

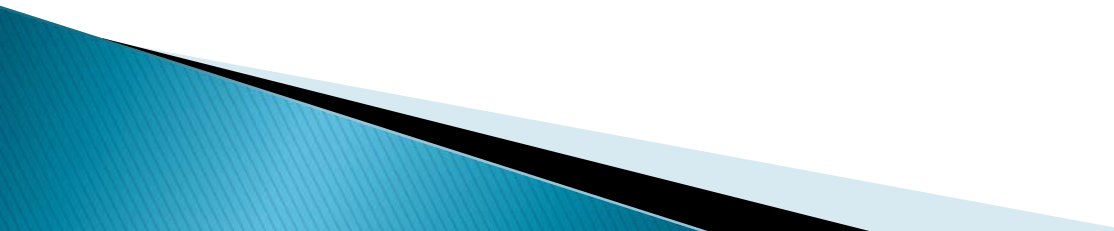
DAM REMOVALS

Illinois Department of Natural Resources, Office
of Water Resources
Permit Requirements

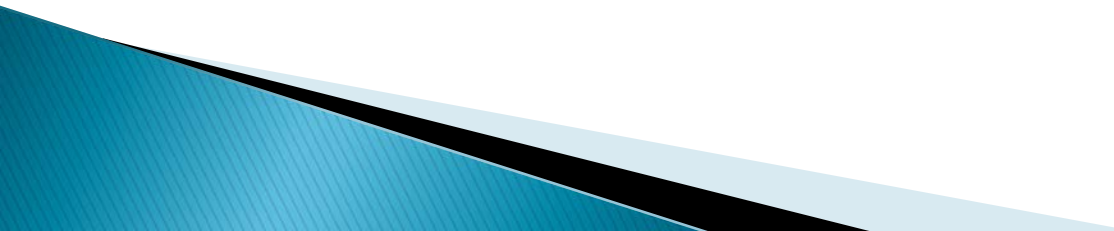
Marmot Dam Removal, Sandy River, Oregon, Time lapse

- ▶ [http://www.youtube.com/watch?v=CaNb2wo
uYUk](http://www.youtube.com/watch?v=CaNb2wo<u>uYUk</u>)

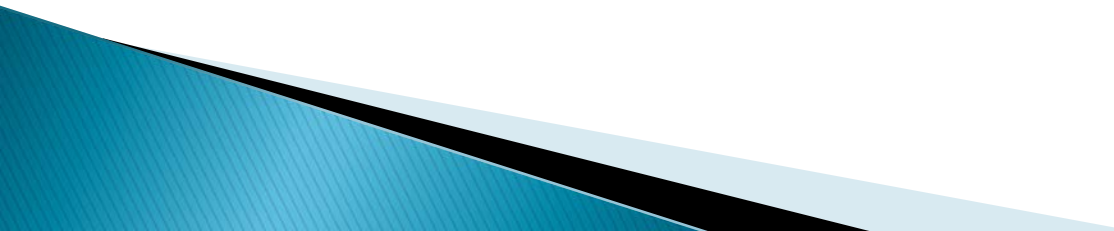
Marmot Dam

- ▶ Owned by Portland General Electric
 - ▶ Cost \$17 M to remove
 - ▶ Cofferdam built with sediment
 - ▶ Waited for the rainy season to remove.
 - ▶ 900,000 cubic yards of sediment in the pool.
 - ▶ 100 years worth of sediment released in a matter of hours.
 - ▶ The dam was 45 feet in height.
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Notable Dam Removals

- ▶ YWCA Dam Removal, aka Brewster Creek
 - ▶ Hofmann Dam
 - ▶ Armitage Dam
 - ▶ Fairbank Dam
 - ▶ South Batavia Dam
 - ▶ Others
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Permits for Dam Removals

- ▶ In order to acquire a permit for a dam removal you must apply for a permit using the Joint Application Form
 - ▶ A public notice is required. Our office will issue a 21 day public notice.
 - ▶ In order to acquire a permit compliance with the Dam Safety Rules (Part 3702 Rules) and the Floodway Rules (Part 3700 or Part 3708 Rules) must be demonstrated.
 - ▶ Public Water Rules (Part 3704 Rules) may also be applicable.
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Floodway Rules

- ▶ Existing and proposed conditions flood profiles must be calculated which show the impacts the proposed work has on upstream and downstream flood elevations.

Public Water Rules

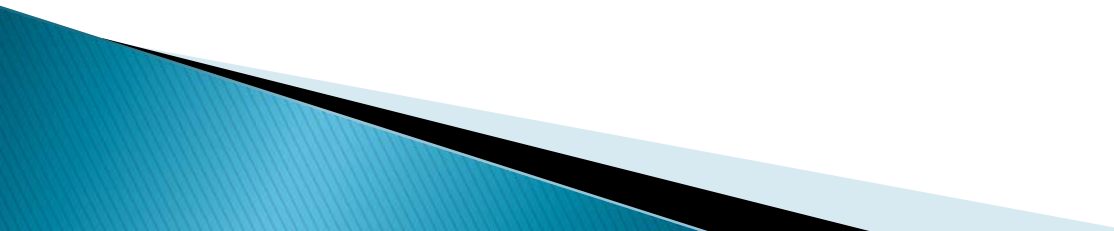
- ▶ If the dam is in a public water you will need to show compliance with the public water rules (Part 3704 Rules). Hofmann Dam project was partly in the public waters of the Des Plaines River. Downstream of the dam was public water and upstream of the dam was not.



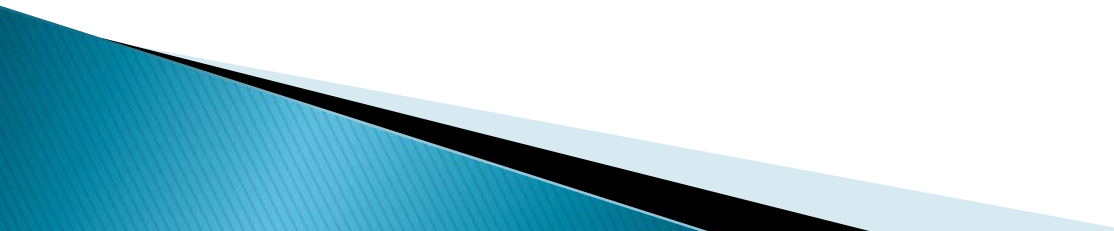
Part 3702 Rules

- ▶ Permit Requirements for Dam Removals are driven by Rules.
 - ▶ The Part 3702 Rules are the Dam Safety Rules
 - ▶ The rules can found on our web site at www.dnr.illinois.gov/WaterResources
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Two Sections of the Rules

- ▶ The first section is 3702.50 on pages 23 and 24. This section lists the Requirements for Approval. These are Standards.
 - ▶ The second section that speaks to dam removals is 3702.70 on page 27. This section lists the information which needs to be submitted.
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Standards 3702.50

- ▶ Reservoir Dewatering
 - ▶ Effecting a Breaching
 - ▶ Control of Erosion at the site of the breach
 - ▶ Downstream Channel Impacts
 - ▶ Channel Restoration
 - ▶ Control of Sediment
 - ▶ Restoration of Reservoir Lake Bed
 - ▶ Plan for Maintenance
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Reservoir Dewatering

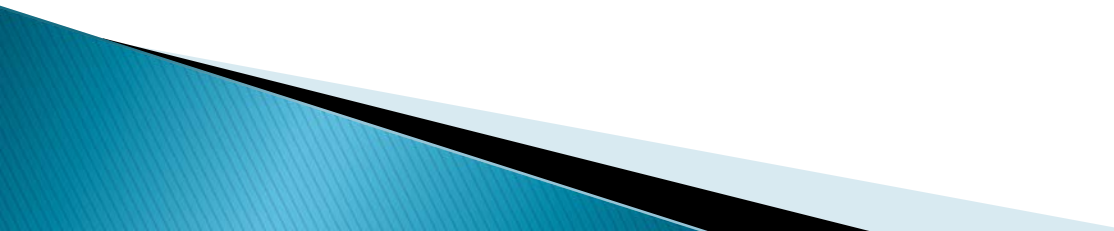
We need to know how the reservoir is being dewatered. We need to know the method and timing.

Is a draw down pipe be used?

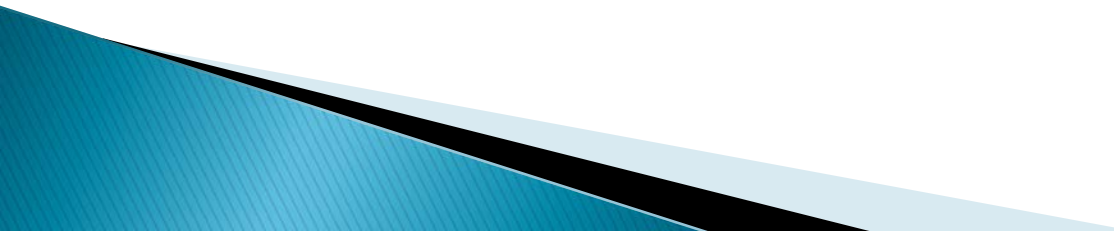
Can the reservoir be pumped out?

Backhoe mounted hydraulic hammers are usually used on concrete spillways.

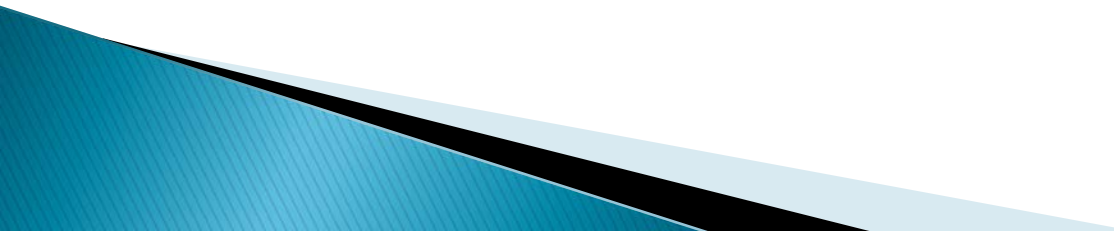
Breaching the Dam

- ▶ The breach should be made in a manner so that downstream properties are safe in all reasonably anticipated storm events.
 - ▶ The size of breach: The cross sectional area of the breach shall be sufficient to pass the 100 year flood with negligible backwater.
 - ▶ Control of erosion at the breach by the use of appropriate structural measures.
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Control of erosion at the breach during and after the breach

- ▶ We don't want an uncontrolled erosion of an embankment dam.
 - ▶ We also don't want an erosive situation occurring in the channel or on the banks (or anywhere else).
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Downstream Channel Impacts

- ▶ Effects of the breach on the downstream channel need to be assessed.
 - ▶ Increases in water surface elevations downstream of the breach should be negligible unless there is no damage results from the increases.
 - ▶ Mitigation is required if the damage cannot be prevented.
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Restoration of the Channel

- ▶ The original channel must be restored from the site of the breach upstream to the end of the area impacted by the reservoir.

Control of Sediment Deposits

- ▶ Measures must be undertaken to minimize movement of reservoir sediment.

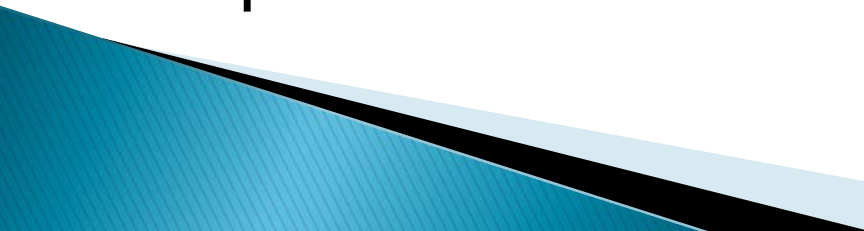
Restoration of the Reservoir Lake Bed

- ▶ The bed of the reservoir within the 100 year floodplain shall be restored to a condition whereby it can serve a reasonable floodplain use.

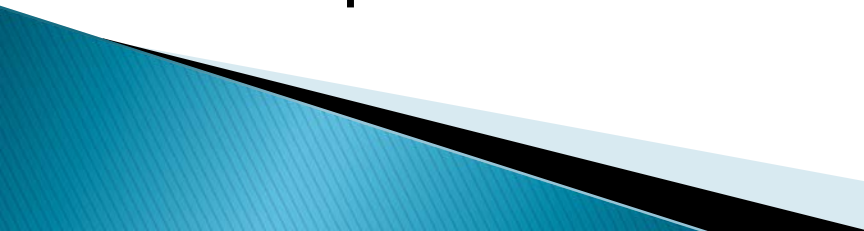
Plan for Maintenance

- ▶ A plan must be submitted which provides regular maintenance of the breach, outlet channel, inlet channel and reservoir bed for a period of time necessary to establish plant cover or other erosion and sedimentation control.

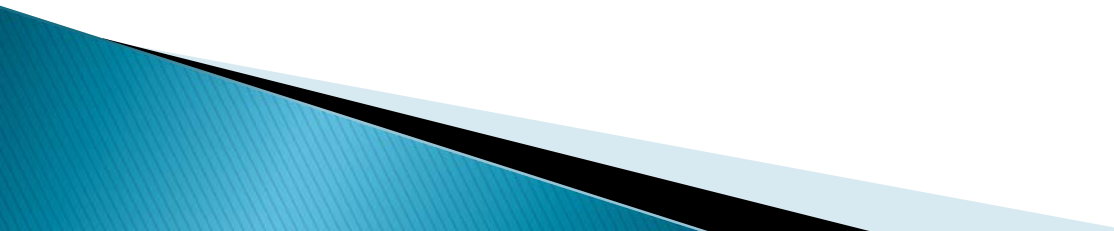
Information which must be submitted Section 3702.70

- ▶ Application form.
 - ▶ Computations for the timing of the dewatering the reservoir and the design of the method being used.
 - ▶ Design plans to effect the breach.
 - ▶ Methods being used to control erosion at the breach.
 - ▶ Computations showing the effects of breach on the channel downstream.
 - ▶ Plans for the restoration of the channel upstream.
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Continued

- ▶ Plans for the control of sediment deposits.
 - ▶ Plans for the restoration of the bed of the reservoir.
 - ▶ A time schedule for the initiation and completion of all phases of the removal.
 - ▶ Agreement by the applicant to submit as-built plans.
 - ▶ Access rights for the State to inspect the breach site and the vicinity until restoration is complete.
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Closing

- ▶ Things to watch for are what's happening to flood elevations, control of sediment, control of erosion, restoration of the channel and the lake bed and a plan for maintenance.
 - ▶ Keep in mind that public water rules may also be effective at this location.
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Questions or Comments?

