



Legislative Fiscal Bureau

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Joint Committee on Finance

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Dam Inspection Requirements (DNR -- Water Quality)

[LFB 2009-11 Budget Summary: Page 474, #2]

CURRENT LAW

Currently, DNR makes dam hazard classifications in administrative rule based on the potential property damage or loss of life should the dam fail. Under N.R. 333.06, all existing and proposed dams in Wisconsin are classified as high, significant, or low hazard as follows: (a) high hazard dam means a dam that has existing development in the hydraulic shadow (area of land downstream from the dam that would be filled with water if the dam failed during a regional flood) that would be inundated to a depth greater than two feet or does not have land use controls in place to restrict future development in the hydraulic shadow and, therefore, loss of human life during failure or mis-operation of the dam is probable; (b) significant hazard means a dam that has no existing development in the hydraulic shadow that would be inundated to a depth greater than two feet and has land use controls in place to restrict future development in the hydraulic shadow and, therefore, failure or mis-operation of the dam would result in no probable loss of human life but can cause economic loss, environmental damage, or disruption of lifeline facilities (such as transportation or utilities); (c) low hazard means a dam that has no development unrelated to allowable open space use in the hydraulic shadow where the failure or mis-operation of the dam would result in no probable loss of human life, low economic losses, low environmental damage, no significant disruption of lifeline facilities and has land use controls in place to restrict future development in the hydraulic shadow.

Under current law, DNR is required to inspect each large dam that is maintained or operated in or across state navigable waters at least once every 10 years. A dam is considered to be a large dam if: it has a structural height of 25 feet or more and impounds more than 15 acre-feet of water; or, it has a structural height of more than six feet and impounds more than 50 acre-feet of water. There are approximately 4,000 dams in Wisconsin, of which 10% are owned by the state, 3% by the federal government, 19% by municipalities, and the remaining 68% are owned by private entities, including individuals, camps, organizations, or businesses. As of April, 2009, Wisconsin had 1,089 large dams, of which 167 were not subject to state inspection (the number of dams changes somewhat as dams are constructed or removed). Non-state regulated dams

include federally regulated hydroelectric dams, dams owned by the U.S. Army Corps of Engineers and 41 cranberry operations dams (not subject to state or federal inspection). As of April, 2009, 922 large dams were subject to state inspection by DNR.

GOVERNOR

Specify that DNR classify each large dam in the state as a high hazard, significant hazard, or low hazard dam. Require DNR to inspect each large dam classified as high hazard and significant hazard once every 10 years. In addition, require each owner of a large dam to hire a professional engineer to inspect the dam as follows: for a high hazard dam- four times between each inspection by DNR; for a significant hazard dam- at least two times between each DNR inspection, and for a low hazard dam- at least once every 10 years. Further, require the owner of each large dam to submit a report to DNR detailing the inspection results within 90 days of the inspection. The report must include information regarding any deficiencies in the dam, recommendations for addressing those deficiencies, and recommendations for improving the safety and structural integrity of the dam.

DISCUSSION POINTS

1. Under current law, DNR is required to inspect each state regulated large dam once every 10 years. In the five-year period from January 1, 2004, through December 31, 2008, DNR inspected 330 dams, including 107 high hazard, 54 significant hazard, and 169 low hazard. Department staff generally conduct between 50 and 100 dam inspections a year. During 2007 and 2008, DNR inspected approximately 90 dams a year, as the Department attempted to reduce a backlog of inspections of significant and high hazard dams. As of June, 2008, DNR had inspected all high hazard dams that currently required inspection. The Department hopes to be up to date on all significant hazard dams by the end of calendar year 2009. However, DNR estimates there are currently approximately 360 dams that have had no formal inspections in more than 10 years. Most of these dams are currently classified as "low hazard"; however, the true dam hazard ratings cannot be confirmed until after the dams are inspected. DNR notes that the rate of approximately 90 inspections per year in 2007 and 2008 would not allow the Department to make significant progress in reducing this backlog of overdue inspections while conducting current inspections at the same time. In addition, the Department indicates that a rate of 90 inspections a year was considered an unusually high rate of inspection and came at the expense of other DNR staff responsibilities.

2. The bill would retain the 25-foot structural height that impounds more than 15 acre-feet of water definition of a large dam, and would clarify that a dam is also considered a large dam if it has a structural height of six feet and impounds 50 acre-feet *or more* of water. The bill would require DNR to classify each large dam in the state as high hazard, significant hazard, or low hazard and would define the hazard classifications as follows: (a) high hazard dam means a large dam the failure of which would probably cause loss of human life; (b) significant hazard dam means a large dam the failure of which would probably cause significant property damage, but would probably not cause loss of human life; and (c) low hazard dam means a large dam the failure of which would probably not cause significant property damage or loss of human life.

3. In addition, the bill would eliminate the requirement that DNR inspect each large

dam that is maintained or operated in or across state navigable waters at least once every 10 years and instead specify that DNR inspect each high hazard dam and each significant hazard dam at least once every 10 years.

4. Of the 922 large dams currently subject to state regulation, 189 are classified as high hazard dams, 129 as significant hazard dams, and 604 as low hazard dams. However, approximately 360 low hazard dams have not been inspected in the last 10 years; therefore, the hazard ratings associated with those dams could change after they are inspected. The following table shows the 922 large dams, the hazard rating the dam is currently assigned, and the type of dam ownership: public, private, or DNR. Public ownership includes municipalities (counties, towns, villages, lake and sewer districts), private ownership includes individuals, clubs or associations, and businesses.

Current Large Dams Subject to State Regulation

<u>Dam Ownership</u>	<u>High Hazard Dams</u>	<u>Significant Hazard Dams</u>	<u>Low Hazard Dams</u>	<u>Total</u>
Public	141	98	254	493
Private*	<u>37</u>	<u>22</u>	<u>235</u>	<u>294</u>
Subtotal Non-DNR	178	120	489	787
DNR	<u>11</u>	<u>9</u>	<u>115</u>	<u>135</u>
Total	189	129	604	922

*Including one dam of unknown ownership

5. The bill would also require an owner of a large dam to hire a professional engineer, registered under section 443.04 of the statutes, to inspect the dam as follows: for a high hazard dam- at least four times between each inspection by DNR; for a significant hazard dam- at least two times between each DNR inspection; and for a low-hazard dam, at least once every 10 years. DNR would also be subject to these requirements for Department-owned dams. As shown in Table 1, currently, 178 dams classified as high hazard are owned by entities other than DNR and would be required to hire a professional engineer to inspect the dam at least four times between DNR inspections (every 10 years), 120 significant hazard dam owners would be required to have the dam inspected twice between DNR inspections, and 489 owners of dams classified as low hazard dams would be required to hire an engineer to inspect the dam once every ten years. In addition, dam owners would be required to submit a report to DNR detailing the inspection results within 90 days of the inspection. The report must include information regarding any deficiencies in the dam, recommendations for addressing those deficiencies, and recommendations for improving the safety and structural integrity of the dam. Therefore, under the bill, DNR would be required to inspect at least 50 dams on an annual basis. Further, DNR would review approximately 145 dam inspection reports annually.

6. The administration argues that eliminating the requirement that DNR inspect every large dam rated as a low hazard at least once every 10 years, and instead require owners of large dams classified as low hazard dams to hire an engineer to inspect those dams at least once every 10 years would significantly address the backlog in DNR dam inspections. In addition, the requirement that dam owners hire engineers to inspect dams classified as high hazard and significant hazard

between DNR inspections, could identify safety problems earlier, which could lead to less costly repairs and/or identify significant structural problems earlier. Further, the administration indicates that the requirements are also intended to encourage dam owners to take a more direct responsibility for dam safety.

7. Requiring dam owners to hire an engineer to inspect their dam between Department inspections could be costly to local governments and private dam owners. DNR estimates that hiring an engineer to conduct a typical inspection costs between \$2,000 and \$10,000 depending on the location, size, design, age, and hazard rating of the dam. An alternative could be to require a smaller number of inspections between the 10-year DNR inspections. An owner of a dam rated as a high hazard dam could be required to inspect the dam twice between DNR inspections (rather than four times under the bill), which would result in the dam being inspected approximately once every three to four years. An owner of a significant hazard dam could be required to have the dam inspected once between DNR inspections, meaning the dam would be inspected at least twice every 10 years. Owners of a dam rated as low hazard would be required to have the dam inspected at least once every ten years. (Alternative 3.)

8. While the bill creates increased inspection requirements for dam owners, the administration indicates that these requirements were not intended to apply to dams not subject to state regulation, such as federally regulated hydroelectric dams. Currently, s. 31.19(2)(b) specifies that, "an inspection is not required if the dam is inspected periodically by or under the supervision of a federal agency in a manner which is acceptable to the department and if the results of each inspection are made available to the department". This exemption could also be applied to the inspection requirements created under the bill (Alternative 2 or 3).

ALTERNATIVES

1. Adopt the Governor's recommendation to specify that DNR classify each large dam in the state as a high hazard, significant hazard, or low hazard dam. Require DNR to inspect each high hazard dam and significant hazard dam once every ten years. In addition, require each owner of a large dam to hire a professional engineer to inspect the dam the following number of times: (a) high hazard dam -- at least four times between DNR inspections; (b) significant hazard dam -- at least two times between DNR inspections; and (c) low hazard dam -- at least once every 10 years.

2. Adopt the Governor's recommendation as modified to exempt a dam under federal regulation from the dam inspection requirements.

3. Specify that DNR classify each large dam in the state as a high hazard, significant hazard, or low hazard dam. Require DNR to inspect each high hazard dam and significant hazard dam once every ten years. In addition, require each owner of a large dam to hire a professional engineer to inspect the dam the following number of times: (a) high hazard dam -- at least twice between DNR inspections; (b) significant hazard dam -- at least once between DNR inspections; and (c) low hazard dam -- at least once every 10 years. Further, exempt a dam under federal regulation from the dam inspection requirements.

4. Maintain current law.

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