

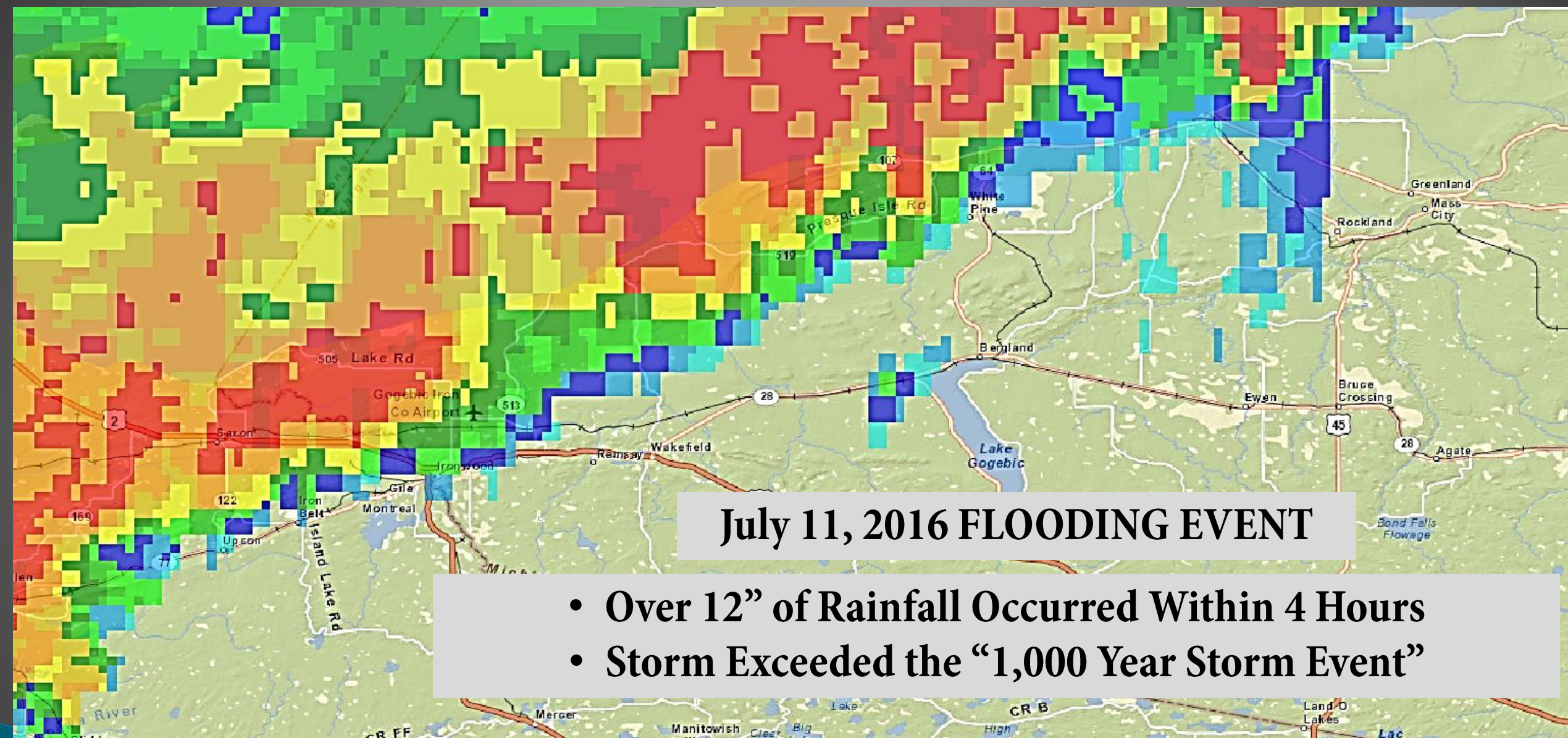
Emergency Relief Preparedness Gogebic County



By: Darren Pionk, P.E.
Engineer/Manager
Gogebic County RC

History of Natural Disasters in Gogebic County

- ▶ 2002 Spring Snowmelt – Presidential Declaration of Disaster: \$3,500,000
 - ▶ 2013 Spring Snowmelt – Presidential Declaration of Disaster: \$2,100,000
 - ▶ 2016 Sevier Rain Event – State Declaration of Disaster: \$4,000,000
- \$9,600,000
- Annual MTF – \$2,750,000 (2016)



Radar Image 11:00pm

Powers Road Damages Local Roads



Washouts and Road Failures
(Several Locations over 8 miles)

Lake Road Damages

Primary Roads



Lake Road ½ mile lane washout



Lake Road Culvert #12

Lake Road Damages



Lake Road Culvert #13



Lake Road Culvert #13

Lake Road Damages (Continued)



Lake Road Culvert #14



Lake Road Culvert #14

Lake Road Damages (Continued)



Lake Road Culvert #27



Lake Road Culvert #34

Lake Road Damages (Continued)



The Big Fill



Omans Bridge

Disaster Response Phases

- ▶ **Emergency Response – Emergency Repairs**
 - ▶ **Initial Assessment of Damage**
 - ▶ **Disaster Declarations (Local, State, Federal)**
 - ▶ **Emergency Relief Funding Sources – Detailed Damage Inspection Reports**
 - ▶ **Permanent Repairs – Design, Permitting, Construction**
- 

Emergency Response – Emergency Repairs

Road Commission– Priority #1

(Provide emergency access to stranded residents)

- **Mobilize GCRC Forces**

- Signs, Barricades, Traffic Control Devices – Road Closers
- Assess Initial Damage: Foremen and Sherriff Patrolmen reporting culvert failures
- Mobilize manpower and equipment – Prioritize repairs to stranded residents

- **Local Contractors and Suppliers**

- Local contractors for availability of manpower and equipment
- Vendors for equipment rental availability
- Material sources: Sand, gravel, riprap, culverts

- **Logistical Issues**

- Remote area along Lake Superior Shoreline – Limited access points (one)
- Limited communication (No radio and cell phone coverage until 8 miles inland)

July 12th – The Day After

- Emergency Management Coordinator – County
 - Set up Emergency Command Center in Courthouse (Bessemer)
 - Start coordinating essential needs to stranded residents (water, medical, injuries, etc.)
 - Approximately 75 to 100 residents stranded
- Sherriff Department – emergency access via boat (Lake Superior) and ATV
- Road Commission – initial direction with Foreman – Local Contractors
- Emergency Road Commission Meeting (2:00 p.m.)
 - Aerial photos by helicopter indicate approximately 30 locations affected along Lake Road alone. Numerous other locations throughout the local road system.
 - Board approved postponing ALL construction projects and none essential maintenance work
 - Authorized the Engineer/Manager to proceed as necessary and spending limits suspended to make emergency repairs as needed to gain access to stranded residents along Lake, Powers, Brace Roads and Aspen Lane.

Initial Estimate of Damage

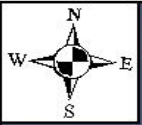
- Lake Road (over 9 miles) Primary Road
 - All Major Stream Crossings Destroyed
 - 20–30 road crossings (1 bridge)
 - ½ mile lane washed out
 - \$3.5 million repair estimate

- Other Local Roads in area
 - 30+ culverts washed out (some significant crossings)
 - Aspen Lane (1 / 2 mile roadway washed away)
 - Powers Road (5' deep washouts over 8 miles)
 - \$1 million

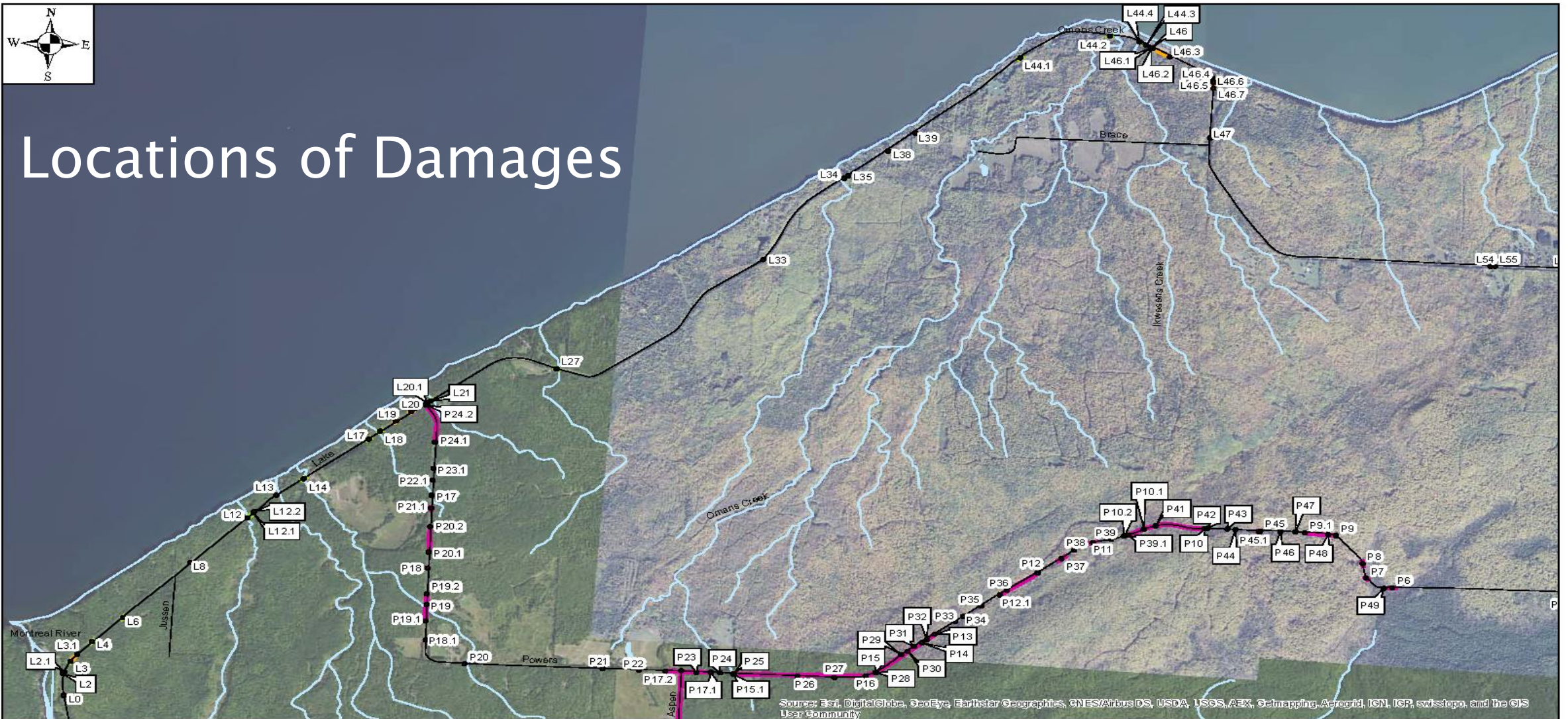
- Emergency Repairs
 - \$500,000 to provide temporary access

Initial Damage Assessment

- **Based on previous experience with Major Flooding Events**
- **Data collection of flood damage sites**
 - GCRC engineering crew and local consultant (Coleman Engineering)
 - Gather GPS point locations of sites (label sequence)
 - Catalog pictures for each site
 - GCRC Administrative Staff – Set up Project Numbers for each Site. (track emergency repairs)
- **Preliminary Cost Estimates**
 - Costs estimates for each site
 - Emergency repair costs
 - Permanent repair costs (Ball Park Figures)



Locations of Damages



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroX, GeoMapping, AeroGrid, IGN, IGP, swisstopo, and the GIS User Community

0 2,000 4,000
Feet
1 inch = 2,000 feet

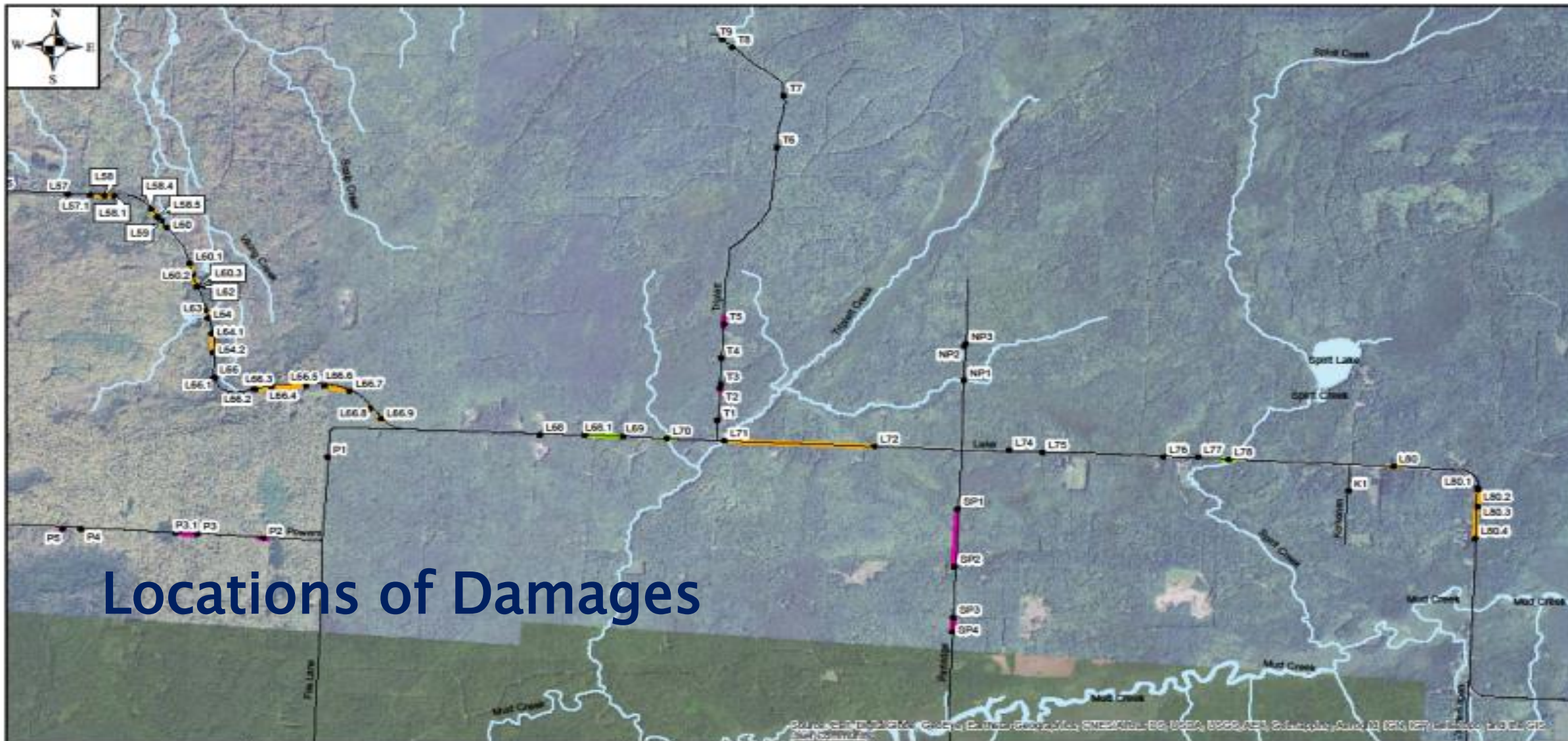
Little Girl's Point Area - West
Page 1 of 2

Drawn By:
Coleman Engineering Company
Kelsey Roble

Data Gathered:
July 15-17, 2016

Legend

- Points of Issues
- Asphalt Road - Shoulder Washout
- Gravel Road - Washouts
- Asphalt Road - Road Failure
- Roads
- Rivers & Streams
- Lakes & Ponds



Little Girl's Point Area - East
Page 2 of 2

Drawn By:
Coleman Engineering Company
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Data Gathered:
July 15-17, 2018

Legend

- Points of Issues
- Gravel Road - Washouts
- Asphalt Road - Shoulder Washout
- Asphalt Road - Road Failure
- Roads
- Rivers & Streams
- Lakes & Ponds

Emergency Declaration Timeline

- ▶ Storm – Monday Evening, July 11th
GCRC Emergency Board Meeting (July 12th)
- ▶ County Disaster Declaration by County Board
Tuesday, July 12th
- ▶ Declarations submitted by County Emergency Coordinator
- ▶ State Declaration Granted Friday, July 15th
Based on initial cost estimate of damages
- ▶ No Presidential Declaration
Did not meet Thresholds of Damage



State Declaration

- ▶ Provides access to other resources:
MDOT, MDEQ, Corp of Engineers,
National Guard, etc.
- ▶ National Guard Mobilized, Saturday July 16th
- ▶ Governor Snyder toured disaster area
Monday July 18th
- ▶ Emergency Relief Funding Options



Emergency Relief Funding Options

▶ Emergency Relief Funds – FHWA

- 1) Minimum \$700,000 threshold in damages per event
- 2) Site damage < \$5,000
- 3) Federal Aid Eligible Roads Only – No Local Roads
- 4) 100% Emergency Repairs – 80%/20% Permanent Repairs.
- 5) Structure sizing based on pre-event or regulatory requirements OR “local standard guidelines”

▶ ERFO Funds – Emergency Relief on Federally Owned Road

- 1) Administered by the BIA (Bureau of Indian Affairs)
- 2) Minimum \$700,000 threshold in damage per event
- 3) Site damage < \$5,000
- 4) Primary and Local Roads – but only on IRR Inventory (Indian Reservation Roads)
- 5) 100% reimbursable for both Emergency Permanent Repairs
- 6) Structure sizing based on pre-event or regulatory requirements OR “local standard guidelines”

Emergency Relief Funding Options

▶ FEMA

- 1) Requires Presidential Disaster Declaration
- 2) Threshold Limits – Extremely High \$13 million plus for event
- 3) For damage where no other funding sources are available.
- 4) 100% reimbursable on Emergency repairs
- 5) 80%/20% cost share on Permanent repairs

▶ Other Funding Sources

- 1) Township funded
- 2) County funds
- 3) SIB Loan – State Infrastructure Bank Loan
- 4) Special Appropriations – Legislature

Detailed Damage Inspection Report (DDIR)

FHWA Form 1547

<div><div></div><div>U.S. Department of Transportation Federal Highway Administration</div></div>		DETAILED DAMAGE INSPECTION REPORT (Title 23, Federal-aid Highways)				Report Number			
		Location (Name of Road and Milepost)				Sheet _____ of _____			
Description of Damage						FHWA Disaster Number			
						Inspection Date			
						Federal-aid Route Number			
						State _____ County _____			
Cost Estimate									
Emergency Repair	Description of Work to Date (Equipment, Labor, and Materials)				Unit	Unit Price	Quantity	Cost	
								Completed	Remaining
Method						Subtotal			
<input type="checkbox"/> Local Forces <input type="checkbox"/> State Forces <input type="checkbox"/> Contract						PE/CE			
						Emergency Repair Total			
Permanent Restoration									
Method						Subtotal			
<input type="checkbox"/> Local Forces <input type="checkbox"/> State Forces <input type="checkbox"/> Contract						PE/CE			
						Right-of-Way			
						Perm. Repair Totals			
Environmental Assessment Recommendation									
<input type="checkbox"/> Categorical Exclusion <input type="checkbox"/> EA/EIS				Estimated Total					
Recommendation				FHWA Engineer				Date	
<input type="checkbox"/> Eligible <input type="checkbox"/> Ineligible									
Concurrence				State Engineer				Date	
<input type="checkbox"/> Yes <input type="checkbox"/> No									
Concurrence				Local Agency Representative				Date	
<input type="checkbox"/> Yes <input type="checkbox"/> No									

Local Agency Role

- ▶ Identify Damaged Sites
 - ▶ Complete Emergency Repairs
 - ▶ Coordinate with MDOT
 - ▶ Participate on detailed Damage Inspection Teams
 - ▶ Complete Permanent Restoration (when authorized)
- 

Emergency Relief – FHWA

Pay 80% of Construction of Federal Aid Eligible Roads

	Lake Road Phase & Number of Sites	ER Funding (80%)	Local Match (20%)	Project Total
1	Phase I – Lake Road (10 sites)	\$2,011,377	\$ 502,845	\$2,514,222
2	Phase II – Lake Road (10 sites)	\$1,112,644	\$278,161	\$1,390,805
3	Design and Construction Engineering (Phase I)		\$301,700	\$ 301,700
4	Design and Construction Engineering (Phase II)		\$166,900	\$ 166,900
	<u>Totals:</u>	<u>\$3,124,021</u>	<u>\$1,249,606</u>	<u>\$4,382,627</u>

Design Phase (ER) Lake Road

▶ Consultants

- Topo Survey, Drainage Areas, Concept Designs
- Coleman Engineering (9 sites)
- AECOM - Con Span Structure

▶ Regulatory Agencies

– Get in contact immediately

- MDEQ – Site Reviews
- Corps of Engineers – Shoreline

▶ MDOT

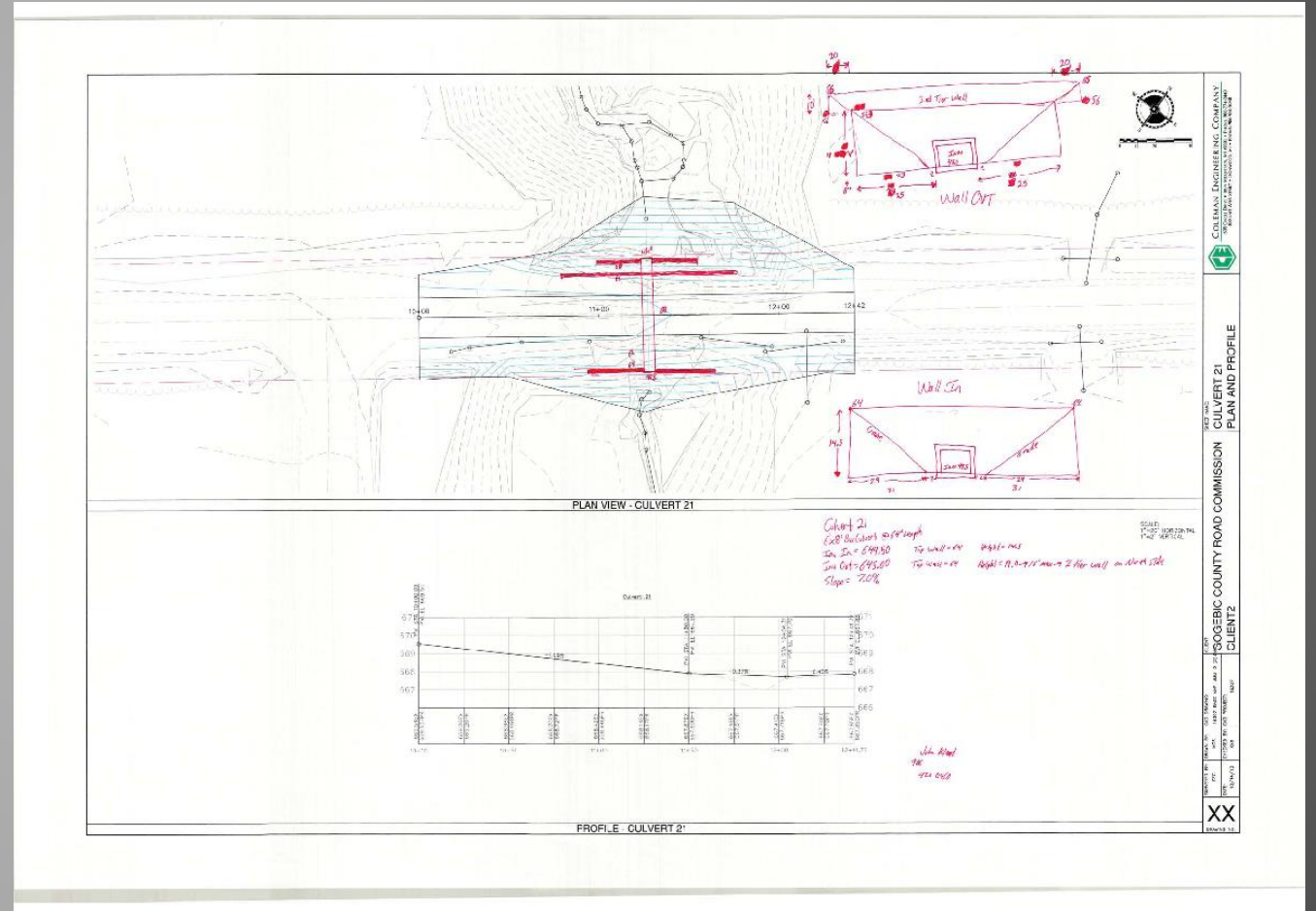
- Weekly Status Meetings – Sometimes twice a week
- Continuous GI Review

▶ FHWA

- Oversee project development

▶ Material Suppliers

- Preliminary estimates on rough material costs
- Do they have capacity to handle work – late fall



Design Pitfalls

▶ ROW – 66 feet only

- Proposed culverts exceeded our limits
- Phase I required 32 TAKES and Grading Easements
- Utilized MDOT resources for Property Appraisals
- Approximately one month to obtain all easements and property acquisitions

▶ MDEQ

- Site Visits and Permitting
- Bankfull Widths and sizing (100 yr Storm Event) Per GCRC Policy
- Hydraulics on Steep Grades (6% to 9%)
- Once submitted permit applications into MI Waters – Fast turn around. Within 10 days.

▶ Corp of Engineers

- “Big Fill” – Lake Superior part of Lake Road
- Required Permitting for sheet piling
- Once submitted – Fast turn around. Within 10 days

Design Pitfalls

▶ FHWA – Section 4(f) properties – “Big Fill site”

- ✓ Public Parks, Recreation Areas, and Wildlife and Waterfowl Refuges
- ✓ Historic Sites
- ✓ Archeological Resources
- ✓ Tribal Lands and Indian Reservations
- ❑ **FORGET IT !!!! – Change design**

▶ MDOT

- Normal Timeline for Bid Letting – Too long (Winter Approaching)
- Due to extreme circumstances – MDOT & FHWA approved local bid letting
- Invitation only Bid (Prequalified contractors only)
- Bid Letting Time Frame – 7 days only

Design Pitfalls

▶ FHWA – ER Program Funding

- \$100 million per year
- Already gone – no funding available for 2016 and possibly 2017!!
- Applied for SIB Loan to Bridge Funding Gap

▶ Gogebic CRC approved for SIB Loan

- \$3,431,500
- Provides cash flow to repair damaged roads when funding or reserves are not available.
- Partial bridge loan for Emergency Relief Funding
- Funds GCRC local match (20%) plus Engineering Services
- Repayment of SIB Loan over a 10 year period.

SIB Loan Approval

Bridge the Funding Gap

- ▶ Gogebic CRC approved for SIB Loan
 - \$3,431,500
 - State Infrastructure Bank Loan Program
- ▶ Provides cash flow to repair damaged roads when funding or reserves are not available.
- ▶ Partial bridge loan for Emergency Relief Funding
- ▶ Funds GCRC local match (20%) plus Engineering Services
- ▶ Repayment of SIB Loan over a 10 year period.



Bid Letting

▶ 7 day advertisement

- Emailed to selected contractors on September 15th
- Bids Opening September 22nd
- Phase I Engineers Estimate: \$2,516,859

▶ Bid Opening

- Five Bids Received
- Low Bid – MJO Contracting, Hancock (\$2,097,797) – 17% under estimate
- Second low bid: \$2,104,078 (\$6,281) difference
- GCRC Board approval on September 23rd
- MDOT reviewed bids (UBR) and concurred with low bid on September 26th
- Precon Meeting held September 28th
- Notice to Proceed – Progress Schedule September 30th

Phase I Construction Photos



Culvert #17



Culvert #17 temporary access lane

Phase I Construction Photos



Culvert #18



Culvert #18 Inlet

Phase I Construction Photos



Culvert #21 Wingwalls



Culvert #21 Backfill

Phase I Construction Photos



Culvert #27 Pipe Delivery



Tight Construction Sites

Phase I Construction Photos



Culvert #27 Pipe Installation



Culvert #27 Headwall

Phase I Construction Photos



Culvert #27 Outlet



Culvert #27

Phase I Construction Photos



Culvert #13 Concrete Pump Truck



Pouring Sloped Channel

Phase I Construction Photos



Foundation turned into rock cliffs



Culvert #13 Con Span Sections

Phase I Construction Photos



Setting Con Span



Culvert #13

Phase I Construction Photos



Project set up for Night Work



Retaining Wall Sections

Phase I Construction Photos



Inlet of Culvert 13 – Flink Creek



Outlet – Flink Creek

Summary

- ▶ Storm event happened on July 11th
- ▶ Began Emergency repairs – Completed by July 30th
- ▶ All residents had access by July 21st
- ▶ DDIR and Design work being completed at same time
- ▶ Permitting, Property Acquisition and Design completed by September 10th

Summary

- ▶ Project Bid Letting – 7 days (Bid Opening on September 22nd)
- ▶ GCRC approval and MDOT concurrence on September 26th
- ▶ Contractor began work on October 1st
- ▶ Phase I of Construction – Substantially completed by November 20th