

Low Head Dams

Many streams and rivers have low head dams that serve important functions such as water supply, recreation, irrigation, navigation, streambed stabilization, power generation, flow measurement, and creation of wetland and lake habitats. Under most flow conditions, these dams are non-hazardous and have become favorite destinations for fisherman, boaters, waders, and other visitors. However, under certain flow conditions, low head dams can become significant hazards.

Growing populations near these structures combined with increasing water recreation has focused attention on public safety and the need to identify and correct hazards created by these dams. Gannett Fleming assists clients by identifying public safety hazards and developing alternatives and solutions for public safety improvements.

Public Safety Hazards

- Hydraulic roller at downstream face of the dam
- Strong, unpredictable currents above and below the dam
- Strainers and excessive seepage paths through the dam
- Slippery surfaces on dam structures, shorelines, and steep embankments
- Poor dam visibility from the upstream side
- Submerged hazards
- Steep river banks with no exit
- Unrestricted public access
- Potential for downstream damage from flood wave produced by dam failure

Improving fish passage and public safety at low head dams



Dam owners are responsible for maintaining dams in a safe condition and doing what is needed to avoid injury to people or property. This includes posting warnings if an unsafe condition exists.



Public safety sign

Solutions to Improve Public Safety

- Dam removal entails evaluating:
 - Health of the river
 - Recreational losses
 - Historic value
 - Sediment accumulation
 - Financing.
- Installing signs, buoys, cables, fences, portages, and rescue facilities
- Structural dam modifications including:
 - Raising the dam crest (eliminate the hydraulic roller)
 - Reshaping the downstream face of the dam (placement of large boulders and or construction of concrete steps)
 - Replacing the dam with an inflatable dam
 - Divesting ownership
 - Fish passage facilities (denil, vertical slot, rock ramp, nature-like bypass channel, and Alaskan steeppass).



Low head run-of-the-river dam on the West Fork River, Harrison County, W.Va.

Representative Projects

- Conceptual Study of Alternatives at Shenango Intake Dam, Sharon, Pa.
- Design of Modifications and Removal of Four Low Head Dams on the West Fork River, Clarksburg, W.Va.
- Improving Public Safety at Four Low Head Dams on the West Fork River, Clarksburg, W.Va.



Moveable crest inflatable dam, Sunbury, Pa.

800.233.1055

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For more information on Gannett Fleming's Low Head Dam services, please contact:

Paul G. Schweiger, P.E.
717.763.7211 x2504
pschweiger@gfnet.com



Offices Worldwide



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