



REQUEST FOR PROPOSAL

Title: Horn River Basin Airborne Electromagnetic Survey Pilot Study

Date Issued: Friday, 4 March, 2011

Solicitation Closes: 12:00 noon Pacific Time, Friday, 18 March, 2011

Enquiries to: Christa Sluggett,
Project Geologist and Communications Coordinator
Geoscience BC

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THE ORGANIZATION

Geoscience BC is an independent, not for profit, geoscience organization with a mandate to attract new mineral and oil and gas investment to British Columbia through geoscience. Geoscience BC works in partnership with industry, academia, government, First Nations, and communities to fund innovative applied geoscience projects.

THE PROJECT

The Horn River Basin (HRB) is a world-class shale gas play in Northeast British Columbia (please refer to attached map of the HRB area included in Appendix 1). Estimates of the total gas-in-place remain preliminary; however, current estimates place the HRB among the largest natural gas plays in North America. Development of the Horn River Basin will provide significant economic and employment benefits for British Columbia over the next several decades.

As with all areas of the province, water is a vital resource in the HRB, supporting a variety of domestic and commercial uses and activities, as well as First Nation traditional activities. Natural gas producers developing the HRB require water for hydraulic fracturing operations to stimulate natural gas production and support drilling camps and infrastructure development. A wide range of stakeholders including provincial ministries and agencies, local governments, commercial water users and First Nations, as well as the general public, need detailed and unbiased information about existing water resources to make appropriate policies, regulations and permit decisions as well as to support public discussion on issues related to water use.

In collaboration with the Horn River Basin Producers Group (HRBPG), Geoscience BC recently completed Phase I of the Horn River Basin Subsurface Aquifer Study to identify and evaluate deep subsurface saline aquifers. These saline aquifers may be able to serve as a fracking water supply source and spent water disposal locations. However, suitable deep saline aquifers are not likely distributed evenly throughout the HRB, which may necessitate a range of water supply options including surface water, shallow ground water and deep aquifers. In addition, as the HRB develops and additional water is required, operators will require sustainable water supplies where and when it is needed.

To date, individual companies operating in the HRB are undertaking specific studies to better understand local surface and ground water. As surface and near-surface water supply may play a key role in the development of some areas in the basin, there is a need to develop a better understanding of the distribution of the surface and near-surface water resources within the basin. This information will provide government, the public, First Nations and industry with a better understanding of the basin-wide water supply sources being used for the development of the shale gas reserves.

Geoscience BC recently (January 19, 2011) issued a Request for Proposals for surface water monitoring in the HRB. To complement the surface water monitoring and the deep subsurface aquifer studies,

Geoscience BC and the HRBPG are undertaking projects to develop a better understanding of near-surface (ground) water resources and their distribution.

Geoscience BC and the HRBPG and four participating producer companies are now seeking a proponent to undertake an airborne electromagnetic (AEM) geophysical survey pilot study of four test areas in the HRB to determine the applicability of the AEM techniques to identify and map sources of near surface (shallow, less than 200 m) groundwater in the HRB. See attached map in Appendix 1 for an outline of the four pilot project areas.

DESCRIPTION OF SERVICES REQUESTED AND STUDY AREA

This Request For Proposals (RFP) is focused on determining the applicability of AEM technology to determine and map the location of near surface groundwater sources in the Horn River Basin.

AEM has the potential to map buried sand and gravel filled post glacial channels, and to map basal and intermediate till layers which are controls for the flow of water in the Quaternary sediments overlying bedrock in the study areas.

This RFP is for a demonstration survey. It is expected that there may be additional work flowing onward to the AEM survey industry if the pilot study is deemed to be successful. The results of this demonstration survey will be made available for review by the individual industry partners and the HRBPG. After a period of confidentiality during which the data will be assessed by the industry participants in this project, the data will be released by Geoscience BC as a report. At that time the data will enter the public domain.

Four areas are to be flown. These are areas nominated by the individual industry partners in this program. Each area is approximately 10km x 10km. It is expected that the traverse line spacing will be 250m, with at least 3 tie lines flown in each area. This comprises approximately 440 line kilometres in each area, or approximately 1660 line kilometres total for the survey being considered in this RFP. Survey areas are identified in the attached map, and an excel spreadsheet of UTM coordinates, which are included in Appendix 1.

The depths of interest in the study areas are from zero to 200m depth. Airborne AEM suppliers bidding on this RFP should provide all raw data, processed data, and also conductivity depth interpretation sections that can be used directly by hydrogeologists and water management specialists to locate buried channels and delineate overburden stratigraphy, if these have an expression in the AEM results. Specifically, companies bidding should indicate how they will process the data to provide conductivity depth sections. They should provide all necessary technical system information so that an independent consultant can recompute conductivity-depth sections to check these results.

The interpretation depth sections should be provided as a voxel conductivity volume, and as conductivity depth slices at multiple depths, and as depth sections along each flight line. Once released

into the public domain this data will be available to the academic and industrial community to test and demonstrate AEM inversion and interpretation tools for water delineation.

There is some well log and ground truth information available. This data will be accessible to the contractor to help calibrate their AEM inversion results. However, it may remain confidential and thus may only be made available to the AEM contractor on a confidential basis.

Geoscience BC retains an explicit right to cancel this contract if it is not completed in a timely manner. Low level airborne operations are restricted in the survey areas during the time of caribou calving, which is expected to be from May 1 to July 16th. Thus the survey work must start by April 15th, 2011, to allow time for completion before the end of April, 2011. If the work is not started by this time, or if it is apparent that the survey will not be finished before May 1, 2011, then Geoscience BC retains an explicit right to cancel the survey, and to only pay pro-rata on a line kilometre basis for work completed.

Airborne EM survey companies are invited to submit a proposal, including cost bids, for this work.

CONTENT OF PROPOSAL

The proposal **should** contain:

1. A specification of the airborne system to be used, including the aircraft, system geometry, transmitter frequencies and waveforms, and transmitter power.
2. A specification of the data processing methodology to be used. Examples of the successful use of the proposed AEM system for this type of work will be considered positively.
3. An undertaking to start the project in a timely manner with weekly reporting of the status of the individual aircraft and EM system to be used, both before and during the survey operations. The contractor will commit to maintaining an open dialogue with GBC with respect to the location of the system to be used for the pilot survey, the backlog of work for the system before the GBC survey, and the availability of the system and aircraft required to complete the survey. GBC will protect the confidential nature of this information to the contracting company, but retains the right to visit the aircraft and system in the field to assess the availability of the system to do the work. The contractor will assist in providing the necessary permissions from their clients to allow GBC to make these visits should it desire to do so.
4. A price for the survey in Canadian dollars. This will be an all-inclusive price, including all mobilization, logistical support and aircraft costs, and including the final presentation of the data in maps and digital formats. Also, a cost to fly additional line kilometres should be included. The contractor will be obliged to fly additional line kilometres up to an additional 25% of the total contracted line kilometres if GBC should desire to do so. Further increases in the size of the survey will be by mutual agreement.

The submission of standard business development or promotional materials, published corporate profiles, annual reports, standard marketing or sales brochures and other like materials is discouraged.

Each Proponent is solely responsible for conducting its own independent research, due diligence, and any other work or investigations and seeking any other independent advice necessary for the preparation of its Proposal. Nothing in this RFP is intended to relieve the Proponents from forming their own opinions and conclusions with respect to the matters addressed in this RFP.

CONFIRMATION OF INTEREST

Each Proponent who intends to submit a Proposal in response to this RFP shall confirm its intention and provide a single point of contact, phone number, fax number and e-mail address to Christa Sluggett at Geoscience BC.

Contact:	Christa Sluggett
E-Mail:	<i>sluggett@geosciencebc.com</i>

SUBMISSION OF PROPOSALS

Proposals will be accepted in the form of an electronic submission in PDF format to sluggett@geosciencebc.com by the time and date indicated on page 1 of this RFP document. Proposals submitted in response to this RFP will not be returned, and will be kept confidential.

Original Proposals submitted after this deadline will not be accepted. Each Proponent shall be responsible for the timely delivery of its Original Proposal. All components of a proposal must be received by the submission deadline.

GBC may extend the Submission Deadline by issuing an Addendum prior to the Submission Deadline. Proponents who have confirmed their intention to submit a Proposal will be advised directly of any extension of the Submission Deadline.

ENQUIRIES / TIME EXTENSION TO THE RFP CLOSING DATE

All enquiries and other communications related to this RFP throughout the solicitation period shall be directed in writing only to Ms. Christa Sluggett by email.

To ensure the equality of information among proponents, answers to enquiries which are relevant to the quality of the proposals will be posted on Geoscience BC's website. Such enquiries must be received at least five (5) working days before the closing date. A request for a time extension to the RFP closing date WILL NOT be considered.

VALIDITY OF PROPOSAL

Any cost estimates associated with the proposals must remain valid for acceptance for a period of not less than ninety (90) day after the closing date of the RFP. After the RFP closing date, no amendments to the proposal will be accepted. However, during the evaluation the Technical Authority may require clarification from or conduct interviews with Proponents.

AMENDMENT OF PROPOSAL

A Proponent may amend its Proposal prior to the Submission Deadline by withdrawing its original Proposal and submitting a revised Proposal.

GBC may, in 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 Proponents, seeking information from other parties about the Proponent, requiring the Proponents to submit supplementary documentation and seeking the Proponent's acknowledgement of GBC's interpretation of the Proponent's Proposal.

APPLICABLE LAWS

Any contracts 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.

RIGHTS OF GEOSCIENCE BC

Geoscience BC reserves the right to:

- a) Reject any or all proposals received in response to this RFP
- b) Enter into negotiations with one or more Bidders on any or all aspects of its proposal;
- c) Accept any proposal in whole or in part;
- d) Cancel and/or reissue this requirement at any time;
- e) Award one or more contracts;
- f) Verify any or all information provided with respect to this requirement;
- g) Award contracts without competition for follow-on-work if any, to the successful proponent for this requirement.

INFORMATION PROVIDED BY GEOSCIENCE BC

No representation or warranty, expressed or implied, is made and no responsibility of any kind is accepted by GBC, 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.

CHANGES TO THE RFP DOCUMENTS

GBC 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.

COSTS OF PROPOSAL

The Proponent 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. GBC shall not be liable to pay any such costs/expenses regardless of the conduct or the outcome of the RFP process.

CONFIDENTIALITY

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

Proponents will take all reasonable precautions to maintain the confidentiality of the information submitted by GBC, subject to any disclosure required by law. Proponents reserve the right, however, to disclose the Proposal to employees, servants, agents, advisors and consultants of the Proponent and its affiliates for the purpose of assisting Proponents in preparing the Proposal.

NO PUBLIC STATEMENTS

Recipients of or Proponents to this RFP shall not issue any public statement or news release pertaining to this RFP without the prior written consent of GBC.

ABSENCE OF CONTRACTUAL OBLIGATIONS DURING RFP PROCESS

- (a) GBC shall have no obligation to enter into a contract with a Proponent in respect of the provision of Services that are the subject of this RFP. GBC shall only have obligations to a Proponent if it decides to execute a written agreement with a Proponent and such obligations shall be in accordance with the terms and conditions of that agreement as finalized between GBC and the Proponent.
- (b) GBC may, in its sole discretion, for any reason and at any time, take any action in respect of the Proposals it receives including:
 - (i) Entering into further discussions or clarification meetings with one or more of the Proponents;
 - (ii) Entering into any contract or contract negotiations with one or more of the Proponents;
 - (iii) Inviting any of the Proponents to participate in another competitive process to carry out the Services;
 - (iv) Requesting one or more of the Proponents to supplement and resubmit their Proposal;
 - (v) Accepting or rejecting any Proposal;
 - (vi) Annulling this RFP process and rejecting all Proposals; or
 - (vii) Annulling this RFP process and commencing a new process;

at any time without incurring any liability to an affected Proponent and without any obligation to inform an affected Proponents of the reasons for GBC's actions. Nothing in this subsection or elsewhere in the RFP Documents shall impact or affect the validity of (a) and (b).

FURTHER INFORMATION, CLARIFICATION AND CONTACT INFORMATION

Requests for further information, clarification or for any other purpose related to this RFP are to be made by e-mail to:

Christa Sluggett
E-Mail: sluggett@geosciencebc.com

- (a) Proponents are responsible for seeking any clarification that they require well in advance (at least 5 working days) of the Submission Deadline. GBC shall not be responsible for any misunderstanding of the RFP Documents.
- (b) For all purposes related to this RFP, Proponents shall not contact or attempt to contact:
 - (i) Any GBC officer, employee, subcontractor, agent, representative, consultant or volunteer with respect to this RFP, **other than the GBC contact set out in subsection (a) above; and**
 - (ii) Any other prospective Proponent except for the purpose of discussing the possibility of submitting a Proposal as a Joint Venture.

METHOD OF SELECTION

This RFP will be awarded based on qualifications, work plan and budget (in Canadian dollars). GBC shall, in its sole discretion, use any evaluation criteria (whether subjective or objective), it deems suitable to evaluate the Proposals. In the event that GBC selects a Proponent for the provision of the Services, GBC will notify each Proponent in writing, and GBC's method of selecting the Proponents will remain confidential to GBC.

AGREEMENTS

GBC will confirm the business arrangement in the form of a Project Agreement to be drafted after selection of the successful Proponent(s)

APPENDIX 1: Coordinates and Map

EOG Block

Id	UTM_X	UTM_Y
1	530806.20	6615780.74
2	535416.03	6615846.60
3	535415.96	6617716.64
4	541030.65	6617767.74
5	541156.33	6607057.57
6	535206.63	6606976.27
7	535206.73	6605636.23
8	530966.77	6605605.26

Quicksilver Block

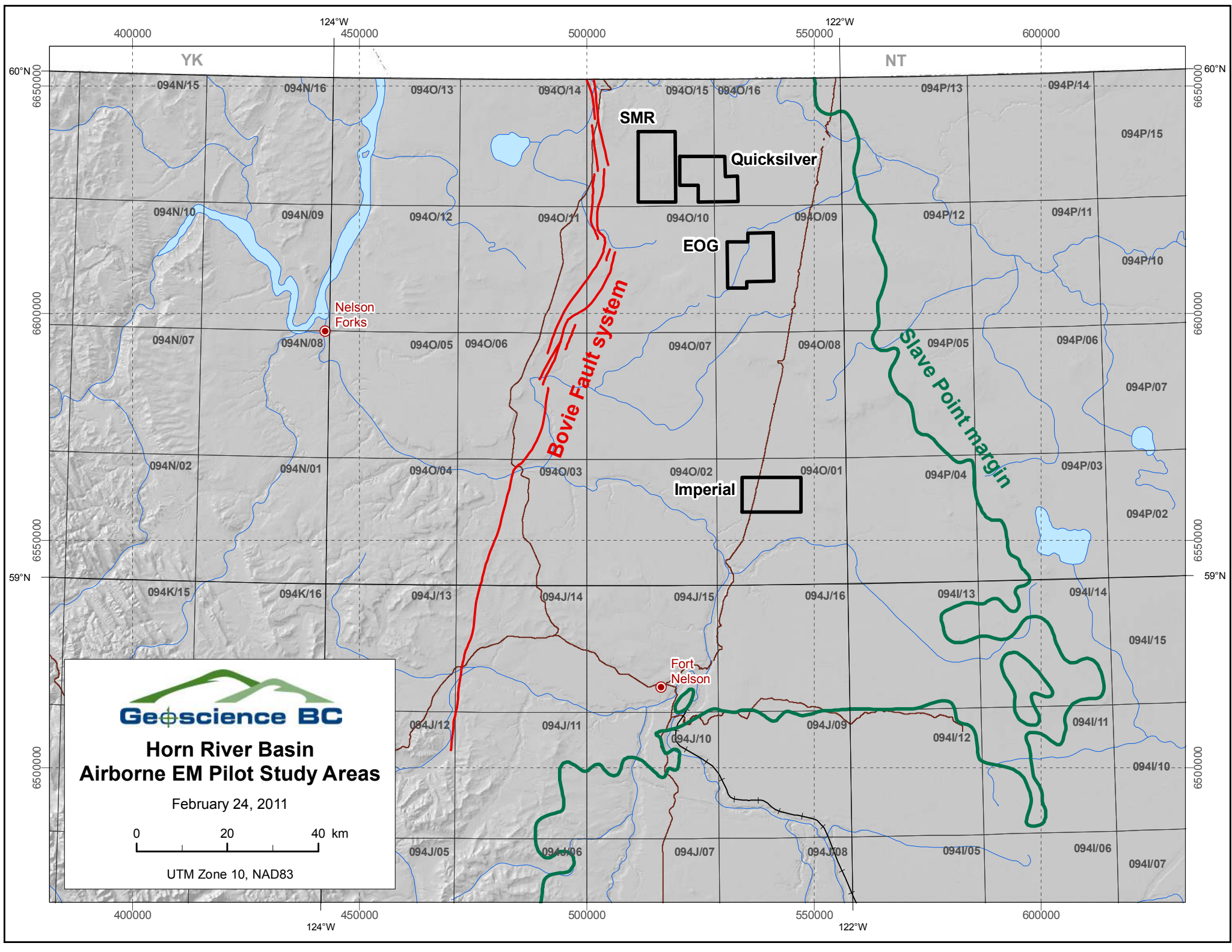
Id	UTM_X	UTM_Y
1	520394.7	6634528.5
2	530375.3	6634558.8
3	530416.9	6630179.6
4	533171.7	6630204.3
5	533248.5	6624635.6
6	524486.3	6624574.1
7	524466.6	6628275.5
8	520421.1	6628260.7

SMR Block

Id	UTM_X	UTM_Y
1	511251	6640060
2	519443	6640063
3	519502	6624538
4	511311	6624505

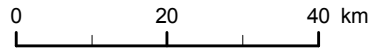
Imperial Block

Id	UTM_X	UTM_Y
1	534044.35	6564112.96
2	547067.69	6564114.44
3	547069.29	6556485.82
4	534046.79	6556484.41



**Horn River Basin
Airborne EM Pilot Study Areas**

February 24, 2011



UTM Zone 10, NAD83