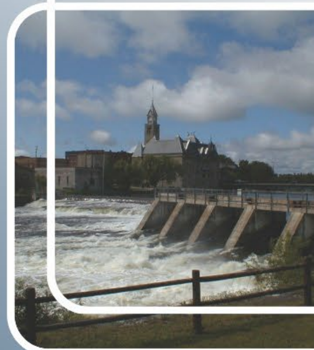
Mississippi Valley Conservation Authority

OPERATIONAL PLAN

Water Control Infrastructure

December 2024



Contents

Abbreviations

CA: Conservation Authority

CDA: Canadian Dam Association

DSR: Dam Safety Review

EPP: Emergency Preparedness Plan

LIRA: Lakes & Rivers Improvement Act

MECP: Ministry of the Environment Conservation and Parks

MNR/MNRF: Ministry of Natural Resources and Forestry

MOU: Memorandum of Understanding

MVCA: Mississippi Valley Conservation Authority

MRWMP: Mississippi River Water Management Plan

PSP: Public Safety Plan

1.0 Regulatory Requirement

Preparation of this Operational Plan for Mississippi Valley Conservation Authority (MVCA) water control infrastructure is required per Section 5(2)1. of *Ontario Regulation 686/21* under the *Conservation Authorities Act, RSO 1990.*

2.0 Management of the Mississippi River System

System-wide operational goals and requirements for dams within the Mississippi River watershed are set by the provincially mandated Mississippi River Water Management Plan (MRWMP), 2020.[1]

Dam owners on rivers with hydropower facilities are required to develop Water Management Plans and operate their facilities in accordance with the provisions of those plans. The objective of these plans is to prevent hydropower producers from exploiting water resources for the benefit of meeting an electricity demand at the expense of the environment or some other objective. The MRWMP sets specific objectives and seasonal minimum and maximum target water levels for all hydro dams and several other structures in the watershed.

Preparation of the MRWMP and periodic reporting under the Plan is a collaborative effort of the major dam owners: OPG, Enerdu, Mississippi River Power Corporation, Canadian Hydro Developers Inc., MVCA, and the Ontario Ministry of Natural Resources, which ultimately approves the Plan, all amendments to the Plan, and Implementation Reports.

The first MRWMP was prepared in 2008, and was subsequently updated in 2016 and again in 2020.[2] A joint Implementation Report is required to be submitted to the province every 5 years.

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[1] Required per Section 23.1 of the *Lakes and Rivers Improvement Act*, RSO 1990.

[2] The 2008 plan was developed in accordance with the provincial *Water Management Planning Guidelines for Waterpower*, 2002. The 2016 update was prepared in accordance with the MNRF *Technical Bulletin: Maintaining Water Management Plans, 2016*. Initially, a Standing Advisory Committees was established to support guidance and implementation of these Plan, however it was disbanded by the province in 2020.

2.1 MRWMP Scope

MVCA owns and operates 11 dams, and a Flood Control Facility (FCF) with downstream river corridor that serves as a flood control structure. Table 1 identifies which MVCA's facilities are addressed by the MRWMP.

Table 1: MVCA Water Control Structures

Name	Facility Type	Municipality	MRWMP
Shabomeka	Dam	North Frontenac	✓
Mazinaw	Dam	North Frontenac	✓
Kashwakamak	Dam	North Frontenac	✓
Mississagagon	Dam	North Frontenac	✓
Big Gull	Dam	North Frontenac	✓
Carleton Place	Dam	Carleton Place	✓
Farm	Weir	North Frontenac	
Pine	Dam	North Frontenac	
Bennett	Dam	Tay Valley	
Widow	Dam	Lanark Highlands	
Lanark	Dam	Lanark Highlands	
Glen Cairn / Carp River	FCF	Ottawa	

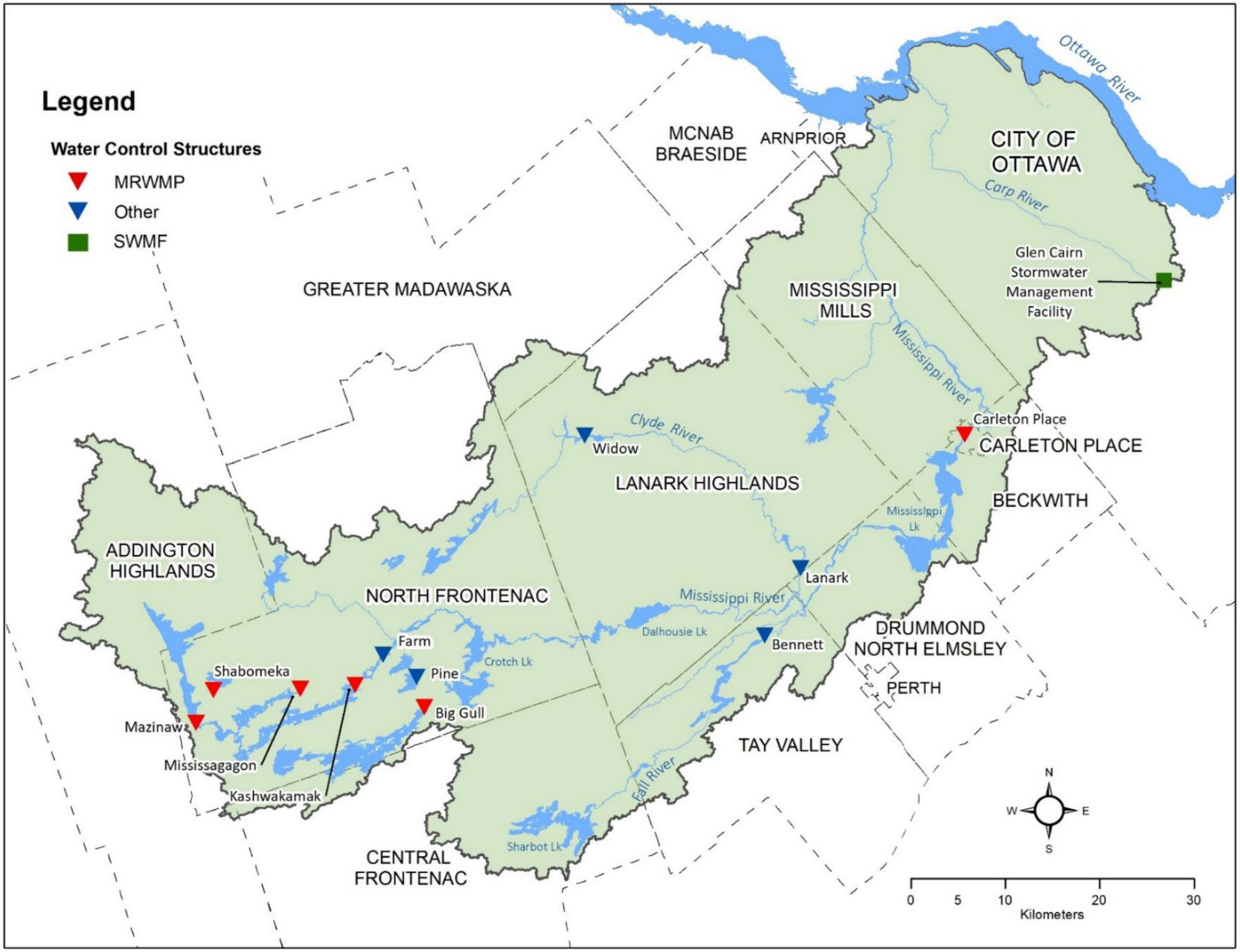
Several other structures are addressed by the MRWMP that are not owned by MVCA.[3]

Figure 1 illustrates the location of MVCA water control structures. Note, MVCA also operates several structures under contract for MNRF and OPG that are not shown on this map.[4]

[3] OPG dams at Crotch Lake and High Falls Generating Station (GS). EO Generation LP (Dba Portage Power) dams at Appleton GS and Galletta GS. And, the Enerdu GS and Mississippi River Power GS located in Almonte.

[4] Dams managed by MNR's Kemptville office: Malcolm, Mosque, Summit, Palmerston, Canonto, and Clayton. MVCA operates these facilities in accordance with an agreement signed Sept 2024. Dams owned by OPG: Crotch Lake and High Falls GS. MVCA operates these facilities in accordance with Contract # 50014173 that expires 12/31/25.

Figure 1: Location of MVCA Water Control Structures



2.2 Guiding Principles

The MRWMP sets the following guiding principles for operation of water control structures within the Mississippi River watershed.

- Maximum net benefit to society – maximize net environmental, social and economic benefits derived from operation of water power facilities and associated water level control structures in terms of water flow and levels.
- Riverine ecosystem sustainability
- Planning based on best available information and establishment of baseline conditions
- Evaluation of the need for changes to the existing water management operations for water level and flow management to address objectives and issues.
- Planning will be without prejudice to the rights of Aboriginal People and treaty rights
- Public & stakeholder participation – communications and integration are paramount to this planning exercise
- Adaptive management – effectiveness monitoring to assist future planning.

2.3 Objectives

The MRWMP sets the following system operational objectives:

1. Maintain or Improve Aquatic Ecosystem Health throughout the System
    - Improve lake trout spawning success on Shabomeka and Mazinaw Lakes.
    - Maintain spring spawning opportunities for pike, walleye and bass by having steady flows or rising levels.
    - Minimize water level fluctuations as they affect aquatic and riparian wildlife.
    - Where possible, emulate the natural flow regime.
    - Improve aquatic ecosystem health by maintaining flow through the system.
    - Ensure abundance of wild rice is not reduced due to fluctuating water levels.

2. Address Public Safety and Minimize Property Damage
    - Minimize flooding throughout the system.
    - Minimize ice damage throughout the system.

3. Maintain Water Levels throughout the System for Navigation, Recreation, Cultural and Social Opportunities
    - Maintain stable water levels for navigation, including boat access only properties, throughout the recreational season and the entire system.
    - Maintain water levels suitable for access to Twin Islands and Fawn Lakes.
    - Maintain and improve recreation, and access to Wild Rice beds and Pictographs.

4. Recognize Power Generation Values from the System

- Maintain or enhance power generation on a seasonal and daily basis.

5. Develop Public Awareness on Current Conditions
    - Explain constraints, objectives and natural processes that are considered in the operation of the Mississippi River system.
    - Foster an understanding of how the system operates.

3.0 Management of the Carp River System

The Carp River is a very gently sloping river with a wide flood plain, with only one flood control structure along its length: The Glen Cairn Pond and downstream riverbed owned by MVCA and maintained by the City of Ottawa.

The Glen Cairn Flood Control Facility was constructed in 1979 at the request of the province and the former City of Kanata to address flooding of the Glen Cairn subdivision. This detention basin is not actively operated by MVCA. There is a maintenance agreement in place with the City of Ottawa and MVCA to distinguish responsibility of cost and maintenance of this structure.

The Carp River system is not subject to water management plan requirements like the Mississippi River because it lacks hydro power generating stations and water control structures that can be operated. However, the watershed is subject to flooding and has undergone significant urban growth. Further examination of the river system to understand how best to mitigate flood flows and levels under future development and climate scenarios is required.

4.0 The Lakes and Rivers Improvement Act

The Lakes and Rivers Improvement Act (LRIA) provides the MNR with the legislative authority to govern the design, construction, operation, maintenance and safety of dams in Ontario.

The Lakes and Rivers Improvement Act Administrative Guide and supporting technical bulletins provide direction regarding the administration of the LRIA and the application review and approval process. All technical bulletins in this series must be read in conjunction with the LRIA's Administrative Guide (2017) including:

- Alterations, improvements and repairs to existing dams
- Classification and inflow design flood criteria
- Dam decommissioning and removal
- Geotechnical design and factors of safety
- Location approval for dams
- Maintaining water management plans
- Seismic hazard criteria, assessment and considerations
- Spillways and flood control structures
- Structural design and factors of safety

5.0 Canadian Dam Association Guidelines

The preparation and implementation of Operations Plans for dams have long been a requirement of dam owners/operators per guidelines and technical bulletins issued by the Canadian Dam Association (CDA), including:

- CDA Dam Safety Guidelines, 2013
- CDA Guidelines for Public Safety Around Dams, 2011
- CDA Technical Bulletins:
  - Dam Safety, 2007
  - Dam Safety Reviews, 2017
  - Environmental Consequences Classification, 2023

Table 2 lists CDA recommended contents for dam operations plan.

Table 2: CDA Recommended Operations Plan Components

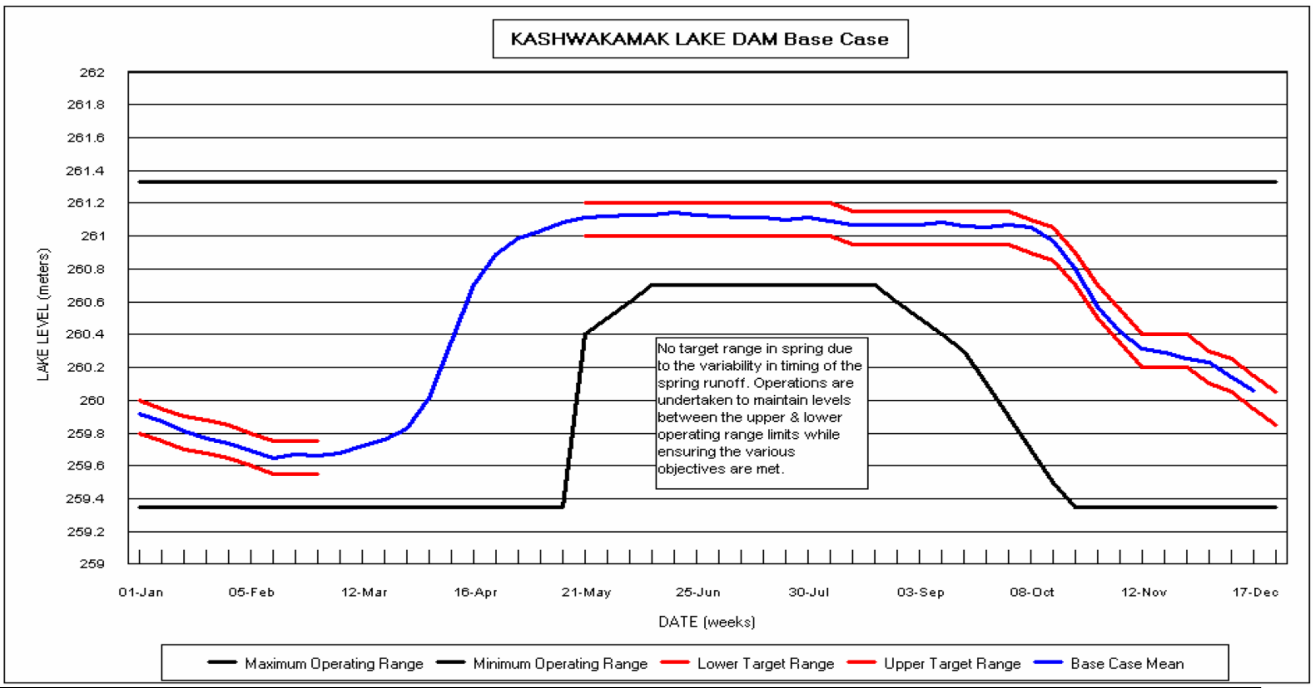
1. Project Description
Overview
Infrastructure
    Communications
    Access Routes
    Public Safety
    Site Security
2. Operation
Roles and Responsibilities
Water Management
Operating Procedures
    Normal Operations
    Flood or Drought Operations
    Unusual Operations
    Emergency Operations
    Records (Logs)
Flow Control
    Equipment and Facilities
    Water Level Gauge Systems
    Supervisory Control Systems
    Emergency Systems
	3. Maintenance
	Maintenance Programs
	Concrete Structures
	Embankment Structures
	Steel Structures
	Other Dam Structures
	Spillway Structures
	Penstocks Tunnels and Pressure Conduits
	Infrastructure (Access, Utilities)
	4. Surveillance
	Visual Inspections
	Dam Instrumentation
	Response to Unusual Conditions
	Documentation and Follow-ups
	5. Maintenance and Testing of Flow Control Equipment

6.0 MVCA Dam Operations Plans

Until 2008, MVCA dams were operated within a defined and documented operating range; or according to specific physical landmarks that defined maximum and minimum elevations above the structure. Levels were maintained within these operating ranges as much as possible to fulfill the operating objectives of the individual structures. Many structures also had a narrower target range representing the ideal levels needed to maximize benefits across the watershed. These limits were generally only exceeded due to intense weather events, which did not necessarily result in flooding, but allowed owners/operators the flexibility required to mitigate potential damages and address competing objectives. Figure 2 provides a sample of the broad and narrow ranges used to operate the Kashwakamak Dam.

All MVCA water control infrastructures have established Operations Plans (see Appendix A). Exceptions are Farm and Glen Cairn which are passive water control structures. Components of individual Operations Plans for each MVCA's structure are listed in Appendix B.

Figure 2: Example of Historic Operating Range Graph



Today, dams are operated in accordance with the limits set out in the *Mississippi River Water Management Plan, 2020*. Structures not addressed by the MRWMP continue to be operated per the historical approach.

The following sections summarize the operational approach taken by MVCA within the Mississippi River watershed during each of the four seasons. Details for each structure are contained in individual Operations Plans.

6.1 Fall (September to November)

The objectives of fall operations are the following:

- To drawdown water levels on the upper lakes to promote the formation of stable ice conditions, minimize shoreline damage due to ice movement, and create storage capacity within the system for the spring freshet. The goal is to have all lakes at their target winter setting prior to freeze-up.

- To fill Crotch Lake to allow for slow release during the winter months and maintain a minimum average flow of 5-15 cms in the lower system.

Fall drawdown begins mid-September with Pine, Shabomeka and Mississippi lakes. Shabomeka Lake is drawn down earlier so that the winter target level is achieved before the Lake Trout spawn.

Drawdown on Kashwakamak, Big Gull, and Mississagagon Lakes begins immediately after the Thanksgiving weekend which is deemed to be the end of the recreational season.

Draw down on Mazinaw Lake does not begin until after the hunting season (1st week of November) to ensure navigation through the narrows between the upper and lower lake is maintained. Mazinaw usually reaches its target minimum level by mid-January.

During the draw down period, Crotch Lake is refilled from mid-October until late December 1 during which a log is added on average once every 7 to 10 days.

Table 3 provides the drawdown schedule for each structure.

Table 3: Annual Fall Drawdown Schedule

Lake	Start Date	End Date
Shabomeka Lake	September 15th	Mid October
Pine Lake	September 10th	Late September
Mississippi Lake	September 15th	Early October
Kashwakamak Lake	After Thanksgiving weekend (Mid Oct.)	Early December
Mississagagon Lake	After Thanksgiving weekend (Mid Oct.)	Early November
Big Gull Lake	After Thanksgiving weekend (Mid Oct.)	Mid November
Summit Lake	After Thanksgiving weekend (Mid Oct.)	Early November
Widow Lake	After Thanksgiving weekend (Mid Oct.)	Early November
Mazinaw Lake	After Hunting season (Mid November)	Mid December
Crotch Lake	Mid January / Early July	Mid March / October

6.2 Winter (December to February)

The objectives of winter operations are to:

- mitigate flooding and ice break-up, and damage that may arise due to winter thaws and rain.
- optimize storage capacity in the upper lakes to receive the spring freshet(s)
- provide for sufficient capture of runoff to achieve target summer levels

MVCA does not operate the system to mitigate ice damage to permanent docks and other structures located within the floodplain.

As winter weather conditions vary year over year, operations can also vary considerably. However, in a typical year the following approach is generally followed:

- From January until March, Crotch Lake is drawn down by removing one log every 10-20 days to maintain a minimum flow of 5-15 cms. By mid-March, the maximum amount of storage to reduce flood concerns is usually achieved within the watershed. All other dams are only operated if required to maintain stable ice conditions and prevent shoreline damage.

This approach may be impacted by the following conditions:

High precipitation levels in the fall can result in much higher winter lake levels throughout the system. MVCA must decide how much of that water to store (if any) and how much to release. It can take up to 2-weeks or more to pass water safely from the upper watershed through the system, longer if there is ice covering the lakes.

Low snow water equivalent (SWE). The depth and water content of snow are measured at 16 sites throughout the winter. If the SWE is well below normal, and the weather forecast does not provide for significant precipitation, it may be appropriate to begin to insert stoplogs in some lakes as early as February in order to capture runoff to achieve target summer levels.

Above average SWE. If the snow pack is above average, inserting stoplogs will be delayed in an effort to allow the ice to soften while still ensuring that there is adequate water supply in the snow to refill the lakes, and adequate storage capacity to capture any late season rains.

Other extreme changes. Major weather events can affect winter operations. For example: a cold snap in late winter /early spring can dramatically reduce the rate of runoff, delay spawning, and increasing the risk of quick rapid melting once temperatures return to seasonal normal. Persistent winds and temperatures just above freezing can cause the snowpack to sublimate[5] rather than melt, which reduces the water available to fill the system and achieve target summer lake levels.

Frazil Ice is slush like, has limited structural strength, and builds from the bed of the river upwards, typically on long stretches of open water following a severe and extended cold period. Ice jams can result from frazil ice when lake ice is still solid.

There is no easy way to mitigate the formation of and to control frazil ice. Historically, it occurs on the Mississippi River at Sheridan's Rapids, the Playfairville Rapids, Ferguson's Falls Rapids, the Innisville Rapids, at Glen Isle, the Appleton Rapids, in Almonte and upstream of Pakenham. It also occurs at numerous areas along the smaller tributaries where rapids exist.

Other variables can influence winter operations including the following:

[5] Sublimation is the conversion between the solid and the gaseous phases of matter, where snow, ice, and frost change directly to water vapor resulting in no runoff.

- Fall soil conditions prior to freeze up as this impacts the ability of the soil to store water once the snow melt begins.
- Ice thickness and levels for ice fishing, snowmobiling, etc. as fluctuating water levels could cause unsafe ice conditions as well as create potential shoreline damage.
- Fish spawning seasons (e.g. Pike in March)
- Time of the year, as the later the snow pack remains on the ground the more likely the temperatures will warm up quickly and generate fast runoff.

6.3 Spring (March to May)

The objectives of spring operations are to:

- Mitigate spring flooding,
- Provide suitable conditions for fish spawning,
- Fill the upper lakes to target summer recreational water levels, and
- Fill Crotch Lake to provide for drawdown over the summer in order to maintain base flow downstream.

As the snowpack begins to melt in the spring, logs are installed in the upper lakes to capture melt water and rainfall in order to meet target summer recreational lake levels. Approximately 140 mm of rainfall and snowmelt are required to fill the lakes. Filling of the lakes must be balanced with maintaining sufficient storage in the system to accommodate late spring rainfalls; and with providing sufficient flows and levels for fish spawning (e.g. stable flows for walleye spawning in rapids.)

Filling the upper lakes also reduces the risk of downstream flooding, as the lower watershed receives mostly uncontrolled flows from the tributaries Antoine Creek, Cranberry Creek, Fall River and Clyde River.

Peaking of the spring freshet typically occurs as follows:

- The Indian River typically peaks 2 days prior to the Clyde River at Gordon Rapids.
- Gordon Rapids typically peaks 36 to 48 hours prior to the Clyde River at Lanark.
- Lanark typically peaks 2 to 3 days prior to the lower Mississippi River at Appleton.

Peak levels at Appleton are usually about 2.0 to 2.5 times the flows on the Clyde River (double when flows are <70 cms, and 2.5 times when flows are >70 cms.) These are based upon historic observations, however, MVCA has witnessed significant changes over the past 20-years and this pattern is expected to change.

Areas with a history of flooding are the following:

- Lanark Village
- Cedardale and Clyde River downstream to Lanark
- Snow Road / Dalhousie Lake
- Innisville and Mississippi Lake
- Town of Carleton Place, Glen Isle and Appleton

- Town of Mississippi Mills (Almonte, Pakenham)
- Carp River – mainly villages of Carp and Kinburn
- Ottawa River shoreline – mainly Constance Bay

Though less frequent, there is also potential for substantial flooding to occur on Shabomeka, Mazinaw, Kashwakamak and Big Gull Lakes, primarily during late spring rainfall May/June and during large watershed flooding events (as experienced in in 2024 and 2019, respectively).

Once the spring runoff has subsided, the upper lakes are gradually filled to reach target levels for recreation and tourism. Thereafter, all dams except Crotch Lake are operated to maintain relatively stable water levels during the summer months. Crotch Lake Dam is the only true reservoir in the watershed as it has the greatest capacity for storing spring runoff and is filled and lowered to maintain base flow in the lower system year-round.

6.4 Summer (June to August)

According to the 2008 MRWMP, maintaining an average flow of 5 cms at High Falls GS came from a "gentleman's agreement" to provide a minimum flow downstream of Crotch Lake throughout the summertime. This "agreement" expanded over the years to become a year-round value.

It is believed that the 5 cms standard came through years of system operation during which it was determined that this flow rate could be maintained by gradually releasing all available storage in Crotch Lake over a 4-month period, assuming average summer rainfall. This flow rate equals ~1/3 the total plant flow capacity of the High Falls G.S., thereby allowing one of the three units to operate at full capacity.

Local runoff from the area between Crotch Lake and High Falls contributes flow to the river and can be used to help achieve the 5 cms baseflow target. However, when Crotch Lake is operated to minimize downstream flooding, flooding may still occur due to uncontrolled runoff from this local drainage area, as occurred in April 1998.

Flows less than 5 cms may occur during drought conditions. In all watercourses, aquatic habitat is affected to some degree depending on the severity and duration of the low water event. Livestock farmers may have difficulty providing water for their animals during drought periods. Other impacts include golf courses, which rely on irrigation from tributary streams, that tend to dry out. Safe boating on the Mississippi River system and uncontrolled lakes can be jeopardized by lower water levels.

Typical impacts from drought in MVCA's jurisdiction are the following:

- <u>Upper Controlled Lakes</u> (Shabomeka, Mazinaw, Kashwakamak, Malcolm, Big Gull and Mississagagon): lake evaporation during drought conditions makes it difficult to maintain lake levels and downstream flows. When the water level in a lake falls below its target summer operating range, operation of the dam ceases per the MRWMP.
- <u>Mississippi River</u>: when flows from the upper lakes drop or cease, downstream flows can fall significantly resulting in disconnected pools, shoreline mud flats, and the drying out of

wetlands, which can affect aquatic and terrestrial species populations (current and future years), and recreational uses and docks.

- Buckshot Creek: low flows can result in exposed streambeds and reduced habitat. Local beaver activity can exacerbate this by further reducing or eliminating flow downstream.
- Clyde River: tributaries and wetlands can dry-up and the main channel can become disconnected pools, affecting aquatic and terrestrial species (current and future years.)
- Fall River: flows can drop to zero leaving an exposed streambed and reduced habitat. Local beaver activity can exacerbate this by further reducing or eliminating flow downstream.
- Carp River: flows can be reduced to zero leaving exposed streambed and reduced habitat – exacerbated by beaver activity. Tributary streams can have no flow – also exacerbated by beaver activity.
- Ottawa River (east from Watts Creek watershed): The Ottawa River is a major system responding mainly to weather conditions in northeastern Ontario and western Quebec. To have a significant impact, dry conditions would have to extend over a very large area. Municipal water supplies taken from the Ottawa River are a small portion of the flow and have not been at risk during low water events in the Mississippi watershed.
- Tributaries to the Ottawa River (Stillwater, Constance, Watts, Shirley's Brook): All streams can drop to minimal or no flow during drought conditions and severely impact aquatic habitat.

7.0 Compliance Monitoring & Updates

Watershed monitoring is necessary to support dam operations and adaptively manage flows and mitigate flooding. MVCA has a diverse network of gauges monitoring levels and flows throughout the system. Precipitation, snow, and ice are tracked throughout the year to determine flood risk. Modeling and forecasting tools are being developed and used to help predict peak flood elevations and flows.

The 2018 MRWMP requires plan proponent(s) to undertake a review of activities under the plan and to prepare and submit an Implementation Report to the MNR after every five years of operation that:[6]

- Summarizes all amendment activity during the term;
- 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.

MVCA participated in the 2020 and 2024 reviews that were prepared with the hydro co-proponents and submitted to MNR for review and approval.[7] MVCA are not considered to be subject to the compliance and enforcement provisions of the MRWMP plan.

[6] Approved in accordance with the MNR 2016 *Maintaining Water Management Plans* Technical Bulletin.
[7] MNR is also a co-proponent under the MRWMP and has reporting obligations under the Plan.

8.0 Flood Forecasting & Warning

MVCA must be prepared at all times to activate the Flood Warning System to assist in the prevention of the loss of lives and minimize property damage. Daily monitoring of evolving conditions across the watershed are used to identify areas at potential risk of flooding. Flood risks are classified as set out in Table 4, and used to characterize and notify affected communities.

Table 4: Flood-risk Classification System & Associated Water Levels

	Forecasted Impacts	Historical Levels
Nuisance	• Flooding low lying areas/docks • No residential flooding • Access routes are not disturbed	
Minor	• Some disruption of roads • No evacuations • Minor residential flooding such as some basement seepage or minor sewer backup	
Major	• Significant road damage • Surface water in basements • 1st floor residential flooding • Potential evacuation due to loss of services	Dalhousie Lake – 157.40 m or higher Mississippi Lake – 135.50 m or higher Mississippi River – 220 cms at Appleton Clyde River – 110 cms at Herron's Mills Carp River – 100 cms
Severe	• Major disruption to roads and services • Many residences with 1st floor flooding • Houses destroyed • Evacuations • Major risk to loss of life • Industrial, commercial and agricultural damage	
Catastrophic	• Loss of life • Community destruction	

Appendix 1: List of MVCA Water Control Infrastructure Operations Plans

The following operations plans are available under separate cover:

- Shabomeka Lake Dam, 2007
- Mazinaw Lake Dam, 2005
- Mississagagon Lake Dam, 2004
- Kashwakamak Lake Dam, 2004
- Big Gull Lake Dam, 2004
- Pine Lake Dam, 2000
- Widow Lake Dam, 2001
- Lanark Dam, 2002
- Bennett Lake Dam, 2000
- Carleton Place Dam, 2002

Appendix 2: MVCA Operational Plan Components

Table 2: MVCA Operations Plan Components, as of September 2024

Facility	Location Map	Data Sheet	Summary Description	Drawings	Hydraulic Information	Operating Plan	Operator Safety Procedures	Water Levels	Flood Thresholds	Lake Information	Structure Survey	Inspection Reports	Latest DSR	Latest EPP	Latest PSP
Shabomeka	x	x	x	x	x	x	x	x	x	x	x	x	2020	2020	2020
Mazinaw	x	x	x	x	x	x	x	x	x	x	x	x	2006	Draft	Draft
Mississagagon	x	x	x	x		x	x	x	x	x	x	x	N/A	Draft	Draft
Kashwakamak	x	x	x	x	x	x	x	x	x	x	x	x	2021	Draft	Draft
Farm	x	x	x	x				x			x	x	N/A	Draft	Draft
Big Gull	x	x	x	x	x	x	x	x	x	x	x	x	2006	Draft	Draft
Pine	x	x	x	x		x	x	x			x	x	N/A	Draft	Draft
Widow	x	x	x	x		x	x	x		x	x	x	N/A	Draft	Draft
Lanark	x	x	x	x	x	x	x	x	x	x	x	x	2024	Draft	Draft
Bennett	x	x	x	x		x	x	x		x	x	x	N/A	Draft	Draft
Carleton Place	x	x	x	x	x	x	x	x	x	x	x	x	2022	2022	2022

MVCA maintains other information separate from the operational plans such as the legal description, drainage area maps, rule curves and rating tables, hydrographs, bathymetry, and maintenance records. These are being integrated into the operational plans over time as resources allow.