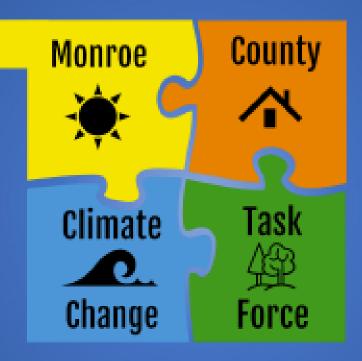
Monroe County Climate Change Task Force



Land Conservation Dept. - Director Bob Micheel - October 13, 2021



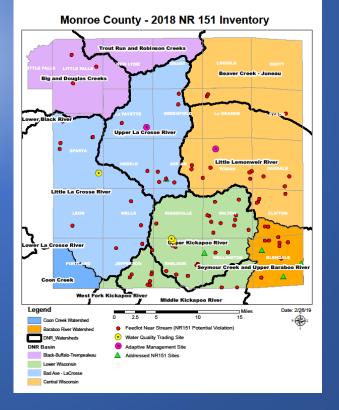
Monroe County







- 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



Climate Change

 Last 34 years – Warmest Years (temp) on Record 2021 – 109 days above 80 degrees
 Average Temperature is +2 degrees
 Increase Evaporation
 Rainfall Intensity 2-6" hour
 Since 2007 – 20+ Major Flood Events

> The greatest warming is occurring during winter and spring, with nighttime temperatures increasing more than daytime temperatures.

isconsin's climate is changing. A wealth of temperature and precipitation data gathered over more than half a century, along

with records from a variety of other periods and sources, paint a consistent picture of our state becoming generally warmer and wetter. The decades ahead are likely to bring changes much more profound than those seen so far, according to climate models.

The warming Wisconsin has experienced to date is consistent with the global trend.

The warming Wisconsin has experi-

enced to date is consistent with the global trend. The past three decades have been Earth's warmest since reliable surface temperature records began to be kept in 1850, with a global average increase of about 1.5 degrees Fahrenheit over that period (see figure 1). In fact, temperature trends based on Arctic ice cores and other evidence indicate that the Earth's temperature

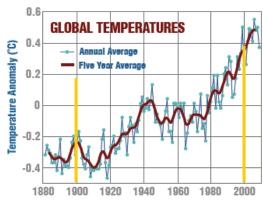
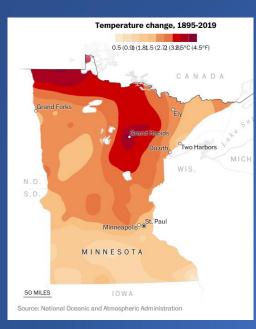


Figure 1. Global average temperatures have been steadily rising since reliable records began being kept in 1850.

Source: Intergovernmental Panel on Climate Change, 2007.

We can continue to debate the cause if you want, but that doesn't change the facts on the ground.



Localized Temp Regimes



Well Water - Contamination



Invasive Species



Oak Wilt



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. We Dr. David Samuels

Wildlife & Human Diseases (CWD)

Symptoms of Climate Change?

100 year flood event - every year!!

Localized Rain Events

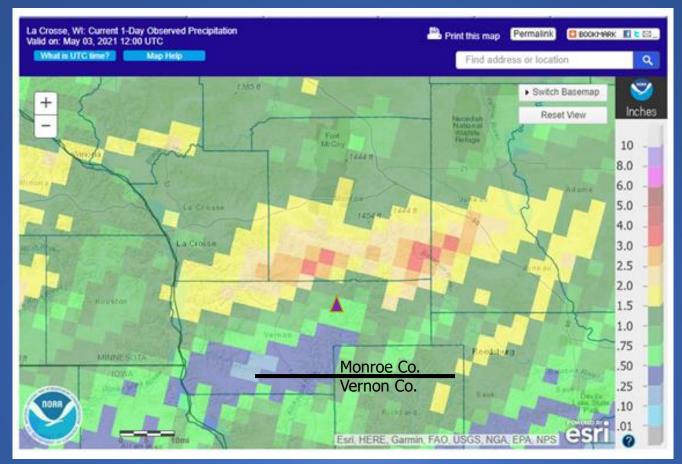
Ave. Annual Rainfall = 33''April 3^{rd} – Dec. 31, 2018 \bigstar 60.79''



<u>2019</u> July 3rd (4-5"/1.5 hrs) July 9th (1"/20 min) July 18th (6-8"/2 hrs)

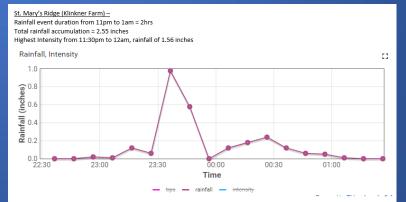


Monroe County - Watersheds

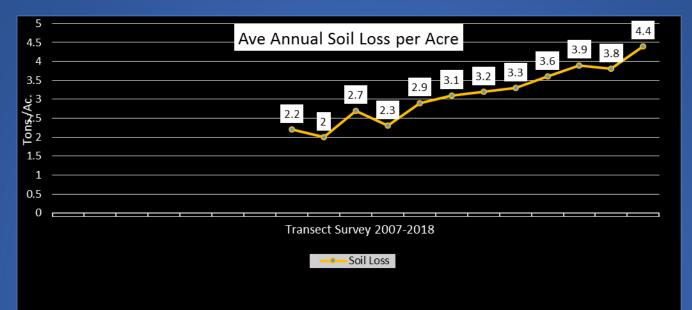


2021 Rain Events: May 4th (3.16" – 3.88") July 28 & 29th (2-3.74") August 7th (3.64"-7.43") August 9th (2.08"-3.84")

Rainfall Intensity:



Soil Erosion & Delivery - Cropland





Soil Loss = 649,057 tons/year





Mono-Culture Farming



Sediment Delivery

Saturated Landscape & Flooded Basements







Infrastructure Failure







Brush Creek - 2018

Reclaiming the Valley Floor









Coon Valley

Ontario



August 28, 2018 Flood Event

LIFE THREATENING FLOODING NOW!

Auxiliary

Spillway

PL566 Flood Control Dams (Coon Creek Watershed)

- 6 of 7 Overtopped
- 3 Breached



Conservation Practice Failure



Grass Waterway



Streambank Stabilization



Grade Stabilization Structure

CCTF Born on Date



July 1st – Concrete Stream Crossing



5" rain in 90 minutes – July 3, 2019



CCTF - 16 Members: (August 28, 2019)

- 1. County Administrator
- 2. LCD Director
- 3. Land Use Planner
- 4. UWEX Agent
- 5. Emergency Mgt. Coordinator
- 6. Hwy Commissioner
- 7. Sanitation & Zoning Administrator
- 8. County Board Supervisor
- 9. County Board Supervisor
- 10. County Board Supervisor
- 11. County Board Supervisor
- 12. Town Board Supervisor
- 13. Town Board Supervisor/Farm Bureau President
- 14. DNR Program & Policy Agent
- 15. Fort McCoy Public Affairs Officer
- 16. Fort McCoy Fisheries Biologist

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.

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: 15-0-1

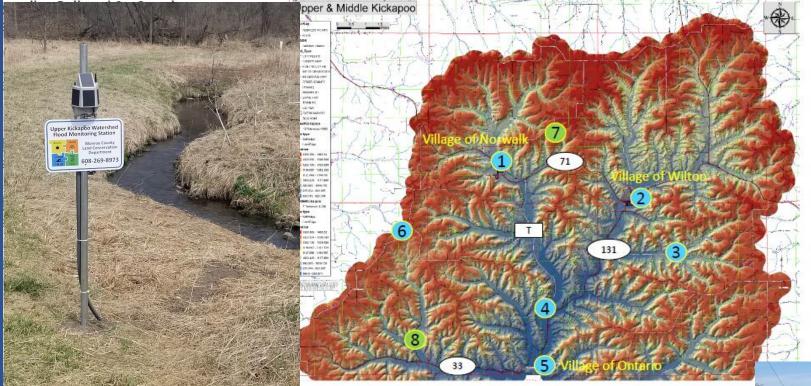




Objective/Goal #1

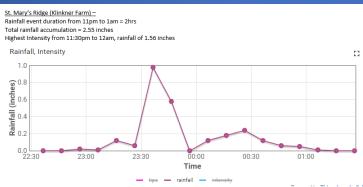
Implement monitoring devices (weather stations) and warning systems in real time by coordinating with emergency management and the National Weather Service.

Kickapoo River Watershed – Monitoring Station Planning



Site 3

Vernon County - KVR



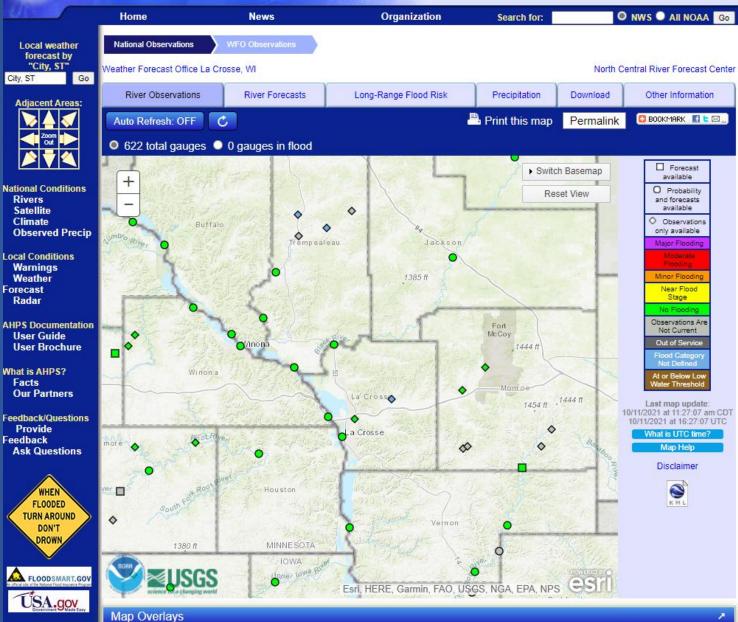
Site 6



National Weather Service

NOAA

Advanced Hydrologic Prediction Service



Objective #2 – Floodplain Management

Why are so Many Structures Failing?

- Poor or No Design
- Traditional Hydraulic Design is No Longer Adequate
- Climate Change—warmer air holds more moisture
- Population and Development Increasing—marginal sites being developed
- Regular Maintenance Neglected
- Regular Inspections and Inventories
 of Culverts Needed
- Lean Budgets
- Perceived Cost of Ecological Design Culverts
- More Media Coverage



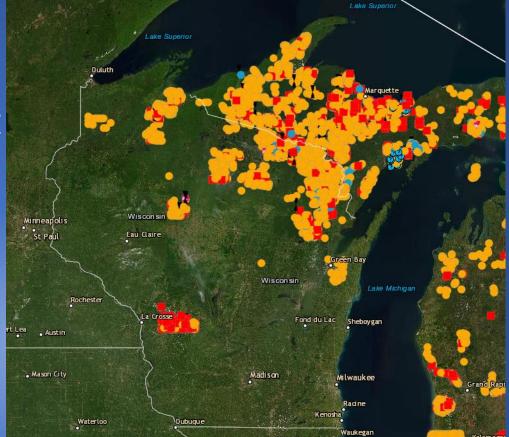
Ladder Effect (11:4mi)



 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.

2021 Crossing Inventory/Assessment





- County evaluate (2021) the cumulative effects (flooding, conductivity, fish passage, watershed management, etc.).
- Provide training to the Town & County officials to address infrastructure (Culvert/Bridge)

- Standardized inventory procedure for all municipalities in Monroe County
- Establishment of a county GIS layer
- Aquatic & flood resiliency assessment
- Ranking will prioritize financial resources
- Define funding opportunities
- Long term plan improve stream crossing resiliency for climate change

Stream Crossing Dashboard			Select State No category selected	County None
î172 î	1	20.69 Tonu/Yr	12: 070400071202 00 11 11 12: 0704000	
Stream Crossing List (Select Sites from List to view photos and Additional Erosion Information)	Stream Crossing : Time Sensitive Maintenance Needs:	Additional Structures (Select Sites from Map or Stream Crossing List)		HUC12: 070700031304
Minnesota: Poe Creek: Unnamed: Unnamed:	Additional Site Comments:		Sparta) In:12: 070100000000 HUUC12: 070400000001	HUG12: 070700084601 10208
 Unnamed: Unnamed: Baraboo River: Unnamed: Moore Creek: 	Select Site From Stream Crossing List	Select Site From Stream Crossing List	: 97744000000077 1030809 HUU:12: 077 HUU:12: 070400080808 70800040102 HUU:12: 070700080 HUU:12: 070700080	000000003 -20
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Ulknown:	Aquatic Passability Not Assessed 0.58% Barrier 29.65% 55.23% Barrier at Most	Stream Crossing Co	3 <u>1 1 13</u> Bridge	Crossing Type 59.3% Culvert 40.7%
: Last update: a minute ago	Flows 12.21% Last update: a m Aquatic Passability		Last update: a minute ago	Last update: a minute ago Overall Score

• Land Use – Roads, Buildings, Cropland, etc.



Buyout Program



Home Buyout Program

- Targeted Watershed
- 8 Homes
- Funding

Before



After



Objective 9 - Information & Education





Supervisors unanimously agree climate change affecting county

By PAI MULVANEY diff.die

We need to charge our way of tend ase, our practices, our infinancium. car compression acaptions." On 15-0 sone Weakerday, Montos Roto Lusiba, o Ridgerthe Toosa

Climate Change Task Ford



Climate Change Task Force - Members

CCTF Objectives Amended

Iowa Presentation Power Point

- February 12th, 2020 Minutes & Attendees

- DNR PowerPoint Presentation
- January 8 2020 Agenda
- December 11th 2019 Meeting Minutes w/ Attendees
- December 11 2019 Agenda
- October 4 2019 Agenda
- October 4 2019 Meeting Minutes

-Media-



Wisconsin Land+Water Conservation Association

131 W. Wilson Street, Suite #601 · Madison, Wisconsin 53703 (608) 441-2677 · Fax: (608) 441-2676 · www.wisconsinlandwater.org

Weekly News. Wisconsin Conservation.

February 21, 2020

TOP STORIES



Clean water bills flow smoothly through Assembly



Lt. Gov. Barnes speaks on climate change impact in WI



Messaging through participation:

- WI Climate Change Task Force, WICCI
- Wisconsin Land & Water
- DNR, NRCS, USGS, UWEX, LCD, National Weather Service
- 5 Surrounding Counties
- Wisconsin Green Fire
- Village, City, County, State & Federal Elected Officials
- Media
- County & Regional Planners





"Herricks Dairy Farm is an example of a farm family that has taken conservation to heart. They understand their role as stewards of this creation and have instituted a number of farming practices to prevent erosion and flooding. The Herricks' show that tending to soil health and water quality locally can play an important role in mitigating the threats of climate change and extreme weather across our region. With targeted investments in agricultural conservation, we can prompt both resilience of the land and economic resilience among our farmers."

-Sen. Tammy Baldwin

Building climate resilient landscapes

Jack Herricks' land ethic and dedicated stewardship made his operation a perfect location for U.S. Senator Tammy Baldwin to get a firsthand look at climate-smart conservation practices on the landscape.

Herricks' family-run operation in Cashton expands over 1,000 acres and supports a 600-head dairy heard. For decades, the Herricks family has implemented conservation practices that preserve the landscape.

Their practices include no-till planting, erosion control structures, grassed waterways, and wildlife improvement projects. Over the years, Herricks has increased his soil organic matter from 2% to between 4%-6%. Each percentage increase in soil organic matter can hold an inchequivalent of rainfall. Additionally, healthy soil can store more carbon, which means it can produce its own nutrients and reduces the need for additional croo inputs.

County Conservationist Bob Micheel has worked closely with Herricks and others on the Monroe County Climate Change Task Force to address the increasing intensity of weather events in the Driftless Area. "We can't build our way out of it, and so we need to pursue ways to mitigate the impacts of these events," said Micheel.

As a policy maker, Sen. Baldwin found the tour extremely informative. "I study the policies and I know about cover crops, I know about contouring, but to come and see it. That's where the light bulb goes off for a policy maker and then I can explain, especially to my colleagues who don't represent rural states."



SAVE THE DATE: An Introduction to Carbon Farm Planning Webinar

Carbon is important in building healthy, resilient soils, and mitigating the effects of a changing climate. Our partners at Carbon Cycle Institute will share their experience helping farmers and conservationists read the landscape through a carbon lens.

This webinar is an introduction to our three-week workshop to be held in January/February that will dive deeper into carbon's role in healthy soils & climate change, re-thinking carbon in farming, and using COMET to assess carbon potential for various management practices. The workshop is comprised of a three self-guided modules and a weekly webinar to review and discuss materials.



This introduction is for anyone curious about carbon farming from a conservation perspective.

Visit our website for more details.

In 1933, the Soil Conservation Service selected the Cook Creek Watershed for the first project designed to combat the effects of erosion.

Almost a century later, the Driftless Area is still a hub for innovative conservation practices to mitigate the effects that extreme weather events have on the landscape. To learn more about

Wisconsin's conservation history, <u>visit our website</u>.

Coming Soon: WICCI Report on Climate Change in WI

Across the globe, extreme weather has been battering communities due to climate change.

The Wisconsin Initiative on Climate Change Impacts (WICCI) has been doing its part to address these



challenges here at home. In the coming months, WICCI will launch its new comprehensive assessment report on climate change in Wisconsin, focusing on science, impacts, and solutions.

The report will be based online, incorporating vivid stories, stakeholder interviews, and links to white papers and other technical information developed by WICCI working groups.

Learn more about WICCI on their website: wicci.wisc.edu



LEARN MORE

Visit the Monroe County website to learn more about their Climate Change Task Force.

MONROE COUNTY CLIMATE READINESS AND RURAL ECONOMIC OPPORTUNITY ASSESSMENT

Wisconsin's Green Fire is leading the effort by utilizing a team of specialists to conduct a multi-faceted assessment with emphasis on community climate resiliency, built and natural infrastructure, and rural economic development through conservation.

Monroe County Climate Readiness and Rural Economic Opportunity Assessment



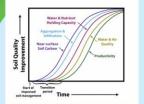
4 Sub-Teams:

- 1.) Agriculture
- 2.) Forestry

Monroe County

- 3.) Climate and Hydrology
- 4.) Infrastructure

Increase Soil or Panic Carbon Inprove Soil Health Ensure Resiliency were and the arrene arene arene arrene arrene arene arrene arrene arrene a





Extension

Agriculture and Climate

Farm families are diproportionately affected by the impacts of climate change. Intense ratio events are carving guiles through fields, warming writers are increasing pests and invasive species that threaten crops, and eraclic weather are shifting growing seasons and causing plant stress. With agriculture managing over hald of the Monree County landscope, the Agriculture slubteam is working to find solutions to limit these impacts and support the community effort to build a more reliainet landscape across the county.

Agriculture sub-feam members consist of representatives from: County formers, County land conservation department, Extension, NRCS, American Familiand Trust, Northern limitlufe for Applied Climate Science, W Land-Water.

How will climate impact farmland?

 neary ran events recomp change in summer all modules, increased length of dry spells Day to day variation/emailst weather Nome entergely hot days Nome at temportune, langur growing season Changes in manus speciels, pestylondepris and diseases Nomead furmidly New entergely cald days, thatter writes

What tools do we have to respond to these impacts?

What's next?

The Agliculture Sub-Horm's using carbon accounting tools to assess storage potential on Morree County soits and developing case studies to better understand management changes at the farm scale. Morree County Land Conservation Department is looking for farmers, interested in finding allmate-smart practices that Bunique farm management systems and noceed a more reliefer community.



TeNature

Monroe County

ECONOMIC OPPORTUNITY ASSESSMEN



Hydrologic Sensitivity Analysis

This GIS based analysis of runoff depth/volume from storm depth using distributed soils and landcover (NCLD2019) data and newlydeveloped plug-in. Our analysis graphically displays "runoff source areas".

This analysis shows some of the impact of differing land uses in a watershed and how those land uses influence runoff. This analysis not a design tool and does make specific lar use recommendations.

ur initial hydrologic sensitivity tests focus on noff depth (water volume) generation of peak discharge or flooding depth - for conditions:

a. Existing Land Use Conditions b. All agricultural land is in pasture

c. All agricultural land is in row cro

d. Forest area is increased by 209

Beatlet of Pedininary Ruceding for Timber Creek Waterhead Ruceding and the second seco

Extension

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 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

Less runoff from pasture

Evaluate Runoff response to extreme rainfall and changes in agricultural use and forest cover



Monroe County HUC12s



The Nature

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

Observations from Hydrological Sensitivity Analysis on Timber Creek Watershed

When agricultive is the dominant land use most of the watershed runoff is generated from row-cropping
 Pasture or perennial cover on agricultural lands substantially reduces runoff volume, especially in
 smaller storm events.

 For typical small storms – smaller than 2 inches, runoff reductions exceed 25% when agricultural land is dominated by pasture. This could produce substantial water quality and stream health benefits.

Runoff from large rainfalls - over / inches - would only be reduced by ~10%

If all agricultural lands are in row crops, runoff will increase substantially.





Monroe County Climate Change Task Force OPEN HOUSE

Join The Monroe County Climate Readiness and Rural Economic Opportunity Team for a briefing on their work and a discussion on future strategies. Followed by a listening session where community members can discuss their climate change concerns.

When: 9:00 am – 11:00 am on September 29, 2021 Where: American Legion 1116 Angelo Road Sparta, WI 54656







Monroe County Climate Change Task Force Community Listening Sessions

The Monroe County Climate Change Task Force invites county residents to join us to learn about the Monroe County Climate Readiness and Rural Economic Opportunity Assessment and share your concerns and experiences around our changing climate.

Where & When:

- Wilton, Community Hall Thursday, October 21st from 4-5:30pm
- Tomah, High school Auditorium Thursday, October 21st from 6:30-8pm
- Cashton, Bank of Cashton Wednesday, December 1st from 1- 2:30pm
- Sparta, American Legion Wednesday, December 1st from 6-7:30pm

Presentation:

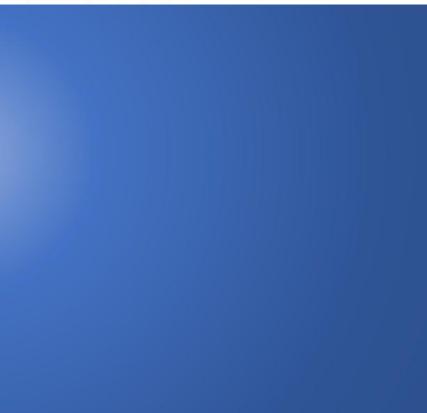
- Climate Trends and Projections
- Agriculture, Forestry & Infrastructure Impacts & Opportunities
- Public Participation Share your stories, Q & A!!

For more information contact: bmicheel@co.monroe.wi.us or call 608.269.8975

Monroe County Climate Readiness and Rural Economic Opportunity Assessment

PHASE II – Action Planning

Project Proposal August 26th, 2021



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

Donations

Tax-deductible donations can be made to KVA to support the purchase and implementation of flood monitoring devices. All proceeds will be repurposed back to MCCCTF to purchase equipment.

Kickapoo River Watershed Adopt a weather station for \$10,000 or a sen station for \$3,000 and receive naming rights Check the donation level you'd like to include



Return form with check

Donations can be mailed to: Kickapoo Valley Association Attn: Scott Lind - Treasurer P.O. Box 103 Ontario, WI 54651

Donate Now to help the Monroe County Climate Change Task Force implement flood warning systems.



is partnered with the Monroe County Climate Change Task Force (MCCCTF) on data collection and spearheading fundraising efforts to buy weather stations and flood warning systems.

The fundraising goal is \$100,000.

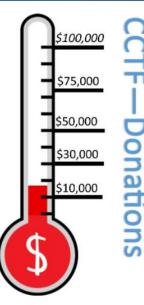


Your donation will make a difference in saving lives and keeping people out the way of our yearly floods.

Kickapoo River Watershed

Monroe County Climate Change Task Force and Kickapoo Valley Association Need your help!

Elood Resilience – A Watershed Approach



Thank you:

Village of Wilton Edward Jones Sparta Walmart Supercenter Tomah Walmart Distribution Center Matthews Archery West Agronomics American Family Insurance Friends of KVR Toro Kickapoo Valley Reserve String Swing Alliant Energy ALM Holding Company Ben Johnston Gina Rae Tim & Donna Welch Leon Community Center

Total Donations = \$20,150 as of 6/3/2021

- Fishers & Farmers Grant
- FEMA HMA Grant
- Wisconsin Health Dept.
- UW-Coon Creek WH Study
- County Land & Water Plan
- WICCI
- WI Land & Water Climate Information Hub

Monroe County Objectives:

Address the Symptoms:

- Keep people & structures out of the flood-way
- *Mitigate intense rain events on the landscape
- *Manage runoff events





Cover

Soil



Grade Stabilization Structure



"The land just blew away; we had to go somewhere." — Kansas preacher, June 1936

Today - Climate Change?



https://www.co.monroe.wi.us/departments/land-conservation

LAND CONSERVATION

Conservation Programs/Cost Sharing

Stewardship Awards

Tree Sale

Poster Contest Winners

Invasive Species Working Group

CONTACT US

Director Bob Micheel

Address Ag Services Center 820 Industrial Drive Suite 3 Sparta, WI 54656

Phone (608) 269-8975

Fax (608) 269-4394

Email BMicheel@co.monroe.wi.us

Office Hours Monday - Friday 8:00 a.m. - 4:30 p.m.

Find us on Facebook

Departments »

Monroe County Land Conservation Department

Welcome to the Monroe County Land Conservation Department (LCD).

The Monroe County LCD administers and assists with a variety of County, State, and Federal conservation programs.

The mission of the Monroe County Land Conservation Department is to manage, conserve and protect our natural resources. The department will facilitate wise, sustainable land use and outdoor recreation through information and education while supporting technical and financial assistance to landowners of Monroe County and encourage all residents of Monroe County to be stewards of our natural resources keeping in mind the generations to follow.

Notice: At this time we are only accepting phone calls and emails. The staff at the Monroe County Land Conservation Department remain committed to serving the public as we navigate the challenges presented by COVID-19. You can reach us during our normal office hours,

https://www.co.monroe.wi.us/departments/land-conservation COVID-19 Updated Policy





Questions & Discussion

