



Management of Hazards and Emergencies in the Environment

2022 Value-for-Money Audit

Why we did this audit

- From 2017 to 2021, there were 53 significant flood events, of which 43 were declared emergencies. Half of the significant events occurred during the record-breaking floods in spring 2019, which led to the evacuation of six First Nations communities.
- There were 4,500 fires in Ontario from 2017 to 2021 affecting 1.44 million hectares of land. More than 90% were in Northwestern Ontario.
- The province has more than 5,700 abandoned mines. The cost to rehabilitate these mines is estimated to be about \$1.3 billion.
- There are 3,500 dams in Ontario. The Province owns and operates about 400, or 11% of them.
- There are at least 27,000 oil and gas wells across Ontario.

Why it matters

- Effective emergency management programs are integral to protecting the public, the environment and infrastructure against emergencies resulting from environmental hazards.
- The effective management of hazards in compliance with relevant legislation, regulations, policies and best practices reduces the risk of emergencies resulting from these hazards that threaten lives, property, infrastructure and the environment.

What we found

Level of Flood Preparedness is Worsening Due to Flood Mapping Gaps

- The Natural Resources Ministry does not track or maintain a centralized repository of floodplain (flood-prone areas near rivers and streams) maps that have been completed across the province. As a result, the Ministry cannot carry out effective mitigation and preparation measures, as it does not know where all flood prone areas are.
- Also, since 1993 the Natural Resources Ministry no longer provides funding for floodplain mapping and thus, there has been no floodplain mapping nor any mechanism to fund mapping efforts in areas that fall outside the jurisdiction of a conservation authority or municipality, such as unincorporated territories.

RECOMMENDATION 3

Forest Fire Response Often More Than Four Hours

- For the 3,873 forest fires from 2017 to 2021 that required a response, it took the Ministry more than four hours to dispatch fire crews to 15% of the fires, exceeding the required response time of four hours.
- In 2021, the four districts with the longest average time to dispatch a fire crew were: Dryden (13.6 hours); Cochrane (11 hours.); Fort Frances (10.4 hours); Sioux Lookout (8.2 hours); and Thunder Bay (6.4 hrs.).

RECOMMENDATION 7

Wildfire Protection Strategy Not in Place in Many High-Risk Communities.

- As of August 2022, about 63% of districts within the province with a rating of extreme or very high risk of fire had communities without Wildfire Protection Plans in place.
- For the three-year period ending 2021/22, the Natural Resources Ministry spent less than half of the \$1 million budgeted for the FireSmart program, the Ministry's key fire prevention strategy designed to reduce the likelihood of large uncontrollable wildfires near communities and infrastructure.

RECOMMENDATION 9

Lessons Learned From Past Events Are Not Identified and Incorporated into Emergency Plans.

- Contrary to the Ministry's Emergency Response Plan, the Natural Resources Ministry did not complete after-action reports after each significant event and exercise to identify areas for improvement. For the 7 significant flood events the Ministry responded to from 2017 to 2021, it prepared after-actions reports for only 3 of those events. Similarly, for the 11 declared emergencies related to forest fires from 2017 to 2021, the Ministry completed after-action reviews for only 2 fires.

RECOMMENDATION 2, 8

Most Abandoned Mines Not Rehabilitated or Inspected Regularly

- Based on our analysis of the mines database, 3,942, or 69% of the 5,746 abandoned mine sites in Ontario have unaddressed hazards as of April 2022.
 - Only 111 (3%) of sites had been partially rehabilitated
 - 2,335 (59%) sites had not been rehabilitated, and
 - the rehabilitation status of the remaining 1,496 (38%) sites was unknown.
- 72% of abandoned mines have not been inspected for more than 10 years (before 2011) and another 25% had no known inspection date.

RECOMMENDATION 13, 14

Natural Resources Ministry Not Performing its Full Regulatory Responsibilities with Respect to Dams.

- The Natural Resources Ministry estimates that there are about 3,500 dams in Ontario; only about 10% of them are Ministry-owned. The balance is owned by the Ministry of the Environment, Conservation and Parks, Ontario Power Generation, the federal government and private operators.
- The Ministry does not inspect or review privately-owned dams despite having regulatory authority to do so under the *Lakes and Rivers Improvement Act*. It has limited its role to only providing approvals for the construction of new dams and making changes to existing dams.
- About half of the Natural Resources Ministry's dams (146 of 316) will reach the end of their serviceable life within 20 years and will need to be replaced, rehabilitated or decommissioned. The replacement value has been assessed for only 31% of these dams; estimated replacement value for only those dams is \$321 million.

RECOMMENDATION 16

Few Oil and Gas Wells Inspected Annually

- Poorly maintained and improperly plugged wells present a safety risk to people and a potential risk to groundwater resources, yet only 19% of all oil and gas wells in the province have been inspected by the Natural Resources Ministry since 2005. Of those, 38% were last inspected more than a decade ago (before 2011).
- The Ministry has not assessed the risk of all 27,000 oil and gas wells to identify the highest risk wells to focus inspection efforts.
- One well in Southern Ontario has been leaking oil since at least 2018 and is scheduled to be plugged in 2022/23. Two other wells, also in Southern Ontario, are at a high risk of leaking gas. At the time of our audit, the Ministry did not have a timeline for plugging these wells.

RECOMMENDATION 20, 21

No Plan for Awareness or Risk Reduction Programs for Properties Susceptible to Erosion.

- There are no provincial hazard maps to identify areas at risk of shoreline erosion.
- The Ministry has no plans to provide education and awareness programs for local residents, homeowners and real estate agents, on risks related to shoreline erosion.

RECOMMENDATION 25

Hazard Identification and Risk Assessment Processes Not Timely or Coordinated

- Each of the Ministry's 25 districts is expected to maintain a district-specific risk assessment for all hazards assigned for monitoring.
- Although districts are required to update their risk assessments annually, we found that only nine of 25 districts had done so within the last year. The remaining 16 districts had not updated their risk assessments since 2018.
- Districts in Northern Ontario used a different risk model from those in the southern region, and risk assessments were often made without consideration for the potential consequences of the impact of an emergency, or external factors such as climate change and population growth.

RECOMMENDATION 27

Guidance to Support Hazard Management Outdated.

- The Ministry developed seven technical guides between 1996 and 2009 to support municipalities, First Nations and conservation authorities in implementing policies and requirements for floods, drought, erosion and soil/bedrock instability.
- These guides have not been updated since that time.
- Similarly, the Ministry issued nine technical bulletins between 2011 and 2016 to support the administration of the Lakes and Rivers Improvement Act and outline requirements, guidance and best practices for application reviews and approvals in relation to dams. Components of some technical guides and bulletins are outdated. For example, some guides do not appropriately consider current technologies in climate and/or hydrological modelling (to aid in understanding, predicting and managing the flow and quality of water resources) and the effects of climate change on flood hazards.

RECOMMENDATION 6

Conclusions

- There is a lack of clarity around roles and responsibilities related to emergency response between the Natural Resources Ministry, the Provincial Emergency Management Office, local governments and communities.
- The Natural Resources Ministry needs to strengthen its emergency management systems and processes, including conducting accurate and up to date risk assessments for hazards it is assigned to manage; updating technical guides and bulletins to ensure they reflect current technologies and impacts of climate change; and having a formal and disciplined approach to reviewing lessons learned following emergencies and practice exercises to avoid recurring issues and improve future emergency response efforts. As well, the Ministry needs to take immediate action to eliminate high-risk hazards, such as leaking wells.
- The Mines Ministry has not rehabilitated the majority of known abandoned mines in the province and does not know the rehabilitation status of another quarter of them.