



**FEDERAL FLOOD MAPPING GUIDELINES SERIES  
STANDARDIZATION WORKSHOP  
Summary Report**

June 10, 2020

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## Workshop Report

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# EXECUTIVE SUMMARY

What?	Federal Flood Mapping Guidelines Series Standardization Workshop
When?	Tuesday, February 25, 2020 from 9 a.m. to 4 p.m.
Where?	Carleton University in Ottawa, Ontario, Canada
Who?	<ul style="list-style-type: none"><li>• Co-hosted by Natural Resources Canada, Public Safety Canada, and the Standards Council of Canada</li><li>• Over 70 participants from across Canada representing provinces and territories, municipalities, federal agencies, Indigenous communities, Conservation Authorities, Standards Development Organizations, industry and non-for-profit organizations.</li></ul>
Why?	<p>The workshop was held to initiate a long-term project to strengthen flood mapping practices, contributing to safer and more resilient communities across Canada. The objectives of the workshop were to:</p> <ul style="list-style-type: none"><li>• Discuss the possible development of the <i>Federal Flood Mapping Guidelines Series</i> and other elements into National Standards of Canada.</li><li>• Establish requirements for standardization of flood mapping practices in Canada.</li><li>• Identify potential challenges, opportunities, and a path forward for standardization</li></ul>
How?	An agenda for the workshop, a list of participants and a summary are included in in Appendices A-C.
What We Heard	Participants generously shared their expertise and ideas about the potential standardization of the <i>Guidelines Series</i> . A few key takeaways (Section 3) included: strong sense of the benefits; awareness of the challenges; support for standardization; strong alignment on the path forward; and desire for continued engagement.
What's Next?	A high-level roadmap was developed based on the outcomes of the workshop (Section 5). Some of the critical first steps suggested include: scoping the project, securing provincial and territorial buy-in, reconfirming the timelines, identifying a national lead, securing funding, establishing governance and oversight, and ensuring continuous engagement.

## We are on a journey, together...

Please feel free to direct all questions and comments about the workshop and the summary report to Laura Salisbury at Natural Resources Canada, [laura.salisbury2@canada.ca](mailto:laura.salisbury2@canada.ca) or 613-853-8079.

# 1. ABOUT THE WORKSHOP

The *Federal Flood Mapping Guidelines Series* Standardization Workshop was held on Tuesday, February 25, 2020 from 9 a.m. to 4 p.m. at Carleton University in Ottawa, Ontario, Canada. The workshop was co-hosted by Natural Resources Canada, Public Safety Canada, and the Standards Council of Canada.

The workshop was held to initiate a long-term project to strengthen flood mapping practices, contributing to safer and more resilient communities across Canada.

The **objectives** of the workshop were to:

- Discuss the possible development of the *Federal Flood Mapping Guidelines Series* and other elements into National Standards of Canada.
- Establish requirements for standardization of flood mapping practices in Canada.
- Identify potential challenges, opportunities, and a path forward for standardization.

The **agenda** for the workshop is included in Appendix A.

An invited group of seventy **participants** from across Canada representing provinces and territories, municipalities, federal agencies, Indigenous communities, Conservation Authorities, Standards Development Organizations, industry and non-for-profit organizations participated in the day. Invitees that were unable to attend the workshop were sent the presentation material and discussion questions, and were invited to submit comments. A list of attendees is included in Appendix B. After the workshop, the **presentations** and a series of **questions and answers** from the workshop were emailed to participants.

A narrative **overview** of the workshop is included in Appendix C.



*Panel discussion with presenters (L → R) Adrienne Yuen, Laura Salisbury, Paula MacLeod, Paul Steenhof, and facilitator, Amanda Kennedy.*

## 2. CONTEXT

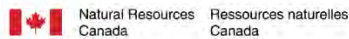
### About the *Federal Flood Mapping Guidelines Series*

The *Federal Flood Mapping Guidelines Series* is a series of evergreen documents, developed by the federal government in consultation with provincial and territorial partners and key stakeholders, that provide details on technical aspects of the following flood mapping related activities:

- Hydrologic and hydraulic investigation
- Flood mapping
- Risk assessment
- Estimating the effects of climate change forecasting on flood modelling
- LiDAR data acquisition
- Land use planning.

The full *Series* can be found at: [publicsafety.gc.ca/ndmp](https://publicsafety.gc.ca/ndmp)

### About Natural Resources Canada



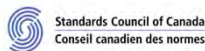
Natural Resources Canada is the ministry of the Government of Canada responsible for natural resources, energy, minerals and metals, forests, earth sciences, mapping and remote sensing.

### About Public Safety Canada

Public Safety Canada ensures coordination across all federal departments and agencies responsible for national security and the safety of Canadians. Public Safety Canada helps Canadians and their communities protect themselves from emergencies and disasters related to all kinds of hazards – natural, human-induced and technological – through national leadership in the development and implementation of policies, plans and a range of programs. For more information on Emergency Management, and associated policies, plans and programs, please visit Public Safety's [website](#).



### About the Standards Council of Canada



The Standards Council of Canada (SCC) is a Crown corporation and part of the Innovation, Science and Economic Development Canada portfolio that leads and facilitates the development and use of national and international standards and accreditation services in order to enhance Canada's competitiveness and well-being. For additional information, visit [www.scc.ca](http://www.scc.ca).

# 3. WHAT WE HEARD: THEMES

The following five key themes emerged from the Workshop:

- Strong sense of the benefits
- Awareness of the challenges
- Support for standardization
- Strong alignment on the path forward
- Desire for continued engagement

## Strong Sense of Benefits

Many benefits associated with potential standardization of the *Guidelines Series* were raised at the workshop, including: consistency for a range of end-users of flood maps (developers, emergency responders, etc.); ease of interpretation of the maps; greater cross-jurisdictional interoperability and defensibility; long-term cost savings; and ease of communication and understanding, especially for community-based risks and hazards.



*Cross-jurisdictional interoperability, broader understanding of relative flood hazard potential, and development of consistent mitigative strategies.*

## Awareness of Challenges

Participants were acutely aware of the challenges associated with the potential development of National Standards of Canada. These included the ability to reach national consensus on the details of standardization, choosing a design standard that could be achievable on a national scale, what to standardize (data quality vs. methodology/process), and the need for buy-in from provincial and territorial jurisdictions.

Other challenges raised included building stakeholders' capability to implement the standards; working with practitioners to adopt the standards; ensuring that the standards are effective without being overly prescriptive; operating in a changing (non-linear) climate; and navigating political, legal and policy-related changes.



*Getting all jurisdictions to buy into the same guidelines will require significant effort and coordination as well as a designated coordinator.*

## Support for Standardization

Over the course of the morning, groups discussed the possible development of the *Federal Flood Mapping Guidelines Series* and other elements into National Standards of Canada. Discussions revealed a **strong, cross-sectoral desire to move towards standardization of the *Guidelines Series***:

Please indicate your level of support for....

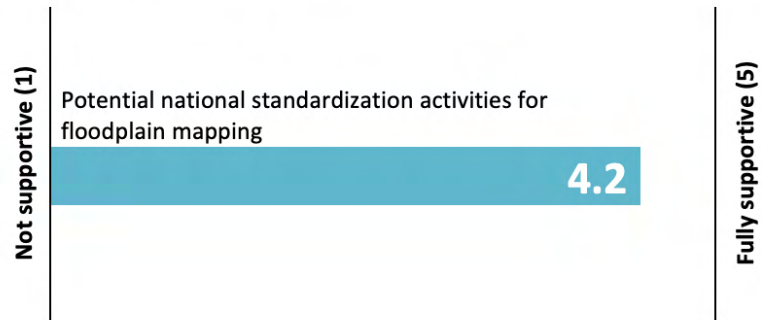


Figure 1. Results of an in-workshop digital poll indicating level of support for standardization

Note: Online responses have also been included and responses from Federal support staff have been removed to account for any potential bias.

There was a **sense of urgency** and a desire to “get moving” on the path to standardization. Participants were keen to continue the momentum that was gained at the workshop.



*There’s a lot of momentum towards working on flood hazard issues. Its critical to keep things going and stay in contact especially after this workshop.*

Urgency was also mentioned in relation to **climate change**, and it came up as a theme during all discussions.

*Water doesn’t respect jurisdictional boundaries.*



Just as participants were eager to get moving, they were also seeking **clear leadership and direction**. There was some uncertainty expressed about which organization or department will take the lead.



*Identify a Federal champion and provide them with stable, predictable funding.*

Strong Alignment on Path Forward

The affirmation of the direction from participants allowed for small breakout groups to spend the afternoon of the workshop to developing **potential pathways** toward standardization.

There was **strong alignment** between the pathways proposed in these groups about the steps required to move the *Guidelines Series* towards standardization. After the workshop, these were coalesced into a high-level roadmap (Section 5).

Participants were given an opportunity to share their thoughts on the **critical first steps**. Responses were primarily about clarifying the purpose and scope, and also included ideas about assessing users' needs, setting up governance and engagement structures, and completing necessary baseline information.



*Clarify intent and better understand needs of providers, developers, and users of flood mapping (and related data/activities).*

Participants were open, collaborative, and aware that practices vary widely across Canada. The need for some common scoping and reconciliation was mentioned a number of times.



*We can only drive standards down so far before diversity of practice makes standards unworkable.*

While participants at the workshop were highly aligned in terms of the sequence of actions to move towards standardization, the proposed aggressiveness of the **timelines varied**. Suggested timeframes to move to standardization ranged from two years to twenty plus. Nonetheless, participants expressed a consensus that the process will require a **staggered approach**.

Participants were asked which of three **existing federal guidelines** might be a natural place to start potential standardization efforts. Using a ranking system, the *Federal Airborne LiDAR Data Acquisition Guideline* emerged as the highest priority; however, support for the other two (*Federal Hydrologic and Hydraulic Procedures for Flood Hazard Delineation* and *Federal Geomatics Guidelines for Flood Mapping*) was not markedly different.

The results of this exercise suggest that any of the three could serve as starting points for the development of National Standards. Other guidelines and documents that were suggested as starting points included:

- National ice jam database (6 mentions)
- Standardization of event scenarios
- Bathymetry guidelines
- Federal and Provincial Open Data Directives and Guidelines
- LiDAR derivatives
- Guidance for 1D/2D and 2D modelling



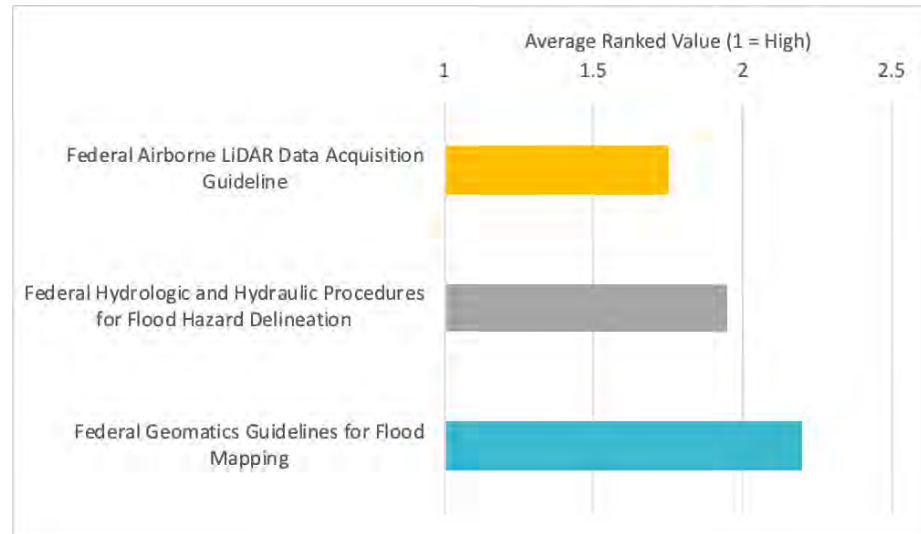


Figure 2. Results of an in-workshop digital ranking exercise to select a preferred starting point for standardization.

Note: Online responses have also been included and responses from Federal support staff have been removed to account for any potential bias.

## Desire for Continued Engagement

Participants, as representatives of their organizations, were keen to stay involved and receive additional information. Attendees were also unequivocal about the assertion that authentic engagement will be critical for the future standardization of the *Guidelines Series*.

Participants requested information and asked questions to help clarify the scope and scale of the workshop and process.



*What's needed? Nationwide collaboration with jurisdictions and end users of flood mapping products.*

In addition to sharing information with the workshop hosts, the general sentiment was that participants were able to learn from each other. It was extremely instructive to have so many different perspectives and so much varied representation active in the room, as it very clearly illustrates how many different and often diverging interested parties (contributing bodies/interested and affected groups ) there are in the standardization discussion and truly how large the scale and scope of this issue is and remains.

# 4. RECOMMENDATIONS

Many ideas emerged from the full-day workshop. Based on this input, the following recommendations are presented for consideration and implementation:

- Establish strong governance and secure funding
- Maintain an open and collaborative approach
- Continue to share information
- Implement a roadmap for action

## Establish Strong Governance and Secure Funding

Establishing and communicating the governance and oversight for standardization will be critical over the coming months. Participants are eager to keep moving, and recommended the following:

- **Establish formal leadership:** Given their respective mandates, Natural Resources Canada and the Standards Council of Canada would be appropriate co-leads for a multi-year initiative to standardize flood mapping in Canada. Formalizing, documenting and communicating their respective roles would be a natural next step.
- **Flesh out the roadmap** with input from national stakeholders. Seek buy-in to proposed roles for Provinces, Territories, and other key participants.
- Confirm **roles and responsibilities** and embed these in the next iteration of the roadmap or work plan.

## Maintain an Open and Collaborative Approach

Once the right governance structures (e.g. working groups, committees) are set up, use these groups to scope the work in an open and collaborative manner:

- Ensure there is **flexibility** in the resultant NSC(s) due to differences across Canada. As a rule, the standard(s) should allow for flexibility in approach and favour process- and risk-based elements over prescriptive requirements. They should also be applicable in a range of environments. Standardization must consider the geography, logistical challenges and limitations, climate, environmental conditions, and cultural considerations of Canada's diverse regions and those areas with limited financial capacity and competing priorities.
- Identify and work through any **data sharing and intellectual property** issues that hinder flood mapping standardization.
- Monitor and incorporate findings from **emergent research fields**, such as ice jamming.

## Continue to Educate the Flood Mapping Community

Many participants remarked that the issue was both broader and deeper than they originally envisioned, and that more information would be helpful to understand the complexities. As we go forward, the following items may be helpful:

- Sharing additional items to **help some participants understand the context** and baseline, including:
  - *Federal Flood Mapping Guidelines Series*: <https://www.publicsafety.gc.ca/cnt/mrgnc-mngmnt/dsstr-prvntn-mtgtn/ndmp/fldpIn-mppng-en.aspx>
  - A diagram of the participants - a simple organizational tool to see who all the contributors are and their relative roles and responsibilities
  - A historical overview of flooding and flood mapping in Canada to provide context
  - A case study of NRCan's process or experience around developing the guidelines and review of how they've been implemented
- Developing easy-to-digest, commonly shared **key messages** about the benefits of standardization
- Hosting a **webinar** focused on listening to the perspective of First Nations

## Implement a Roadmap for Action

The design of the workshop agenda and discussion questions over the course of the morning helped reveal a strong, cross-sectoral desire to move towards standardization of the *Guidelines Series*. The affirmation of the direction from workshop participants allowed for the afternoon to be spent developing potential pathways toward standardization.

The final exercise of the workshop was for breakout groups to develop individual pathways to standardization.





There was strong alignment between the steps proposed, and groups arrived at very similar conclusions about the steps required to move the *Guidelines Series* towards standardization.

The attached roadmap\* (Section 5) is an amalgam of some of the common steps we heard. The roadmap will need to be socialized, vetted and then put into action.

*\*(Note: Tasks in the roadmap may appear sequential due to the layout of the roadmap, however, many activities will occur simultaneously)*

# 5. HIGH-LEVEL ROADMAP

Figure 3. High-level roadmap for implementation based on the outcomes of the February 2020 workshop

Timing	Short-Term (Present to 18 months)			Medium-Term (2-5 years from now)		Long-Term (5+ years from now)	
Stage	Create Flood Mapping Strategy for Canada			Publish NSCs Implement Strategy		Renew & Maintain (5-year cycle)	
<b>Planning</b> 		Establish governance structures (e.g. working groups)		Develop implementation plan	Review uptake	Evaluate impact	
	Clarify roles and responsibilities, including national leadership	Determine the end state, agree on scope & what is being standardized	Seek working group approval and input	Develop and issue RFP(s) for the NSCs	Promotion, outreach and capacity building (training, conferences)	Review compliance of proper use of the standards (if necessary)	
		Establish the strategy, sequencing and prioritization of the NSCs		Draft, peer review, approve, and release the NSCs		Review, revise, and renew the standards as required by SCC process	
	Discuss data sharing and intellectual property		Secure consensus on what to standardize next (H+H guidelines, etc.)	Consider future additions to the "suite" of NSCs and related activities (feasibility and funding)			
<b>Technical</b> 	Conduct baseline studies, environmental scan	Scan international examples	Evaluate data, models, best practices and recommendations	Develop the standards			
	Review current practices and drivers	Build list of existing literature, guidance, and documentation					
<b>Funding</b> 	Review and assess funding opportunities, including seed funding	Agree on funding mechanisms and arrangements	Develop work plan and budget		Reassess budget and funding for long term		
		Confirm funding					
<b>Engagement</b> 	Stakeholder identification	Develop communications plan		Implement communications plan (stakeholder updates)	Public awareness campaign	Renewal & maintenance of communications and engagement plan (5 yr)	
	Stakeholder needs assessment	Secure provincial/territorial buy-in for principles and outcomes via contact, workshops, consensus review			Develop training, workshops and webinars		
Continuous, consistent and clear engagement, capacity building, and communications of/for the public, federal, provincial, territorial and municipal decision-makers and staff, Indigenous communities and representatives, SDOs, industry, academia and not-for-profit organizations.							
<b>Considerations</b>	<ul style="list-style-type: none"> <li>● Climate change</li> <li>● Inclusivity</li> <li>● Need for buy-in</li> <li>● Flexibility</li> <li>● Voluntary, by default</li> <li>● Review implications for provinces &amp; territories</li> <li>● Authentic inclusion of Indigenous communities, training and engagement</li> </ul>						



**FEDERAL FLOOD MAPPING GUIDELINES SERIES  
STANDARDIZATION WORKSHOP  
Appendices**



# A. AGENDA

The agenda for the workshop is included on the following two pages.

# B. PARTICIPANTS

## Participants

Attendees are listed on the following pages, in alphabetical order by first name. Online contributors have also been included. *Please report any errors or omissions to [laura.salisbury2@canada.ca](mailto:laura.salisbury2@canada.ca)*

## Welcoming Remarks

- Genevieve Nottaway, Indigenous Elder, MaigenAjik tanakeewin
- Brady Allin, Manager, Infrastructure & Climate Change, Standards Council of Canada
- Éric Loubier, Director General, Natural Resources Canada

## Speakers

- Paula McLeod, Program Manager, and Laura Salisbury, Geospatial Standards Advisor, Natural Resources Canada
  - “Federal Flood Mapping Guidelines Series Initiative”
- Adrienne Yuen, Sector Specialist, Climate Resilience and Sustainability, Standards Council of Canada
  - “An Introduction to Standards”
- Paul Steenhof, Project Manager, Natural Resources, CSA Group
  - “Case Study: Weather Data Standards Initiative”

## Facilitators

- Amanda Kennedy, Kennedy Consulting
- Sarah Kennedy, Kennedy Consulting

# FEDERAL FLOOD MAPPING GUIDELINES SERIES STANDARDIZATION WORKSHOP

**DATE:** Tuesday, February 25, 2020

**TIME:** Registration and Light Breakfast 8:30  
Workshop 9:00 to 16:30  
Optional Social Event 16:30 to 18:00 (Location TBC)

**LOCATION:** The Residence Commons Conference Rooms  
Carleton University, 1125 Colonel By Drive, Ottawa ON





**INVITEES:** An invited group of up to 80 participants from across Canada representing provinces and territories, municipalities, federal agencies, Indigenous communities, Conservation Authorities, Standards Development Organization, industry and non-for-profit organizations.











**OBJECTIVES:** This workshop will initiate a long-term project to strengthen flood mapping practices, contributing to safer and more resilient communities across Canada.

The objectives of the workshop include:

- Establishing requirements for standardization of flood mapping practices in Canada.
- Discussing the possible development of the Federal Flood Mapping Guidelines Series and other elements into National Standards of Canada.
- Identifying potential challenges, opportunities, and a path forward for standardization.

## AGENDA

Time	Agenda Item
8:30	 <b>Doors Open</b>
8:30 – 9:00	 <b>Registration &amp; Light Breakfast</b>
9:00 – 9:30	 <b>Welcome, Introductions, and Opening Remarks</b> <ul style="list-style-type: none"> <li>• Indigenous Community Member</li> <li>• Natural Resources Canada</li> <li>• Standards Council of Canada</li> </ul>
9:30 – 10:30	 <b>Setting the Context</b> <ul style="list-style-type: none"> <li>• Short presentations to provide contextual information about standards, success stories, and Federal Flood Mapping Guidelines Series</li> <li>• Moderated question and answer session</li> </ul>

Time	Agenda Item	
10:30 – 10:45		<b>Health Break</b>
10:45 – 11:00		<b>Looking to the Future</b> <ul style="list-style-type: none"> <li>• A chance to explore the overall goal to evolve the Federal Flood Mapping Guidelines Series into standards to support community and infrastructure resilience</li> </ul>
11:00 – 12:00		<b>Standardization Guidance</b> <ul style="list-style-type: none"> <li>• Facilitated group discussions about the possibility of national standardization - exploring opportunities, challenges, available starting points and the potential value of standardization</li> </ul>
12:00 – 13:00		<b>Networking Lunch</b>
13:00 – 14:00		<b>Participants' Advice on Next Steps: Options and Actions</b> <ul style="list-style-type: none"> <li>• Identify potential solutions to overcome the previously discussed barriers</li> <li>• Identify potential actions to take in the short and medium term to advance potential standardization objectives</li> </ul>
14:00 – 14:30		<b>Plenary Session to Review Potential Options and Actions</b>
14:30 – 14:45		<b>Health Break</b>
14:45 – 15:45		<b>Participants' Advice on Next Steps: Roadmapping</b> <ul style="list-style-type: none"> <li>• Based on the potential options and actions, participants will work together to help identify potential partners, specific milestones, deliverables and timelines</li> </ul>
15:45 – 16:30		<b>Summary of Discussion and Closing</b> <ul style="list-style-type: none"> <li>• Closing remarks</li> <li>• Next steps</li> <li>• Evaluation</li> </ul>
16:30 – 18:00		<b>Social (Not hosted and optional)</b> <ul style="list-style-type: none"> <li>• Meet for some casual networking</li> </ul>



## List of Participants

Name	Title	Organization
Adrienne Yuen	Sector Specialist	Standards Council of Canada
Alex Harrison	Water Science Analyst	Natural Resources Canada
Alexandra Doucette	Policy Analyst	Public Safety Canada
Ali Khan	Manager	Government of Newfoundland and Labrador
Amanda Kennedy	Facilitator	Kennedy Consulting
Amanda Lynch	Senior Project Manager (A)	City of Ottawa
Andres Rodriguez	Senior Water Resources Engineer	AECOM
Annick Maletto	Chief	City of Montreal (Civil Protection Centre)
Brady Allin	Manager	Standards Council of Canada
Brent Edwards	GIS Advisor	Communauté métropolitaine de Montréal
Captain Tracy Sprague	Director General	Canadian Armed Forces (Canadian Forces Intelligence Command)
Carolyn Mann	Policy Analyst	Natural Resources Canada
Catherine Bulman	Analyst	Infrastructure Canada
Cathie Brown	Senior Advisor	Association of Municipalities of Ontario
Chad Nelson	Principal Advisor/Manager	Infrastructure Canada
Cherilyn Silvestri	Senior Engineer	Toronto and Region Conservation Authority
Chris Rol	Senior Policy Advisor	Insurance Bureau of Canada, Toronto, ON
Craig Wells	VP of Government Services	WOOD PLC
Dalia Al-Ali	Project Manager	Canadian Water Network
David Brown	Water Resources Department Head/Associate Principal	KGS Group
Emily Cranston	Administrative Assistant	Natural Resources Canada
Éric Loubier	Director General	Natural Resources Canada
Étienne Bonhomme	Project Leader	Natural Resources Canada
Evan Graham	GIS Technologist	Government of Manitoba (Infrastructure and Transportation)
Frances Woo	Program Manager	Fraser Basin Council
Gabriel Rondeau-Genesse	Specialist in climate scenarios and services	Ouranos
Genevieve Nottaway	Elder	MaigenAjik tanakeewin
James Britton	Manager	Ontario Ministry of Natural Resources & Forestry (Mapping and Geomatics Services Section)
Jean-Luc Fournier		Natural Resources Canada
Jeff Schroeder	Engineering Specialist	Credit Valley Conservation

Name	Title	Organization
Jennifer McKay	A. Coordinator	Ontario Ministry of Natural Resources and Forestry
Jesal Shah	Manager	Government of British Columbia
Jimmy	Community Member	MaigenAjik tanakeewin
Jo-Anne Rzadki	Business Development and Partnerships Coordinator	Conservation Ontario
John Wade	Standards Program Manager	ULC Standards
Jun Ying Qu	Senior Hydrotechnical Engineer	Government of British Columbia
Kent Todd	Coordinator	Ontario Ministry of Natural Resources & Forestry (Mapping and Geomatics Services Section)
Kevin Tudhope	Senior Engineer	Toronto Water (City of Toronto)
Kibreab Assefa	Sr. Water Control Systems Planning Engineer	Government of Manitoba
Larissa Mathewson-Brake	Director (A)	Ontario Ministry of Natural Resources & Forestry (Mapping and Information Resources)
Laura Salisbury	Geospatial Standards Advisor	Natural Resources Canada
Marc-André Long	GIS Specialist	Southeast Regional Service Commission
Mark Greenwood	Hydrologist	Nova Scotia Environment (Industrial Management Unit)
Mark Shifflett	Senior Water Resources Engineer	Upper Thames River Conservation Authority
Michael Leering	Director, Environment & Business Excellence	CSA Group
Michelle Poirier	Geomatics Advisor	Natural Resources Canada
Naveed Khaliq	Water Resources Engineer	National Research Council
Neelam Gupta	Manager	Credit Valley Conservation
Omar Kanan	Water Resources Specialist	South Nation Conservation Authority
Paul Steenhof	Project Manager	CSA Group
Paula McLeod	Program Manager	Natural Resources Canada
Reid McLean	GIS Data Analyst	Government of New Brunswick
Robin Bourke	Engineering Advisor	Public Safety Canada
Ross Willness	Environmental Planning & Policy Analyst	First Nations Technical Services Advisory Group Inc.
Sandra Davis	River Engineering, Watershed Planning, Water Resources	City of Calgary
Sandra Mancini	Team Lead, Engineering	South Nation Conservation Authority
Sarah Kennedy-Near	Facilitator	Kennedy Consulting
Scott Robertson	Senior Water Resources Engineer	Grand River Conservation Authority

Name	Title	Organization
Simon Rochette	Hydraulic Engineer	Ministère de l'Environnement et de la Lutte contre les changements climatiques
Simon Tolszczuk-Leclerc	Emergency Geomatics Officer	Natural Resources Canada
Stan Dueck	Chief Building Official	District of Sooke
Stéphane Comtois	Supervisor	Ministère de l'Environnement et de la Lutte contre les changements climatiques
Ted Yuzyk	Director	International Joint Commission
Tina Lindsay	Project Officer	Natural Resources Canada
Valérie Vendette	Director	Ministère de l'Environnement et de la Lutte contre les changements climatiques
Veronique Lefebvre-Beauparlant	Senior Program Analyst	Infrastructure Canada
William Burmeister	Senior Hydrotechnical Consultant	Hatch Ltd
Xuebin Zhang	Senior Research Scientist	Climate Research Division: Environment and Climate Change Canada
Yannick Blain	Project Manager	Natural Resources Canada

## Online Contributors

Name	Organization
Alexandra Mochid	Rural Municipalities of Alberta
Benoit Turcotte	Yukon Government, Environment
Bobby Pettigrew	J.L. Richards & Associates Ltd
Brad Hlasny	GeoBC / Province of BC
Bryce Haimila	Alberta Environment and Parks
Enda Murphy	National Research Council Canada
James Hanley	ISL Engineering, Calgary AB
Jean-François Sabourin	Union des municipalités du Québec
Jon Lipinski	Ecopia.AI
Karen Morris	On behalf of the Saskatchewan Association of Rural Municipalities
Kyle Little	NWT Centre for Geomatics
Simon Rochette	Ministère de l'Environnement et de la Lutte contre les changements climatiques (Qc)
Steven Bohrn	Hatch Ltd.

# C. NARRATIVE SUMMARY

“I was in Gatineau this week and while speaking to some community members, we shared a finding with each other – during the recent floods in Ottawa, we were made acutely aware that the maps in Ottawa, being from Ontario, and those in Gatineau, from Quebec, were inconsistent.” This real-life anecdote from **Éric Loubier**, Director General, of the of the Canada Centre for Mapping and Earth Observation, kick-started the workshop to explore the potential standardization of the [Federal Flood Mapping Guidelines Series](#). Éric’s words set a tone for collaborative problem-solving that flowed throughout the day.

Over seventy attendees - representing provinces and territories, industry, municipalities, academia, Indigenous communities, not-for-profit organizations, Standards Development Organizations (SDOs), and federal organizations – actively participated in the full-day workshop on Tuesday, February 25<sup>th</sup>, 2020 at Carleton University.

The spirit of collaboration was initiated prior to the workshop via the intentional co-hosting of the workshop by three federal organizations with distinct interest in the future of the Guidelines – Natural Resources Canada (from a geospatial perspective), Public Safety Canada (from a risk mitigation and emergency management standpoint), and the Standards Council of Canada (as the national body responsible for coordinating voluntary standardization in Canada). The co-hosts sought out a group of participants from across Canada with diverse viewpoints and a range of expertise.

Previous engagement on the *Guidelines Series*, and on flood mapping in general had revealed that Canada’s changing climate; inconsistencies in mapping protocols across jurisdictions; and the overall financial, health, and psychosocial risks of flooding were drivers for potential standardization. Therefore, the intent of the workshop was to explore the possible development of the *Federal Flood Mapping Guidelines Series*, and other elements, into National Standards of Canada.





The day began with greetings from **Genevieve Nottaway**, an Anishinabe Kwe Elder and water advocate, from MaigenAjik tanakeewin. Genevieve talked about that responsibility and reminded all participants of the important work we need to do, not only to develop technologies to better understand water patterns or, prepare for upcoming flooding and disasters, but to be cognizant, in our everyday lives, of the sacred role water plays.

**Brady Allin**, Manager, Infrastructure & Climate Change, at the Standards Council of Canada, then touched upon the objectives of the day, including the overall intent to discuss the possible development of the *Federal Flood Mapping Guidelines Series* and other elements into National Standards of Canada.

The remainder the morning session was spent listening to contextual presentations to help bring participants up to speed on the *Guidelines Series* and national standards: **Laura Salisbury** and **Paula MacLeod**, both of Natural Resources Canada, shared the flood mapping framework, existing technical work, and role and status of the guidelines, and discussed the possibility of developing guidelines into national standards.

Presenter **Adrienne Yuen**, of the Standards Council of Canada, touched on what makes a National Standard of Canada, the value and benefits of standards and introduced a case study about weather data standards that has direct parallels to the potential to standardize the *Guidelines Series*.

**Paul Steenhof**, of the CSA Group, presented and continued to share lessons learned about the weather data standards. He demonstrated that organizations can work together, collaboratively, to resolve challenges on a complex, technical topic, and that it's possible to have a national, consistent approach via a staggered, parallel roadmap with multiple agencies.

The day was facilitated by the team at **Kennedy Consulting**, and participants were provided with a mix of independent time to reflect and gather their thoughts, small groups discussions, and dedicated time to interact with digital tools to accurately reflect and record their important and diverse input.



The small groups were designed to have a mix of participants from different organizations and geographic regions, and were facilitated by federal staff in neutral (non-subject matter expert) roles. The diversity of participants allowed for different perspectives to emerge; through conversation, attendees recognized how large the scale and scope of this issue of inconsistent flood mapping is, and remains.

Some of the potential benefits associated with standardization that emerged at the workshop included: consistency for a range of end-users (developers, emergency responders, etc.), ease of interpretation, greater cross-jurisdictional interoperability and defensibility, ease of communication and understanding (especially for community-based risks and hazards), and long-term cost-savings.

Many of the potential challenges raised by participants were around the ability to reach national consensus on the details of standardization, including a design standard that could be achievable on a national scale; agreeing what to standardize (data quality vs. methodology/process); and attaining sufficient buy-in from provincial and territorial jurisdictions. Other challenges raised for consideration included the ability to implement the standards, working with practitioners to adopt standards, ensuring they are effective while not overly prescriptive, addressing mapping in a changing (non-linear) climate, and navigating political, legal and policy-related changes.

The design of the agenda and discussion questions over the course of the morning helped participants to reveal a strong, cross-sectoral, desire to move towards standardization of the *Guidelines Series*. The affirmation of the direction from this group of selected stakeholders allowed for the afternoon to be spent developing potential pathways toward standardization.

Groups developed individual draft pathways to standardization. There was strong alignment between the steps proposed and groups arrived at very similar conclusions.

Some of the common steps that emerged were:

- Establishing baseline information (current practices, international examples, environmental scan, etc.) and the drivers
- Stakeholder identification and engagement
- Clarifying roles and responsibilities, including clear leadership or a champion
- Developing, and agreeing upon, the problem statement
- Potentially applying the process to an easily agreed upon “seed” standard; establishing oversight mechanisms, including developing the appropriate, diverse and cross-sectoral oversight, engagement and management committees, working groups and/or technical committees
- Drafting, reviewing and approving the guidelines and standards, including peer review; and
- Developing and communicating an implementation plan, including considerations for social media.

Other groups mentioned the need to consider factors that were raised earlier in the workshop such as inclusivity, flexibility, stakeholder buy-in, and climate change. Others noted the need for continual renewal and maintenance (on a five-year cycle).

In general, participants were collaborative, keen to have initiated the conversation, receptive to each other’s ideas, collaborative, and interested in a clear and quick way forward with decisive leadership.

The host organizations recognize that this workshop is one step along an engagement pathway towards potential standardization and that the answers received reflect the perspectives of participating attendees and organizations, and are not necessarily nationally definitive. Therefore, additional engagement will continue.

The outputs from the workshop, the responses from the online questionnaire, and other engagement outputs have been consolidated into a summary report.

Stay tuned as the potential standardization pathway for the *Federal Flood Mapping Guidelines Series* is fine-tuned with input from across Canada.

