



REQUEST FOR PROPOSALS

FOR

OKANAGAN MAINSTEM FLOOD MAPPING

RFP #: 2018-RFP-22

ISSUED ON: OCTOBER 26, 2018

RESPONDENT'S MEETING (WEBINAR): NOVEMBER 6, 2018 at 10:00AM LOCAL TIME

<https://attendee.gotowebinar.com/register/4271515107366120194>

CLOSING DATE AND TIME: NOVEMBER 26, 2018 at 12:00PM LOCAL TIME

Summary, Contents & Instructions:

Summary:

Through this Request for Proposals, the Okanagan Basin Water Board (the “OBWB”) invites Proposals for flood modeling and mapping for the Okanagan mainstem lakes shorelines and reaches of the Okanagan river.

The work is to commence as soon as possible, with an initial set of deliverables due by March 31, 2019 and the remaining work to be completed by March 31, 2020.

Further details on the services required are provided in Part A. The responding consultant must allow for any additional items deemed necessary. You are requested to submit a detailed work plan outlining the level of effort required and fee requirements. The proposals will be reviewed by OBWB and the project Steering Committee and will form part of the agreement with the successful consultant.

Note: Project proponents must be qualified professionals (with respect to flood mapping) who understands the specific hydrologic model needs of flood maps. The successful proponent must sign a statement to this effect.

Contents:

This Request for Proposals (the “RFP”) is organized into the following parts:

- **Part A: The Services** – full details of the services required.
- **Part B: The RFP Process** – the process for submissions, evaluation and award of the Contract
- **Part C: The Contract** – the Contract the OBWB will enter into with the selected Contractor
- **Part D: Submission Forms** – the forms a Respondent should submit in their Proposal


EXHIBITS:

- Exhibit A – Map of Okanagan Mainstem Lakes and Okanagan River Reaches of Interest
- Exhibit B – Historical Okanagan Water Modeling and Considerations
- Exhibit C – APEGBC Best Practice Guidelines for Flood Mapping
- Exhibit D – APEGBC Flood Mapping Assurance Statement

Instructions:

Whenever you see the following symbol and box throughout this document, this box is providing instructions to a Respondent on what this section means and/or what a Respondent must do:

Example:

	Whenever you see this box throughout the RFP document, the text is providing instructions or information on what this section means and/or what a Respondent must do.
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Part A: The Services



This Part A provides details on the Services required by the Okanagan Basin Water Board. Respondents should ensure they are fully capable of providing all of the requirements outlined, as this section will form the scope of work in the final Contract.

1. Context:

1.1. Overall Project Goals:

The goal of this project is to develop multi-purpose flood modeling, maps and digital mapping layers to better understand flood hazards and to further investigate flood risks and flood management options for the Okanagan mainstem lakes and river system. The models will estimate the extent, depth and (where meaningful) the velocity of potential flooding under a variety of scenarios, and convey this information through mapping layers. The modeling must consider wave height and wave damage during storm events at high water; illustrate areas of ponding caused by inadequate drainage not directly related to lake or river channel over-bank flooding; and areas susceptible to flooding through failure of flood protection or road infrastructure. The project will NOT consider failure of dikes or dams. It is also not expected for the project to identify all the populations, buildings, infrastructure, environmental and cultural assets that could be damaged or destroyed.

The following mainstem lakes will be included in the project: Ellison, Wood, Kalamalka, Okanagan, Skaha, Vaseux, Osoyoos Lakes; and Okanagan River from Okanagan Lake to Osoyoos Lake, including areas affected by overbank flooding that occurred in 2017. This is a regulated system, experiencing significant within-year variation in inflows and discharges. The period of interest is the freshet season, extending from February – July.

1.2. Background:

In 2017, the Okanagan Basin Water Board (OBWB) worked with the three Okanagan regional districts and a number of Okanagan local governments, and the Okanagan Nation Alliance to initiate collaborative projects to obtain flood mapping and risk assessments in the valley.

Local governments and Okanagan Nations desire flood maps to better inform and protect their communities and get in a better position for flood risk planning and flood mitigation actions. The floods of 2017 approached the very limits of current flood construction levels (especially in storm conditions) and some properties were not sufficiently protected. The flood of 2018 again caused flooding in southern Okanagan communities, near the Okanagan River and Osoyoos Lake.

Many hydrological and hydraulic modeling efforts have taken place in the Okanagan. The work done on this Contract will build on previous efforts, including OBWB hydrologic models, the Fish/Water Management Tool, the management protocols for the dams on Kalamalka/Wood, Okanagan, Skaha, Vaseux and Osoyoos lakes, and the latest inflow forecast models from the B.C. River Forecast Centre. The model parameters must provide for scenarios involving climate change, historical records for Okanagan, Kalamalka/Wood, Skaha and Osoyoos lakes levels, and downstream flow records.

1.3. Flood Map Intended Uses and Applications:

The deliverables will help to inform decision-makers, technical staff, consultants, stakeholders and the public and will support education, engagement and capacity-building. The project will provide a current, high quality, and consistent set of data for decision support at local, sub-regional, and regional geographic scales. They will also help to evaluate the effectiveness and other strengths and limitations of different flood mitigation options.

The flood maps will be used for:

- a basis of hazard and risk assessments, including high-risk vulnerable infrastructure;
- insurance incentives;
- public awareness programs;
- emergency management response planning;
- flood damage reduction and mitigation;
- development of land use regulations (building codes, bylaws, enforcement, recommendations for consistent new flood construction levels, recommendations for consistent new development set-backs from the lakeshores, etc.); and
- acquiring property on the floodplain and relocating structures.

2. Contract Term:

The OBWB expect to execute a Contract for the Services by November 26, 2018. The Contract term will expire upon the completion of Phase 2 Services, which shall be no later than March 31, 2020.

3. Budget:

For completion of the Services under this Contract, the OBWB has the following maximum budget amounts:

- Phase 1 deliverables: budget of \$100,000 (excluding GST)
- Phase 2 deliverables: maximum budget of \$400,000 (excluding GST)

4. Work Phases:

The Services will be completed in two phases as follows:

Phase:	Services & Deliverables	To Be Completed By:
1	i) Peak flood volume inflow hydrology report for each lake (hydrographs, timing of inflows and corresponding lake levels): Ellison, Kal/Wood (one system), Okanagan, Skaha and Vaseux Lakes. ii) A hydrology report for the tributary contributions to Okanagan River flood flows in each of the reaches downstream of Okanagan Lake., and iii) A frequency analysis for the Similkameen River peak freshet flows for the USGS gauge 12442500 "Similkameen River near Nighthawk".	March 31, 2019 Note: Phase 1 deliverable timing relates to internal budget requirements.
2	i) A report on Okanagan River mainstem flood releases, flows and water levels. ii) A report hydrology report for Osoyoos Lake flood levels which considers influence of inflows and Similkameen River backwater iii) All Other Services & Deliverables	March 31, 2020

5. Services Required (Scope of Work):

The Services to be performed by the Contractor shall be as follows:

5.1. General Requirements:

- The Contractor must follow the APEGBC (EGBC) best practice guidelines for flood mapping in BC (see especially the Roles & Responsibilities detailed in Exhibit C);
- The Contractor must have demonstrated experience performing hydrology, hydraulics and mapping studies to support flood mapping projects; and
- The Contractor will complete all work and deliverables (the "Services") as detailed in this Part A, including delivering Phase 1 and 2 on schedule. These Services will create necessary hydrologic and hydraulic models for the mainstem Okanagan lakes and river reaches (as shown in Exhibit A) and subsequent flood maps for the lake/river shores.

5.2. Contractor Team Requirements:

The Contractor's team that performs the Services must meet the following minimum requirements:

- The Contractor's team must include qualified professionals (with respect to flood mapping hydrology) who understands the specific hydrologic model needs of flood maps.
- Deliverables will be sealed by a lead professional from a designated professional society from the Province of British Columbia. This professional must be identified at the time of RFP submission.

5.3. Work Steps:

As stated in the APEGBC Guidelines for Flood Mapping in BC, there are four stages in the production of a flood map;

- Base mapping – topography, bathymetry, land cover, infrastructure
- Hydrology – estimation of design flows
- Hydraulics – calculation of flood elevations by numerical modeling
- Flood mapping – graphical representation of floodlines, elevations, recommended flood construction levels and associated hazards.

The following tasks are anticipated for this project. The Phase 1 deliverable includes work in Tasks I, II and III due March 31, 2019. The remainder of the work is to be included in Phase 2.

Alternative tasks must be clearly identified and relevancy demonstrated. Consultants should also identify any added-value items, innovations, or anticipated obstacles within their suggested methods and project proposal:

- I. Review existing Okanagan hydrology/hydraulic models (Exhibit B) and use available datasets wherever appropriate.
- II. Obtain operational guidelines and rules, and historical data for hydrologic and hydraulic model development, including
 - a. Okanagan Fish/Water Management Tool
 - b. Climate models.
 - c. Hydrometric data.
 - d. Previous Okanagan hydrologic and hydraulic models.
 - e. Current inflow forecasting model for Okanagan Lake used by BC River Forecast Centre.
 - f. New naturalized stream flow models and stream hydrologic models from OBWB.
 - g. Modeling by the US Army Corps of Engineers on the effect of Similkameen flows on Osoyoos lake levels, if available.
 - h. Other data sources as needed.
- III. Develop a separate inflow model for each lake and section of river channel, looking at extreme precipitation amounts and timing, and predicted inflows **[Deliverable is due March 31, 2019]**.
 - a. Ellison Lake
 - b. Kalamalka/Wood Lakes (treated as one system)
 - c. Okanagan Lake
 - d. Skaha Lake
 - e. Vaseux Lake
 - f. Okanagan River from Okanagan Dam to Skaha Lake
 - g. Okanagan River from Skaha Dam to Vaseux Lake
 - h. Vaseux Dam /Control structure to Osoyoos Lake
 - i. Additionally, develop a frequency analysis for freshet flows on the Similkameen River using the USGS gauge at Nighthawk

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- IV. Obtain LiDAR data captured during high-water event in 2017 (available from OBWB at initiation of contract), AND LiDAR captured during low-water conditions in 2018 (anticipated to be available in January 2019 from OBWB);
- V. Obtain new bathymetry (cross section) survey of the Okanagan River reaches from Okanagan Lake to Osoyoos (available April 2019 from OBWB);
- VI. Model each lake separately, as a separate sub-basin, running water between the lakes and operating dams according to rules.
 - a. High outflows from Kalamalka/Wood, Skaha, Vaseux and Osoyoos Lakes are limited by hydraulic considerations of the channel and structure capacities along with downstream considerations. The operating rules involve not only gate operations but the unique discharge capacity of the lakes when gates are freeboarding during a range of higher freshet inflows to each lake.
 - b. Contractor will be required to develop freeboarding rating curves for Kalamalka/Wood, Skaha and Vaseux Lakes using available lake level discharge and gate operations records. Osoyoos Lake will require a backwater analysis which looks at the relationship between the historical Similkameen River flows and lake levels for different inflows.
 - c. Include variation in wave heights and uncertainties of lake level estimates to provide appropriate freeboard estimates, and develop recommendations for flood construction levels.
- VII. Calibrate models against actual water flows by linking natural hydrology with water management.
- VIII. Perform model verification.
- IX. Conduct at least three scenario tests, recreating 2017 flood conditions, changing variables such as freshet rainfall; volume, timing and rate of freshet snowmelt and inflows, and lake operations to determine what kind of an event would cause even higher flood conditions given lake operating rules.
- X. Create flood maps/map layers and a Technical Report for the project (see list of Deliverables below).

5.4. Other Information:

- The OBWB is currently working with GeoBC to acquire LiDAR and orthoimagery for the valley, to support flood mapping. The LiDAR data is scheduled to become available in January, 2019, and the orthoimagery will be available mid-2019.

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- The OBWB is also undertaking a bathymetry survey of the Okanagan River cross sections on behalf of the Regional District of Okanagan-Similkameen, and this survey should be available by April 1, 2019.
- In 2018, the OBWB completed a project to produce naturalized flows for the major creeks entering the Okanagan mainstem system. Up to 19 of the streams will have full hydrological models developed for them in 2019.
- All Okanagan mainstem inflows were included in the 2010 Okanagan Water Supply and Demand Project (OWSDP), and the model outputs from that work are all available to the successful proponent.
- Downscaled climate modeling was completed for the Okanagan as part of the 2010 OWSDP, and this is currently being redone. Any available models or model outputs will be made available to proponents.
- The City of Penticton is currently undertaking a flood risk assessment on Okanagan and Skaha lake shorelines, as well as five creeks and the river channel (all within the city boundaries). This study will include mapping and will be completed in early 2019.
- Osoyoos Lake has a unique set of hydrologic consideration, affected by Similkameen River flows and backwater influence, and will need a separate analysis. The US Army Corps of Engineers is working on a model for Osoyoos Lake, and this information may or may not be available (yet to be determined). Otherwise, information on the backwater effect is available from the Osoyoos Lake Plan of Study – Study 7 (Part 1): Demonstration of factors that govern Osoyoos Lake during high water periods (March 2010) see attachment at http://ijc.org/en_/iolbc/Board_Reports.

6. Deliverables

As part of the Services, the Consultant will deliver the following:

1. Milestone Deliverable for March 31, 2019: Hydrology report (including peak volume flood freshet inflow hydrographs, timing and lake levels) for each of: Ellison, Kal/Wood (one system), Okanagan, Skaha and Vaseux lakes; freshet tributary inflows to each of the Okanagan River reaches downstream of Okanagan Lake; and a frequency analysis for the Similkameen River peak freshet flows for the USGS gauge at Nighthawk. (Note: The Phase 1 report should not include the hydrology of the mainstem releases and resultant Okanagan River flows and levels (i.e. dam operations) or the analysis of Osoyoos Lake levels which will both be included in the Phase 2 deliverable.)
2. Data and model outputs for all specified mainstem lakes and river channel sections.
3. Technical Study Report for entire project: include models used, input, output, charts, graphs, results, all other relevant data and information, lessons learned, remaining gaps, and recommendations for next steps.

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4. Mapping style guide for use by local governments, to create uniform-looking two-dimensional maps with consistent colour schemes, fonts, legends, scales, etc., following the APEGBC (EGBC) recommendations for flood maps in BC.
5. Flood maps and digital mapping layers showing:
 - a. Results of the scenarios tests (see 5.3.IX);
 - b. Maps and mapping layers showing the spatial extent and depth of the expected inundation related to the following flood probabilities (return periods): 20, 100, 200, 500 year return periods and the 2017 event flood;
 - c. Maps and mapping layers of areas of ponding caused by inadequate drainage not directly related to lake or river channel over-bank flooding;
 - d. Maps and mapping layers of areas susceptible to flooding through failure of flood protection infrastructure
 - e. Identification of barriers to natural drainage patterns such as roads or dikes.
 - f. Analysis of potential wave heights along different portions of lakeshore and river banks.
 - g. Recommendations for new flood construction levels, given both in the report and as mapping layers, including new freeboard values based on uncertainty in the analysis as well as on wave action, climate change and other factors.
6. Mapping layers must adhere to the following specifications:
 - a. Data must be provided in a 'file geodatabase' (*.gdb).
 - b. Map layer files must be provided, storing all the symbology and references to the data in the file geodatabase. It is acceptable to provide a 'map package' that includes all the data and symbology, but the data within the map must be sourced from a file geodatabase. 'Shapefiles' are not acceptable.
 - c. All data must be provided in: 'NAD 1983 UTM Zone 11N'
7. A signed APEGBC (EGBC) Flood Mapping Assurance Statement (as per the statement form detailed in Exhibit D)

Part B: The RFP Process



This Part B details the terms and conditions of how this RFP process will be run by the OBWB, and how the Contractor will be selected. Respondents to this RFP must ensure they follow all the terms detailed below. Failure to follow the terms of this Part B may result in a Proposal being rejected.

1. Key Details:

1.1. RFP Contact Person:

The sole point of contact at the Okanagan Basin Water Board for any queries or questions related to this RFP is:

- James Littley, Operations & Grants Manager
- Email: james.littley@obwb.ca

The above-named RFP Contact Person is the only person that any Respondent to this RFP may contact during this RFP process. Information obtained from any source other than the RFP Contact Person is unofficial and must not be relied upon as part of this RFP. Respondents must not contact any other employees, officers, consultants, agents, elected officials or other representatives of the Okanagan Basin Water Board regarding matters related to this RFP. Any Respondent found to have contacted persons other than the RFP Contact Person, may be disqualified from submitting a Proposal, or have their Proposal rejected.

All questions regarding this RFP must be submitted in writing prior to the Deadline for Questions detailed under Section 1.2 of this Part B. Questions received after the Deadline for Questions will be addressed if time permits. The Respondent is solely responsible for seeking any clarification required regarding this RFP, and the OBWB shall not be held responsible for any misunderstanding by the Respondent.

1.2. Timetable:

This RFP process will run to the following timetable. This timetable may be amended at the OBWB's discretion through the issuance of an addendum to this RFP.

Event:	Date:
Issue Date of this RFP	October 26, 2018
Respondent's Information Meeting	November 6 2018 at 10:00 AM Local Time
Deadline for Questions	November 9, 2018
Last Day for Issue of Addenda	November 13, 2018
RFP Closing Date and Time:	November 26, 2018 at 12:00 PM Local Time
Contract Execution Date (Anticipated):	December 3, 2018

1.3. Respondents Information Meeting:

A Non-Mandatory Respondent's Information Meeting will be held by webinar at the date and time listed in section 1.2 to provide Respondent's with an overview of the Services, and provide an opportunity to ask questions. Respondents are strongly encouraged to attend this meeting.

1.4. Submission of Proposals (Address, Date & Time, Format):

Proposals to this RFP should be submitted in accordance with the following:

- **Email Address:** Proposals must be submitted by email to: james.littley@obwb.ca
- **RFP Closing Date and Time:** Proposals must be received no later than the RFP Closing Date and Time listed in Section 1.2.
- **Format:** One copy containing all of the information required in the forms listed under Part D – Submission Forms

The complete Proposal must be received at the email address detailed above no later than the Closing Date and Time. It is the Respondent's sole responsibility to ensure that the electronic Proposal is received before the RFP Closing Date and Time. Electronic Proposals must not exceed 10 megabytes in total email size. The Okanagan Basin Water Board assumes no responsibility for the receipt of email Proposals and will not be liable to any Respondent if for any reason a Proposal is not properly received prior to the Closing Date and Time. Proposals that are not received on or before the Closing Date and Time will not be considered any further in the RFP process.

2. Definitions Used in this RFP:



The following are definitions used in this RFP document. Whenever one of the following terms is used with a capitalized first letter, the term shall have the meaning as set out in this section.

- 2.1. "Addenda" or "Addendum" means additional information or amendments to this RFP, issued by the OBWB in accordance with Section 5 of this Part B.
- 2.2. "OBWB" means the Okanagan Basin Water Board
- 2.3. "Contract" means the written agreement resulting from this RFP, executed between the OBWB and the successful Respondent to this RFP.
- 2.4. "Contractor" means the successful Respondent to this RFP who enters into a Contract with the OBWB.
- 2.5. "Closing Date and Time" means the date and time that Proposals to this RFP must be received by in accordance with Section 1.2 of this Part B.
- 2.6. "Must" or "Mandatory" means a requirement that must be met in order for a Proposal to receive consideration.
- 2.7. "Proposal" means a Proposal submitted by a Respondent in response to this RFP.
- 2.8. "Respondent" means a person or entity that submits a Proposal to this RFP.
- 2.9. "RFP" means this Request For Proposals # 2018-RFP-22 including all Parts A to D.
- 2.10. "Section" means the numbered section of the referenced part of this RFP.
- 2.11. "Services" means the Services which the OBWB seeks to be provided by the Contractor, as outlined in Part A.

2.12. “Subcontractor” means a person, partnership, firm or corporation that the Respondent proposes to contract with to deliver part of the Services, in a subordinate relationship to the Respondent.

3. Amendment of a Proposal by Respondent:

A Respondent may amend a Proposal at any time up until the RFP Closing Date and Time. Amendments must be submitted in the same way as the original Proposal, as detailed in Section 1.3 of this Part B. Amendments to a Proposal must be clearly labelled as such, must contain the RFP reference number and title, and the full legal name and legal address of the Respondent. Amendments must clearly detail which part(s) of the Proposal is being amended or replaced.

4. Revocation of a Proposal by Respondent:

A Respondent can revoke a Proposal that is already submitted, at any time throughout the RFP process up until the execution of a written Contract for the provision of the Services as detailed in Section 6.6 of this Part B.

5. Addenda Issued by OBWB:

This RFP may only be amended by way of an Addendum issued in accordance with this Section. At any time up until the Closing Date and Time, the OBWB may issue an Addendum in order to amend, clarify, or answer questions to this RFP. Each Addendum will be issued at the same location and in the same manner as this RFP document (www.obwb.ca/rfp). Each Addendum will form an integral part of this RFP. Respondents are solely responsible for checking for Addenda up until the Closing Date and Time. If the OBWB deems it necessary to issue an Addendum after the Last Day for Issue of Addenda, as detailed in Section 1.2 of this Part B, then the OBWB may extend the Closing Date and Time in order to provide Respondents with more time to complete their Proposal.

Proposals should confirm receipt of all Addenda in Appendix A – Certification Form of their Proposal.

6. Evaluation of Proposals & Award of Contract:

The OBWB will conduct the evaluation of Proposals and selection of a successful Respondent in accordance with the process detailed in this Section. Evaluation of Proposals will be by an evaluation committee which may include employees of OBWB, as well as employees of the Province of British Columbia and representatives from OBWB’s municipal partners. The OBWB’s intent is to enter into a Contract with the Respondent who has met all mandatory criteria and minimum scores, and who has the highest overall ranking based on this evaluation process.

6.1. Mandatory Criteria:

Proposals not clearly demonstrating that they meet the following mandatory criteria will be excluded from further consideration in the evaluation process.

Mandatory Criteria:	
1	The Proposal must be received by the Closing Date and Time, in accordance with the requirements of Section 1.4
2	The Proposal must include the following completed form: <ul style="list-style-type: none"> • Appendix A – Certification Form

6.2. Scored Criteria:

Proposals that meet all of the Mandatory Criteria will be further assessed against the following scored criteria.

Scored Criteria	Weighting	Minimum Score (Out of 100)
Total Fixed Lump Sum Contract Price (based on Appendix B submission)	20%	NA
Suitability of Method & Schedule (based on Appendix C submission and also the Task Fee Schedules submitted as part of Appendix B)	35%	50
Suitability of Team (based on Appendix D submission)	30%	50
Suitability of Respondent's Experience (based on Appendix E submission)	15%	50

Proposals that do not meet the minimum score within a scored criterion will not be evaluated further.

6.3. Scoring Method:

The following method will be used to score the scored criteria:

- Total Fixed Lump Sum Contract Price: Total Fixed Lump Sum Contract Price will be scored relative to other Respondents' Total Fixed Lump Sum Contract Prices using the following formula:
 - $\text{Lowest Total Fixed Lump Sum Contract Price} \div \text{Respondent's Total Fixed Lump Sum Contract Price} \times \text{Weighting} = \text{Score}$
 Other Criteria: All other criterion (except Total Fixed Lump Sum Contract Price) will be scored by the evaluation committee out of 100, which will then be multiplied by the Weighting factor to provide a weighted score.

6.4. Clarifications & Remedy Period:

Notwithstanding the requirements for mandatory criteria and scored criteria detailed in this Section 6, the OBWB will allow the following remedies and clarifications at its sole discretion:

- Remedy for Missing Mandatory Criteria: If the OBWB finds that a Proposal fails to meet all of the mandatory requirements detailed in Section 6.1, then the OBWB may

provide written notification to a Respondent which identifies the requirements not met and provides the Respondent with 2 calendar days to remedy and supply the requirements. The 2 calendar days shall commence upon notification by the OBWB to the Respondent. This option to remedy missing requirements shall not apply to Proposals not received by the Closing Date and Time.

- **Clarification of Proposals:** During evaluation of the scored criteria, the OBWB may at its sole option, request further details or clarification from the Respondent and/or third parties, on aspects of a Proposal by way of a written request for clarification. The written request shall clearly state the required clarification and time limit to supply the information requested. Following receipt of the clarification information, the OBWB may use this information to reassess and/or re-score the Proposal according to the scored criteria.

6.5. Ranking of Respondents:

Following completion of the evaluation against the scored criteria, the weighted scores for each Proposal will be added together, and Proposals will be ranked according to their total weighted scores. The Respondent with the highest-ranked Proposal will be invited to conclude a Contract with the OBWB. In the event that two or more Proposals have an equal total weighted-scored, then the Respondent with the Lowest Total Price will be invited to conclude a Contract with the OBWB.

6.6. Conclusion and Execution of a Contract

Neither the Respondent nor the OBWB will be legally bound to provide or purchase the Services until the execution of a written Contract. Following an invitation to the Respondent, by the OBWB, to conclude a Contract, the parties shall enter into discussions which may include:

- Clarification or amendment to the scope of work, plus any resulting price adjustments, based on items submitted in the Proposal.
- Amendments to the terms and conditions of the Contract (Part C), based on items submitted in the Proposal.

The OBWB shall seek to execute a Contract within 5 days of issuing an invitation to the Respondent to conclude a Contract. If the parties cannot execute a Contract within this time-period, the OBWB may discontinue the process with the Respondent that has the highest-ranked Proposal, and then invite the Respondent with the next-highest-ranked Proposal to conclude a Contract. The OBWB may then continue this process until a Contract is executed, or there are no further Respondents, or the OBWB elects to cancel the RFP process entirely.

7. Other Terms & Conditions of this RFP Process:

The following terms and conditions shall also apply to this RFP:

7.1. Proposals in English:

All Proposals are to be in the English language only.

7.2. **Only One Entity as Respondent:**

The OBWB will accept Proposals where more than one organization or individual is proposed to deliver the Services, so long as the Proposal identifies only one entity that will be the lead entity and will be the Respondent with the sole responsibility to deliver the Contract if executed. The OBWB will only enter into a Contract with that one Respondent. Any other entity involved in delivering the Service should be listed as a Subcontractor. The Respondent may include the Subcontractor and its resources as per of the Proposal and the OBWB will accept this, as presented in the Proposal, in order to perform the evaluation. All Subcontractors to be used in the Service must be clearly identified in the Proposal.

7.3. **Proposals to Contain All Content in Prescribed Forms:**

All information that Respondents wish to be evaluated must be contained within the submitted Proposal. Proposals should not reference external content in other documents or websites. The OBWB may not consider any information which is not submitted within the Proposal or within the pre-prescribed forms set-out in this RFP.

7.4. **References and Experience:**

In evaluating a Respondent's experience, as per the scored criteria, the OBWB may consider information provided by the Respondent's clients on the projects submitted in the Proposal, and may also consider the OBWB's own experience with the Respondent, or the experience of project partners with the Respondent.

7.5. **RFP Scope of Work is an Estimate Only:**

While the OBWB has made every effort to ensure the accuracy of the Services described in this RFP, the OBWB makes no guarantees as to the accuracy of the information provided. Any quantities or measurements provided are estimates only and are provided to describe the general nature and scale of the Services. Respondents must obtain all information they deem necessary, including verification of quantities or measurements in order to complete a Proposal.

7.6. **Respondent's Expenses:**

Respondents are solely responsible for their own expenses in participating in this RFP process, including costs in preparing a Proposal and for subsequent finalizations of an agreement with the OBWB, if required. The OBWB will not be liable to any Respondent for any claims, whether for costs, expenses, damages or losses incurred by the Respondent in preparing its Proposal, loss of anticipated profit in connection with any final Contract, or any matter whatsoever.

7.7. **Retention of Proposals and FOIPPA:**

All Proposals submitted to the OBWB will not be returned and will be retained in accordance with the Freedom of Information and Protection of Privacy Act ("FOIPPA"). Respondents should note that in accordance with the provisions of FOIPPA, certain details of this RFP and any executed Contract may be made public, including the Contractor's Name and total Contract price. Respondents should identify with their Proposal any information which is supplied in confidence and therefore should be maintained as confidential by the OBWB.

7.8. Notification and Feedback to Unsuccessful Respondents:

At any time up until or after the execution of a written Contract with the Contractor, the OBWB may notify unsuccessful Respondents in writing that they have not been selected to conclude a Contract. Unsuccessful Respondents may then request a feedback email or telephone call with the OBWB's in order to obtain feedback on how their Proposal fared in the evaluation. Such requests for feedback must be made within 30 days of notification of the RFP results to the unsuccessful Respondent. Details of feedback provided will be at the OBWB's sole discretion in order to protect the confidentiality of other Respondents and the OBWB's commercial interest.

7.9. Conflict of Interest:

All Respondents must disclose an actual or potential conflict of interest, as set-out in Appendix A – Certification Form. The OBWB may, at its sole discretion, disqualify any Respondent from this RFP process, if it determines that the Respondent's conduct, situation, relationship (including relationships of the Respondent's employees and OBWB employees) create or could be perceived to create a conflict of interest.

The OBWB may rescind or terminate a Contract entered into if it subsequently determines that the Respondent failed to declare an actual or potential conflict of interest during this RFP process, as required under Appendix A – Certification Form.

7.10. Confidentiality:

All information provided to Respondents by the OBWB as part of this RFP process is the sole property of the OBWB and must not be disclosed further without the written permission of the OBWB.

7.11. No Contract A, No Claims, and Limitation of Damages:

This RFP process is not intended to create and shall not form a legally binding irrevocable bid process, commonly referred to as a 'Contract A' based bid process. For extra clarity, both the Respondent and the OBWB are free to cancel their participation in this RFP process at any time up until the execution of a written Contract for the Services.

Neither the Respondent nor the OBWB shall have the right to make any claims of damages against the other related to this RFP or execution of a Contract as a result of this RFP.

Notwithstanding this Section 7.11, the Respondent agrees that it will not claim any damages, for whatever reason, relating to this RFP process, in excess of an amount equivalent to the reasonable costs incurred by the Respondent in preparing its Proposal, and the Respondent, by submitting its Proposal, waives any claim for loss of profits if no Contract is made with the Respondent.

7.12. Right to Cancel RFP:

Although the OBWB fully intends to conclude a Contract as a result of this RFP, the OBWB may at its sole discretion, cancel or amend this RFP process at any time without any liability to any Respondent.

7.13. [Governing Law and Trade Agreements:](#)

This RFP is governed by the laws of the Province of British Columbia and any other agreements which exist between the Province of British Columbia and other jurisdictions.

Part C: The Contract



This Part C details the Contract terms and conditions that the OBWB will enter into with the Contractor at the conclusion of the process outlined in Section 6.6 of Part B.

The OBWB and the successful Respondent shall enter into a Contract for the Services using terms and conditions contained in the following pages in this Part C:



Consulting and General Services Contract

CONTRACT./FILE NO: 2018-RFP-01	THIS AGREEMENT DATED FOR REFERENCE THE
PROJECT DESCRIPTION: .	

BETWEEN:

OKANAGAN BASIN WATER BOARD
1450 KLO Road
Kelowna, BC. V1W 3Z4
Representative: Anna Warwick Sears
Email: anna.warwick.sears@obwb.ca

(the "OBWB", "we", "us", or "our" as applicable)

AND:

<CONTRACTOR NAME>

(the "Contractor", "you", or "your" as applicable)

The OBWB wishes to retain the Contractor to provide the Services specified in Schedule A and, in consideration for the remuneration set out in Schedule B, the Contractor has agreed to provide those Services, on the terms and conditions set out in this Agreement.

The OBWB and the Contractor agree as follows:

ARTICLE 1 - DEFINITIONS

1.01 In this Agreement, unless the context otherwise requires:

- a) **"Business Day"** means a day, other than a Saturday or Sunday, on which OBWB offices are open for normal business in British Columbia;
- b) **"Incorporated Material"** means any material in existence prior to the start of the Term or developed independently of this Agreement, and that is incorporated or embedded in the Produced Material by the Contractor or a Subcontractor;
- c) **"Material"** means the Produced Material and the Received Material;
- d) **"Produced Material"** means records, software and other material, whether complete or not, that, as a result of this Agreement, are produced by the Contractor or a Subcontractor and includes the Incorporated Material;
- e) **"Received Material"** means records, software and other material, whether complete or not, that, as a result of this Agreement, are received by the Contractor or a Subcontractor from the OBWB or any other person;

- f) **“Record”** is the definition of “record” in the *Interpretation Act* and as incorporated into this Agreement and “records” will bear a corresponding meaning;
- g) **“Services”** means the services described in Schedule A;
- h) **“Subcontractor”** means a person described in Section 16.05;
- i) **“Term”** means the term of the Agreement described in Section 3.01 of this Agreement subject to that term ending earlier in accordance with this Agreement; and
- j) **“Unit of Measure”** has the meaning described in Schedule B.

ARTICLE 2 - CONTRACT DOCUMENTS AND MODIFICATIONS

2.01 The attached schedules are applicable to and form part of this Agreement:

Schedule	Title
Schedule 'A'	Services
Schedule 'B'	Fees
Schedule 'C'	Subcontracting Schedule
Schedule 'D'	Insurance
Schedule 'E'	Copyright
Schedule F	Moral rights

2.02 No modification of this Agreement is effective unless it is in writing and signed by, or on behalf of, the parties.

ARTICLE 3 - TERM OF CONTRACT

- 3.01 The Term of this Agreement is from and including XXXXXXXXXX, 2018 to and including XXXXXXXX, 2020 inclusive.
- 3.02 Regardless of the date of execution or delivery of this Agreement, the Contractor must provide the Services during the Term.
- 3.03 Time is of the essence in this Agreement and, without limitation, will remain of the essence after any modification or extension of this Agreement, whether or not expressly restated in the document effecting the modification or extension.

ARTICLE 4 - CONTRACTOR'S OBLIGATIONS

- 4.01 You must provide the Services described in Schedule A (the "Services") in accordance with this Agreement.
- 4.02 Unless the parties otherwise agree in writing, you must supply and pay for all labour, materials, equipment, tools, facilities, and approvals and licences necessary or advisable to perform your obligations under this Agreement, including the license under Section 8.04.
- 4.03 Unless otherwise specified in this Agreement, you must perform the Services to a standard of care, skill, and diligence maintained by persons providing, on a commercial basis, services similar to the Services.
- 4.04 You must provide, instruct, and supervise a sufficient number of qualified personnel to enable timely and proper performance and completion of the Services. All such personnel shall be competent, English literate, efficient and qualified by education, training and experience to carry out the tasks to which each is assigned.
- 4.05 We may from time to time give you reasonable instructions (in writing or otherwise) as to the performance of the Services. You must comply with those instructions but, unless otherwise specified in this Agreement, you may determine the manner in which the instructions are carried out.
- 4.06 If we provide an instruction under Section 4.05 other than in writing, you may request that the instruction be confirmed by us in writing, which request we must comply with as soon as it is reasonably practicable to do so.
- 4.07 Requesting written confirmation of an instruction under Section 4.06 does not relieve you from complying with the instruction at the time the instruction was given.
- 4.08 In the performance of your obligations under this Agreement, you must comply with all applicable laws.

ARTICLE 5 - PAYMENT

- 5.01 If you comply with this Agreement, we must pay you at the rates and times described in Schedule B:
- (a) the Fixed Prices described in that Schedule;
 - (b) the Unit Rates for any extra work which has been authorized and pre-approved in writing by OBWB; and
 - (c) any applicable taxes payable by us under law or agreement with the relevant taxation authorities on the fees and expenses described in paragraphs (i) and (ii).
- We are not obliged to pay you more than the Total Contract Price amount or dollar limit specified in Schedule B on account of fees and expenses.
- 5.02 In order to obtain payment of any fees or expenses, if any, under this Agreement, you must submit written statements of account to us in a form satisfactory to us, but no sooner than the dates referred to in Schedule B.
- 5.03 Without limiting Section 11.01 we may withhold from any payment due to you an amount sufficient to indemnify, in whole or in part, the OBWB and its employees and agents against any liens or other third-party claims that have arisen or could arise in connection with the provision of the Services. An amount withheld under this section must be promptly paid by the OBWB to you upon the basis for withholding the amount having been fully resolved to the satisfaction of the OBWB.
- 5.04 Our obligation to pay money to you is subject to the Financial Administration Act, which makes that obligation subject to an appropriation being available in the fiscal year of the OBWB during which payment becomes due.
- 5.05 Unless otherwise specified in this Agreement, all references to money are to Canadian dollars.
- 5.06 If you are not a resident in Canada, you acknowledge that we may be required by law to withhold income tax from the fees described in Schedule B and then to remit that tax to the Receiver General of Canada on your behalf.
- 5.07 You must not, in relation to performing your obligations under this Agreement, commit or purport to commit us to pay any money except as may be expressly provided for in this Agreement.
- 5.08 You must:
- a) apply for, and use reasonable efforts to obtain, any available refund, credit, rebate or remission of federal, provincial or other tax or duty imposed on you as a result of this Agreement that the OBWB has paid or reimbursed to you or agreed to pay or reimburse to you under this Agreement; and
 - b) immediately on receiving, or being credited with, any amount applied for under paragraph (a) remit that amount to us.

ARTICLE 6 - REPRESENTATIONS AND WARRANTIES

- 6.01 As at the date this Agreement is executed and delivered by, or on behalf of, the parties, you represent and warrant to us as follows:
- (a) except to the extent you have previously disclosed otherwise in writing to us:
 - (i) all information, statements, documents and reports furnished or submitted by you to us in connection with this Agreement (including as part of any competitive process resulting in this Agreement being entered into) are in all material respects true and correct,
 - (ii) you have sufficient trained staff, facilities, materials, appropriate equipment and approved subcontractual agreements in place and available to enable you to fully perform the Services, and
 - (iii) you hold all permits, licenses, approvals and statutory authorities issued by any government or government agency that are necessary for the performance of your obligations under this Agreement; and
 - (b) if the Contractor is not an individual:
 - (i) you have the power and capacity to enter into this Agreement and to observe, perform and comply with the terms of this Agreement and all necessary corporate or other proceedings have been taken and done to authorize the execution and delivery of this Agreement by, or on behalf of, you, and
 - (ii) this Agreement has been legally and properly executed by, or on behalf of, you and is legally binding upon and enforceable against you in accordance with its terms except as enforcement may be limited by bankruptcy, insolvency or other laws affecting the rights of creditors generally and except that equitable remedies may be granted only in the discretion of a court of competent jurisdiction.

ARTICLE 7 - PRIVACY, SECURITY AND CONFIDENTIALITY

- 7.01 You must comply with the Privacy Protection Schedule if attached to this Agreement.
- 7.02 You must make reasonable security arrangements to protect the Material from unauthorized access, collection, use, disclosure, alteration, or disposal and comply with the Security Schedule, if attached.
- 7.03 You must treat as confidential all information in the Material and all other information accessed or obtained by you or a Subcontractor (whether verbally, electronically or otherwise) as a result of this Agreement, and not permit its disclosure or use without our prior written consent except:
- 7.03.1 as required to perform your obligations under this Agreement or to comply with applicable laws;
 - 7.03.2 if it is information that is generally known to the public other than as a result of a breach of this Agreement; or
 - 7.03.3 if it is information in any Incorporated Material.
- 7.04 Any public announcement relating to this Agreement will be arranged by us and, if such consultation is reasonably practicable, after consultation with you.
- 7.05 You must not, without our prior written approval, refer for promotional purposes to the OBWB being your customer or the OBWB having entered into this Agreement.

ARTICLE 8 - MATERIAL AND INTELLECTUAL PROPERTY

- 8.01 If you receive a request for access to any of the Material from a person other than us, and this Agreement does not require or authorize you to provide that access, you must promptly advise the person to make the request to us.
- 8.02 We exclusively own all property rights in the Material that are not intellectual property rights. Any equipment property we may provide to you or a subcontractor is our exclusive property. You must deliver any Material or equipment property to us immediately following expiration of this Agreement, or sooner upon our request, in the same condition it was supplied to you, excepting always loss or damage attributable to reasonable wear or tear.
- 8.03 The Province of BC will exclusively own all intellectual property rights, including copyright:
- 8.03.1 in Received Material that you receive from us, and
 - 8.03.2 in Produced Material, other than any Incorporated Material.
- Upon our request, you must deliver to us documents satisfactory to us that irrevocably waive in our favour any moral rights that you (or your employees) or a Subcontractor (or its employees) may have in the Produced Material and confirm the vesting in the Province of the copyright in the Produced Material, other than any Incorporated Material.
- 8.04 Upon any Incorporated Material being embedded or incorporated in the Produced Material and to the extent that it remains so embedded or incorporated, you grant us:
- 8.04.1 a non-exclusive, perpetual, irrevocable, royalty-free, worldwide license to use, reproduce, modify, and distribute that Incorporated Material; and
 - 8.04.2 the right to sublicense to third-parties the right to use, reproduce, modify and distribute that Incorporated Material.

ARTICLE 9 - RECORDS AND REPORTS

- 9.01 You must, upon our request, fully inform us of all work done by you or a Subcontractor in connection with providing the Services.
- 9.02 If Schedule B provides for you to be paid fees at a Unit of Measure rate or for you to be paid or reimbursed for expenses, you must maintain time records and books of account, invoices, receipts and vouchers of expenses in support of those payments, in form and content satisfactory to us. Unless otherwise specified in this Agreement, the Contractor must retain such documents for a period of not less than seven years after this Agreement ends.

ARTICLE 10 - AUDIT

- 10.01 In addition to any other rights of inspection the OBWB may have under statute or otherwise, we may at any reasonable time and on reasonable notice to you, enter on your premises to inspect and, at our discretion, copy

any of the Material and you must permit, and provide reasonable assistance to, the exercise by us of our rights under this section.

ARTICLE 11 - INDEMNITY AND INSURANCE

- 11.01 You must indemnify and save harmless the OBWB and its employees and agents from any losses, claims, damages, actions, causes of action, costs and expenses that the OBWB or any of its employees or agents may sustain, incur, suffer or be put to at any time either before or after this Agreement ends, including any claim of infringement of third-party intellectual property rights, where the same or any of them are based upon, arise out of or occur, directly or indirectly, by reason of any act or omission by you or your agents, employees, officers, directors or Subcontractors in connection with this Agreement (each a "Loss"), excepting always liability arising out of the independent acts or omissions of the OBWB and its employees and agents.
- 11.02 You must comply with the insurance requirements in Schedule D, if attached, as those terms may be modified from time to time in accordance with our directions.
- 11.03 Without limiting the generality of Section 4.08, you must comply with, and must ensure that any Subcontractors comply with, all applicable occupational health and safety laws in relation to the performance of your obligations under this Agreement, including the *Workers Compensation Act* in British Columbia or similar laws in other jurisdictions.
- 11.04 At your own expense, and where required under *Workers Compensation Act* in British Columbia, you must obtain WorkSafe BC coverage for yourself, all workers and any shareholders, directors, partners or other individuals employed or engaged in the performance of the Services and you shall ensure all approved Subcontractors obtain WorkSafe BC Coverage.
- 11.05 If you are an individual or a partnership of individuals and do not have the benefit of mandatory workers compensation coverage under the *Workers Compensation Act* in British Columbia, you must apply for and maintain Personal Optional Protection under the *Workers Compensation Act*.
- 11.06 You are responsible for all fines, levies, penalties and assessments made or imposed under the *Workers Compensation Act* and regulations relating in any way to the Services.
- 11.07 Upon our request you must provide us with evidence of your compliance with Sections 11.02, 11.04 and 11.05.

ARTICLE 12 - FORCE MAJEURE

- 12.01 An "Event of Force Majeure" means a natural disaster, fire, flood, storm, epidemic or power failure, war (declared and undeclared), insurrection or act of terrorism or piracy, strike (including illegal work stoppage or slowdown) or lockout, or a freight embargo if such event prevents a party from performing its obligations in accordance with this Agreement and is beyond the reasonable control of that party.
- 12.02 An "Affected Party" means a party prevented from performing its obligations in accordance with this Agreement by an Event of Force Majeure.
- 12.03 An Affected Party is not liable to the other party for any failure or delay in the performance of the Affected Party's obligations under this Agreement resulting from an Event of Force Majeure and any time periods for the performance of such obligations are automatically extended for the duration of the Event of Force Majeure provided that the Affected Party complies with the requirements of Section 12.04.
- 12.04 An Affected Party must promptly notify the other party in writing upon the occurrence of the Event of Force Majeure and make all reasonable efforts to prevent, control or limit the effect of the Event of Force Majeure so as to resume compliance with the Affected Party's obligations under this Agreement as soon as possible.

ARTICLE 13 - NON-COMPLIANCE WITH AGREEMENT CONDITIONS

- 13.01 An "Event of Default" means any of the following:
- (a) your failure to perform any of your obligations under this Agreement, or
 - (b) any representation or warranty made by you in this Agreement is untrue or incorrect, or
 - (c) an Insolvency Event, which means any of the following;
 - (i) an order is made, a resolution is passed or a petition is filed, for your liquidation or winding up,

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- (ii) you commit an act of bankruptcy, make an assignment for the benefit of your creditors or otherwise acknowledge your insolvency,
 - (iii) a bankruptcy petition is filed or presented against you or a proposal under the *Bankruptcy and Insolvency Act* (Canada) is made by you,
 - (iv) a compromise or arrangement is proposed in respect of you under the *Companies' Creditors Arrangement Act* (Canada),
 - (v) a receiver or receiver-manager is appointed for any of your property, or
 - (vi) you cease, in our reasonable opinion, to carry on business as a going concern.
- 13.02 On the happening of an Event of Default, or at any time thereafter, we may, at our option, elect to do any one or more of the following:
- 13.02.1 by written notice to you, require that the Event of Default be remedied within a time period specified in the notice;
 - 13.02.2 pursue any remedy or take any other action available to us at law or in equity; or
 - 13.02.3 by written notice to you, terminate this Agreement with immediate effect or on a future date specified in the notice, subject to the expiration of any time period specified under Section 13.02(a).
- 13.03 No failure or delay on our part to exercise our rights in relation to an Event of Default will constitute a waiver by us of such rights.
- 13.04 If you become aware that an Event of Default has occurred or anticipates that an Event of Default is likely to occur, you must promptly notify us of the particulars of the Event of Default or anticipated Event of Default. A notice under this section as to the occurrence of an Event of Default must also specify the steps you propose to take to address, or prevent recurrence of, the Event of Default. A notice under this section as to an anticipated Event of Default must specify the steps you propose to take to prevent the occurrence of the anticipated Event of Default.

ARTICLE 14 - TERMINATION

- 14.01 In addition to our right to terminate this Agreement under Section 13.02(c) on the happening of an Event of Default, we may terminate this Agreement for any reason by giving at least 5 days' written notice of termination to you.
- 14.02 Unless Schedule B otherwise provides, if we terminate this Agreement under Section 14.01:
- (a) we must, within 30 days of such termination, pay you any unpaid portion of the fees and expenses described in Schedule B which corresponds with the portion of the Services that was completed to our satisfaction before termination of this Agreement; and
 - (b) you must, within 30 days of such termination, repay to us any paid portion of the fees and expenses described in Schedule B which corresponds with the portion of the Services that we have notified you in writing was not completed to our satisfaction before termination of this Agreement.
- 14.03 The payment by us of the amount described in Section 14.02(a) discharges us from all liability to make payments to the Contractor under this Agreement.

ARTICLE 15 - DISPUTE RESOLUTION

- 15.01 In the event of any dispute between the parties arising out of or in connection with this Agreement, the following dispute resolution process will apply unless the parties otherwise agree in writing:
- (a) the parties must initially attempt to resolve the dispute through collaborative negotiation;
 - (b) if the dispute is not resolved through collaborative negotiation within 15 Business Days of the dispute arising, the parties must then attempt to resolve the dispute through mediation under the rules of the British Columbia Mediator Roster Society; and
 - (c) if the dispute is not resolved through mediation within 30 Business Days of the commencement of mediation, the dispute must be referred to and finally resolved by arbitration under the *Commercial Arbitration Act*.

- 15.02 Unless the parties otherwise agree in writing, an arbitration or mediation under Section 15.01 will be held in Kelowna, British Columbia.
- 15.03 Unless the parties otherwise agree in writing or, in the case of an arbitration, the arbitrator otherwise orders, the parties must share equally the costs of a mediation or arbitration under Section 15.01 other than those costs relating to the production of expert evidence or representation by counsel.

ARTICLE 16 - GENERAL

- 16.01 Any notice or document contemplated by this Agreement, to be effective, must be in writing and delivered as follows:
- (a) hand delivered to the party or the specified party representative, in which case it will be deemed to be received on the day of its delivery; or
 - (b) by prepaid post to the party's address specified on the first page of this Agreement, in which case if mailed during any period when normal postal services prevail, it will be deemed to be received on the fifth Business Day after its mailing; or
 - (c) delivered by courier service to the party's address specified on the first page of this Agreement, in which case it will be deemed received on the fifth Business Day after collection by the courier service; or
 - (d) by facsimile or electronic transmission to the specified facsimile number or Email address on the first page of this Agreement, in which case it will be deemed to be received on the day of transmittal unless transmitted after the normal business hours of the addressee or on a day that is not a Business Day, in which cases it will be deemed to be received on the next following Business Day.
- 16.02 Either party may from time to time give notice to the other party of a substitute address, Email address, or fax number, which from the date such notice is given will supersede for purposes of Section 16.01 any previous address, Email address, or fax number specified for the party giving the notice.
- 16.03 You must not assign your rights under this Agreement without our prior written consent.
- 16.04 You must not subcontract any of your obligations under this Agreement without our prior written consent, excepting persons listed in Schedule A.
- 16.05 No subcontract, whether consented to or not, relieves you from any obligations under this Agreement. You must comply with the Subcontracting Schedule if attached to this Agreement. You must ensure that any person retained by you or any person retained by a person retained by you fully complies with this Agreement in performing the subcontracted obligations.
- 16.06 We may, for reasonable cause, object to the use of a proposed Subcontractor and require you to retain another qualified subcontractor.
- 16.07 A waiver of any term or breach of this Agreement is effective only if it is in writing and signed by, or on behalf of, the waiving party and is not a waiver of any other term or breach.
- 16.08 This Agreement and any modification of it constitute the entire Agreement between the parties as to performance of the Services.
- 16.09 Sections 4.08, 5.01 to 5.04, 5.07, 5.08, 7.01 to 7.05, 8.01 to 8.04, 9.01, 9.02, 10.01, 11.01, 11.02, 11.07, 12.01 to 12.04, 13.02, 13.03, 14.02, 14.03, 15.01 to 15.03, 16.01, 16.02, 16.09, and 16.11, any accrued but unpaid payment obligations, and any other sections of this Agreement (including schedules) which, by their terms or nature, are intended to survive the completion of the Services or termination of this Agreement, will continue in force indefinitely, even after this Agreement ends.
- 16.10 The schedules to this Agreement (including any appendices or other documents attached to, or incorporated by reference into, those schedules) are part of this Agreement.
- 16.11 In relation to the performance of your obligations under this Agreement, you are an independent contractor and not our:
- 16.11.1 employee or partner; or
 - 16.11.2 agent except as may be expressly provided for in this Agreement.
- You must not act or purport to act contrary to this section.

- 16.12 You must not do anything that would result in personnel hired or used by you or a Subcontractor in relation to providing the Services being considered our employees.
- 16.13 If one or more individuals are identified in the schedules as "Key Personnel", you must cause those individuals to perform the Services on your behalf and not remove or replace them, without our prior written approval. Any approved replacement is at your expense.
- 16.14 We must make available to you all information in our possession which we consider pertinent to the performance of the Services.
- 16.15 You must not provide any services to any person in circumstances which, in our reasonable opinion, could give rise to a conflict of interest between your duties to that person and your duties to us under this Agreement.
- 16.16 If there is a conflict among provisions of this Agreement, a provision in the body of this Agreement will prevail over any conflicting provision in, attached to, or incorporated by reference into a schedule, unless that conflicting provision expressly states otherwise and a provision in a schedule will prevail over any conflicting provision in a document attached to or incorporated by reference into a schedule, unless the schedule expressly states otherwise.
- 16.17 This Agreement does not operate as a permit, license, approval or other statutory authority which you may be required to obtain from the Province of BC or any of its agencies in order to provide the Services. Nothing in this Agreement is to be construed as interfering with, or fettering in any manner, the exercise by the Province or its agencies of any statutory, prerogative, executive or legislative power or duty.
- 16.18 If any provision of this Agreement or the application of it to any person or circumstance is invalid or unenforceable to any extent, the remainder of this Agreement and the application of such provision to any other person or circumstance will not be affected or impaired and will be valid and enforceable to the extent permitted by law.
- 16.19 Each party must perform the acts, execute and deliver the writings, and give the assurances as may be reasonably necessary to give full effect to this Agreement.
- 16.20 This Agreement is governed by, and is to be interpreted and construed in accordance with, the laws applicable in British Columbia.

ARTICLE 17 - INTERPRETATION

- 17.01 In this Agreement:
- (a) "we", "us", and "our" refer to the OBWB alone and never refer to the combination of the Contractor and the OBWB;
 - (b) the Contractor and the OBWB are referred to as "the parties" and each of them as a "party";
 - (c) "includes" and "including" are not intended to be limiting;
 - (d) unless the context otherwise requires, references to sections by number are to sections of this Agreement;
 - (e) "attached" means attached to this Agreement when used in relation to a schedule;
 - (f) unless otherwise specified, a reference to a statute by name means the statute of British Columbia by that name, as amended or replaced from time to time;
 - (g) the headings have been inserted for convenience of reference only and are not intended to describe, enlarge or restrict the scope or meaning of this Agreement or any provision of it;
 - (h) "person" includes an individual, partnership, corporation or legal entity of any nature; and
 - (i) unless the context otherwise requires, words expressed in the singular include the plural and *vice versa*.

ARTICLE 18 - EXECUTION AND DELIVERY

18.01 This Agreement may be entered into by a separate copy of this Agreement being executed by, or on behalf of, each party and that executed copy being delivered to the other party by a method provided for in Section 16.01 or any other method agreed to by the parties.

The Parties have executed this Agreement as follows:

SIGNED AND DELIVERED on behalf of the Okanagan Basin Water Board by an authorized representative of the OBWB	SIGNED AND DELIVERED by or on behalf of the Contractor (or by an authorized signatory of the Contractor if a corporation)
_____ (Authorized Signatory)	_____ (Contractor or Authorized Signatory)
_____ (PRINTED NAME)	_____ (PRINTED NAME of Contractor)
Dated this ____ day of _____, 20____	Dated this ____ day of _____, 20____

RFP# 2018-RFP-01

LIDAR and Aerial Image Acquisition for the Okanagan Valley Watershed

SCHEDULE "A" – The Services

This Schedule will be completed upon execution of the Contract.

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SCHEDULE "B" – FEES

This Schedule will be completed upon execution of the Contract.

SCHEDULE "C" – SUBCONTRACTING SCHEDULE

ARTICLE 1 GENERAL PROVISIONS

1.01 If the Contractor engages a Subcontractor, the Contractor shall not be relieved from the subcontracted obligations or any obligations under this Agreement.

1.02 The actions of any Subcontractor engaged to carry out any of the work shall be deemed to be the actions of the Contractor.

1.03 If the Contractor engages a Subcontractor to carry out any of the work, any provision in this Agreement requiring the Contractor to meet an obligation associated with the Subcontractor's work shall be deemed to mean the Contractor shall ensure the Subcontractor meets that obligation.

1.04 The OBWB may, for a reasonable cause, object to the use of an intended Subcontractor and require the Contractor to employ another qualified Subcontractor.

1.05 The Contractor acknowledges and agrees that the Subcontractor or any of the Subcontractors' directors, officers or members is not an Associated Person of the Contractor as that term is referenced in the tendering documents and as defined in the federal *Income Tax Act* or related Canada Revenue Agency's interpretation bulletins.

1.06 Nothing in this Agreement will create any direct or indirect contractual relationship between the OBWB and any Subcontractor or impose any obligation or liability upon the OBWB to any Subcontractor.

1.07 The Contractor must ensure all approved Subcontractors obtain WorkSafe BC coverage and comply with all conditions of the *Workers Compensation Act* and regulations thereunder and where general Worksafe BC coverage is not obtainable, the Contractor will ensure all Subcontractors obtain Personal Optional Protection under the *Workers' compensation Act*, and upon request must provide us with proof of such compliance.

1.08 The Contractor shall ensure that all its Subcontractors performing work under this Agreement carry insurance in the form and limits as specified in the insurance schedule, and upon request must provide us with proof of such compliance.

ARTICLE 2 INSPECTION BY THE CONTRACTOR

2.01 The Contractor is not entitled to subcontract any obligations with respect to inspection to the Subcontractor whose work is being inspected. Any inspection must be done by the Contractor, or by a different Subcontractor approved by the OBWB.

2.02 The Contractor shall inspect the work performed and/or each Payment Area or part thereof for the purposes of determining the quality of work.

2.03 The Contractor shall inspect the work as it is required at RFP, Part B – Requirements.

2.04 The Contractor shall provide the OBWB with a written statement of the work quality achieved, supported by inspection data and a map of the work area and/or Payment Area (or portions thereof).

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The OBWB may examine such portion or portions of the work performed and/or Payment Areas as it considers appropriate to verify the quality of the work.

2.05 If the OBWB determines the inspection carried out by the Contractor does not correctly indicate the quality of the work, the OBWB may require the Contractor to carry out additional inspection(s).

ARTICLE 3 APPROVED SUBCONTRACTORS

3.01 The Contractor acknowledges and agrees that only the following are approved by the OBWB to be Subcontractors:

- *To be completed upon execution of the Contract.*

3.02 There shall be no substitution for the Subcontractor(s) listed above without the prior consent of the OBWB.

SCHEDULE "D" – INSURANCE REQUIREMENTS

- a. Without restricting the generality of the indemnification provisions contained in the Agreement, the Contractor shall, at its own expense, provide and maintain, during the term of this Agreement, the following insurance coverage as fully specified in Paragraph 11 and any additional insurance which it is required by law to carry or which it considers necessary to cover risks not otherwise covered by insurance specified in this Schedule in its sole discretion.
- b. All such insurance described herein must be primary and not require the sharing of any loss by any insurer of the OBWB.
- c. Where a warranty period is required by the OBWB under this Agreement, the Contractor shall ensure that Products and Completed Operations coverage, as applicable, shall be in force for the duration of the warranty period.
- d. Insurance shall be placed with Insurers licensed to underwrite such insurance in Canada and in forms and amounts acceptable to the OBWB. All such insurance shall be at no expense to the OBWB. If the OBWB requires additional Insurance Coverage to be obtained by the Contractor, the additional expense of such additional insurance shall be borne by the OBWB.
- e. Notwithstanding Paragraph 6, the Contractor shall, prior to the commencement of services and before any payments are made under this Agreement, file with the Ministry Representative evidence of insurance coverage in the form of a completed Province of British Columbia Certificate of Insurance (Form FIN 173). When requested by the OBWB, the Contractor shall provide certified copies of required insurance policies.
- f. ICBC's Confirmation of Automobile Insurance Coverage, Form APV 47 shall be used as satisfactory evidence of Automobile Liability Insurance.
- g. The insurance policies, except for ICBC Automobile Liability Insurance, shall provide that the insurance shall not be cancelled or materially changed so as to affect the coverage provided under the Agreement, without the Insurer giving at least thirty (30) days prior written notice to the OBWB. Material change with respect to Professional Liability Insurance does not require the Insurer to give thirty (30) days prior written notice to the OBWB.
- h. Failure to provide the required insurance documentation shall result in termination of this Agreement.
- i. If the insurance policies expire prior to the end of the Agreement Term, the Contractor shall provide the ministry evidence of renewal or new policy meeting the requirements of the expired insurance in the form of a completed Province of British Columbia Certificate of Insurance and ICBC's Form APV 47, if applicable, at least ten (10) days prior to the expiry date of the policies listed in this Schedule.

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j. The Contractor shall ensure that all its subcontractors performing Services under this Agreement carry insurance in the form and limits specified in Paragraph 11.

k. The following forms of insurance and specified minimum limits are required:

- Commercial General Liability

Commercial General Liability insurance in an amount not less than \$2 million inclusive per occurrence against bodily injury, personal injury, and property damage and including liability assumed under the Agreement.

Such policy(s) of insurance shall include, but not be limited to:

- i) Products and Completed Operations Liability;
- ii) Owner's and Contractor's Protective Liability;
- iii) Contingent Employer's Liability;
- iv) Blanket Written Contractual Liability;
- v) Personal Injury Liability;
- vi) Non-Owned Automobile Liability;
- vii) Cross Liability;
- viii) Employees as Additional Insureds;

a) Broad Form Property Damage;
and where such further risk exists:

b) Forest Fire Fighting Expense Coverage in the amount of:

- \$1 million (activity taking place during fire season)
- \$500,000 (activity taking place outside of fire season)
- Not applicable (activity not taking place in forested areas or where the activity does not include potential of sparks from welders, chainsaws, or hot exhaust, etc.)

c) Sudden and Accidental Pollution endorsement on the Commercial General liability insurance policy with a limit of liability not less than the amount indicated below per occurrence insuring against bodily injury, property damage and cleanup expenses arising from new pollution conditions arising from the Contractor's performance of the Agreement, or if such endorsement is unavailable on the Commercial General Liability insurance policy, a Sudden and Accidental Pollution insurance policy insuring against same and with same limits of liability indicated below, and this insurance shall include the OBWB as an additional insured as stated below:

- \$250,000
- \$500,000
- \$1 million
- Not applicable

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The OBWB is to be added as an "Additional Insured" under this policy, as follows: "The Okanagan Basin Water Board and any of its employees, servants or agents".

- Automobile Liability

Where any licensed vehicles owned, leased, rented, or used in the performance of this Agreement, Automobile Liability insurance in an amount not less than \$2 million inclusive per occurrence must be provided for any such vehicle.

- Aviation Liability

Where any aircraft (including helicopters) operated or used in the performance of this Agreement, the Contractor will obtain and maintain, or will cause to be obtained and maintained and will provide evidence to the OBWB of a Subcontractor's compliance with this requirement, Aviation Liability Insurance insuring against bodily injury, property damage, and passenger liability, in an amount not less than the limits of liability imposed by any *Canadian Aviation Regulation* and in any event not less than a per occurrence combined single limit of:

1. \$3 million for aircraft up to 5 passenger seats, or
2. \$3 million plus \$1 million for each additional passenger seat for aircraft up to 10 passenger seats, or
3. \$10 million for aircraft over 10 passenger seats.

Such insurance shall include a cross liability clause.

The OBWB is to be added as an "Additional Insured" under this policy, as follows: "The Okanagan Basin Water Board and any of its employees, servants or agents".

Where applicable, such policy will also include coverage for aerial drift or misapplication of fertilizers or herbicide chemicals in an amount not less than \$50,000, per occurrence.

Where this Agreement is for air transportation services only, the requirement for Commercial General Liability insurance may be waived at the discretion of the OBWB.

- Professional Liability Insurance

Professional Liability Insurance in an amount not less than \$2 million inclusive per occurrence, which shall be in effect for at least 24 months from completion of all deliverables for the Services.

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SCHEDULE "E" Acknowledgment of Assignment of Copyright

I, _____, of _____,

(Name of Individual)

(Name of Firm/Company)

(the Contractor), for good and valuable consideration, payable pursuant to an Agreement dated _____ with the Okanagan Basin Water Board (the OBWB), do hereby acknowledge, confirm, and perfect the assignment to the OBWB all of my rights in the Copyright in the Produced Material described in the Agreement referred to above.

Executed at _____, this _____ day of _____, 20_____.

SIGNED AND DELIVERED by or on behalf of the Contractor
(or by an authorized signatory of the Contractor if a corporation)

(Signature of Contractor or Authorized Signatory)

(Printed Name of Contractor or Authorized Signatory)

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SCHEDULE "F" – Waiver of Moral Rights

I, _____, (check one) employee

(Name of Individual) sole proprietor

contractor

subcontractor

subcontractor's employee

of

(Name of Firm/Company)

and an author of the Produced Material, as that term is defined in the Contract in consideration of my employment, hereby waive, in favor of the Okanagan Basin Water Board, all my moral rights established under the *Copyright Act*, as amended from time to time, in the Produced Material. I further agree not to institute legal proceedings against the Okanagan Basin Water Board or the Province of British Columbia, or their servants, agents or employees with respect to these moral rights.

Executed at _____, this _____ day of _____, 20__.

SIGNED AND DELIVERED by or on behalf of
the individual waiving their moral rights:

(Signature of Individual Waiving Moral Rights)

(Printed Name of Individual Waiving Moral Rights)

Part D: Submission Forms



This Part D contains forms detailing the information that should be included in a Proposal, as detailed under Section 6 of Part B.

Part D Contents:

This Part D contains the following forms:

- Appendix A – Certification Form
- Appendix B – Pricing Form
- Appendix C – Methodology & Schedule Form
- Appendix D – Team Form
- Appendix E – Experience Form

APPENDIX A – CERTIFICATION FORM



Respondents must complete all details requested in this Appendix A – Certification Form and include this completed form in the Proposal, as detailed under Section 6.1 (Mandatory Criteria) of Part B. No changes to this form must be made, except for completing the requested information in the spaces provided.

1. Respondent Details:

Full Legal Name of Respondent:	
Other “Doing Business As” Names the Respondent Uses:	
Registered Address:	
Respondent Contact Person Name & Title:	
Contact Person Phone No.:	
Contact Person Email:	

2. Certification & Acknowledgement of RFP Process:

By signing this Appendix A – Certification Form, we the Respondent, certify and acknowledge the following:

- a. We have carefully read and examined this RFP document, including all Parts and Appendices, and have conducted such other investigations as were prudent and reasonable in preparing this Proposal. We are able to provide the Services detailed in Part A for the pricing submitted in this Proposal.
- b. We certify that the statements made in this Proposal are true and submitted in good faith.
- c. We acknowledge that the RFP process will be governed by the terms and conditions set out in Part B, and it is explicitly understood that this RFP process does not form a legally binding irrevocable bid process, commonly referred to as a ‘Contract A’ based bid process, and further that both the Respondent and the OBWB are free to cancel their participation in this RFP process at any time up until the execution of a written Contract.
- d. We certify that in relation to this RFP process, we have not engaged in any conduct which would constitute a conflict of interest and we understand that a conflict of interest would include the following situations:
 - i. The Respondent has an unfair advantage or engages in conduct which may give it an unfair advantage;
 - ii. The Respondent has had access to confidential information of the OBWB which is not available to other Respondents to this RFP.

- iii. The Respondent has influence over an employee of the OBWB who is a decision-maker involved in this RFP process, which could reasonably be perceived as giving the Respondent an unfair advantage or preferential treatment.

3. Confirmation of Addenda Received:

We confirm receipt of the following addenda that were issued by the OBWB up until the Closing Date and Time:

Addendum #	Issued On Date:

4. Certification of Professional Qualifications

We certify that we are qualified professionals with respect to flood mapping hydrology, hydraulics and mapping. We have the necessary experience in flood mapping to undertake this project. All Deliverables are required to be sealed by the following lead professional from a designated professional society from the Province of British Columbia

Name of designated lead professional

Signature and seal of lead professional

Date

5. Certification Signature:

The Respondent hereby certifies that the above statements are true and that the individual signing below has the authority to bind the Respondent:

Signature of Respondent Representative

Name of Respondent Representative

Title of Respondent Representative

Date

APPENDIX B – PRICING FORM



Respondents must complete the requested pricing in all tables in this Appendix B – Pricing Form and include the completed form in the Proposal, as detailed under Section 6.2 (Scored Criteria) of Part B. No changes to this form must be made, except for completing the requested information in the spaces provided.

Respondents are reminded that the Fixed Lump Sum Prices entered into section 2 must not exceed the OBWB's maximum budget amounts detailed in Part A.

In addition to completing this Pricing Form, Respondent should also provide a task fee schedule breakdown, as detailed under section 3 of this this Appendix B.

1. Pricing Basis:

Pricing entered into the table of section 2 below, shall be on the following basis:

- a. All Prices are in Canadian funds, are inclusive of all applicable duties and taxes, except the GST which shall be itemized separately where indicated.
- b. The Total Lump Sum Contract Price is all-inclusive and includes for all labour, materials, supplies, travel, overheads, profit, insurance, site visits, expenses, disbursements, and all other costs and fees necessary to deliver the Services outlined in Part A.
- c. Prices shall be firm for the entire Contract term.

2. Fixed Lump Sum Prices for the Services:

For completion of all Services detailed in Part A, the Consultant will be compensated the Fixed Lump Sum Prices as follows:

SERVICES ITEM	FIXED LUMP SUM PRICE
Phase 1 Deliverables, as detailed in Part A	\$
Phase 2 Deliverables (all other Services), as detailed in Part A	\$
Any Other Costs (please specify if any):	
TOTAL FIXED LUMP SUM CONTRACT PRICE:	\$
GST:	\$

3. Task Fee Schedule Breakdown

Proposals should include a Task Fee Schedule Breakdown provided with this Appendix B. This Task Fee Schedule Breakdown can be in a format of the Respondent's choosing, but should detail the following in order for the District to be able to evaluate the level of effort included as per the Scored Criteria (section 6.2 of Part B).

Task Fee Schedule Breakdown should provide the following detail:

- Detail of personnel, hours and the hourly rates for all Services and work requirements identified in Part A – the Services, and section 2 of this Appendix B.
- Detail of all expenses and disbursements for all Services and work requirements identified in Part A – the Services, and section 2 of this Appendix B.
- The total of the Task Fee Schedule Breakdown for the Services must match the Total Fixed Lump Sum Contract Price submitted in section 2 of this Appendix B.

4. Payment Terms:

4.1. Subject to the holdback detailed in 4.2, the Contractor may deliver an invoice to the OBWB, in respect of the immediately preceding month, setting out a portion of the Fixed Lump Sum Contract Price claimed for Services performed in that preceding month, in accordance with the hours and expenses breakdown in the Contractor's Proposal. The OBWB shall, to the extent the OBWB is satisfied the fees are for Services satisfactorily performed by the Contractor, pay the Contractor the fees claimed in any invoice delivered in accordance with this section, within 30 days after delivery of such invoice to the District.

4.2. For both Phase 1 and Phase 2, the OBWB will holdback 20% from every invoice payment as performance security until the Contractor submits all final deliverables and the District confirms that all Services and deliverables have been completed as per the Contract. Once this milestone is achieved, the District will pay the holdback amount within 30 calendar days.

APPENDIX C – METHODOLOGY & SCHEDULE FORM



Proposals should include, in a format of your choice, the details requested in this Appendix C – Methodology & Schedule Form, as detailed under Section 6.2 (Scored Criteria) of Part B. This section of your Proposal must be labelled as “Appendix C – Methodology & Schedule Form”.

Evaluation Factors:

Factors to be considered during the evaluation in assessing suitability of methodology and schedule will include:

- Quality and suitability of the approach, method, work and deliverables proposed in order to meet the scope of work requirements detailed in Part A.
- Demonstration that the Respondent understands the work required and factors to be considered during the Services;
- Suitability of the schedule proposed; plus
- Level of effort and hours proposed for the Services (as per the Task Fee Schedule submitted under Appendix B).

1. Methodology:

Please provide, on a separate sheet and in a format of your choosing, details of the steps, approach, methodology, work and deliverables your company and sub-contractors (if applicable) proposes in order to deliver the Services and meet the objectives and content detailed in Part A. This should include the following details:

- Introduction: Provide a brief statement of your firm's understanding of the project and services, and of your capability to complete it successfully.
- Background: Provide a description of your firm's understanding of the background to the project.
- Methods: Describe in sufficient detail your approach and the specific steps to be completed to deliver this project successfully.
- Project Management Plan: Describe your approach to managing the project.
- Project Deliverables: Describe your project deliverables

2. Schedule:

For the Services detailed in Part A, please provide a schedule, preferably in a gantt chart format, which details the following for key milestones, deliverables and activities:

- a. Start and Completion dates for Phases 1 and 2
- b. Work activity sequence/breakdown, showing predecessors / successors
- c. # of work days

APPENDIX D – TEAM FORM



Proposals should include, in a format of your choice, the details requested in this Appendix D – Team Form, as detailed under Section 6.2 (Scored Criteria) of Part B. This section of your Proposal must be labelled as “Appendix D – Team Form”.

Evaluation Factors:

Factors to be considered during the evaluation in assessing suitability of the team will include:

- Experience and expertise of the proposed team;
- Experience of Project Manager and Team Members on similar projects; and
- Respondent’s completion of the Qualified Professional Assurance Statement

1. Team:

Please provide, in a format similar to the table below, details of the team members from your company, and from Sub-Contractors (if applicable), that will deliver the Services outlined in Part A. Please also attach a resume and/or bio for each named team member which provides an overview of their education and experience relevant to delivering the Services.

Team Member Name:	Position:	Employee or Subcontractor:

Notes:

- Team Members working on the Services cannot be changed, except for reasons which are beyond the reasonable control of the Contractor (e.g. staff termination of employment or staff sickness).
- Only Subcontractors identified in this Appendix D submission may be used in delivering the Services.

2. Project Manager & Team Experience:

Please provide, in a format of your choice, a list of similar projects and clients that the proposed Project Manager and other project team members have completed work for in the past 5 years.

APPENDIX D – EXPERIENCE FORM



Proposals should include, in a format of your choice, the details requested in this Appendix D – Experience Form, as detailed under Section 6.2 (Scored Criteria) of Part B. Respondents should provide details on 3 projects completed in the last 5 years which are the most relevant and demonstrate experience performing hydrology to support flood mapping projects. Respondents should note that OBWB may contact the client to provide a reference on the experience listed (including amending scoring in the evaluation based on the client’s feedback).

Evaluation Factors:

Factors to be considered during the evaluation in assessing suitability of experience will include:

- Suitability of experience with similar work and projects – specifically performing hydrology to support flood mapping projects; and
- Feedback from Client references, if OBWB chooses to contact references.

Project Experience #1

Client Name:	
Project Name:	
Date Respondent Started Work on Project:	
Date Respondent Finished Work on Project:	
Brief Description of Project and Services Respondent Performed:	
Value of Respondent Contract on this Project (excluding GST):	

Project Experience #2

Client Name:	
Project Name:	
Date Respondent Started Work on Project:	
Date Respondent Finished Work on Project:	
Brief Description of Project and Services Respondent Performed:	
Value of Respondent Contract on this Project (excluding GST):	

Project Experience #3

Client Name:	
Project Name:	
Date Respondent Started Work on Project:	
Date Respondent Finished Work on Project:	
Brief Description of Project and Services Respondent Performed:	
Value of Respondent Contract on this Project (excluding GST):	

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EXHIBITS:

The following Exhibits are attached:

- Exhibit A – Map of Okanagan Mainstem Lakes and Okanagan River Reaches of Interest
- Exhibit B – Historical Okanagan Water Modeling And Considerations
- Exhibit C – APEGBC Best Practice Guidelines for Flood Mapping
- Exhibit D – APEGBC Flood Mapping Assurance Statement

Exhibit A: Map of Okanagan mainstem lakes and Okanagan river reaches of interest for the development of the flood maps

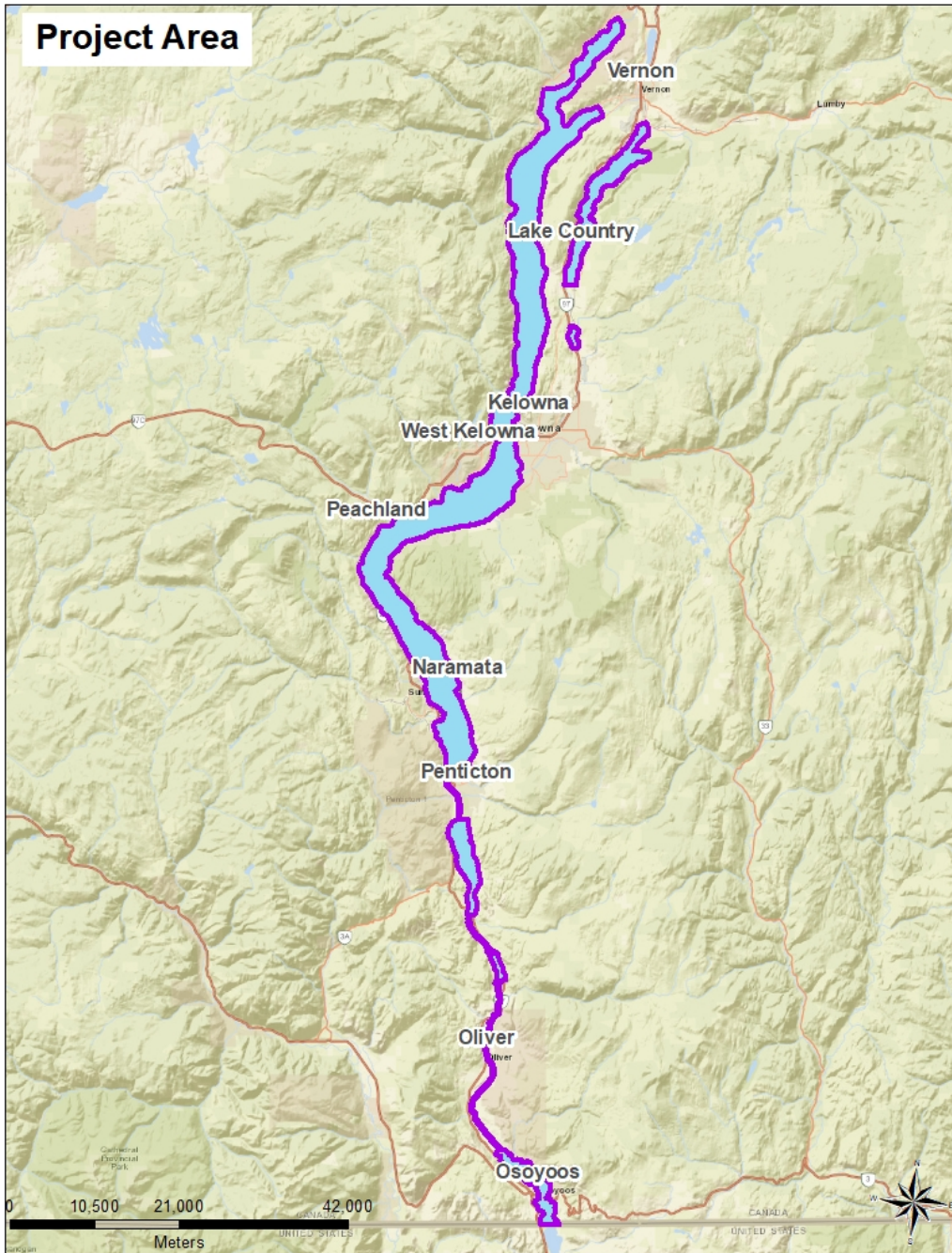


Exhibit B: Historical Okanagan Water Modeling and Considerations

Summary of Okanagan Water Supply and Demand Project

The most extensive recent hydrologic models in the past decade have been related to the Okanagan Water Supply and Demand Project. This 6-year project was completed in 2010 that identified knowledge gaps relating to Okanagan water supply and demand (Phase 1), and delivered a series of scientific and modeling studies (Phase 2) that updated work last completed in the early 1970s. The Phase 2 program included developing models to simulate water supply and water demand in the basin, and the effects of water use on streamflow.

Phase 2 of the OWSDP was completed between 2007 and 2010, and included scientific studies, mapping, including development of the Okanagan Basin Hydrology Model (OBHM), to examine future water conditions and estimate the influence of climate change and human water use on streamflow. The summary report is available here: <https://www.obwb.ca/wsd/about/project-reports>

The OBHM is a physically-based, deterministic, spatially disaggregated hydrologic model that simulates physical processes and creates estimates of runoff from each 500m x 500m grid cell at a temporal scale of one hour. The model's internal calculations are spatially integrated at the outlet of each tributary watershed and temporally integrated to weekly outputs. The OBHM was developed on the MikeShe modeling platform. The OBHM is driven by a 500 m by 500 m climate grid.

A limited range of future climate scenarios was examined in OWSDP Phase 2. This limitation was partially overcome in Phase 3, in which several relevant General Circulation Models (GCMs) were used to examine a wide range of future climate and land use conditions. However, Phase 3 was still limited in scope - new models and better GHG scenarios are now available. The Phase 3 Climate Scenarios report is available here: <https://www.obwb.ca/wsd/climate-change-scenarios/phase-3-scenarios>.

Relevant OWSDP work completed since 2010:

Data:

- Additional hydrometric stations have been installed.
- An Integrated Hydrologic Database System (IHDS) has been developed using the Aquarius software – this system now houses all the hydrometric data being collected in the Okanagan.

Studies:

- Okanagan Hydrologic Connectivity Model Summary Report (2013): <https://www.obwb.ca/wsd/about/project-reports>
- Streamflow Naturalization project (ongoing with a completion date of November 2018) – a project to use best available information to determine the naturalized flows and the actual flows (i.e. flows affected by human management) of drainages into the Okanagan Mainstem system.

Summary of Okanagan Fish and Water Management Tools (FWMT)

FWMT is a web-based environmental decision support system which provides a set of real-time fish and water management tools to support Okanagan Lake Regulation System (OLRS) decision makers in improving the balance of water management decisions on the affecting both human and natural systems along the OLRS. The tool has been used routinely by Provincial water managers and First

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Nations, federal and provincial fish managers to inform weekly water release decisions from Okanagan Lake since 2003.

FWMT is comprised of:

- a coupled set of four biophysical models of critical relationships between climate, fish and water,
- a fish water management guidelines and rules model which predicts consequences of release decisions for fish and other water users,
- a network of stations providing near real-time observations of lake levels, river flows, precipitation and snowpacks, and
- an internet-accessible, graphical user interface query tool.

The model integrates real-time data, freshet inflow volume forecasts, proposed Penticton Dam releases (entered in weekly time steps) and the biophysical process models to predict in-season lake levels and river flows and the impacts of the levels and flows on a variety of competing economic, environmental and social objectives at several locations from Okanagan Lake to Osoyoos Lake. These objectives include: the protection of lakeshore and riverside properties and infrastructure from flooding; minimization of flood; minimization of flood and drought impacts on fisheries values; maintenance of urban and agricultural water supplies; and maintenance of navigable water and recreational activities.

In addition to the real-time use of FWMT, the tool can also be used explore the impacts of water management decisions using both historical data and synthetic future data sets to assess the complex interactions among inflows, climate, etc. and the attainment of management objectives.

- **Additional Reference:** “A decision support system for improving “fish friendly” flow compliance in the regulated Okanagan Lake and River System of British Columbia” (K. Hyatt, C. Alexander, M. Stockwell. Canadian Water Resources Journal – Feb. 2015. Link: <http://dx.doi.org/10.1080/07011784.2014.985510>)

Summary of Okanagan Forecasting Models

- There is an overview of Kalamalka and Okanagan Lake forecasting models available in section 4.1.2 of the “Review of 2017 Flood Response: Okanagan Lake Regulation System and Nicola Dam. The report is available here: https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/integrated-flood-hazard-mgmt/2017_flood_response_report_final.pdf

Other Reports/Studies

- Regional District of Central Okanagan Regional Floodplain Management Plan – Phase 1. <https://www.regionaldistrict.com/your-services/planning-section/projects#FloodPlan>
- Design Brief on the Floodplain Mapping Study Okanagan River (1992) – a good overview of some of the challenges associated with regulating water levels, and the thinking behind the elevations used in the 1992 floodplain mapping for the Okanagan mainstem. http://a100.gov.bc.ca/appsdata/acat/documents/r2133/OkanaganRiver2_1104878874996_03d56c73d9834f43b1b8ce5361dd6fa3.pdf

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Osoyoos Lake

Main webpage for Osoyoos Lake reports: http://ijc.org/en /iolbc/Board_Reports

- An assessment of the most suitable water levels for Osoyoos Lake (Study <http://ijc.org/files/tinymce/uploaded/documents/reportsAndPublications/Study%201%20Final%2020110203.pdf>)
- Climate Change and its implications for managing water levels in Osoyoos Lake: Summary Report
- <http://ijc.org/files/tinymce/uploaded/documents/reportsAndPublications/IJC%20Study%206%20SUMMARY%2020110414.pdf>
- Osoyoos Lake Plan of Study – Study 6: Climate Change and its Implications for Managing Water Levels in Osoyoos Lake (April 2011) <http://ijc.org/files/tinymce/uploaded/documents/reportsAndPublications/IJC%20Study%206%20FINAL%2020110414.pdf>
- Osoyoos Lake Plan of Study Study 7 (Part 1): Demonstration of factors that govern Osoyoos Lake Levels during high water periods (March 2010) – See also attachment at: http://ijc.org/en /iolbc/Board_Reports

Other Specific Hydrologic Considerations for Individual Mainstem Lakes and the Okanagan River

Ellison Lake:

Key WSC Stations:

- 08NM067 Ellison Lake near Winfield 1968-1980 (Level)
- 08NM162 Vernon Creek at Inlet to Ellison Lake 1970-1974 (Flow)
- 08NM182 Vernon Creek at Outlet of Ellison Lake 1971-1974 (Flow) (DA = 138 km²)

There is no control structure on the outlet of Ellison Lake.

Kalamalka & Wood Lakes:

Key WSC Stations:

- 08NM143 Kalamalka Lake at Vernon Pumphouse 1967-current (Level)
- 08NM065 Vernon Creek at Outlet of Kalamalka Lake 1927-current (Flow)

Kalamalka & Wood Lakes are connected by a short low gradient unregulated section of channel in Oyama. Therefore, for management and operational purposes the two lakes are considered to rise and fall as a single body of water.

A small, low head control structure (reconstructed in the early 1980's) located at the north end of Kalamalka Lake is used to regulate releases from the lake. Each winter/spring an annual freshet management plan for Kalamalka Lake levels and releases is developed based on the target lake

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elevations and downstream Vernon Creek flows as set out in the Okanagan Basin Study, the real-time lake level and the monthly freshet inflow volume forecasts to Kalamalka Lake which are provided by the BC River Forecast Centre.

During flood years the operators may choose to freeboard the gates on control structure in an attempt to increase the volume of water being discharged from the lake. However, due to the limited conveyance capacity of the initial 150 metres of Vernon Creek it may not be possible achieve the desired discharge until the lake level rises sufficiently.

It should be noted that although Kalamalka releases are tributary to Okanagan Lake, the only downstream flooding impacts taken into consideration when managing releases from Kalamalka Lake during flood years are those impacts along Vernon Creek through Vernon. Due to the much larger size and drainage area of Okanagan Lake the flood related impacts of specific operational decisions for Kalamalka Lake have been considered inconsequential on Okanagan Lake.

Okanagan Lake:

Key WSC Stations:

- 08NM071 Okanagan Lake at Penticton 1920-1974 (level)
- 08NM083 Okanagan Lake at Kelowna 1943-current (level)
- 08NM050 Okanagan River at Penticton 1921-current (flow & level)

Although records of the level of Okanagan Lake and the releases from the lake are available dating back to the early 1920's it is important to remember that Okanagan Lake and most of the larger tributary streams have been regulated to varying degrees throughout this entire period of record. When conducting frequency analysis it is generally assumed that the hydrological conditions have remained relatively stable during the period of record. While this assumption may be valid for natural streams it may not be valid for a system as heavily regulated as the Okanagan mainstem.

Okanagan Lake itself has been regulated since the first experimental dam was constructed at the outlet in Penticton in 1914. Since then there have been a series of dams constructed to regulate the lake including the present structure which was constructed as part of the larger Okanagan Lake Regulation System (OLRS) in the early 1950's. Unfortunately, little is known about the specifics of the details of operation of the structures prior to construction of the present dam. Even the operation of the current dam and OLRS has evolved since its construction. Factors which have contributed to this evolution include:

- several decades of operational experience which has increased understanding of the system's physical operational limitations and opportunities;
- advancements in data collection and analysis, and forecasting techniques;
- greater understanding and refinement of the OLRS management goals and objectives; and
- a heightened awareness of the potential impacts of a changing climate on future water management operations.

Okanagan Lake is the largest lake on the Okanagan mainstem, with a surface area approximately four times that of all the other mainstem lakes combined. Additionally, almost three quarters of the Okanagan Basin in Canada is tributary to Okanagan Lake. Therefore, Okanagan Lake Dam operations are the key focus of regulation on the mainstem during both flood and drought years.

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Experience has found that in flood years the maximum level Okanagan Lake is a function not only of dam operations but more importantly the volume, time and shape of the freshet inflow hydrograph. Beginning early in each calendar year water managers use monthly forecasts of the upcoming freshet inflow volume to Okanagan Lake to determine a pattern for the releases over the next several months to meet the competing management objectives (i.e., minimizing flood risk, water supply, environmental requirements, etc.) both around Okanagan Lake and through the different downstream sections of the Okanagan Lake Regulation System (OLRS).

During years with lower inflow forecast the system is operated to capture and store sufficient water in Okanagan Lake to meet water supply needs over the remainder of the year. Conversely in years with above normal inflow forecasts the lake will be lowered to mitigate freshet flood risks along the OLRs. As the winter and spring unfold and forecasts are updated the managers will periodically adjust the operating plan in response to any changes to the inflow volume forecasts or extreme weather conditions. However, it is important to recognize that the ability to respond to changing conditions later in the season is limited by both the remaining time available to respond to the changes and limitations on the rate at which water can be released for the Okanagan Lake. This ability to respond to changing conditions is particularly challenging in years with above normal precipitation during freshet and/or when there is an early rapid melting of the snowpack. Under these conditions the inflow rate to the lake for a number of weeks can be several times higher than the rate at which water can be released in rapidly rising lake levels.

Although the construction of the OLRs has enabled significantly higher releases from Okanagan Lake at lower lake levels than was previously the case, there are still limitations as to how quickly water can be let out of the lake. The Penticton section of the engineered channel was designed and constructed to pass 60 m³/s (equivalent to 1.5 cm/day on the lake) although operator experience has found that the channel can safely convey up to 75 m³/s (1.9 cm/day) without damaging the channel through Penticton. However, operationally the actual releases in Penticton may need to be held much lower than the design flow to minimize the risk of producing damaging flow conditions in the lower reaches of the OLRs, particularly during periods of high downstream tributary inflows. For example, in mid May 2018 the observed difference between the releases in Penticton and the peak daily flows observed near Oliver exceeded 65 m³/s. As a result a decision was made to reduce releases in Penticton to less than 35 m³/s for several days to reduce the risk of downstream flood damage.

Skaha Lake:

Key WSC Stations:

- 08NM084 Skaha Lake at Okanagan Falls 1943-current (level)
- 08NM002 Okanagan River at Okanagan Falls 1915-current (flow & level)

The construction of the OLRs and the dam on Skaha Lake has significantly changed the relationship between the maximum level of Skaha Lake and outflows from the lake by enabling managers to make greater releases at lower lake levels than would have been previously possible. The OLRs has also enabled higher discharges from Okanagan Lake which in turn has increased the maximum daily inflows to Skaha Lake and other locations along the Okanagan River downstream of Penticton.

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Since completion of the OLRs the highest levels on Skaha Lake have occurred during periods of high inflows and corresponding high discharges, during which times the dam gates have been fully opened (i.e., freeboarding) in an effort to limit the maximum lake level.

Vaseux Lake:

Key WSC Stations:

- 08NM243 Vaseux Lake near the Outlet 1991-current (level)
- 08NM002 Okanagan River at Okanagan Falls 1915-current (flow & level)
- 08NM247 Okanagan River below McIntyre Dam 2012-current (flow & level)

McIntyre Dam is a water supply dam located approximately 1.8 km downstream of the natural outlet of Vaseux Lake. During periods of high runoff the dam's gates are typically fully opened at which point and the dam no longer controls the level of the lake. When this occurs the outflow from and the level of Vaseux Lake are functions of the inflow to the lake and the hydraulic capacity of a natural sill at the outlet of the lake and the 1.8 km reach of Okanagan River between the lake outlet and McIntyre Dam.

Okanagan River from Okanagan Falls to Osoyoos Lake:

Determination of design flows and corresponding water levels in the various reaches of Okanagan River, both channelized and natural, will require hydrologic and hydraulic modelling of the individual reaches. This modelling will need to take into the consideration the distribution of the various tributary contribution to the river flows and the hydraulic impacts of the 17 concrete drop structures and various rock riffles which have been constructed in the Okanagan River.

Osoyoos Lake:

Osoyoos Lake levels are regulated by Zosel Dam near Oroville, Washington which is owned and operated by the Washington State Department of Ecology in accordance with the applicable Orders of the International Joint Commission with oversight by the International Osoyoos Lake Board of Control.

During periods of anticipated or actual high levels of Osoyoos Lake the gates on Zosel Dam are required to be fully opened so that the dam does not cause higher lake levels. During these periods the maximum lake levels are a function of a combination of inflows to the lake, channel capacity and a significant backwater influence due to elevated downstream water levels which restrict, or in extreme cases reverse, the outflow from Osoyoos Lake. The backwater effect is triggered when the natural discharges in Similkameen, which joins the Okanagan River a short distanced downstream of Zosel Dam, exceed approximately 10,000 cfs.

This phenomenon, and the resultant impact on the flood levels of Osoyoos Lake, is the subject of a current independent study by the US Army Corps of Engineers. The results of this study may be available, but proponents should not assume this in the bidding process. An earlier study is available: Osoyoos Lake Plan of Study Study 7 (Part 1): Demonstration of factors that govern Osoyoos Lake Levels during high water periods (March 2010) – See attachment at: <http://ijc.org/en /iolbc/Board Reports>

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Okanagan Mainstem Flood Mapping

Exhibit C: APEGBC Best Practice Guidelines for Flood Mapping

The APEGBC Best Practice Guidelines for Flood Mapping can be found here:

<https://www.egbc.ca/getmedia/8748e1cf-3a80-458d-8f73-94d6460f310f/APEGBC-Guidelines-for-Flood-Mapping-in-BC.pdf.aspx> . The Roles and Responsibilities for QPs are given below.

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Okanagan Mainstem Flood Mapping

Exhibit D: APEGBC Flood Mapping Assurance Statement