

**Ontario Power Generation Inc., TransAlta Corporation, Enerdu Power Systems Ltd., Mississippi River Power Corporation, Mississippi Valley Conservation Authority**

# Implementation Report

**Mississippi River Water Management Plan (MRWMP)  
Mississippi River, Ontario**

Date: July 2020

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Mississippi Valley Conservation Authority**

**Implementation Report**

**Mississippi River Water Management Plan**

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# 1 Introduction

On February 16<sup>th</sup>, 2018, the Ministry of Natural Resources and Forestry (MNRF), under the authority of Section 23.1(6) of the *Lakes and Rivers Improvement Act* (LRIA), amended the Mississippi River Water Management Plan (MRWMP). The amendment was completed to align the MRWMP with the approved 2016 Maintaining Water Management Plans Technical Bulletin.

The newly amended MRWMP includes the requirement for the plan proponent(s) to undertake a review of the water management plan (WMP) components and prepare and submit an Implementation Report to the MNRF, after every five years of operation. The MRWMP is a complex plan involving five co-proponents, four of whom are generators, and this implementation report has been produced to represent all plan proponents.

The Co-Proponents were tasked with undertaking a review for the initial term (2006 until 2019) of the WMP and prepare an Implementation Report which:

- Summarizes all amendment activity during the term;
- Reports on the status of the Standing Advisory Committee (SAC);
- Outlines the results and conclusions of the effectiveness monitoring program (EMP), if applicable; and,
- Reports on the status and results of the data collection program, if applicable, and determine if revisions to the program are required.

This report, which summarizes the findings, has been developed based on the contributions of key WMP plan Co-Proponents (Mississippi Valley Conservation Authority, Ontario Power Generation, Trans-Alta Corporation, Enerdu Power Systems Ltd. and Mississippi River Power Corporation). In addition, portions of this report have been directly authored by MNRF and the Ministry of Environment, Conservation and Parks (MECP).

For information or questions related to facility operations, including incidents and annual reporting, please contact the appropriate facility operator.

## 2 Amendment Requests

The following section outlines all amendment requests received, including a rationale for any completed amendments and how proposed amendments that did not proceed were addressed.

## **2.1 Summary of Amendment Requests**

### **2.1.1 Mississippi Valley Field Naturalists**

In October 2012 and March 2014, the MNRF received requests to amend the WMP from the Mississippi Valley Field Naturalists. Specifically, the requests were to amend operations at the Enerdu Generating Station in Reach 18, to alter the maximum water level from May 1<sup>st</sup> to October 31<sup>st</sup> for five consecutive years in order to allow for silver maple tree recovery in the Appleton wetland.

Based on the information provided, MNRF was unable to conclude that the wetland's health was being impacted or definitively link the change in the wetland vegetation community to the operation of the Enerdu facility, and therefore did not proceed with the amendment request.

### **2.1.2 Mississippi Valley Conservation Authority Control Structures**

No amendment requests were submitted.

### **2.1.3 Ontario Power Generation – Crotch Lake Dam**

No amendment requests were submitted.

### **2.1.4 Ontario Power Generation – High Falls GS**

No amendment requests were submitted.

### **2.1.5 TransAlta Corporation – Appleton GS**

No amendment requests were submitted.

### **2.1.6 Enerdu Power Systems Ltd. – Enerdu GS**

No amendment requests were submitted.

### **2.1.7 Mississippi River Power Corporation – Brian J. Gallagher (Almonte) GS**

An amendment to the MRWMP was proposed by Mississippi River Power Corp (MRPC). in February 2008 prior to construction of the Lower Falls Redevelopment project. The requested amendment included: an updated description of the generating station to reflect a new plant capacity and combined hydraulic capacity; the establishment of a new minimum aesthetic flow target over the dam and lower falls; and an update to the monitoring requirements for the headrace and tailrace water level readings.

## 2.1.8 TransAlta Corporation – Galetta GS

No amendment requests were submitted.

## 2.2 Summary of Amendments Completed and Approved

### 2.2.1 MNRF

An administrative amendment was approved by MNRF on February 16<sup>th</sup>, 2018. The amendment was required to align the MRWMP with new policy requirements under the Lakes and Rivers Improvement Act Technical Bulletin released in 2016 entitled ‘Maintaining Water Management Plans’.

New Policy Direction under the authority of the *LRIA* was released October 7<sup>th</sup>, 2016. The Technical Bulletin ‘Maintaining Water Management Plans’ removed expiry dates and mandatory reviews from Water Management Plans, made changes to amendment procedures, reduced the types of amendment to two (minor and major), and increased the role for plan authors, in compliance (increased self-reporting, changes to data reporting requirements) and effectiveness monitoring (new five-year Implementation Report).

Several changes to the MRWMP were required to align with this Policy Direction (refer to Appendix 9 of the MRWMP document (amended February 2018) for a complete summary of amendment text changes):

- The expiry date has been removed;
- The ‘administrative’ category of amendments was removed;
- Requirements for both ‘minor’ and ‘major’ amendments were outlined, along with changes in responsibility for processing amendments to plan proponents;
- New text was added to clarify requirements for self-reporting (incidental and annual);
- The 10-year plan review was removed; and
- A new requirement for a five-year Implementation Report.

## 2.3 Summary of Amendments Pending Approval

### 2.3.1 Mississippi River Power Corporation – Brian J. Gallagher (Almonte) GS

MRPC presented an amendment request to the Standing Advisory Committee on April 1<sup>st</sup>, 2008 prior to construction of the Lower Falls Redevelopment project to: revise the plan to reflect the increased plant capacity and combined hydraulic capacity;



establish a new minimum aesthetic flow target over the dam and lower falls; and to update the monitoring requirements for the headrace and tailrace water level readings.

The SAC did not note any concerns with the amendment and supported the amendment request. During a meeting of the SAC on March 19<sup>th</sup>, 2009, a copy of the draft amendment was provided to the committee and the committee was invited to provide comments. No comments were received.

The amendment was recommended to be categorized as minor because it would only affect a small geographic area and no significant impact was anticipated.

Neither additional public consultation, nor First Nations consultation was required on the amendment request as MRPC had completed a consultation program as part of their requirements for an environmental screening under Ontario Regulation 116/01 of the Ontario *Environmental Assessment Act*. In addition, no order was required to be issued by the MNRF for the revision of the plan contents after redevelopment was complete. MRPC filed a Statement of Completion of their environmental assessment requirements in the fall of 2006.

Plan co-proponents and the steering committee were consulted through a written request for comments sent on May 13<sup>th</sup>, 2008 on the amendment request and the recommended categorization. Respondents agreed with the proposed categorization and public consultation requirements. Furthermore, respondents stated that the 2.2 cm aesthetic flow should be a target.

The final amendment was drawn up by MNRF in 2010. Preparation of the amendment was completed in 2011. The final document was signed by MRPC and sent to MNRF for final approval and to date continue to await formal notice of the amendment approval. The MNRF is currently reviewing the amendment materials for incorporation into the WMP.

### **3 Standing Advisory Committee Status**

The role of the SAC was to advise, review and assist in the implementation of the WMP and to promote public engagement during the implementation of the plan. The SAC enabled collaboration of the various stakeholders of the WMP through such tasks as assessing operations, reviewing plan amendment requests, and representing and communicating with the public on water management issues.

The SAC Formation meeting took place on May 17<sup>th</sup>, 2007. Kemptville District has records of 8 meetings held between October 17<sup>th</sup>, 2007 and March 11<sup>th</sup>, 2014. Members represented various interested parties across the Mississippi River system (i.e. MNRF, Mississippi Valley Conservation Authority (MVCA), WMP co-proponents, First Nations, public, etc.). The committee was first chaired by

Cliff Bennett, Mississippi Valley Field Naturalist and then by Jim Fraser, from the Kemptville district office of the MNRF. Subsequent meetings were administered by MNRF with involvement from partner agencies such as MVCA, Mississippi River Power Corporation, OPG and other stakeholders.

Matters discussed by the SAC included activities associated with development projects on the Mississippi River system, discussing compliance of operations and reviewing public concerns. In addition, the SAC reviewed current and forecasted watershed conditions, and identified information and effectiveness monitoring needs for the plan.

A letter was issued to SAC members on November 18<sup>th</sup>, 2017 informing them of changes to the WMP as a result of the October 2016 Maintaining Water Management Plans Technical Bulletin issued by MNRF. These changes include the fact that SACs are no longer a mandatory requirement of WMPs however, they remain a recommended best practice. No subsequent meetings of the SAC have been held by plan proponents or MNRF. Information on the SAC and meeting minutes can be obtained from the Kemptville District MNRF office.

## **4 Effectiveness Monitoring Plan (EMP)**

The following section outlines the status and results of the effectiveness monitoring projects mandated to be undertaken in the WMP (Table 9.1) as part of EMP since January 1<sup>st</sup>, 2007. The monitoring program included monitoring requirements related to both environmental and socio-economic components, which may be affected by the operations of the waterpower facility or the requirements of the WMP.

## 4.1 Environmental Monitoring

Environmental effectiveness monitoring on the river was to be undertaken by MVCA and MNRF (Bancroft and Kemptville Districts) to ensure that the assumptions used to develop and select the approved operating plan were appropriate. The collected environmental data can be used by MVCA and MNRF to identify if, and if so, where impacts to fisheries and the overall ecosystem health may be occurring.

### 4.1.1 Environmental Objective – Maintain or Improve Aquatic Ecosystem Health Throughout the System (MNRF and MVCA)

MNRF Walleye Assessment – Walleye Spawning and Population Assessment is also tied to this Plan Objective (See Status and Results Summary of the Data Gaps and Information Collection Program, Section 5.7 (Walleye Assessment), below).

Other related MNRF project(s) which were achieved and tied to this Plan Objective:

- 2007 Mississippi Lake Walleye Spawning Habitat Rehab Project + associated Walleye Spawning Observation Surveys;
- 2017 In-Water Structures Project – Mississippi Lake;
- 2014 Dalhousie Lake Walleye Spawning Habitat Rehab Project + associated Walleye Spawning Observation Surveys;
- 2007 and 2009 Mississippi Lake Nearshore Community Index Netting;
- 2008 Mississagagon Lake Fall Walleye Index Netting;
- 2009 and 2015 Mississippi Lake Broadscale Monitoring;
- 2009 and 2015 Dalhousie Lake Broadscale Monitoring;
- 2010 and 2017 Crotch Lake Broadscale Monitoring;
- 2008, 2013 and 2018 Kashwakamak Lake Broadscale Monitoring;
- 2010 and 2017 Big Gull Lake Broadscale Monitoring;
- 2008, 2013 and 2018 Mazinaw Lake Broadscale Monitoring;
- 2017 Mississippi River (Pakenham to Galetta Reach) Riverine Index Netting.

### 4.1.2 Environmental Objective – Improve Lake Trout Spawning Success on Shabomeka and Mazinaw Lakes (MNRF and MVCA)

MNRF (Bancroft District) and MVCA were assigned a series of effectiveness monitoring strategies associated with the ecosystem health of these two lakes, such as;

- Assess Lake trout population for natural recruitment (MNRF - Bancroft District with Co-Proponent MVCA support);
- Assess spawning activity (MNRF - Bancroft District with Co-Proponent MVCA support);
- Monitor water levels throughout the winter (MVCA);

- Complete a survey of structures on the lakes (MVCA).

#### 4.1.2.1 Findings of Effectiveness Monitoring

MVCA has water level data for both Shabomeka and Mazinaw lakes for the planning period. Facilities were operated in accordance with the operating guidelines established by the WMP. A survey of structures on the lakes was last carried out in the 1980s. Shoreline inventory data that addresses impacted properties is not presently in an easily accessible/interpreted format. This information is not easily accessed and should be updated when resources permit. No negative or unintended impacts were observed.

The assessment for Lake Trout natural recruitment and spawning activity on these lakes by the MNRF has been partially met and a summary is provided below.

##### **Shabomeka Lake:**

##### **Results (2006):**

A Spring Littoral Index Netting (SLIN) assessment was completed to update the status of the Lake Trout population prior to changes in fall/winter water levels on the lake being implemented. A total of 73 Lake Trout were captured (catch per unit of effort (CUE) of 2.43 fish per net), 8 of which (11%) were unclipped (i.e. from natural reproduction = native fish), in addition to 6 Lake Whitefish (CUE = 0.2), 19 Cisco (Lake Herring, CUE = 0.63), White Suckers, Smallmouth Bass, Rock Bass, Pumpkinseed and Brown Bullhead.

In previous assessments, 3 of 30 Lake Trout capture were unclipped (10%) in a 1987 netting project, as were 5% of the 83 Lake Trout captured during the SLIN assessment which was conducted in 1999.

##### **Results (2008):**

A Lake Trout spawning assessment was completed on Shabomeka Lake in late October, with a total of 9 possible spawning shoals examined. Lake Trout were seen using only 2 of the 9 shoals surveyed. Short term net sets captured only 3 Lake Trout (all unclipped), all on one shoal.

##### **Mazinaw Lake:**

No spawning assessments were performed. Although fisheries population assessments were conducted to help determine Lake Trout spawning success. The size range of lake trout captured indicate successful spawning and recruitment.

*(See Status and Results Summary of the Data Gaps and Information Collection Program, Section 5.4. (Lake Trout Spawning), Interim or Final Results, ii, below).*

#### **4.1.2.2 Requirement for Proposed Changes to Operations or EMP**

Information from MNRF about Lake Trout natural recruitment and spawning in relation to the results of the assessment and the need for any changes to the operations of water control infrastructure is provided below.

##### **Shabomeka Lake 2006 studies:**

A benchmark level of natural recruitment in the “pre water level change” population of 11% was established, which is considered low. Subsequent assessments were to be measured against this value to determine whether there is an increase in natural recruitment following the increase of 0.3 metre in the fall/winter water level, the latter which was to be implemented upon Water Management Plan Approval.

##### **Shabomeka Lake 2008 studies**

This information confirmed there is still a low level of natural reproduction occurring in the lake. This assessment was conducted post-increase of 0.3 metre in the fall/winter water level, but in comparison to previous years, there was no significant change in the number of fish observed using the spawning shoals. This would suggest the amount of “additional spawning substrate” available to Lake Trout as a result of the above-mentioned water level increase showed no significant change.

##### **MVCA report:**

No adjustment to operations affecting the lake levels or flows is required at this time. Every reasonable effort is made to emulate the natural flow regime per the Management Plan. Flows, levels, precipitation and dam operations will continue to be monitored year-round, including during the spawning periods, with records kept on the WISKI database. The effectiveness monitoring will continue with no adjustment to the EMP. No negative impacts from operations have been observed or reported, and no requirement for remedial action or a change in operations have been identified.

#### **4.1.2.3 Adaptive Management**

No adaptive management has been proposed at this time.

#### **4.1.3 Environmental Objective – Maintain Spring Spawning for Key Species (pike, walleye, bass); Minimize Water Level Fluctuations; Emulate Natural Flow Regime and Maintain Flow (MVCA)**

MVCA was to conduct effectiveness monitoring of flow, water levels, precipitation and dam operations across the system during critical spawning periods and provide an annual summary of this activity in order to determine if spring flow regime is beneficial to the sustainability of key species in the system.

#### **4.1.3.1 Findings of Effectiveness Monitoring**

Level, flow, precipitation and operating records are available for the period of record that demonstrate that all reasonable efforts were made to maintain spring spawning conditions per the WMP. No annual report is prepared except under exceptional circumstances, such as this year. The report does not document every log operation but describes how the event unfolded across the watershed and the steps taken to mitigate impacts. The September 2019 report is available upon request. All data is maintained in the WISKI database and is available upon request.

#### **4.1.3.2 Requirement for Proposed Changes to Operations or EMP**

No adjustment to operations or the EMP is required.

#### **4.1.3.3 Adaptive Management**

No adaptive management is required.

#### **4.1.4 Environmental Objective – Ensure Abundance of Wild Rice is not reduced (MVCA and MNRF)**

MVCA and MNRF were assigned two effectiveness monitoring strategies associated with the wild rice beds throughout the system, such as;

- Continue to monitor water levels, flow, precipitation and dam operations during critical periods (MVCA);
- Continue to maintain communications with First Nations (MNRF and MVCA).

MNRF continues to maintain a dialogue and relationship with the First Nations, where interests can be raised.

MVCA recently commenced work on developing a Watershed Plan and has retained a consultant to support engagement with First Nations. MVCA's objective is to use the watershed planning process as an opportunity to establish and build a working relationship with First Nations in the watershed.

#### **4.1.4.1 Findings of Effectiveness Monitoring**

MVCA has operational records that document spring operations in relation to stream flows and water levels and can demonstrate that all reasonable efforts were made to protect wild rice habitat per the WMP.

Engagement with First Nations by MVCA has been sporadic and most recently related to reconstruction of the Shabomeka Lake Dam. No conversations have occurred in recent years regarding system operations and wild rice production. There is an opportunity for improved communications and understanding by MVCA and MNRF on this issue.

#### **4.1.4.2 Requirement for Proposed Changes to Operations or EMP**

No adjustment to operations or the EMP is required.

#### **4.1.4.3 Adaptive Management**

Areas requiring improvement in order to meet WMP objectives:

1. Data management and analysis of shoreline impacts during flood events (MVCA, First Nations); and
2. First Nations engagement (MNRF and MVCA).

## **4.2 Socio-Economic Monitoring**

Socio-Economic effectiveness monitoring on the river was to be undertaken by MVCA, MNRF and Co-Proponents to ensure that the assumptions used to develop and select the approved operating plan were appropriate. The collected data can be used to identify if, and if so where, social, cultural and economic impacts to users in the system may be occurring.

### **4.2.1 Socio-Economic Objective – Public Safety and Property Damage (MVCA)**

MVCA was assigned two effectiveness monitoring strategies to minimize flooding and ice damage throughout the system, such as;

- Assess impact during flood conditions (MVCA);
- Assess impact on shoreline and shoreline structures (MVCA).



#### **4.2.1.1 Findings of Effectiveness Monitoring**

In addition to water level records, MVCA retained weather records, press releases issued regarding flood risks/conditions, and photos and other records that document the impact of floods on shoreline structures. To date, over 300 permit applications have been received from property owners in 2019. This represents approximately double the annual average number of applications and is associated with flooding on both the Mississippi and Ottawa River this spring. The spring of 2019 event had similar flows and levels to those recorded in 1998, however water levels did not return to typical conditions until early June this year and property owners throughout the watershed were impacted. Most impacted were property owners on Dalhousie Lake and Mississippi Lake, with the section between the two lakes also affected. Shoreline damage and building flooding were common in these areas. In several cases, structures are being raised to mitigate future damage. The County of Lanark hosted a postmortem during which municipal members identified how their communities were impacted. A copy of the meeting notes can be provided upon request.

#### **4.2.1.2 Requirement for Proposed Changes to Operations or EMP**

The effectiveness monitoring will continue and no adjustment to the EMP is required as impacts to shorelines and structures were unavoidable due to the significance of the event.

#### **4.2.1.3 Adaptive Management**

Areas requiring improvement to meet WMP objectives:

1. Data management and analysis of shoreline impacts during flood events (MVCA); and
2. Tracking and documenting of exceedances to the guidelines (MVCA).

During the spring 2019 event the City of Ottawa paid for the entire length of the Ottawa River to be flown within its jurisdiction that allowed for identification and mapping of the area of inundation. This is outside the financial resources of MVCA to carry out within the Mississippi River watershed. Therefore, identification of impacts is carried out manually on the ground using cameras. Data collection in the field is being automated including the attachment of photos and video. Filing systems are being updated on a phased basis and that will allow for improved consistency in the naming and filing of images.



#### **4.2.2 Socio-Cultural-Economic Objective – Maintain water Levels for Navigation, Recreation, Cultural and Social Opportunities (MVCA and MNRF)**

MVCA and MNRF were assigned two effectiveness monitoring strategies to maintain water levels for recreational navigation including boat access to properties and the Pictographs and access to wild rice beds for harvesting during the critical seasons throughout the system, including;

- Continue to monitor flow, water levels, precipitation and dam operations during critical periods (MVCA and MNRF);
- Continue to maintain communications with First Nations (MVCA and MNRF).

##### **4.2.2.1 Findings of Effectiveness Monitoring**

As mentioned above, water flows, levels, precipitation, and dam operations are all recorded daily by MVCA and available for the planning period. Work by MVCA is ongoing to improve filing and retrieval of images collected in the field that are used to document and assess shoreline and other damage.

Communications with First Nations have varied over time and is an area requiring continuous improvement. MVCA recently retained a consultant to engage First Nations as part of development of a Watershed Plan. Through this project it is hoped that communication lines can open between the CA and First Nations and foster sharing of information and cooperation on issues of mutual interest.

##### **4.2.2.2 Requirement for Proposed Changes to Operations or EMP**

Effectiveness monitoring will continue. No adjustment to the EMP is required at this time.

##### **4.2.2.3 Adaptive Management**

No adaptive management is required.

#### **4.2.3 Socio-Economic Objective – Recognize Power Generation Values from the System (Co-Proponents)**

It is well recognized that the positive attributes of hydroelectric generation generally include environmental benefits (low carbon emissions) as well as socio-economic benefits such as local job creation and direct revenues, as well as water (level, flow) control to support recreational use and tourist business opportunities. For these benefits to be sustainable, it is apparent that the hydroelectric businesses themselves must be appropriately profitable.

It is therefore incumbent upon the MRWMP co-proponents and other stakeholders to understand whether the WMP itself is impacting the net revenues of the generating station. Net revenues could be impacted, for instance, by changes in the amount of water available to the facility for generation, or by changes to the operating costs of the facility caused by administrative, reporting, or other requirements imposed by the Plan.

Since the time of implementation of the MRWMP, the river generators have continued to monitor and collect information on water levels, flows and dam operations on a continuous basis throughout the period. Upon review, the generating co-proponents do not have any suggestions, nor wish to make any modification to their existing operating regimes. The current operational structure has provided optimal power generation for the facilities applicable and as such there are no proposed changes to enhance power generation at this time.

#### **4.2.3.1 Findings of Effectiveness Monitoring**

Many of the generation facilities have been used for waterpower in different iterations for well over 100 years. Although the WMP was only formally implemented on January 1<sup>st</sup>, 2007, the water management regime described therein for most of the facilities has essentially been in place for a long-established timeframe and therefore were adopted into the WMP. As a result, negative or unintended impacts have not occurred as a result of the WMP requirements over the period of this Implementation Report.

#### **4.2.3.2 Requirement for Proposed Changes to Operations or EMP**

No proposed changes to operations or EMP for any of the facilities are required.

#### **4.2.3.3 Adaptive Management**

No adaptive management is required. co-proponents will continue to gather generation and cost data.

#### **4.2.4 Social Objective – Develop Public Awareness on Current Conditions (MNR and Co-Proponents)**

Over the term of the Implementation Report the co-proponents that are generators have established public awareness programs to improve the communications with the public. For instance, generators often participate in the Ontario Heritage Trust communities' "Doors Open Ontario" events to raise awareness of waterpower and its' unique cultural heritage within Ontario's communities. In addition, most are members of the Ontario Waterpower Association (OWA), which acts as the voice for waterpower in the Province. The OWA website is, "the central hub for high quality information and education on waterpower in Ontario."

OPG has participated in various stakeholder meetings and public engagement sessions through the years as it relates to the Mississippi River watershed, most recent being a public meeting held at the Mississippi Valley Conservation Authority during 2019. Going forward we will continue to initiate and participate in these sessions as they are designed to promote education and awareness of OPG facilities and overall operation within the river system. OPG is an active member of the Ontario Waterpower Association.

Enerdu Power Systems Ltd. (Enerdu) participates in “Doors Open Ontario” events organized by the Municipality of Mississippi Mills, where the public are invited to tour their facility. Enerdu is also an active member of the Ontario Waterpower Association.

MRPC holds an Annual General Meeting, where members of the public are invited to learn about the operations, finances, and history of the organization. The corporation also has a Facebook page and Twitter account, which are used to release information on flows, generation, events, and other relevant information. In addition to their participation in “Doors Open Ontario” events, MRPC also conduct regular tours for members of the public, which are advertise on the MRPC website. Finally, being a municipally owned corporation, MRPC’s corporate meeting minutes are sent to the Municipality of Mississippi Mills and included in the municipality’s meeting packages, available to anyone via the municipal website. MRPC is also an active member of the Ontario Waterpower Association.

The following are incidences of complaints that were brought forward to each Co-Proponents and/or the MNRF over the reporting term (2007-2019) specifically associated with each Co-Proponent’s infrastructure are as follows:

#### Mississippi Valley Conservation Authority Control Structures

- None.

#### Ontario Power Generation - Crotch Lake Dam

- None.

#### Ontario Power Generation - High Falls GS

- None.

#### Trans-Alta – Appleton GS

- None.

#### Enerdu Power Systems Ltd. – Enerdu GS

As stated earlier in this report in Section 2.1.1, in October 2012 and March 2014 amendment requests by the Mississippi Valley Field Naturalists were presented to the MNRF, MOE (now MECP) and the Steering Committee suggesting that a silver maple die-off in the Appleton Swamp was directly related to dam operations at Enerdu. MNRF reviewed the requests. Based on the information provided, MNRF was unable to conclude that the wetland's health was being impacted and could not definitively link the change in the wetland vegetation community to the operation of the Enerdu facility, and therefore did not proceed with the amendment. Documents for this complaint should be found at the MNRF local district office in Kemptonville, Ontario.

#### Mississippi River Power Corporation – Brian J. Gallagher (Almonte) GS

- None.

#### Trans-Alta – Galetta GS

- None.

#### **4.2.4.1 Findings of Effectiveness Monitoring**

At the time of reporting, all co-proponents have determined there to be no negative or unintended impacts attributed with the operation of each of their facilities within the Mississippi River watershed. Ongoing monitoring, data collection and established public awareness programs will continue throughout the following reporting period in order to assess negative impacts as required.

#### **4.2.4.2 Requirement for Proposed Changes to Operations or EMP**

No proposed changes to operations or EMP for any of the facilities are required.

#### **4.2.4.3 Adaptive Management**

No adaptive management is required. co-proponents will institute, if required, improvements to their record-keeping for all communications (complaint or otherwise) and will continue to monitor with their established public awareness programs and respond to public comments and concerns.

## 5 Data Gaps and Information Collection Programs

Section 8.2 (Figure 8.3, pg.109) of the MRWMP (amended February 2018) outlines several data gaps and the information collection programs developed to be undertaken by MNRF, MECP and the MVCA. The following information collection programs were developed within the original WMP (2006) and remained within the amended 2018 version:

1. Eels;
2. Instream Flow Requirements;
3. Status of Amphibian, Reptile, Mammal and Invertebrate Populations;
4. Lake Trout Spawning;
5. Waste Assimilation;
6. Hydro-meteorological Network;
7. Walleye Assessment;
8. Socio-economic data;
9. Literature Review;
10. Bathymetric Mapping (Kashwakamak Lake, Gull Lake, Mississagagon Lake, Dalhousie Lake and Mississippi Lake);
11. Species at Risk Monitoring;
12. Water Taking Permits;
13. Other Spawning;
14. Mazinaw Lake Rehabilitation;
15. Wild Rice Research;
16. Dam Safety Assessment of Shabomeka Lake Dam.

In some cases, MNRF has not fulfilled commitments identified in the approved Water Management Plan (WMP). Some commitments made in the WMP are being met through other initiatives that were implemented after approval of the WMP (such as Broadscale Monitoring (BsM)), are now the responsibility of another Ministry, or may be met based on future work planning. Over time and since the approval of the WMP, ministry priorities, structure and approaches have shifted including those for Water Management Plans. Work undertaken by MNRF must always be considered relative to current established priorities, resourcing and workloads.

Where Ministry priorities and approaches have changed and Data Gaps/Information Collection commitments are now being met through other programs (such as Broadscale Monitoring (BsM)), are the responsibility of another Ministry/agency, or are complete, MNRF may consider amending the WMP to reflect these updates.

For the purposes of this report the writer has adopted priority 'levels' for the following five overall goals of the MRWMP as described in Section 4, p. 24 of the MRWMP (amended February 2018) document;

“..... *Water management within the Mississippi River has evolved to the point where the priorities are as follows (note the priorities vary on importance depending on the time of year, location and circumstances):*

- Flood control;
- Low flow augmentation;
- Ecological integrity;
- Recreation / tourism; and
- Hydro-generation.”

Therefore, in order to assign each data and information collection program to a priority level various statements made throughout the document were considered as demonstrated in the following table;

Priority Level	Value	Rationale	MRWMP Reference
<b>High</b>	Flood control and Low flow augmentation	<i>“the dams in the system are managed as a first priority to hold water and to control the release of water to downstream areas and reduce flooding as much as possible.”</i>	Section 4.2.1, p. 23
<b>Moderate</b>	Ecological integrity	Default level based on high and low priority rationale.	N/A
<b>Low</b>	Recreation / tourism; and Hydro-generation	<i>“Hydro generation is the lowest priority because all the generating stations are “run of the river” and have limited impact on the overall operation of the system.”</i>	Appendix 8, p. 211

Priority Level	Value	Rationale	MRWMP Reference
		<p><i>“Hydro-production and recreation are not mutually exclusive. While determining the exact values of hydro-production and recreation are difficult, hydroproduction has minimal impact on recreational opportunities. The system is currently operated for the benefit of both.”</i></p>	<p>Section 4.2.4, p. 28</p>

There is a variance to the above system in regards to the Lake Trout Spawning programs in Mazinaw and other natural lake trout lakes such as Shabomeka Lake which were elevated to a **HIGH** priority level due to the following statement made in Appendix 8, p. 178 of the MRWMP (amended February 2018), *“Recent genetic sampling of Mazinaw lake trout has shown that the native population belongs to a newly identified, rare genetic strain of lake trout, unique to the Addington Highlands area. Preservation of this unique strain is a priority in Bancroft District.”*

## 5.1 Eels (MNRF)

The following excerpt from the Water Management Plan describes the data gap:

**“Data Gap”:** *“Keep informed of broader research being done on eels.”*

**Priority:** Moderate

**Information Collection Program:**

1. Literature Review;
2. MNRF was a member of the Canadian Eel Science Working Group (CESWoG) – which undertakes and shares information on eel scientific research;
3. Some local data collection was undertaken (i.e. American Eel Tailrace Surveys, lead by the Lanark County Stewardship Council).

**Responsibilities:** MNRF

**Interim or Final Results:** Completed as assigned.

**Describe any proposed changes to the sampling program and rationale:** This program has been discontinued at the MNRF. The provincial responsibility for Species at Risk and the Ontario Endangered Species Act has now been transferred to the Ministry of the Environment, Conservation and Parks (MECP), and as such, related inquiries should be directed to them at [SAROntario@ontario.ca](mailto:SAROntario@ontario.ca).

## 5.2 Instream Flow Requirements (MNRF and DFO)

The following excerpt from the Water Management Plan describes the data gap:

**“Data Gap”:** *“Specific minimum flows through each of the control structures is required to maintain ecological integrity. The specific minimum flows need to be established through current research on in-stream flow requirements. Implementation of this research will be addressed in future amendments to this plan.”*

**Priority:** Moderate

**Information Collection Program:** Literature review.

**Responsibilities:** MNRF and Fisheries and Oceans Canada (DFO)

**Interim or Final Results:** The literature review has not been completed. It may be considered for future work planning.

**Describe any proposed changes to the sampling program and rationale:** Not applicable.



### 5.3 Status of Amphibian, Reptile, Mammal and Invertebrate Populations (MNRF)

The following excerpt from the Water Management Plan describes the data gap:

**“Data Gap”:** *“Keep informed of research being undertaken on the impact of lower winter water levels on the abundance of amphibians, reptiles, mammals and invertebrate populations.”*

**Priority:** Moderate

**Information Collection Program:** Literature review.

**Responsibilities:** MNRF

**Interim or Final Results:** The literature review has not been completed. May be considered for future work planning.

**Describe any proposed changes to the sampling program and rationale:** Not applicable.

**Adaptive Management:** Not applicable.

### 5.4 Lake Trout Spawning (MNRF and MVCA)

The following excerpt from the Water Management Plan describes the data gap:

**“Data Gap”:** *“Little baseline information exists on the impacts of water levels on the long-term sustainability of the naturally reproducing lake trout. The status of the population needs to be assessed on an on-going basis to measure the population response to the new operating regime.”*

**Priority:** High (for Bancroft district MNRF office)

**Information Collection Program:**

1. Population Assessments (Spring Littoral Index Netting (SLIN); Broad-scale Monitoring (BsM));
2. Spawning Observation Surveys.

**Responsibilities:** MNRF

**Interim or Final Results:** The SLIN is complete as assigned. BsM is ongoing as per provincial monitoring program. Spawning surveys were completed on Shabomeka Lake although surveys on Mazinaw were not completed.

1. Results of SLIN conducted on Shabomeka Lake (2006) and BsM conducted on Mazinaw Lake (2008, 2013 and 2018):

*(See Section 4.1 - Status and Results Summary of the Effectiveness Monitoring Program - Environmental Objective - Improve Lake Trout Spawning Success on Shabomeka and Mazinaw Lakes (MNR and MVCA) - Findings of Effectiveness Monitoring, above).*

Shabomeka Results (2006):

The 2006 SLIN survey indicated a low level of natural recruitment still occurs. However, it appears the increase of 0.3 metre to the fall/winter water level did not substantially increase the natural recruitment.

Mazinaw Results (2008):

A total of 11 fish species were captured in the large mesh nets. Lake Trout represented 13% of the total catch, with a mean total length (TL) of 412 mm (size range of 276 to 627 mm). Approximately 45% of the catch was in the 400 – 490 mm TL size classes.

Results (2013):

A total of 10 fish species were captured in the large mesh nets. Lake Trout represented 5% of the total catch, with a mean total length (TL) of 537 mm (size range of 365 to 725 mm). Approximately 55% of the catch was in the 500 – 590 mm TL size class.

Results (2018):

A total of 13 fish species were captured in the large mesh nets. Lake Trout represented 3% of the total catch, with a mean total length (TL) of 368 mm (size range of 266 to 501 mm). Approximately 30% of the catch was in three of the following TL size classes: 200 – 290 mm, 300 – 390 mm and 400 – 490 mm.

2. Spawning Observation Surveys

Spawning observation surveys were carried out on Shabomeka Lake in 2008. The surveys indicated a low level of natural spawning, which was similar to the population survey (SLIN) in 2006.

No spawning surveys were conducted on Mazinaw Lake. The range of sizes caught over 10 years of BsM monitoring indicate natural recruitment is occurring.

**Describe any proposed changes to the sampling program and rationale:** No changes have been proposed at this time. Mazinaw Lake will continue to be monitored through the BsM program.

**Adaptive Management:** No adaptive management has been recommended at this time.

## 5.5 Waste Assimilation (MECP and MVCA)

The following excerpt from the Water Management Plan describes the data gap:

**“Data Gap”:** *“Confirm waste assimilation requirements on the lower river system during low flow periods.”*

**Priority:** Moderate

**Information Collection Program:** To our knowledge assimilative capacity is monitored by MECP through ECA approvals and compliance programs. For information about existing guidelines and programs related to waste assimilation, please contact MECP through their webpage at <https://www.ontario.ca/page/ministry-environment-conservation-parks>.

**Responsibilities:** MECP

**Interim or Final Results:** No information collection program specific to the MRWMP has been developed.

**Describe any Proposed Changes to the Sampling Program and Rationale:** Not applicable.

**Adaptive Management:** Not applicable.

## 5.6 Hydro-meteorological Network (MNRF and MVCA)

The following excerpt from the Water Management Plan describes the data gap:

**“Data Gap”:** *“Enhance hydro-meteorological monitoring across the Mississippi watershed.”*

**Priority:** Moderate

**Information Collection Program:** Since 2006, MVCA has been addressing this data gap. At present, there are several hydro-meteorological stations and this program is under continuous improvement. Please refer to <http://mvc.on.ca/monitoring/> for more information.

**Responsibilities:** MNRF and MVCA

**Interim or Final Results:** Work in progress.

**Describe any Proposed Changes to the Sampling Program and Rationale:** Not applicable.

**Adaptive Management:** Not applicable.

## 5.7 Walleye Assessment (MNRF)

The following excerpt from the Water Management Plan describes the data gap:

**“Data Gap”:** *“Crotch Lake: walleye spawning assessment, including upstream, in the lake and downstream; effect of 2 major drawdowns in all 3 locations and effect of low flow downstream.”*

*(These assessments are also tied into Plan Objective: Maintain or improve aquatic ecosystem health throughout the system, see Section 4.1, above).*

**Priority:** Moderate

**Information Collection Program:**

1. Spawning Observation Surveys;
2. Population Assessments (Broad-scale Monitoring (BsM)).

**Responsibilities:** MNRF

**Interim or Final Results:**

No walleye spawning surveys were conducted on Crotch Lake

BsM on Crotch Lake in 2010 and 2017:

Results (2010):

A total of 10 fish species were captured in the large mesh nets. Walleye represented 7% of the total catch, with a mean total length (TL) of 384 mm (size range of 207 to 505 mm). Approximately 40% of the catch was in the 400 – 490 mm TL size class.

Results (2017):

A total of 13 fish species were captured in the large mesh nets. Walleye represented 4% of the total catch, with a mean total length (TL) of 485 mm (size range of 303 to 592 mm). Approximately 60% of the catch was in the 500 – 590 mm TL size class.

**Describe any proposed changes to the sampling program and rationale:** No changes have been proposed at this time. Crotch Lake will continue to be monitored through the BsM program.

**Adaptive Management:** No adaptive management has been recommended at this time.

## 5.8 Socio-economic Data (MNRF and MVCA)

The following excerpt from the Water Management Plan describes the data gap:

**“Data Gap”:** *“Additional information on the socio-economic conditions for the river system, particularly data on the economic value of tourism and recreation.”*

**Priority:** Low

**Information Collection Program:**

**MNRF:**

1. Targeted Recreational Angler Survey;
2. Modified Creel Census Survey.

**MVCA:**

This is being carried out by MVCA as part of watershed planning work, ongoing. Backgrounder 2, produced for the ongoing Watershed Planning project, will be released publicly within the month and identifies how the local economy depends upon natural resource management within the watershed. This document can be provided upon request.

**Responsibilities:** MNRF and MVCA

**Interim or Final Results:**

**MNRF:** Has not been completed. May be considered for future work planning.

**MVCA:** Results of the Backgrounder 2 will be released within the month.

**Describe any proposed changes to the sampling program and rationale:** According to MVCA, no proposed changes are recommended to the current monitoring programs at this time. The MVCA recently commenced work on a Watershed Plan that may identify information gaps and the need for changes in the monitoring program of the CA and partner organizations.

**Adaptive Management:**

No adaptive management has been recommended at this time.

## 5.9 Literature Review (MNRF)

The following excerpt from the Water Management Plan describes the data gap:

**“Data Gap”:** *“Impact of drawdown on fish and fish habitat.”*

**Priority:** Moderate

**Information Collection Program:**

1. Literature Review;
2. Local academic research.

**Responsibilities:** MNRF

**Interim or Final Results:** Has not been completed. May be considered for future work planning.

**Describe any proposed changes to the sampling program and rationale:**

Not applicable.

**Adaptive Management:** Not applicable.

## 5.10 Bathymetric Mapping (MNRF)

The following excerpt from the Water Management Plan describes the data gap:

**“Data Gap”:** *“Bathymetric mapping of the following lakes: Kashwakamak, Gull, Mississagagon, Dalhousie and Mississippi.”*

**Priority:** Moderate-Moderate to Low

**Information Collection Program:**

1. Collect and update digital mapping on the following lakes: Kashwakamak, Big Gull, Mississagagon, Dalhousie and Mississippi.

**Responsibilities:** MNRF

**Interim or Final Results:** Completed as assigned, except for Mississippi Lake which may be considered for future work planning.

**Describe any proposed changes to the sampling program and rationale:** No changes have been proposed at this time.

**Adaptive Management:** No adaptive management is recommended at this time.

## 5.11 Species at Risk Monitoring (MNRF)

The following excerpt from the Water Management Plan describes the data gap:

**“Data Gap”:** *“Monitoring the species at risk and keep informed of broader research being completed (i.e. Blanding’s turtle).”*

**Priority:** Moderate

**Information Collection Program:** Information

1. Literature Reviews;
2. Some local data collection was undertaken (i.e. American Eel Tailrace Surveys, led by the Lanark County Stewardship Council; Rapids Clubtail Surveys lead by MNRF Kemptville District Staff).

**Responsibilities:** MNRF

**Interim or Final Results:** Completed as assigned. The provincial responsibility for Species at Risk and the Ontario Endangered Species Act has now been transferred to the Ministry of the Environment, Conservation and Parks, and as such related inquiries should be directed to them at [SAROntario@ontario.ca](mailto:SAROntario@ontario.ca) .

**Describe any proposed changes to the sampling program and rationale:** No changes have been proposed at this time.

**Adaptive Management:** No adaptive management is recommended at this time.

## 5.12 Water Taking Permits (MECP and MVCA)

The following excerpt from the Water Management Plan describes the data gap:

**“Data Gap”:** *“Confirm the number and volume of water taking permits issued on the river system.”*

**Priority:** Moderate

**Information Collection Program:** No known collection program has been established. However, this action could easily be completed using the MECP GIS database, if required.

**Responsibilities:** MECP

**Interim or Final Results:** Inquiries regarding the number and volume of water taking permits that have been issued on the river system may be directed to MECP at <https://www.ontario.ca/page/ministry-environment-conservation-parks> and may be viewed here; <https://www.ontario.ca/environment-and-energy/map-permits-take-water>.

***Special Note on Waterpower and PTTW: It is important to note that amendments to the Ontario Water Resources Act as part of Bill 132, Better for People, Smarter for Business Act received Royal Assent on December 10, 2019. The amendments exempt waterpower facilities from requiring a permit to take water. However, the Ministry of Natural Resources and Forestry also created a new Minister’s regulation under the Lakes and Rivers Improvement Act to ensure continued oversight reporting of methyl mercury impacts of waterpower facilities. Mercury-related requirements that were previously administered through permits to take water will continue to be addressed through the Lakes and Rivers Improvement Act, including:***

- ***Monitoring and reporting;***
- ***Notification to local communities of fish consumption advisories.***

***Despite this exemption, all existing permits for waterpower facilities remained in effect until being revoked by the Ministry of the Environment, Conservation and Parks on April 1, 2020.***

**Describe any proposed changes to the sampling program and rationale:**

Not applicable.

**Adaptive Management:** Not applicable.

### **5.13 Other Spawning (MNRF)**

The following excerpt from the Water Management Plan describes the data gap:

**“Data Gap”:** *“Spawning sites of other species should be assessed.”*

**Priority:** Moderate

**Information Collection Program:** Information

1. Spawning Observation Surveys;
2. Review Consultants’ Reports (from Scientific Fish Collector’s Licences, Development Proposals, etc.) for evidence of nearby spawning (e.g. presence of young-of-year fish (i.e. fish nursery habitat));
3. Anecdotal Reports (with potential ground-truthing).

**Responsibilities:** MNRF

**Interim or Final Results:** Has not been completed. May be considered for future work planning.

**Describe any proposed changes to the sampling program and rationale:** Not applicable.

**Adaptive Management:** Not applicable.



## 5.14 Mazinaw Lake Rehabilitation (MNRF and MVCA)

The following excerpt from the Water Management Plan describes the data gap:

**“Data Gap”:** *“Mazinaw Lake assessment of spawning bed rehabilitation project.”*

**Priority:** High

**Information Collection Program:**

1. Spawning Observation Surveys.

**Responsibilities:** MNRF

**Interim or Final Results:** Has not been completed. May be considered for future work planning.

**Describe any proposed changes to the sampling program and rationale:** Not applicable.

**Adaptive Management:** Not applicable.

## 5.15 Wild Rice Research (MNRF and MVCA)

The following excerpt from the Water Management Plan describes the data gap:

**“Data Gap”:** *“Conduct literature search and compilation of how changes in flows would impact the rice. May also include further consultation with First Nations.”*

**Priority:** Moderate

**Information Collection Program:** Information

1. Literature Review
2. Follow up First Nations Consultation.

**Responsibilities:** MNRF

**Interim or Final Results:** Has not been completed. May be considered for future work planning.

**Describe any proposed changes to the sampling program and rationale:** Not applicable.

**Adaptive Management:** Not applicable.

## 5.16 Dam Safety Assessment of Shabomeka Lake Dam (MVCA)

The following excerpt from the Water Management Plan describes the data gap:

**“Data Gap”:** *“Proposed changes to the Shabomeka Lake Dam operating regime requires a structural review of loading conditions on Shabomeka Lake Dam.”*

**Priority:** High

**Information Collection Program:**

A condition assessment carried out of the Shabomeka Lake Dam identified the need for reconstruction. The EA was completed, and supplemental biological and archeological work carried out; detailed design is ongoing; and permit applications have been submitted to the Province. The project is to be tendered once funding is secured.

**Responsibilities:** MVCA

**Interim or Final Results:**

Shabomeka Dam EA completed and due for reconstruction. The province allocated insufficient funds to WECl in 2020 to allow construction this year.

**Describe any proposed changes to the sampling program and rationale:**

Not applicable.

**Adaptive Management:** The section of the MRWMP dealing with the Shabomeka Lake Dam will require an amendment after the dam reconstruction is completed to address modest changes in the design of the dam and to address safety and maintenance needs of dam operators. No changes in the operating regime are required or planned.

## 6 Conclusion

The MRWMP came into effect on January 1<sup>st</sup>, 2007. Over the course of the last twelve years there has been only one approved amendment request in 2018 (by MNRF). All compliance monitoring and reporting requirements have been fulfilled in a timely and complete manner and there are no outstanding issues or recommended changes to the WMP, with the exception of the pending MNRF approval of MRPC’s amendment request.

Similarly, neither the Effective Monitoring Plans nor Data Gap and Information Collection Programs have any specific components applicable to the power producers, within the watershed, beyond the common requirement to gather and maintain operational data (water levels and flows) in areas of potential improvements and negative impacts. The practice of continuous data recording, as briefly summarized in this report, is of relevance for such baseline data considerations. At this time no complementary data or information on environmental and social conditions have been gathered by any power producers within the watershed.

Other sources of information and data needs from external agencies have been referenced where identified.

Overall, in review of the MRWMP and its governing objectives regarding the identified environmental and social implications of operations within the Mississippi River, no amendments to the MRWMP document are recommended at this time.

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