

# Dam Removal and Safety Issues in Illinois



Department of Natural Resources  
Office of Water Resources

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## Dangers Posed by Low-Head Dams

*The recirculating currents and turbulent waters below can swamp vessels and drown boaters.*

*The backwash below low-head dams can pull you towards the dam*

*The current above low-head dams can sweep you over the dam*



## People Die

*preventable deaths at dams every year.*

## Know the locations

*of low head dams and practice recreational safety at all times.*

[http://www.boat-ed.com/images/animations/lowhead\\_dam.html](http://www.boat-ed.com/images/animations/lowhead_dam.html)



Illinois  
Department of  
**Natural  
Resources**

## Search these Websites for Additional Information

<http://www.illinoispadding.org>

[http://www.boat-ed.com/images/animations/lowhead\\_dam.html](http://www.boat-ed.com/images/animations/lowhead_dam.html)

[http://www.standingupforillinois.org/cleanwater/ds\\_danger.php](http://www.standingupforillinois.org/cleanwater/ds_danger.php)

<http://www.acanet.org>



**Lowhead Dams are common throughout the Midwest and pose a significant danger to paddlers and fishermen. Always use caution and avoid running dams. The uniform structure of a lowhead dam forms a river wide and very strong recirculating current (hydraulic) just down stream of the dam. Anything caught in this current will be continually pulled under the water again and again. Once caught in the hydraulic, escape is almost impossible without help.**

# Public Safety at Dams

All Dams are Dangerous

Many web sites provide  
advise regarding the  
dangers of dams



# Purpose and Scope

## Dams Assessed

- In an effort to increase public safety at run-of-river dams, the State of Illinois has commissioned a study to document and evaluate existing public safety measures at the 25 run-of-river dams listed below (further referred to as either “run-of-river dams” or simply “dams”). In addition, this report considers further public safety measures and presents temporary and permanent structural options, including dam removal that would eliminate or reduce the public safety hazards posed by run-of-river dams.

### Dams Assessed

#### Kankakee River

Momence  
Kankakee  
Wilmington  
Wilmington Millrace

#### Rock River

Oregon  
Sinnissippi  
Lower Sterling  
Sears  
Steel

#### Des Plaines River

Hofmann

#### Sangamon

Riverside Park  
Petersburg

#### Fox River

McHenry (Stratton L&D)  
Algonquin  
Carpentersville  
Elgin Kimball Street  
South Elgin  
St. Charles  
Geneva  
Batavia  
North Aurora  
Aurora East  
Montgomery  
Yorkville

#### Vermillion River

Danville

## DAMS ON ILLINOIS PUBLIC WATERS (Federal Dams Excluded)



**Legend**

- Dam
- Public Water
- County Boundary

Public Waters are defined in 17 Ill. Adm. Code, Chapter 1, Section 3704 as all lakes, rivers, streams and waterways which are or were navigable and are open or dedicated to public use including all bays, sloughs, backwaters and submerged lands connected by water to the main channel or body of water during normal flow or stages. The Public Waters shown on this map are identified in 17 Ill. Adm. Code, Chapter 1, Section 3704, Appendix A Public Bodies of Water.

Office of  
Water Resources  
June 29, 2007

**Summary of Dams:**

- Des Moines River**  
Patriarchs Road Dam  
Hoffman Dam
- Des River**  
Dapion Dam  
Millstone Dam  
Yorkville Dam  
Montgomery Dam  
Aurora East Dam  
Aurora West Dam  
North Aurora Dam  
North Aurora Dam  
Green Dam  
St. Charles Dam  
South Elgin Dam  
Kankakee Street Dam in Eight  
Carpentersville Dam  
Algonquin Dam  
Station Lock & Dam
- Kankakee River**  
Wilkinson Millstone Dam  
Wilkinson Dam  
Kankakee Dam  
Monsieur Dam
- Rock River**  
Siam Dam  
Seed Dam  
Lower Rock Falls Dam  
Stratford Dam  
Thorn Dam  
Oregon Dam  
Fortham Station Dam  
Rockton Dam
- Sagamon River**  
Petersburg Dam  
Riverside Dam
- Spout River**  
Bernadette Dam
- Vermillion River**  
Dunville Dam

# Warning and Informational Signage

- Signage for recreational river and shoreline users can serve as an effective tool in the effort to enhance public safety at run-of-river dams.
- *Proposed Signage*



# Public Awareness Campaign

## Signage Opinions of Cost

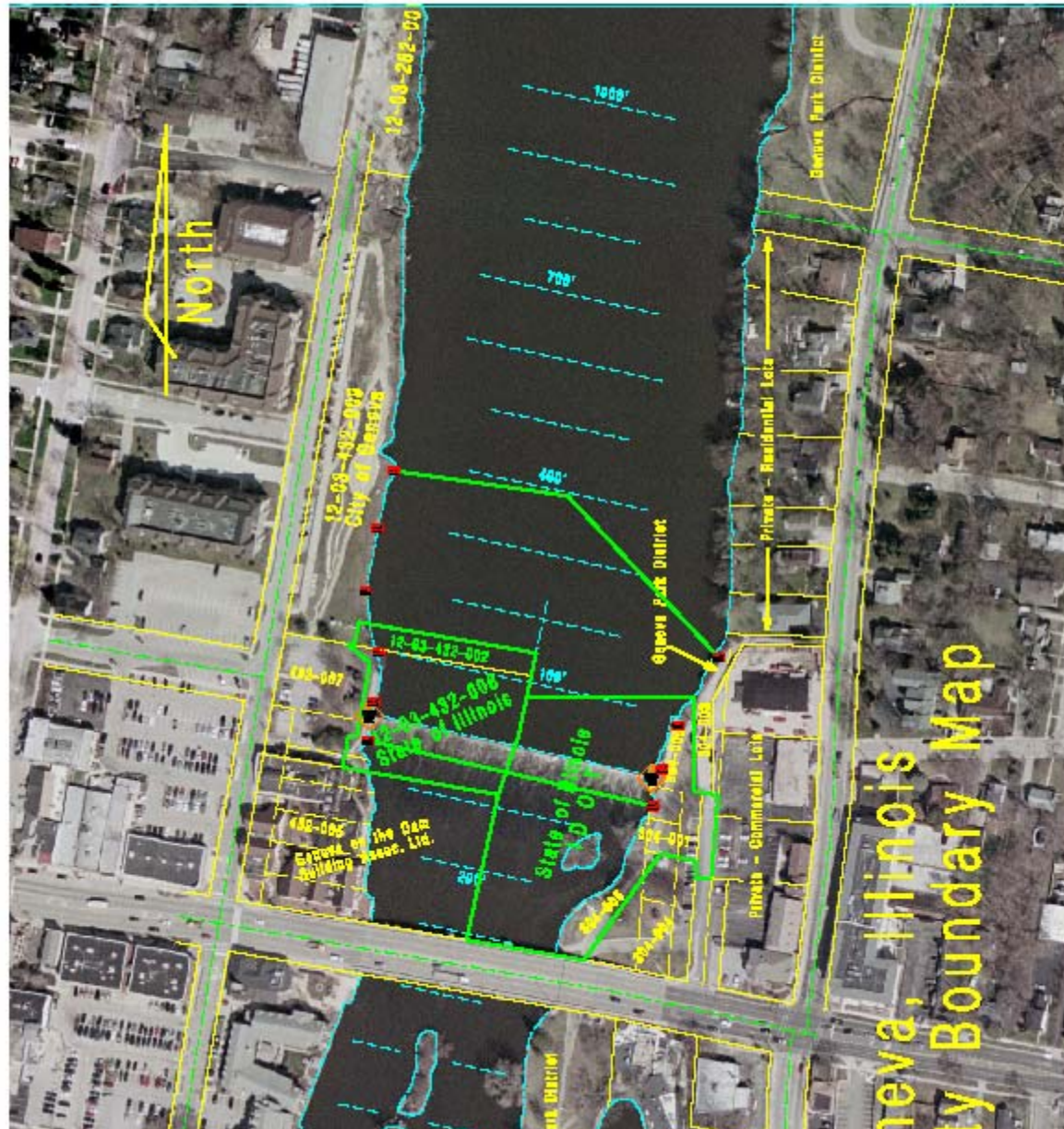
Opinion of Cost <sup>1</sup>

Dam	Without Optional Signs	With Optional Signs
Momence	\$ 55,000	\$ 62,000
Kankakee	\$ 76,000	\$ 92,000
Wilmington	\$ 195,000	\$ 266,000
Wilmington Millrace	\$ 50,000	\$ 56,000
Oregon	\$ 177,000	\$ 300,000
Sinnissippi	\$ 277,000	\$ 416,000
Lower Sterling	\$ 152,000	\$ 170,000
Sears	\$ 77,000	\$ 86,000
Steel	\$ 242,000	\$ 320,000
McHenry (Stratton L&D)	\$ 73,000	\$ 88,000
Algonquin	\$ 63,000	\$ 71,000
Carpentersville	\$ 86,000	\$ 108,000
Elgin Kimball Street	\$ 72,000	\$ 92,000
South Elgin	\$ 108,000	\$ 142,000
St. Charles	\$ 70,000	\$ 83,000
Geneva	\$ 94,000	\$ 121,000
Batavia	\$ 103,000	\$ 146,000
North Aurora	\$ 106,000	\$ 144,000
Aurora East	\$ 78,000	\$ 97,000
Montgomery	\$ 71,000	\$ 79,000
Yorkville	\$ 99,000	\$ 118,000
Hofmann	\$ 57,000	\$ 65,000
Danville	\$ 62,000	\$ 68,000
Riverside Park	\$ 24,000	\$ 30,000
Petersburg	\$ 57,000	\$ 63,000
<b>Total Cost</b>	<b>\$ 2,524,000</b>	<b>\$ 3,283,000</b>

<sup>1</sup> These costs are based on limited information and are for planning purposes only. They do not include costs associated with land acquisition, maintenance, or difficult installation.



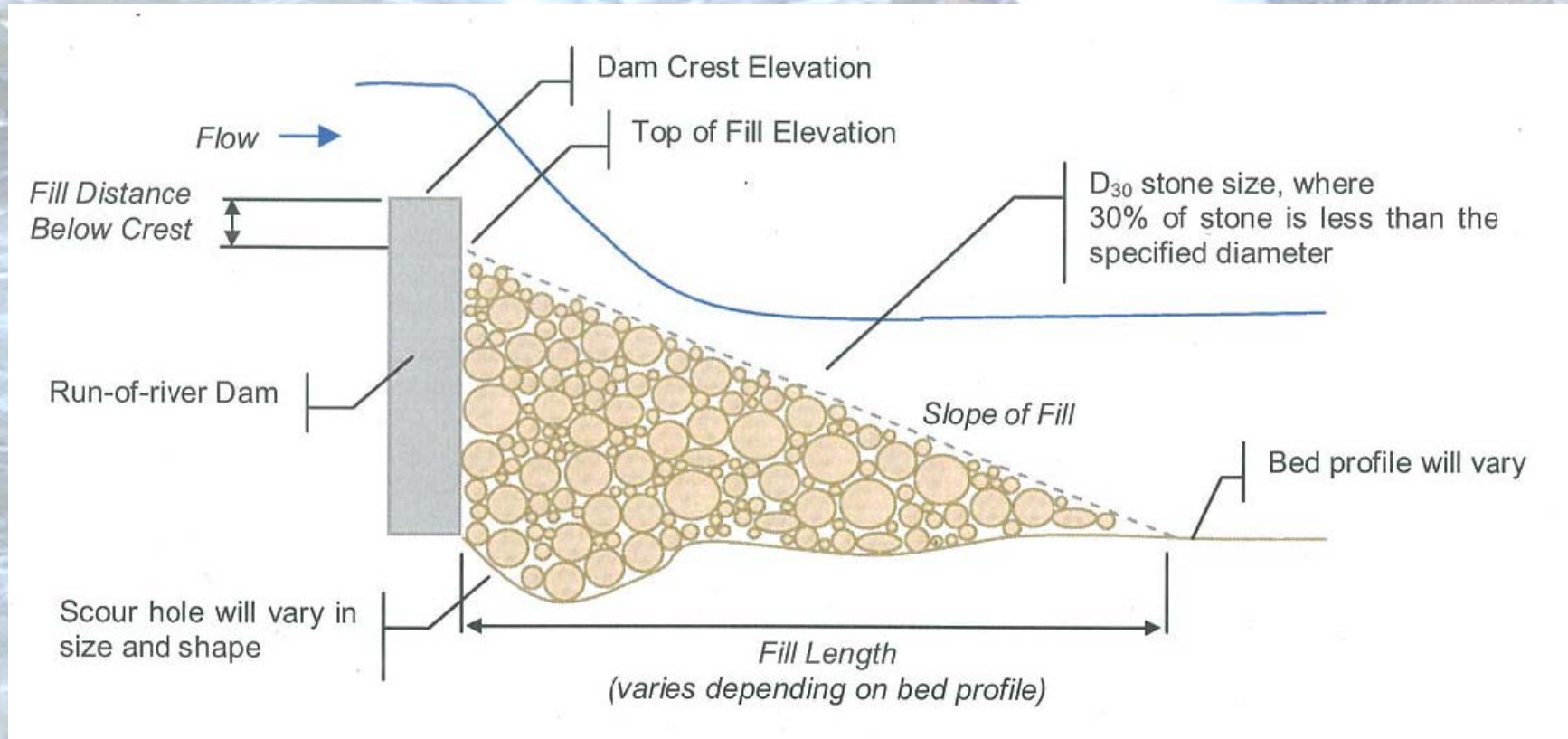
# Detailed Signage Planning



# Upstream Signage/Buoys



# Temporary Rock Fill Structural Option



Rock Fill Concept Schematic

# Temporary Structural Options

## *Temporary Rock Fill*

### *Opinions of Cost*

Dam	Opinion of Cost <sup>1</sup>
Momence	\$ 470,000
Kankakee	<i>not practical</i>
Wilmington	\$ 2,170,000
Wilmington Millrace	<i>not practical</i>
Oregon	\$ 38,130,000
Sinnissippi	\$ 4,150,000
Lower Sterling	\$ 18,030,000
Sears	\$ 3,790,000
Steel	\$ 1,670,000
McHenry (Stratton L&D)	\$ 720,000
Algonquin	\$ 1,460,000
Carpentersville	\$ 1,640,000
Elgin Kimball Street	\$ 2,860,000
South Elgin	\$ 660,000
St. Charles	\$ 1,820,000
Geneva	\$ 860,000
Batavia	\$ 3,210,000
North Aurora	\$ 850,000
Aurora East	\$ 490,000
Montgomery	\$ 1,360,000
Yorkville	<i>not practical</i>
Hofmann	\$ 900,000
Danville	\$ 2,190,000
Riverside Park	<i>not practical</i>
Petersburg	\$ 1,020,000
<b>Total Cost <sup>2</sup></b>	<b>\$ 88,810,000</b>

<sup>1</sup> These costs are based on limited information and are for planning purposes only. They do not include costs associated with land acquisition, final engineering design, and permitting.

<sup>2</sup> Additional survey data at Oregon and Sinnissippi dam resulted in a reduced cost of as much as 38%. If additional data is gathered at each dam, the total opinion of cost could range from \$55,060,000 to \$88,810,000.

# Permanent Structural Options

## *Dam Removal Opinions of Cost*

- Of the 25 dams assessed, 15 dams were studied for potential removal. Dams providing hydropower, power plant cooling water, or major upstream recreation were not considered for potential removal.

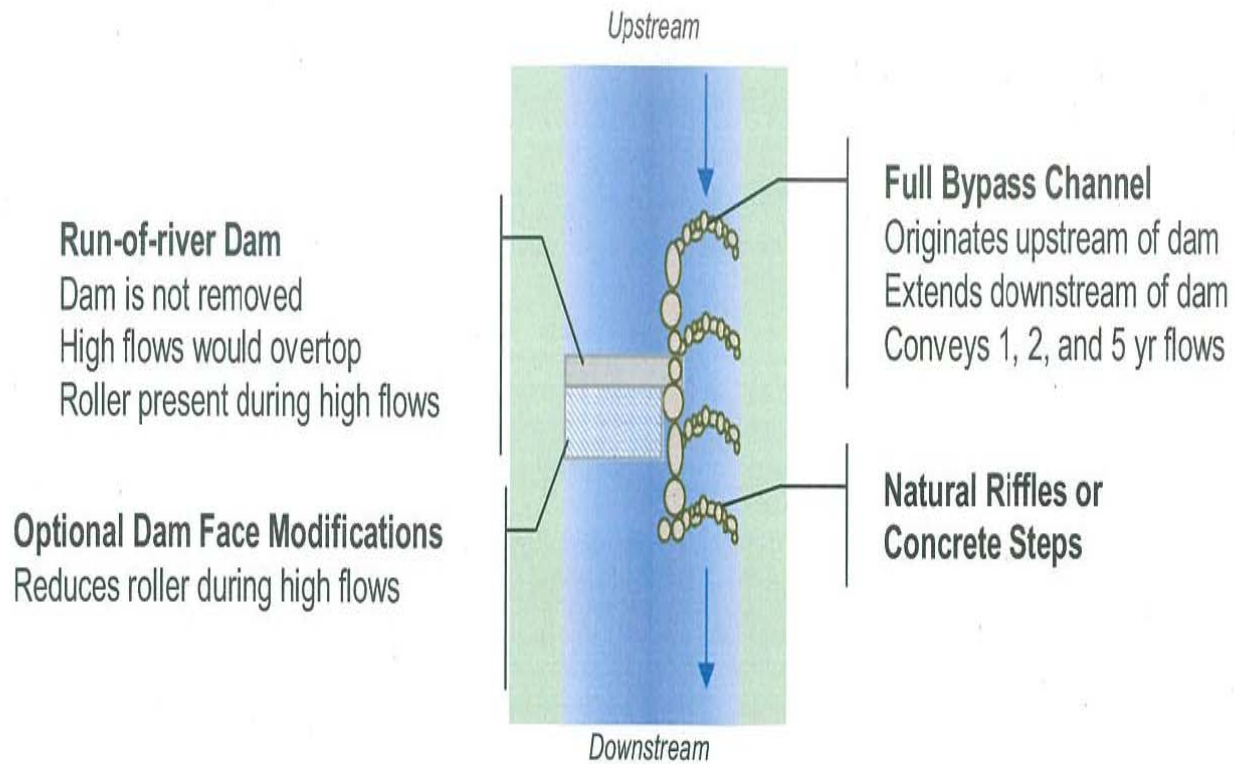
Dam	Opinion of Cost <sup>1</sup>
Momence	\$ 380,000
Lower Sterling	\$ 8,290,000
Carpentersville	\$ 940,000
Elgin Kimball Street	\$ 3,290,000
South Elgin	\$ 720,000
St. Charles	\$ 2,250,000
Geneva	\$ 2,380,000
Batavia	\$ 2,030,000
North Aurora	\$ 1,550,000
Aurora East	\$ 2,900,000
Montgomery	\$ 670,000
Hofmann	\$ 1,850,000
Danville	\$ 2,050,000
Riverside	\$ 270,000
Petersburg	\$ 290,000

<sup>1</sup> These costs are based on limited information and are for planning purposes only. More detailed information on sediment may result in a substantial increase in dam removal costs.

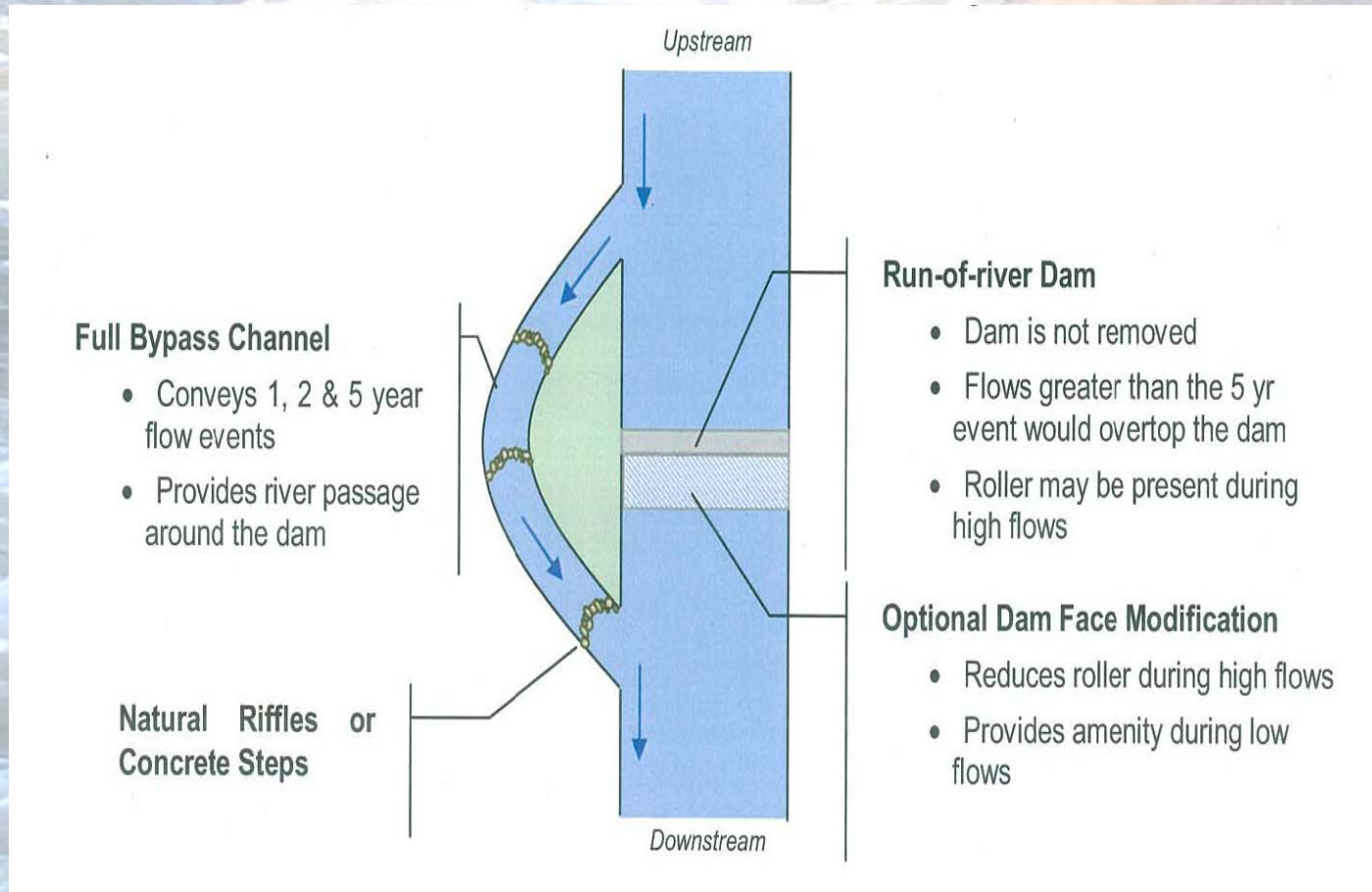
- The four other permanent structural options that were considered included a full bypass channel, a riffle pool rock ramp, an in-stream bypass channel, and a dam face modification.

# In-Stream Bypass Channel

*Bypass with downstream riffle pools*



# Full Bypass Channel



*Plan view of full bypass option with riffle boulders*

# Public Act 095-0020

## HB0033

- AN ACT concerning transportation.  
**Be it enacted by the People of the State of Illinois, represented in the General Assembly:**  
Section 5. The Rivers, Lakes, and Streams Act is amended by adding Section 23b as follows:  
(615 ILCS 5/23b new)
- Sec. 23b. Dams; signs and buoys.
- (a) The Department of Natural Resources shall establish specifications for signs and devices that provide warnings of the presence of dams for persons using the public waters of the State. The Department shall establish such specifications pursuant to administrative rule.
- (b) For dams located in public waters and that are not subject to federal regulation regarding safety standards, the Department of Natural Resources shall examine each dam to determine hazards that may exist at each dam.
- (c) The Department of Natural Resources shall, after conducting the examination required under subsection (b) of this Section, submit administrative rules setting forth appropriate safety devices to be required at each dam.
- (d) The Department of Natural Resources shall be authorized to designate enforceable exclusion zones around dams pursuant to administrative rule. Violation of such exclusion zones shall constitute a Class A misdemeanor.
- (e) Except for willful and wanton misconduct, neither the Department of Natural Resources nor employees or agents of the Department shall be liable for damages, injuries, or deaths occurring at dams located in public waters by reason of the Department's regulation thereof pursuant to this Section. Nothing in this Act shall relieve an owner or operator of a dam from the legal duties, obligations, and liabilities arising from ownership or operation.  
Section 99. Effective date. This Act takes effect upon becoming law.



# **Gov. Blagojevich Signs Groundbreaking Dam Safety Legislation**

**New law creates warning and enforcement standards at publicly owned dams throughout the state**

**SPRINGFIELD – Governor Rod R. Blagojevich signed first-of-its-kind legislation today that focuses on improving public safety on rivers throughout the state. House Bill 33, sponsored by State Rep. Tom Cross (R-Plainfield) and State Sen. Arthur Wilhelmi (D-Crest Hill), creates new warning and enforcement standards on public waterways near dams. The law gives the Illinois Department of Natural Resources (IDNR) the ability to establish guidelines for the placement of signs and buoys around 32 publicly-owned dams on navigable waterways such as the Fox, Rock and Kankakee rivers.**

**This important legislation will make people more aware of the dangers that these dams possess and create better warnings so they can avoid these hazards,” said Gov. Blagojevich. “Too many people have died preventable deaths near dams. We want people to enjoy themselves on the water, but more importantly – we want them to be safe.”**

**HB 33 was introduced in the wake of two tragedies at the Glen Palmer in Yorkville which claimed the lives of three people in May of 2006 and three additional deaths at a low head dam in Wilmington in August of last year.**

**Every year lives are lost because a boater, kayaker or an individual fishing gets too close to a dam or attempt to cross the dam and gets caught in a re-circulating current that is similar to an intense washing machine of rocks and logs. Not only did Alyssa lose her dad that day, but two brothers, Bruce and Mark Sperling, lost their lives attempting to save him. Alyssa has told me many times that she does not want others to have to go through what she went through when she lost her dad and is pleased that this legislation is now law in Illinois,” said Rep. Tom Cross.**

**I am happy to be part of this legislation that makes our rivers safer,” said Sen. Wilhelmi. “Now Illinoisans may spend time enjoying the rivers without worrying about the dangers posed by dams.”**

**Last September, IDNR and the Capital Development Board (CDB) contracted engineering firm Consoer, Townsend, Envirodyne (CTE) to create safety recommendations at publicly owned dams throughout Illinois.**

**The dam safety report, which was released on July 20, presents options and recommendations to improve the safety of boaters, fishermen and other recreational river users near 25 low-head or run-of-the-river dams on publicly navigable waterways. Not all of the options apply to each of the dams surveyed. The range of options includes: Installing temporary rock fill; dam removal; Constructing a bypass channel either beside the dam or in the river; installing a riffle pool, a series of boulders that help reduce the dangerous current below the dam; Modifying the face of the dam.**

**The study will be used to help the IDNR develop new administrative rules on buoys and signs.**

**The Governors proposed FY08 budget includes \$143,000 to help implement dam safety guidelines and \$10 million in capital funding for larger construction projects at dams such as renovation or removal.**

**The law goes into effect immediately.**

# Stepped Spillway Performance



# Illinois River Conference

# Thank You - Questions



**Department of Natural Resources  
Office of Water Resources**

**Gary R. Clark, P.E.  
Director**