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)
July 11, 2016 FLOODING EVENT

- Over 12” of Rainfall Occurred Within 4 Hours
- Storm Exceeded the “1,000 Year Storm Event”
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 Damages (Continued)
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)
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.)
- Areal 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.

July 12th – The Day After
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
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. (tract emergency repairs)

Preliminary Cost Estimates
- Costs estimates for each site
- Emergency repair costs
- Permanent repair costs (Ball Park Figures)
Locations of Damages
Locations of Damages
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
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

<table>
<thead>
<tr>
<th>Lake Road Phase &amp; Number of Sites</th>
<th>ER Funding (80%)</th>
<th>Local Match (20%)</th>
<th>Project Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Phase I – Lake Road (10 sites)</td>
<td>$2,011,377</td>
<td>$502,845</td>
<td>$2,514,222</td>
</tr>
<tr>
<td>2 Phase II – Lake Road (10 sites)</td>
<td>$1,112,644</td>
<td>$278,161</td>
<td>$1,390,805</td>
</tr>
<tr>
<td>3 Design and Construction Engineering (Phase I)</td>
<td></td>
<td>$301,700</td>
<td>$301,700</td>
</tr>
<tr>
<td>4 Design and Construction Engineering (Phase II)</td>
<td></td>
<td>$166,900</td>
<td>$166,900</td>
</tr>
<tr>
<td><strong>Totals:</strong></td>
<td><strong>$3,124,021</strong></td>
<td><strong>$1,249,606</strong></td>
<td><strong>$4,382,627</strong></td>
</tr>
</tbody>
</table>
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 Phase (ER) Lake Road
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.
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
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 22\textsuperscript{nd})
- GCRC approval and MDOT concurrence on September 26\textsuperscript{th}
- Contractor began work on October 1\textsuperscript{st}
- Phase I of Construction – Substantially completed by November 20\textsuperscript{th}