Alberta Environment and Parks

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Memorandum

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Date: November 20, 2015

From: Bill Werry
Deputy Minister

To: Derek Fildebrandt
Committee Chair
Legislative Assembly of Alberta
3 Floor, 9820-107 Street
Edmonton, Alberta T5K 1E7

Subject: **Follow-up to Public Accounts Committee Meeting on October 20, 2015**

Thank you for your October 27, 2015 email regarding the requests for more information following the Public Accounts Committee attended by Environment and Parks and Municipal Affairs on October 20, 2015.

As requested, our written responses on the topics below are enclosed.

- Percentage and/or number of communities that did not have up-to-date flood maps when the 2013 flood occurred;
- Outcomes from cross-jurisdictional analysis conducted by the department;
- Number of safety inspections concluded on privately owned dams in the past five years and a sense of general results; and
- Total number of safety inspections on dams (both private and government-owned that were conducted in a year).

If you require further information, please contact Tom Davis, Assistant Deputy Minister of Corporate Services Division at 780-644-3205 or via tom.davis@gov.ab.ca.

Bill Werry

Enclosure

cc: Tom Davis, Environment and Parks
Giovana Bianchi, Legislative Assembly of Alberta

Alberta Environment and Parks: Information for Public Accounts Committee

Topic: Percentage and/or number of communities that did not have up-to-date flood maps when the 2013 flood occurred.
(Reference Transcript PA30; Mr. Malkinson)

- Prior to June 2013, the Flood Hazard Identification Program was intent on completely mapping on the identified list of 66 communities with a flood risk. At that point, 52 of the 66 communities were completed, with an additional nine studies in draft status.
- Since June 2013 we have shifted our approach from community based mapping to longer lengths of river that contains multiple communities. To put this in perspective, prior to this shift in approach approximately 1100 km of mapping had been completed. With the new studies, approximately 525 km of new and updated mapping is being done, including communities such as Calgary, High River, Okotoks, Canmore, Black Diamond, and Peace River. This will better allow our mapping products to account for urban expansion and establishes an integrated model that can be used for basin wide assessment of river and flood related issues.
- Flood hazard mapping, which is primarily used for long-term land use planning, has an expected useful lifetime in the order of decades. There is no set number of years that causes flood hazard mapping to be considered out-of-date.
- The hydraulic analysis that defines the floodway and flood fringe incorporates a future condition where the flood fringe is fully developed. Changes in the flood fringe, including additional development after the mapping is first prepared, does not affect flood water levels calculated and mapped.
- Existing hydraulic models are reviewed periodically, and after major flood events, to asses if the models remain reasonably representative and can simulate water levels that match surveyed high water marks from actual flood events.
- Periodic assessments are also made on the representativeness of design discharges in light of additional flow data measured after a study is completed, and our current understanding of flood frequency statistics.
- Study competition dates and the revision history to the study, hydraulic model, or flood hazard mapping are published online at www.floodhazard.alberta.ca, with individual summary PDFs for all draft and final flood hazard mapping studies.

Topic: Outcomes from cross-jurisdictional analysis conducted by the department.
(Reference Transcript PA31; Dr. Turner)

- Task groups under the Canadian Council of Ministers of the Environment can choose to conduct a cross-jurisdictional analysis when developing guidelines and policies.
- Alberta Environment and Parks participates in ten of the Canadian Council of Ministers of the Environment's task groups.
- The cross-jurisdictional analysis can be presented as a compendium for information sharing; there are no explicit comparisons between jurisdictions.
- The Canadian Council of Ministers of the Environment has not conducted any cross-jurisdictional analysis related to floods or flood mitigation systems.
- The examples of this cross-jurisdictional analysis as it relates to water include:
    - Climate, Nature, People: Indicators of Canada's Changing Climate.
    - Canada-Wide Standards for Mercury.
    - Review of Existing Municipal Wastewater Effluent Regulatory Structures in Canada.
    - An Overview of Federal, Provincial and Territorial Water Conservation Policies.
    - An Analysis of Canadian and Other Water Conservation Practices and Initiatives.
    - Review and Assessment of Canadian Groundwater Resources, Management, Current Research Mechanisms and Priorities.
- The flood mapping team within the River Forecasting Section have extensive knowledge of the different flood mapping methods and systems used in other provinces and countries. The River Forecasting Section has four internationally recognized and formally Certified Floodplain Managers.
- Currently, flood mapping staff are involved in discussions with federal representatives responsible for setting national flood mapping guidelines and best practices.
- Flood mapping is a tool that can be tailored to best support the larger goals and strategies of flood mitigation in any specific jurisdiction.

Topic: Number of safety inspections concluded on privately owned dams in the past five years and a sense of general results.
(Reference Transcript PA32; Mr. Loyola)

- Dam owners themselves are required to conduct periodic regulatory inspections of their dams. In addition to these inspections, the department also performs a number of audit inspections annually to ensure compliance with the dam and canal safety regulation. The main focus for the audit inspections are extreme- to high-consequence dams due to higher risks should a dam failure occur. Due to the fact that liability for dam and canal structures is placed on the dam owner under the *Water Act*, these inspections are led by a qualified Professional Engineers retained by the dam owners with departmental Dam Safety staff and the dam owner present. The inspections are recorded by the qualified Professional Engineers.
- The inspections of the low consequence dams are recorded by the department and the results of the inspections are communicated to the dam owners along with the required actions. The department works with the owners to ensure they understand the results and any actions required as a result of the inspection.
- Based on the annual dam safety audit inspection targets mentioned above, the department has performed approximately 900 inspections in the last five years. The general conclusions of the inspections as well as the review of the required regulatory reporting submitted by the dam owners are as follows:
    - No critical dam safety deficiencies were found in the dam structures. A critical dam safety deficiency is defined as a deficiency that needs immediate attention (i.e. either it must be addressed immediately or risks must be mitigated or managed until corrected).
    - A number of dam safety deficiencies (related to design, construction, operations, maintenance and surveillance) exist and/or were found in some of the dam structures inspected. These types of deficiencies generally require significant further studies, investigations and monitoring before developing a comprehensive action plan to address the deficiencies. The qualified Professional Engineers (responsible for the dam safety assessments and evaluations) provide recommendations to the dam owners regarding the necessary actions to mitigate/mange the risk related to the dam safety deficiencies until the deficiencies are addressed. The Dam Safety Regulator reviews the recommendations provided by the qualified Professional Engineers and determines whether or not the recommendations are acceptable to the Regulator. All extreme to high consequence dams have plans in place to mitigate/manage the risks due to the dam safety deficiencies.
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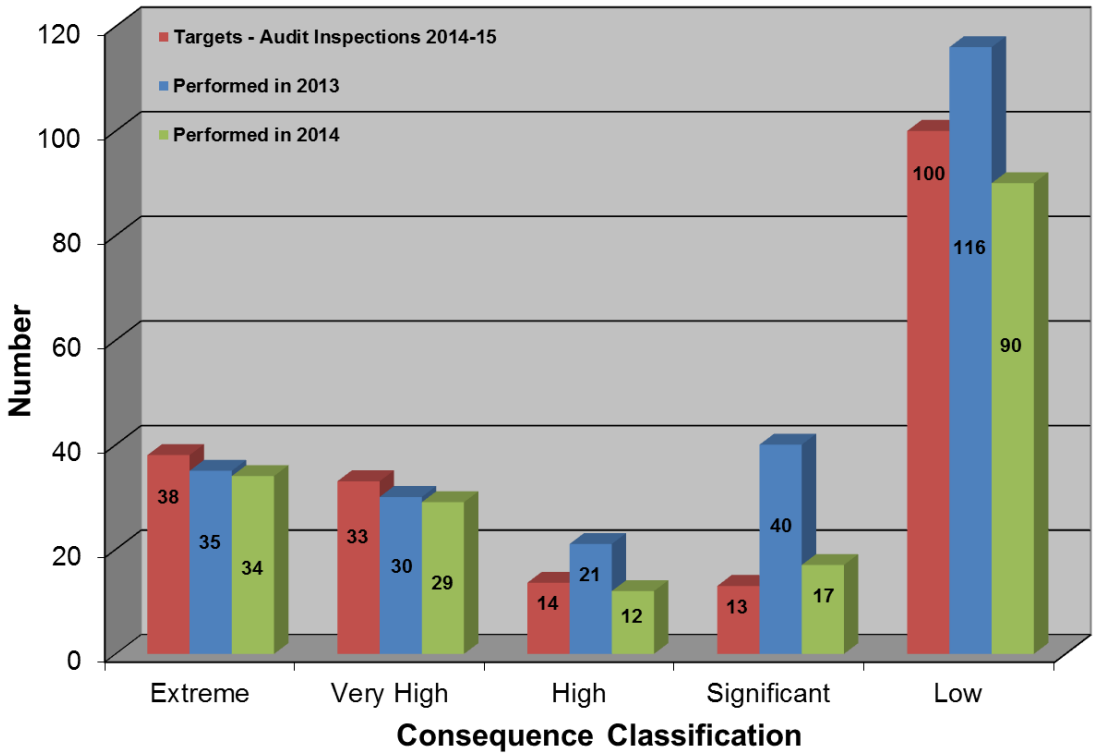
Topic: Total number of safety inspections concluded on dams (both private and government-owned) that were conducted in a year.
(Reference Transcript PA32-PA33; Ms. Renaud)

- The plot of audit inspections performed by the department in the 2013-2014 and 2014-2015 years is shown in Figure 1 below.



- The plot shows that the department achieved approximately 90% of its targets for the audit inspection for all consequence classifications. Audit inspections exceeded targets for high to low consequence dams in 2013 and 2014 due to:
  - Additional inspections conducted after the 2013 flood event, approximately 70 audit inspections of significant and low consequence dams were performed in flood impacted areas.
  - Additional inspections conducted after OBED mine tailings impoundment failure incident, approximately 30 additional inspections of coal mines tailings dams were performed in 2014, along with the Alberta Energy Regulator. Note: OBED falls under the jurisdiction of the Alberta Energy Regulator.
- The department uses the audit inspection to confirm compliance and also for education and prevention purposes to encourage compliance by raising awareness and sharing information on regulatory requirements and processes, roles and responsibilities, compliance assurance, and emergency preparedness and response.