

### Dams built without permits can pose a risk to people and property

Owners of dams that store at least 10 acre-feet of water are required by law to have a permit to construct and maintain their dams. These dams are regulated by the Department of Ecology's Dam Safety Office (DSO). The DSO oversees dams and dam construction for the sole purpose of protecting public safety.

As funding and staffing permit, the Dept. of Ecology (Ecology) identifies and inspects unpermitted dams which may pose a risk to people and property. The dams are identified from publicly-available aerial photos, and then inspected to verify if the unpermitted structure is subject to the dam safety regulations. Over the past decade, five dams in Washington state built without permits and inspections from Ecology have failed, causing flooding and property damage downstream. These include:

- An orchard owner from the Royal Slope area who lost approximately \$100,000 replacing four acres of producing trees uprooted by a dam breach.
- In the Walla Walla area, the failure of an unpermitted dam cost one landowner some \$200,000 in one season's fruit production, and flooded a school on his property.

### Unpermitted dam fails in Yakima: a story of damage that could have been prevented

In April 2005, failure of an unpermitted 15 acre-foot frost control dam in Yakima County resulted in significant property damage.

The pond was built some 30 years ago without securing the necessary permits and, most importantly, without engineering plan review or construction inspection. Then without proper authorization, in the fall of 2004, the owner hired a contractor to replace the aging low level outlet pipe. The contractor cut a deep trench through the dam and backfilled, again without engineering review or construction inspection.

#### MORE INFORMATION

**Dam Safety Office webpages, for information on dam inspections, dam permits and dam construction:**

<http://www.ecy.wa.gov/programs/wr/dams/dss.html>

#### Reservoir permits

A reservoir permit may also be required for your dam.

Information on reservoir permits can be found on the Web site at:

<http://www.ecy.wa.gov/programs/wr/dams/GuidanceDocs/PDF/ecy040182.pdf>

#### Contact information

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#### Special accommodations

If you need this publication in an alternative format, call the Water Resources Program at 360-407-6872.

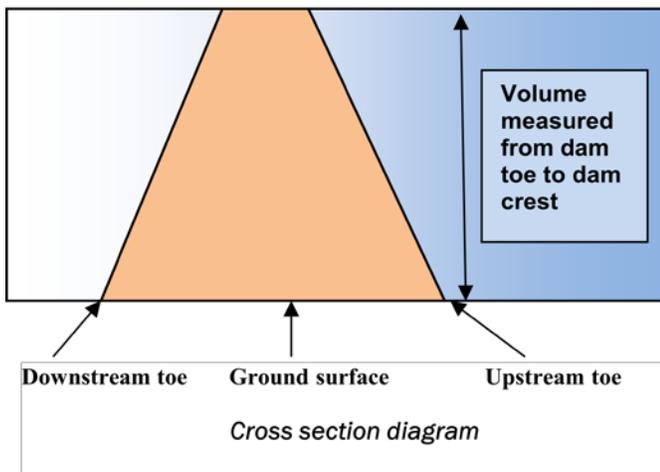
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The dam failed within days of its next filling. A witness to the event described seeing an upwelling of sand and water over the buried pipe some tens of feet off the dam toe. Within 15 minutes that upwelling had moved upstream some 100 feet, opening a gaping hole through the dam. The resulting flood buried the pump station electrical service, eroded away sections of an unpaved county roadway and passed out an undershot of a nearby canal before finally being contained by a system of downstream ponds.



*Kershaw Dam failure in Yakima County, April 2005.*

Frost ponds have proved to be an effective means of minimizing frost damage to budding trees for orchard owners. Spraying a fine mist of water serves to raise air temperatures a critical degree or two as the mist freezes. The method is so successful that smudge pots and wind machines have largely become a thing of the past. But five unpermitted frost ponds have failed in Washington state after owners skirted legal requirements.



**Q: How do I know if my dam falls under Ecology’s authority?**

**A:** If the reservoir impounded behind your dam can store 10 acre-feet (3.26 million gallons) or more above ground level, then it falls under Ecology’s authority (RCW 90.03.350). This volume is measured from the toe to the crest of the impounding barrier. There is no minimum height for a dam to be under Ecology’s authority. A pond holding 10 acre-feet of water would be equivalent to a football field of water, eight feet deep.

**Q: What should I do if I’ve built or own an unpermitted dam that falls under Ecology’s authority?**

**A:** Report your dam to Ecology to have it inspected by Ecology engineers. They will advise you on how to bring the dam in compliance with state standards. (Contact information on first page sidebar.)

Once the dam has passed an Ecology inspection, all deficiencies have been corrected, and you have obtained all other needed permits, your dam will be accepted into the Dam Safety inventory and considered a legal facility.

**Q: What happens if I don't go through proper channels and Ecology finds out?**

**A:** In recent years, Ecology has done several rounds of inspecting unpermitted dams. These are dams identified by publicly-available aerial photographs that are not listed in Ecology's dam inventory, and appear large enough to pose a hazard to downstream homeowners. Ecology first sends the owner a letter requesting permissions for inspectors to enter private property. The owners are then asked to voluntarily bring their dam into compliance with dam safety regulations by correcting deficiencies identified in the inspections.

For most situations, this means hiring an engineer after the Ecology inspection to assess the dam in detail and recommend modifications necessary to bring the facility up to current safety standards. In those cases where the dam has serious safety deficiencies that could pose an immediate threat of failure, Ecology may order emergency repairs to be made, or require the reservoir level to be lowered.

Once a reservoir owner completes any required modifications, and all other needed state permits are obtained, the dam will be in compliance. Owners failing to correct deficiencies could face fines up to \$5,000 per day. Ecology can also order dangerous dams to be drained and removed.

**Q: What can I do to avoid having my dam fall under Ecology's authority?**

**A:** One option is to construct or reduce the height of your dam so that it impounds less than 10 acre-feet (AF) at dam crest level. Another option would be to excavate the reservoir all or partially below ground level. Only the volume contained from the toe to the crest of the impounding barrier counts towards the 10 AF volume threshold. (See diagram on page 2.)

Even if your impoundment is too small to fall under Ecology's authority, you may still be liable for property damage if your dam fails. Therefore it is always a good idea to have a licensed engineer design any impoundment structure, oversee its construction, and periodically inspect it.

**Q: Are there any fees associated with owning a dam?**

**A:** If your dam has a low downstream hazard rating (no lives at risk), there are no annual fees. However, if your dam has a high (3 or more homes at risk) or significant (1 or 2 homes at risk) downstream hazard rating, then a prorated annual inspection fee is charged.

- The high hazard fee is \$1208.
- The significant hazard fee is \$881.

These fees pay for an inspection every five years.

**Q: What are the requirements and fees associated with building a new dam that stores 10 or more acre-feet?**

**A:** You will need to follow the standard dam safety permitting process. This requires hiring an engineer to design the pond, and prepare plans and specifications. A dam construction permit must be submitted to Ecology along with the plans and a minimum application fee of \$1,977. Ecology issues a Construction Permit when the construction plans and specifications, as well as the Construction Inspection Plan, are found to be acceptable and upon payment of applicable plan review fees.

**Q: Are there any other permits needed for my dam?**

**A:** You may need a reservoir storage permit and/or water right for the use of the water impounded behind the dam. You should contact the Ecology Regional Offices closest to the dam area for assistance in determining whether a permit or water right is needed.

**Ecology Regional Offices**

Northwest Regional Office  
3190 160th Avenue SE  
Bellevue, WA 98008-5452  
425- 649-7000

Southwest Regional Office  
PO Box 47775  
Olympia, WA 98504-7775  
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1250 W. Alder Street  
Union Gap, WA 98903-0009  
509- 575-2490

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