Gladwin County May 2020 Flood



Dave Pettersch - Managing Director
Gladwin County Road Commission

MICHIGAN CEW 2021 County Engineers' Workshop

CRA County Road Association OF MICHIGAN

A conference hosted by...

Center for Technology & Training

Michigan's Local Technical Assistance Program

Sunday, May 17, 2020
Forecast calls for 4-8” of rainfall county wide



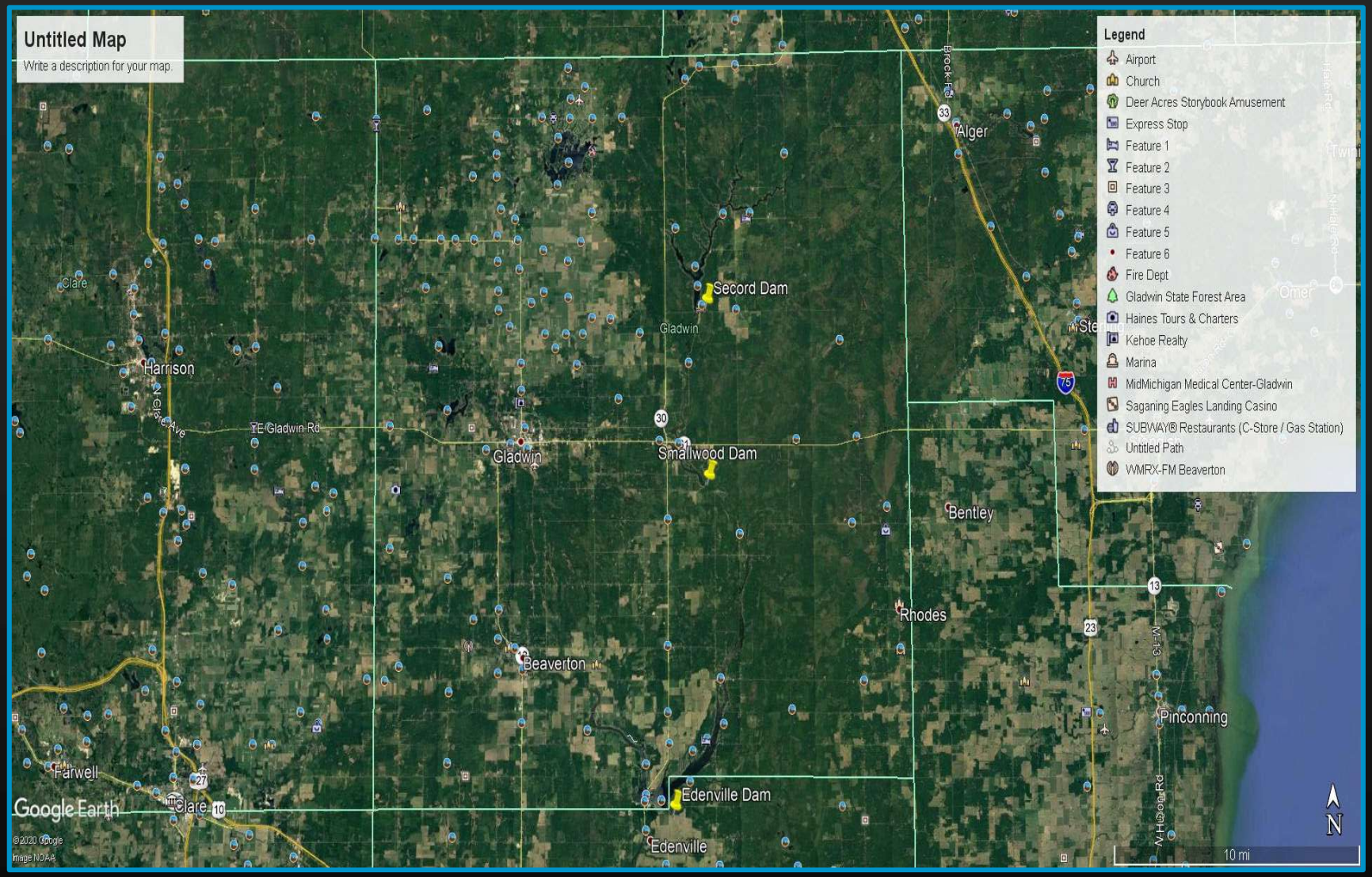
Precipitation Report 05/18/2020

LOCATION	AMOUNT	TIME/DATE	PROVIDER
AU GRES	8.10 IN	0700 AM 05/19	MEDIA
EAST TAWAS	7.97 IN	0828 AM 05/19	CWOP
AU GRES 9.0 N	7.60 IN	0830 AM 05/19	MEDIA
STERLING	7.20 IN	0730 AM 05/19	MEDIA
SILVER CREEK	5.57 IN	0702 AM 05/19	RAWS
WEST BRANCH	5.47 IN	0800 AM 05/19	COCORAHS
EAST TAWAS	5.41 IN	0800 AM 05/19	COCORAHS
ALGER	4.60 IN	0601 AM 05/19	RAWS
HOUGHTON LAKE	4.48 IN	0800 AM 05/19	COCORAHS
LAKE CITY	4.28 IN	0700 AM 05/19	COCORAHS
GLADWIN	4.13 IN	0700 AM 05/19	COOP

Tittabawassee River

- Starts in southern Roscommon/Ogemaw Counties, northern Gladwin County
- Runs north to south throughout Gladwin County
- Three dams: Secord, Smallwood, and Edenville (Wixom Lake)

- Rainfall hit hardest at the far northern edge of Gladwin County, into neighboring counties
- Monday, May 18: Our calls began in the northern townships
- Tuesday, May 19 - 6:00 PM: Dam burst in Edenville (on our southern border)



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MICHIGAN CEW 2021 County Engineers' Workshop





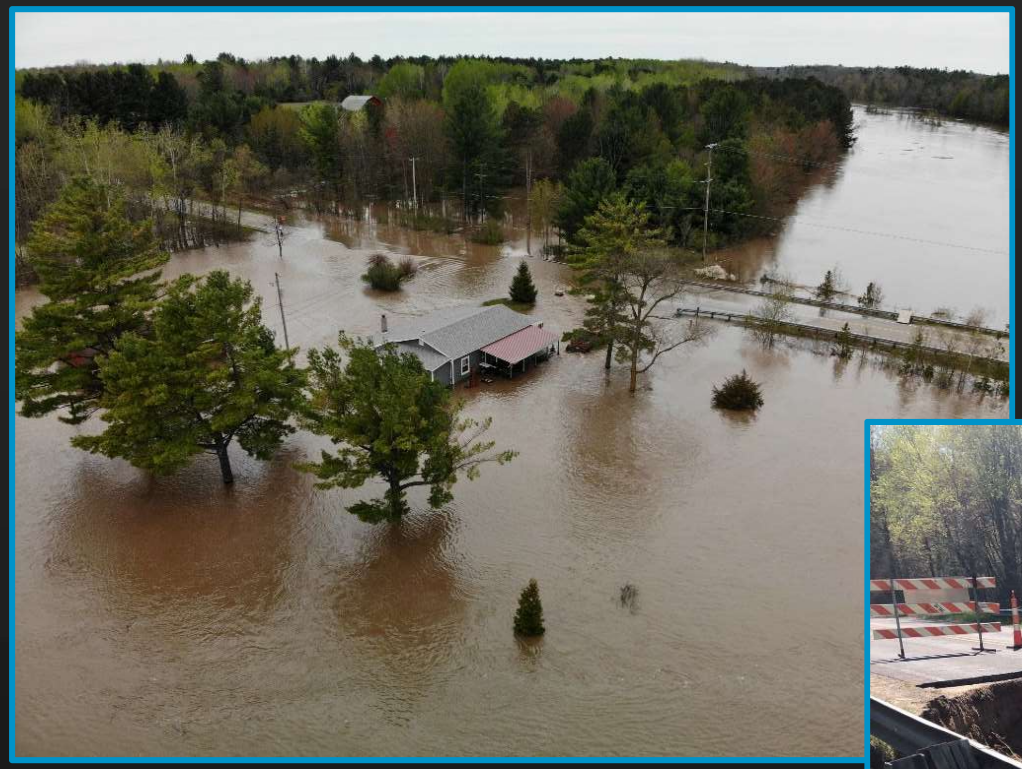
MICHIGAN CEW 2021
County Engineers' Workshop

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< Highwood Road



Sugar River Road >

Sugar River Road

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Michigan's Local Technical Assistance Program

Jones Road
(Billings Twp)





MICHIGAN CEW 2021 County Engineers' Workshop

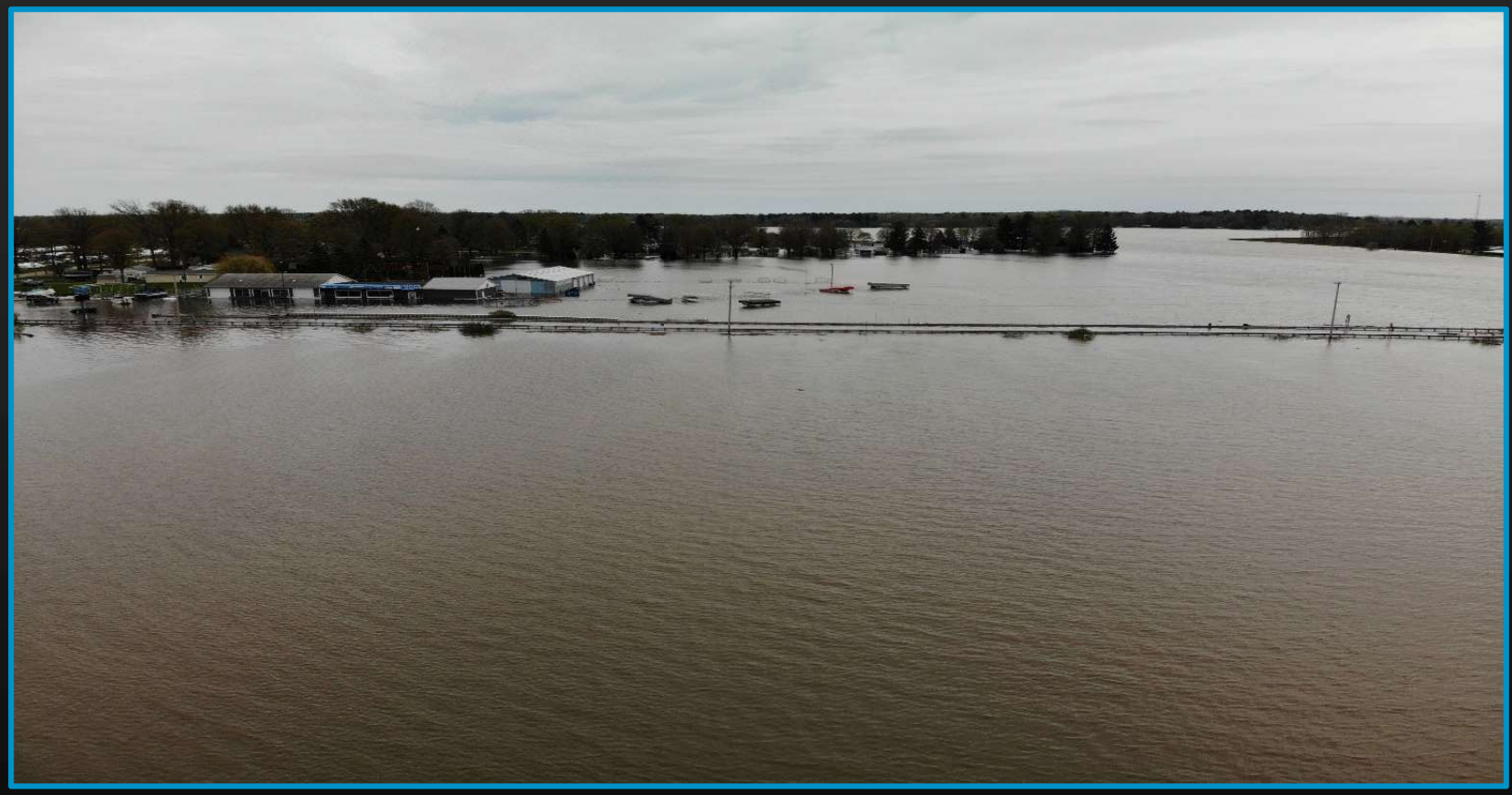
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Center for Technology & Training

Michigan's Local Technical Assistance Program

M-30 at Wixom Lake



M-30 at Wixom Lake



MICHIGAN CEW 2021 County Engineers' Workshop

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Center for Technology & Training

Michigan's Local Technical Assistance Program

Storm Response

- Initial response proved futile – TOO MUCH WATER!
- We focused on getting stranded people out, especially in low-lying areas below the dams
- Hardest part of our response: very little you can do while the water is still flowing
- When the dam failed, the water went down and the work began

Challenges Begin

- When the water went down, it pulled the sedinment froom the lake bed and scoured the bridges
  - Highwood Road – severely compromised
  - Etsey Road – extremely compromised
  - Edenville M-30 – completely gone
  - Da;e Road – scoured and compromised

- All primary roads in the river area were also compromised

- **Mobility was now SEVERELY compromised!!!!!**

Next Challenge – PEOPLE

- All mobility east to west in our county and those counties to the south was cut off
- People could not get in or out; however, people from all over rushed to the area
- Homeowners, gawkers, volunteers, sightseers, first respondents, residents, etc.
- During a pandemic, it seemed like our county gained 50,000 residents and our roads were in disarray

Asset Management

- We mapped our closures and assigned priority
- We needed to establish mobility for the highest number of people
- We selected roads to work on first based on emergency (trapped) and traffic count
- We had to get those trapped or in need of emergency services first, then establish mobility for the highest number of individuals that we could with each repair
- In several cases, this meant repairing local roads first to keep traffic moving around the area before dropping back to primary roads with longer repair timelines

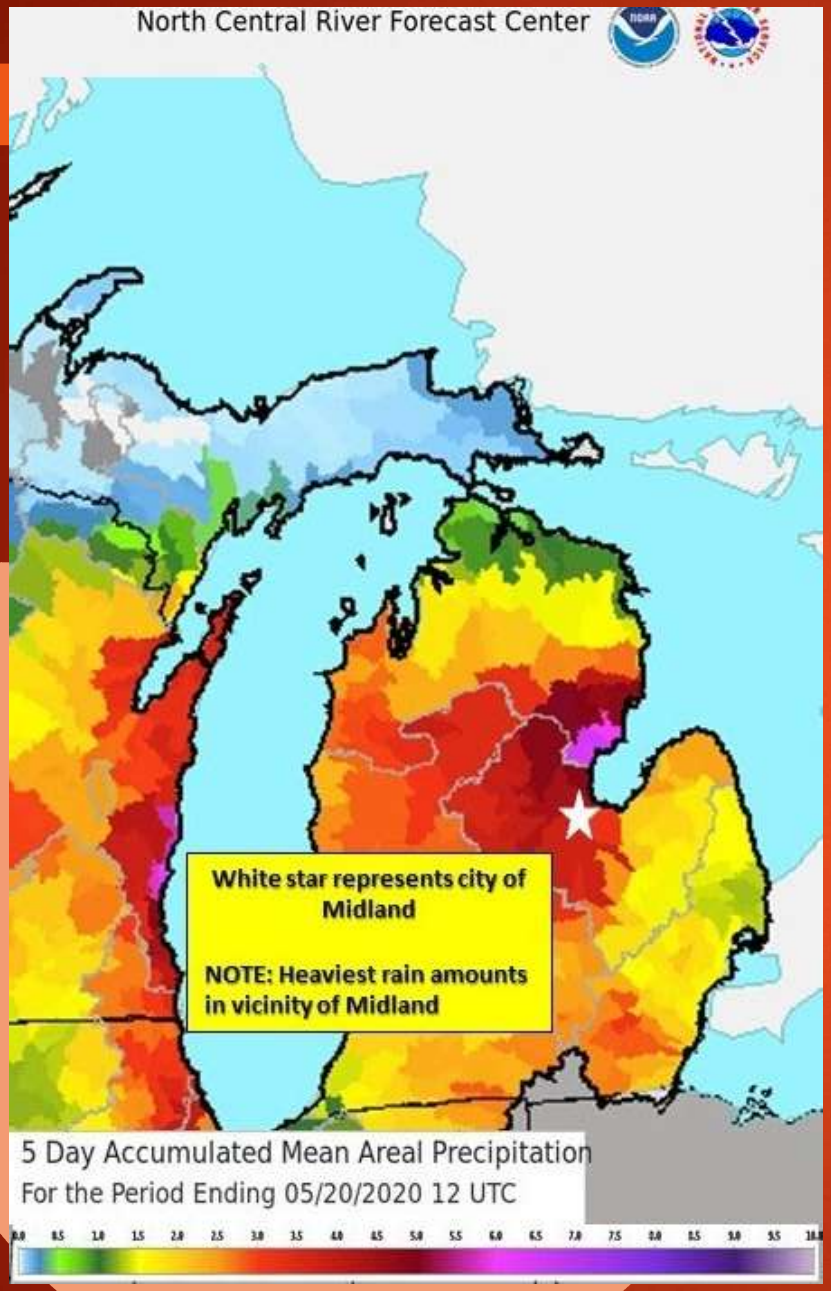
2020 FLOOD

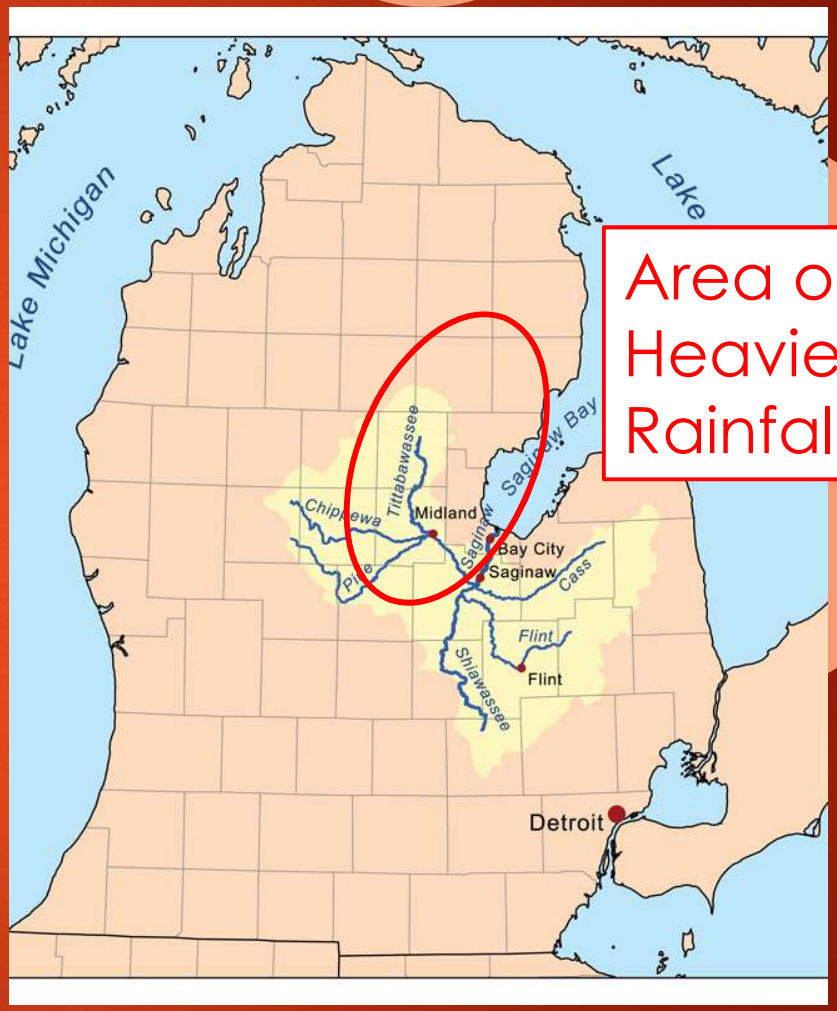
Jon Myers, PE
Managing Director

MIDLAND COUNTY ROAD COMMISSION

County Engineers Workshop
Feb 9-10, 2021

May 18-20, 2020 Storm





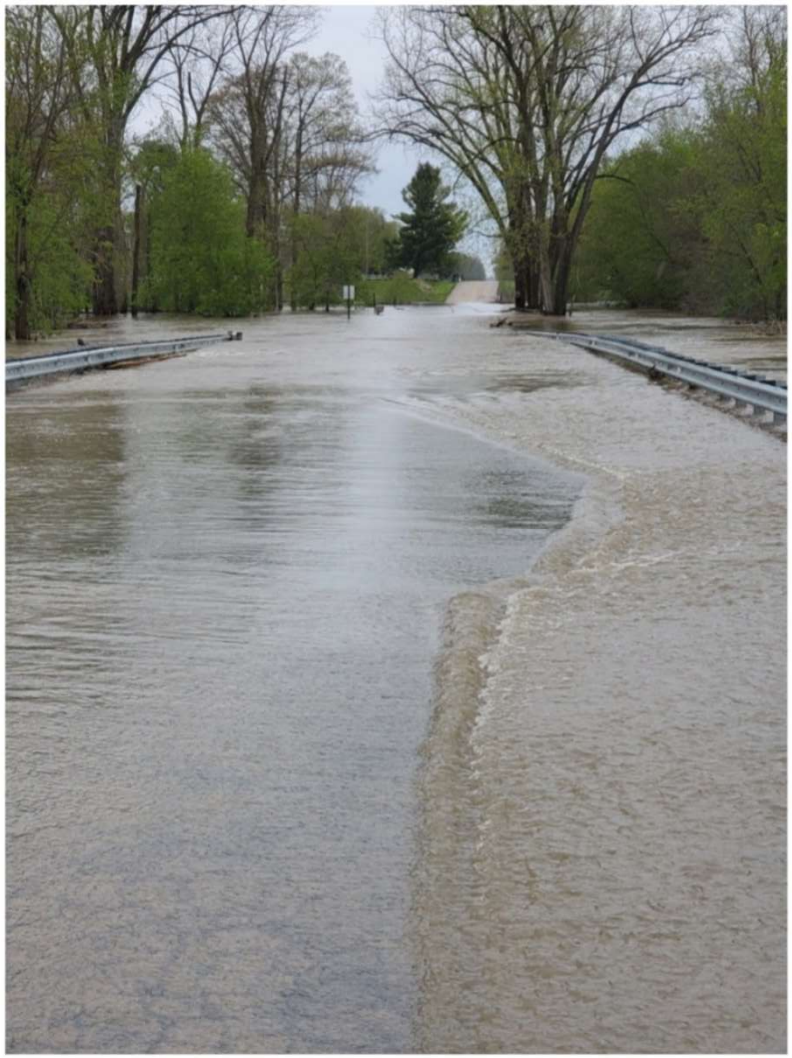
Tittabawassee/Saginaw River Watershed

May 18, 2020



MIDLAND COUNTY ROAD COMMISSION

May 18, 2020

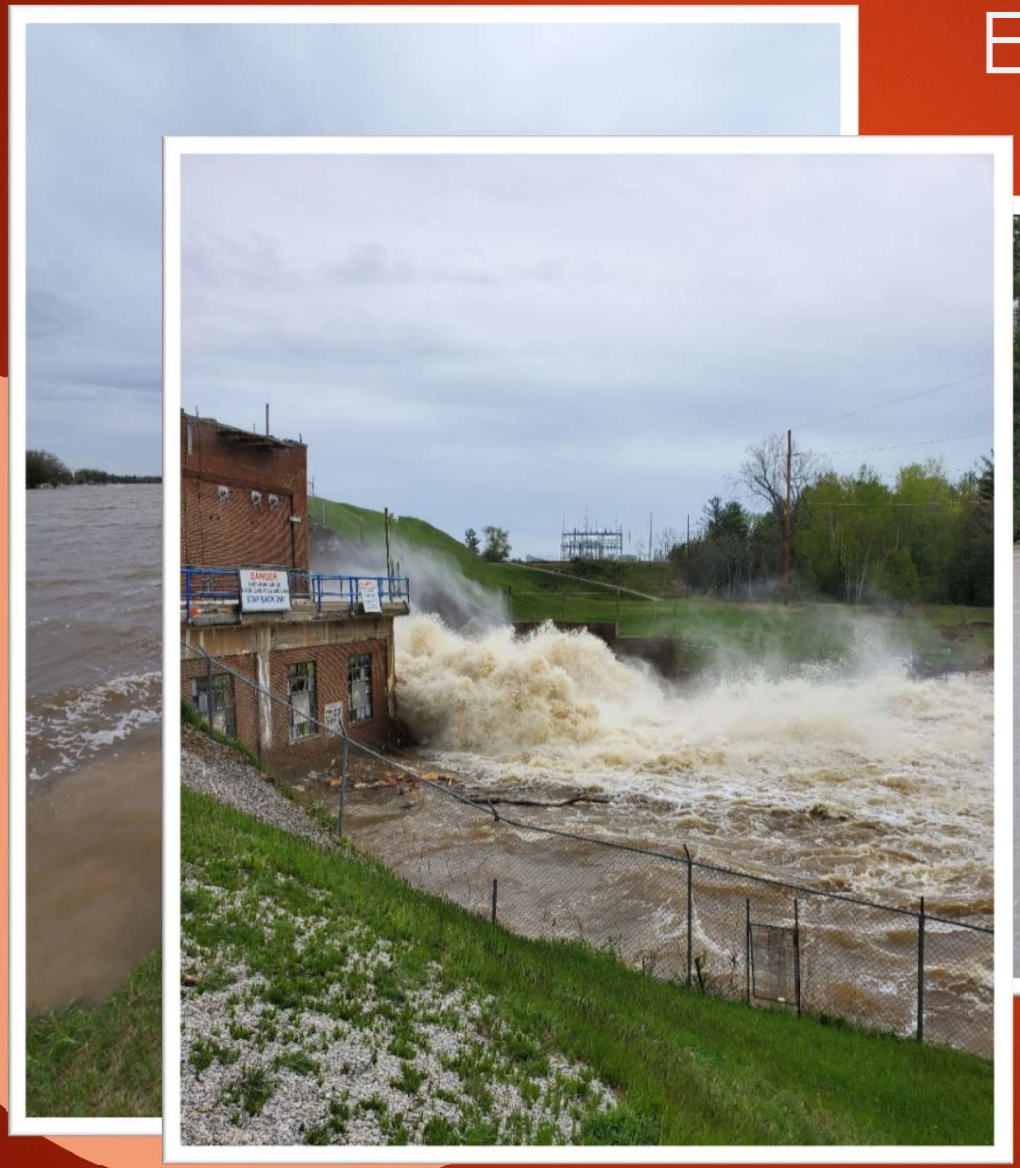


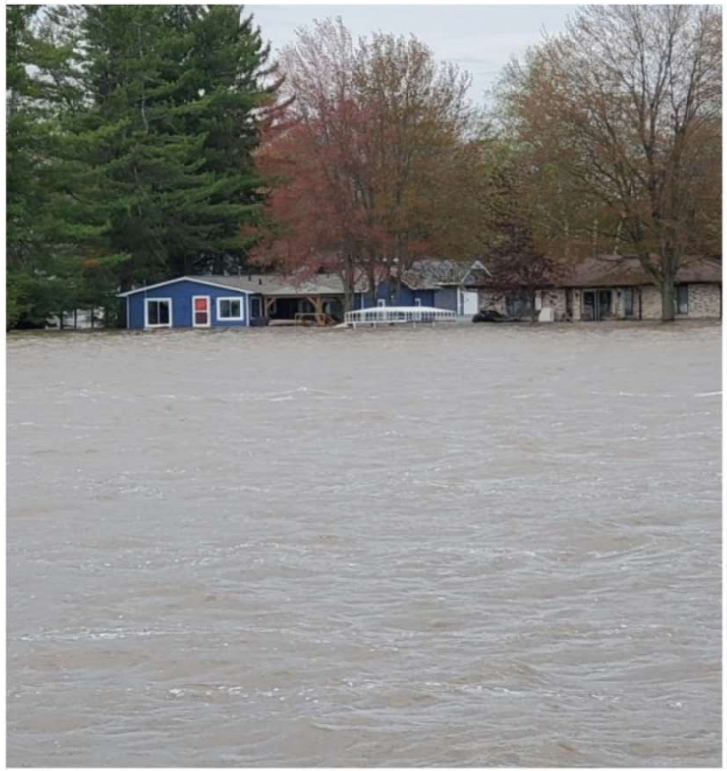


MIDLAND COUNTY ROAD COMMISSION

May 19, 2020

Edenville Dam / Wixom Lake





MIDLAND COUNTY ROAD COMMISSION

May 19, 2020

Edenville Dam / Wixom Lake



MIDLAND COUNTY ROAD COMMISSION

May 19, 2020



MIDLAND COUNTY ROAD COMMISSION

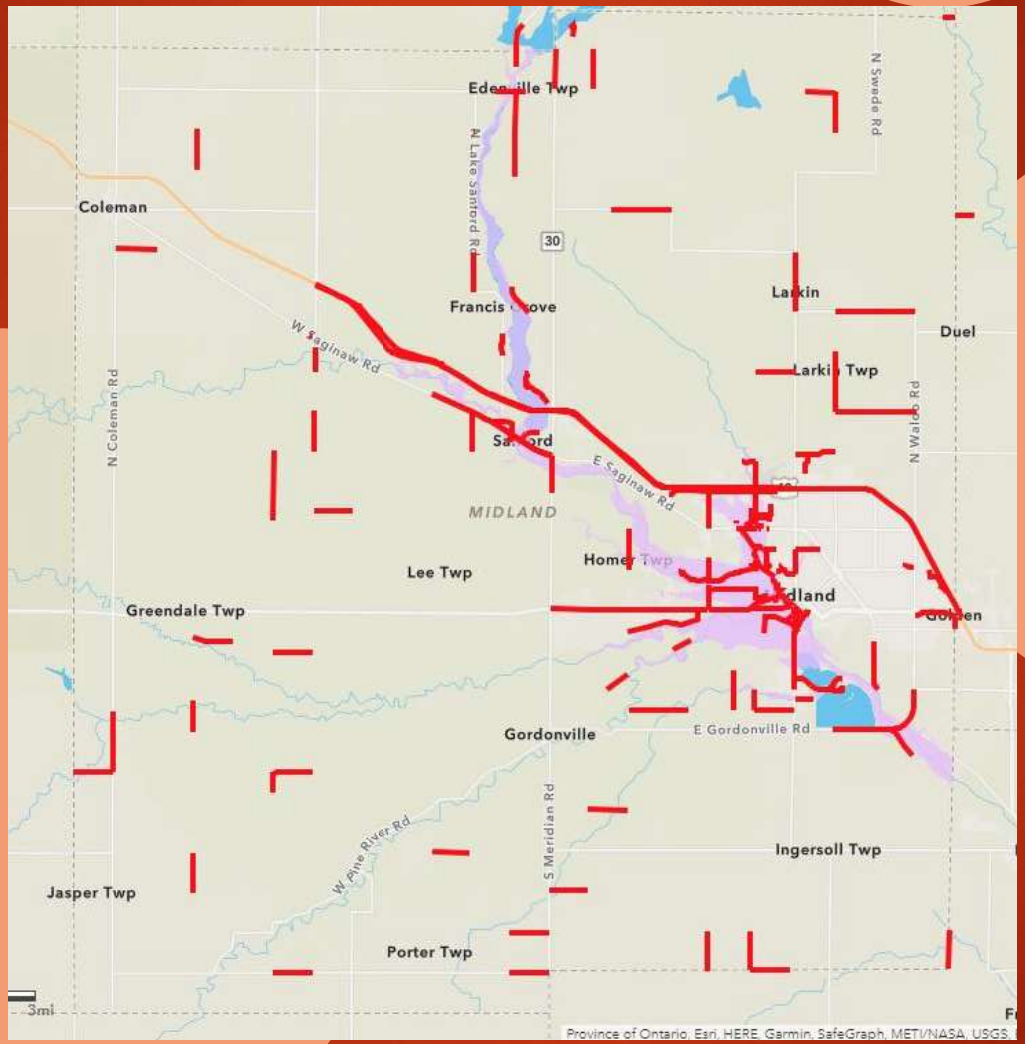
May 19, 2020

Sanford Dam / Sanford Lake



MIDLAND COUNTY ROAD COMMISSION

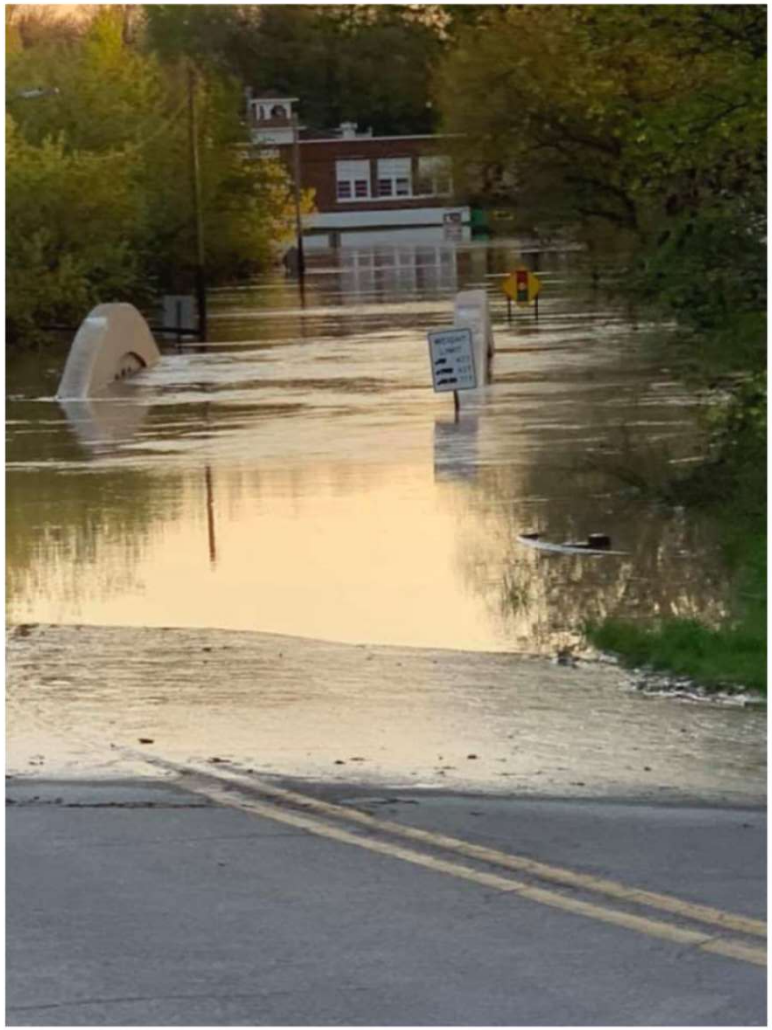
May 19-20, 2020



Road Closures

MIDLAND COUNTY ROAD COMMISSION

May 19-20, 2020





MIDLAND COUNTY ROAD COMMISSION

May 19-20, 2020



MIDLAND COUNTY ROAD COMMISSION

May 19-20, 2020





MIDLAND COUNTY ROAD COMMISSION

May 19-20, 2020



MIDLAND COUNTY ROAD COMMISSION

Aftermath





MIDLAND COUNTY ROAD COMMISSION

Post-flood

DOCUMENTATION

- LOTS of photos and video
- Review ALL roads, bridges, culverts for damage
- Detailed measurements
- Keep records of all time & expenses

MIDLAND COUNTY ROAD COMMISSION

Post-flood

REPAIR FUNDING

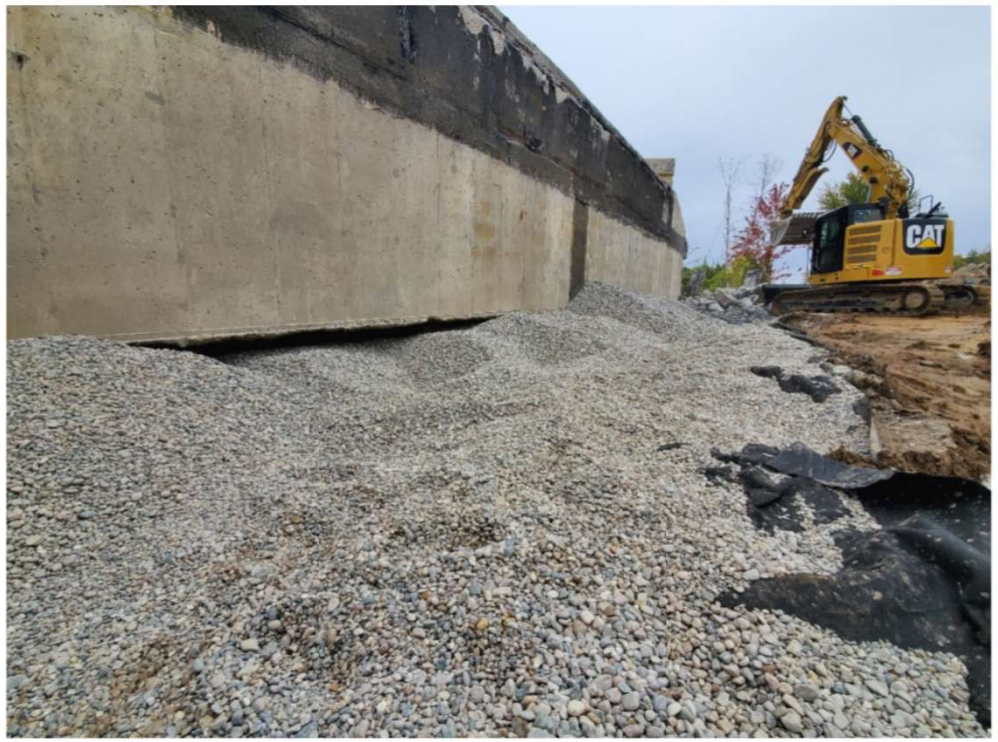
- FHWA
- FEMA
- USDA (multiple sources)
- State Emergency Funds
- Begging



MIDLAND COUNTY ROAD COMMISSION

Post-flood

REPAIR WORK





Curtis Road

MIDLAND COUNTY ROAD COMMISSION

Post-flood

REPAIR WORK





Curtis Road

MIDLAND COUNTY
ROAD COMMISSION

Post-flood

REPAIR WORK





Curtis Road

MIDLAND COUNTY ROAD COMMISSION

Post-flood

REPAIR WORK





Curtis Road

MIDLAND COUNTY ROAD COMMISSION

Post-flood

REPAIR WORK



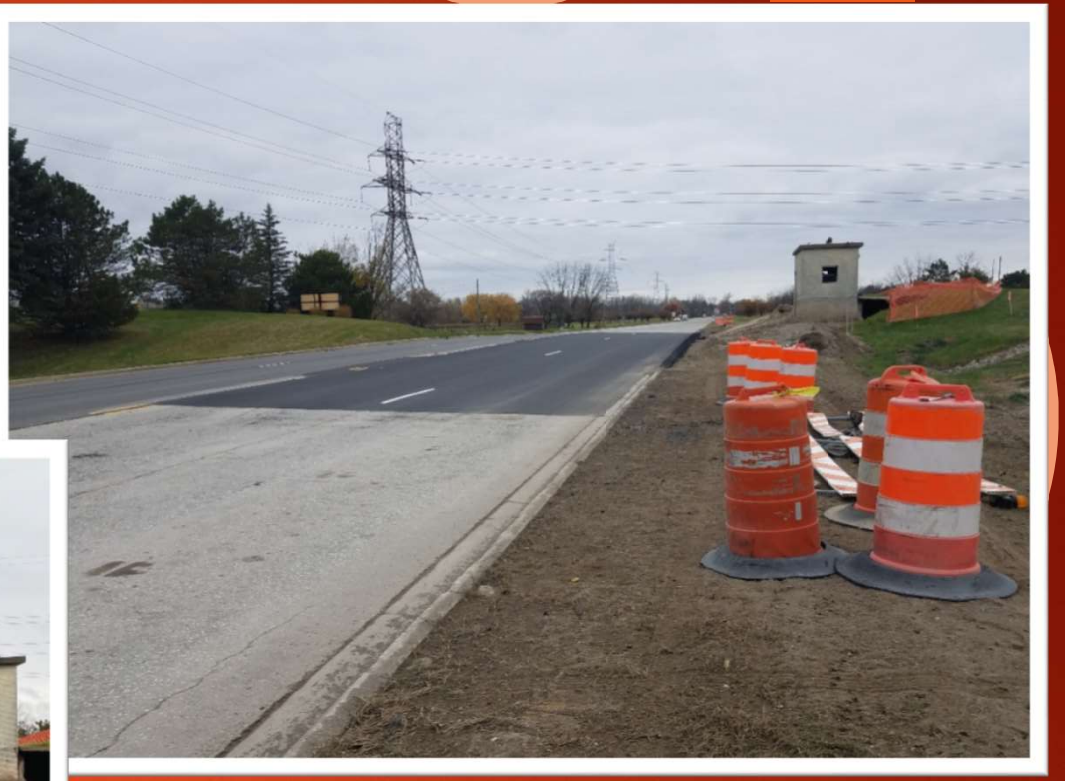


Poseyville Road

MIDLAND COUNTY ROAD COMMISSION

Post-flood

REPAIR WORK





Poseyville Road

MIDLAND COUNTY ROAD COMMISSION

Post-flood

REPAIR WORK





West River Road

MIDLAND COUNTY ROAD COMMISSION

Post-flood

REPAIR WORK





West River Road

MIDLAND COUNTY ROAD COMMISSION

Post-flood

REPAIR WORK

To Be Continued…

Mid-Michigan Flooding Emergency Response

Kimberly Zimmer, P.E.
MDOT: Bay Region
Associate Region Engineer - Operations



MDOT
Michigan Department of Transportation

Mid–Michigan Flooding Event 2020

- May 17 – 19, 2020
- Flood on the Tittabawassee River at US-10 was between the 0.5% (200-year) and 0.2% (500-year) return frequencies.
- Flooding in Midland, Gladwin, Arenac, Saginaw, and Iosco counties
- On May 19, the Edenville Dam holding over 21 billion gallons of water at Wixom Lake failed. This water travelled down the Tittabawassee River to Sanford Lake where it subsequently overwhelmed the Sanford Dam and caused the release of an additional 4.5 billion gallons of water.
- Presidential and Governor's Declaration of Emergency
- Largest Emergency Relief Event in Michigan
- **No fatalities**

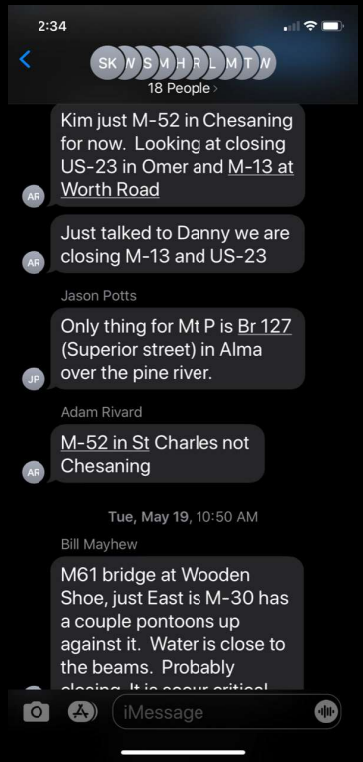


Response Activities during the Event

- County and State Level Emergency Operations Centers Activated
- Collaboration between Federal, State and Local Governments
- Continuous Communication:
  - Cell Phones/Devices
  - Text Messaging
  - Social Media
  - Websites
  - Online Meetings
  - Emails
  - GIS
- Road/Bridge Closures
- Evacuations
  - COVID Precautions



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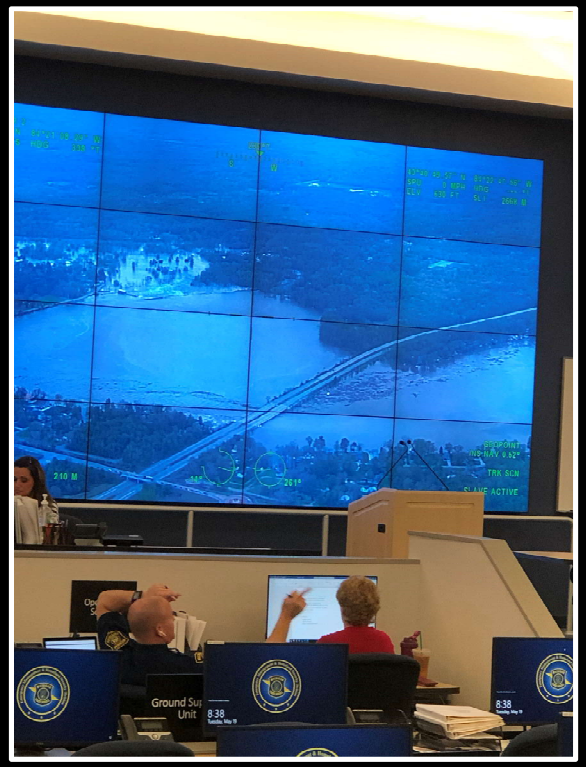
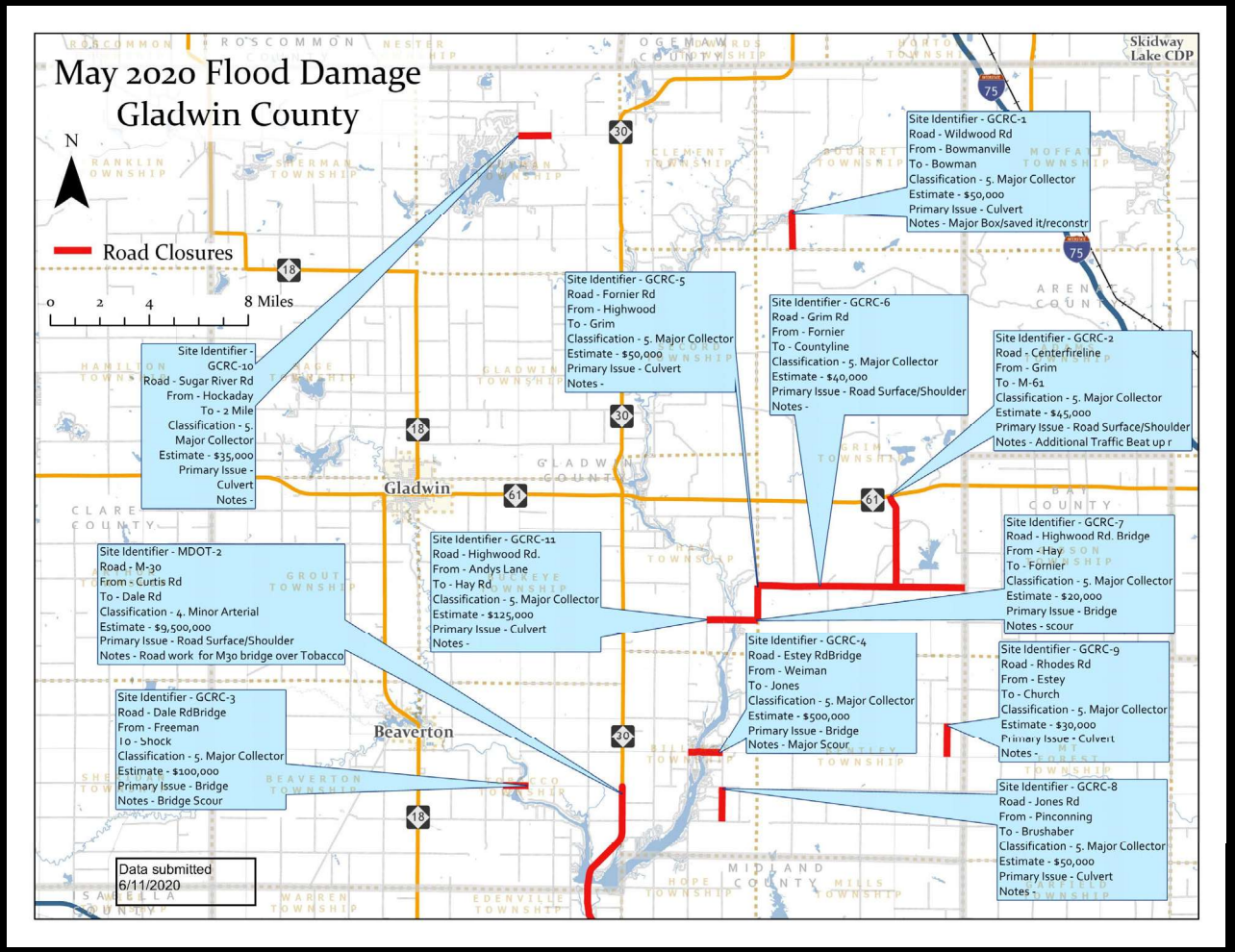
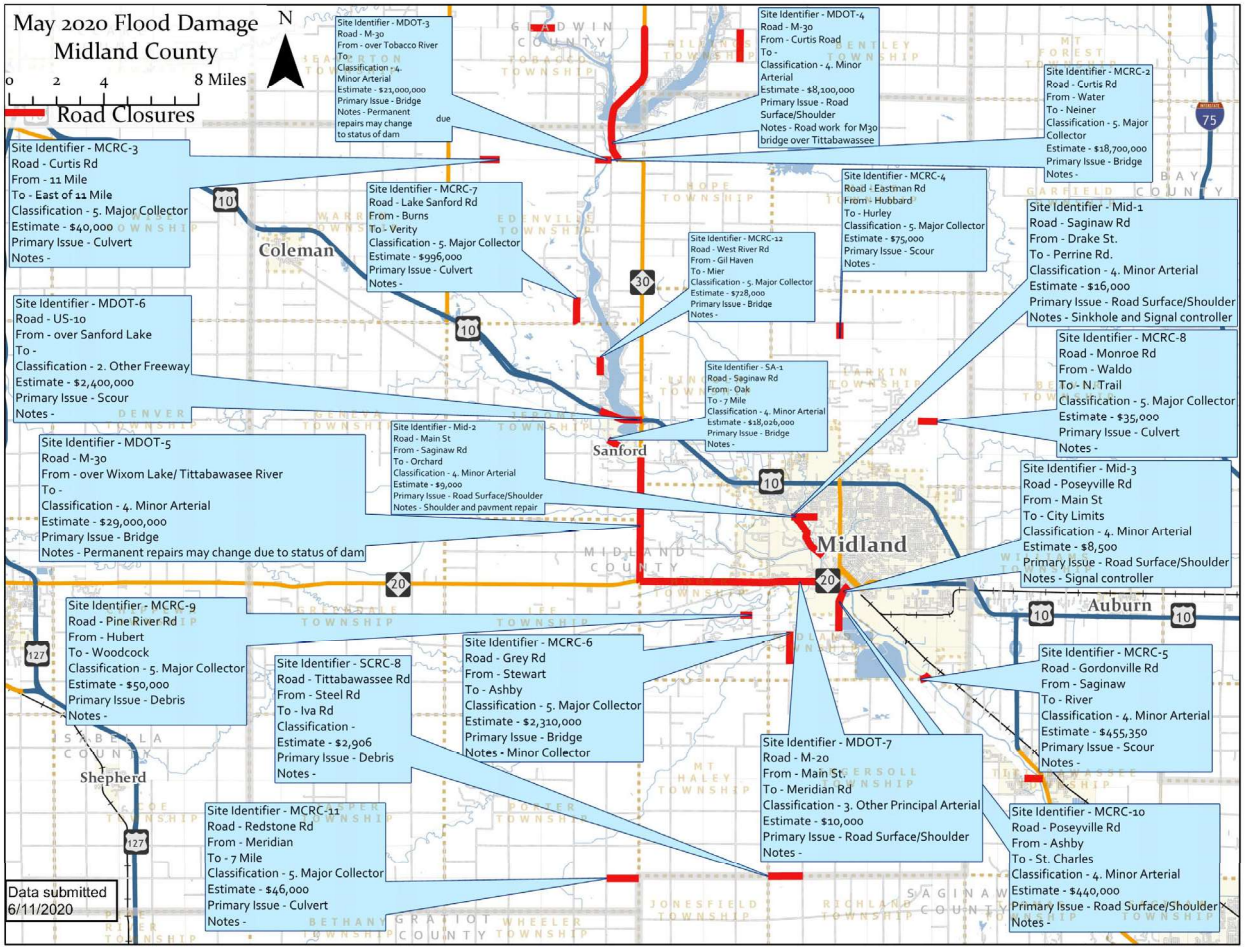


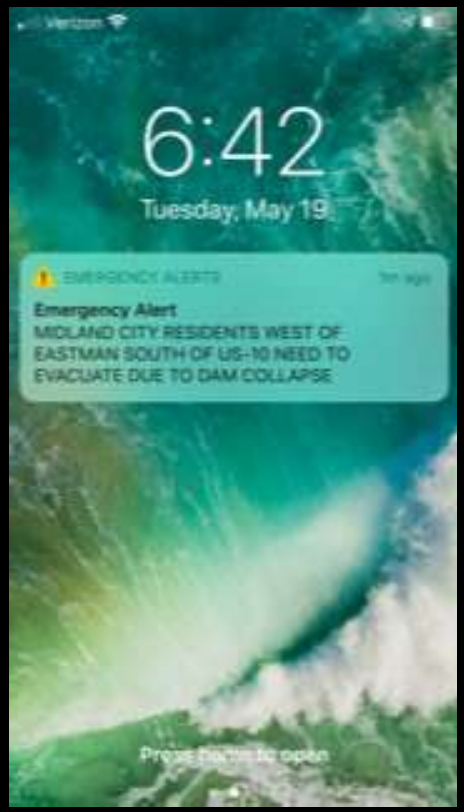
Image Courtesy: MDOT Safety & Security

Gladwin County Closures

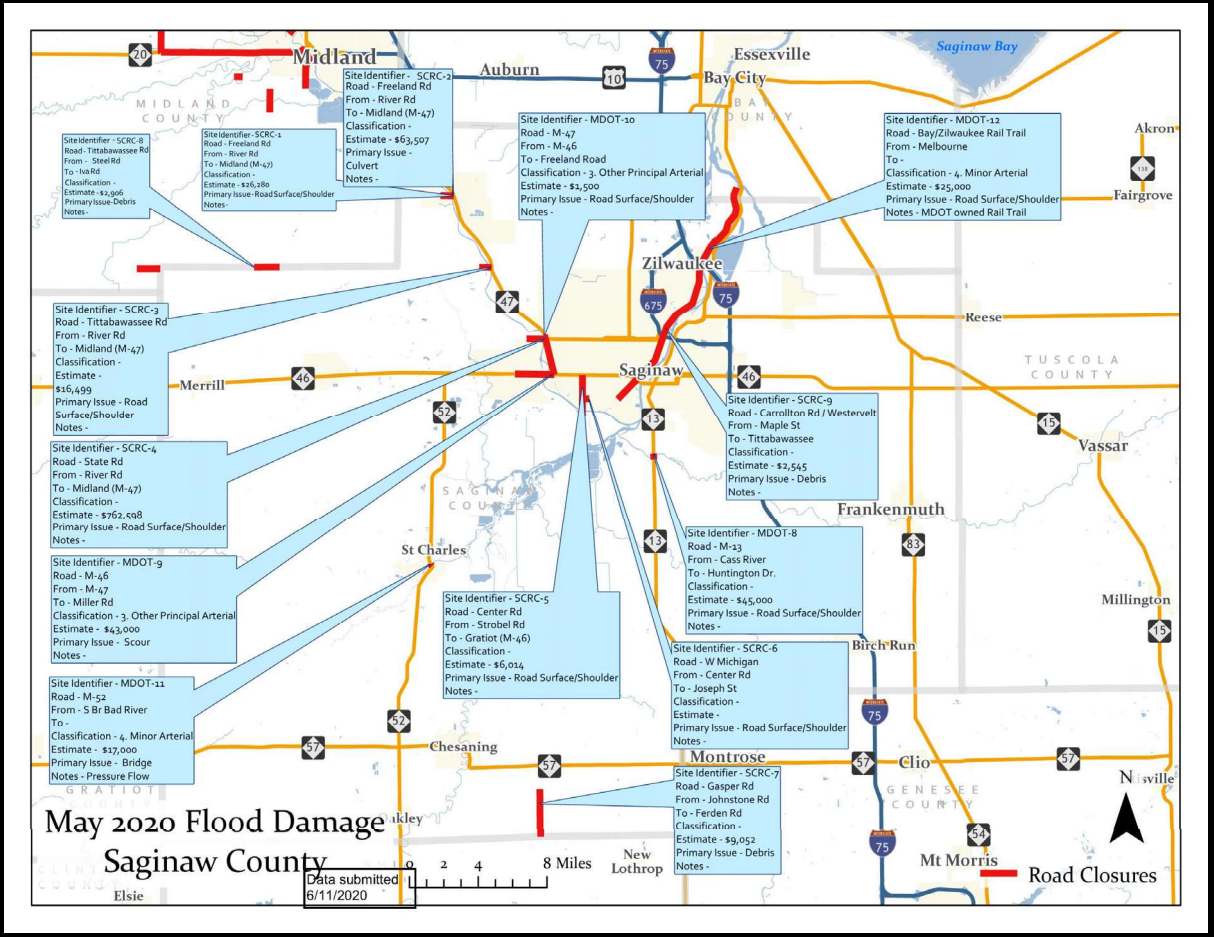


Midland County Closures

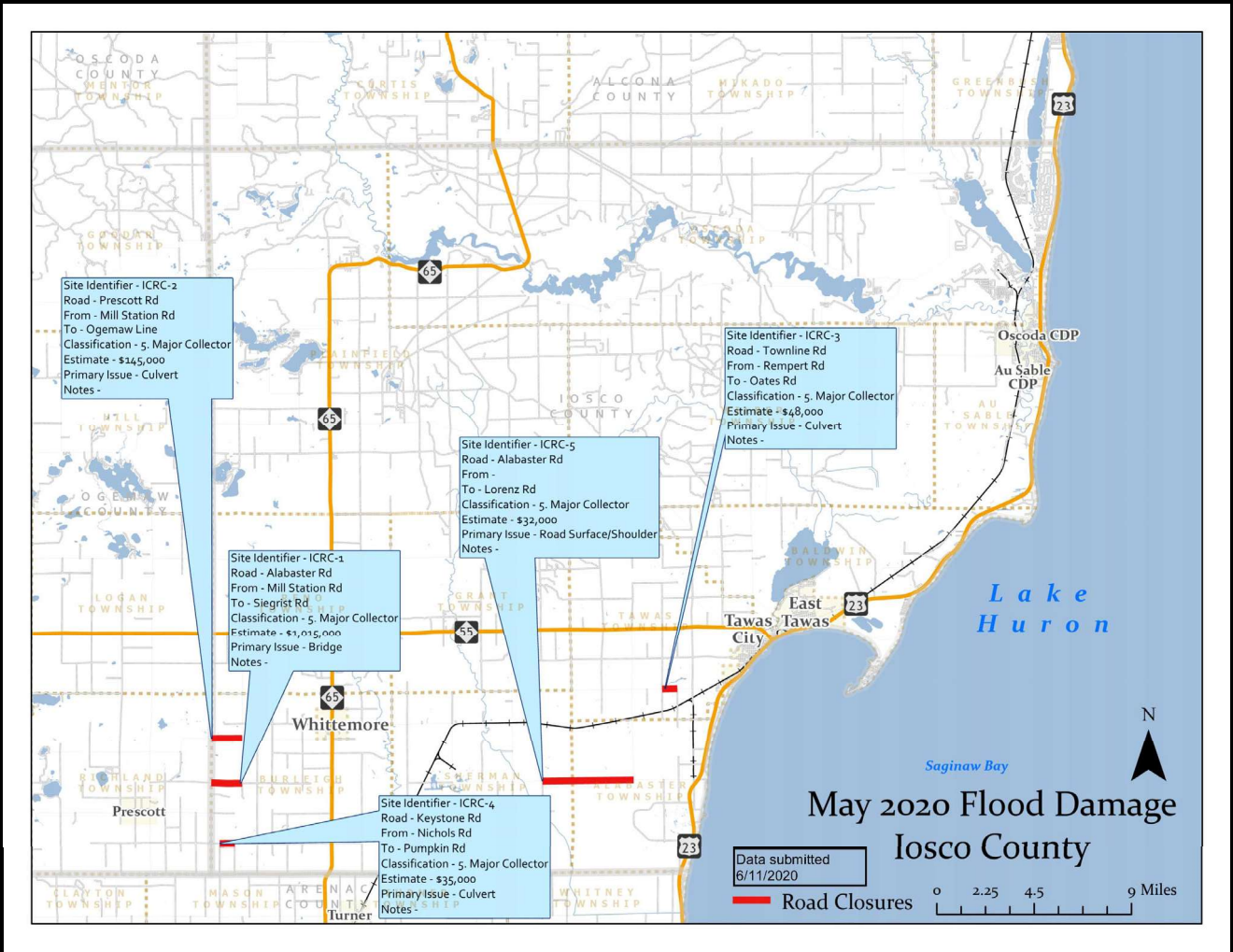




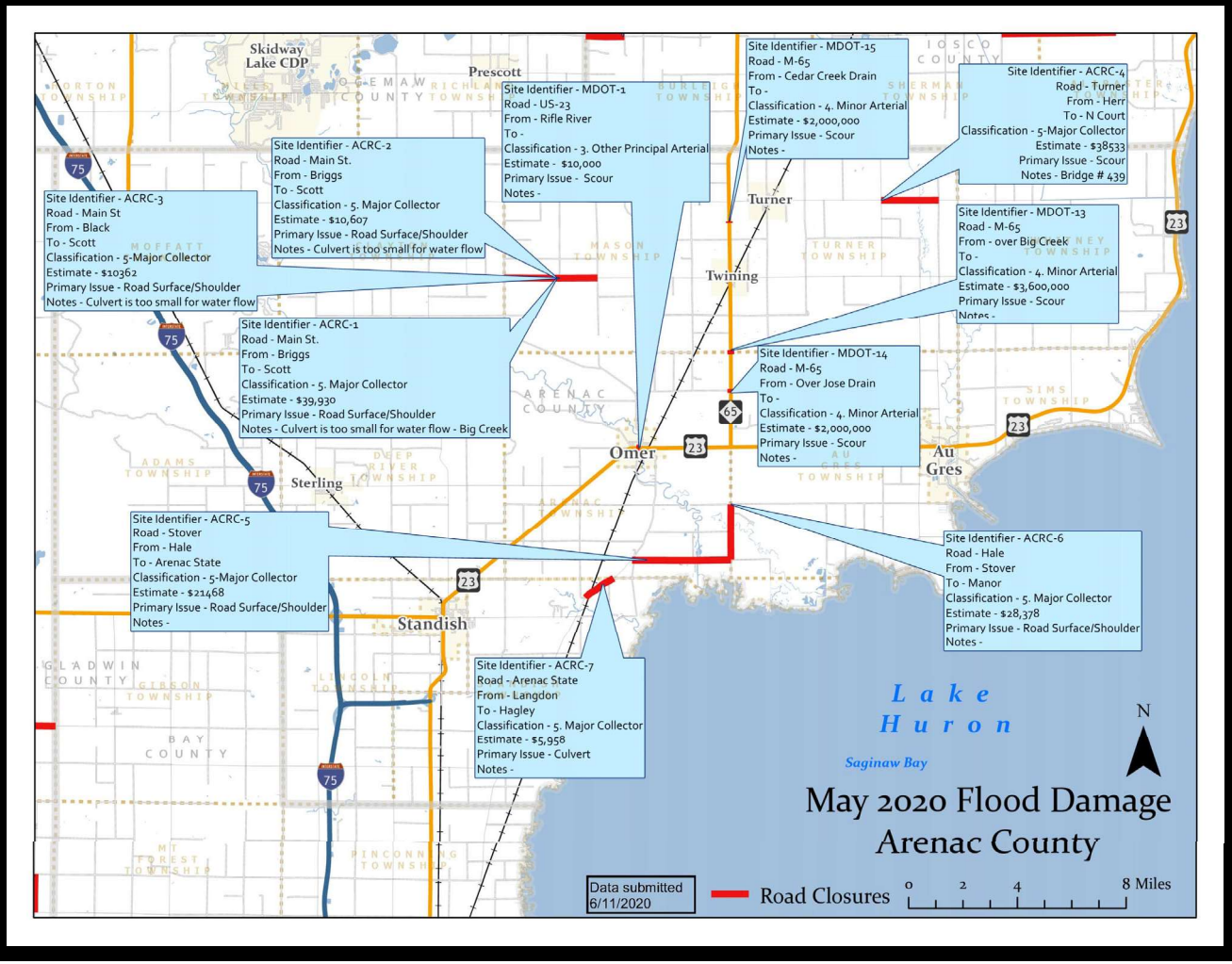
Saginaw County Closures



Iosco County Closures

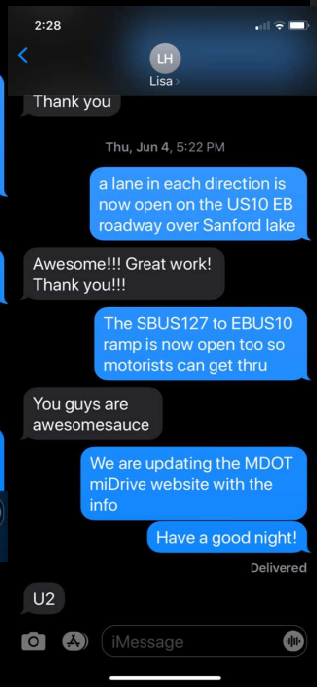


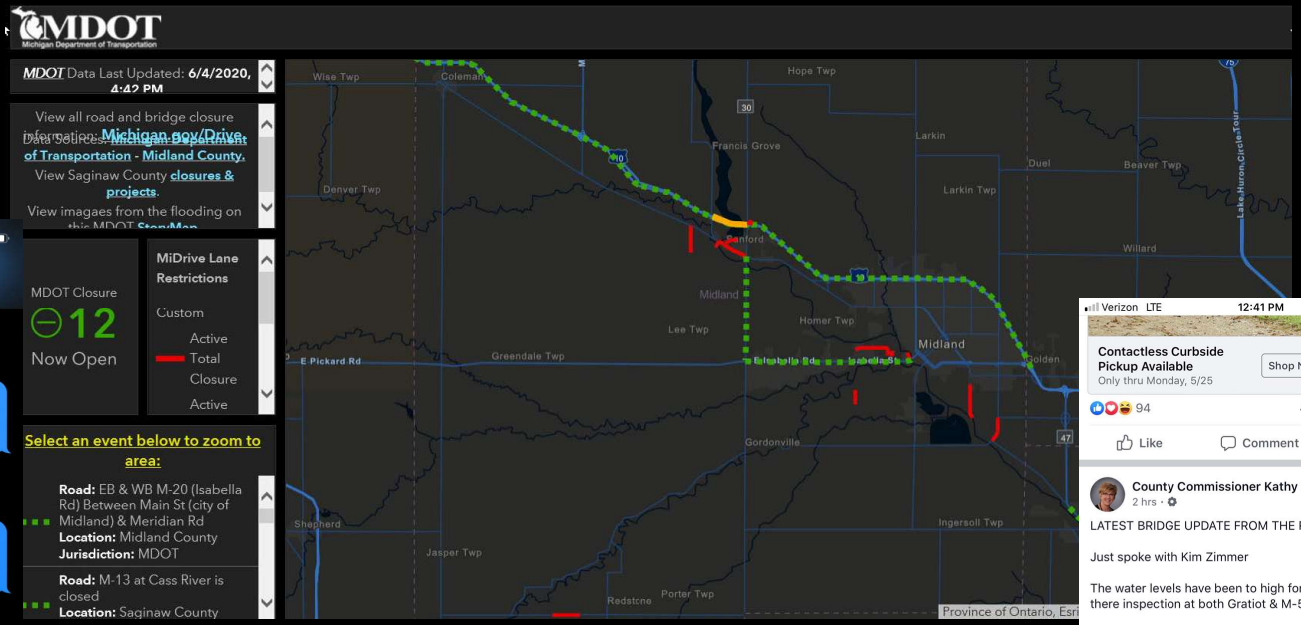
Arenac County Closures

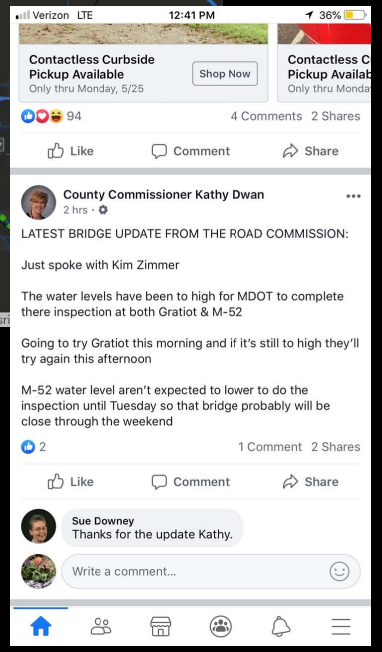


Response Activities during the Event

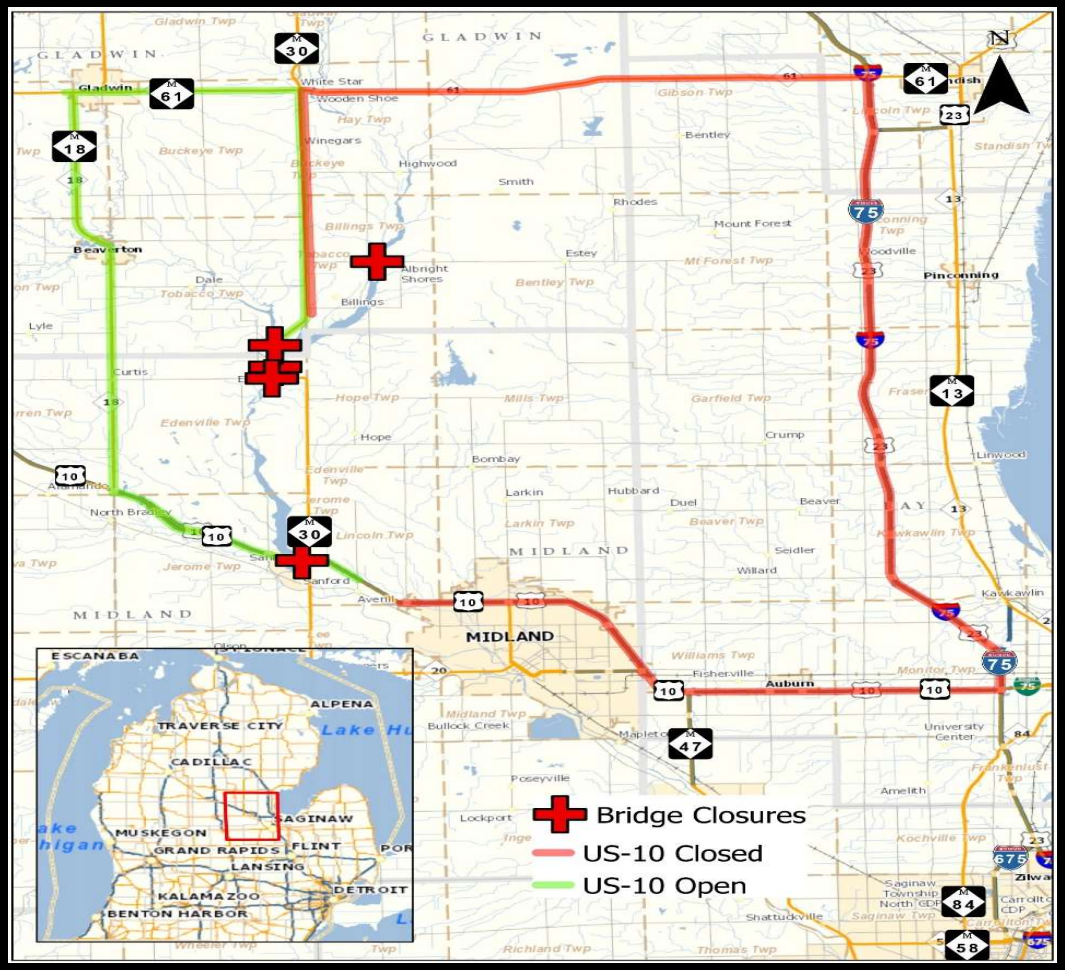






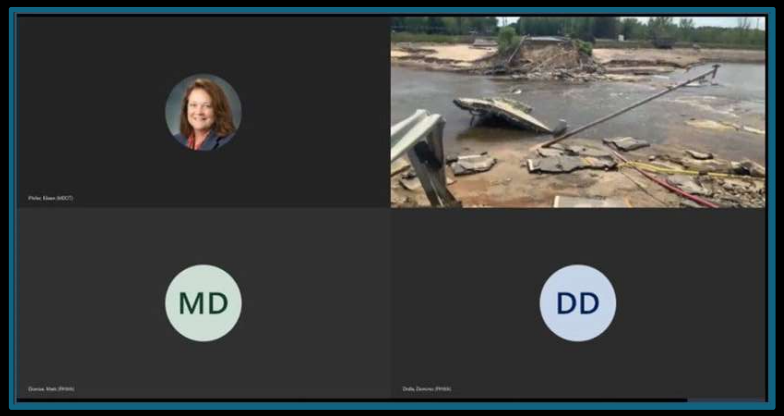


Mobility Impacts

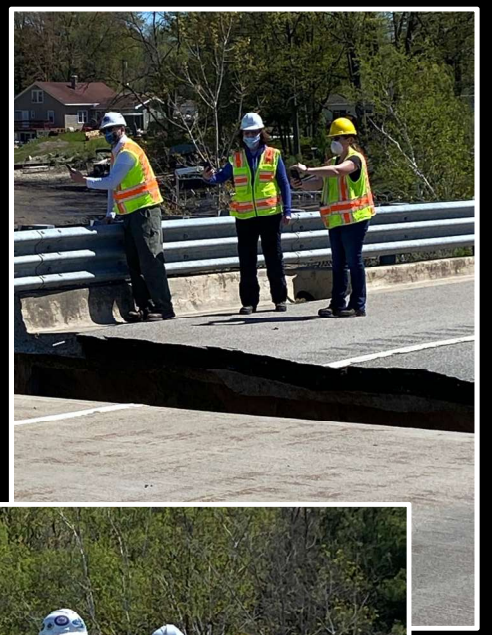


Virtual Site Damage Assessments

- FHWA Travel Restrictions
- Innovative field assessments:
  - Facetime
  - Microsoft Teams
  - Emily
- Staff placed strategically for field reviews
- Recorded field meetings
- Live Q&A







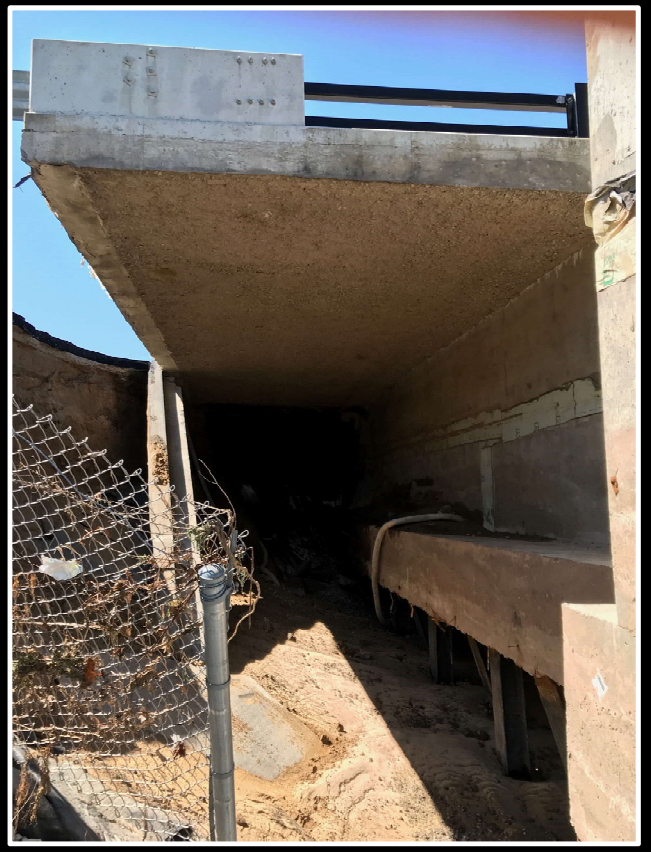


Post Event: Site Damage Assessments









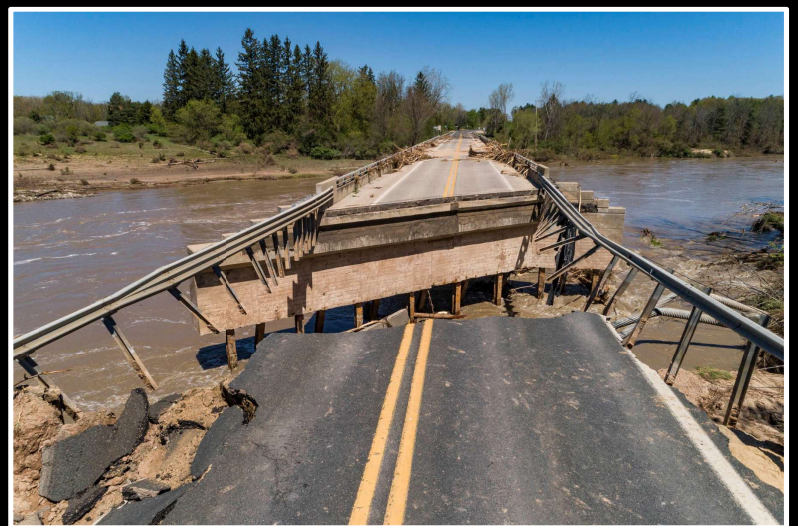
US-10 over Sanford Lake
Midland County

Photo credits: MDOT Photography Unit

Post Event: Site Damage Assessments









M-30 over Tittabawassee River
Midland County

Photo credits: MDOT Photography Unit

Post Event: Site Damage Assessments





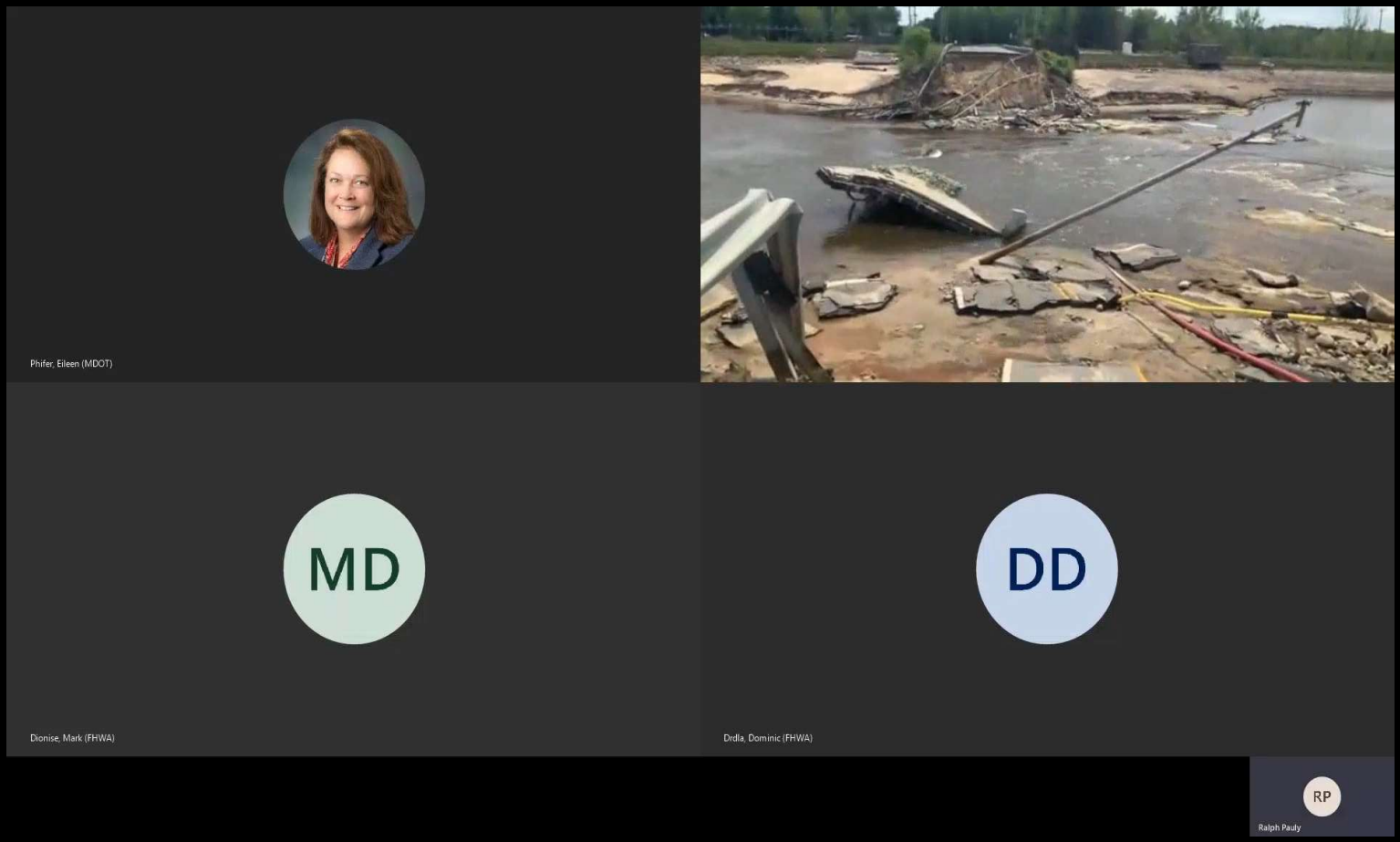


Photo credits: MDOT Photography Unit



M-30 over Tobacco River
Gladwin County

Post Event: Site Damage Assessments



M-30 over Tobacco River, Gladwin County

Post Event: Site Damage Assessments















Saginaw Road – Village of Sanford
Midland County

Post Event: Site Damage Assessments

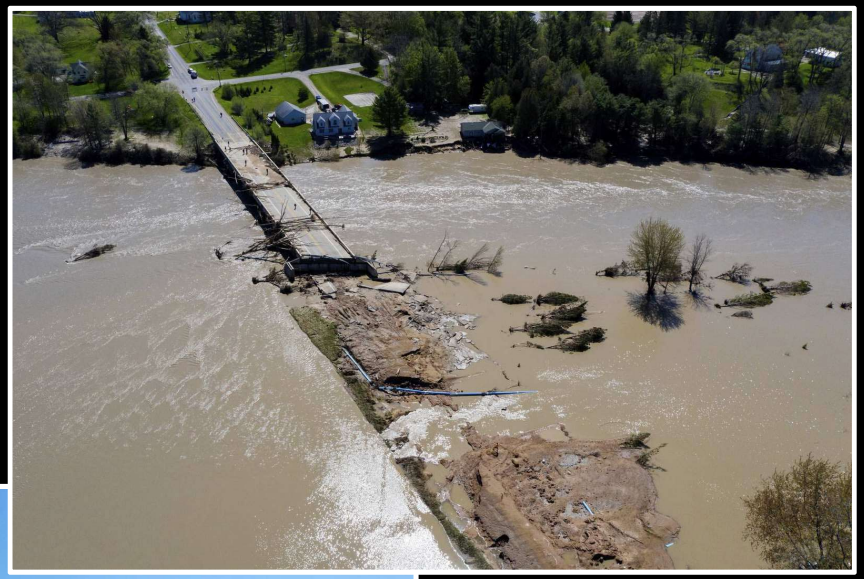






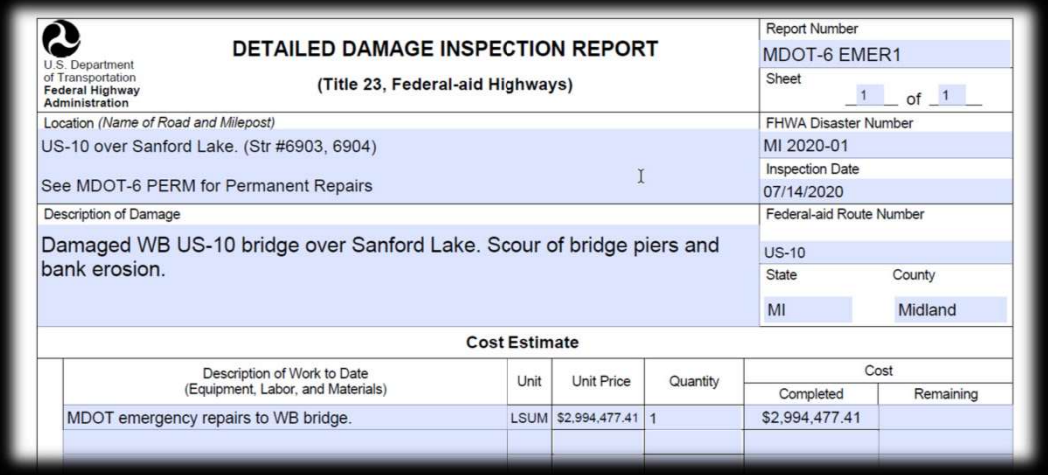
Photo credits: MDOT Photography Unit



Curtis Road over
Tittabawassee River
Midland County

Post Event: Site Damage Assessments

- Estimated Repair Costs: $104M
- 117 DDIR's (63 MDOT/54 Local) submitted to FHWA
- DDIR's conducted by Spicer Group and Michael Baker, Inc.



U.S. Department of Transportation
Federal Highway Administration

DETAILED DAMAGE INSPECTION REPORT

(Title 23, Federal-aid Highways)

Report Number: MDOT-6 EMER1

Sheet: 1 of 1

Location *(Name of Road and Milepost)*: US-10 over Sanford Lake. (Str #6903, 6904)

See MDOT-6 PERM for Permanent Repairs

FHWA Disaster Number: MI 2020-01

Inspection Date: 07/14/2020

Description of Damage: Damaged WB US-10 bridge over Sanford Lake. Scour of bridge piers and bank erosion.

Federal-aid Route Number: US-10

State: MI

County: Midland

Cost Estimate

Description of Work to Date (Equipment, Labor, and Materials)	Unit	Unit Price	Quantity	Cost	
				Completed	Remaining
MDOT emergency repairs to WB bridge.	LSUM	$2,994,477.41	1	$2,994,477.41	

Spicer group
ENGINEERS
SURVEYORS
PLANNERS
ARCHITECTS

Michael Baker
INTERNATIONAL

U.S. Department of Transportation
Federal Highway Administration

Post Event: Restoring Mobility

- MDOT and local agencies needed help
- As-needed Program Manager Consultant (PMC) Contracts
  - AECOM and Fishbeck selected as prime consultants
  - Expedited contracting process through MDOT Contract Services Division (CSD) utilizing Task Orders from PMC Contracts
  - 13 Task Orders issued to date, with more in process
  - Unrealistic deadlines all while working remotely during a pandemic



Post Event: Restoring Mobility

- AECOM Team
  - Edenville Dam Mitigation and Design Assistance for EGLE
  - Hydraulic Analysis and Design of Scour Monitoring System at M-30 over Tobacco River (Causeway) Bridge
  - Curtis Road over Tittabawassee River – Midland County
  - Saginaw Road over Tittabawassee River Detailed Inspection – Village of Sanford
  - Scour Countermeasure Design in Gladwin and Midland Counties

AECOM

SSI surveying solutions, inc.

OHM Advancing Communities®

DRUMMOND CARPENTER engineering + research

GREAT LAKES ENGINEERING GROUP, LLC

SE Somat Engineering, INCORPORATED

ASC GROUP, INC.

RS Engineering, LLC

Post Event: Restoring Mobility

- Fishbeck Team
  - M-30 over Tittabawassee River - Washout repairs and scour countermeasures
  - M-65 Culverts - Rehabilitation and Replacements at 10 locations
  - M-65 Bridges – Scour countermeasures at two structures
  - Saginaw Road – Road reconstruction and repair in the Village of Sanford
  - M-30 over Tobacco River - Roadway reconstruction and approach design

fishbeck
Engineers | Architects | Scientists | Constructors

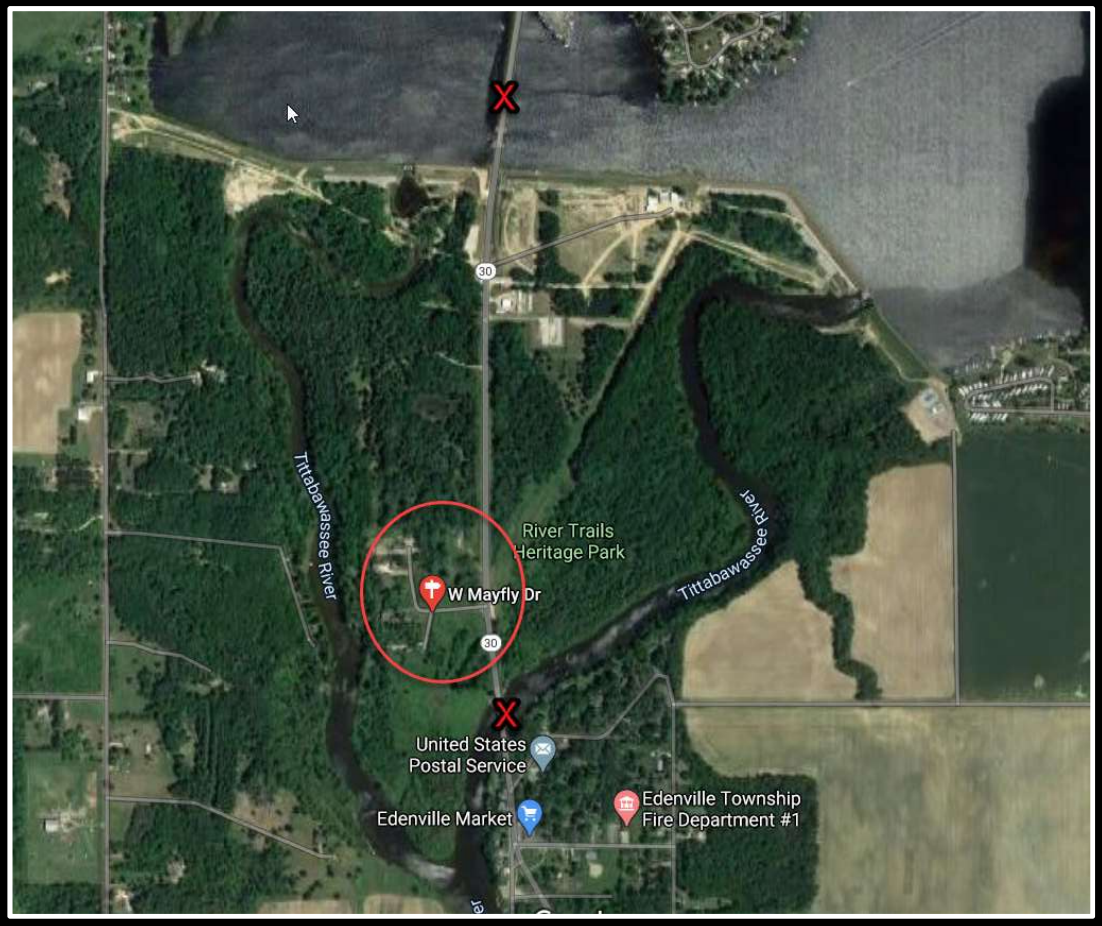
ROWE

RS Engineering, LLC

DLZ
ARCHITECTURE • ENGINEERING • PLANNING
SURVEYING • CONSTRUCTION SERVICES

SE Somat Engineering, INCORPORATED

Post Event: Restoring Mobility





Rivard Family – Edenville Resident

US-10 over Sanford Lake





Photo credits: MDOT Photography Unit

US-10 over Sanford Lake

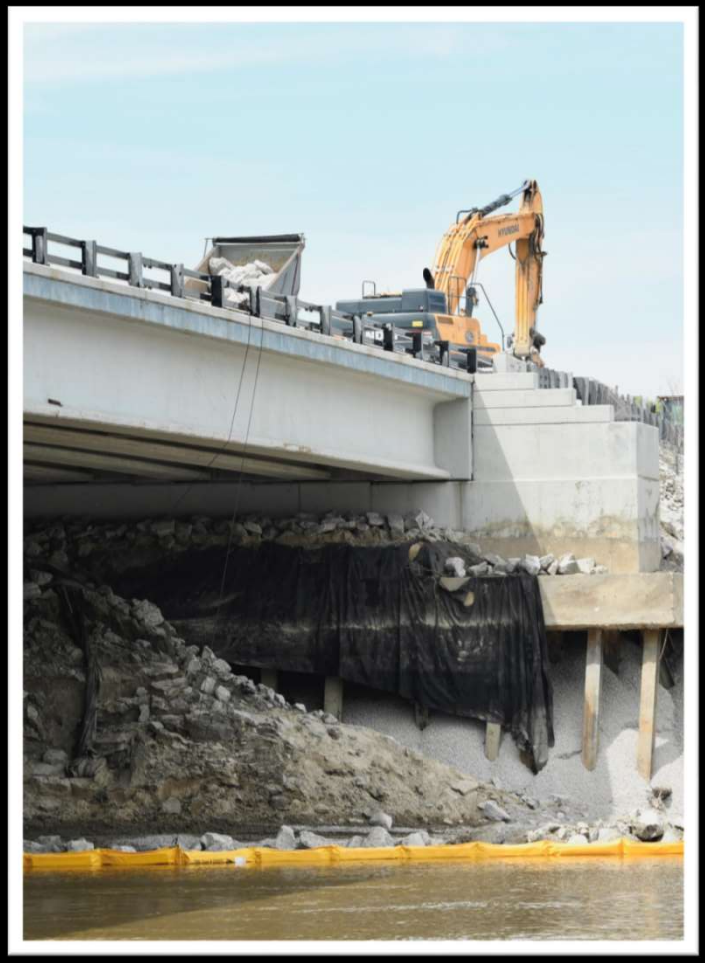




Photo credits: MDOT Photography Unit

US-10 over Sanford Lake

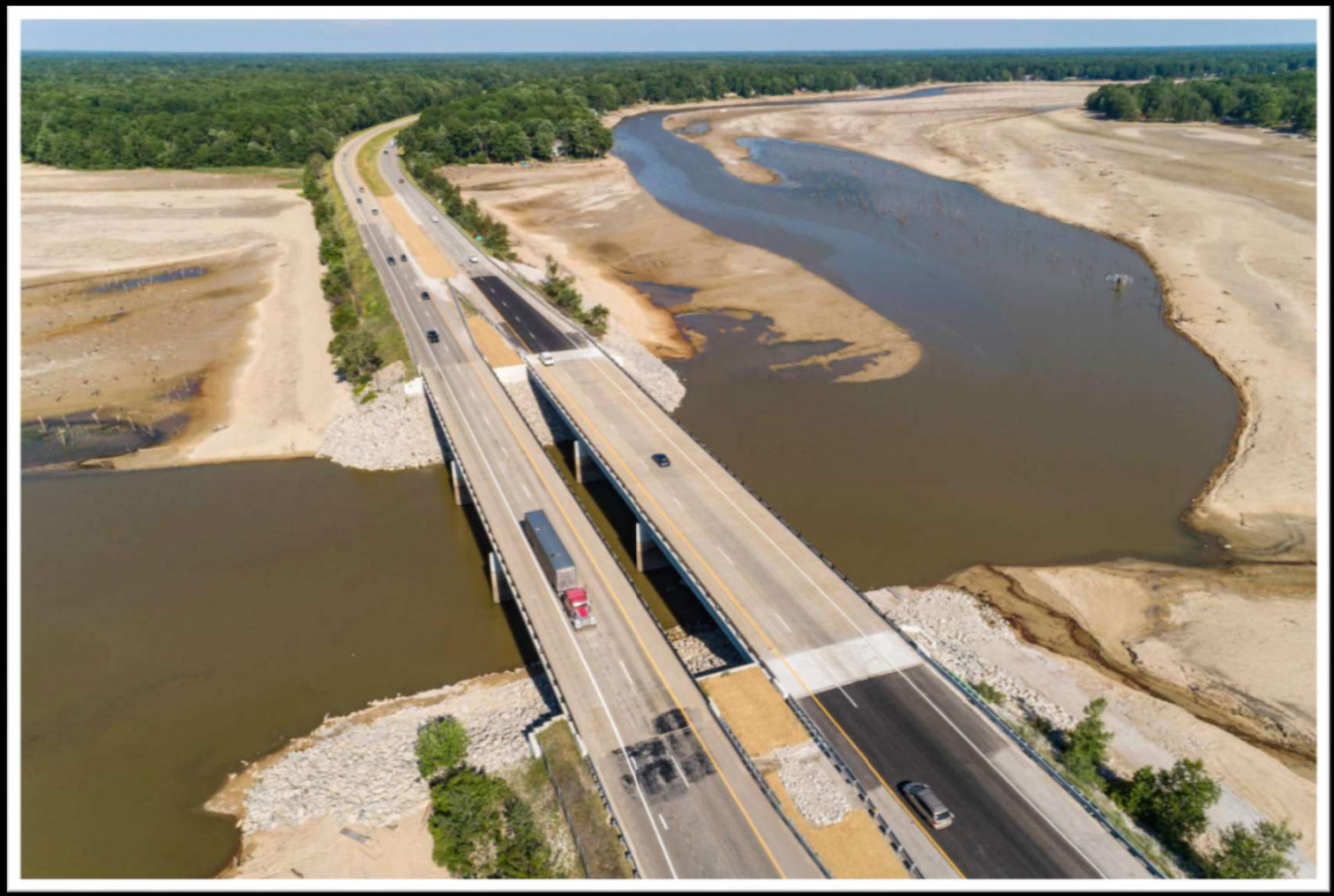
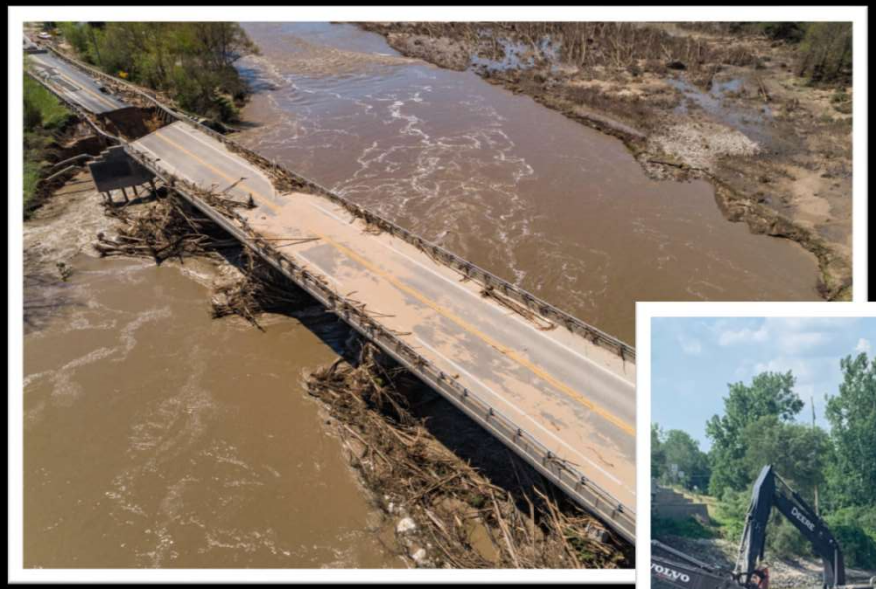


Photo credits: MDOT Photography Unit

M-30 over Tittabawassee River





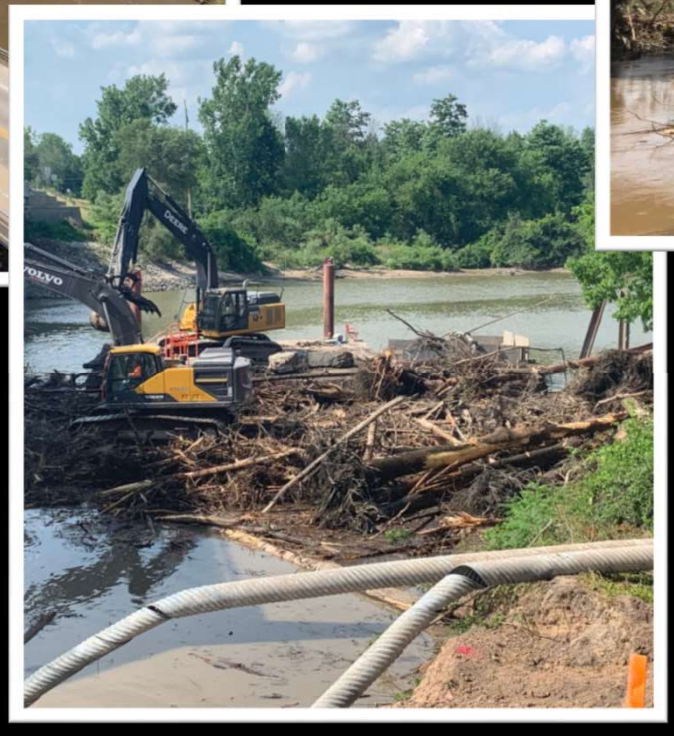


Photo credits: MDOT Photography Unit

M-30 over Tittabawassee River



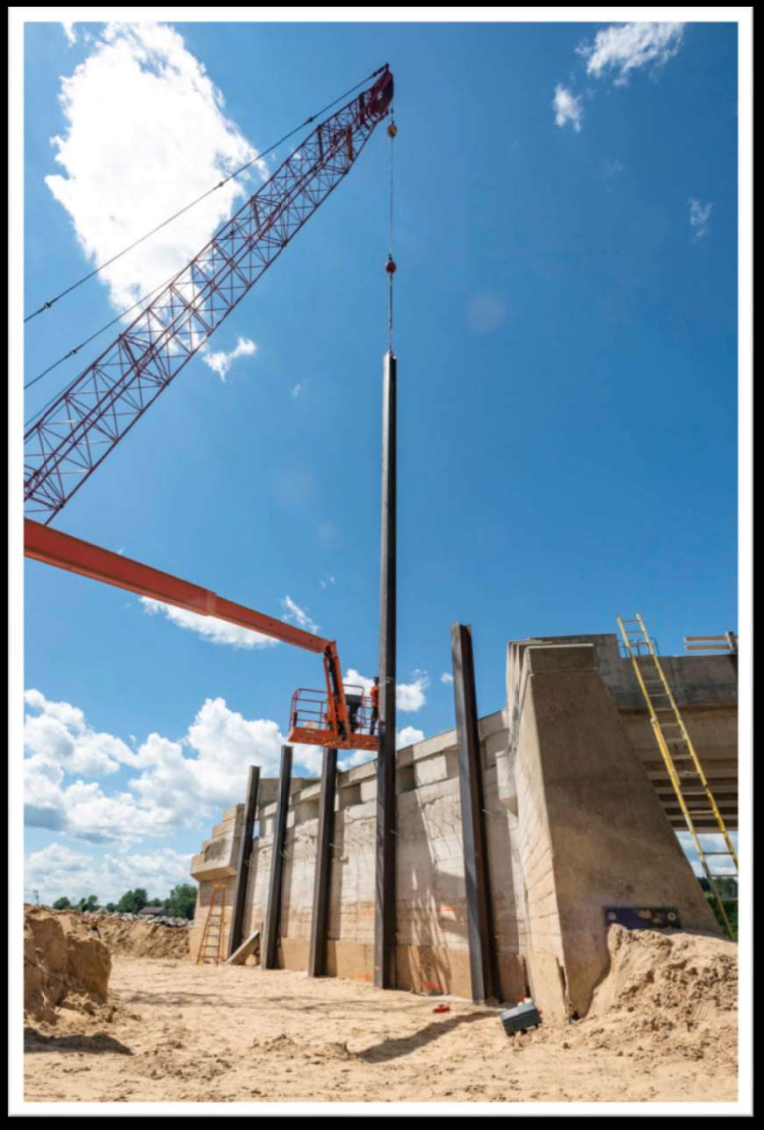


Photo credits: MDOT Photography Unit

M-30 over Tittabawassee River

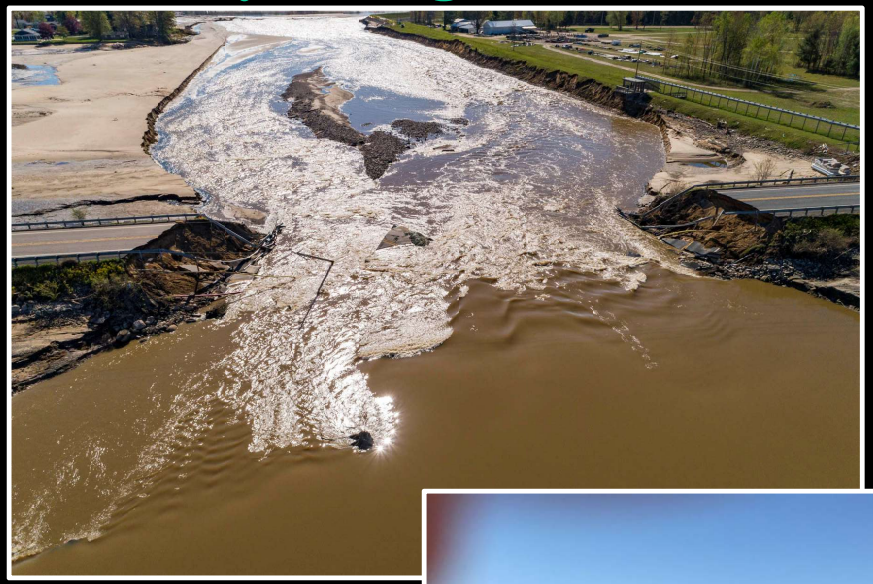




Photo credits: MDOT Photography Unit

M-30 over Tobacco River (Causeway Bridge)





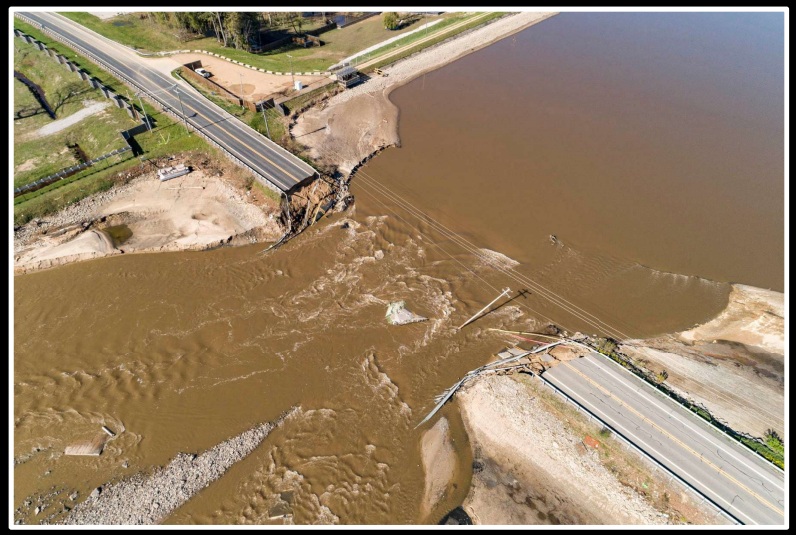




Photo credits: MDOT Photography Unit

M-30 over Tobacco River (Causeway Bridge)







Photo credits: MDOT Photography Unit

M-30 over Tobacco River (Causeway Bridge)





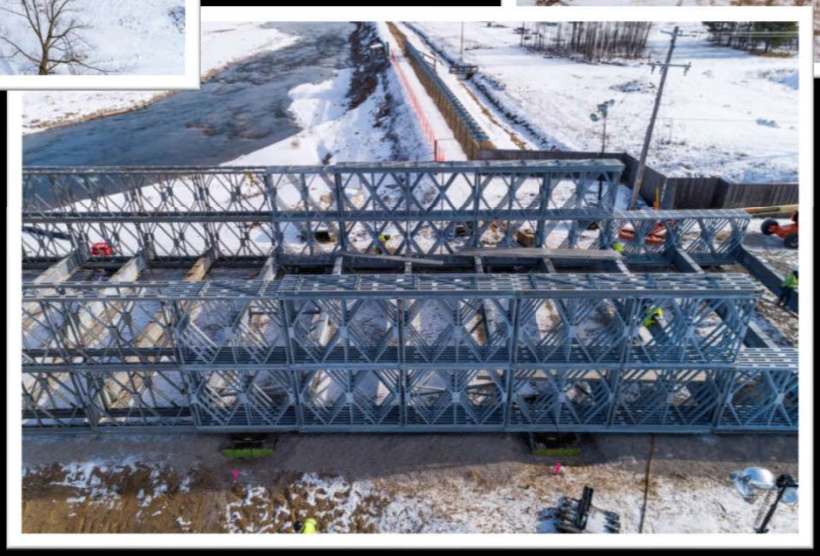


Photo credits: MDOT Photography Unit

Status/Progress Update:

- Estimated Repair Costs: Approximately $104M
- 117 DDIR's (63 MDOT/54 Local)
- Consultant Contracts
  - DDIR's
  - Design Services
- Emergency/Expedited Contracts:
  - US-10 over Sanford Lake (2 contracts)
  - Debris Removal at M-30 bridges
  - M-30 over Tittabawassee River (Repairs)
  - M-65 Detour Route
  - US-23 over AuGres River
  - Saginaw Road - Village of Sanford
  - Curtis Road – Midland County
  - M-30 over Tobacco River - Temporary Bridge
- Ongoing meetings with EGLE, FLTF



M-30 over Tittabawassee River Midland County
Photo Courtesy: MDOT Photography Unit



Us-10 over Sanford Lake Midland County
Photo Courtesy: MDOT Photography Unit

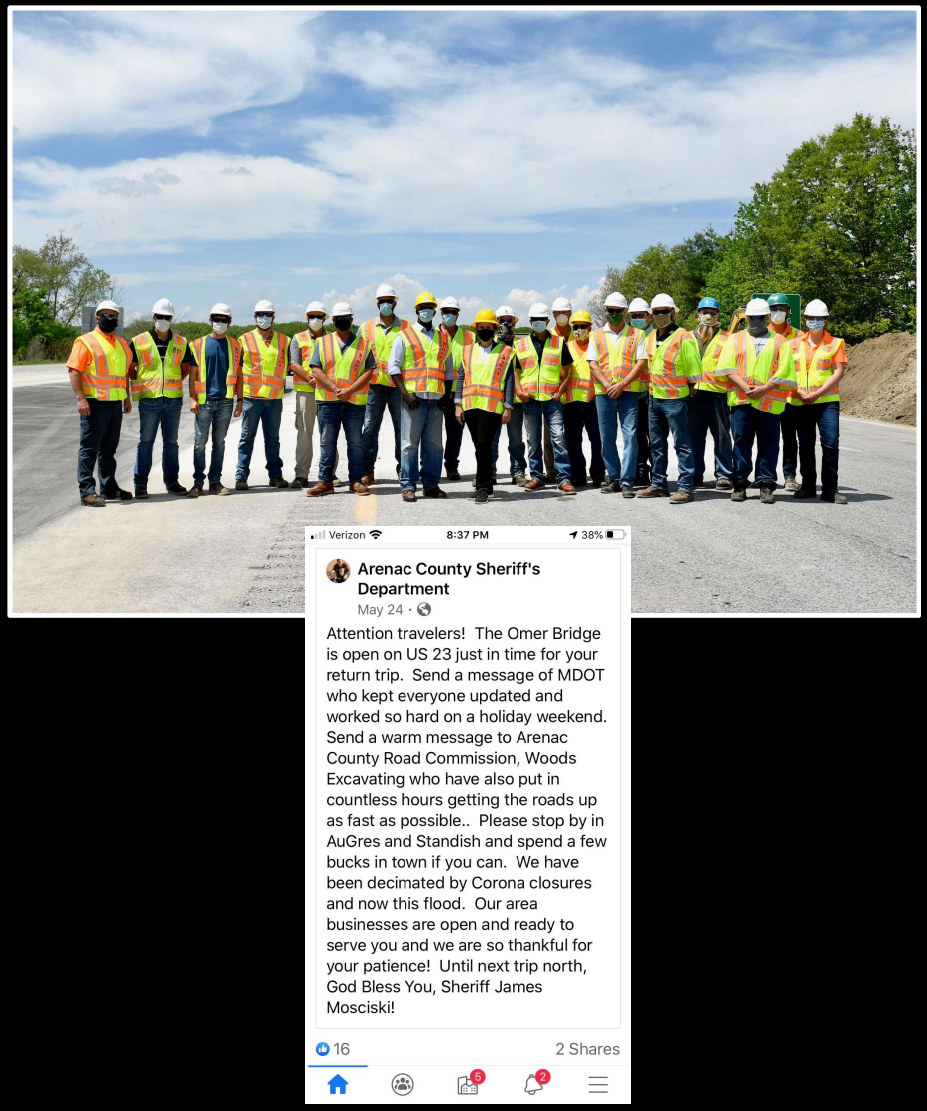
Teamwork

- Director Ajegba
- Bob Ranck
- Matt Chynoweth
- Gregg Brunner
- Eileen Phifer
- Connie Vallier
- Kimberly Zimmer
- Kim Hill
- Paul Schiefer
- Adam Walsh
- Jason Garza
- Bill Mayhew
- Shaun Bates
- Cory Isola
- Jocelyn Hall
- Bruce Kadzban
- Erik Carlson
- Brian Ulman
- Carol Rademacher
- Dick Endres
- Ryan Snook
- Heather Stinson
- Joe Thick
- Derek Weichlein
- Karl Brandys
- Laura Dotson
- Kathleen Gleeson
- Jim Shell
- Mike Loynes
- Jessica Kennett
- Tim Anderson
- Andy Philp
- Brian Stark
- Teresa Vanis
- MDOT Reach All Crew
- Don Matula
- Jack Hofweber
- Clint Mayoral
- Brad Wagner
- Jessica Lee
- Jeff Cranson
- Adam Rivard
- Matt Beatty
- Albert Bekmanis
- Janice Harris
- Jeff Triezenberg
- Eve Fischer
- Brian Atkinson
- Brent Brooks
- FHWA
- EGLE
- County Road Commissions
- Consultants
  - Kamran Qadeer
  - Jim Stankiewicz
  - Chris Sikkema
  - Raja Jildeh
  - Troy Naperala
  - Mukund Patel
  - Paul Perri
  - John Kelley
  - Doug Parmerlee
  - Mike Niederquell
  - Rich Kathrens
  - Jeff Bartlett
  - Cheryl Gregory
  - Michael Vought
  - Casey Collings
  - Jon Zaremski
- Consultants
  - Vik Gautam
  - Rich Kathrens
  - Mike Mitchell
  - David Murphy
  - Vanessa Martin
  - Brittany Bouche
  - Matt Seitz
  - Jason Sadowski
  - Bea Hunt
  - Ryan Edison
  - Sal Todaro
  - Aaron Humphrey
  - Andy Troyanowski
  - Ethan Carpenter
  - Tim Platz

Emergency Response

Reflecting on the response to event:

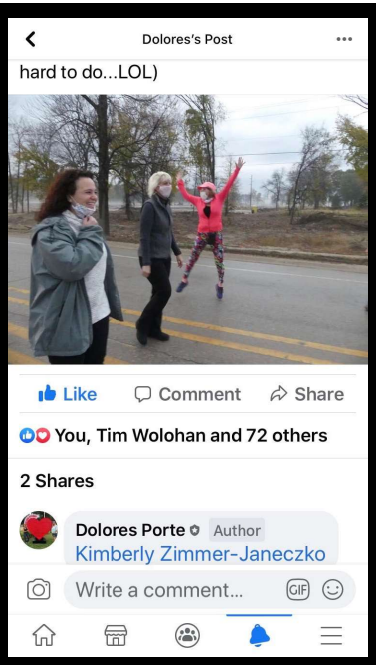
- Limited Resources:
  - Staff
  - Traffic Control Devices
  - Routes
- Use of Technology for Communications and Public Engagement
- Understanding Emergency Relief Process
- Use of Emergency Contracting Procedures
- Relationships & Communication
  - MDOT
  - Federal, State, Local Governments
  - Emergency Responders & Emergency Operation Centers
  - 911 Central Dispatch
- Resilient & Reactive Staff

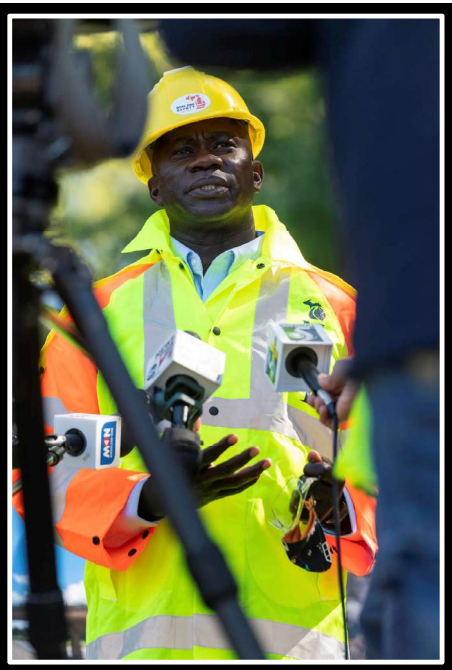


The Human Element













"To have that kind of quick action is really meaningful for communities that have quite literally been to hell and back."
-Michael Hayes: State Transportation Commission Vice Chair

"The reopening made possible thanks to swift work by the Michigan Department of Transportation and the Midland County Road Commission."
– Craig Gosen: Edenville Twp. Supervisor

Questions

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Bay Region Office
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989.233.0597