REQUEST FOR PROPOSAL

COMPLETE THE CMAQ MODELING WORK TO MEET THE OMF, ADMF AND NEP NEEDS AND TO ESTIMATE ACID DEPOSITION FOR THE MAGIC MODEL;
CMAQ APPLICATION FOR THE OMF, ADMF AND NEP

July 23rd, 2012

Re. Complete the CMAQ Modeling Work to meet the OMF, ADMF and NEP needs and to Estimate Acid Deposition for the Magic Model

The Cumulative Environmental Management Association (CEMA) has a mandate to develop recommendations to government to address the cumulative effects within in the Regional Municipality of Wood Buffalo (RMWB).

You are invited to submit a statement of qualification, experience, approach, methods and fee schedule for a project to CEMA’s Air Working Group. The AWG will evaluate the Proposals received for the work described in this Request for Proposal before selecting an organisation to complete the work.

All Proposal responses must be received electronically or by mail, by **12:00PM (Noon) MST, August 13th, 2012.** Any Proposal delivered to the Designated Contact after the required time and date specified for delivery shall be considered late and non-responsive. Any late Proposals will not be considered. All Proposals shall be delivered to the following contact:

**CONTACT**

Any questions concerning this Request for Proposal (“RFP”) and all written submissions required under this RFP must be directed to:

**Program Administrator:**
Katherine Duffett
AWG Program Administrator
CEMA
Suite 214, Morrison Building
9914 Morrison Street
Fort McMurray, AB T9H 4A4
Tel: 587 – 785 - 2228
Fax: 780-714-3081
Email: katherine.duffett@cemaonline.ca
(the “Designated Contact”).

Sincerely,

Sunny Cho John Dennis Ron Pauls
Co-Chairs, Air Working Group (AWG)

Enclosure
REQUEST FOR PROPOSAL

COMPLETE THE CMAQ MODELING WORK TO MEET THE OMF, ADMF AND NEP NEEDS AND TO ESTIMATE ACID DEPOSITION FOR THE MAGIC MODEL;
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INTRODUCTION

CEMA is a multi-stakeholder society that is a key advisor to the provincial and federal governments committed to respectful, inclusive dialogue to make recommendations to manage the cumulative environmental effects of regional development on air, land, water and biodiversity. CEMA is governed by approximately 50 members, representing all levels of government, industry, regulatory bodies, environmental groups and Aboriginal groups.

BACKGROUND

CEMA accomplishes its work through technical working groups. The NOx and SO2 Management Working Group (NSMWG) was established to design management frameworks that establish environmental capacity guidelines, environmental management objectives, and action plans to manage and control regional NOx and SO2 emissions associated with the oil sands development. NSMWG developed the following management framework/plan documents (www.cemaonline.ca):

- Acid Deposition Management Framework (ADMF)¹
- Ozone Management Framework (OMF)² for the Regional Municipality of Wood Buffalo
- Interim Nitrogen (Eutrophication) Management Recommendations and Work Plan (NEP)³

NSMWG was replaced by the Air Working Group (AWG) in 2010. The AWG has adopted and will complete ongoing work as well as initiate any new work as required and appropriate.

Implementation of these frameworks/plans relies to varying degrees on air quality and deposition modeling to assess environmental exposure to airborne and deposited substances emitted from oil sands industry and other sources in and around the Regional Municipality of Wood Buffalo, as follows:

- The AMDF is being implemented in three stages, with stage 1 completed in 2004, stage 2 completed in 2010, and stage 3 initiated with completion expected in 2013. All stages involve an assessment of areas within the oil sands region where acid deposition exceeds soil and lake critical loads. The stages differ in the approaches taken to assess critical loads and acid deposition. The Stage 1 assessment was reported in Golder (2004). The Stage 2 assessment was reported in Golder (2010). The Stage 3 assessment is scheduled for completion in 2013. For the Stage 3 assessment the MAGIC model will be used to determine whether acid deposition-related changes to lakes and soils will exceed defined thresholds (in the ADMF) within 15 to 30 years of the current date (i.e., by 2025/2030 and 2040/2045 for a 2013 implementation). This work will also involve full implementation of the modeling elements of the ADMF using a dynamic time to effect PAI soil and water impact model currently being developed. The MAGIC model, as implemented for the region, requires acid deposition (comprising sulphur and nitrogen compounds and base cations) input data for each township in the oil sands region. Acid deposition inputs to the MAGIC model include historical, current, and future and cover the period 1900-2100 (as in Whitfield and Watmough, 2010).

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- Ozone Management Framework (OMF): This framework has adopted the action level criteria and management responses of the Alberta Particulate Matter and Ozone Management Framework. These criteria are based on monitored ground level ambient ozone concentrations. The framework also recommends ozone modeling at 3-year intervals to facilitate appropriate placement of monitoring stations and to assess the potential for future exceedances of Canada-wide standards. Modeling was most recently done in 2010 using the 2006 emissions inventory as representative of the current emission status (Environ and Millennium EMS, 2010). This report provides recommendations for future work including options for future emissions scenarios. Modeling is to be done for two scenarios: 1) all existing and approved facilities and 2) all existing, approved, and planned projects. The framework also recommends comparison of existing and projected ozone levels with vegetation exposure metrics (i.e. SUM60 and AOT40) selected by CEMA for the protection of vegetation (AMEC, 2006). The emissions of interest are NOx and VOCs.

- Interim Nitrogen (Eutrophication) Management Recommendations and Work Plan (NEP): The plan recommends that studies be undertaken to develop critical loads for nitrogen deposition for the region. A 5-year study is being developed to support the establishment of critical loads. It is anticipated that model-based estimates of N deposition in relation to critical loads will, after completion of these studies, provide the basis for management of N emissions.

The model estimates required for implementation of these frameworks require representative regional emissions inventory profiles over time from pre-industrial to a future date specific to the framework. The CMAQ model has been used for recent PM and ozone modeling (Environ Inc., and Millennium EMS, 2010).

In 2011 and 2012, the AWG commissioned work leading up to air quality and deposition modeling as required under the foregoing frameworks (AWG contract # 2010-0031). This work consisted of:

- development of a protocol for the development, establishment, and updating of emissions inventories, documented in “Protocol for Updating and Preparing a Modelling Emission Inventory” (Stantec Consulting Ltd. and Environ Inc., 2012 – Draft final),

- development of a an emissions inventory database, following the above protocol, documented in “Lower Athabasca Region Source and Emission Inventory” and “Emissions Source Inventory outside Lower Athabasca Region and CMAQ Emissions Modelling of Sources Inside and Outside the Region to Support CEMA Management Frameworks” (Stantec Consulting Ltd., Environ Inc., and Clearstone, 2012 – Draft final). This emission database will be used for the modeling work in the request for proposal

- develop a CMAQ and CALMET/CALPUFF protocol document for application for these models in the implementation of the foregoing frameworks, documented in “CMAQ Modeling Protocol for the CEMA Management Frameworks” (Stantec Consulting Ltd. and Environ Inc., 2012 – Draft final) and the CALPUFF protocol document. This protocol will be used in the modeling work in this request for proposal, except where otherwise indicated or by documented agreement with the AWG

- conduct a comparison of the CALPUFF and CMAQ model outputs, documented in “Comparison of CALPUFF and CMAQ Models in the Context of CEMA Management Frameworks” (Stantec Consulting Ltd. and Environ Inc., 2012 – Draft final). From this comparison, it was unclear which model is most appropriate for acid deposition modeling, so both will be used.

A companion request for proposal is being issued for modeling with CALPUFF. The AWG will favour proposals from a company/consortium that submits suitable proposals for both the CALPUFF and CMAQ modeling.
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OBJECTIVES

This request for proposal (RFP) involves work related to the ADMF Stage 3 (implementation of framework with both monitoring and modelled time-to-effect objectives), the NEP and the OMF. The purpose of this project is to carry out the CMAQ modeling work to estimate acid deposition as required for use by the MAGIC model, and estimate ambient ozone and PM. Specifically, the successful bidder will:

- Apply the protocol developed for a standardized approach to the ADMF, NEP and OMF applications of the CMAQ model that includes certain set user options/recommendations (Stantec Consulting Ltd. and Environ Inc., 2012). The CEMA/AWG emission inventory includes historical, baseline, and future regional air contaminant emissions required for acid deposition modeling as specified in ADMF. The baseline and future temporal periods used for the NEP and OMF should be consistent with the ADMF.
- Complete the modeling work required under the OMF, including PM. This will include ambient ozone and PM estimates, and comparisons with the action criteria/thresholds of the OMF, including vegetation protection criteria/thresholds recommended by CEMA AWG.
- Conduct CMAQ modeling to meet the needs of the ADMF and NEP, including the prediction of annual dry, wet, and total deposition of both acidifying compounds and nitrogen compounds in the Lower Athabasca Region (LAR). The deposition estimates will be provided in the type and format required by the MAGIC model, which will be used to estimate potential responses of soils and lakes to acidic deposition.
- Conduct comparisons of the performance of the CALPUFF and CMAQ modeling systems, including a comparison of model results with monitoring data. Care must be taken to ensure consistency of inputs and approaches of the CALPUFF and CMAQ modeling to facilitate this comparison. This request also appears in the companion RFP to this. In the event that different bidders are successful on this and the companion RFP, a process for efficiently conducting the comparison will be discussed in the kick-off meeting for the contract.

SCOPE

Modeling will be conducted according to the CMAQ modeling protocol document but with additional and/or altered options as specified below. Tasks 1a-1i are associated with the OMF and Tasks 2a-2g are additional tasks required for the ADMF and NEP. In addition, Task 3 is the model intercomparison between CALPUFF and CMAQ results.

Task 1a: Adjust Leaf Area Index

Geophysical parameters will be developed on a 4 km grid basis for the model domain. The MODIS satellite data (e.g., 2010 met. year & 2010 LAI) approach will be used for the selected land use class, LAI values will be based on the CEMA studies i.e. apply the Hassan and Bourque (2010) MODIS LAI correction factor and account for spectral limitations in the winter. The year 2009 MODIS LAI data, as corrected, should be used for all four temporal assessment periods.

The internal CMAQ algorithms for computing dry deposition velocities will be also updated based on the revised LAI, and the default and revised LAI will be compared (4km domain only).

Task 1b: Confirmation of Protocol
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While the protocol document represented a “best path” forward at the time they were prepared, there will be an opportunity to update/confirm some of these previous decisions prior to the application of the CMAQ model. Any deviations from the protocol not specified in this request for proposal will be by agreement with the AWG.

Task 1c: Conduct Meteorology (WRF) Modeling

- 2010 WRF meteorological modeling will be used in order to be consistent with the emissions inventory year. WRF outputs will be converted to CMAQ input files using the MCIP processor.
- 2010 WRF modeling results and their conversion to CMAQ inputs will be validated against monitoring data.

Task 1d: Application of the CMAQ model for the existing and two future scenarios

The CMAQ model will be applied according to the CMAQ protocol document. CMAQ modeling will be conducted for the two future scenarios using both 2010 and 1980 meteorological years. Cost estimation associated with additional estimates for the CMAQ model runs using 1980 meteorological data for future scenarios should be provided to CEMA.

Task 1e: Output Data Processing

The output data from the CMAQ model runs will be processed (following CMAQ protocol documentation p.8-1 to 8-3), and should also include a total N map (wet and dry) in [Kg/ha].

Task 1f: Model Evaluation

The results from the CMAQ existing case will be evaluated following the procedures described in the CMAQ modelling protocol.

Task 1g: Comparison with Ozone and PM Metrics

The results from the CMAQ baseline and two future scenarios will be compared with ozone and PM metrics following the procedures described in the CMAQ modelling protocol and provided by the AWG, including W126 for ozone exposure metrics (A.S.L. & Associate, 2011), and recently proposed National Air Quality Objectives.

Task 1h: Preparation of Documentation

The approach and the results will be documented in a report.

Task 1i: Electronic Archival

All modeling files will be provided to CEMA on disk drives (accessible data format; MS Excel). In addition, the model output data format should be consistent with MAGIC modeling contactor’s requirements and needs. As these are expected to be very large, they will be delivered to CEMA on one to two disk drives.
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Task 2a: Historical (additional) Emissions

CMAQ-ready emissions for the historical scenario will be prepared.

Task 2b: Additional Meteorology

CMAQ modeling will be conducted using the most representative meteorological year for acid deposition (1980) to generate background deposition concentration for the CALPUFF modeling team. A new zero-out LAR CMAQ simulation for CMAQ non-LAR background concentrations and deposition fluxes will be required and the regenerated data will be transferred to CALPUFF. Input from CALPUFF modeling team will be provided.

1980 WRF meteorological modeling results will be also compared against 2010 WRF modeling results in order to determine whether the 1980 is a representative year for PM and Ozone modeling. The contractor should incorporate CEMA EITG (Emission Inventory Task Group) members’ inputs for decision-making on the most representative meteorological year for PM and ozone modeling.

Task 2c: Historical CMAQ Simulation

CMAQ modeling will be conducted for the historical scenario using the most representative meteorological year resulting from Task 2b.

Task 2d: Output Data Processing

CMAQ outputs will be processed and analyzed for the ADMF/NEP utilizing methods discussed in the CMAQ protocol document.

Task 2e: Data Transfer to MAGIC Model

CMAQ model results will be processed and transferred to the MAGIC modelers following the methods outlined in the CMAQ protocol document. Input from the MAGIC modeling team will be provided as necessary.

Task 2f: Additional Documentation

The results will be added to the report.

Task 2g: Electronic Archival

All modeling files will be provided to CEMA on disk drives (accessible data format; MS Excel). In addition, the model output data format should be consistent with the MAGIC modeling contactor’s requirements and needs.

Task 3: Model Intercomparison

Conduct a performance comparison of modeling results between CALPUFF and CMAQ for the AMDF and the NEP, including a comparison with monitoring data.
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DELIVERABLES

1. Draft and final reports.
2. Conference call discussions with the EITG members at specified project milestones.
3. Presentation of final results to the AWG.
4. Electronic archived disk drives.

Draft deliverables will be submitted to the AWG according to the timeline outlined in Table 1. The Working Group will review the material and provide comments back to the consultant to consider and incorporate into the final deliverables.

PROPOSED TIMELINE

These timelines are meant as general guidelines and will need to be confirmed through discussions between the AWG and the successful proponent. In their RFP, contractors are encouraged to recommend timelines that they believe are realistic, according to their approach.

Table 1: Timeline

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Delivery Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Attendance at initiation meeting</td>
<td>August 24th, 2012</td>
</tr>
<tr>
<td>2</td>
<td>Submission of draft report to the EITG</td>
<td>December 21st, 2012</td>
</tr>
<tr>
<td>3</td>
<td>Submission of comments on the draft report to the consultant</td>
<td>January 11th, 2013</td>
</tr>
<tr>
<td>4</td>
<td>Submission of draft final report to the EITG &amp; AWG</td>
<td>January 18th, 2013</td>
</tr>
<tr>
<td>5</td>
<td>Submission of comments on the draft final report to the consultant</td>
<td>January 25th, 2013</td>
</tr>
<tr>
<td>6</td>
<td>Submission of final report to the AWG</td>
<td>February 1st, 2013</td>
</tr>
</tbody>
</table>

MEETINGS

The consultant may be requested to attend conference call meetings to provide updates. Attendance will be determined on an as needed basis. CEMA AWG MAGIC modeling contractor will join in a contract kick-off meeting in order to ensure the CMAQ modeling outputs are in a format consistent with the requirements of the MAGIC model.

REFERENCES

CALPUFF Modelling Protocol in the Context of CEMA Management Frameworks (Stantec Consulting Ltd. & ENVIRON International Corporation, 2012)

CMAQ Modelling Protocol for the CEMA Management Frameworks (ENVIRON International Corporation & Stantec Consulting Ltd., 2012)

Comparison of CALPUFF and CMAQ Models in the Context of CEMA Management Frameworks (Stantec Consulting Ltd. & ENVIRON International Corporation, 2012)

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Emissions Source Inventory Outside Lower Athabasca Region and CMAQ Emissions Modeling of Sources Inside and Outside the Region to Support CEMA Management Frameworks (ENVIRON International Corporation & Stantec Consulting Ltd., 2012)

Field Verification of MODIS-Based Leaf Area Index for the Greater Athabasca Oil Sands Region of Northern Alberta, Canada (Bourque and Hassan, 2010)

Lower Athabasca Region Source and Emission Inventory (Stantec Consulting Ltd. & ENVIRON International Corporation, 2012)

Regional Application of MAGIC to Lake Catchments and Soils in the Regional Municipality of Wood Buffalo (Whitfield and Watmough, 2010).

The Assessment of Acid Deposition in the Alberta Oil Sands Region – Phase 2 of Stage 2 Implementation of the CEMA Acid Deposition Management Framework (Golder, 2010)


PROJECT BUDGET

A proposed budget is not being provided at this time to allow for creative proposal development.

Proposals from a single company or a consortium for both this, and the companion CALPUFF modeling RFP, will be favoured.

Please include appropriate fee schedule including:

1. A brief outline of the approach and fee schedule for conducting the work described herein.
2. An outline of estimated total contract costs and any assumptions/caveats based on the work outlined in the “Project Tasks”, broken down by numbered task. This should include the following:
   a) Who is on the project team and their roles with their rates for the project
   b) Who from the project team will be working on each task with an estimated number of hours per task at their given rate?
   c) CEMA will not pay for secretarial/admin AND a mark up on professional fees. Should a markup be selected, it cannot exceed 5%.
   d) Disbursements/expenses assumed for each task with an estimate for these disbursements/expenses. Please note that expenses/disbursements will be reimbursed at cost. No mark up/surcharge will be paid on these items.
   e) Totals net of GST for each task.
   f) A final total net of GST.
   g) A list of any assumptions/caveats on the budget/fee schedule.
   h) Identification of any value adds beyond the proposed scope of work

INVOICING

The successful consultant will be expected to provide monthly invoices and progress reports to the Working Group Program Administrator for review. Invoicing will commence one month after initiation of the contract, and will be submitted by mail monthly, at the end of each month, for work conducted during the previous month, except...
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where no work has been conducted in that previous month. All invoices with fees and expenses incurred on this project will be billed directly by mail to the Working Group Program Administrator only for review and sign off. Electronic versions of invoices may be submitted in advance of the hardcopy by mail, if desired, for quicker processing (this will not be considered a substitution for mailed hardcopies of the invoices with receipts). These invoices may be submitted with the contractor’s monthly update and progress report to the Working Group.

All invoices shall include the following:
1. Specify the date on which the invoice was submitted to CEMA.
2. Specify the month in which the work was conducted.
3. Specify the CEMA contract number as provided to you by the Working Group Program Administrator.
4. Specify the consultants invoice number.
5. Provide a brief description of all tasks conducted.
   a) Provide a clear outline and breakdown of fees in net of GST including:
   b) Technical, professional and administrative hours allocated to the project
   c) Which task(s) these hours were billed against
   d) Rate at which these hours are charged.
   e) Who on the consulting team worked on each task?
   f) A clear outline and breakdown of expenses in net of GST including: Travel costs (Flights, taxis, hotels, meals, mileage, parking) with copies of detailed receipts for all amounts charged.
   g) Contract costs (for any and all work subcontracted out to other organizations) with copies of all invoices of contracts billed for all amounts charged.
   h) Other miscellaneous expenses (Hall bookings, catering, equipment rentals, printing charges, etc.) with copies of detailed receipts for all amounts charged.
6. A subtotal of all fees and expenses net of GST.
7. Specify the amount, as a separate item, that relates to any federal Goods and Services Tax that may apply to the Services provided (GST will be charged at cost of the amount incurred for disbursements and 5% on labour).
8. Specify the Goods and Services Tax registration number of the Contractor.
9. Specify a final invoice total.
10. Specify the date when payment is due, no less than 30 days from date of invoice.
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SCOPE CHANGES
Any additional funds required once the Contract is issued shall be discussed with the Program Administrator. A formal Scope Change with a new fee schedule must be completed before additional fees can be expensed against the Contract.

PUBLISHING
CEMA produced reports will be made publicly available. Traditional knowledge or other content sensitive material will be removed from the reports before posting to our public website.

REPORTING REQUIREMENTS
During contract term:
• A brief status report, in letter format, is to be provided to the Program Administrator on a monthly basis following the contract start date.
• An electronic copy of the draft report to be emailed to the Program Administrator.

Upon contract completion:
• Two hard copies of the report (one bound, one unbound).
• Two CDs, each containing a PDF and MS Word format copy of the document. Both CDs should include all maps and data files.
• All spatial data products to be in ArcInfo Export or compatible format (see Appendix I).

Please note: The PDF files must be unprotected and unsecured.

PROPOSAL CONTENTS/CONDITIONS
Since the services requested may require differing capabilities as well as experience, your bid package may involve a cooperative effort by more than one company. If the bid involves more than one company, bidders must submit an integrated proposal that clearly defines roles, responsibilities, and accountabilities of each company.

The proposal must contain the following:
1. A brief outline of the methods and processes for conducting the work described herein including any assumptions or caveats to the proposed work.
2. The credentials of the proposed project team and their academic and professional qualifications, relevant experience and their specific roles and time commitment to the study. Please include all contact information for the proposed project team and project lead.
3. A brief description of any similar projects undertaken, in particular those undertaken in north-eastern Alberta. Please include the date the project was undertaken and the key individuals involved in its completion.
4. An outline of estimated total contract costs and fee schedule by task with consultants expected to work on each task, hours and rates to be applied and any assumptions/caveats based on the work outlined in the scope. Include considerations for in-person meetings, travel expenses, and revisions to the draft report should be outlined in the proposal. Note that review costs will be covered by CEMA directly.
5. If your organisation cannot meet the proposed timeline a revised schedule should be provided.
6. Please indicate funding requirements on calendar year basis. For example, if work is to extend over the end of a calendar year then the fee must indicate how much (dollar figure) of the total contract will be needed/spent in each year. E.g. A $100,000 contract starting in February 2011 and extending to February of 2012. In this example the contract must indicate the projected dollar expenditure for the 2011 and the 2012 calendar years separately, the sum of those amounts totaling, but not exceeding, $100,000.
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Governing Conditions

1. The proposal must be no more than 10 pages in length excluding resume(s) and other attachments.
2. This request for proposal does not constitute an obligation on the part of CEMA to accept this proposal.
3. CEMA will not pay any compensation for the preparation of the proposal.
4. Please review the CEMA Contract Template, (located at www.cemaonline.ca under RFP’s) prior to submitting your proposal. The terms of this contract are strictly adhered to.
5. CEMA will review the proposal(s) and reserves the right, at its sole and absolute discretion, to refuse any and all proposals.
6. Given the participation of the Government of Alberta (GoA) in the CEMA, all companies and consultants need to be aware of the Freedom of Information and the Protection of Privacy Act (FOIPPA) passed by the GoA.
   a) All information and documents submitted to CEMA and in the custody of Alberta Environment (AENV) and Alberta Sustainable Resource Development (ASRD), are subject to the provisions of the FOIPPA and may, therefore, be subject to disclosure to any person requesting such information pursuant to FOIPPA.
   b) The FOIPPA grants a right of access to records in AENV/ASRD custody or control, and prohibits these departments from disclosing information where disclosure would be harmful to your business interests as defined in section 15 of FOIPPA, or would be an unreasonable invasion of your personal privacy as defined in section 16 of FOIPPA.
   c) AENV/ASRD routinely discloses information and records in its custody and under its control pursuant to FOIPPA. Should your proposal contain any information such as trade secrets, processes or techniques, commercial or financial, the release of which would harm your business interest, please identify such information. This is so that you may be contacted should a request be made to access the information. Please note that AENV/ASRD and CEMA cannot guarantee that any information submitted will remain confidential.
   d) Further information about FOIPPA, should be sought from the FOIP office at 780-427-4429.
7. Personal information requested above is included as part of the RFP package to enable CEMA to evaluate the proposal. All individuals whose personal information is contained in your proposal must be advised of the possibility of disclosure and the purpose of the request for this information.
8. Indemnities and Insurance:
The Contractor shall be responsible for and indemnify and save CEMA harmless from all claims, losses and damages, including all costs on a solicitor/client basis, which relate to or arise out of negligent acts, errors and omissions of the Contractor or its agents in providing the Services.
The Contractor represents and warrants that the Services provided and the Contract Property do not and will not infringe upon or violate a patent, copyright, license or other property or proprietary right held, or misappropriate a trade secret or other property right claimed by any third party. The Contractor shall indemnify and hold CEMA harmless from all claims, losses and damages, including costs on a solicitor/client basis, which relate to the Contract Property infringing on any patent, copyright, license or other property right or proprietary right of any third party.
The Contractor shall indemnify CEMA for any claims made against CEMA, or loss, damages or costs suffered by CEMA, its agents and employees, resulting from the use or disposition of the Contract Property by the Contractor.
   a) The Contractor shall provide, maintain, and pay for Commercial General Liability Insurance, identifying CEMA as an additional insured, and Professional Liability Insurance, with limits, per occurrence, of not less than the amount of $2,000,000.00.
   b) Both the Commercial General Liability Insurance and the Professional Liability Insurance specified in clause a) shall be in force from the date of commencement of the Services until the date that the Services provided under the Contract are complete to the satisfaction of CEMA, unless otherwise provided for in the
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signed Contract, Schedule "B", Part "C".
c) Notwithstanding any other provision of this Agreement, the aggregate liability of the Contractor, for the Services provided pursuant to this Agreement, shall not exceed the amount of $2,000,000.00
d) Prior to the commencement of any provision of Services pursuant to the Contract, the Contractor shall promptly provide CEMA with confirmation of coverage. If required by CEMA, the Contractor shall provide CEMA with a certified copy of the certificate of insurance, executed by an authorized representative of the Contractor's insurer, together with copies of any and all amending endorsements, which certificate shall provide at least 14 days notice to be given to CEMA prior to the cancellation or modification of any insurance referred to therein.
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APPENDIX I

CONTRACT PROPERTY – DATA SETS

1. All mapping is to be performed on the Provincial Base Features GIS data layers. If data is provided to the Contractor by CEMA or one of its member associates, the Contractor will not use this data for any purpose other than this contract.
2. Data sets should be submitted in formats that will best ensure their future usability. Types of data sets that do not fall under the specifications below should be submitted in formats with this goal in mind, and should be reviewed by the Program Administrator.
3. The Contractor is required to submit the master copy of the contracted data to the CEMA Program Administrator after the project has been completed.
4. Spatial vector data layers are to be provided in Shape (.shp) or ESRI Geodatabase (.gdb) files. Spatial raster data layers are to be provided in Geotiff format.
5. Spatial data are to be submitted using the NAD 83 datum and UTM Zone 12N projection. All information is to be tagged with metadata using the template provided by CEMA. Simple tabular data is to be submitted in Open Document Formats (ODF) wherever possible (i.e. Not .xls or .xlsx).
6. Relational databases must include a data model diagram with the submission. SQL scripts to recreate the database structure and load the data must be included.

The metadata template and instructions can be found at http://library.cemaonline.ca/dms-resources/dms-template. The completed template must be completed and reviewed by the Program Administrator in order for the contract to be considered closed.