



Z-DAM | JAMES RIVER, VIRGINIA
MAX POSNER

LOW HEAD DAMS BY THE NUMBERS

789

Number of recorded fatalities at low head dams.

50

Number of deaths caused every year by low head dams.

13,000+

Number of low head dams in the United States.

50+

Number of low head dams that have been removed.

WHAT IS A LOW HEAD DAM?

A low head dam is a human-made structure that spans the full width of a river, allowing water to flow continuously over its crest. These dams are typically less than 25 feet high and are not designed to provide flood risk reduction.

Despite their modest size, low head dams can pose outsized risks to public safety.

ARE LOW HEAD DAMS DANGEROUS?

Low head dams are deceptively dangerous. Often referred to as “drowning machines,” they create a powerful recirculating current, known as a hydraulic, at the base of the dam. This hydraulic can trap and hold swimmers, paddlers, and even rescuers underwater.

The danger exists on both sides of the structure. From upstream, low head dams can be difficult to recognize until it is too late to avoid them. From downstream, the circulating current can pull boats and people back toward the dam and into the hydraulic.

Rescue is extremely difficult, and many fatalities include would-be rescuers attempting to help others.

Across the United States, low head dams are responsible for an estimated 50 fatalities each year.

Low head dam regulation

Most low head dams fall outside state dam safety jurisdiction, which primarily addresses structural failure rather than day-to-day public safety. While some states require warning signage, enforcement is often limited by gaps in authority and resources.

As a result, known lethal hazards can remain in place for decades without meaningful intervention. Many of these dams no longer serve a critical purpose. Removing obsolete low head dams is one of the most effective ways to eliminate this risk.

A focused policy approach — combining legislation, funding, and agency action — can prevent future tragedies and protect river users.

Low head dam public safety awareness

Many communities are unaware that these hazards exist on their local rivers. Increasing awareness is a critical first step in preventing accidents.

American Rivers is working with partners to:

- Improve public awareness of low head dam risks
- Increase access to information about dam locations
- Advance policies that prioritize public safety
- Support removal of obsolete dams
- Promote signage and safe portage at dams that remain

LEARN MORE

americanrivers.org/low-head-dam-safety/

BE DAM AWARE: HOW TO STAY SAFE

- **Know before you go**
 - Research your river route in advance to identify any dams along your path.
- **Stay alert**
 - Low head dams can be difficult to see from upstream. Watch for warning signs, buoys, or changes in water flow — but be aware that these markers are often absent.
- **Portage early**
 - Move to shore well upstream of a dam and carry your boat around it. Water moves faster than it appears, especially at higher flows.
- **Don't play the hero**
 - If someone is caught in a dam, do not enter the water. Call 911 immediately and assist from shore if possible. Attempting a rescue in the hydraulic can be deadly.



Low head dams like Z-Dam on the James River in Virginia can be nearly impossible to see from upstream. Max Posner



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