Building stronger with culvert inventory data

Jon Simonsen – DNR
October 2019
Overview

Broad importance of road stream crossings

Case for culvert inventories

Challenges and opportunities
Perspective: Aquatic Connectivity

Perspective: Aquatic Connectivity
Perspective: Manoomin (Wild Rice)
ALL ROADS LEAD TO WISCONSIN

Wisconsin’s central location, uniquely positioned for access within a single business day, allows companies to do business on a global scale.

Perspective: Transportation Infrastructure
Study finds Midwest flooding more frequent
Research covered more than 50 years of data in 14 states

Washed Away: Northwest Wisconsin Copes With The Costs Of A Changing Climate
Local Communities Find Themselves Stuck In A Cycle Of Rebuilding Infrastructure After Repeated Floods
Will Cushman, WisContext
Aug. 15, 2019 / 6 a.m.
"This model here is designed to handle flash flooding."
Replace in-kind?

Replace with a larger structure?
Culvert Inventory
Reduce long term culvert costs

Lessons learned:

• New York & Vermont Post Tropical Storm Irene
• Massachusetts
• Wisconsin – Duck Pensaukee Watershed

An Economic Analysis of Improved Road-Stream Crossings

Written by Jessica Levine
The Nature Conservancy, Adirondack Chapter
Keene Valley, NY
August 2013
Putting the pieces together for flood resiliency

For riverine flood hazards, $1 spent saves $7 in future damages.
(Source: WEM Hazard Mitigation presentation & National Institute of Building Sciences – 2017)
High-risk watersheds

Source: Matt Diebel
Wild Rice & stream reach longitudinal profile

Credit: Nathan Podany – Hydrologist, Sokaogon Chippewa Community
Increase cost share opportunities

Linking Fish Passage and Flood Resiliency
Increase cost share opportunities

Disaster Recovery Reform Act of 2018 Transforms Field of Emergency Management

**Release date:** October 5, 2018

**Release Number:** HQ-18-142

WASHINGTON – Today, President Donald J. Trump signed the Disaster Recovery Reform Act of 2018 (DRRA) into law as part of the Federal Aviation Administration Reauthorization Act of 2018.

Highlights from the DRRA include:

- **Greater investment in mitigation, before a disaster:** Authorizing the National Public Infrastructure Pre-Disaster Hazard Mitigation Grant Program, which will be funded through the Disaster Relief Fund as a six percent set aside from disaster expenses.
  - This program will focus on funding public infrastructure projects that increase community resilience before a disaster occurs.
  - Previously, funding for pre-disaster mitigation grants relied on congressional appropriations which varied from year to year. Now, with a reliable stream of sufficient funding, communities will be able to plan and execute mitigation programs to reduce disaster risk nationwide.
  - According to a 2017 National Institute of Building Sciences report, the nation saves six dollars in future disaster costs for every one dollar invested in mitigation activities.
Not with planning.
Road Stream Crossing Inventories

Source: Matt Diebel
Track information over time with changing staff

Standardize rankings, ask the right questions, and transfer knowledge.
Flood response

FEMA Teams Visit Northern Wisconsin To Tour Flood-Damaged Counties

Federal Agency Will Verify County Damage Estimates From June Flooding

Monday, July 16, 2018, 11:45am

By Daniele Keeding
Build broad awareness & informed decisions
Build broad awareness & informed decisions
Implementation of Sustainable Solutions

- Challenges and Opportunities
Important road stream inventory data
STREAMS MOVE WATER, AND SEDIMENT (AND DEBRIS).

STREAMS HAVE A NATURAL DIMENSION, PATTERN, AND PROFILE.
Culvert indicators
Culvert indicators
Geomorphic condition
Great Lakes Road Stream Crossing Inventory Instructions

5/6/2011

This protocol was developed, reviewed, and tested by the following organizations:

Funding for development and testing was provided by the U.S. Forest Service, U.S. Fish & Wildlife Service, and The Nature Conservancy.
A Screening Method for Identifying Fish Passage Barriers at Road Crossings Using LiDAR-Derived Elevation Data
ESRI Collector/ Survey 123

Menu provides data driven forms to minimize typing
Benefits of culvert inventories

DNR Webinar: The case for inventory data as an important sustainability initiative in Wisconsin


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