certify that this information is as complete and accurate as possible and that my upcoming field season will be based on the information that I have provided. Check to confirm your agreement with this statement:**

**If you receive support from the PCSP, do you agree to allow them to use basic information about your project [e.g., the principal investigator's name and affiliation, the project title and its study area(s)] on its website and in its publications?** Yes

Date: 2021-08-11 1:12:34 AM

Version: 3.1.31661