



Rural County of 46,754



Monroe County









- Size 581,300 acres (908 mi²)
- Land use:
 - Fort McCoy -60,000 acres
 - Central Wisconsin Conservation Area (16,000 acres in Monroe Co.)
 - cranberries 3,654 acres
 - woodland 273,000 acres
 - cropland 185,800 acres
 - wetlands 56,000 acres
 - 5 Watershed Basins

Monroe County Watersheds



Grand Forks C A N A D A Grand Forks C A N A D A C A N A D A C A N A D A C A N A D A C A N A D A C A N A D A MIN N E S O T A So MILES LOWA Source: National Oceanic and Atmospheric Administration

Localized Temp Regimes



Oak Wilt

Symptoms of Climate Change?



Well Water - Contamination



Invasive Species



Coronavirus has changed our lives, but as you see, diseases caused by a virus, a bacteria, or a fungus, have seriously impacted our wildlife. There is much speculation as to why we're seeing a resurgence in these serious wildlife diseases. Climate change, more urban interaction of wild and domestic animals, more use of chemicals in food production, and more water and ocean pollution, have all been discussed as possible reasons. We really are in this together, and relative to humans and wildlife, we need to clean up our act. Dr. David Samuels

Wildlife & Human Diseases (CWD)

Extremes



In the days leading up to the Lytton fire, the surrounding region of British Columbia had broken heat records - at one point nearly reaching 50C (122F) - and the arid land was more parched than normal.

Brutal Winter Causing Huge Losses in Western Big Game

Air Quality Alerts

Frost - June 13th

Drought Continues to Intensify Across Portions of the Midwest



Agriculture - Rill & Gully Erosion







Saturated & Flooded Cropland

Infrastructure Failure







Private Property





Flooded Basements & Lawns





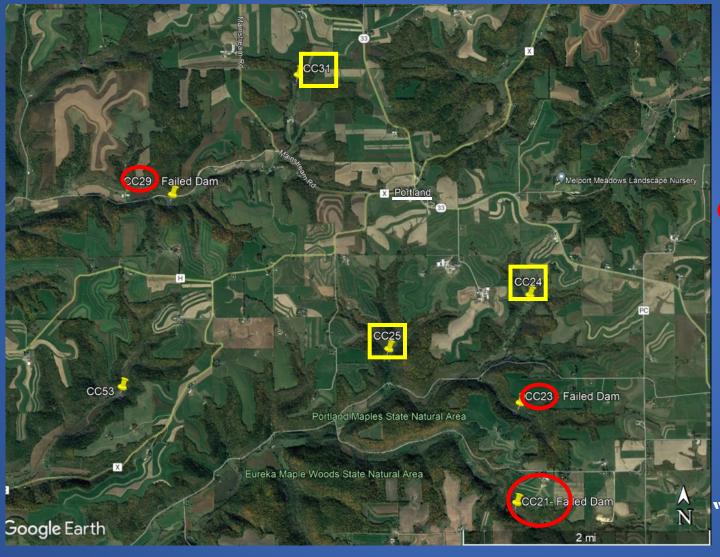
August 28, 2018 Flood Event



→ PL566 Flood Control Dams







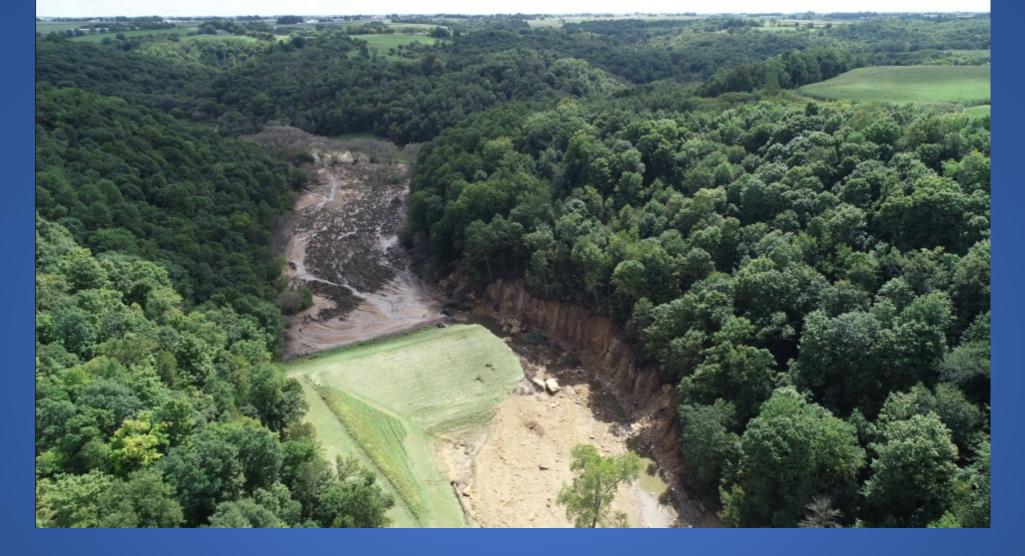
Coon Creek Watershed 92,589 Acres

92,589 Acres
Coon Valley – 49,400 acres
14 - PL566 Dams = 25% D.A.
3 Damaged

3 Structures Breached



"National Attention"



CC21 – D.A. 2,022 acre
40' EH
Principle Spillway 30"
Auxiliary Spillway 40'

Flood damage per decade in Monroe County (EM)



CLIMATE CHANGE IN MONROE COUNTY

WHEREAS, climate change poses a serious threat to Monroe County's natural resources, agriculture, public health, communities, tourism, and economy; and

WHEREAS, increasing instances of extreme weather events since 2007 and more recently August of 2018 and July of 2019 are devastating Monroe County and surrounding communities; and

WHEREAS, the safety of our citizens is of the utmost importance and adequate monitoring of severe weather occurrences will help protect individuals, businesses and communities; and

WHEREAS, adequate floodplain management can help alleviate future property damage; and

WHEREAS, updating and or creating the county's floodplain map through an impact study will more accurately reflect current weather events; and

WHEREAS, identifying current landuse trends and challenges will allow the county to improve enforcement of standard zoning policies and practices to create sustainable land use decisions; and

WHEREAS, Monroe County citizens, businesses, and municipalities have incurred significant financial damage in the millions of dollars due to climate change and extreme weather events. These damages are impacting the municipalities budgets and adding substantial financial strain; and

WHEREAS, the Climate Change Task Force (CCTF) will seek federal, state, and local technical and financial assistance to implement Task Force recommendations and goals; and

WHEREAS, the CCTF will provide educational materials and inform the citizens of Monroe County about climate change and it's effects on the County; and

WHEREAS, establishing mitigation programs throughout Monroe County that will benefit all citizens; and

WHEREAS, promotion of sustainable land use policies and practices with the state and federal government is vital for future change; and

WHEREAS, our county has a responsibility to current and future generations of Monroe County residents to act to prevent continuing damage to our resources and infrastructure and to invest in solutions that help to mitigate the changes that have already occurred.

NOW, THEREFORE, BE IT RESOLVED that the Monroe County Board recognizes that climate change is occurring in Monroe County and supports the efforts of

Monroe County Board September 28th, 2019



Resolution - Vote: 15-0

CCTF - 16 Members:

- 1. County Administrator
- LCD Director
- Land Use Planner
- 4. Conservation Agronomist
- 5. Emergency Mgt. Coordinator
- 6. Hwy Commissioner
- 7. Sanitation & Zoning Administrator
- County Board Supervisor
- County Board Supervisor
- .0. County Board Supervisor
- 11. County Board Supervisor
- 12. Town Board Supervisor
- 13. Town Board Supervisor/Farm Bureau President
- L4. DNR Program & Policy Agent
- L5. Fort McCoy Public Affairs Officer
- 16. Fort McCoy Fisheries Biologist

CCTF Objectives

Monroe County

Climate Change - Task Force

Define: goals/plan/action - 12/11/19

(Sequence based on importance and development time)

- 1. Implement monitoring devices (weather stations) and warning systems in real time by coordinating with emergency management and the national weather service. (warning signage/Nixel/messaging)
- 2. Floodplain Management Remove structures/roads/crossings within floodway that have a history of being flooded & or under immediate threat. Define standards for building within the floodplain.
- 3. Complete flood impact study to identify 100 year floodway boundary based on recent rainfall data and current land use. Focus on areas with development pressure & or chronic flooding issues.
- 4. Zone to promote sustainable land use decisions. Improve existing enforcement of shore land zoning ordinance.
- 5. Enforcement of land use decisions.
- 6. Flood Mitigation Projects (watershed management) implement/develop water infiltration, retention practices that address rainfall and runoff.
- 7. Promote sustainable land use policies or practices that influence state and federal legislation.
- 8. Climate Change Mitigation:
 - > ID contributions/sources
 - > Establish standards for sustainability
 - Implement climate change mitigation and adaptation planning into municipal (county, town, village, city, etc.) comprehensive plans and promote planning integration throughout other municipal plans (transportation, hazard mitigation, watershed, etc.).
 - Implement mitigation programs (ex. Tree planting, mass transit, Runoff Curve Number (RCN) & Temperature balancing, Agriculture – Carbon Sequestering practices, etc.
 - > Individual Empowerment
- 9. Provide information & education
- 10. Seek funding sources to implement Task Force recommendations/goals.







CCTF Objectives = Actions

- Flood Monitoring Equipment NWS
- Home Buyout Program (Floodplain)
- Stream Crossing Inventory & Assessment
- Land Use & Infiltration Assessment UW Madison
- Village of Norwalk EAP
- Brinkman Landing
- Funding
- Coon Creek Watershed (PL 566) EIS Plan
- Agro-Forestry Demonstration
- Climate Readiness & Rural Economic Opportunity
 Assessment WI Green Fire







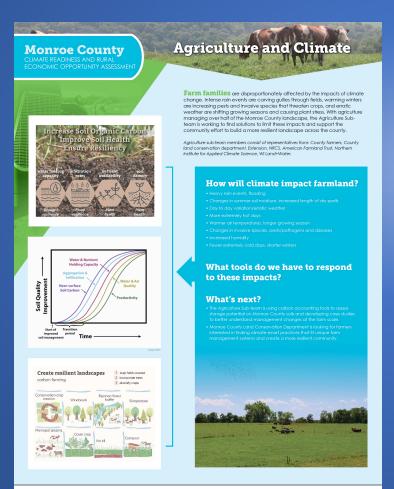
Monroe County Climate Readiness and Rural Economic Opportunity Assessment





4 Sub-Teams:

- 1.) Climate and Hydrology
- 2.) Infrastructure
- 3.) Agriculture
- 4.) Forestry



Monroe County

Hydrologic Sensitivity Analysis Results TIMBER CREEK WATERSHED

Our Climate and Hydrology Sub-team includes representatives from the Wisconsin Initiative for Climate Change Impacts, the University of Wisconsin Madison, the Natural Resources Conservation Service, and the National Weather Service.

Hydrologic Sensitivity Analysis

Hydrologic Sensitivity Analysis Approach

- Timber Creek (Rullands Coulee) (drains to Coon Creek)
- Moore Creek (Kickapoo)
- Headwater Little La Crosse River (La Crosse)
- Rathbone Creek (Black R)
- Bear Creek (Lemonweir River) the drought index Evaluate Runoff response to extreme rainfall and changes
- in agricultural use and forest cover





- · High runoff greas are tilled lands (and some impervious greas) in both upland and lowland positions
- · Wooded hillsides produce little runoff

· Less runoff from pasture

Observations from Hydrological Sensitivity Analysis on Timber Creek Watershed













































Listening sessions

Community Listening Sessions Scheduled for

The Monroe County Climate Readiness and Rural Economic Opportunity Assessment

Where & When:

- Cashton Community Hall Thursday, October 14th from 6-7:30pm
- Wilton Community Hall Thursday, October 21st from 4-5:30pm
- Tomah High school Cafeteria Thursday, October 21st from 6:30-8pm

Presentation:

- Climate Trends, Vulnerabilities, & Projections
- Agriculture, Forestry & Infrastructure Impacts & Opportunities
- Public Participation Share your stories, Q & A!!



Monroe County

CLIMATE READINESS AND RURAL



Water & Nutrient Holding Capacity Aggregation & Infiltration Near-surface Soil Carbon Freductivity Water & Air Quality Start Treatiles Improved period Time



Agriculture and Climate

Farm families are disproportionately affected by the impacts of climate change. Intense rain events are carving gullies through fields, warming winters are increasing pests and invasive species that threaten crops, and erratic weather are shifting growing seasons and cousing plant stress. With agriculture managing over half of the Monroe County landscape, the Agriculture Subteam is working to find solutions to limit these impacts and support the community effort to build a more resilient landscape across the county.

Agriculture sub-team members consist of representatives from: County farmers, County land conservation department, Extension, NRCS, American Farmland Trust, Northern Institute for Applied Climate Science, Wi Land+Water.

How will climate impact farmland?

- . Heavy rain events, flooding
- Changes in summer soil moisture, increased length of dry spells
- Day to day variation/erratic weather
- More extremely hot day
- · Warmer air temperatures, longer growing season
- Changes in invasive species, pests/pathogens and disease
- Increased humidity
- Fewer extremely cold days, shorter winter

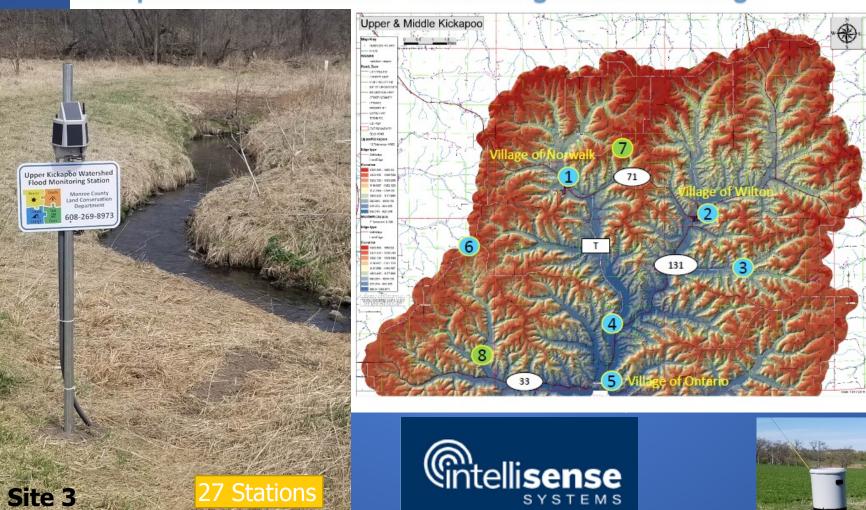
What tools do we have to respond to these impacts?

What's next?

- the Agriculture sub-team is using carbon accounting tools to assess storage potential on Morroe County soils and developing case studies to better understand management changes at the farm scale.
- Monroe County Land Conservation Department is looking for farmers interested in finding climate-smart practices that fit unique farm

Monroe County Climate Assessment - Recommended Strategies									
						Public Safety	Resiliency	Soil, Air, Water	Carbon
Sector	18 Strategy	80 Action	Responsible or Lead Party	Secondary Party	Notes		<u>1</u>	303030	∰
	1. Invest in Enhanced Floodplain Risk Assessments	1.1 Review additional floodplain risk assessments to supplement FEMA maps and incorporate into future land use planning and project reviews.	Counties, Cities, and Villages		For example, First Street Foundation's Flood Factor Tool, https://firststreet.org/flood-factor; WI DHS Flood Resiliency Scorecard. This data may be qualitative and may not affect insurance eligibility, but it can be valuable in identifying risk areas especially outside FEMA mapped floodplains.	+	+		
		1.2 Complete a geospatial data set for buildings > 600 sq. ft. and their associated flood risk zone(s)	Counties, Cities, and Villages		This project identified the FEMA flood hazard zones of structures larger than 600 sq. ft based on the County's building data and curent FEMA maps. Add the attributes for tax parcel number, elevation, and any parcel zoning records for use by Planning and Zoning program administrators.	+	+		
		1.3 Use the improved topography developed from the County's digital elevation model (DEM) to contribute to floodplain hydraulic modeling.	WIDNR	Monroe County	WDNR's studies to update FEMA maps will improve the risk assessment of structures in flood hazard zones.	+	+		
Floodplain		1.4 Review stormwater management standards across jurisdictions	Counties, Cities, and Villages	WI DNR	Ensure construction and post-construction measures go beyond minimum standards in NR-151 wherever possible, e.g. use WI Rainfall Project statistics. Encourage and remove unnecessary barriers to implementing green infrastructure, such as infiltration basins, permeable pavement, and bioswales.	+	+		
		1.5 Inspect and evaluate stream corridors in flood risk areas	Monroe County	Farmers and Forest Owners	Assess wooded corridors for deadfalls from dead and dying trees (such as ash) and other debris sources that may reduce peak flow capacity. Plan for tree debris removal in high-risk flood zones where debris loading is high.	+	+	+	
		1.6 Use rainfall runoff analyses using transposition of the August 2018 storm to explore flooding vulnerability in selected watersheds	Monroe County	Non-government Entities	This technique could be very valuable in answering the question "what if the big storm happened here" in areas of potentially high flood amage or public safety risk. Likely approach would be for a contractor or NGO working with Monroe County in collaboration with DNR.	+	+		
		1.7 Evaluate the extent of cleanup and remaining toxicity of Superfunds and Brownfields sites in or near floodplains throughout the county. especially in urban	Local Units of Government	Monroe County	Contaminated sites are vulnerable to release of contaminats during flood events. Following inventory of identified sites determine whether unremediated or exposed contaminants could be discharge to surface waters via river flooding or storm water runoff. Superfund and Brownfield sites listed in WDNR's	+	+	+	
	7. Maintain and Improve Watershed Resiliency	7.1 Make the business and economic development case for watershed conservation and compatible uses.	Monroe County	Non-government Entities	Monroe County has some of the best conditions in southern Wisconsin to become a trout fishing destination, even as the climate warms. Showcase the large number of associated benefits from watershed restoration, including flood risk reduction, reduced soil loss, improved water quality, and tourism and recreation, and associated economic benefits.	+	+	+	
		7.2 For the highest risk watersheds, adopt tailored strategies to enhance resiliency.	Monroe County	Farmers and Forest Owners	Practices may include targeted efforts to increase agricultural lands in continuous cover, increase forest cover or forest improvement, restore degraded wetlands and streamside habitats.	+	+	+	+
		7.3 Ground truth and assess feasibilty of potential restoration and improvement projects	Monroe County	Farmers and Forest Owners	Potential restoration or improvement identified here is based or remotely sensed data without regard to parcel boundaries. Understanding current conditions and landowner considerations are essential next steps to assess project feasibility before further planning.		+	+	

Kickapoo River Watershed - Monitoring Station Planning



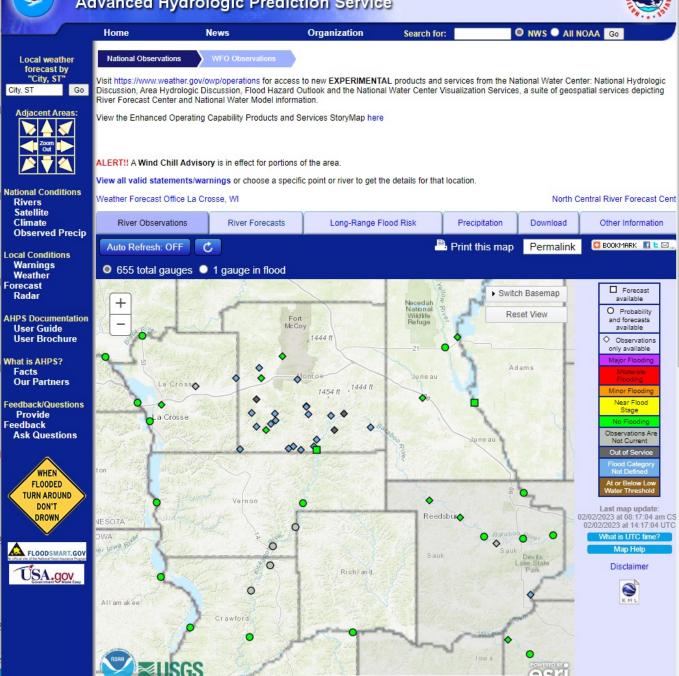
Objective 1 – Implement monitoring devices and warning systems in real time.

Stations

Site 3

National Weather Service Advanced Hydrologic Prediction Service





National Weather Service





Old Order Amish Community

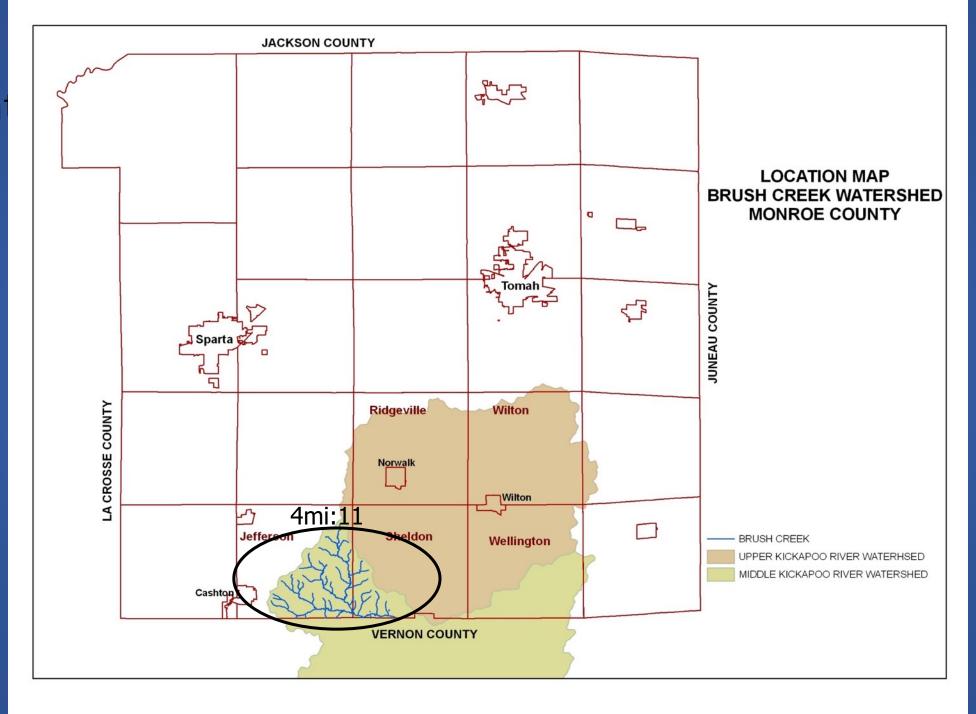


• Understanding & developing relationships within the community.





Wa







Beacon & Signage





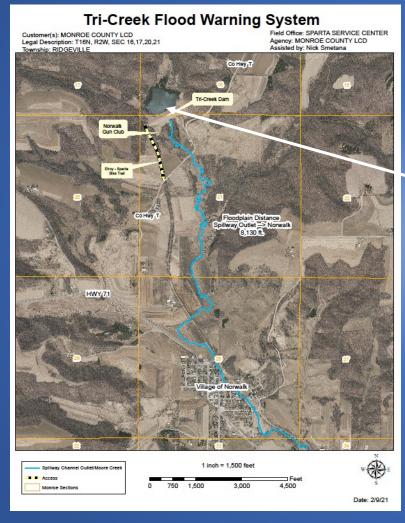
Emergency Action Plan - Flooding

Norwalk

599 Population [2022] – Estimate



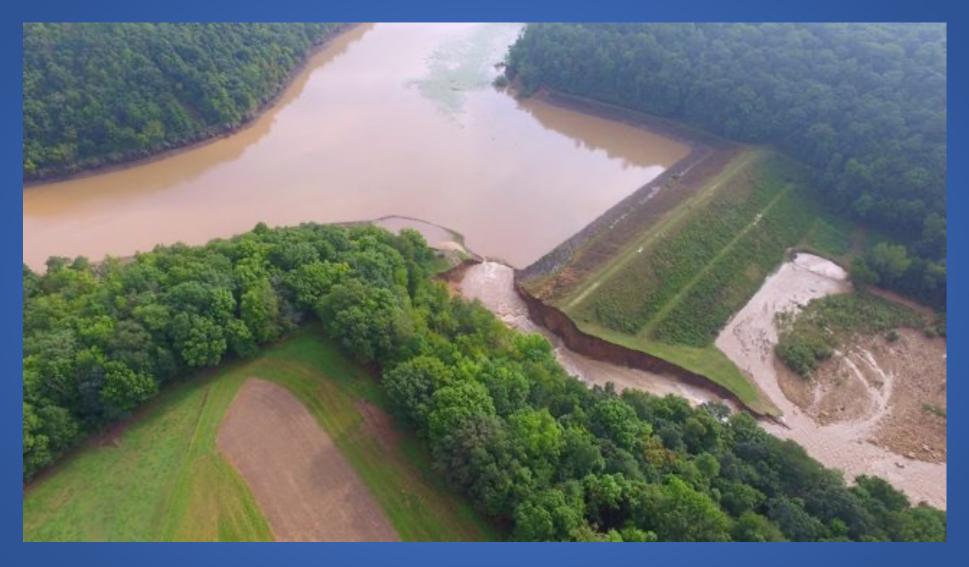
Tri- Creek Dam (1976) - PL566 Structure



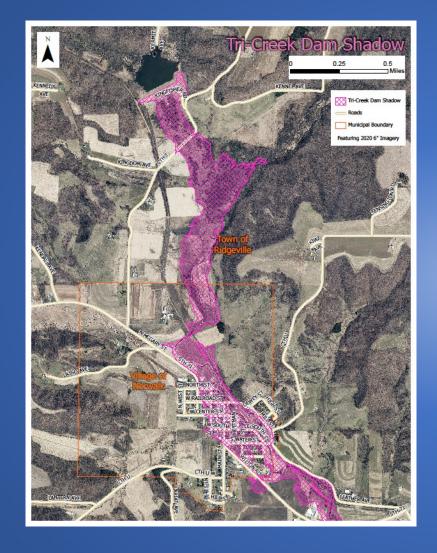


- Structural Details:
 - Drainage area of 2,944 acres
 - Total Embankment length 1,265 lin.ft. and 54' high at CL of channel.
 - Emergency Spillway 150' x 10' deep
 - Principle Spillway 280' of 36" R/C pipe

Dam Failure/Breech



Tri-Creek Flood Shadow









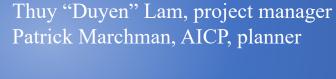
Responding to increasing flood concerns through a coupled emergency action plan and warning system approach.

Village of Norwalk, Wisconsin

Keywords

Emergency Response Action Plan Flood Rural

Climate Change





Levi Helgren, Norwalk Village President
Jen Schmitz, VOAD regional representative
Bob Micheel, Monroe County Land Conservation Director
Jared Tessman, Monroe County Emergency Management



Tri-Creek Flood Warning System Proposal er(s): MONROE COUNTY LCD lescription: 116N, R2W, SEC 16,17,20,21 ip: RIDGEVILLE Field Office: SPARTA SERVICE CENTER Agency: MONROE COUNTY LCD Assisted by: Nick Smetana Customer(s): MONROE COUNTY LCD Legal Description: T16N, R2W, SEC 16,17,20,21 Township: RIDGEVILLE Co Hwy T Floodplain Distance Spillway Outlet => Norwalk 8,130 ft. Weather Monitoring System w/Camers (3) 1 inch = 1,500 feet Toping Bucket 750 1,500 3,000 4,500 Date: 2/9/21 Monroe Sections





Flood Emergency Action Plan

Village of Norwalk, WI



Norwalk is set in a beautiful valley, surrounded by hills, farms, and forests. The very topography that makes our town so beautiful also makes it vulnerable to floods.

McCrary Lake, just north of Norwalk, feeds Moore Creek, which gave Norwalk several severe floods before the construction of the dam in 1975. Dams can overflow or fail however. And if it fails, the town of Norwalk is at risk.

The Village has developed a plan to give advance warning to the town in case of dam failure.



Notfication Systems

When water levels are at dangerous heights, be aware:



- Sirens Push Notification
- Town's Personnel

Shelter Locations

St. Augustine Catholic Church

St. Jacob's Lutheran Church (former)



water levels to the

Village and Monroe

County Emergency

Management

Stay connected on social media

Be aware of warning systems

Avoid low lying areas during flooding



flood shadow map "Go-bags" with

basic necessities and documents



Be a neighborhood captian to help inform and help others preapre and evacuate



For more information please contact NAME at PHONE NUMBER &



Stay Updated on Facebook

Pueblo de Norwalk, WI Plan de Emergencia para Inundaciones



Norwalk está situado en un valle hermoso, rodeado de colinas, granjas y bosques. La topografía que hace a nuestro pueblo tan hermoso también hace que sea una zona vulnerable a las inundaciones.

Lago McCrary (también conocido como estanque Norwalk o presa Tricreek), situado al norte de Norwalk, alimenta el arroyo Moore, que causó varias inundaciones en Norwalk antes de la construcción de la presa en 1975. Sin embrago, las presas pueden fallar o desbordarse. Si falla, el pueblo de Norwalk está en peligro.

El pueblo ha desarrollado un plan de emergencia para proporcionar a los residentes un aviso en caso de falla de una presa y/o inundación



lefe de Bomberos - Jim Stoikes - 608-633-2811 Oficial de Policía - Officer Dave Jones - 608-343-1600 Presidente del Pueblo - Levi Helgren - 608-855-0521

Director de Obras Públicas - Henry Vian - 608-633-0504

Flood Map and **Shelters**

he shaded area is the flood area in the case of a dam breach.

St. Jacob Lutheran Church (former) 100 Mc Gary St Norwalk, WI 54648







St. Augustine Catholic Church W109 Co Hwy U, Norwalk, WI 54648

200 Structures in the Floodway





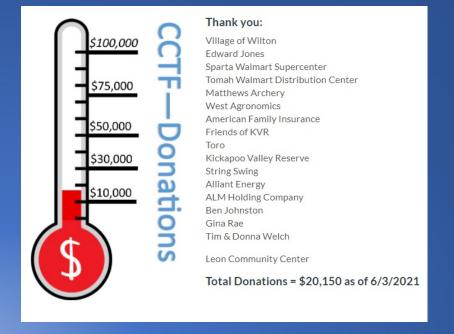




Open Space Plan
8 Properties

Objective 10 - Seek <u>funding</u> to implement objectives





Fishers and Farmers Partnership Grant US Fish and Wildlife Service: \$36,086

<u>Hazard Mitigation Grant Program – Planning</u> Grant: FEMA and WEM: \$80,976

<u>Hazard Mitigation Grant Program</u> - Buyouts FEMA and WEM: \$1,175,028

Nature Conservancy/WI Land & Water \$10,000

Grants = \$1,759,376

American Rescue Plan Funds (ARPA)
Monroe County: \$130,000

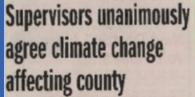
<u>DNR-Municipal Flood Control Grant</u> - Buyouts \$222,886

Environmental Health Capacity Grant: WI DHS and CDC: \$64,400

Building Resilient Infrastructure and Communities FEMA: \$40,000

Objective 9 - Information & Education





We need to change our way of land test, our practices, our infrastructure. car comerciation practices." On 15-0 vote Wednerday, Morroe Roy Luche, a Ridgeville Town -Media-



Climate Change Task Force - Members

CCTF Objectives Amended

- February 12th, 2020 Minutes & Attendees

- January 8 2020 Agenda

- October 4 2019 Meeting Minutes

Listening Sessions WSH Meetings CCTF Meetings







understand their role as stewards of this creation and have institute

a number of farming practices to prevent erosion and flooding.

The Herricks' show that tendin

to soil health and water quality

weather across our region. With

tural conservation, we can promp both resilience of the land and economic resilience among our

locally can play an important

role in mitigating the threats

Building climate resilient landscapes

4%-6%. Each percentage increase in soil organic matter can hold an inch-equivalent of rainfall. Additionally,





SAVE THE DATE: Carbon Farm

Planning Webinar

farming, and using COMET to assess carbon potential for various manage



Coming Soon:

on Climate Change in WI Across the globe, extreme

weather has been battering ommunities due to climate change.

WICCI Report

mitigate the effects that

have on the landscape history, visit our website

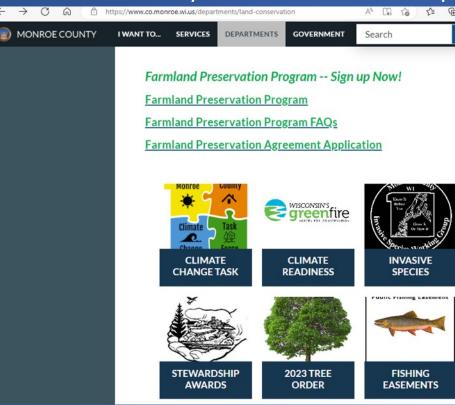
incorporating vivid stories, stake-holder interviews, and links to white papers and other technical informa-

tion developed by WICCI working Learn more about WICCI on their website: wicci.wisc.edu



MONROE COUNTY CLIMATE **READINESS AND RURAL ECONOMIC OPPORTUNITY ASSESSMENT**

Monroe County Land Conservation Dept.



Resources

