

**RETURN BIDS TO:**  
**RETOURNER LES SOUMISSIONS À:**  
**Regional Manager/Real Property  
Contracting/PWGSC**  
**Ontario Region, Tendering Office**  
**12th Floor, 4900 Yonge Street**  
**Toronto, Ontario**  
**M2N 6A6**  
**Ontario**

**REQUEST FOR PROPOSAL**  
**DEMANDE DE PROPOSITION**

**Proposal To: Public Works and Government  
Services Canada**

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

**Proposition aux: Travaux Publics et Services  
Gouvernementaux Canada**

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

**Comments - Commentaires**

<b>Title - Sujet</b> Dam Safety Reviews - Lower Rice	
<b>Solicitation No. - N° de l'invitation</b> EQ754-133441/A	<b>Date</b> 2013-05-23
<b>Client Reference No. - N° de référence du client</b> R.059226.001	
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$PWL-023-1858	
<b>File No. - N° de dossier</b> PWL-2-35144 (023)	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2013-07-04</b>	
<b>Time Zone</b> <b>Fuseau horaire</b> Eastern Daylight Saving Time EDT	
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Lau, Karen	<b>Buyer Id - Id de l'acheteur</b> pwl023
<b>Telephone No. - N° de téléphone</b> (416) 512-5297 ( )	<b>FAX No. - N° de FAX</b> (416) 512-5862
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> Frankford Dam Meyers Dam Hagues Reach Dam Ranney Falls Dam Trent-Severn Waterway Peterborough Municipality, ON	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

**Vendor/Firm Name and Address**  
**Raison sociale et adresse du**  
**fournisseur/de l'entrepreneur**

<b>Delivery Required - Livraison exigée</b>	<b>Delivery Offered - Livraison proposée</b>
<b>Vendor/Firm Name and Address</b> <b>Raison sociale et adresse du fournisseur/de l'entrepreneur</b>	
<b>Telephone No. - N° de téléphone</b> <b>Facsimile No. - N° de télécopieur</b>	
<b>Name and title of person authorized to sign on behalf of Vendor/Firm</b> <b>(type or print)</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/</b> <b>de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

**Issuing Office - Bureau de distribution**  
**Regional Manager/Real Property Contracting/PWGSC**  
**Ontario Region, Tendering Office**  
**12th Floor, 4900 Yonge Street**  
**Toronto, Ontario**  
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**Ontario**

## **REQUEST FOR PROPOSAL (RFP)**

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## **SUPPLEMENTARY INSTRUCTIONS TO PROPONENTS (SI)**

### **SI1 INTRODUCTION**

1. Public Works and Government Services Canada (PWGSC) intends to retain an individual consulting firm or joint venture to provide the professional services for the project as set out in this Request for Proposal (RFP).
2. This is a single phase selection process. The nature of the requirement and the anticipated limited number of response by the industry leads PWGSC to believe that this approach will not unduly force a large number of firms to expend an overall unreasonable amount of effort in response to PWGSC.
3. Proponents responding to this RFP are requested to submit a full and complete proposal. The proposal will cover not only the qualifications, experience and organization of the proposed Consultant Team, but also the detailed approach to the work, and the pricing and terms offered. A combination of the technical and price of services submissions will constitute the proposal.

### **SI2 PROPOSAL DOCUMENTS**

1. All instructions, general terms, conditions and clauses identified in the RFP by number, date and title, are hereby incorporated by reference into and form part of this solicitation and any resultant contract.

All instructions, general terms, conditions and clauses identified in the RFP by number, date and title, are set out in the Standard Acquisition Clauses and Conditions Manual ( <https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual> ) issued by Public Works and Government Services Canada.

2. The following are the proposal documents:
  - (a) Supplementary Instructions to Proponents (SI);  
R1410T (2013-04-25), General Instructions to Proponents (GI);  
Submission Requirements and Evaluation (SRE);
  - (b) the general terms, conditions and clauses, as amended, identified in the Agreement clause;
  - (c) Project Brief;
  - (d) any amendment to the solicitation document issued prior to the date set for receipt of proposals; and
  - (e) the proposal, Declaration/Certifications Form and Price Proposal Form.

3. Submission of a proposal constitutes acknowledgment that the Proponent has read and agrees to be bound by these documents.

### SI3 QUESTIONS OR REQUEST FOR CLARIFICATION

Questions or requests for clarification during the solicitation period must be submitted in writing to the Contracting Authority named on the RFP - Page 1 as early as possible. Enquiries should be received no later than seven (7) working days prior to the closing date identified on the front page of the Request for Proposal. Enquiries received after that date may not be answered prior to the closing date of the solicitation.

### SI4 CANADA'S TRADE AGREEMENTS

This procurement is subject to the provisions of the North American Free Trade Agreement (NAFTA), the World Trade Organization - Agreement on Government Procurement (WTO-AGP), **the Canada-Colombia Free Trade Agreement (FTA) and the Canada-Peru FTA.**

### SI5 CODE OF CONDUCT AND CERTIFICATIONS - RELATED DOCUMENTATION

By submitting a bid, the Proponent certifies, for himself and its affiliates are in compliance with the Code of Conduct and Certifications clause of the R1410T (2013-01-28) General Instructions to Proponents (GI). The related documentation therein required will help Canada in confirming that the certifications are true.

### SI6 - WEB SITES

The connection to some of the Web sites in the RFP is established by the use of hyperlinks. The following is a list of the addresses of the Web sites:

Employment Equity Act

<http://laws.justice.gc.ca/en/E-5.401/index.html>

Federal Contractors Program (FCP)

<http://www.hrsdc.gc.ca/eng/labour/equality/fcp/index.shtml>

Certificate of Commitment to Implement Employment Equity form LAB 1168

<http://www.servicecanada.gc.ca/cgi-bin/search/eforms/index.cgi?app=profile&form=lab1168&dept=sc&lang=e>

Code of Conduct for Procurement

<http://www.tpsgc-pwgsc.gc.ca/app-acq/cndt-cndct/contexte-context-eng.html>

**Consent to a Criminal Record Verification (PWGSC-TPSGC 229 form)**

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**<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaires-forms-eng.html>**

Lobbying Act

<http://laws.justice.gc.ca/en/L-12.4/?noCookie>

Contracts Canada

<https://buyandsell.gc.ca/>

Supplier Registration Information

<https://srisupplier.contractsCanada.gc.ca>

Consultant Performance Evaluation Report Form

<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/2913-1.pdf>

Canadian economic sanctions

<http://www.international.gc.ca/sanctions/index.aspx?lang=eng>

National Joint Council (NJC) Travel Directive

<http://www.njc-cnm.gc.ca/directive/travel-voyage/index-eng.php>

## TERMS, CONDITIONS AND CLAUSES

### AGREEMENT

1. The Consultant understands and agrees that upon acceptance of the offer by Canada, a binding Agreement shall be formed between Canada and the Consultant and the documents forming the Agreement shall be the following:

- (a) the Front Page and this Agreement clause;
- (b) the General Terms, Conditions and Clauses, as amended, identified as:
  - R1210D (2013-04-25), GC1 - General Provisions
  - R1215D (2011-05-16), GC2 - Administration of the Contract
  - R1220D (2011-05-16), GC3 - Consultant Services
  - R1225D (2012-07-16), GC4 - Intellectual Property
  - R1230D (2012-07-16), GC5 - Terms of Payment
  - R1235D (2011-05-16), GC6 - Changes
  - R1240D (2011-05-16), GC7 - Taking the Services Out of the Consultant's Hands, Suspension or Termination
  - R1245D (2012-07-16), GC8 - Dispute Resolution
  - R1250D (2012-07-16), GC9 - Indemnification and Insurance
  - Supplementary Conditions
  - Agreement Particulars
- (c) Project Brief;
- (d) any amendment to the solicitation document incorporated in the Agreement before the date of the Agreement;
- (e) the proposal, the Declaration/Certifications Form and the Price Proposal Form.

2. The documents identified above by title, number and date are hereby incorporated by reference into and form part of this Agreement, as though expressly set out herein, subject to any other express terms and conditions herein contained.

The documents identified above by title, number and date are set out in the Standard Acquisition Clauses and Conditions (SACC) Manual, issued by Public Works and Government Services Canada (PWGSC). The SACC Manual is available on the PWGSC Web site:

<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>

3. If there is a discrepancy between the wording of any documents that appear on the following list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) any amendment or variation in the Agreement that is made in accordance with the terms and conditions of the Agreement;
- (b) any amendment to the solicitation document incorporated in the Agreement before the date of the Agreement;
- (c) this Agreement clause;

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- (d) Supplementary Conditions;
  - (e) General Terms, Conditions and Clauses;
  - (f) Agreement Particulars;
  - (g) Project Brief;
  - (h) the proposal.

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## **SUPPLEMENTARY CONDITIONS (SC)**

There are no supplementary conditions which apply to the Agreement.



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## **AGREEMENT PARTICULARS**

The Agreement Particulars will be issued at time of award of contract and will identify the fee to be paid to the Consultant for the services determined in the Price Proposal Form.

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## **PROJECT BRIEF**

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## PROJECT BRIEF

The Project Brief is divided into two sections:

- **Description of Project (PD)**
- **Description of Services**
  - Project Administration (PA)
  - Required Services (RS)

### PD 1 PROJECT INFORMATION

<b>PD 1.1 Project Title:</b>	Dam Safety Reviews: Lower Rice Region, Trent-Severn Waterway, Parks Canada.
<b>PD 1.2 Location of the Project:</b>	Trent-Severn Waterway, Peterborough Municipality, Ontario.
<b>PD 1.3 Project Number:</b>	R.059226.001
<b>PD 1.4 Department:</b>	Public Works and Government Services Canada (PWGSC)
<b>PD 1.5 Departmental Representative:</b>	Shawn Fillion, PWGSC, Project Manager
<b>PD 1.6 Client Representatives:</b>	Bob Nash, Parks Canada Agency, Project Leader  Brett McLellan, Parks Canada Agency, Trent-Severn Waterway Representative  André Roy, Parks Canada Agency, Dam Safety Program Specialist

### PD 2 PROJECT DESCRIPTION

#### PD 2.1 Purpose

- .1 PWGSC is looking at retaining the services of a Consultant to undertake a Dam Safety Review (DSR) of four sites in the Lower Rice Region, which consists of Frankford Dam 6 & Lock 6, Meyers Dam 8 & Lock 9, Hagues Reach Dam 9 & Lock 10 and Ranney Falls Dam 10 & Locks 11 & 12. The reviews are to be undertaken on the concrete dams, earthworks and locks. The locks, dams and earthworks on the Trent-Severn Waterway are owned and operated by the Ontario Waterways Unit of Parks Canada Agency.

#### PD 2.2 Description

- .1 Dam Safety Reviews are to be undertaken in accordance with the Directive for Dam Safety Program of Parks Canada Dams and Water-Retaining Structures, and the Dam Safety Guidelines (2007) of the Canadian Dam Association (CDA).
- .2 Given the broad scope of the dam safety reviews to be conducted under this contract, the Consultant will be required to draw upon their hydro-technical, hydraulic, and specific dam safety review experience to successfully complete the work.

## **PD 3 PROJECT INTRODUCTION AND BACKGROUND**

### **PD 3.1 Project Introduction**

#### **.1 General**

- (1) The Ontario Waterways Unit of the Parks Canada Agency owns and operates the Trent-Severn Waterway (TSW), which is a 386 km waterway that extends from the Bay of Quinte on Lake Ontario at the City of Quinte West (Trenton) to Port Severn in the north, located to the south of Georgian Bay (Lake Huron).
- (2) The waterway traverses two major watersheds, the Trent River Watershed and the Severn River Watershed.
- (3) The Trent River basin which drains more than 12,000 km<sup>2</sup>, encompasses some 218 lakes in the Haliburton Highlands region, 47 of which are directly controlled by the TSW. Water from these lakes flows south along either the Gull River, Burnt River, Nogies Creek, Mississagua River, Eels Creek or Jack Creek systems into the Kawartha Lakes. The Kawarthas drain down the Otonabee River into Rice Lake and on to Trenton on Lake Ontario via the Trent River. The Crowe River drains the eastern-most lakes in the Trent Watershed. Lake Scugog drains northward from the Oak Ridges Moraine to Sturgeon Lake.
- (4) The neighboring Severn River basin drains an area just over 6,000 km<sup>2</sup>. Included in this watershed are the Canal Lake - Talbot River system, the Holland River, the Lake Simcoe - Couchiching basin, the Black River and the channels of the Severn River below the hamlet of Washago.
- (5) The water levels and flows on the waterway are managed by 143 dams which are owned and operated by the Ontario Waterways Unit of the Parks Canada Agency (PCA). Of the 143 dams, 100 are located on the Trent River Watershed, including 47 dams and water retaining structures in the Haliburton sub-watershed to control various reservoir lakes and rivers feeding the waterway. The remaining 43 dams and water retaining structures associated to the waterway are located in the Severn River Watershed.
- (6) The locks and dams under this Project brief are operated by the Southern Sector of the Trent-Severn Waterway, which is located in the Town of Campbellford, ON.
- (7) Navigation Season is from mid-May to mid-October.

### **PD 3.2 Project Background**

## .1 Frankford Dam 6 and Lock 6



MAP - Frankford Dam & Lock 6 - PART I.pdf  
6 - PART II.pdf



MAP - Frankford Dam & Lock 6

### (1) Location:

- (i) Frankford Dam 6 and Lock 6 are located in the Town of Frankford, ON. It can be accessed via Mill St. (Regional Road 5) by exiting the River Drive bridge south into the municipal park and travelling north to the dam or south to the lock. The lock can also be accessed from Regional Road 4.

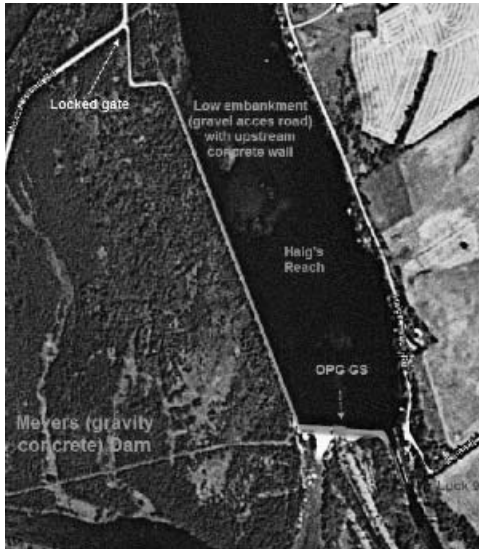
### (2) Main Dam:

- (i) The concrete gravity dam (as shown in pink) was built in 1912 and was rehabilitated in 1994. The concrete dam has a total length of approximately 128 m and consists of two 7.62 m wide sluices (east), a 25 m wide spillway and eight 7.62 m wide sluices (west). All sluices are equipped with vertical steel roller gates. Each gate is operated by an electric motor with a backup hand crank, which drives two drum hoists. Gain and gate heaters are also installed at each sluice. A portable gasoline driven hydraulic motor, that drives the hydraulic system, is available as a backup in the event of a power failure. A maintenance gain is located directly upstream of each gate and tracks are in place on the operating deck for a travelling log lifter to install stop logs. The dam has a total height of approximately 7.3m (top of downstream apron to top of deck) and retains a reservoir height of approximately 5.9m.
- (ii) The left abutment includes a 13 m long concrete retaining wall with an earth embankment on the downstream side.

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- (iii) The concrete dam is a regulating dam, which is operated as required to maintain the navigation water levels on the Waterway, provide water control of the watershed and water levels required for power generation.
- (3) Lock:
- (i) The lock (as shown in red) is a concrete gravity structure with stacked-timber gates and was built in 1912. The lock was built within earth embankments which project above the surrounding land on both sides. The gates are operated manually with a push bar – rack and pinion system. The filling and discharge valves are wagon (vertical) type. Valves 1 & 3 are operated hydraulically and valves 2 & 4 are operated manually. Valves and rails 1 & 3 were refurbished in fall 2008.
- (ii) The railing system was upgraded to meet NBC standards along the stairways from the lower approach docks to the lock deck and along wingwalls. There are no railings along the edges of the lock chamber.
- (iii) The lock is a single chamber with the following dimensions:
- a) Chamber quoin to quoin: 53.3 m long x 10 m wide
- b) Upper sill to coping height: 3.45 m
- c) Lower sill to coping height: 7.56 m
- (4) Embankments:
- (i) Right dyke (west side, as shown in green) consists of a 250 m long earth embankment with a concrete core wall, from Sill's Island Generating Station to the right abutment of the dam.
- (ii) The canal right embankment (west side, as shown in yellow) is 1160 m long and consists of an earth embankment with concrete liners from the guard gate to the River Drive Bridge. From the River Drive Bridge to the lock, the embankment consists of an earth embankment with a concrete core wall.
- (iii) The canal left embankment (east side, as shown in green) is 425 m long and consists of an earth embankment with a concrete core wall and extends from the lock to the River Drive Bridge.
- (5) Dam C at Sill's Island:
- (i) Dam C is located immediately upstream of the Generating Station at Sill's Island, and has an overall length of 53 m.
- (ii) The dam, which consists of six 7.16 m wide sluices and a concrete deck, is no longer operated and all stoplogs and winches have been removed. Therefore, it is not used to regulate water levels.
- (iii) The dam is currently used as a pedestrian bridge by visitors to access Sill's Island.
- (iv) The steel railing system on the pedestrian deck consists of a mid and top rail only, and does not meet NBC standards.

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- (v) Note that a Dam Safety Review is not required for this dam, however, this dam is to be included in the Public Safety Review of the site.
- (6) Guard Gate:
- (i) The entrance to the canal is equipped with a gate that rotates into position. It is not known if the gate was intended for emergency use or simply maintenance. The guard gate structure consists of 35 m long concrete retaining wall structures on each side of the canal with earth embankments on the downstream side.
- (7) Known concerns and/or issues are:
- (i) The guard gate is not currently operational.
- (ii) The read-out on the vertical steel roller gate No.4 is missing.
- (iii) Staff have noted that a section of the west canal earth embankment, near the dam, was eroded along the toe during a high flow event in 1985. The dyke structure was not breached.
- (iv) Record drawings show a repair to the east embankment following a washout on April 5, 1917. The washout appears to have been approximately 50 m long and at this location, both embankments and the bottom of the canal have 150mm thick concrete revetment.
- (v) The right dyke, between the dam and the Sills Island Generating Station, has vegetation covering the crest and downstream slope, which may affect accessibility for inspection. Note that Parks Canada will clear the vegetation prior to inspection.
- (8) The dam and lock structure serve to provide navigation along the Waterway. The water level is maintained at full navigational depth for the whole year to support power generation.
- (9) Based on the Parks Canada Directive for Dam Safety Program of Parks Canada Dams and Water-Retaining Structures, the dam has been assigned a preliminary Dam Classification of High A.
- (10) Aerial photos of the site and drawings of the dam and lock construction are included in the appendices.
- (11) Required Services: A full DSR as outlined in this Project Brief is required for the lock, dam and embankments.
- (12) In addition to the work described in the REQUIRED SERVICE section of the Project Brief, the following items also need to be considered:
- (i) The above mentioned work will require the consultant also interview the management and operation staff of the Sill's Island Generating Station.

## .2 Meyers Dam 8 and Lock 9



Map - Meyers Dam & Lock 9.pdf

Meyers Dam Lock09B.jpg

### (1) Location:

- (i) Meyers dam 8 and lock 9 are located immediately east of Meyersburg, ON. The lock can be accessed on the east bank by taking Haigs Reach Road or Second Line East via County Road 8. The dam can be accessed on the west bank by taking an access road (equipped with a locked gate) off Meyers Island Road via County Road 30.

### (2) Main Dam:

- (i) The concrete gravity dam (as shown in pink) was built in 1913 and rehabilitated in 1990. The concrete dam has a total length of 85 m and consists of three stop log sluices at the west end, seven gate controlled sluices and one stop log sluice at the east end (all sluices are 6.096 m wide). All gated sluices are equipped with vertical steel roller gates. Each gate is operated by an electric motor with a backup hand crank, which drives two drum hoists. Gain and gate heaters are also installed at each sluice. A portable gasoline driven hydraulic motor, that drives the hydraulic system, is available as a backup in the event of a power failure. A maintenance gain is located directly upstream of each gate and tracks are in place on the operating deck for a travelling log lifter to install stop logs. The dam has a total height of approximately 8.1 m (top of downstream apron to top of deck) and retains a reservoir height of approximately 7.0 m.



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- (ii) The concrete dam is a regulating dam, which is operated as required to maintain the navigation water levels on the Waterway, provide water control of the watershed and water levels required for power generation.
  - (iii) The generating station (as shown in orange) consists of three sluices.
- (3) Lock:
- (i) The lock (as shown in red) is a concrete gravity structure with stacked timber gates and was built in 1913. The gates are operated manually with a push bar – rack and pinion system. The filling and discharge valve 1 is guillotine type and valve 3 is wagon (vertical) type, which are hydraulically operated. The filling and discharge valves 2 & 4 are wagon (vertical) type valves, which are manually operated. Valve 1 was installed in the fall of 2010, valve 2 ladder was replaced in fall of 2010 and valve 3 rails and valve were refurbished in fall of 2009.
  - (ii) The railing system was upgraded to meet NBC standards along the stairways from the lower approach docks to the lock deck and along wingwalls. There are no railings along the edges of the lock chamber.
  - (iii) The lock is a single chamber with the following dimensions:
    - a) Chamber quoin to quoin: 54 m long x 10 m wide
    - b) Upper sill to coping height: 3.45 m
    - c) Lower sill to coping height: 8.33 m
- (4) Embankments:
- (i) The right embankment (west side, as shown in green) consists of a 1000 m long concrete retaining wall with an earth embankment and roadway on the downstream side.
  - (ii) The left retaining wall (east side, as shown in pink) extends 100 m from the generating station to the west upper lock approach wall and consists of a concrete retaining wall with earth embankment.
  - (iii) The right upper lock approach wall (west side, as shown in red) is 60 m long and consists of a concrete retaining wall with earth embankment.
  - (iv) The left upper lock approach wall (east side, as shown in red) is approximately 70 m long and consists of a concrete retaining wall with earth embankment.
  - (v) There is a draw-off culvert that extends from the north end of the upper west approach wall to the lower west approach wall of the Percy Reach Canal. The culvert is controlled by valves at the north end.
- (5) Known concerns and/or issues are:
- (i) An area of settlement, approximately 150mm deep over a few metres, is visible on the right dyke roadway.
  - (ii) The downstream slope of the right dyke is vegetated and the toe is not visible. Parks Canada staff will clear the vegetation prior to inspection.

- (iii) Lock staff believe that seepage from the lock chamber is the source of flow from the drains in the lower approach walls.
- (6) The dam and lock structure serve to provide navigation along the Waterway. The water level is maintained at full navigational depth for the whole year to support power generation.
- (7) Based on the Parks Canada Directive for Dam Safety Program of Parks Canada Dams and Water-Retaining Structures, the dam has been assigned a preliminary Dam Classification of High B.
- (8) Aerial photos of the site and drawings of the dam and lock construction are included in the appendices.
- (9) Required Services: A full DSR as outlined in this Project Brief is required for the lock, dam and embankments.
- (10) In addition to the work described in the REQUIRED SERVICE section of the Project Brief, the following items also need to be considered:
  - (i) The above mentioned work will require the consultant also interview the management and operation staff of the generating station.

### .3 Hagues Reach Dam 9 and Lock 10



Map - Hagues Reach Dam.pdf  
1-57-46 PM.jpg

Hagues Reach D9 2006-12-15

- (1) Location:
  - (i) Hagues Reach dam 9 and lock 10 are located approximately one kilometer south of Campbellford, ON. The lock can be accessed on the east bank by

taking Haigs Reach Road via Fourth Line Road and County Road 8. The dam can be accessed on the west bank by taking an access road (equipped with a locked gate) off the 5<sup>th</sup> Line West via County Road 30.

(2) Main Dam:

- (i) The concrete gravity dam (as shown in pink) was built in 1915 and rehabilitated in 1973. The concrete dam has a total length of 117 m and the outflow has been divided between two channels by a 'river' wall immediately downstream of the dam. The west channel (back channel) bypasses Meyers Dam and joins the Trent River downstream of Meyers Dam. The east channel outflow, the hydro dam outflow and the lock, all discharge into the main channel, upstream of Meyers Dam. The west outflow consists of two 15 m wide radial-arm gates and two 6.096 m wide stop log sluices. The east outflow consists of seven 6.096 m wide stop log sluices. Each radial-arm gate is operated by an electric motor and includes gain and gate heaters at each sluice. A portable gasoline driven hydraulic motor, that drives the hydraulic system, is available as a backup in the event of a power failure. A maintenance gain is located directly upstream of each gate and tracks are in place on the operating deck for a travelling log lifter to install stop logs. An Atlas Polar self-powered log lifter is on site to operate the nine stop log sluices. There are manual travelling winches on site as backup to the Atlas Polar log lifter. The dam has a total height of approximately 10.44 m (top of downstream apron to top of deck) and retains a reservoir height of approximately 9.0 m.
- (ii) The concrete dam is a regulating dam, which is operated as required to maintain the navigation water levels on the Waterway, provide water control of the watershed and water levels required for power generation.
- (iii) The generating station (as shown in orange) consists of 3 sluices.

(3) Lock:

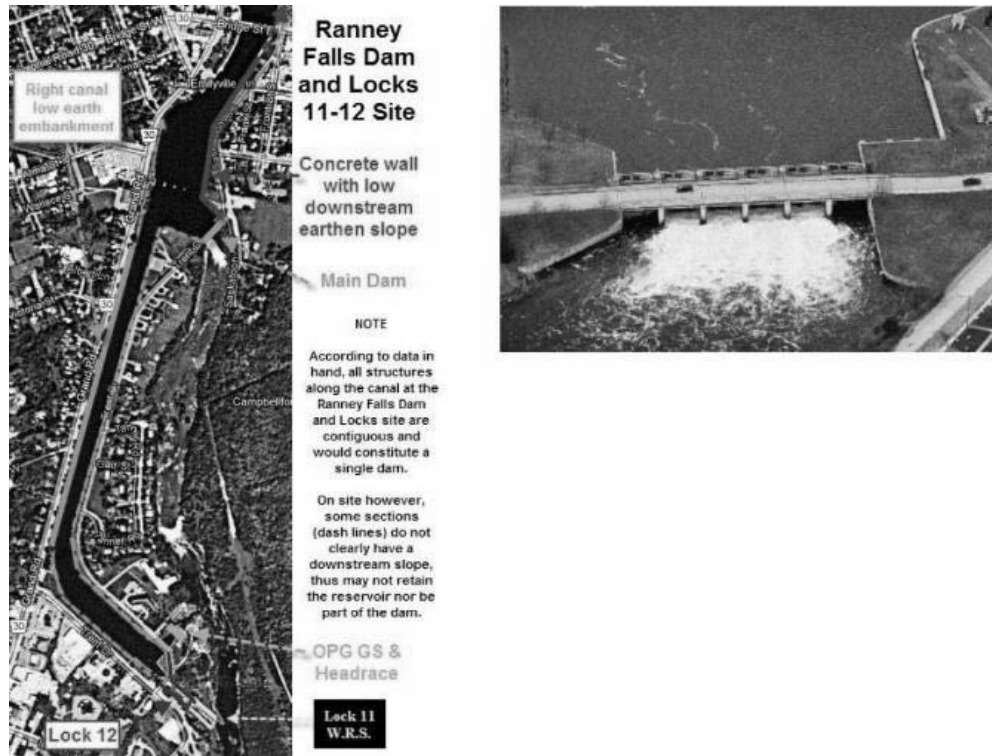
- (i) The lock (as shown in red) is a concrete gravity structure with stacked timber gates and was built in 1913. Gates 1 & 2 (1970's) and gates 3 & 4 (fall of 2005) are operated hydraulically. The filling and discharge valves 1 & 3 are wagon (vertical) type valves, which are hydraulically operated and were automated in the fall of 2005. The filling and discharge valves 2 & 4 are wagon (vertical) type valves, which are manually operated.
- (ii) The railing system was upgraded to meet NBC standards along the stairways from the lower approach docks to the lock deck and along wingwalls. There are also railings on both sides of the lock chamber.
- (iii) The lock is a single chamber with the following dimensions:
  - a) Chamber quoin to quoin: 53.3 m long x 10 m wide
  - b) Upper sill to coping height: 3.45 m
  - c) Lower sill to coping height: 10.77 m

(4) Embankments:

- 
- (i) The right wingwall (west side, as shown in pink) is a 63 m long concrete retaining wall with an earth embankment and roadway on the downstream side.
  - (ii) The right embankment (west side, as shown in pink) from the main dam to Hagues generating station is 280 m long.
  - (iii) The right embankment (west side, as shown in green) from the generating station to the lock is 870 m long. The green line in the photo follows the access road which forms part of the low and wide embankment. The canal is in a cut from the generating station to slightly more than half way to the lock and a low and wide embankment (represented by the green line) forms the remainder of the canal.
  - (iv) The upper right lock approach wall (west side, as shown in red) is a 70 m long concrete retaining wall with earth embankment on downstream side.
  - (v) The left upper lock approach wall (east side, as shown in red) is approximately 150 m long and consists of a concrete retaining wall with earth embankment on the downstream side.
- (5) Known concerns and/or issues are:
- (i) The right dyke from the dam to the generating station has two areas of leakage. There is an area of settlement of 150mm adjacent to the concrete shore wall and a substantial flow of water downstream of the dyke.
  - (ii) The right dyke is covered with low density vegetation which restricts access for investigation. There is no vehicle access to the embankment from the dam to the generating station. Parks Canada staff will clear the vegetation prior to inspection.
  - (iii) The lock area has seepage and ground settlement in many areas on both sides of the lock chamber. There is a persistent flow along the toe of the left embankment and the right embankment is marshy over a large area with significant seepage. Lock staff advise that the seepage of water from the lock varies with the water level in the lock chamber.
  - (iv) The lock control building has cracks at the windows and corners which indicates differential settlement.
- (6) The dam and lock structure serve to provide navigation along the Waterway. The water level is maintained at full navigational depth for the whole year to support power generation.
- (7) Based on the Parks Canada Directive for Dam Safety Program of Parks Canada Dams and Water-Retaining Structures, the dam has been assigned a preliminary Dam Classification of High A.
- (8) Aerial photos of the site and drawings of the dam and lock construction are included in the appendices.
- (9) Required Services: A full DSR as outlined in this Project Brief is required for the lock, dam and embankments.

- (10) In addition to the work described in the REQUIRED SERVICE section of the Project Brief, the following items also need to be considered:
- (i) The above mentioned work will require the consultant also interview the management and operation staff of the generating station.

#### .4 Ranney Falls Dam 10 and Locks 11 & 12



Map - Ranney Falls Dam & Lock 11-12.pdf  
2006-12-15\_1.jpg

Ranney Falls D10

- (1) Location:
  - (i) Ranney Falls Dam 10 and Locks 11 & 12 are located in the town of Campbellford, ON. The site can be accessed on the west side by taking Trent Drive from Regional Road 30 and on the east side by taking Saskatoon Avenue and then Trent Drive from Regional Road 8.
- (2) Main Dam:
  - (i) The concrete gravity dam (as shown in pink) was built in 1925 and rehabilitated in 1980. The concrete dam has a total length of 70 m and consists of six, 10 m wide, gate controlled sluices. The gates are vertical steel roller gates and each gate is operated by an electric motor with a backup hand crank, which drives two drum hoists. Gain and gate heaters are also installed at each sluice. A portable gasoline driven hydraulic motor, that drives the hydraulic system, is available as a backup in the event of a power failure. A maintenance gain is located directly upstream of each gate and tracks are in place on the operating deck for a travelling log lifter to install stop logs. The dam has a total height of approximately 10.82 m (top of downstream apron to top of deck) and retains a reservoir height of approximately 9.15 m.

- (ii) The concrete dam is a regulating dam, which is operated as required to maintain the navigation water levels on the Waterway, provide water control of the watershed and water levels required for power generation.
  - (iii) The generating station (as shown in orange) consists of 5 sluices.
- (3) Lock:
- (i) Locks 11 and 12 (as shown in red and yellow) are concrete gravity structures built in 1910 and last rehabilitated in 2004. The upper gates are stacked timber and the intermediate and lower gates are steel. All gates and valves are hydraulically operated. The filling and discharge valves are cylindrical (bell) type valves.
  - (ii) The railing system was upgraded to meet NBC standards along the stairways from the lower approach docks to the lock deck and to the intermediate lock deck and along wingwalls. There are also railings on both sides of the lock chambers.
  - (iii) The lock is a double chamber, with each chamber having the following dimensions:
    - a) Chamber quoin to quoin: 53.3 m long x 10 m wide
    - b) Upper sill to coping height: 3.45 m
    - c) Intermediate sill to coping height: 10.77 m
    - d) Lower sill to coping height: 10.77 m
- (4) Embankments:
- (i) The right embankment (west side, as shown in green), from the bridge at Regional Road 30 to the lock, is 2100 m long. From the bridge, for 350 m, there is a concrete retaining wall with the earth behind the wall at or above the coping of the wall. From the end of the concrete retaining wall to the lock approach wall is 1600 m of earth embankment and the ground level behind the embankment gradually slopes below the canal level.
  - (ii) The upper right lock approach concrete gravity retaining wall (west side, as shown in green) is approximately 170 m long and the earth beyond is level with the coping of the wall.
  - (iii) The left upper lock approach concrete gravity retaining wall (east side, as shown in red) is approximately 170 m long and extends to the generating station. The earth beyond is at the same level as the coping for approximately 15 m and then slopes down to the river below.
  - (iv) The left dyke (east side, as shown in green) stretches for 1130 m from the generating station to the main dam and consists of an earth embankment. The roadway, that parallels the embankment, is at the same elevation or higher. The grade then gradually slopes down to the level of the Trent River.
  - (v) The left concrete gravity retaining wall (east side, as shown in purple), from the dam to the bridge at Regional Road 30, is 460 m long with low downstream

earth slope. The base of the wall includes a box culvert incorporated into the wall or a separate 18" or 24" diameter concrete culvert, for most of it's length, with provision for local runoff.

- (vi) Several culverts pass beneath the river to drain the natural depression of the area, west of the right dyke.
- (5) Known concerns and/or issues are:
  - (i) During a recent rainfall event, the right dyke of the canal was overtopped with minor erosion to the crest. The area was repaired and a toe drain was added to prevent further erosion if overtopping occurs in a future event.
  - (ii) The earth dykes on the right bank of the canal have some areas of local settlement.
  - (iii) The some of the seal tubes for the vertical steel roller gates on the dam are missing.
- (6) The dam and lock structure serve to provide navigation along the Waterway. The water level is maintained at full navigational depth for the whole year to support power generation.
- (7) Based on the Parks Canada Directive for Dam Safety Program of Parks Canada Dams and Water-Retaining Structures, the dam has been assigned a preliminary Dam Classification of High B.
- (8) Aerial photos of the site and drawings of the dam and lock construction are included in the appendices.
- (9) Required Services: A full DSR as outlined in this Project Brief is required for the lock, dam and embankments.
- (10) In addition to the work described in the REQUIRED SERVICE section of the Project Brief, the following items also need to be considered:
  - (i) The above mentioned work will require the consultant also interview the management and operation staff of the generating station.

### **PD 3.3 Hydro-Technical Study**

- .1 In support of the ongoing Dam Safety Reviews, a Hydro-meteorological Conditions Study and Flood Flows Estimate Study has been completed for the Trent River Watershed. The studies were undertaken in accordance with the Directive for Dam Safety Program of Parks Canada Dams and Water-Retaining Structures and the Canadian Dam Association 2007 Dam Safety Guidelines. The following reports are being made available to the selected Consultant to assist in estimating the flood flows at the dams:
  - (1) The Hydrometeorological Conditions Study contains the hydrometrological condition data to calculate the spring and summer-fall Probable Maximum Flood. The data includes the spring and summer-fall Probable Maximum Precipitation (PMP), the 100 year snow pack and the 100 year spring rainfall and critical temperature scenario leading to critical snow melt.



- (2) The Flood Flow Estimate Study contains statistical peak flood flows and spring and summer-fall PMF at eight nodes within the Trent River Watershed Trent.
- (3) The Book of Maps contains drainage area, lake and reservoir areas and hypsometric curves for the sub-basins composing the Trent River Watershed.
- (4) These reports are to be considered as CONFIDENTIAL and are not be used or shared by the Consultant for any purpose other than for this contract, without prior approval from PWGSC. Copies of the reports are to be returned to PWGSC upon completion of the present study.

#### **PD 4 DESIGN CODES, REGULATIONS and REFERENCES**

PD 4.1 The standards, codes and regulations to be used for the design and construction shall be the latest edition of the following (including all amendments, supplements and revisions thereto):

- .1 Dam Safety Guidelines 2007, from the Canadian Dam Association, ISBN 978-0-7726-5802-9;
- .2 Guidelines for Public Safety around Dams (2011), from the Canadian Dam Association.
- .3 Canadian Dam Association Technical Bulletins;
- .4 Parks Canada Directive for Dam Safety Program of Parks Canada Dams and Water-Retaining Structures;
- .5 National Building Code of Canada (NBCC);
- .6 Provincial Occupational Health and Safety Regulations based on the Occupational Health & Safety Act (OOHS); and
- .7 Canada Labor Code (including latest revisions of all regulations)

PD 4.2 In addition to the above mentioned documents, the Consultant shall make use of the following reference documents for his analysis:

- .1 United States Department of the Interior: Bureau of Reclamation (USSR) "A Procedure for Estimating Loss of Life Caused by Dam Failure" (DSO-99-06) - for the calculation of the loss of life for the dam classification exercise;
- .2 Engineering Guidelines for the Evaluation of Hydropower Projects, Chapter 2 - Selecting and Accommodating Inflow Design Floods for Dams, FERC (Federal Energy Regulatory Commission) - 1993, - for the development of assumptions for the dam breach analysis;
- .3 Canadian Electricity Association Technologies Inc. (CEATI) 2003- "Static Ice Loads on Hydroelectric Structures - Summary Report, Ice Load Design Guide, and Ice Load Prediction Computer Program".
- .4 River & Stream Systems: Flooding Hazard Limit, Technical Guide from Ontario Ministry of natural Resources, 2002.

PD 4.3 In the event of any conflicts or discrepancies between the Dam Safety Guidelines 2007 and Parks Canada Directive for Dam Safety Program of Parks Canada Dams and Water-Retaining Structures, the Parks Canada Directive will take precedence.

PD 4.4 The Consultant has the option of consulting other regulations, standards, codes and references as deemed necessary to complete the work under this Project Brief.

## **PD 5 REVIEW ENGINEER AND CONSULTANT TEAM**

PD 5.1 The Dam Safety Review needs to be headed by a professional engineer, registered in the Province of Ontario, supported by a multidisciplinary team with background in design, construction, performance analysis and operation of dams.

PD 5.2 The lead engineer appointed by the consulting firm on this project will assume the responsibility of the Review Engineer, and as such will be responsible for the final content of the Dam Safety Review.

PD 5.3 The Consultant team for this project must be capable of providing the following services:

- .1 Project Manager/Project Lead;
- .2 Structural engineering;
- .3 Civil engineering;
- .4 Electrical Engineering;
- .5 Mechanical engineering;
- .6 Dam safety engineering;
- .7 Hydrology engineering;
- .8 Hydraulics engineering;
- .9 Geotechnical engineering;
- .10 Safety and operation specialist;
- .11 Public safety Specialist.

PD 5.4 In addition to the above, depending of the result of the dam classification review, a seismology specialist may be required to evaluate the earthquake parameters.

PD 5.5 The lead engineer assigned to this project needs to be co-located with the majority of the Consulting team carrying out the work under this Project Brief.

## **PD 6 CONSULTANT CONTRACT APPROACH**

**PD 6.1 The following Required Services (RS) are the overall Consultant Services which are required to deliver this project.**

- .1 DAM SAFETY REVIEW
- .2 GEOTECHNICAL INVESTIGATION PROGRAM

## **PD 7 SCHEDULE**

PD 7.1 Deliver the project to be ready for use in accordance with the project milestone listing identified below.

PD 7.2 Completion dates shown are relative to the award date:

<u>Stage</u>	<u>Time from Award Date</u>
Award of Consultant Contract:	baseline
- Dam Safety Review	
- Investigation Report	20 weeks
- DRAFT Dam Safety Review Reports	14 months
- Final Dam Safety Review Report	16 months

PD 7.3 Prepare a detailed network diagram in accordance with the above milestone listing for review as part of the deliverables identified in the Required Services (RS) section.

## **PD 8 DOCUMENT CONFIDENTIALITY**

PD 8.1 All documents provided by Parks Canada and PWGSC for the purpose of this PROJECT BRIEF are to be considered CONFIDENTIAL and are not be used or shared by the Consultant for any purpose other than the work under this PROJECT BRIEF without prior approval from PWGSC.

PD 8.2 DRAFT and FINAL reports, together with any other associated notes, preliminary reports, e-mails etc. are to be considered as CONFIDENTIAL and are not be used or shared by the Consultant for any purpose other than for the work under this PROJECT BRIEF.

## **PD 9 EXISTING DRAWING AND DOCUMENTATION**

### **PD 9.1 Existing Documentation - Available for all Proponents**

The existing drawings and documents provided for this project are to be treated as reference material only. PWGSC and Parks Canada cannot ensure their completeness and accuracy. As such the Consultant is responsible to review and confirm all information and inform PWGSC of any discrepancies. These drawings and documents are available in English only.

#### **.1 Existing Studies:**

- (1) Trent River Watershed Hydro-Technical Study and Dam 1 Safety Review: Phase II - Hydro-Technical Study - Hydrometeorological Conditions Study Report, May 2011, AECOM;
- (2) Trent River Watershed Hydro-Technical Study and Dam 1 Safety Review: Phase II - Hydro-Technical Study - Flood Flows Estimation Study Report, May 2011, AECOM;
- (3) Trent River Watershed Hydro-Technical Study, Sub-Basins Book of Maps and Physical Parameters, May 2011, AECOM;

(4) Trent-Severn Water Management Study - Water Management Program, May 2007 Ecoplans Limited;

.2 Existing Drawings: (provided as pdf or tif files)

(1) Frankford Lock 6 & Dam 6

- (i) "Trent Canal - Rice Lake Division, Section No. 2, Dam No. 6" T11-280.07 (1907)
- (ii) "Trent Canal - Rice Lake Division, Section No. 2, Lock No. 6" T20-231.02 (1907)
- (iii) "Trent Canal - Rice Lake Division, Section No. 2, Dam No. 6, Steel Reinforcement in Stoplog Platform & Footbridge" T11-280.03 (1908)
- (iv) "Trent Canal - Rice Lake Division, Section No. 2, Plan & Sections Showing Washout in Canal Bank at STA. 407+50, Frankford, Ont." T22-356.01 (1917)
- (v) "Trent Canal - Section No. 2 O.R.L. Div., Plan Showing Supply Sluices to Proposed Power House Above Lock No. 6" T11-280.01 (1922)
- (vi) "Trent Canal - Section No. 2 O.R.L. Div., Plan Showing Supply Sluices at Head of Canal for Proposed Power House Above Lock No. 6" T11-280.02 (1922)
- (vii) "Trent Canal - Rice Lake Division, Section No. 2, Dam No. 6, As Constructed" T11-280.04
- (viii) "Trent Canal - Rice Lake Division, Section No. 2, Lay-out Plan of Lock & Dam No. 6, As Constructed" T20-231.06a, T20-231.06b, T20-231.06c, T20-231.06d
- (ix) "Trent Canal - Rice Lake Division, Section No. 2, Lock No. 6, As Constructed" T20-231.03
- (x) Dam 'C' at Frankford.

(2) Meyers Dam 8 & Lock 9

- (i) "Dam No. 8" COTSM 88 R27 (10-907)
- (ii) "Trent Canal - Rice Lake Division, Section No. 4, Layout of Mooring Posts on Lock Walls and Entrance Piers for Lock No. 9" T24-111.01 (1910)
- (iii) "Trent Canal - Rice Lake Division, Section No. 4, Steel Reinforcement in Stoplog Platforms of Dams Nos. 8, 9 & 10" T11-247.14 (1910)
- (iv) "Trent Canal - Rice Lake Division, Section No. 4, Dam No. 8" T11-247.13 (1910)
- (v) "Trent Canal - Rice Lake Division, Section No. 4, Layout Plan of Dam No. 8 & Lock No. 9" T11-275.11a, T11-275.11b (1910)
- (vi) "Trent Canal - Rice Lake Division, Section No. 4, Dam No. 8, As Built" T11-247.16 (1922)

- (vii) "Trent Canal - Rice Lake Division, Section No. 4, Layout Plan of Lock No. 9 & Dam No. 8, As Built" T20-216.13 (1922)
- (viii) "Trent Canal - Rice Lake Division, Section No. 4, Lock No. 9" T20-216.14
- (3) Hagues Reach Dam 9 & Lock 10
  - (i) "Trent Canal - Repair of Concrete in Lock No. 10 and Lower Entrance" T20-211.03 (1938)
  - (ii) "Trent Canal - Lock No. 10 Concrete Restoration" T40-884.01 (1972)
  - (iii) "Trent Canal - Dam No. 9 Reconstruction" T11-324.01, T11-324.02, T11-324.05, T11-324.13, T11-324.17, T11-324.21, T11-324.24, T11-324.25 (1973)
  - (iv) "Trent Canal - Rice Lake Division, Section No. 4, General Plan Showing Lock No. 10 & Dam No. 9, As Constructed" T20-211.06b, T20-211.06c, T20-211.06d
  - (v) "Trent Canal - Rice Lake Division, Section No. 4, Lock No. 10" T20-211.05
- (4) Ranney Falls Dam 10 and Locks 11 & 12
  - (i) COTSCA 79 R37 (10-733) "Dam 10 Reconstruction Phase 1"
  - (ii) COTSCA 80 R74 "Dam 10 Reconstruction, Piers"
  - (iii) COTSCA 80 R97 (10-764) "Dam 10 Reconstruction"
  - (iv) COTSCA 84 R85 "Dam 10 New Reconstruction"
  - (v) COTSCA 84 R117 "Dam 10 As Built"
  - (vi) COTSW 03 R12 "Ranney Falls Locks Nos. 11 and 12 Rehabilitation"
  - (vii) "Trent Canal - Rice Lake Division, Section No. 4, Layout Plan, Locks Nos. 11 & 12, Dam No. 10" T20-193.17 (1910)
  - (viii) "Trent Canal - Rice Lake Division, Section No. 4, Lock Nos. 11 & 12" T20-193.15
  - (ix) "Trent Canal - Rice Lake Division, Section No. 4, Plan, Profiles & Sections of River Walls at Campbellford" T22-386
  - (x) "Trent Canal - Repair of Concrete in Lock No. 12 and Upper Entrance" T20-193.12
  - (xi) "Trent Canal - Rice Lake Division, Sections No. 4 & 5, General Plan" T20-193.16
- (5) Other Information:
  - (i) Dam Data Sheet for each site
  - (ii) Property Map NRC Map for each site
  - (iii) Directive for Dam Safety Program of Parks Canada Dams and Water-Retaining Structures

- (iv) Trent Basin Hydrological Study by ACRES - 1973
  - (v) TSW Navigational Charts
  - (vi) TSW Standing Orders
  - (vii) FEMA Guides to Vegetation on Dams
  - (viii) Log Lifter
  - (ix) Parks Canada Service Directive on Visitor Safety: Implementation Manual and Risk Tolerance Matrix.
- .3 Orthorectified aerial photographs and DTM files are available for each site. The aerial imagery has a 20 cm resolution and together with the DTM file can be used to develop 0.5 m contour mapping. If these contour maps are required to assist with the work under this Project Brief, the Consultant will need to generate them from this data, unless he can obtain it elsewhere.
- .4 Please note that PCA does not have any bathymetric information of the areas.

## **PD 9.2 Access to Documentation for Proponents**

Available upon request to Proponents interested in submitting proposals. Requests for Existing Documentation must be submitted in writing to the Contracting Authority named on the RFP - Page 1 as early as possible. **Those requesting the documentation will be required to sign a non-disclosure agreement.**

## **PD 10 CONSULTANT TEAM**

PD 10.1 The consultant team for this contract must be capable of providing the following services related to dams and water-retaining structures:

- .1 Civil Engineering - provide civil and structural engineering services for the inspection, investigation, monitoring, design and analysis of new or existing earth, concrete dams, navigational locks and water retaining structures or their components such as gains, gates, stoplogs, concrete decks, abutments, walls, sills, log lifting mechanisms, railings etc or associated infrastructure. Undertake Dam Safety Reviews in accordance with the Canadian Dam Safety Guidelines and the Directive for Dam Safety Program of Parks Canada Agency for Dams and Water-Retaining Structures for structures owned by Parks Canada.
- .2 Mechanical Engineering – provide inspection, investigation and analysis of dam and water-retaining structure's machinery such as existing guillotine, vertical and radial dam gates, stoplog lifting mechanisms, lock gates and valves and their associated manual, hydraulic and/or electrical operation systems.
- .3 Electrical Engineering - provide electrical engineering services to carry out inspection, investigation and analysis of electrical and control systems associated with dam and water-retaining structure machinery.

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- .4 Water Hydraulics Engineering – application of water hydraulics to support other disciplines in the analysis of existing dams and water-retaining structures and their components.
  - .5 Geotechnical Engineering – provide inspection, investigation, monitoring and analysis of existing earth dams, dam embankments, riverbeds and water-retaining structures and associated structures. Investigation work may include stability analysis, verification of soil and bedrock conditions, assessment of soil and bedrock design parameters and condition verification and assessment of construction materials. Geotechnical work may also include in-water investigations.
  - .6 Seismology Engineering - application of seismic analysis for the development of site specific seismic parameters such as ground velocity, acceleration and response spectra, which are beyond the event data published by the Geological Survey of Canada.
  - .7 Hydrology Engineering - application of hydrology principals to analyze and assess inflow design flood events and undertake inundation studies.
  - .8 Safety and operation specialist;
  - .9 Public safety Specialist.

PD 10.2 The consultant team may be augmented/supported by other specialties or services as required by the work under this contract.

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## DESCRIPTION OF SERVICES

### PROJECT ADMINISTRATION (PA)

#### PA 1 General Information

- PA 1.1 PWGSC Project Manager
- PA 1.2 Health and Safety
- PA 1.3 Lines of Communication
- PA 1.4 Media
- PA 1.5 Project Response Time
- PA 1.6 Project Progress Meetings
- PA 1.7 Other Meetings
- PA 1.8 Official Languages

#### PA 2 Authorities Having Jurisdiction

- PA 2.1 Federal Government Authorities
- PA 2.2 Provincial, Municipal and Other Local Authorities

#### PA 3 Submissions, Reviews and Approvals

- PA 3.1 General Submission Requirements for Project Deliverables
- PA 3.2 Acceptance of Project Deliverables



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## **PROJECT ADMINISTRATION (PA)**

### **PA 1 GENERAL INFORMATION**

#### **PA 1.1 PWGSC Project Manager**

- PA 1.1.1 The Project Manager assigned to the project is the Departmental Representative.
- PA 1.1.2 The Departmental Representative is directly concerned with the project and responsible for its progress on behalf of PWGSC and the client (Parks Canada).
- PA 1.1.3 The Departmental Representative is the liaison amongst and between the Consultant, PWGSC and Parks Canada.
- PA 1.1.4 PWGSC administers the project and exercises continuing control over the project throughout the contract.
- PA 1.1.5 Unless directed otherwise by the Departmental Representative, the Consultant shall obtain all Federal requirements and approvals necessary for the work.

#### **PA 1.2 HEALTH AND SAFETY**

##### **PA 1.2.1 GENERAL REQUIREMENT**

1. Develop a written site-specific Health and Safety Plan (SSHSP) for each site based on hazard assessment prior to beginning any field work and continue to implement, maintain, and enforce the plans through all phases of the project.
2. The SSHSP's need to cover all activity of the Consultant team (Consultant personnel, sub-Consultant and contractors).
3. Any underwater inspection will require a separate Site Specific Health and Safety Plan for the diving work, and together with a copy of the Ministry of Labor Dive Notice, shall be submitted to the Departmental Representative.
4. The Consultant shall incorporate in their SSHSP's, and abide by, any additional constraint or safety requirement imposed by Parks Canada for accessing and using Parks Canada property or part thereof.
5. Coordinate field work with PWGSC and Park Canada activity on or adjacent to the project site.
6. Provide all required Personnel Protective Equipment, equipment and material as required to meet the intent of the safety requirement set in the SSHSP's or as required by the Provincial Occupational Health and Safety Legislation.

7. The Consultant shall be responsible for health and safety for all of their team on site, and for protection of general public and government employees adjacent to the site to the extent that they may be affected by conduct of the field work.
8. Assign responsibility and obligation to a Competent Person or Supervisor to oversee the field work. At the Competent Person's discretion, the field work may be stopped if necessary or advisable for reasons of health or safety. The Departmental Representative may also stop work for health and safety considerations.
9. Prior to starting field work, attend a Safety Briefing meeting with PWGSC and Parks Canada.
10. Daily tailboard meetings are required at the project site. Where appropriate, Parks Canada Operation staff are to participate in the daily tailboard meetings. Records of tailboard meetings are to be submitted to the Departmental Representative on a daily basis.
11. The Consultant Team will need to closely coordinate their field work schedule with the TSW Southern Sector Office. In situations where the Consultant Team will be visiting a dam site without being escorted by the TSW, the Consultant will need to notify the TSW Southern Sector Office when they get to and leave the dam sites. Under no circumstance will a member of the Consultant Team be allowed to visit a dam site alone.

#### **PA 1.2.2 KNOWN HAZARDS**

1. The following section identifies common hazards around dams in general and known hazards at the dam sites which are being examined under this contract. These are provided to assist in the preparation of the SSHSP and does not remove the Consultant responsibility to complete his own hazard assessment prior to beginning any field work.
2. The Consultant Team will be exposed to, but not necessarily limited to, the following common hazards:
  - (a) Low head weir creating underwater hydraulics at base of structure.
  - (b) Upstream leakage between stoplogs creating strong drawing force.
  - (c) Upstream leakage around vertical steel roller gates creating strong drawing force.
  - (d) Upstream leakage around radial-arm gates creating strong drawing force.
  - (e) Foaming water exhibiting reduced buoyant force compared to normal water.
  - (f) Rapidly changing flows and water levels below a dam.

- (g) Steep embankments and retaining walls may impede quick egress from dangers.
  - (h) Slippery conditions due to ice formation during winter months in and around dams.
  - (i) Unprotected gain opening on the dam presents a fall hazard.
  - (j) Working near a power generating station.
3. More specifically to dams under this contract, the Consultant Team will be exposed to, but not necessarily limited to, the following hazards:
- (a) The guardrail may not meet the full requirement of the OHSA. Guardrails are present on the dam control structures and at some, but not all, lock wall edges.
  - (b) Slip hazard on upstream and downstream side of earth dams due to steep embankments.
  - (c) Falling in lock during the filling or emptying of the lock due to the forces and flow through the lock valves and culverts.

#### **PA 1.2.3 REFERENCE CODES AND STANDARDS**

1. Occupational Health and Safety Act Revised Statutes of Ontario 1990, Chapter O.1 as amended, and Regulations for Construction Projects, O. Reg. 213/91 as amended;
2. Canada Labor Code (including latest revisions of all regulations)
3. Ontario Diving Regulations no. 629/74 and CSA Diving Standard Z275.04-02.
4. Workplace Safety and Insurance Act, 1997,
5. Municipal statutes and authorities.

#### **PA 1.2.4 SUBMITTALS**

1. Submit a site-specific Health and Safety Plan for each site within 7 days after date of Notice to Proceed and prior to commencement of field work. Each Health and Safety Plan must include:
  - (a) Results of site specific safety hazard assessment.
  - (b) Mitigation and precaution measures that will be implemented as a result of a safety and health risk or a hazard analysis for site tasks and operations.
  - (c) Consultant's Team Safety Communication Plan.
  - (d) Contingency and Emergency Response Plan addressing standard operating procedures specific to the project site to be implemented during emergency situations. Where applicable, coordinate plan with

existing Parks Canada Emergency Response requirements and procedures provided by Departmental Representative.

2. In addition to the SSHSP's, the following documents shall also be submitted:
  - (a) A copy of the Consultant Team's Workplace Safety and Insurance Board (WSIB) Clearance Certificates.
  - (b) Occupational health and safety training and certification records: the Consultant must provide documentation verifying all members of the Consultant team have received the appropriate safety training including equipment operation training as required to perform the specific field work.
3. Departmental Representative may respond in writing, either accepting or requesting improvements, where deficiencies or concerns are noted and may request resubmission with correction of deficiencies or concerns.
4. Departmental Representative's review of Consultant's final SSHSP's should not be construed as approval and does not reduce the Consultant's overall responsibility for Health and Safety at the project site.

### **PA 1.3 Lines of Communication**

- PA 1.3.1 Unless otherwise directed by the Departmental Representative, conduct all project communication through the Departmental Representative only.
- PA 1.3.2 Formal contact between the Consultant and the PWGSC Project Team, which includes Users and Stakeholders, shall be through the Departmental Representative.
- PA 1.3.3 Direct communication between members of the PWGSC Project Team on routine matters is required to enable the discussion and resolution of technical issues. However, no communication shall alter the terms of the project scope, budget or schedules unless directed in writing by the Departmental Representative.
- PA 1.3.4 During the request for proposal period, PWGSC shall conduct all correspondence with bidders.

### **PA 1.4 Media**

- PA 1.4.1 The Consultant shall not respond to requests for project related information or questions from the media. Such inquiries are to be directed to the Departmental Representative.

### **PA 1.5 Project Response Time**

- PA 1.5.1 It is a requirement of this contract that the key personnel of the Consultant and Sub-Consultant or Specialist firms be personally available, or have an

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acceptable substitute available, to attend meeting or respond to inquiries **within one (1) working day.**

## **PA 1.6 Project Progress Meetings**

PA 1.6.1 The Departmental Representative shall arrange and chair conference calls (meetings) generally **every month** throughout the entire project, for all members of the project team, including representatives from:

1. Parks Canada
2. PWGSC (Departmental Representative and others as required);
3. Consultant team;
4. Other Stakeholders as required.

PA 1.6.2 Standing agenda items shall include, without being limited to:

1. Project Planning Monitoring and Control,
2. Cost,
3. Risk,
4. Quality,
5. Scope,
6. Environment,
7. Health and Safety

PA 1.6.3 The Consultant shall attend the meetings, record the issues and decisions, as well as prepare and distribute minutes to all participants within seventy-two (72) hours of the meeting.

## **PA 1.7 Other Meetings**

PA 1.7.1 The Departmental Representative shall arrange and chair a Project Start Up Meeting in Peterborough, Ont.

PA 1.7.2 At the discretion of the Departmental Representative, these meetings may be held instead of, or jointly with, the Project Progress Meetings described in PA 1.6.

1. The Consultant shall record the issues and decisions, as well as prepare and distribute minutes to all participants within seventy-two (72) hours of the meeting.

PA 1.7.3 On occasion, the Departmental Representative may be required to call urgent problem-solving meetings. The Consultant shall:

1. be available to attend such meetings, in the location specified by the Departmental Representative, within one (1) working day notice;
2. assist the Departmental Representative in organizing the meeting;

3. Record the issues and decisions; and
4. prepare and distribute minutes to all participants within seventy-two (72) hours of the meeting.

PA 1.7.4 A meeting may be held in Peterborough at the end of the study to present the Dam Safety Report and answer questions. If a meeting is held, then this work will be treated as an amendment to the contract.

## **PA 1.8 Official Languages**

PA 1.8.1 This project requires services in english only. This includes all verbal communications, written correspondance, and reports.

## **PA 2 AUTHORITIES HAVING JURISDICTION**

### **PA 2.1 Federal Government Authorities**

PA 2.1.1 The following are authorities having Federal Government jurisdiction over the project:

1. Treasury Board of Canada
  - (a) Project and contract approvals
2. Public Works and Government Services Canada
  - (a) Contracting authority and project delivery
  - (b) Multimedia,
  - (c) IT,
  - (d) Security systems
3. Parks Canada Agency
  - (a) Parks Canada Act
4. Human Resources and Skills Development Canada
  - (a) Fire prevention services,
  - (b) Life safety
5. Environment Canada
  - (a) Canadian Environmental Assessment Act and
  - (b) Canadian Environmental Protection Act
6. National Building Code of Canada (NBCC)
  - (a) Building codes and standards
7. Transport Canada
  - (a) Navigable Waters Protection Act (NWPA)

## 8. Fisheries and Oceans Canada

### (a) Fisheries Act

## **PA 2.2 Provincial, Municipal and Other Local Authorities**

PA 2.2.1 Although the Federal Government does not formally recognize jurisdiction at other levels of government, voluntary compliance with the requirement of these other Authorities is required unless otherwise directed by the Departmental Representative.

PA 2.2.2 In some cases, the Federal government may defer to provincial and municipal authorities for specific regulations, standards and inspections. In areas of conflict, the Federal authority prevails.

### 1. Ontario Ministry of Labor

- (a) Employment Standards
- (b) Construction Health and Safety
- (c) Workers Compensation

### 2. Ontario Ministry of the Environment

- (a) Ontario Environmental Protection Act: 3R Regulations
- (b) Disposal of Designated Substances

### 3. Ontario Ministry of Natural Resources

- (a) Lakes and Rivers Improvement Act

### 4. Ontario Ministry of Consumer and Commercial Relations - Elevating Devices Branch

- (a) Construction Hoists

### 5. Municipality/Civic Authorities

- (a) Local Police and Emergency Services

PA 2.2.3 The Consultant shall, with the assistance of the Departmental representative, identify any other Authorities Having Jurisdiction and endeavour to ensure that all design work meets or exceeds all codes, regulations and standards of these other authorities having jurisdiction.

## **PA 3 SUBMISSIONS, REVIEWS AND APPROVALS**

### **PA 3.1 General Submission Requirements for Project Deliverables**

PA 3.1.1 Unless otherwise specified, where deliverables and submissions include summaries, reports, cost estimates, schedules or drawings, the Consultant shall submit six (6) hard copies, as well as one (1) electronic copy in each of the following electronic formats:

1. in Portable Document Format (PDF), and
2. in a non-PDF, editable format (original software of preparation).

PA 3.1.2 Electronic deliverables shall be provided in the current PWGSC standard suite of software applications as follows:

**Deliverable**

**PWGSC**

Written reports and studies:

Microsoft Word and PDF

Schedules

Microsoft Project

Drawings:

AutoCad (\*.dwg) version 2010 or later and PC

PA 3.1.3 Drawings, prepared in AutoCad, must also include the CTB, SHP and SHX files, so that these drawings can be imported into Parks Canada GIS system.

PA 3.1.4 All photos are to be taken using a GPS camera, so that they can be integrated in the Parks Canada ArcGIS program. Photos are to be submitted on compact disks (DVD).

PA 3.1.5 Electronic deliverables provided on compact disks (DVDs) shall be fully and professionally labeled; furthermore, the DVD labels shall indicate software and version.

PA 3.1.6 Schedules shall be submitted in a format that shall allow analysis of critical path relationships and milestones.

PA 3.1.7 All drawings shall be generated and distributed in the format using layering and file transfer protocols.

### **PA 3.2 Acceptance of Project Deliverables**

PA 3.2.1 While PWGSC acknowledges the Consultant's obligations to meet project requirements, the project delivery process entitles PWGSC to review work. PWGSC reserves the right to reject undesirable or unsatisfactory work. The Consultant shall obtain Departmental Representative acceptances for all submissions.

PA 3.2.2 The acceptance does not relieve the Consultant of professional responsibility for the work and compliance with the contract, and with all applicable codes, standards and regulations.



## REQUIRED SERVICES

### RS 1 DAM SAFETY REVIEW

#### RS 1.1 GENERAL

1. In general terms, the scope of the Dam Safety Review (DSR) for each site will cover all aspects required to demonstrate that:
  - (a) The dam is safe, operated safely and maintained in a safe condition;
  - (b) Surveillance is adequate to detect any developing safety problem.
  - (c) Meets the CDA Guidelines and PCA Directive for Dam Safety Program.
2. In addition to the demonstration of the safety of the dams, the DSR will also examine:
  - (a) Safety procedures and protocols that are in place to ensure the safety of the dam and lock operators, and the operation of the dam and lock; and
  - (b) Safety issues with the continued usage of the dam and lock structure by the public.
3. Any deficiencies are to be identified by the Reviewing Engineer and reported.

#### RS 1.2 PRE-FIELD INSPECTION

1. Review of existing drawings, reports and documents of structures. All available records for dam, including any appurtenant structures, are on file at the Parks Canada TSW headquarters in Peterborough. Be familiar with the CDA Dam Safety Guidelines, CDA Technical Bulletins and the Directive for Dam Safety Program of Parks Canada Agency for Dams and Water-Retaining Structures, for structures owned by Parks Canada.
2. Review documents such as, but not necessarily limited to, the existing operation procedures, operation maintenance procedures and emergency response procedures, for information purposes. As part of the Dam Safety Review Report, the Consultant shall discuss the status of these procedures, together with a discussion of deficiencies, and provide recommendations for improvements. Note that TSW has standing work orders for operating the dams and locks and no other formal documents.
3. Prior to undertaking the field inspection program, provide the Departmental Representative with:
  - (a) A field inspection program plan, including a schedule and a list of specialized equipment to perform the inspection work;
  - (b) A Health and Safety Plan, including an Emergency Response Plan for the field work;
  - (c) An Environmental Protection plan for the field work.;
  - (d) Required coordination/assistance from Parks Canada.

4. The Trent-Severn Waterway Water Control Engineer, dam operator(s), lock staff, and general maintenance staff that may have historical information on the dam/lock or operations and general public usage of the dam/lock, will be made available for interview by the Consultant. The operation and maintenance personnel for this site are located at the TSW Southern Sector Office in Campbellford, Ontario.
5. Prepare questionnaires covering dam operations, operator safety, and public safety and usage of the site. Questionnaires are to be submitted to the operation and water management staff, for their review and preparation, a minimum of two days in advance of the interviews.
6. The Consultant Team will need to advise of their proposed schedule for the field work at least a week in advance.

## **RS 1.3 SITE INSPECTION**

### **1. FIELD INSPECTION AND RECORDS**

- (a) In general terms, the field work shall include, but not necessarily be limited to:
  - (i) The Consultant needs to examine the upper and lower reaches and become familiar with the hydrology and hydraulic characteristics of the site.
  - (ii) In addition to the dam and lock structures themselves, the Consultant shall inspect and document the condition of erosion protection of the upstream and downstream embankments, log lifting equipment, stoplogs, stoplog gains, gain covers, vertical steel roller gates, radial-arm gates, guardrails, fencing, safety and debris booms, trash racks, signage, site/dam/lock access, etc. and recommend appropriate measures to correct inadequate or unsafe conditions, and provide associated cost estimates.
  - (iii) PWGSC will take general overall measurements of the dam, lock and associated structure dimensions to create, and provide to consultant, scaled drawings with borders and titles (AutoCAD format) showing:
    - (1) An overall site plan showing (as a minimum):
      - .1 PCA properties;
      - .2 Hydro-generation properties (where appropriate);
      - .3 Amenities such as buildings, fences, parking lots, services and utility lines on PCA property only.
      - .4 Ground contour, based on Digital Elevation Model (DEM) files.
    - (2) Elevation views for each structure/dam and lock, and typical section details with critical elevations to geodetic datum of the dam and lock, hydro-generation station and earth embankments (dykes), as required to complete the dam break analysis.
    - (3) This information (site drawings and measurements) will be completed before June 20, 2013.

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- (iv) A detailed structural inspection of the locks & lock gates, the dam's and dam gates, the dam decks (including visual inspection of underside of deck), and the site will be undertaken to assess existing conditions, confirm concrete condition, concrete strength and integrity, confirm concrete contact with other materials (e.g. steel and bedrock) and to collect other pertinent information deemed relevant to the dam safety reviews.
- (v) A detailed mechanical inspection, to verify condition, reliability and functionality of the components of the dam, including but not limited to:
- (1) Hydraulic log lifter and back-up manual winches.
  - (2) Vertical steel roller gates and operating machinery.
  - (3) Radial-arm gates and operating machinery.
- (vi) Inspection of the Lock mechanical components shall be limited to visual observations and interviews with the maintenance and operational staff. This inspection is to cover the mitre gate operating mechanisms as well as the filling and discharge valves and operating mechanisms. If a more detailed inspection is deemed necessary, the Consultant shall submit a mechanical inspection program for the lock mechanisms. This work would be treated as an amendment to this contract.
- (vii) A detailed inspection of the earth embankments, including soil erosion protection.
- (viii) A general assessment of trees and woody vegetation on earth embankments. The assessment is not intended to be a rigorous assessment, but should provide a good understanding of the seriousness of the impact of the existing vegetation on operation, performance and dam safety. In general terms, this assessment is typically associated with the determination of the type, size and general location of undesirable plant growth on an earth embankment, and the evaluation of the level of the impact the vegetation represents, including the impact associated with the removal (and extent of removal) of the vegetation growth. The inspection and evaluation methodology shall be based on the Technical Manual for Dam Owners, Impact of Plants on earth Dams (FEMA 534/September 2005) or similar assessment methodology.
- (ix) Plans, drawings, and photographs as appropriate shall be prepared to document the location, type, and extent of deterioration and/or problem areas. The Consultant shall identify the probable cause or causes of such deterioration (e.g. freeze thaw action, ice damage, seepage, alkali-silica reaction, settlement, etc.). Mechanical deficiencies are also to be documented on the plans and drawings, with supporting photographs.
- (x) The Consultant shall document the important features found at the site. The points of interest are to be electronically annotated using circles or arrows with appropriate captions.

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- (xi) Geological / geotechnical survey (non-intrusive) and study should be carried out to identify geological features and geotechnical conditions that could affect the stability of the structures and to estimate the concrete/bedrock contact strength for the initial analysis. Seepage areas downstream of the dam should be mapped and flow rates estimated. For earth dams and concrete dams where applicable, the consultant shall document and assess any evidence of piping or seepage (including an estimate of the flow rate), and any evidence of heavy settlement or slope movement.
  - (xii) Through interviews with the operational staff and visual observations of the upper reach, assess whether or not ice flow and debris could potentially create a hazardous situation. If the interviews reveal reported or unreported or anecdotal evidence that ice or debris have jammed or blocked the discharge weirs and/or spillways in the past, the consultant shall include these conditions as part of the assessment and evaluation.
  - (xiii) The site inspection shall include a survey, both upstream and downstream, to photograph and document existing development and infrastructure that could be adversely affected (including flooding, erosion or ice damage) by the operation of the dam or by an uncontrolled release.
  - (xiv) Topographical surveys shall be undertaken to confirm the accuracy of the DEM files. Furthermore, critical elevations to geodetic datum are to be taken of the adjacent properties, buildings, shorelines, downstream features, minimum road elevations, etc, as required to complete the DSR. As well, topographical surveys shall be undertaken for the Water Impoundment Review (RS1.9).
  - (xv) The site inspection needs to assess operational procedures and safety, and public safety as outlined under RS 1.11 and RS 1.12. As part of the assessment the Consultant shall provide the Operation & Public Safety questionnaire to Parks Canada Dam Operation and Engineering Services staff prior to conducting interview to allow for their review preparation.

## 2. UNDERWATER INSPECTION

- (a) As part of the field work, the Consultant will need to undertake an inspection of the surfaces of the dam and lock which are underwater. The initial inspection shall be completed by using an underwater video camera mounted on a pole. The inspection needs to cover all upstream and downstream areas of the dam which are underwater.
- (b) If required, the Consultant shall make arrangement to have a boat on site to undertake the underwater inspection. **NOTE:** The Consultant Team is NOT to go on the water near the dam without PCA being present and that ALL stoplogs have been installed in the weirs and jacked or gates closed, and that all proper safety measures are in place.
- (c) Following the review of the underwater video inspection, if deemed necessary, the Consultant shall organize a diving inspection of:

- (i) The concrete dam.
- (ii) The lock.
- (iii) Earthwork (embankments)

The diving inspection would be treated as an amendment to this contract.

#### **RS 1.4 EMERGENCY CONDITIONS REPORTING REQUIREMENTS:**

1. Report to the Departmental Representative any serious deficiencies identified in the site inspections related to the Occupational Health and Safety Act (OHSA) or public safety.
2. Within 24 hours of the verbal report, provide a brief e-mail or memo report to the Department Representative (maximum two pages).

#### **RS 1.5 FLOOD FLOWS ESTIMATION**

1. As mentioned in PD3.3, in support of the ongoing Dam Safety Reviews, a Hydro-meteorological Conditions Study and Flood Flows Estimate Study has been completed for the Trent River Watershed.
2. Although the Flood Flow Estimate Study does not specifically provide flood flows estimates for this dam, a methodology to determine these flood flows is suggested. Consultant is to use this study to estimate the flood flows in accordance with the guidelines provided in the report.

#### **RS 1.6 DAM CLASSIFICATION REVIEW AND IDF SELECTION**

1. Preliminary Dam Classification
  - (a) The Consultant shall review the preliminary assigned dam classification based on available data (e.g. characteristics of the lock, dam, reservoir, watershed, topography, discharge facilities, downstream development, recreational activities, historical flooding, etc.) and appropriate simplified analyses.
  - (b) Results of the review need to be presented to PWGSC, in report format, before proceeding with any analysis work for the Confirmation of the Dam Hazard Classification.
  - (c) The use of the word dam includes the regulating dam, earth work (embankments), as well as the navigational lock.
2. Confirmation of Dam Classification
  - (a) The Dam Classification will be determined in accordance with the CDA Dam Safety Guidelines 2007 and the classification criteria as set out in the Parks Canada Directive for Dam Safety Program of Parks Canada Dams and Water-Retaining Structures.
  - (b) Parks Canada dam hazard classification is based on losses due to incremental consequence of failure, which is defined as the total damage from an event with

dam failure minus the damage that would have resulted from the same event (flood, earthquake or other event) had the dam not failed.

- (c) For the purpose of calculating property and economic losses, the boundary threshold values listed in Figure 2 of the Parks Canada Directive for Dam Safety Program of Parks Canada Dams and Water-Retaining Structures are to be used. The values are based on 2009 prices, and should be indexed to inflation to be representative of current prices. If the estimated losses are in excess of \$12.2 million, the Consultant is not required to evaluate losses beyond this threshold.
- (d) The Dam Hazard Classification will include the following tasks:
  - (i) Determine the hydrologic and hydraulic conditions under which the dam would be assumed to fail. This should consider infrequent floods under reasonable dam operation and frequent floods with the discharge capacity of the dam impaired due to ice, debris, inaccessibility, etc.
  - (ii) Assess the potential for loss of life, property and economic losses, environmental losses, cultural and heritage losses, if any, under initial conditions (i.e. prior to dam failure);
  - (iii) Assess the downstream effects due to a failure of the dam. This may require modeling of dam failure using an appropriate numerical dam break model to simulate the downstream effects of failure of the dam.
  - (iv) Assess the incremental effects on life, property and the environment as a result of dam failure.
  - (v) Determine and identify a classification for each of the "sunny day" and incremental "inflow flood design" failure conditions.
- (e) As part of the report, provide a discussion of the assumption and approach used to determine the Dam Classification. As a minimum the discussion needs to cover:
  - (i) Population at risk (PAR) and potential Loss of Life;
  - (ii) Property and Economic Losses;
  - (iii) Environmental Loss, downstream and upstream if applicable;
  - (iv) Potential Cascading Event;
  - (v) Incremental and Total Consequences
- (f) For the purpose of the Dam Safety Management, the higher of the two classifications will be the governing classification for the dam. The Inflow Design Flood (IDF) selection shall be based on the dam classification resulting from the incremental flood analysis. The design earthquake shall be based on the dam classification resulting from failure under normal operating conditions (sunny day failure).
- (g) A separate dam classification is needed for the lock structure. The consequence of a failure of the lock will not necessarily be the same as the dam structure.

Classification of the lock needs to take into consideration operation of the lock during both the navigational and non-navigational operation periods

### 3. Incremental Loss Analysis

- (a) From the inundation maps and detailed information on peak flood levels, time of flood arrival, and time to flood peak (from initiation of the dam break) assess the potential for threat to life safety (loss of life) or property losses or environmental and cultural / heritage losses.
- (b) The estimation of expected loss of life shall be as defined by USBR's "A Procedure for Estimating Loss of Life Caused by Dam Failure" (DSO-99-06), or an acceptable equivalent.
  - (i) **Note:** The USBR procedure for loss of life estimation is based on total PAR within the inundated area, and as such is not directly applicable to incremental loss calculation. The Consultant is to apply engineering judgement to evaluate the impact of the flood event (without dam failure) in order to assess the loss of life under the event, or to reduce the total PAR as a result of the event. As per the last step in the USBR procedure (assessment of uncertainties), the Consultant needs to assess and document his assumptions used in his evaluation of incremental consequences.
- (c) A monetary estimate of incremental economic damage/loss due to dam failure is required.
- (d) Discuss with the Departmental representative the proposed methodology to be used to assess incremental losses.

### RS 1.7 DAM BREAK ANALYSIS

1. The Consultant shall perform a dam break analysis (where applicable based on Dam Classification Level) of the dam and lock for the purpose of confirming and /or determining the Dam Classification and Inflow Design Flood (IDF) and for producing a set of river-based inundation maps showing the worst-case inundation due to failure of the dam, including flood peaks or flood wave immediately downstream of the dam.
2. The use of the word dam includes the regulating dam, earth embankments, as well as the navigational lock.
3. The assumption for the development of the parameters for the dam breach is to be based on Chapter 2, FERC 1993, or acceptable equivalent. The evaluation needs to address initial hydrologic conditions for the following scenarios:
  - (a) Sunny-day failure - This failure is a sudden dam failure that occurs during normal operations.
  - (b) Flood-induced failure - This is a dam failure resulting from a natural flood of a magnitude that is greater than what the dam can safely pass.
4. Initial Conditions:

- (a) For each assumed flood event it shall be assumed that the reservoir at the beginning of the flood event is at the maximum normal operating level.
- (b) The dam failure shall be assumed to coincide with the peak of the inflow hydrograph.
- (c) The assumed configuration of the discharge weirs (stoplog arrangements) for the purpose of the dam break analysis is to be based on operation procedures and capability of the operation crews, together with the expected time of arrival of peak flood flows. **(Note:** PCA dams are not normally drawn down for a flood event, the dams are only operated to maintain navigation levels on the TSW.)
- (d) Prior to the dam break, stage-discharge-storage relationships for the assumed configuration of the discharged weirs and spillways, together with reservoir flood routing, will be required to assess the water levels due to the flood event at the dam.
- (e) Assumptions and methodology used for the dam break analysis are to be discussed with the Departmental Representative before the analysis is carried out.

#### 5. Inundation Mapping

- (a) The results of the downstream routing of flood flow event and normal (sunny day) scenarios must be illustrated on inundation maps, along with the normal water levels. For flood events, the inundation map must also illustrate the incremental inundation due to the selected flood with dam failure. Where applicable, the inundation map needs to also show the impact of possible cascading events of dam failures.
- (b) In addition, the inundation maps shall have the following information at critical downstream locations:
  - (i) Distance from the dam;
  - (ii) Time of flood arrival;
  - (iii) Time of flood peak (from the initiation of the dam failure);
  - (iv) Maximum flood levels, and
  - (v) Maximum velocities.
- (c) Inundation maps for the incremental loss analysis must be developed at a scale sufficiently large enough to identify downstream permanent structures within the impacted area.
- (d) The final inundation maps for the selected IDF flood event shall be at a suitable scale and contour spacing for any future use in the Emergency Preparedness Plan (EPP).

#### 6. Incremental Analysis

- (a) The analysis for the evaluation of the incremental effects of failure of the dam under the IDF scenario should begin at a higher flow event IDF. If the



incremental rise of the downstream flood water due to the dam failure results in no or insignificant incremental losses, a lesser flood event must be selected and the analysis repeated.

- (b) For each iteration of the incremental analysis an inundation map needs to be produced to assist with the incremental loss analysis.
- (c) The IDF for the dam shall be the flood event at which significant incremental losses are starting to be assessed.

#### 7. Cascade Dam Failures

- (a) In analyzing the dams in this contract, consideration must be given to dams which are downstream of the study area and assess potential cascading effects of dam failures. The approach described in the *CDA Technical Bulletin for Hydrotechnical Consideration for Dam Safety* shall be followed for evaluating the IDF and dam classification.

### RS 1.8 HYDRAULIC CAPACITY

1. The Consultant shall establish the IDF flow parameters at the dams and shall assess the adequacy of the hydraulic discharge capacity at the dams under IDF conditions, including the following specific tasks:
  - (a) Using the flood flows estimates calculated under RS 1.5, determine and plot the inflow and outflow hydrographs;
  - (b) Determine and plot the variation of head levels with time during the IDF;
  - (c) Determine and plot the sensitivity of the peak headwater and tailwater levels to inflows, as a percentage of the IDF (if applicable);
  - (d) Determine the drag forces on the sluiceway piers under IDF conditions if applicable;
  - (e) Assess the adequacy of the available freeboard under normal and IDF conditions by determining wind setup and wave run-up. Assessment of freeboard shall be in accordance with *CDA Technical Bulletin for Hydrotechnical Consideration for Dam Safety* (2007).
2. The hydraulic capacity of the generating station or the lock is not to be taken into consideration when evaluating the hydraulic capacity of the dam.

### RS 1.9 WATER IMPOUNDMENT REVIEW

1. Using a reservoir flood routing and backwater analysis (as applicable), the Consultant shall carry out a review of the reservoir rim to verify whether or not the increase in the water level of the reservoir due to the IDF could:
  - (a) overtop the banks or reservoir dykes causing the reservoir to drain onto adjacent lower lands; and
  - (b) flood of properties beyond PCA owned land.

2. If overtopping and/or flooding is assessed under the IDF, the flood event under which these conditions first occurs needs to be determined.
3. For both events the Consultant shall assess:
  - (a) potential erosion of affected areas;
  - (b) the potential for loss of life, property and economic losses, environmental losses, and/or cultural and heritage losses, and if required, adjust the incremental loss evaluation for the dam;
  - (c) whether or not the flooded area due to the flood event are within the Trent-Severn right-of-way.
4. As a result of the analysis, provide:
  - (a) Level and depth at which the reservoir rim will be overtopped at its lowest point(s).
  - (b) The reservoir storage curve.
  - (c) The reservoir discharge curve(s).
  - (d) Recommendation of measures to either prevent overtopping, or where appropriate, measures to take by PCA to manage the reservoir when flow and water level reach levels where adjacent properties may be affected.

## **RS 1.10 STABILITY ASSESSMENT / ANALYSIS**

### **1. Loading**

- (a) General
  - (i) Loading combinations and acceptance criteria as prescribed in the CDA Dam Safety Guideline 2007 and the CDA Technical Bulletin for Structural Considerations for Dam Safety 2007, are to be followed.
  - (ii) The use of the word dam includes the regulating dam, earth embankments, as well as the navigational lock.
  - (iii) If the interviews with the operators reveal that ice (including frazil ice) or debris have jammed or blocked the discharge weirs in the past, an "unusual loading - plugged drain" load combination will need to be considered.
- (iv) Seismic Parameters
  - (1) Given their assigned Dam Classification and based on the guidelines as described in the Parks Canada Directive for Dam Safety Program, the required earthquake parameters for each site are to be determined.
  - (2) Seismic analysis based on NBCC peak ground acceleration (using appropriate soil and topographic modified factors) will be allowed, and depending on the resulting factors of safety, the consultant may be requested to redo the analysis in accordance with the CDA guidelines

and the CDA Technical Bulletin for Seismic Hazard Considerations for Dam Safety 2007.

(b) Ice Loading

- (i) Where site-specific characteristics and reservoir operating water level information is available, values of static ice loads as determined by the CEATI Ice Load Design Guide (CEATI 2003) shall be used for the dam stability assessment, otherwise, with the approval of the Departmental Representative a value of 150 kN/m acting 300 mm below the water level can be used.
- (ii) As specified by the CEATI, a reduced ice load acting directly on the gates and stoplog can be used. With the approval of the Departmental Representative, a value of 75 kN/m for steel gates and a value of 30 kN/m for timber stoplogs or lock gates can be used. (Ref: Alberta Design Guidelines for Water Control Structure).
- (iii) Where piers or other protrusion are present, bridging action from pier to pier is to be considered.
- (iv) Where ice cover is known to drift due to river flows or wind effect, dynamic impact due to these ice flows are to be considered.

(c) Hydrostatic Pressure

- (i) Appropriate water levels, corresponding to the event being analyzed, are to be used. For the normal operation, water levels are to be based on maximum recorded summer and winter levels. For flood events, the water levels are to be determined based on an analysis of operation procedures and capability of the operation crews, together with the expected time of arrival of peak flows and consideration of reservoir effects.

(d) Silt Pressure

- (i) An assessment needs to be carried to evaluate whether or not silt accumulation (earth-pressure) against the dam needs to be considered for the stability analysis of the dam.

## 2. Dam, lock and foundation assessment:

- (a) The use of the word dam includes regulating dam, earth embankments, as well as the navigational lock.
- (b) The Consultant shall review all available information including the site inspection and carry out stability analysis using appropriate analysis methods.
  - (i) The structural and stability analysis is intended to determine the integrity of the dam and lock structures under standard loading conditions. Combinations of loading are categorized by their likelihood of occurrence. Unusual loads due to flood and earthquake events should also be considered. The assessment shall include an evaluation of concrete conditions.

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- (ii) As a minimum the structural analysis and stability assessment for the dam and lock structures needs to include all concrete components (wall, abutments, piers, sill etc.). In addition, the structural capacity of the stoplogs, lock gates, vertical steel roller gates and radial-arm gates need to be evaluated under normal summer and winter loading conditions, including seismic loading.
  - (1) The initial assessment of the dam and lock gates is to be limited to a cursory structural assessment of the gates (simple beam and load analysis, not a finite element analysis). Should this initial assessment indicate that the gates do not safely meet minimum standards, a detailed analysis will be carried out. This additional analysis work will be managed as an amendment to this Contract.
  - (iii) The scope of the concrete dams design review shall include:
    - (1) Initial assessment of the dam: analyze the dam using standard load and load combinations, IDF water levels, and estimates of the uplift pressure and strength parameters for the concrete/bedrock contact required for the analysis. The assessment should be based on the CDA Dam Safety guidelines.
    - (2) If the dam does not meet minimum standards under the initial assessment, then carry out sensitivity analyses to determine the required shear strength and/or the magnitude of loads to meet standards.
    - (3) Assess the need for a geotechnical investigation program. If there is a need to perform a geotechnical investigation program, then the service will be paid for in accordance with the following.
      - .1 There is a maximum amount payable for fees and disbursements related to a geotechnical investigation program. The amount is defined in the Price of Services Form in appendix C.

### 3. Earth Embankment Assessment

- (a) Initial assessment of the earthwork (embankments): analyze the embankments to determine the integrity of the dam under standard loading conditions using estimated pore pressures and soil strength parameters. Combinations of loading are categorized by their likelihood of occurrences. Unusual loads due to flood and earthquake events should also be considered. The assessments of the earth embankments are to include:
  - (i) The stability of the embankment under normal operations with steady state seepage;
  - (ii) The stability of the embankment under applicable seismic load conditions;
  - (iii) The stability of the embankment under IDF conditions, including the effect of over topping on it's overall stability;
  - (iv) The stability of the embankment under conditions such as rapid drawdown;

- (v) Seepage, piping, erosion and heaving potential.
- (b) Assess the need for a geotechnical investigation program. If there is a need to perform a geotechnical investigation program, then the service will be paid for in accordance with the following.
  - (i) There is a maximum amount payable for disbursements related to a geotechnical investigation program. The amount is defined in the Price Proposal Form in appendix C.
- (c) Determine if the dam satisfies the CDA guidelines standards.
- (d) Prioritize deficiencies and recommend measures to address deficiencies identified in the site inspection and stability analysis.
- (e) Provide a list of recommendations for repairs, including estimated costs and appropriate timelines for implementation based on operator and public safety considerations.
- (f) As part of the report include all assumptions, parameters and calculations for the stability analysis of the embankments.

#### **4. Other Failure Modes:**

- (a) In addition to the structural stability consideration of the dam structure, the Consultant shall assess any other potential failure modes and the adequacy of the design, construction and operation of the dam structure to address these failure modes.

### **RS 1.11 OPERATIONAL PROCEDURES AND SAFETY REVIEW**

#### **1. Operational Procedures**

- (a) Review of the dam operational procedures is required to assess the capability and reliability of the operations under usual situations and unusual or extreme situations such as under the IDF. This review needs to look at the role and responsible between PCA and the Hydro Generating Station for the control and operation of the dams.
- (b) Review of the lock operational procedures is required to understand the conditions under which the lock, portion of the lock or the lock gates, are acting as a dam/water retaining structure.
- (c) The operation procedures and equipment review is to be completed in accordance with Flow Control Equipment for Dam Safety CDA Technical Bulletin 2007. As a minimum the review needs to address:
  - (i) Dams: operating equipment condition, operations and security (log lifter, stoplog winches, gains, gain covers, stoplogs, vertical steel roller gate operating mechanism, radial arm gate operating mechanism, etc.)

- (ii) Locks: operating equipment condition, operations and security (lock filling and discharge valves and operating mechanism, lock gate operating mechanism, etc.)
  - (iii) Backup equipment and spare parts availability;
  - (iv) Maintenance schedule (including stoplog replacement);
  - (v) Dam operations procedures (i.e. seasonal operations, gate operation, stoplog jacking, ice removal etc.);
  - (vi) Operational staff capability; (sector crew size, number of dams, distance travel, experience, etc.)
  - (vii) Training of operational staff in the use of the operating equipment and the conditions under which they may have to operate (usual and unusual conditions). This is also to include the training of operational staff to execute an emergency response plan in the event of unusually high flows, flooding or a dam breach.
  - (viii) Service gains and the availability and condition of stoplogs for these gains.
- (d) Testing of the flow control equipment.
- (i) The test is to demonstrate that the equipment is in good operating condition and to confirm that the equipment can be operated to full weir capacity.
  - (ii) The test is to be approved and scheduled with the Water Management Engineer at the TSW. The operation of the equipment will be done by PCA operation staff.
  - (iii) The test will need to be fully documented and carried in two stages:
    - (1) Stage one: Functional test, intended to verify that the equipment is in operable condition. The test could be a recent documented operation of the equipment under normal operation condition. For equipment or weirs which are not normally operated, a test should be run with the removal of an equivalent number of stoplogs from an adjacent operational weir under normal condition. For gates which are not normally operated, a test should be run by opening the gate to the equivalent of an adjacent operational gate under normal condition.
    - (2) Stage two: full flow test, intended to verify the capability to fully remove and re-install stoplogs or fully open a gate. At a minimum, one of the deepest sluices on the dam needs to be fully opened. The full flow test should preferably be performed under high water condition; as such the test may need to be done in the spring.
  - (iv) Flow control equipment test restrictions: (note, these restrictions will need to be re-confirmed at the time of testing)
    - (1) Frankford Dam 6 and Lock 6:
      - .1 Functional and full flow test can be carried out on the vertical steel roller gates but will have to be scheduled based on staff availability

and water levels. Generally the spring is the best time to see maximum flows.

(2) Meyers Dam 8 and Lock 9:

- .1 Functional and full flow test can be carried out on the stoplog weirs or vertical steel roller gates but will have to be scheduled based on staff availability and water levels. Generally the spring is the best time to see maximum flows.

(3) Hagues Reach Dam 9 and Lock 10:

- .1 Functional and full flow test can be carried out on the stoplog weirs or radial-arm gates but will have to be scheduled based on staff availability and water levels. Generally the spring is the best time to see maximum flows.

(4) Ranney Falls Dam 10 and Locks 11 & 12:

- .1 Functional and full flow test can be carried out on the vertical steel roller gates but will have to be scheduled based on staff availability and water levels. Generally the spring is the best time to see maximum flows.

- (e) Report deficiencies and provide recommendations, together with urgency of actions to be taken.

## 2. Operator Safety

- (a) The following operators' safety procedures need to be reviewed and evaluated against the Canada Labor Code:
  - (i) Access to the site and the dam deck for operations (including access during adverse weather conditions);
  - (ii) Safety features of the dam (i.e. guardrails, gain cover);
  - (iii) Operators safety measures;
  - (iv) Dam and lock operations procedures (i.e. Stoplog operation, vertical steel roller gate operation, radial-arm gate operation, lock gate operation, stoplog jacking, ice and debris removal, etc.);
  - (v) Stoplog lifting equipment (i.e. log lifter and winches);
  - (vi) Communication;
  - (vii) Training of operation staff on dam equipment operating procedure and in emergency response.
- (b) Prepare a hazard assessment for the dam and lock operations;
- (c) Report deficiencies and provide recommendations, together with urgency of actions to be taken.

## RS 1.12 PUBLIC SAFETY REVIEW

1. The public safety review of each site (dam, embankments and lock) is to be completed in accordance with the Guidelines for Public Safety Around Dams 2011, Technical Bulletin: Public Safety Signage Around Dams October 2011, Technical Bulletin: Booms and Buoys for Public Safety Around Dams October 2011, Parks Canada Service Directive on Visitor Safety: Implementation Manual and Risk Tolerance Matrix, and the National Building Code of Canada (or the more recent version of these documents).
2. The assessment for public safety review shall consist of:
  - (a) Review of the PCA policies in reference to the public usage of the site;
  - (b) Field investigation to identify potential public safety hazard, existing control and mitigating measure at the site;
  - (c) Determine the present usage of the site by the public;
  - (d) Establish the risk associated with these activities;
  - (e) Review and assessment of existing control and mitigation measures at the site;
  - (f) Report of risk assessment and review of existing control and mitigation measures and their deficiencies.
3. Public safety assessment (PSA) around the dams needs to cover areas of the dam itself, lock, embankments, adjacent shorelines and water areas located upstream and downstream of the dam. Exclusion zones are limited to a distance from the dam where flow and water condition are no longer considered hazardous. Note that at some sites these areas may extend beyond PCA property limits.
4. The assessment of existing control and mitigation measures needs to cover existing fencing, barricades, signage, safety boom or other safety measures at the site. In particular, the assessment needs to cover:
  - (a) The review of the condition, visibility, layout and position of the control and mitigation measures, as per applicable CDA Technical Bulletins, the NBCC and if applicable the NWPA regulations.
  - (b) The review and assessment of the existing size and configuration of the upstream and downstream hazardous areas.
  - (c) The review of the public safety protocols used by PCA while carrying out dam operations.
  - (d) The review of PCA safety emergency response protocol for these sites.
5. Public usage of the site can be obtained through interviews with PCA operation staff, adjacent land owners or local municipality. As detailed in the CDA Guidelines, the review needs to assess the likelihood of different usage of the site, and incident consequence for the activity and for the particular hazard. These should also be obtained through these interviews.



6. Parks Canada has developed a Risk Evaluation Criteria (Risk Tolerance Criteria Matrix). As such, the public safety risk assessment shall be carried out as in accordance with the CDA Guidelines for Public Safety Around Dams 2011, and shall include the final task of the assigning a risk rating associated with the risk tolerance criteria.
7. The Risk Assessment Worksheet provided in the CDA Guidelines for Public Safety Around Dams 2011 is to be used for the risk analysis. The worksheet may require to be modified to reflect public activities and potential hazards associated with the locks.
8. A separate PSA report for each site is to be provided. The DSR report is to include a summary and highlights of the Public Safety Assessment Reports.

### **RS 1.13 ASSET CONDITION RISK CLASSIFICATION**

1. The Asset Condition Risk Classification is an assessment tool designed to assist PCA decision making for the investment planning for future rehabilitation of their infrastructures. In general the methodology employs results obtained through the Dam Safety Review to assess condition, performance, and risk of failure as well as likelihood of failure.
2. The asset assessment hierarchy is broken down into four major categories and related factors as follows:
  - (a) Physical Characteristics;
  - (b) Operational Procedures;
  - (c) Third Party Impact;
  - (d) PCA Impact.
3. Details of the rating methodology and the table (in Microsoft Excel format), are to be provided in a separate report for each site.

### **RS 1.14 OTHER SERVICES**

1. Additional work to be included as part the DSR assessment is described in PD3.2 PROJECT BACKGROUND under the individual dam site descriptions.

### **RS 1.15 CONCLUSION AND RECOMMENDATIONS**

1. For the conclusion of the Dam Safety Review, the reviewing Engineer needs to make one of the following conclusions:
  - (a) The lock, concrete dam and earthworks clearly meets all regulatory requirements; or

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- (b) The lock, concrete dam and earthworks clearly does not meet some regulatory requirements.
  - 2. Prioritize deficiencies and recommend mechanical, structural and/or non-structural remedial measures to address deficiencies identified in the site inspection, documentation review, and hydraulic and stability analysis.
  - 3. Where required, provide recommendations for additional investigation or study.
  - 4. Provide recommendations for repairs needed and estimated costs. Repairs are to take into consideration:
    - (a) Trent-Severn Waterway navigation and operations requirements;
    - (b) Public and operator safety requirements.
    - (c) Additional condition surveys, inspections and investigations required for preparing design and tender package.
    - (d) Design, construction, project management, and supervision fees
    - (e) Location of site, access
    - (f) Requirements for construction divers
    - (g) Cofferdam requirements and dewatering maintenance
  - 5. Recommend appropriate repair priorities with timelines for implementation.
  - 6. For urgent requirements provide recommendation for interim mitigation measures that can be taken, while appropriate measures are put in place.

## **RS 1.16 DELIVERABLES**

### **1. GENERAL**

- (a) Prepare and submit DRAFT Reports at 95% completion for review and approval by the Departmental Representative.
- (b) Revise as required by the Departmental Representative and submit Final Report.
- (c) Final DSR reports must be signed and sealed by a P.Eng licensed in the Province of Ontario.
- (d) Submit six (6) hard copies of each draft report and ten (10) hard copies of each Final Report. Also provide four (4) CD-ROMs containing the final reports, photographs, and drawings in AutoCAD and pdf format.
- (e) The reports are to use recognized international convention for identification of left and right hand sides of the dam, which is the left and right of the dam while looking downstream. Furthermore, the reports also need to use the metric system for showing/discussing dimensions, forces, stress etc.
- (f) Except for deliverables explicitly asked for in this brief, all other important issues, decisions, and concerns will be dealt with using e-mails, memos, and conference calls or meetings with minutes.

## 2. EMERGENCY CONDITIONS REPORTING

- (a) Serious deficiencies identified in the site inspections as mentioned in RS 1.4 or during the analysis of the dam structures, related to the Occupational Health and Safety Act (OHSA) or public safety, are to be identified immediately to PWGSC verbally, then followed up by a brief e-mail or memo within 24hrs.

## 3. INSPECTION REPORT

- (a) The Consultant shall prepare an Inspection Report for each of the four dam sites. Draft reports are to be forwarded to Departmental Representative for review. The final reports will be prepared after written comments from the Departmental Representative are satisfactorily addressed.
- (b) The Consultant is not to stop their work on the Dam Safety Review while the Inspection Reports are being reviewed by PWGSC and PCA.
- (c) The Inspection Report shall include, but not limited to the following:
  - (i) Table of Contents
  - (ii) Condition assessment and records of observation / findings of:
    - (1) Upstream and downstream condition;
    - (2) Concrete dam structure (including deck and underwater observations);
    - (3) Earthworks (embankments);
    - (4) Lock structure (including lock gates and lock discharge & filling valves);
    - (5) Mechanical equipment (stoplogs, log lifter, winches, vertical steel roller gates and lifting mechanism, radial-arm gates and lifting mechanism, etc.);
    - (6) Public and operators safety questionnaire, which have been filled-out.
  - (iii) Review of operation procedures.
  - (iv) Records of interviews with PCA operation and engineering staff :
    - (1) PCA staff reported issues with the dam and lock;
    - (2) Dam and lock operation issues;
    - (3) Operator and public safety issues;
    - (4) Public usage of the site;
    - (5) Other.
  - (v) Appendices
    - (1) Photographs of significant areas of deterioration or interest. In addition, photographs of the general condition of structures and site are important even if structure is in good condition.
    - (2) Copy of the preliminary geotechnical/material investigation report (if available).

#### 4. PUBLIC SAFETY ASSESSMENT REPORT

- (a) The consultant shall prepare a detailed Public Safety Assessment (PSA) Report for each of the four dam sites. Draft reports are to be forwarded to Departmental Representative for review. The final reports will be prepared after written comments from the Departmental Representative are satisfactorily addressed.
- (b) The Consultant is not to stop their work on the Dam Safety Review while the Inspection Reports are being reviewed by PWGSC and PCA.
- (c) The Inspection Report shall include, but not limited to the following:
  - (i) Title Page
  - (ii) Covering memorandum
  - (iii) Table of Contents
  - (iv) Introduction
  - (v) Background
  - (vi) Public Safety Risk Assessment
  - (vii) Site Observations and Risk Evaluation
    - (1) Introduction
    - (2) Upstream Location
    - (3) Headpond
    - (4) Structures (including earthworks and Locks)
    - (5) Spillway
    - (6) Downstream Location
  - (viii) Conclusion
  - (ix) List of Figures (if required)
  - (x) List of Tables (if required)
  - (xi) Appendices
    - (1) Location Maps
    - (2) Site Inspection Photos
    - (3) Public Safety Around Dams Risk Assessment Tool
    - (4) Questions to Operators and Answers

#### 5. ASSET CONDITION RISK CLASSIFICATION REPORT

- (d) Details of the rating methodology and the table (in Microsoft Excel format) are to be provided in a separate report.

(e) The Report shall include, but not limited to the following:

- (i) Covering memorandum explaining the details of the rating methodology.
- (ii) Table in Excel.

## 6. DAM SAFETY REVIEW REPORT

- (a) The Consultant shall prepare a detailed Dam Safety Review Report for each of the four dam sites. Draft reports are to be forwarded to Departmental Representative for review prior to finalizing. The final report will be prepared after written comments from the Departmental Representative are satisfactorily addressed.
- (b) All assumptions, parameters and calculations, which were made to assess the dam safety, dam classification and dam stability, are to be clearly identified in the report.
- (c) The Dam Safety Report shall cover all aspects of the Dam Safety Review. The content of the report will be based on the 2007 CDA Dam Safety Guidelines and include, but not necessarily be restricted to:
  - (i) Title Page
  - (ii) Covering memorandum
  - (iii) Project Team
  - (iv) Site Photo
  - (v) Executive Summary
  - (vi) Recommendation Table and Cost Estimate
    - (1) Introduction
      - .1 Purpose and Objectives
      - .2 Site Description /Location
    - (2) Background Information
      - .1 General
      - .2 Background
        - 01) General
        - 02) Construction/Repair History
        - 03) Geology and Geotechnical Characteristics
        - 04) Operation
    - (3) Drawings
      - .1 Site layout
      - .2 As-found drawings of the dam and lock showing the plan view, elevation view, appropriate sections, details and any text notes for clarification.
    - (4) Inspection, Document Review and Deficiencies
      - .1 Record of Observation
        - 01) Review of the dam, lock and earthworks (including underwater observations)

- 02) Review of the stoplogs, log lifter, winches, lock gates and valves, etc.
- 03) Review of the vertical steel roller gates (where applicable)
- 04) Review of the radial-arm gates (where applicable)
- 05) Review of operation procedures
- 06) Review of operation and public safety
- 07) Geotechnical aspect
- 08) Review of existing operation procedures and policies, OMS,EPP and ERP documents
- (5) Dam Classification Review
  - .1 Review of preliminary assigned Dam Classification (Dam and Lock)
  - .2 Dam Break Analysis and Inundation Mapping
  - .3 Confirmation of Dam Classification.
- (6) Dam Safety Analysis
  - .1 Hydro-Technical
    - 01) Description of the watershed
    - 02) IDF / PMF assessment
  - .2 Hydraulic Capacity
    - 01) Operational procedures
    - 02) Dam discharge capacity
    - 03) Discharge analysis / Operating Rule Curve
    - 04) Adequacy of Discharge Capacity
    - 05) Freeboard and Wave Action
  - .3 Structural Analysis
    - 01) Stability Assessment/Analysis
      - (1) Concrete Dam;
      - (2) Concrete Lock;
      - (3) Earthworks (embankments);
      - (4) Structural assessment of stoplogs, lock gates, vertical steel roller gates and radial-arm gates.
- (7) Dam and Lock Operation
- (8) Safety
  - .1 Operational Safety
  - .2 Public Safety
- (9) Recommendations
  - .1 Recommendations for additional studies
  - .2 Recommendations for rehabilitation / repair and their priority for work required:
    - 01) Immediately;
    - 02) Within 2 years;
    - 03) Within 5 years;
    - 04) Long term (within 5 years or more).
  - .3 Cost estimates of the rehabilitation / repair work
- (10)Conclusions

Solicitation No. - N° de l'invitation

EQ754-133441/A

Client Ref. No. - N° de réf. du client

R.059226.001

Amd. No. - N° de la modif.

File No. - N° du dossier

PWL-2-35144

Buyer ID - Id de l'acheteur

pw1023

CCC No./N° CCC - FMS No/ N° VME

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## (11)Appendices

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## **RS 2 GEOTECHNICAL INVESTIGATION PROGRAM**

### **RS 2.1 GENERAL**

1. Depending on the results of the initial stability assessment of the concrete structures and earthwork, as defined under Section RS 1.10, a geotechnical investigation program will be required.
2. Develop a geotechnical investigation program as required to undertake subsurface soil sampling, piezometer installation, destructive and non-destructive testing and laboratory analysis. This shall include details on the sub-consultants to be used (if any), costs involved, test locations and type, additional stability analysis using the results of the geotechnical investigation, etc., for the approval by Departmental Representative.
3. As part of the dam safety review the Consultant shall undertake a limited geotechnical / concrete coring program to determine the quality and condition of the concrete in the existing dam and lock, the nature of the bedrock foundation, and evaluate the water-tightness of the dam and bedrock. This work will be carried-out through a field investigation consisting of core drilling, sampling, field observations, recording of core conditions, laboratory testing and reporting.
4. As part of the dam safety review the Consultant shall undertake a limited geotechnical program to define soil parameters of the earthworks and/or of other areas under this study. This work will be carried-out through a field investigation consisting of boreholes, sampling, field observations, recording of borehole conditions, laboratory testing and reporting.
5. The Consultant shall plan the geotechnical investigations to gather sufficient information to help with the dam assessment.
6. Prior to undertaking any geotechnical investigation programs, provide the Departmental Representative with:
  - (a) A field program plan, including a schedule;
  - (b) A Health and Safety Plan, including an Emergency Response Plan for the field work; as per PA 1.2;
  - (c) An Environmental Protection plan for the field work.

### **RS 2.2 DELIVERABLE**

1. Provide four (4) hard copies of the Geotechnical Investigation Report for each site. Also provide one (1) CD-ROMs containing the reports in pdf format.
2. The Geotechnical Investigation Report shall cover:
  - (a) detailed logs of all core and boreholes;
  - (b) colour photos of all retrieved samplings;
  - (c) colour photos of concrete surface distresses at core locations (overall photos of structures are not required);



- (d) detailed laboratory results including an assessment of cohesiveness and determination of friction coefficient, and;
- (e) recommendations with respect to:
  - (i) concrete quality and condition;
  - (ii) seepage through or under dam structure.
- (f) report must be signed and sealed by a P.Eng licensed in the Province of Ontario.

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## **SUBMISSION REQUIREMENTS AND EVALUATION**

SRE 1 General Information

SRE 2 Proposal Requirements

SRE 3 Submission Requirements and Evaluation

SRE 4 Price of Services

SRE 5 Total Score

SRE 6 Submission Requirements - Checklist

## SUBMISSION REQUIREMENTS AND EVALUATION

### SRE 1 GENERAL INFORMATION

#### SRE 1.1 Reference to the Selection Procedure

- .1 An "Overview of the Selection Procedure" can be found in R1410T General Instructions to Proponents (GI 3).

#### SRE 1.2 Calculation of Total Score

- .1 For this project the Total Score will be established as follows:

Technical Rating x 90% = Technical Score (Points)

Price Rating x 10% = Price Score (Points)

Total Score = Max. 100 Points

### SRE 2 PROPOSAL REQUIREMENTS

#### SRE 2.1 Requirement for Proposal Format

- .1 The following proposal format requirements should be implemented when preparing the proposal:
  - (1) Submit **one (1) bound original plus five (5) bound copies of the proposal.**
  - (2) Paper size should be - 216mm x 279mm (8.5" x 11").
  - (3) Minimum font size - 11 point Times New Roman or equivalent.
  - (4) Minimum margins - 12 mm left, right, top, and bottom.
  - (5) Double-sided submissions are preferred.
  - (6) One (1) 'page' means one side of a 216mm x 279mm (8.5" x 11") sheet of paper.
  - (7) 279mm x 432 mm (11" x 17") fold-out sheets for spreadsheets, organization charts etc. will be counted as two pages.
  - (8) The order of the proposals should follow the order established in the SRE section of the Request for Proposal (RFP).

#### SRE 2.2 Specific Requirements for Proposal Format

- .1 The maximum number of pages (including text and graphics) to be submitted for the Rated Requirements under SRE 3.2 is **Forty (40) pages**. The following are not part of the page limitation mentioned above:

- (1) Covering letter;
- (2) Front page of the RFP;
- (3) Front page of solicitation amendment(s) to the RFP, if any;
- (4) Consultant Team Identification (Appendix A);
- (5) Declaration/Certifications Form (Appendix B);
- (6) Price Proposal Form (Appendix C); and
- (7) Code of Conduct Certification ( Appendix B - Annex BB)

### **SRE 2.3 Consequence of non-compliance**

- .1 All pages that extend beyond the abovementioned page limitation, as well as any other attachments, will be extracted from the proposal and will not be forwarded to the PWGSC Evaluation Board members for evaluation.

## **SRE 3 SUBMISSION REQUIREMENTS AND EVALUATION**

### **SRE 3.1 MANDATORY REQUIREMENTS**

Failure to meet the Mandatory Requirements will render the proposal as non-responsive and no further evaluation will be carried out.

#### **SRE 3.1.1 Licensing, Certification or Authorization**

- .1 The Proponent shall be a Civil Engineer (Dam Engineer), licensed or eligible to be licensed, certified or otherwise authorized to provide the necessary professional dam engineering services to the full extent that may be required by provincial law in the province of Ontario.

#### **SRE 3.1.2 Consultant Team Identification**

- .1 The Consultant Team must include the following:

##### **(1) Proponent (Prime Consultant)**

- (i) Civil engineering firm specialized in dam & water retaining structures
- (ii) Lead Engineer - The lead engineer appointed by the Proponent on this project will assume the responsibility of the Review Engineer, and as such will be responsible for the final content of the Dam Safety Review.

## **(2) Key Sub-Consultants and/or Specialists**

- (i) Structural Engineer (dam engineering)
- (ii) Hydrology Engineer;
- (iii) Geotechnical Engineer;
- (iv) Mechanical Engineer;
- (v) Electrical Engineer;
- (vi) Hydraulics Engineer;

## **(3) Information Required**

- (i) Names of firm and of key personnel to be assigned to the project.
- (ii) Indicate current license and, as required, indicate how all other provincial licensing requirements will be met.
- (iii) In the case of a Joint Venture identify the existing or proposed legal form of the Joint Venture (refer to R1410T General Instructions to Proponents GI 9 - Limitation of Submissions).
- (iv) An example of an acceptable format (typical) for submission of the team identification information is provided in Appendix A.

### **SRE 3.1.3 Declaration/Certifications Form**

.1 Proponents must complete, sign and submit the following:

- (1) Appendix B, Declaration/Certifications Form as required.

### **SRE 3.1.4 Code of Conduct Certifications**

Proponents who are incorporated, including those bidding as a joint venture, must provide with their bid or promptly thereafter a complete list of names of all individuals who are currently directors of the Proponent. Proponents bidding as sole proprietorship, including those bidding as a joint venture, must provide the name of the owner with their bid or promptly thereafter. Proponents bidding as societies, firms, partnerships or associations of persons do not need to provide lists of names. If the required names have not been received by the time the evaluation of bids is completed, Canada will inform the Proponent of a time frame within which to provide the information. Failure to comply will render the bid non-responsive. Providing the required names is a mandatory requirement for contract award.

## **SRE 3.2 RATED REQUIREMENTS**

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### **SRE 3.2.1 Achievements of Proponent on Projects**

- (1) Describe the Proponent's accomplishments, achievements and experience as prime consultant on Dam Safety Review (DSR) projects. Select a **maximum** of three (3) projects undertaken within the last ten (10) years. Joint venture submissions are not to exceed the maximum number of projects. Only the first three (3) projects listed in sequence will receive consideration and any others will receive none as though not included.
- (2) The Proponent is to provide for each project:
  - (i) A clear indication of how the project is comparable/relevant to the project in this RFP;
  - (ii) A brief description of the project's intent, objectives, scope, budget and schedule, (including engineering services);
  - (iii) A brief description of challenges and problems that were encountered during the project;
  - (iv) An identification of key disciplines involved in the project, the names of the firms (e.g Prime Consultant or Sub-consultant) who provided the expertise and the names of key personnel who provided the services.
    - a) If the project was carried out as a Joint Venture, provide the names and description of responsibilities of each of the key firms involved
  - (v) Client References including: name, address, phone, fax and e-mail address of client contact at working level. References must be current and complete.

### **SRE 3.2.2 Expertise and Experience of Lead Engineer**

- (1) Describe the expertise and experience of the Lead Engineer to be assigned to this project regardless of their past association with the current Proponent firm.
- (2) This is the opportunity to emphasize the strengths of the individual on the team, to recognize their past responsibilities, commitments and achievements.
- (3) The Proponent should provide for the Lead Engineer:
  - (i) Individual's name, title and brief description of current functions; and name of firm;
  - (ii) A description of expertise and experience (with number of years) and demonstration of how he/she is relevant to the specific needs of this RFP (use references to SRE 3.2.1 as appropriate);

(iii) A demonstration of roles, responsibilities and degree of involvement on past projects that will corroborate the person's expertise and experience;

(iv) Details regarding professional accreditation (province, year, status, etc.)

### **SRE 3.2.3 Expertise and Experience of Key Sub-Consultants and/or Specialist**

- (1) Describe the expertise and experience of key sub-Consultants and/or Specialist to be assigned to this project regardless of their past association with the current Proponent firm.
- (2) This is the opportunity to emphasize the strengths of the individuals on the team, to recognize their past responsibilities, commitments and achievements.
- (3) The Proponent should provide, for each key personnel of the Key Sub-Consultants and/or Specialist in the Team Identification Form in Appendix "A": ( minimum of two (2) key personnels for each Key Sub-Consultants and/or Specialist)
  - (i) Individual's name, title and brief description of current functions; and name of firm;
  - (ii) A description of expertise and experience (with number of years) and demonstration of how they are relevant to the specific needs of this RFP (use references to SRE 3.2.1 as appropriate);
  - (iii) A demonstration of roles, responsibilities and degree of involvement on past projects that will corroborate the person's expertise and experience;
  - (iv) Details regarding professional accreditation (province, year, status, etc.)

### **SRE 3.2.4 Understanding of the Project**

- (1) Demonstrate understanding of the objectives of the project and of its functional and technical requirements. Also, demonstrate understanding of important issues, constraints and challenges that will affect the delivery and implementation of the project.
- (2) The Proponent should provide: Identification and brief description of the key elements of each of the following areas, as well as a broad overview of how the Proponent will address them:
  - (i) Project specific objectives;
  - (ii) Functional and technical requirements;
  - (iii) Important issues, constraints and challenges;

### **SRE 3.2.5 Scope of Services:**

- (1) Demonstrate understanding of the full scope of services for this project. Describe how the Proponent proposes to plan, organize and manage the delivery of all project services and deliverables, through each and every phase of the project, in a manner that will meet project time, cost, quality and scope objectives and requirements.
- (2) The Proponent should provide:
  - (i) A demonstration of the Proponent's understanding, in their own words, of the full scope of services and deliverables required for this project;
  - (ii) A Project Work Breakdown Structure (PWBS) for EACH DAM SITE including, but not limited to:
    - a) deliverable-oriented groupings of all project activities, tasks and deliverables;
    - b) clear assignment of responsibilities for activities, tasks and deliverables to project team personnel in specific areas of expertise, with an estimation of levels of effort in terms of number of hours of all identified resources; (employee hourly rates and value of work (\$\$) are not to be included).
- (3) A Project Schedule for EACH DAM SITE including, but not limited to:
  - (i) logical sequencing of all project activities, tasks and deliverables, taking into consideration project constraints and challenges;
  - (ii) start and finish times for all key activities, along with target dates for major project milestones and deliverables.

### **SRE 3.2.6 Management of Services:**

- (1) Describe how the Proponent will set up, organize and manage all resources (i.e. Prime Consultant, the Joint-Venture Consultant(s)(as applicable), the Sub-consultants and other key personnel) to form a project team capable of effectively providing all the required services and deliverables, addressing all issues and constraints, and meeting all the challenges of the project.
- (2) The Proponent is to provide:
  - (i) A description of the project team including, but not limited to:
    - a) names, titles and years of pertinent experience of all team members, as well as a summary of what their roles and responsibilities will be on the project;
    - b) the firm of origin of the team members (i.e. Prime Consultant, Joint-Venture Consultant, Sub-consultants, etc.) and the number of years with that firm;



- c) detailed profiles of key positions and of key team members for these positions (use links to SRE 4.3 as appropriate);
  - d) names of personnel who will be committed to the project as back-up to key position, and a brief description of their expertise and experience (with years of experience);
  - e) overall depth of available back-up resources and expertise.
- (ii) An Organization Chart that clearly shows:
- a) name and title of the Proponent's prime contact(s) for the project;
  - b) names and titles of the project team members;
  - c) lines of communication and reporting structure;
  - d) business and reporting relationships between firms forming the project team (i.e. Prime Consultant, Joint-Venture Consultant(s), Sub-consultants, etc.);
- (iii) A description of the Proponent's management approach to:
- a) meeting all project administrative requirements;
  - b) managing and coordinating all consulting services and deliverables provided by the Prime Consultant, the Joint-Venture Consultant(s), the Sub-consultants, etc.;
  - c) ensuring continuing and consistent availability, efficiency and assignment of required expertise without omissions, duplications or conflicting responsibilities;
  - d) quality assurance and review process prior to submitting deliverables;
  - e) ensuring effective communications;
  - f) meeting project response time requirements.

### **SRE 3.2.7 Approach / Methodology**

- (1) Describe the internal processes the Proponent has in place to ensure that all project services are delivered on time, on budget, on scope and at the highest level of quality.

- (2) Identify major challenges that may affect the delivery of services and implementation of the project, and describe the Proponent's proposed approach to effectively deal with these challenges.

### SRE3.3 EVALUATION AND RATING

#### SRE 3.3.1 Evaluation Table

	What will be evaluated	Weight Factor
<b>SRE 3.2.1 Achievements of Proponent on Projects</b>		
2 (i)	A clear indication of how the project is comparable/relevant to the project in this RFP	0.3
2(ii)	A brief description of the project's intent, objectives, scope, budget and schedule, (including engineering services)	0.25
2 (iii)	A brief description of challenges and problems that were encountered during the project	0.2
2 (iv)	An identification of key disciplines involved in the project, the names of the firms (e.g Prime Consultant or Sub-consultant) who provided the expertise and the names of key personnel who provided the services. If the project was carried out as a Joint Venture, provide the names and description of responsibilities of each of the key firms involved	0.15
2 (v)	Client References including: name, address, phone, fax and e-mail address of client contact at working level	0.1
<b>SRE 3.2.2 Expertise and Experience of Lead Engineer</b>		
3 (i)	Individual's name, title and brief description of current functions; and name of firm;	0.1
3 (ii)	A description of expertise and experience (with number of years) and demonstration of how he/she is relevant to the specific needs of this RFP (use references to SRE 4.2 as appropriate);	0.4
3 (iii)	A demonstration of roles, responsibilities and degree of involvement on past projects that will corroborate the person's expertise and experience;	0.4
3 (iv)	Details regarding professional accreditation	0.1
<b>SRE 3.2.3 Expertise and Experience of Key Sub-Consultants and/ or Specialist - minimum of two (2) key personnels for each Key Sub-Consultant and/ or Specialist in the Team Identification form in Appendix "A"</b>		

3 (i)	Individual's name, title and brief description of current functions; and name of firm;	0.1
3 (ii)	A description of expertise and experience (with number of years) and demonstration of how they are relevant to the specific needs of this RFP (use references to SRE 4.2 as appropriate);	0.4
3 (iii)	A demonstration of roles, responsibilities and degree of involvement on past projects that will corroborate the person's expertise and experience;	0.4
3 (iv)	Details regarding professional accreditation	0.1
<b>SRE 3.2.4 Understanding of the Project</b>		
2(i)	Project specific objectives	0.2
2(ii)	Functional and technical requirements	0.4
2(iii)	Important issues, constraints and challenges	0.4
<b>SRE 3.2.5 Scope of Services</b>		
2(i)	A demonstration of the Proponent's understanding of the full scope of services and deliverables required for this project	0.3
2 (ii)	A Project Work Breakdown Structure (PWBS) for EACH DAM SITE	0.4
3	A Project Schedule for EACH DAM SITE	0.3
<b>SRE 3.2.6 Management of Services</b>		
2(i)	A description of the project team	0.25
2(ii)	An Organization Chart	0.25
2(iii)	A description of the Proponent's management approach	0.5
<b>SRE 3.2.7 Approach/Methodology</b>		
1	Describe the internal processes the Proponent has in place to ensure that all project services are delivered on time, on budget, on scope and at the highest level of quality.	0.5
2	Identify major challenges that may affect the delivery of services and implementation of the project, and describe the	0.5

	Proponent's proposed approach to effectively deal with these challenges	
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### SRE3.3.2 EVALUATION AND RATING

In the first instance, price envelopes will remain sealed and only the technical components of the proposals which are responsive will be reviewed, evaluated and rated by a PWGSC Evaluation Board in accordance with the following to establish Technical Ratings:

Criterion	Weight Factor	Rating	Weighted Rating
SRE 3.2.1 Achievements of Proponent on Projects	1.0	0 - 10	0 - 10
SRE 3.2.2 Expertise and Experience of Lead Engineer	1.5	0 - 10	0 - 15
SRE 3.2.3 Expertise and Experience of Key sub-Consultant and/or Specialists	2.5	0 - 10	0 - 25
SRE 3.2.4 Understanding of the Project	1.5	0 - 10	0 - 15
SRE 3.2.5 Scope of Services	1.5	0 - 10	0 - 15
SRE 3.2.6 Management of Services	1.0	0 - 10	0 - 10
SRE 3.2.7 Approach / Methodology	1.0	0 - 10	0 - 10
<b>Technical Rating</b>	<b>10.0</b>		<b>0 - 100</b>

### SRE 3.3.3 Generic Evaluation Table

PWGSC Evaluation Board members will evaluate the strengths and weaknesses of the Proponent's response to the evaluation criteria and will rate each criterion with even numbers (0, 2, 4, 6, 8 or 10) using the generic evaluation table below:

NON RESPONSIVE	INADEQUATE	WEAK	ADEQUATE	FULLY SATISFACTORY	STRONG
----------------	------------	------	----------	--------------------	--------

Did not submit information which could be evaluated	Lacks complete or almost complete understanding of the requirements.	Has some understanding of the requirements but lacks adequate understanding in some areas of the requirements	Demonstrates a good understanding of the requirements.	Demonstrates a very good understanding of the requirements.	Demonstrates an excellent understanding of the requirements
	Weaknesses cannot be corrected	Generally doubtful that weaknesses can be corrected	Weaknesses can be corrected	No significant weaknesses	No apparent weaknesses
	Proponent do not possess qualifications and experience	Proponent lacks qualifications and experience	Proponent has an acceptable level of qualifications and experience	Proponent is qualified and experienced	Proponent is highly qualified and experienced
	Team proposed is not likely able to meet requirements	Team does not cover all components or overall experience is weak	Team covers most components and will likely meet requirements	Team covers all components - some members have worked successfully together	Strong team - has worked successfully together on comparable projects
	Sample projects not related to this requirement	Sample projects generally not related to this requirement	Sample projects generally related to this requirement	Sample projects directly related to this requirement	Leads in sample projects directly related to this requirement

	Extremely poor, insufficient to meet performance requirements	Little capability to meet performance requirements	Acceptable capability, should ensure adequate results	Satisfactory capability, should ensure effective results	Superior capability, should ensure very effective results
--	---	--	---	--	---

To be considered further, proponents **must** achieve a minimum Technical Rating of sixty (60) points out of the hundred (100) points available as specified above.

**No further consideration will be given to proponents not achieving the pass mark of sixty (60) points.**

#### SRE 4 PRICE OF SERVICES

All price proposal envelopes corresponding to responsive proposals which have achieved the pass mark of sixty (60) points will be opened upon completion of the technical evaluation. An average price is determined by adding all the price proposals together and dividing the total by the number of price proposals being opened.

All price proposals which are greater than twenty-five percent (25%) above the average price will be set aside and receive no further consideration.

The remaining price proposals are rated as follows:

The lowest price proposal receives a Price Rating of 100

The second, third, fourth and fifth lowest prices receive Price Ratings of 80, 60, 40, and 20 respectively. All other price proposals receive a Price Rating of 0.

On the rare occasions where two (or more) price proposals are identical, the matching price proposals receive the same rating and the corresponding number of following ratings are skipped.

The Price Rating is multiplied by the applicable percentage to establish the Price Score.

## SRE 5 TOTAL SCORE

Total Scores will be established in accordance with the following:

Rating	Possible Range	% of Total Score	Score (Points)
Technical Rating	0 - 100	90	0 - 90
Price Rating	0 - 100	10	0 - 10
Total Score		100	0 - 100

The Proponent receiving the highest Total Score is the first entity that the Evaluation Board will recommend for the provision of the required services. In the case of a tie, the proponent submitting the lower price for the services will be selected.

## SRE 6 SUBMISSION REQUIREMENTS - CHECKLIST

The following list of documents and forms is provided with the intention of assisting the Proponent in ensuring a complete submission. The Proponent is responsible for meeting all submission requirements.

Please follow detailed instructions in R1410T General Instructions to Proponents, G116 Submission of Proposal. Proponents may choose to introduce their submissions with a cover letter.

- |  |  |
|--|--|
| <input type="checkbox"/> Team Identification                         | - see typical format in Appendix A                   |
| <input type="checkbox"/> Declaration/Certifications Form             | - completed and signed - form provided in Appendix B |
| <input type="checkbox"/> Code of Conduct Certifications              | - list of directors/owners - Appendix B, Annex BB    |
| <input type="checkbox"/> Proposal                                    | - one (1) original plus five (5) copies required     |
| <input type="checkbox"/> Front page of RFP                           |  |
| <input type="checkbox"/> Front page(s) of any solicitation amendment |  |

In a separate envelope:

- |  |  |
|--|--|
| <input type="checkbox"/> Price Proposal form | - one (1) completed and submitted in a separate envelope |
|--|--|



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## **APPENDIX A**

### **TEAM IDENTIFICATION FORMAT**

## APPENDIX A - TEAM IDENTIFICATION FORMAT

For details on this format, please see SRE in the Request For Proposal.

The prime consultant and other members of the Consultant Team shall be, or eligible to be, licensed, certified or otherwise authorized to provide the necessary professional services to the full extent that may be required by provincial or territorial law.

### I. Prime Consultant

#### i) Proponent - Civil engineering firm specialized in dam & water retaining structures):

Firm or Joint Venture Name: .....

.....

.....

ii) **Lead Engineer** - appointed by the Proponent on this project will assume the responsibility of the Review Engineer, and as such will be responsible for the final content of the Dam Safety Review.

Provincial professional licensing status and/or professional accreditation:

.....

.....

.....

.....

.....

### II. Key Sub Consultants / Specialists:

#### Structural Engineer (dam engineering)

Firm Name: .....

.....

Key Individuals and provincial professional licensing status and/or professional accreditation:

.....

.....

.....

.....

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**Hydrology Engineer**

Firm Name: .....  
.....  
.....

Key Individuals and provincial professional licensing status and/or professional accreditation:

.....  
.....  
.....  
.....

**Geotechnical Engineer**

Firm Name: .....  
.....  
.....

Key Individuals and provincial professional licensing status and/or professional accreditation:

.....  
.....  
.....  
.....

**Mechanical Engineer**

Firm Name: .....  
.....  
.....

Key Individuals and provincial professional licensing status and/or professional accreditation:

.....  
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.....

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## Electrical Engineer

Firm Name: .....  
.....  
.....

Key Individuals and provincial professional licensing status and/or professional accreditation:

.....  
.....  
.....  
.....

## Hydraulics Engineer

Firm Name: .....  
.....  
.....

Key Individuals and provincial professional licensing status and/or professional accreditation:

.....  
.....  
.....  
.....

## APPENDIX B

### DECLARATION/CERTIFICATIONS FORM

**Project Title: Dams Safety Reviews: Lower Rice Region, Trent-Severn Waterway**

**Name of Proponent:**

**Street Address:**

**Mailing Address:**

(if different than street address)

**City:** \_\_\_\_\_

**City:** \_\_\_\_\_

**Prov./Terr./State:** \_\_\_\_\_

**Prov./Terr./State:** \_\_\_\_\_

**Postal/ZIP Code:** \_\_\_\_\_

**Postal/ZIP Code:** \_\_\_\_\_

**Telephone Number: (\_\_\_\_) \_\_\_\_\_**

**Fax Number: (\_\_\_\_) \_\_\_\_\_**

**E-Mail:** \_\_\_\_\_

**Procurement Business Number:**

<p><b>Type of Organization:</b></p> <p>_____ Sole Proprietorship</p> <p>_____ Partnership</p> <p>_____ Corporation</p> <p>_____ Joint Venture</p>	<p><b>Size of Organization:</b></p> <p>Number of Employees _____</p> <p>Graduate Architects / Professional Engineers _____</p> <p>Other Professionals _____</p> <p>Technical Support _____</p> <p>Other _____</p>
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## APPENDIX B - DECLARATION/CERTIFICATIONS FORM (CONT'D)

### Federal Contractors Program (FCP) - Certification

Pursuant to GI 12, The Proponent must complete the following certification.

1. The Proponent, or, if the Proponent is a joint venture the member of the joint venture, certifies its status with FCP, as follows:

The Proponent or the member of the joint venture

- (a) ☐ is not subject to the FCP, having a workforce of less than 100 full- time or part-time permanent employees, and/or temporary employees having worked 12 weeks or more in Canada,
- (b) ☐ is not subject to the FCP, being a regulated employer under the Employment Equity Act, S.C. 1995, c.44;
- (c) ☐ is subject to the requirements of the FCP, having a workforce of 100 or more full time or part-time permanent employees, or temporary employees having worked 12 weeks or more in Canada, but has not previously obtained a certificate number from HRSDC, (having not bid on requirements of \$200,000 or more), in which case a duly signed certificate of commitment is attached;
- (d) ☐ is subject to the FCP, and has a valid certificate number as follows:  
\_\_\_\_\_ (e.g. has not been declared an ineligible contractor by HRSDC).

Please check the appropriate item above. Further information on the FCP is available on the HRSDC Web site.

2. If the Proponent does not fall within the exceptions enumerated in 1. (a) or (b), or does not have a valid certificate number confirming its adherence to the FCP, the Proponent must fax (819-953-8768) a copy of the signed form LAB 1168, Certificate of Commitment to Implement Employment Equity, to the Labor Branch of HRSDC.

## APPENDIX B - DECLARATION/CERTIFICATIONS FORM (CONT'D)

### Former Public Servant (FPS) - Certification

Contracts with former public servants (FPS) in receipt of a pension or of a lump sum payment must bear the closest public scrutiny, and reflect fairness in the spending of public funds. In order to comply with Treasury Board policies and directives on contracts with FPS, proponents must provide the information required below.

#### Definitions

For the purposes of this clause,

"former public servant" is any former member of a department as defined in the *Financial Administration Act*, R.S., 1985, c. F-11, a former member of the Canadian Armed Forces or a former member of the Royal Canadian Mounted Police. A former public servant may be:

- (a) an individual;
- (b) an individual who has incorporated;
- (c) a partnership made of former public servants; or
- (d) a sole proprietorship or entity where the affected individual has a controlling or major interest in the entity.

"lump sum payment period" means the period measured in weeks of salary, for which payment has been made to facilitate the transition to retirement or to other employment as a result of the implementation of various programs to reduce the size of the Public Service. The lump sum payment period does not include the period of severance pay, which is measured in a like manner.

"pension" means, a pension or annual allowance paid under the *Public Service Superannuation Act* (PSSA), R.S., 1985, c.P-36, and any increases paid pursuant to the *Supplementary Retirement Benefits Act*, R.S., 1985, c.S-24 as it affects the PSSA. It does not include pensions payable pursuant to the *Canadian Forces Superannuation Act*, R.S., 1985, c.C-17, the *Defence Services Pension Continuation Act*, 1970, c.D-3, the *Royal Canadian Mounted Police Pension Continuation Act*, 1970, c.R-10, and the *Royal Canadian Mounted Police Superannuation Act*, R.S., 1985, c.R-11, the *Members of Parliament Retiring Allowances Act*, R.S., 1985, c.M-5, and that portion of pension payable to the *Canada Pension Plan Act*, R.S., 1985, c.C-8.

### Former Public Servant in Receipt of a Pension

As per the above definitions, is the Proponent a FPS in receipt of a pension?

YES ( ) NO ( )

If so, the Proponent must provide the following information, for all FPS in receipt of a pension, as applicable:

## APPENDIX B - DECLARATION/CERTIFICATIONS FORM (CONT'D)

- (a) name of former public servant;
- (b) date of termination of employment or retirement from the Public Service.

By providing this information, Proponents agree that the successful Proponent's status, with respect to being a former public servant in receipt of a pension, will be reported on departmental websites as part of the published proactive disclosure reports in accordance with Contracting Policy Notice: 2012-2 and the Guidelines on the Proactive Disclosure of Contracts.

### Work Force Reduction Program

Is the Proponent a FPS who received a lump sum payment pursuant to the terms of a work force reduction program? YES ( ) NO ( )

If so, the Proponent must provide the following information:

- (a) name of former public servant;
- (b) conditions of the lump sum payment incentive;
- (c) date of termination of employment;
- (d) amount of lump sum payment;
- (e) rate of pay on which lump sum payment is based;
- (f) period of lump sum payment including start date, end date and number of weeks;
- (g) number and amount (professional fees) of other contracts subject to the restrictions of a work force reduction program.

For all contracts awarded during the lump sum payment period, the total amount of fees that may be paid to a FPS who received a lump sum payment is \$5,000, including Applicable Taxes.



## APPENDIX B - DECLARATION/CERTIFICATIONS FORM (CONT'D)

### Name of Proponent:

#### DECLARATION:

I, the undersigned, being a principal of the proponent, hereby certify that the information given on this form and in the attached proposal is accurate to the best of my knowledge. If any proposal is submitted by a partnership or joint venture, then the following is required from each component entity.

.....  
name

.....  
signature

.....  
title

I have authority to bind the Corporation / Partnership / Sole Proprietorship / Joint Venture

.....  
name

.....  
signature

.....  
title

I have authority to bind the Corporation / Partnership / Sole Proprietorship / Joint Venture

.....  
name

.....  
signature

.....  
title

I have authority to bind the Corporation / Partnership / Sole Proprietorship / Joint Venture

During proposal evaluation period, PWGSC contact will be with the following person:\_\_\_\_\_.

Telephone Number: (    ) \_\_\_\_\_ Fax Number: (    ) \_\_\_\_\_

E-mail: \_\_\_\_\_

This Appendix "B" should be completed and submitted with the proposal, but may be submitted afterwards as follows: if Appendix "B" is not completed and submitted with the proposal, the Contracting Authority will so inform the Proponent and provide the Proponent with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting

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Authority and meet the requirement within that time period will render the proposal non-responsive.

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## **APPENDIX B**

### **ANNEX BB**

## **CODE OF CONDUCT CERTIFICATIONS**

Proponents who are incorporated, including those bidding as a joint venture, must provide with their bid or promptly thereafter a complete list of names of all individuals who are currently directors of the Proponent. Proponents bidding as sole proprietorship, including those bidding as a joint venture, must provide the name of the owner with their bid or promptly thereafter. Proponents bidding as societies, firms, partnerships or associations of persons do not need to provide lists of names. If the required names have not been received by the time the evaluation of bids is completed, Canada will inform the Proponent of a time frame within which to provide the information. Failure to comply will render the bid non-responsive. Providing the required names is a mandatory requirement for contract award.

## APPENDIX C

### PRICE PROPOSAL FORM

INSTRUCTIONS: Complete this Price Proposal Form and submit in a **separate sealed envelope** with the Name of Proponent, Name of Project, PWGSC Solicitation Number, and the words "PRICE PROPOSAL FORM" typed on the outside of the envelope. Price Proposals are not to include Applicable Taxes.

PROPOSERS SHALL NOT ALTER THIS FORM

**Project Title:** **Dam Safety Reviews - Lower Rice Region**

**Name of Proponent:** \_\_\_\_\_

**The following will form part of the evaluation process:**

#### REQUIRED SERVICES (RS)

- ♦ **FIXED FEE** (R1230D (2012-07-16), GC 5 - Terms of Payment)

SERVICES	FIXED FEE
RS 1 Dam Safety Review	
.1 Frankford Dam 6 & Lock 6	\$.....
.2 Meyers Dam 8 & Lock 9	\$.....
.3 Hagues Reach Dam 9 & Lock 10	\$.....
.4 Raney Falls Dam 10 & Locks 11 & 12	\$.....
<b>MAXIMUM FIXED FEES</b>	<b>\$.....</b>

- ♦ **DISBURSEMENTS** (R1230D (2012-07-16), GC 5 - Terms of Payment, GC5.12 Disbursements)

RS 2 Geotechnical Investigation Program \$ 250,000.00 \*

*\* All Proponents are to carry this amount for Price Proposal Evaluation purposes.*

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## APPENDIX C - PRICE PROPOSAL FORM (CONT'D)

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### TOTAL COST OF SERVICES FOR PROPOSAL EVALUATION PURPOSES

Total Fee for RS 1 Dam Safety Review \$.....

Maximum Amounts Payable for Disbursements Related  
to RS 2 Geotechnical Investigation Program + \$ **250.000.00**

Total Evaluated Fee \$.....

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♦ **PROGRESS PAYMENT INTERVALS** (R1230D GC 5.3 (2011-05-16) Payments to the Consultant)

The Consultant shall be entitled to receive Progress Payments at monthly intervals for the completed work during that period, up to an amount of 70 percent of the Fixed Fees and applicable Disbursements. The Consultant shall receive the remaining 30 percent of Fixed Fees and applicable Disbursements upon submission and acceptance of all Final Dam Safety Review (DSR) Reports (listed in RS 1.16 Deliverables and RS 2.2 Deliverable).

## APPENDIX C - PRICE PROPOSAL FORM (CONT'D)

### The following will NOT form part of the evaluation process

Canada may accept or reject any of the following fees, disbursements and/or hourly rates. Canada reserves the right to negotiate on these fees, disbursements and/or hourly rates.

### THE FOLLOWING HOURLY RATES MAY BE USED FOR FUTURE CONTRACT AMENDMENTS

#### Principals

Name	\$ per hour
.....	\$.....
.....	\$ .....
.....	\$ .....
.....	\$ .....
.....	\$.....
.....	\$ .....

#### Staff

Name /Position	\$ per hour
.....	\$.....
.....	\$ .....
.....	\$ .....
.....	\$ .....
.....	\$.....
.....	\$ .....

**END OF PRICE PROPOSAL FORM**

Solicitation No. - N° de l'invitation

EQ754-133441/A

Client Ref. No. - N° de réf. du client

R.059226.001

Amd. No. - N° de la modif.

File No. - N° du dossier

PWL-2-35144

Buyer ID - Id de l'acheteur

pwl023

CCC No./N° CCC - FMS No/ N° VME

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## **APPENDIX D**

### **DRAWINGS AND DOCUMENTATIONS**

**(refer to PD9 Existing Drawing and Documentation)**