



2019 Oil & Gas Request for Proposals

RFP 2019-02

**Assessment of Potential Wastewater
Disposal Zones within the Montney Play,
Northeastern BC**

**This request for proposals is looking for projects and research ideas
regarding Montney wastewater disposal targets.**

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1. REQUEST FOR PROPOSALS (RFP) KEY DETAILS

Title	RFP 2019-02: Assessment of Potential Wastewater Disposal Zones within the Montney Play, Northeastern BC
Issue Date	June 12, 2019
Submission Deadline:	July 10, 2019 12:00 noon Pacific Standard Time
Proposal Validity Date	December 28, 2019
Estimated Review Conclusion	July 2019
Earliest Project Start Date	September 15, 2019
RFP Coordinator:	Brady Clift, Manager of Minerals Email: clift@geosciencebc.com Phone: (604) 662-4147

Problem Statement

Geoscience BC has worked on several projects related to deep saline aquifers and wastewater disposal. The Montney Water Project (<http://www.geosciencebc.com/major-projects/montney/>) included research into the potential for some deep saline aquifers to be suitable alternate water sources for hydraulic fracturing, whereas the Deep Aquifer Disposal Project (<http://www.geosciencebc.com/major-projects/deep-aquifer-fluid-disposal/>) assessed deep aquifers in the southern of the Montney Play for water disposal suitability.

In March 2019 the Scientific Hydraulic Fracturing Review Panel (the Panel) released its *Scientific Review of Hydraulic Fracturing in British Columbia* report. Knowledge gaps associated with wastewater disposal was one of the issues raised within the report (Section 3.5 Water Disposal, p.68- 71; Section 4.5 Water Disposal, p.97-102) with respect to development of natural gas within the Montney Play.

The Panel stated: "*The resounding concern about disposal capacity in NEBC was not anticipated by the Panel, and points to a critical need to begin planning for the short and long-term future of natural gas development in NEBC...Thus, it is paramount to either reduce the amount of wastewater being generated or find alternative options for disposing of this waste*".

Research Statement & Guidelines

If full-scale LNG development is to proceed on BC's West Coast, additional wastewater disposal zones will be needed in order to support the requisite natural gas drilling.

This RFP calls for multidisciplinary proposals that use existing accessible geoscience data (could be public or released private data), from the Montney Play in northeastern BC (see map) to address an acknowledged gap in knowledge about wastewater disposal.

Proposals should integrate hydrogeology, geomechanics (if warranted), reservoir characterization (including petrophysics), structural geology through the use of pertinent oil and gas data to evaluate suitable wastewater disposal zones below the base of usable groundwater (as per the BC Oil & Gas Commission's definition: <https://www.bcogc.ca/indb-2016-09-technical-guidance-determining-base-usable-groundwater>). The study does not have to evaluate all zones within the Montney Play, nor the entire fairway *per se*. Proponents can focus on specific areas and stratigraphic zones not previously mapped in the Deep Aquifer Disposal Project and make recommendations on preferred sites.

The study should identify suitable wastewater disposal zones. The report should address for each zone, at minimum, the following:

- Location and disposal metrics of any existing water disposal wells including annual cumulative injection volumes and injection pressure histories.
- Reservoir characterization
 - Petrophysics.
 - Sufficient zone thickness and primary permeability to support commercial disposal injectivity rate fluid dispersion, at an injection pressure below the formation fracture pressure.
 - Sufficient accommodation volume to support commercial disposal for a period of years.
 - Reservoir compartmentalization and heterogeneity, that may impact the above two points.
 - Containment structure – of concern if considering geohazards, addressed below.
 - Hydrogeology – Hydrodynamic state – pore pressure balanced, over or under-pressured for depth – and potential impacts of expected pore pressure on injection and induced seismicity geohazard.
- Geological containment
 - Geomechanical assessment (if possible).
 - Assessment of cap rock containment.
- Geohazard identification
 - Proximity to mapped faults, natural fractures and structures that disposal injection may trigger seismic events.
- Optimized disposal locations
 - Identification of potential water disposal zones within or near to existing industry Montney operational areas would be a benefit.
 - Examine previous work from the Deep Aquifer Disposal Project and assess zones not included in that study.

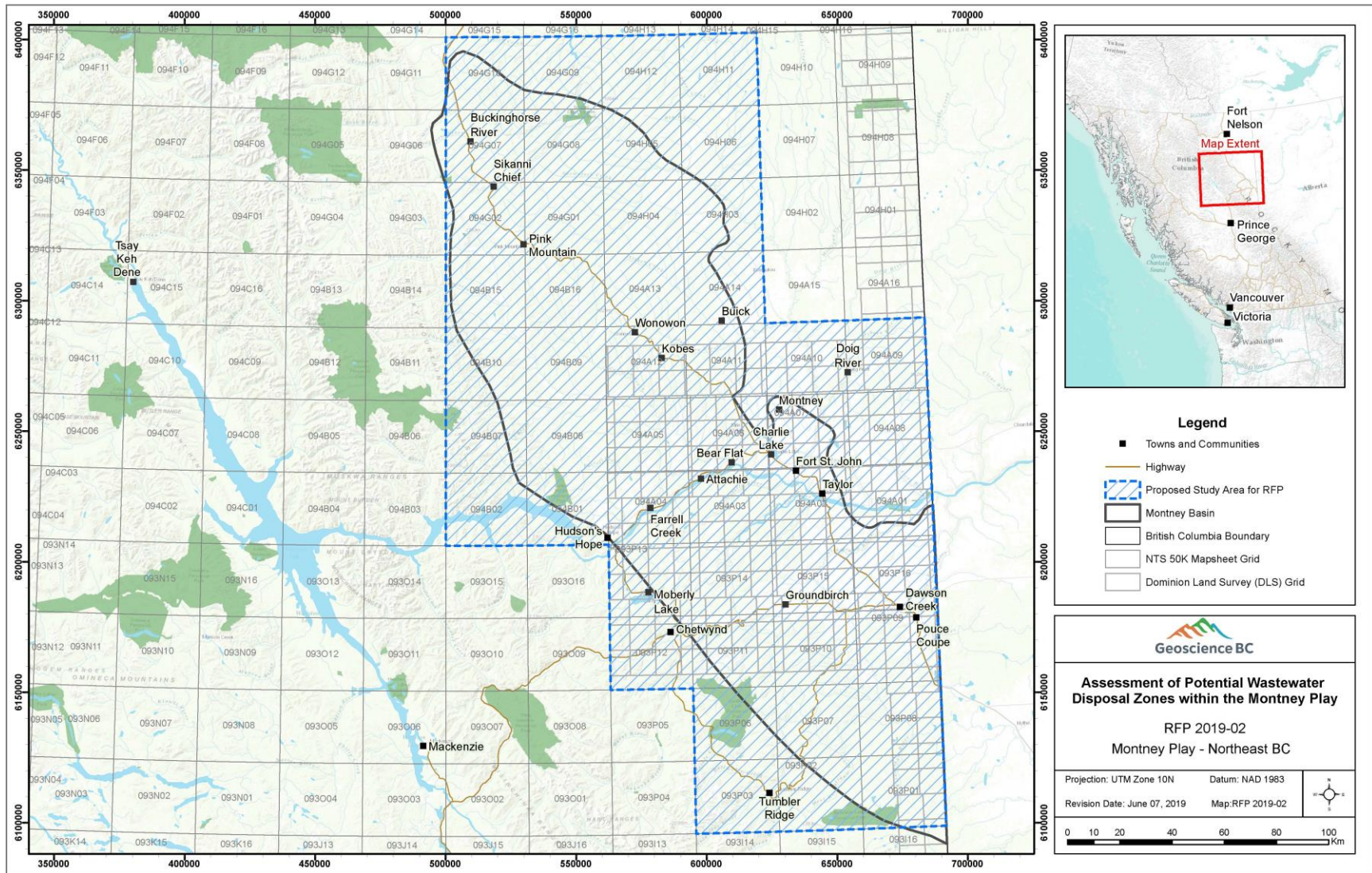
Project Deadline

All project-related work and deliverables must be completed in final format by March 2021.

RFP Linkage to Geoscience BC's Strategic Plan Objectives

This RFP is looking for proposals that help to meet the Strategic Objective *Facilitating Responsible Natural Resource Development* in [the Geoscience BC Strategic Plan 2018-2022](#), and the associated goal:

- *Continue to support development of the Montney Play through technical studies aiding hydrogen-sulfide prediction and safe fluid and acid gas disposal.*



Location map showing area where proposals for this RFP will be accepted. This map should be used as a guideline, the study does not have to evaluate the whole area in the strict sense, but can be focused on preferred areas and stratigraphic zones.

2. RFP SUBMISSION GUIDELINES

2.1 INTRODUCTION

In support of our mission to generate and publicly share high quality and unbiased earth science research and data in British Columbia, Geoscience BC issues requests for proposals (RFP).

The RFP process gives communities served by Geoscience BC an opportunity to directly propose research projects to be undertaken.

2.2 ELIGIBILITY

Applicants who wish to submit a proposal should be aware the following eligibility criteria:

- Proposals must concern research that is materially contained within or affecting British Columbia, Canada. However, researchers or organizations may reside outside of the province or country.
- Proposals will be considered from individuals or teams representing or partnered with Indigenous groups, communities, governments, resource sectors, private consultants, universities or colleges, or not-for-profit agencies.
- Proposals with financial or in-kind support from other organizations will be prioritized.
- Geoscience BC places high value on effective outreach and engagement activities with the resource sectors, academia, communities, Indigenous groups and governments. Successful applicants will be required to participate or lead in these activities as set out in a subsequent Project Agreement.
- Participants in projects will be required to sign in a subsequent Project Agreement that they will not acquire tenures or an interest in tenures (e.g. mineral, coal, petroleum or natural gas) within the project area, until six months after all project data is made public by Geoscience BC.
- Applicants must be prepared to carry appropriate insurance coverage, including Workers' Compensation and Commercial General Liability for the duration of a project. Depending on the nature of the project, Automobile, Aircraft/Watercraft and Construction Machinery insurance may also be required. More information on specific insurance requirements may be listed in an appendix or determined during negotiation of a Project Agreement.

2.3 PROPOSAL SUBMISSION

An applicant is solely responsible for developing a compelling, clear and complete proposal.

2.3.1 Three Components of a Complete Submission

There are three components to a complete application that must be received by the Geoscience BC RFP Coordinator electronically before the Submission Deadline. Hard copies will not be accepted.

i. Notification. Emailed notification of an intent to submit a proposal to the RFP Coordinator. This is important so any updates or clarifications concerning the RFP process can be shared with you, if your proposal contains large files or is sent close to the Submission Deadline.

ii. Proposal. A proposal following the Proposal Template available online and consistent with any instruction included in Appendix A:

- This document must be submitted in MS Word .doc or .docx format
- The completed Proposal Template (including photos and diagrams) should total no more than 15 pages (8.5x11 inch page size only). This does not include the Budget Template, which must be submitted as a separate file, or letters of support. Proposals which exceed this page limit will not be considered.

iii. Budget. A proposal budget that is created using the Budget Template available online and following any additional instruction included in Appendix B:

- This document must be submitted in MS Excel .xls or .xlsx format.

2.3.2 Previously Submitted Proposals

Geoscience BC will consider previously-submitted proposals. These must be resubmitted according to the process and the requirements of this RFP.

2.3.3 Current Geoscience BC Projects

Proposals requesting additional funding for a current Geoscience BC project are asked to notify Geoscience BC at least 15 days before the Submission Deadline and to include an up to date statement of expenditures for the existing project.

2.3.4 Clarification of Submission Requirements

Any clarification regarding this process must be directed to Geoscience BC at least two (2) working days before the Submission Deadline. Geoscience BC shall not be responsible for any misunderstanding of the RFP Documents.

To ensure all participants in the RFP process have equal information, answers to enquiries which are relevant to the RFP process will be communicated through the Geoscience BC website and to applicants who have sent a notification of intent to submit a proposal. You

can also subscribe to receive Geoscience BC 2019 Energy RFP email alerts on the RFP page of the Geoscience BC website or [here](#).

2.3.5 Changes to the RFP Documents

Geoscience BC may, prior to the Submission Deadline, without liability, cost or penalty, alter the Submission Deadline and amend or supplement the RFP Documents by addenda only. No other communications of any kind whatsoever will modify the RFP Documents.

2.3.6 Validity of Proposal

Any budget estimates associated with the proposal must remain valid for acceptance up to the Proposal Validity Date.

2.3.7 Amendment of Proposal

A proposal may be amended prior to the Submission Deadline by withdrawing the original proposal and submitting a revised proposal.

After the RFP Submission Deadline, no updates to the proposal will be accepted, unless requested by Geoscience BC.

2.3.8 Costs of a Proposal Preparation

The applicant shall bear all costs and expenses with respect to the preparation and submission of its Proposal and any other activity pertaining to its proposal, including its participation in the RFP process and contract negotiation, if any. Geoscience BC shall not be liable to pay any such costs/expenses regardless of the conduct or the outcome of the RFP process.

2.3.9 Absence of Contractual Obligations during RFP Process

Geoscience BC shall have no obligation to enter into a contract with an applicant.

Geoscience BC shall only have obligations to an applicant if it decides to execute a Project Agreement and such obligations shall be in accordance with the terms and conditions of that agreement as finalized between Geoscience BC and the Proponent.

2.3.10 Overarching Rights of Geoscience BC

Geoscience BC reserves the right to annul this RFP process and commence a new process, reject any or all proposals received in response to this RFP and accept any proposal in whole or in part.

2.4 REVIEW PROCESS AND SELECTION

After the Submission Deadline has passed, a volunteer Geoscience BC Technical Advisory Committee (TAC) or a sub-committee made up of subject matter experts will evaluate the proposals received.

Geoscience BC shall, at its sole discretion, use any evaluation criteria (whether subjective or objective), it deems suitable to evaluate the proposals.

Proposal review and ranking will usually be completed at a Geoscience BC TAC meeting. Geoscience BC staff do not participate in ranking and all TAC Members must follow the [Code of Conduct and Ethics, and Conflict of Interest Guidelines](#).

2.4.1 Review Process and TAC Recommendations

The process for proposal review by the TAC includes:

- Determine if the proposal is within the scope set out in the RFP process and provides the content and budget required in the provided templates.
- Discuss the proposal with a focus on technical quality, sector relevance, personnel involved and budget as detailed in the next section.
- Rank the proposal in relation to all the proposals in hand.
- Provide the ranking process results and recommendations to the Geoscience BC Board of Directors for funding approval.

2.4.2 Technical Review Criteria

The technical review of a proposal will consider, as a minimum, the following general categories and questions:

- **Technical quality** – Is the proposal technically sound, feasible, and well defined with clearly articulated objectives? Does it improve our collective level of geoscience knowledge? Will it facilitate responsible natural resource development and stimulate innovation and geoscience technologies?
- **Relevance** – Does it answer, provide a methodology, or improve the current state of knowledge of water disposal in NEBC as per recommendations from the *Scientific Hydraulic Fracturing Review Panel's* report?
- **Personnel** – Do the Proponents have the experience and qualifications to complete the project? Have previous projects been completed and delivered in a timely manner? Are there any training aspects to the project?

- **Budget** – Is the budget well defined and competitive? Is it realistic? Has the proposal generated supportive funding?

2.4.3 Confidentiality in the Review Process

Geoscience BC's proposal ranking results, and recommendations for funding will remain confidential to Geoscience BC.

Geoscience BC and its partners will take all reasonable precautions to maintain the confidentiality of the information submitted by the applicants, subject to any disclosure required by law. Geoscience BC reserves the right, however, to disclose the proposal to employees, servants, agents, advisors and consultants of Geoscience BC and its partners and affiliates for the purpose of assisting Geoscience BC in evaluating the proposal.

Any employees, servants, agents, advisors and consultants of Geoscience BC and its partners and affiliates who assist Geoscience BC in the evaluation of the proposal will also be required to take all reasonable precautions to maintain the confidentiality of the information submitted by the applicants, subject to any disclosure required by law. The employees, servants, agents, advisors and consultants of Geoscience BC and its partners and affiliates will not be liable for any damages resulting from any disclosure before, during or after the issuance of this RFP and the submission of a proposal.

2.4.4 Clarification in Review Process

Geoscience BC may, at its sole discretion, seek clarification of any matter in a proposal in any manner it considers appropriate including investigating the abilities and experience of the project participants, seeking information from other parties, requiring the applicants to submit supplementary documentation and seeking the validation of Geoscience BC's interpretation of the proposal.

2.5 REVIEW NOTIFICATION AND PROJECT FUNDING AGREEMENTS

Applicants will be notified if their application has been successful after the Geoscience BC Board considers the TAC's recommendations.

If no suitable proposals are received, no project funds will be awarded.

2.5.1 Notification of Successful Application

Geoscience BC will provide a letter via email to each successful applicant indicating their proposal was accepted for funding.

Geoscience BC reserves the right to approve a smaller budget than submitted in the proposal and/or ask for revisions or modifications.

2.5.2 Notification of Unsuccessful Application

Geoscience BC will provide a letter via email to each unsuccessful applicant indicating their proposal was not accepted for funding.

2.5.3 Notification of Delayed Start or Pending Future Funding

Geoscience BC may need to delay a project start date to align with its budgetary cycle or may wish to hold a proposal in a pending state in anticipation of future funding.

Geoscience BC will provide a letter via email to each applicant indicating their proposal was accepted for funding and an anticipated delayed start or that it wishes to hold the application in a pending state for a specified amount of time.

The Proponent will be able to submit an updated project timeline during subsequent funding agreement negotiations.

2.5.4 Negotiation of a Project Agreement

Geoscience BC will initiate project funding agreement negotiations with each successful applicant who wishes to proceed with their proposal. The proposal document and budget form the specifics of a Project Agreement.

Information on projects, and the names of the Proponent, Principal Investigator and Project Contributors will be published on Geoscience BC's website.

2.5.5 Project Start and Completion Dates

Projects should not be expected to start earlier than the Earliest Project Start Date and must be completed with final deliverables accepted by Geoscience BC, no later than the project completion date set out in the Project Agreement.

2.5.6 Applicable Laws

Any Project Agreements subsequently negotiated and awarded with respect to this RFP shall be interpreted and governed, and the relations between the Parties determined, by the laws in force in the province of British Columbia and the Parties attorn to the jurisdiction of the British Columbia Courts.

2.6 ADDITIONAL INFORMATION

2.6.1 Information Provided by Geoscience BC

No representation or warranty, expressed or implied, is made and no responsibility of any kind is accepted by Geoscience BC, or its advisors, employees, consultants or agents, for the completeness or accuracy of any information contained in the RFP Documents or that is provided during the RFP process or contract negotiation process, or under a contract that may be entered into, if any.

2.6.2 No Public Statements

Recipients of or applicants to this RFP shall not issue any public statement or news release pertaining to this RFP or subsequent Project Agreement without the prior written consent of Geoscience BC.

2.7 CONTACT INFORMATION

Requests for further information, clarification or for any other purpose related to this RFP can be directed to the RFP Coordinator.

3. APPENDIX A - PROPOSAL TEMPLATE AND INSTRUCTIONS

A proposal template is available online for this RFP on the Geoscience BC website RFP page. This document must be submitted in MS Word .doc or .docx format.

The completed Proposal Template (including photos and diagrams) should total no more than 15 pages (8.5x11 inch page size only). This does not include the Budget Template, which must be submitted as a separate file, or letters of support. Proposals which exceed this page limit will not be considered.

Please note that some written sections have word limits. As the Proposal Template will not restrict the number of words entered, it is the applicant's responsibility to ensure that the word limits are respected.

Do not include promotional material or brochures as an attachment to the application.

4. APPENDIX B - BUDGET TEMPLATE AND INSTRUCTIONS

A budget template is available online for this RFP at the Geoscience BC website RFP section. This template needs to be completed and submitted to Geoscience BC in .xls or .xlsx format (do not submit as a .pdf).

Add lines as necessary to properly complete your budget (e.g. if there are multiple personnel at different rates of pay, add a line for each group). Sub-categories (e.g. camp costs, fluid inclusions etc.) can be edited to best fit your application, and sub-categories not used should be deleted. All costs must be in Canadian dollars.

Display columns for budget totals for the entire project. If desired, the budget can also be broken down by major stages identified by summary tasks or by year, but the total budget for the whole project must be readily apparent.

Please be sure to confirm that your budget spreadsheet adds up correctly, and that the numbers included match the summary information you include in the Proposal Template.

4.1 Additional Instructions for Completing a Budget

4.1.1 Goods and Services Tax ("GST")

Funding for projects approved through this RFP will not include Goods and Services Tax ("GST"), as Geoscience BC does not consider project funding to be a 'Taxable Supply' under the Excise Tax Act. Geoscience BC considers project funding to be exclusive of GST to the extent that the Principal Proponent is entitled to claim input tax credits or rebates in respect to their expenditure of these monies. If GST paid is claimed as a project expense under a Geoscience BC grant, the Principal Proponent will provide Geoscience BC with a detailed breakdown of these amounts together with an explanation as to why

these amounts were not claimed as input tax credits or GST rebates, and copies of all invoices on which GST was paid and is being claimed as a project expense, including the GST registration number of each supplier.

4.1.2 Capital Costs

Geoscience BC does not cover Capital Costs over \$1,000 (e.g. computer purchases, field gear) without prior approval.

4.1.3 Overhead

Please be aware that Geoscience BC does not pay overhead. For university applicants, a letter confirming Geoscience BC's policy regarding overhead can be provided on request during the application process.

4.1.4 Insurance Coverage

Please be aware that Geoscience BC requires that appropriate insurance coverage between maintained for the duration of each project.

Mandatory:

- Workers Compensation
- Commercial General Liability (minimum of \$2 million, up to \$5 million depending on the scope of the project)

Project-specific:

- Automobile (\$2 million)
- Aircraft or Watercraft (\$10 million)
- Construction Machinery

4.1.5 Matching and In-Kind Funding

Include funding requested from Geoscience BC and a summary of any matching or in-kind funding that has been secured or will be requested from other sources (details of each additional funding source will be included in the Proposal Template). Components of the proposed project do not need to be separated out as to the source of funds, unless matching or Geoscience BC funds will be directed to a certain part of the project budget.