

**STATEMENT OF NEED AND FISCAL IMPACT**

A Notice of Proposed Rulemaking Hearing or a Notice of Proposed Rulemaking accompanies this form.

Water Resources Department – Technical Services Division  
Agency and Division

690

Administrative Rules Chapter Number

Dam safety administration, engineering design requirements, approvals and emergency preparations

Rule Caption (Not more than 15 words that reasonably identifies the subject matter of the agency's intended action.)

In the Matter of: Standards for the safety of dams in Oregon

Statutory Authority: ORS 540.350, ORS 540.360, ORS 540.370, ORS 540.380, ORS 540.390

Other Authority: ORS 536.050(2)

Stats. Implemented: ORS 536.050(2), ORS 540.350, ORS 540.360, ORS 540.370, ORS 540.380, ORS 540.390

**Need for the Rule(s):**

The dam safety guidance and rules regarding the review and approval of plans and specifications for new dams needed review. The last time these were significantly updated was about 20 years ago. Since that time, there have been major changes in the understanding of Oregon's earthquake and flood risk, and also major changes in national engineering practice regarding design and monitoring of dams. In addition, current dam safety guidance has been confusing to some dam owners and engineers, resulting in multiple submittals of engineering designs prior to Agency approval. These changes are intended to provide clear and specific objective-based rules for both engineers and also for dam owners in Oregon. They are also intended to clarify the process for dam breach inundation analysis; these new rules were added in 2010.

The purpose of these rules is to implement ORS 540.350 through ORS 540.390 with actions that are intended to ensure the safety of dams insofar as they may affect possible damage to property or loss of life.

Oregon has a good dam safety record. However, Oregon dams have not been subjected to a large earthquake or extreme flood event. These rules are intended to provide essential information so that engineers and dam owners can continue this good safety record.

**Documents Relied Upon, and where they are available:**

FEMA 333. Federal Guidelines for Dam Safety: Hazard Potential Classification System for Dams. 2004.

FEMA 64. Federal Guidelines for Dam Safety: Emergency Action Planning for Dams. 2013.

FEMA 65. Federal Guidelines for Dam Safety: Earthquake Analyses and Design of Dams. 2005.

FEMA 94. Selecting and Accommodating Inflow Design Flood for Dams. 2013.

<http://www.fema.gov/federal-guidelines-dam-safety>

Dam Safety Manual. Colorado Division of Water Resources. State Engineers Office, Denver, CO. 2002.

[http://water.state.co.us/DWRIPub/Documents/DS\\_Manual.pdf](http://water.state.co.us/DWRIPub/Documents/DS_Manual.pdf)

Geotechnical Engineering of Dams. Fell, R., G. Bell, D. Stapledon, and P. MacGregor. Balkema Publishers. 2005.

Available for review at Oregon Water Resources Department in Salem.

**Fiscal and Economic Impact:**

These rules would apply to the approximately 1300 dams in Oregon that meet the statutory thresholds set in ORS 540.400. At the present time, between 5 and 10 designs for new dams are submitted each year. With recognized increased need for stored water; this number is likely to increase in the near future.

These rules will result in no change in Department staff devoted to reviewing dam safety plans and specification. There may be some increases in cost of the design for new dams, but most designs are already exceeding these proposed changes. There may also be some increased costs to dam owners for private sector engineering administration of construction and rehabilitation projects. There will be a reduction in the time associated with the Water Resource Department's approval of dam designs. This should reduce expenses of dam owners associated with project delays. There will be greater assurance that dams will be constructed in agreement with the approved designs. There will be more certainty in the hazard rating of a new dam, which may affect dam safety fees for some dam owners, increasing some and decreasing others.

Statement of Cost of Compliance:

1. Impact on state agencies, units of local government and the public (ORS 183.335(2)(b)(E)): There are several agencies and municipalities that own dams. Most of the compliance cost would be for rehabilitation of existing dams or design of new dams. Based on recent designs submitted, proposed new dams have already been meeting the modified requirements as found in these rule changes.

2. Cost of compliance effect on small business (ORS 183.336):

a. Estimate the number of small businesses and types of business and industries with small businesses subject to the rule: There are approximately 400 dams owned by small business in Oregon that could be affected by these rules. In addition, approximately 15 engineering firms that would be considered small business that have dam engineering or related services as a significant part of their business.

The economic impact of the rules on small business were reduced by (ORS 183.540);

a) These rules clarify design requirements. The rules require the least detailed engineering analysis for low hazard dams (those most often owned by small business, and designed by small business).

b) Utilizing objective based rules.

c) Providing a rule that allows an engineer to demonstrate that a rule section is not applicable for dam safety, and making the owner exempt for costs associated with that rule.

d) Elimination of all rules for small dams, replaced with advice to consider requirements of the rules of the Oregon Board of Examiners for Engineering and Land Surveying.

e) Providing specific criteria so all small business dam owners and engineering firms can be held to the same standards. This lets dam owners know up front that they need to budget for design and administration of design. Without including this rule, many have been surprised by these costs in the construction of dams.

f) Having an accurate breach analysis as the basis for the dam safety fee, so dam owners do not pay a fee based on a conservative analysis that could result in a higher hazard classification.

g) Having much improved clarity in what is required for approval, reduced time for approval, and increased certainty will ensure quicker compliance with permit conditions and eventually certification of stored water right.

b. Projected reporting, recordkeeping and other administrative activities required for compliance, including costs of professional services: There are no reporting or recordkeeping requirements. The main costs of these rule changes are associated with preparation of engineering designs and administration of dam construction by registered professional engineers. Engineering designs are already required by Statute, and currently there is very broad range in the information submitted as plans and specifications for dams. These rules clarify what is required, so that uncertainty is reduced.

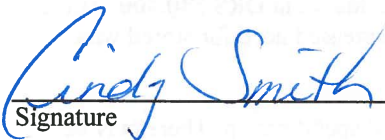
Cost of non-compliance and dam failure are very high. Fortunately we have had a very good safety record in Oregon, but dams have not yet been tested with a major earthquake or extreme flood event.

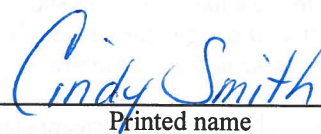
c. Equipment, supplies, labor and increased administration required for compliance: There will be little or no effect on equipment or supplies. There may be some increased engineers' time required for design and for administration of design. This will be partially offset by a reduction in the time and correspondence required during the State Engineer dam safety approval process.

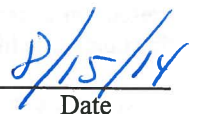
How were small businesses involved in the development of this rule? Yes. Small business engineering firms, and the owner of a small dam were on the rule advisory committee (below).

Administrative Rule Advisory Committee consulted?: Yes

If not, why?:

  
Signature

  
Printed name

  
Date