
Great Lakes-St. Lawrence River Adaptive Management Committee (GLAM)

11th Semi-Annual Progress Report to the Great Lakes Boards and the
International Joint Commission
Covering the period March 1, 2021 to February 28, 2022

March 28, 2022

GLAM GREAT LAKES—ST. LAWRENCE RIVER
ADAPTIVE MANAGEMENT COMMITTEE 

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GLAM Committee Membership (as of February 28, 2022)

Blue text identifies other International Joint Commission Board and Committee affiliations

United States	Canada
John Allis, Co-Chair U.S. Army Corps of Engineers – Detroit District International Lake Superior Board of Control Alternate Regulation Representative	Wendy Leger, Co-Chair Environment and Climate Change Canada
Mary Austerman New York Sea Grant	Patricia Clavet Ministère de l’Environnement et de la Lutte contre les changements climatiques (Québec) International Lake Ontario - St. Lawrence River Board Member
Scudder Mackey Office of Coastal Management, Ohio Department of Natural Resources	Susan Doka Fisheries and Oceans Canada
Dena Abou-El-Seoud U.S. Army Corps of Engineers – Chicago District	Frank Seglenieks Environment and Climate Change Canada
Lauren Fry Great Lakes Environmental Research Laboratory – NOAA	Jean Morin Environment and Climate Change Canada
Bill Werick Retired – US Army Corps of Engineers	Jacob Bruxer Environment and Climate Change Canada
Keith Koralewski U.S. Army Corps of Engineers – Buffalo District International Lake Ontario - St. Lawrence River Board Alternate Regulation Representative	Ogimaa Kwe (Chief) Linda Debassige M’Chigeeng First Nation
Vacant	Vacant
Vacant	Vacant
<i>Melissa Kropfreiter, Co-Secretary</i> U.S. Army Corps of Engineers – Detroit District	<i>Mike Shantz, Co-Secretary</i> Environment and Climate Change Canada

NOTE: The Great Lakes-St. Lawrence River Adaptive Management (GLAM) Committee was established by the International Joint Commission (IJC) as a sub-committee of the Boards and is comprised of an equal number of members from the United States and Canada. Members of the Committee serve at the pleasure of the IJC and are expected to be full participants in all activities of the Committee. As with all IJC Boards and Committees, the GLAM Committee members serve in their personal and professional capacity, not as a representative of their agencies or employers.

Executive Summary

The International Joint Commission (IJC) established the Great Lakes – St. Lawrence Adaptive Management (GLAM) Committee through an IJC directive on January 16, 2015, to provide monitoring and evaluation of regulation plans as a sub-committee in support of the International Lake Superior Board of Control, the International Niagara Board of Control and the International Lake Ontario – St. Lawrence River Board (Great Lakes Boards). This report is the eleventh semi-annual report to the IJC and the Great Lakes Boards. The GLAM Committee did not prepare a written semi-annual report in the fall of 2021 so this report covers the period of March 1, 2021 through February 28, 2022.

The GLAM Committee's Fiscal Year 21 (FY21) work plan (covering the October 1, 2020 to September 30, 2021 period) along with its Fiscal Year 22 (FY22) draft work plan outline the key priorities for the committee over the reporting period. The FY21 work plan was primarily focused on Phase 1 of the expedited review of Plan 2014, the outflow regulation strategy for Lake Ontario and the St. Lawrence River. The draft FY22 work plan was organized to align with the adaptive management framework as outlined in the committee's short and long-term strategy ([Strategy Document](#)). The draft FY22 work plan transitions the committee towards Phase 2 of the expedited review, which will include a more comprehensive review of Plan 2014 and possible plan changes under a range of future water supply scenarios. The GLAM Committee will also be continuing the on-going assessment of recent deviation approaches employed for Plan 2012, the outflow regulation strategy for the St. Marys River (between Lake Superior and Lake Michigan-Huron).

The first phase of the expedited review of Plan 2014 was completed during the reporting period with the submission of a final report to the IJC in November 2021. Phase 1 had a narrow and pressing purpose, to provide the International Lake Ontario – St. Lawrence River Board with better information to help them explore alternative outflow deviation decisions should extremely high water levels as seen in 2017 and 2019 be repeated in the coming years. The GLAM Committee gathered information on the impacts to various interest groups, including shoreline property owners, recreational boating and tourism, ecosystem impacts, municipal and industrial water uses, commercial navigation, and hydropower. The Committee also recognizes the importance of the unique perspectives of Indigenous communities and initiated a process in the reporting period to hear from Indigenous Nations in the Lake Ontario – St. Lawrence River basin about their experiences and perspectives. The information from all these sectors along with updated hydroclimate and forecast conditions were integrated within the context of a Decision Support Tool (DST) to be used by the Board during periods of extreme high water.

A critical component of the GLAM Committee's efforts in support of Phase 1 of the expedited review of Plan 2014 during the reporting period was the collaboration with the Public Advisory Group (PAG). As reported in the GLAM Committee's previous semi-annual update, PAG members have made significant contributions to the expedited review effort. Through

numerous virtual sessions, PAG members have been able to interact extensively with one another and with the GLAM Committee to provide direct feedback on the work being undertaken to support the expedited review. PAG members have shared their perspectives on the impacts of water levels and flows and reported directly on the aspects that are critical to them or their geographic region. Together, they have built a deeper, richer understanding of the overall Lake Ontario-St. Lawrence River system and the complexities of managing outflows and helped guide the GLAM Committee to consider aspects that might not have otherwise been included. The GLAM Committee has greatly appreciated the insights from the PAG. A key Phase 1 finding highlighted the important contributions of the PAG.

The GLAM Committee's Phase 1 report summarizes the recent work and is a highlight of the committee's activities over the reporting period. The report, and the considerable technical work that supported it, would not have been possible without extensive contributions from GLAM Committee members and a long list of associates and contractors. The committee submitted a final version of the Phase 1 report to the IJC in November 2021. A public version of the Phase 1 report was made available by the IJC on February 17, 2022 to initiate a 60 day public comment period. Associated with the public report, the GLAM Committee has developed a series of videos, fact sheets, and newsletter articles to report on the Phase 1 effort. The committee is also supporting the IJC through the public roll-out of the Phase 1 report including a series of community leader meetings, which were initiated at the end of the reporting period.

While the GLAM Committee continues to place considerable emphasis on the expedited review of Plan 2014 for Lake Ontario and the St. Lawrence River, progress was also made on a number of tasks related to St. Marys River outflows and Plan 2012 during the reporting period. Specifically, the committee is working to review outflow deviation strategies employed over recent years in response to hydropower outages that can impact flow changes in the St. Marys Rapids. This work is expected to continue in the coming year with the support of enhanced funding through the expedited review process.

The COVID-19 pandemic continues to impact **how** the GLAM Committee functions, but has not diminished the dedication and success of the committee during the reporting period. In-person meetings were not held, and the GLAM Committee conducted all activities virtually. While the lack of in-person engagement was felt in a number of areas, virtual operations provided considerable flexibility in planning and organizing meeting opportunities to allow Phase 1 to progress. Certainly, some of the benefits of operating virtually over the past two years will be maintained going forward into the future as the GLAM Committee looks to maintain an efficient adaptive management process.

The GLAM Committee continues to be extremely appreciative of the various agencies it has relied upon through their in-kind contributions for its day-to-day operations and implementation of many of the work plan tasks during the reporting period. These in-kind resources along with the funding provided for Phase 1 of the expedited review of Plan 2014 have been critical to the work of the committee. The GLAM Committee thanks the IJC for the

support provided while acknowledging the ongoing resourcing challenges that continue to exist in some aspects of the committee's work.

1.0 Introduction

A directive signed January 16, 2015, by the International Joint Commission (IJC) established the Great Lakes – St. Lawrence Adaptive Management (GLAM) Committee, as a sub-committee to the Boards, to undertake monitoring and assessment of Lake Superior and Lake Ontario-St. Lawrence River Boards’ regulation plans, and Niagara Board of Control activities, as well as coordinate with the Water Quality and Science Advisory Boards on issues of common interest. The GLAM Committee (committee) is comprised of a co-chair from Canada and the United States, as well as members from government agencies, the International Lake Superior Board of Control, the International Niagara Board of Control and the International Lake Ontario-St. Lawrence River Board (Great Lakes Boards), and technical experts. The committee is supported on an on-going basis by an appointed secretary from Canada and the United States.

As defined in its directive from the IJC, the overall objective of the GLAM Committee is to provide information to the Boards and the IJC while advising them on the effects that the water management control structures approved in the IJC’s Orders of Approval and directives have on levels and flows in boundary waters. The GLAM Committee also captures the benefits and impacts that the regulation plans have on the affected interests and communicates this to the Boards and the IJC. This includes the on-going review and evaluation of regulation plans related to:

- a) the effectiveness of the existing regulation plans;
- b) examining how the system may be changing over time and whether any modifications to the regulation plan(s) may be warranted; and
- c) any other questions requested by the Boards and/or IJC that may affect the Boards’ water management decisions over the long-term.

The GLAM Committee was initiated to establish a structured, iterative process of robust evaluation in the face of uncertainty, with an aim to reduce uncertainty over time via system monitoring and feedback to the decision-making framework based on knowledge gained.

This report will highlight GLAM Committee progress and accomplishments for the reporting period of March 1, 2021 to February 28, 2022, as the committee did not prepare a written semi-annual report in September 2021.

2.0 Work Plan Progress and Emerging Priorities

The GLAM Committee’s annual work plans cover the October 1 to September 30 time period, consistent with the United States fiscal year. This semi-annual report discusses efforts to deliver on items in the GLAM Committee’s Fiscal Year (FY) [2021 work plan](#) which was approved in October 2020 as well as the draft FY22 work plan that was submitted to the IJC during the reporting period. It should be noted that at around the same time as the FY21 work plan was

being completed, the committee’s [short and long-term strategy](#) was also approved by the commission. Task organization within the FY21 work plan does not exactly match the broader structure within the committee’s short and long-term strategy. However, the FY22 work plan has been adjusted to reflect the committee strategy framework (Figure 1) and this semi-annual report is organized around a similar structure. Components 1 through 5 represent the core work of the committee, with component 6 including overarching project management aspects.

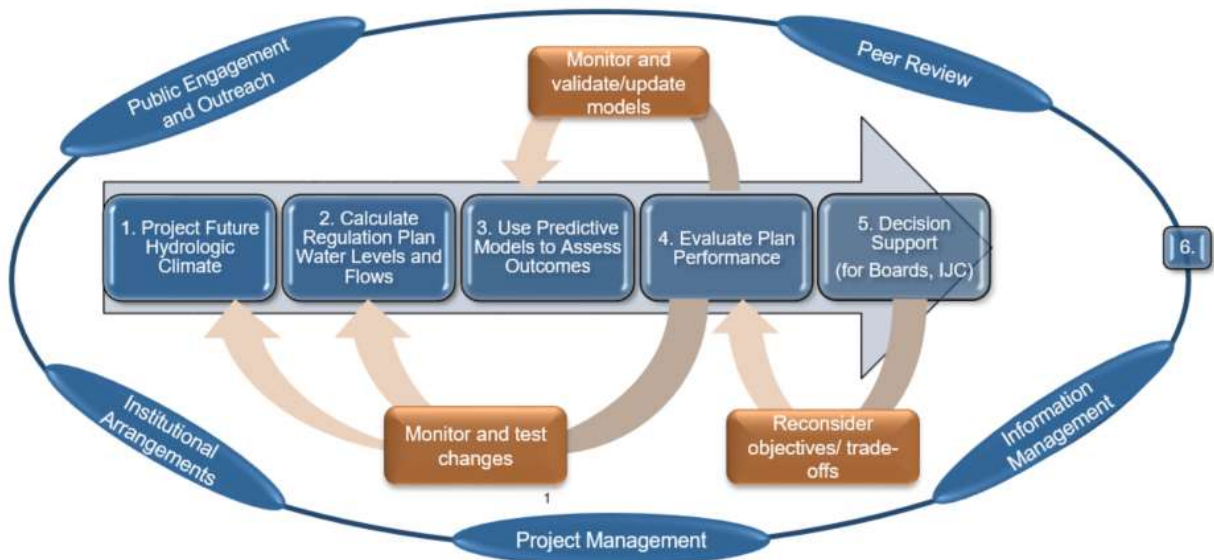


Figure 1: Illustration of the GLAM Committee's adaptive management framework

The GLAM Committee’s FY21 work plan was primarily focused on components needed to support Phase 1 of the expedited review of Plan 2014, the outflow regulation strategy for Lake Ontario, which was funded in February 2020. The committee’s draft FY22 work plan transitions from Phase 1 to Phase 2 of the expedited review for Lake Ontario and the St. Lawrence River and includes components related to the evaluation of Plan 2012, the outflow strategy for the St. Marys River (between Lake Superior and Lake Michigan-Huron).

The GLAM Committee’s work plans are developed annually, and identify key priorities for the upcoming year as envisioned by the committee at that time (typically late summer or early fall of each year). In consultation with the Great Lakes Boards, the GLAM Committee has to consistently work to try to match available resources to expected needs in the coming year and to anticipate priorities. Progress made on work plan tasks, including the expedited review priority tasks, is discussed in 2.1, 2.2, and 2.3 below. The expedited review tasks are a targeted and time bound implementation of specific GLAM Committee requirements outlined in our annual work plan and short and long-term strategy. Specific work plan tasks associated with the expedited review of Plan 2014 are highlighted in the summary.

Despite the ongoing global COVID-19 pandemic, the GLAM Committee continues to make progress on its work plan priorities. While many committee members continued working remotely and adjusted to changing situations in their communities, they continued to push

forward critical work plan activities. The committee is very appreciative of everyone's efforts to support the adaptive management effort in spite of the continued global health challenges over the past year.

Tasks covering the expedited review are led by the hydroclimate, impact assessment, and plan review / decision support working groups made up from members of the GLAM Committee and technical associates. Tasks in support of on-going GLAM Committee requirements are primarily undertaken using in-kind agency contributions as resources permit. With the expedited review financial support, the GLAM Committee did not apply for new International Watersheds Initiative (IWI) funding during the reporting period.

2.1 Tasks supporting the expedited review of Plan 2014

The GLAM Committee put considerable effort into developing a final Phase 1 report that summarizes all aspects of that portion of the expedited review. The final report was submitted to the IJC on November 19, 2021 and posted to the IJC website February 17, 2022 ([Phase 1 report](#)). The Phase 1 report should be considered the primary reference regarding the GLAM Committee's recent activities.

For semi-annual reporting purposes, a few highlights will be discussed below. Tasks discussed in Section 2.1 directly support the Plan 2014 expedited review and were being undertaken through the special expedited review funding confirmed in February 2020. Task reporting is summarized around the primary adaptive management components as outlined in Figure 1. In Section 2.2, tasks in support of the ongoing longer-term adaptive management effort are discussed while Section 2.3 covers broad oversight and administration activities that extend across all aspects to the GLAM Committee's work. Appendix A provides a list of GLAM associates who provide support to the GLAM Committee through their agencies.

2.1.1 Hydroclimate

The hydroclimate team delivered on their commitments to Phase 1, primarily through the preparation of updated stochastic water supply scenarios and the compilation of "more extreme than the historical record" scenarios that could be used within the Decision Support Tool (DST) to test and compare alternative outflow deviation strategies during periods of extreme conditions. The hydroclimate team worked closely with the Board regulation representatives to ensure the new hydroclimate scenarios could be used within the forecasting process. The hydroclimate team prepared a hydroclimate report which is included as one of the technical reference documents used in the preparation of the Phase 1 public report.

As the hydroclimate team transitions from Phase 1 to Phase 2 of the expedited review, they have organized and hosted a series of virtual workshops in January and February 2022 with hydroclimate experts that are undertaking research in the Great Lakes basin. The first workshop

was held February 9, 2022 and included background on the GLAM Committee and identification of key hydroclimate needs as the committee heads into Phase 2. The follow-up workshop on February 16, 2022 included researchers who shared information about their hydroclimate work in the Great Lakes basin that might support ongoing plan review and evaluation. Members of the GLAM Committee subsequently met on March 1, 2022 to discuss what was heard and identify priority next steps to support the expedited review process. The hydroclimate team will use this feedback to guide Phase 2 activities.

2.1.2 Calculating water levels and flows

The Regulation Representative offices provide ongoing support to the International Lake Ontario – St. Lawrence River Board through water level and flow forecasting for the Lake Ontario – St. Lawrence River system and calculating conditions under alternative outflow management strategies. Similar work was critical to the GLAM Committee’s progress under Phase 1 of the expedited review as the committee requires simulations of alternative outflow strategies for use within the draft Decision Support Tool (DST). Alternative outflow deviation strategies were simulated in support of PAG and International Lake Ontario – St. Lawrence River Board virtual workshops held throughout the reporting period. The Regulation Representatives have worked closely with the development of the DST to ensure a seamless transition between forecast development under a range of operational approaches and integration within the DST to compare outcomes. This is a fundamental component for DST application.

In addition to their support for the DST, the Regulation Representative offices are continually updating and refining their modelling tools and forecasting approaches which benefits the committee. For example, the Regulation Representatives are working with the Coordinating Committee on Great Lakes Hydrologic and Hydraulic Data to update the coordinated regulation and routing model that can be used to simulate water levels and flows throughout the system.

The Regulation Representative offices for the International Lake Ontario – St. Lawrence River Board are also responsible for tracking and documenting Lake Ontario outflow decisions. Staff in the Cornwall office completed a summary report of actual and plausible outflow strategies to identify where deviation opportunities and potential changes to the Plan 2014 rules and limits might be possible in the future. The report is referenced in the committee’s Phase 1 report and will be used to guide plan alternative development within Phase 2 of the expedited review.

2.1.3 Impact assessment

Throughout Phase 1 of the expedited review of Plan 2014, the GLAM Committee has worked to gather additional impact data and information that can be used to inform Board decisions. Considerable progress was made in this area throughout the reporting period. The GLAM Committee’ [Phase 1 report](#) highlights a number of these key initiatives and should be referenced for further details.

Phase 1 impact assessment work during the reporting period was focused on delivering information to support the development of the DST. A particular emphasis was placed on assessing impacts for shoreline property owners on Lake Ontario and downstream through the St. Lawrence River. Staff from U.S. Army Corps of Engineers (USACE), Detroit District developed a wave runup simulation tool for Lake Ontario that could be run under a wide range of water level and storm conditions to identify the range of potential buildings where water would reach the foundation. That information could then be used within the DST to compare alternative outflow deviation strategies. Complementary to the lakewide estimates, researchers with the National Research Council of Canada applied wave runup models at three specific shoreline sites on Canadian shoreline of Lake Ontario. Like the USACE work, the National Research Council approach allowed for simulating wave conditions under a range of water level and storm conditions to see how flooding impacts might change.

Staff from Environment and Climate Change Canada continued work to estimate inundation on the lower St. Lawrence River. Considerable progress was made updating critical datasets and using hydrodynamic model simulations to assess potential impacts to buildings, roads, trails, and agricultural lands. That information was integrated directly into the DST, though further work is needed to consider external drivers of shoreline impacts in this part of the system such as wave and tides as well as erosion.

A critical aspect of the DST was the development of impact zones for different locations along the lake and river shoreline. The impact zones essentially define critical water level conditions for specific communities, ranging from low impact to severe impact. The GLAM Committee spent considerable time refining the impact zone definitions during the early part of the reporting period so they could be comparable between locations. Committee members used a wide range of data and information including the flooding and inundation modelling output discussed previously and also other data sources such as online questionnaires, stakeholder surveys, recreational boating and tourism information gathered through the USACE, Buffalo District, and analysis of impact information from 2017 and 2019. While the committee recognizes these impact zone definitions are likely to be refined over time as new information becomes available, they are an important starting point in the development of a functional DST.

In addition to impact information for shoreline communities, the DST includes draft impact zone definitions related to commercial navigation in the St. Lawrence Seaway. The draft commercial navigation impact zones were based largely on operational limitations identified through 2017 and 2019 along with economic information developed by the USACE, Institute for Water Resources (IWR) for the GLAM Committee as part of Phase 1 of the expedited review. The GLAM Committee reached out to the commercial navigation sector during the reporting period to validate the draft impact zone definitions; that collaboration is still ongoing.

2.1.4 Plan formulation and evaluation

The GLAM Committee worked closely with staff from the USACE, IWR during the first half of the reporting period on the design and initial development of the DST for Board outflow deviation decisions. This was a cornerstone of the Phase 1 process. The IWR team built the preliminary DST within Excel based on outflow and water level forecasts generated by the Regulation Representative offices as well as impact information summarized by the impact assessment team. It was an iterative approach, with considerable back and forth throughout the process. Details on the DST and the development process are further outlined in the GLAM Committee's [Phase 1 report](#).

Throughout the spring and summer of 2021, the GLAM Committee worked to transition from an IWR led development to an internal GLAM Committee development cycle for the DST. Internal DST leads were identified and invested considerable energy to learn and further update the prototype DST so that a functional version would be available for use by the Board in early 2022. The DST will require continued review, modification, and updates to improve the functionality and capability throughout the DST's lifecycle; this is a requirement of any tool of this nature and complements the adaptive management process which is intended to continue to review and assess new data and information.

To support DST testing and practice decisions with the International Lake Ontario – St. Lawrence River Board, the plan formulation and evaluation team undertook simulations of alternative outflow deviation strategies for consideration within the DST. The simulations were also important for discussions with the PAG when input was sought on possible DST improvement. Much of this work was led operationally by the Regulation Representative offices, and particularly the Cornwall office, in support of ongoing Board operations.

2.1.5 Decision support

During the reporting period, the GLAM Committee planned and hosted a series of mock decision support workshops with both the PAG and the International Lake Ontario – St. Lawrence River Board to receive feedback on the approach and consider options for improving the DST. This is an ongoing requirement in the iterative process of maintaining the DST. It also provides an opportunity to ensure the GLAM Committee is meeting the needs of the Board. Ultimately, it is the Board that will use the tool so it is important they are engaged in the iterative refinement process.

2.2 Work plan tasks in support of ongoing long-term adaptive management efforts

2.2.1 Hydroclimate

In addition to the priority expedited review tasks, the hydroclimate team has progressed on a few additional work plan tasks in support of the long-term adaptive management effort. The hydroclimate team continues to collaborate with Dr. Scott Steinschneider from Cornell University on a project funded through the National Oceanic and Atmospheric Administration (NOAA) Great Lakes Environmental Research Laboratory (GLERL) and the Cooperative Institute for Great Lakes Research (CIGLR) program regarding forecasting skill in support of regulation plan operations. There is also considerable coordination between GLAM Committee efforts and Environment and Climate Change Canada (ECCC) related to climate change simulations of Great Lakes water levels and work by the Coordinating Committee on Great Lakes Basic Hydraulic and Hydrologic Data to improve understanding of Net Basin Supply conditions throughout the Great Lakes basin. Finally, the hydroclimate team developed an outline for a potential hydroclimate summary that could be prepared annually in support of the committee's triennial reporting requirements.

2.2.2 Calculating water levels and flows

For the Lake Ontario – St. Lawrence River system, efforts to support water level and flow simulations was documented and reported as part of the Phase 1 items discussed previously. For the St. Marys River outflow analysis, the team continues to update the Coordinated Great Lakes Regulation and Routing Model used to simulate alternative Plan 2012 outflow deviation strategies. Staff with the USACE, Detroit District are also working on documenting the recent Plan 2012 deviation approaches.

2.2.3 Impact assessment

The impact assessment activities within the GLAM Committee work plans focus on ensuring that the outcomes of water level and flow scenarios affecting the various interests are measurable and assessable. More specifically, they support the GLAM Committee in understanding how accurately the impacts on these interests are represented by current data and models used in evaluating the management of levels and flows and whether conditions of the system are changing over time. Within the GLAM Committee's short and long-term strategy, impact assessment tasks cover the full range of potentially impacted sectors, both ecosystem and socio-economic. Highlights from progress related to the FY21 and draft FY22 work plans are provided below. These tasks are in addition to those specifically initiated in support of the expedited review of Plan 2014 and discussed in the previous section.

2.2.3.1 Ecosystem Activities

The GLAM Committee continued its annual monitoring of Lake Ontario coastal wetlands on the Canadian shoreline, using methods designed to track how vegetation at different elevations responds to water level conditions and funding support from the IWI. The 2021 field sampling was completed during the reporting period, despite COVID-19 challenges, and the Canadian Wildlife Service (CWS) team from ECCC worked on summarizing and reviewing the data with final delivery expected in late March 2022.

In addition to the wetland monitoring, CWS staff led a project during the reporting period to review existing ecosystem performance indicators previously used during the development of Plan 2014. In particular, they are reviewing what existing monitoring data and information might exist to track and/or validate the performance of those indicators over time. The intent is to determine whether there are valid monitoring data sources that can support the adaptive management process. CWS staff are preparing their report on the project and expect to deliver that to the GLAM Committee for review in late March 2022.

For the upper Great Lakes, the GLAM Committee continued to pursue efforts regarding ecosystem impacts in the St. Marys Rapids area. That included completion of work to collect and process side scan sonar data regarding substrate and aquatic plant species in the St. Marys rapids. More recently, the GLAM Committee has been investigating possible approaches for additional data gathering in the rapids area to support eco-hydraulic model development and application to support gate operations.

2.2.3.2 Shoreline, Recreational Boating, and Municipal/Industrial Water User Impact Activities

All of the Lake Ontario – St. Lawrence River shoreline, recreational boating and municipal/industrial water use activities identified within the FY21 and draft FY22 work plans are part of the expedited review and were discussed previously in Section 2.1 and reported in the [Phase 1 report](#).

For the upper Great Lakes, 2021 continued to be a high water period, particularly on Lake Michigan-Huron. As part of their ongoing requirements, the USACE, Detroit District continued to track high water impacts observed throughout the system. That information will be helpful for future model validation and refinement.

2.2.3.3 Commercial Navigation and Hydropower Impact Activities

All of the Lake Ontario – St. Lawrence River commercial navigation and hydropower socio-economic activities identified within the FY21 and draft FY22 work plans are part of the expedited review and were discussed previously in Section 2.1 and reported in the [Phase 1 report](#).

As the committee moves to Phase 2 of the expedited review, consideration is being given to the application of a full basin commercial navigation model. Further details are still needed to determine whether such an approach is appropriate for GLAM Committee needs.

[2.2.4 Plan formulation and evaluation](#)

All of the Lake Ontario – St. Lawrence River plan formulation and evaluation activities identified within the FY21 and draft FY22 work plans are part of the expedited review and were discussed previously in Section 2.1 and reported in the [Phase 1 report](#).

For the upper Great Lakes, GLAM staff continues work on plan evaluation in support of the review of Plan 2012 for St. Marys River outflows. This analysis will be very similar to what was done for reviewing the 2017 through 2019 conditions. Observed outflows as well as Lake Superior and Lake Michigan-Huron water levels will be compared to simulated conditions under Plan 2012 and Plan 77-A to determine potential differences. This analysis will allow the Board to verify whether the intended benefits of Plan 2012 and deviations from plan were realized.

[2.2.5 Decision Support](#)

Decision support activities during the reporting period were primarily reported in Section 2.1 and in the [Phase 1 report](#).

2.3 Oversight and administration

Activities within the Oversight and Administration category include the overarching functions required to keep the GLAM Committee on track. This includes ongoing chair and secretariat functions along with project management, reporting, communications and engagement, peer review, and information management. Some aspects of this work also directly contribute to delivery of the Expedited Review of Plan 2014.

The GLAM Committee invested considerable energy into the completion of Phase 1 during the reporting period. That included the development and finalization of the Phase 1 report, preparation of a public-facing version of the final report ([Phase 1 report](#)), and creation of a range of associated public materials to report on the Phase 1 progress including a series of videos, fact sheets, and IJC newsletter articles. Those materials are now available through the expedited review [website](#). The GLAM Committee is grateful for the support provided by the IJC in preparing these public facing materials.

Through the reporting period, the GLAM Committee continued its engagement efforts. One of the most extensive was the ongoing collaboration with the Public Advisory Group (PAG) that was established by the IJC to provide input on Phase 1 of the expedited review. With the help of Consensus Building Institute (CBI), a contractor brought on to facilitate the process, the PAG and the GLAM Committee met regularly to discuss the expedited review and seek PAG input and suggestions. The GLAM Committee learned a lot from PAG members who presented on aspects of the Lake Ontario – St. Lawrence River system that were important to them and the respective communities they represent. The PAG members shared unique and personal perspectives that reflect the diversity of sectors and geographies impacted by the regulation of Lake Ontario outflows. That input was reflected in updates and modifications to the DST as it was being developed and continues to be enhanced.

The GLAM Committee is grateful for the many hours of volunteer commitment made by the PAG members throughout the Phase 1 process. In the [Phase 1 report](#) recommendations, the GLAM Committee highlights the importance of the PAG to the expedited review process. As Phase 1 wraps up and transitions to Phase 2, the GLAM is keen to work with the IJC to determine what steps may be possible to maintain the public input process for the expedited review.

In addition to the PAG process, the GLAM Committee continued to undertake targeted engagement on various aspects of the expedited review. GLAM Committee members met with municipal and conservation authority staff to discuss progress on the DST and help validate impact information in the tool. In Ontario and Quebec, those meetings occurred virtually due to Covid-19 limitations. However, Mary Austerman and Chris Warren were able to host an in-person meeting in November for a few of the municipalities along the New York shoreline.

During the reporting period, the GLAM Committee, in collaboration with the contractor People-Plan-Community and its team undertook a significant Indigenous engagement effort with Indigenous Communities that might have been impacted by recent high water conditions on Lake Ontario and the St. Lawrence River. Through the contractor, a series of listening sessions were held with Indigenous Nations either directly adjacent to or with an interest in the Lake Ontario and St. Lawrence River shoreline. The listening sessions were highly informative, and allowed the GLAM Committee to learn a great deal about the perspectives held by local Indigenous Nations regarding their relationship with Lake Ontario and the St. Lawrence River. The GLAM Committee sees these listening sessions as a first step in a longer-term engagement process and looks forward to some of the recommendations that People Plan Community will identify in their final report at the end of March 2022. The participation of the IJC Commissioners and particularly Commissioner Lickers, who opened and closed many of the sessions, was welcomed by participants.

As part of the Phase 1 effort, the IJC supported a peer review process. The GLAM Committee appreciated the timely and thoughtful insight provided by the peer review committee. The suggestions were always relevant and helped improve the overall direction and outcomes of Phase 1.

The GLAM Committee continued to hold regular monthly conference calls to update members and discuss relevant items. Longer virtual workshops were held in April, June, and December 2021 with the ILOSLRB in addition to the numerous PAG workshops discussed previously. The spring 2021 and fall 2021 IJC semi-annual appearances were held remotely in April 2021 and October 2021 respectively, where the GLAM Committee updated the commission on recent progress and in particular work related to the expedited review of Plan 2014. No face-to-face meetings were held in the reporting period due to the COVID-19 pandemic. A written semi-annual report was not prepared for the fall 2021 appearances due to the focus on the preparation of the [Phase 1 report](#) which largely summarizes the main progress of the committee.

3.0 International Watersheds Initiative Projects

The GLAM Committee's FY21 and FY22 work plans were developed based on available agency and essential in-kind staff contributions and potential support through the IWI and other funding. In all cases, progress for each task is dependent on actual available resources when the project is initiated. The bulk of the committee's work has been funded through the expedited review during the reporting period. In the FY21 work plan, there were 3 individual carry-over IWI projects that were either funded (full or partial) or conditionally approved for IWI funding. No new IWI proposals were submitted during the reporting period.

4.0 Funding and Resourcing

There were a number of changes to the GLAM Committee's membership during the reporting period. On the Canadian side, Mr. Rob Caldwell is currently on an acting assignment with the IJC and relinquished his GLAM membership. As well, Mr. Jonathan Staples recently retired from the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry. Both were members since the creation of the GLAM Committee in 2015 and contributed to the framing of the adaptive management process. Meanwhile, Ogimaa Kwe (Chief) Linda Debassige joined the GLAM Committee in April 2021. There are two Canadian vacancies at the end of the reporting period. On the U.S. side, there are also two vacant committee positions.

From a resourcing perspective, the GLAM Committee continues to focus on allocating funding from the United States and matching Canadian funds identified to support the Plan 2014 expedited review based on the priorities outlined in the expedited review strategy and the committee's work plans. In addition to the funding allocated to support the expedited review, the committee continues to leverage considerable in-kind contributions from the various agencies represented on the GLAM Committee. A list of GLAM associates is found in Appendix A.

As the GLAM Committee continues its push to deliver on priorities of the expedited review, ongoing requirements for operational staff and the challenges associated with operating under COVID-19 restrictions continue to place pressure on staff and committee members contributing to the effort. The committee is doing its best to meet expectations while re-visiting priorities to ensure effective use of available resources.

Respectfully Submitted,

Mr. John Allis
GLAM Committee U.S. co-chair

Ms. Wendy Leger
GLAM Committee Canadian co-chair

Appendix A: GLAM Associates and Contractors

GLAM Associates and Working Team Affiliations

USACE	ECCC
Deanna Apps, Hydroclimate team	Olivier Champoux, Coastal team
Bryce Carmichael, Decision Support team	Yin Fan, Decision Support co-lead
Michael Deegan, Decision Support team	Joe Fiorino, Ecosystem team
Lynn Greer, Communications team	Daniel Ferreira, Coastal team
Sung Lee, Project management support	Patrice Fortin, Coastal team
Rachel Malburg, Coastal team	Jamie Ferguson, Plan Review co-lead
Guillermo Mendoza, Decision Support team	Natalie Gervasi, Plan Review team
Jenny Olszewski, Decision Support team	Greg Grabas, Ecosystem team
Lauren Schifferle, Plan Review team	Nicole O'Brien, Hydroclimate team
James Selegean, Coastal team	Elyse Parent, Coastal team
Jonathan Waddell, Coastal team	Caroline Sevigny, Decision Support team
Chris Warren, Decision Support co-lead	Zach Simard, Plan Review team
Laura Witherow, Project management support	Ian Smith, Ecosystem team
	Yuki Yeung, Coastal team
	OMNRF
	David Copplestone – Coastal team
IJC - US	IJC - Canada
Mark Colosimo – IJC advisor	David Fay – IJC advisor
Adam Greeley – IJC Advisor	Erika Klyszejko – IJC Advisor
Ed Virden – Communications team	Sarah Lobrichon – Communications team
	Catherine Lee-Johnston – Contracting

Public Advisory Group (listed alphabetically)

US Members	Canadian Members
John Boyce St. Lawrence Seaway Pilots Association	Jean-François Belzile Montréal Port Authority / RUSL
Robert Cantwell Jefferson County Legislator	Gilbert Cabana Université du Québec à Trois-Rivières Sciences de l'Environnement
Pat Davis New York Power Authority	Ghalia Chahine Union des producteurs agricoles
Corey Fram Thousand Islands International Tourism Council	Sarah Delicate United Shorelines Ontario

Bernie Gigas Rochester, NY	Abraham Francis Mohawk Council of Akwesasne
James Howe The Nature Conservancy	Rick Layzell Boating Ontario Association
John Peach Save The River Upper St. Lawrence Riverkeeper	Nicolas Milot Communauté métropolitaine de Montréal
David Scudder Save Our Sodus	David Speak Beaconsfield Yacht
Jonathan Schultz Niagara County	Cliff Steinburg Ault Island, ON

Contractors and Agency Support (listed alphabetically)

US	Canada
Consensus Building Institute	ECCC - Canadian Wildlife Service - Ontario
Clarkson University	Copticom Stratégies et Relations Publiques
Limnotech	Kennedy Consulting Ltd.
Steven Orr	National Research Council of Canada
New York Sea Grant	ECCC - National Hydrological Service
USACE – Buffalo District	People Plan Community
USACE – Detroit District	Polytechnique Montréal
USACE – Institute for Water Resources	River Institute