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Reduced bearing capacity of reservoirs, information to the public via Internet

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The first reservoirs of water for power production in Norway were established nearly 100 years ago. Changes in ice conditions were soon recognized and claimed to be caused by the regulation of lakes and reservoirs.

This initiated ice and water-temperature investigations. In the water courts the power owners were deemed to fulfil compensating measures as roads and bridges or monetary compensations, permanent or yearly. Satisfactory information to the public of “areas where the bearing strength of the ice cover has been reduced” has always been compulsory and included in the permission given for regulation.

Throughout the last century ca 900 reservoirs have been established. They are located from fairly low to higher altitudes, from close to inhabited areas to remote areas in the mountains. The ownership of the power developments, and thus the reservoirs, are changing, and thus also the responsibility for the safety information.

The changes in the ice conditions, and thus the weakened areas, used to be well known by the local people. Even though more and more winter traffic is routed on land, there are still advantages and needs in many areas to use the ice as winter roads. The use of the ice for leisure use has been more and more popular, both by local people and tourists. The local knowledge of the ice conditions is also getting scarcer.

In some regions there are several power plants with drainage areas and thus reservoirs fairly close to each other, and it may be necessary to have information from several power plant owners to cover a limited region.

To make information of areas where the ice is weakened by water power regulation this information is presented on the Internet.

It is focused on

- Changes in water level

- Increased flow

- Natural inlets and outlets

- Artificial inlets and outlets, tunnels

The influence may vary throughout the winter, and from year to year. Increased use of peaking has also made the influenced the ice conditions even more. The information presented is the “worst case” as it is impossible to know the actual regulations schemes satisfactory to consider the actual situation throughout the winter season.

The information is a joint venture of all the power owners and NVE, The Norwegian water resources and energy directorate. The information is presented through NVE-Atlas which is a geographical tool for showing various water themes on digital maps. Entrance to the program on the internet is a zoom able map of Norway. The area of interest can then be zoomed in and out to the scale that is wanted.

In the not affected areas the ice conditions will be as on comparable natural lakes in the area. Throughout the winter information of the state of the ice conditions on lakes are given, also through the internet. The map of weakened ice together with the current information of ice conditions on lakes should give the public good information of ice conditions in the various areas of the country.