Restoring Mississippi River Basin Health with Floodplains

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Floodplains
SCHOOL START DATE DEBATE

Year-round schools fear loss of programs

Alternative scheduling proponents say stricter state rules jeopardize their functioning timetables

By Brandon Van

Water Management Division

Both school and city officials cite the benefits of year-round schooling, which they say can provide a better educational setting for students. But critics claim it hinders the system’s ability to function effectively. The Des Moines Register's new commitment to year-round schooling is expected to be presented to parents in the next month. Although there are a full range of programs available, some say they’re not enough.

FEDERAL LAWSUIT

WATER WORKS VOTES TO SUE 3 COUNTIES

FARM RUNOFF FOULING IOWA RIVERS, UTILITY SAYS

By Timothy Novak

Des Moines Water Works, an active member of the Iowa River Basin, is seeking to halt agricultural runoff from entering the river system. The utility claims the sources are not properly treated, which results in harmful chemicals entering the river. The suit has been filed against three counties: Polk, Johnson, and Cedar. The suit asks for court-ordered procedures to reduce runoff entering the river.

FARMERS: We feel unfairly targeted

Some frustrated producers threaten to boycott Des Moines

By James L. Lee

In response to the lawsuit, farmers are expressing their concerns about the rising cost of complying with the new regulations. They feel the costs are too high and believe they are not being adequately compensated. The American Farm Bureau Federation is considering legal action against the utility, stating that the suit is an attempt to increase the costs of production for farmers in the area.

TILES ON TRIAL

Des Moines Water Works is trying to reduce their use of tiles by incorporating new technologies that reduce the amount of nutrients entering the river. The tiles are used to prevent runoff from entering the river system. The new technology is designed to reduce the amount of nutrients that enter the river, which is crucial for the health of the river system. The tiles are being tested in the Des Moines River basin, and the results are expected to be announced in the next month.
Benefits of Floodplains and other Wetlands

• Nutrient Removal
  • 40% N and P reduction on average (range 10% - 90%)
  • Up to 5X land-based nitrate mitigation BMPs

• Flood risk mitigation

• Biodiversity hotspots
Mollicy Farms
Ouachita River, Louisiana

- Purchased and restored 16,000 acres
  - 3-million trees planted
  - Ouachita River reconnected
  - Historic bayous restored
  - Final footprint **75,600 acres**

- Flood risk mitigation
  - Lowered record flood stage in Ouachita River by **1-foot**.

- Nutrient Removal
  - Removing **48.1 MT** of nitrogen from the MRB each year.
**Atchafalaya River Basin**

A critical wetland landscape with global significance

- Largest contiguous tract of forested wetlands in the US
- Habitat for more than 300 resident and migratory wildlife species and more than 100 species of fish.
- Flood protection for millions of US citizens.
- Supports the culture and livelihoods of Louisiana residents – e.g. largest wild crawfishery in US.
- Important nutrient bio-reactor
The Need for Restoration

• **Altered Hydrology** - The plumbing in the Basin is broken

• **Poor water quality** – “Dead Zones”
  • Reduced forest health
  • Repeated fish kills
  • Reduced crawfish populations

• **Reduced ability** to remove nutrients.
Atchafalaya River Basin Initiative

TNC’s long-term vision to conserve and restore America’s great swamp forest

1. Restoration

2. Science

3. Community
Atchafalaya Basin Preserve
The Foundation

- Five tracts - 5,359 acres.

- Embedded within a matrix of state-owned lands.

- Key tracts that contains several state-approved restoration landmarks.
**Restoration**  
**Improved Connectivity**

- Reinstitute north-south flow pattern through the swamp.
  - Create a more natural flood/drain cycle
  - Improve water quality
  - Improve forest health – cypress regeneration
  - Improve habitat for fish and wildlife

- First restoration project – 5,000 acres.
**Science**
Documenting ecosystem response with replicable protocols.

- **Monitoring**
  - TNC – hydrology and water quality

- **Applied Research** - TNC Conservation Fellows Program
  - Nutrient cycling and removal
  - Geomorphology
  - Forest health
  - Crawfish stocks
**Science**

Improved Connectivity

- **Increased floodplain connection.**
  - Pre-restoration ~20 days
  - Post-restoration ~100 days.

- **Improved water quality.**
  - When the floodplain is disconnected, the swamp is hypoxic over 99% of time.

- **Improved fisheries.**
  - Hypoxia reduces crawfish growth by half

- **Improved nutrient removal.**
  - ARB not living up to its true nitrogen removing potential.
    - Removing 14% total nitrogen

*Crawfish growth rates in relation to dissolved oxygen*
Science
Nitrate Reduction

• Floodplain areas connected to river are currently removing $58.6 \text{ mg N m}^{-2}\text{d}^{-1}$

• We expect to remove 107 \text{ MT of N} for ~ 5,000 acres over 3-month flooding period

• 52,655 bags of fertilizer
Community
Creating a Restoration Culture

• The Atchafalaya Conservation Center
  • Nucleus for research and community and stakeholder engagement.

• Water Quality Markets
  • Potential incentive for private landowners.

• Our goal is to expand restoration to more than 100,000 acres of the Atchafalaya Basin.
Floodplain Conservation in the Mississippi River Basin
Scaling Up

• Targeting and Prioritizing
  • Where and how much?

• Conservation Delivery
  • Innovative public/private partnerships for conservation.
  • Protect floodplains at a scale that matters.

• Monitoring
  • Understanding and documenting return on investment.
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