A Lesson Plan for Flood Mitigation
The Gurnee Grade School vs. the Des Plaines River
The Transformation of a Community Liability into a Community Asset

By Michael Warner, PE, CFM and Christine Gaynes, CFM
Project Components

1. History and Flooding
2. Flood Response
3. Project Partners
4. Funding
5. Planning and Design
6. Final Steps
The Gurnee Christian Church was built in 1878 on Kilbourne Road. This view of the church is dated 1893. Notice the balloon from the Chicago Columbian Exposition seen above the trees. The Gurnee Grade School can be seen to the right of the church.
Addition added to original School in 1954
1954 Cornerstone was saved
Flood of 1960
An exterior view of Gurnee Grade School in 1964 shows a new addition to the left of where the 1893 school once was.
The Des Plaines River Floodway was one of the first designated floodways in Illinois
USGS Stream Gage at Gurnee

Flood Stage At Gurnee Gage = 7.0 feet
Relocated 5th Grade Classroom in 1986

The lower level, former customer service center in the Wieboldt department store at Lakehurst Mall in Waukegan, has been transformed into the fifth grade classroom for Mrs. Jean Bowie, teacher at the Gurnee Grade School.

News-Sun Photo by Thomas Delany Jr.
"WE MET THE CHALLENGE!"

GURNEE FLOOD

2004
2007 Flooding
Kilbourne Road was completely submerged
2013 Flooding
Flood Response

SMC's Role

Village of Gurnee
National Incident Management System (NIMS) Structure

- Comprehensive, national approach to incident management
- Standardizes incident management regardless of cause, size, location, or complexity
- Applicable at all jurisdictional levels and across functional disciplines
NIMS Structure

Five primary phases should be followed in sequence to ensure a comprehensive IAP:
1. Understand the situation.
2. Establish incident objectives and strategy.
3. Develop the plan.
4. Prepare and disseminate the plan.
5. Execute, evaluate and revise the plan.

Responsibilities

- **Incident Commander**
  - Develops incident objectives and approves resource orders and demobilization.

- **Operations Section**
  - Identifies, assigns and supervises the resources needed to accomplish the incident objectives.

- **Planning Section**
  - Tracks resources and identifies resource shortages.

- **Logistics Section**
  - Orders resources.

- **Finance/Admin Section**
  - Procures and pays for the resources. Reports costs.
Daily Flood Briefing with Local Partners
Latest observed value: 11.06 ft at 9:30 AM CDT 19-Apr-2013. Flood Stage is 7 ft

NOTE: River forecasts for this location take into account past precipitation and the precipitation amounts expected approximately 24 hours into the future from the forecast issuance time.

NOTE: Forecasts for the Des Plaines River near Gurnee are issued as needed during times of high water, but
Lake County Emergency Operation Center Activation
Inundation Mapping
SMC's Flood Response Structure

Response Team
- Flood Manager/Operations Manager
- Public Information Coordinator
- Technical Coordinator
- Field Coordinator
- Damaged Properties Coordinator
- Intake Staff
- Field Staff

Flood Mitigation
- Identify hardest hit areas
- Streamline Field Data
- Coordinate with local units of government
- Identify availability of mitigation funds
- Coordinate with IEMA
- Submit mitigation application

Damage Assessments
- Coordinate with local municipalities
- Document damages to structures
- Tabulate data for Illinois Emergency Management Agency
- Field Verification with IEMA and FEMA

Field Team
- Collect Field Data
- Document Damages
- Report Findings to Field Coordinator
- Data recorded on GIS layers

Threat Alert Level
- National Weather Service Flood or Flash Flood Watch
- National Weather Service Flash Flood Warning
- Moderate Flood Warning
- Significant Flooding Reported
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<table>
<thead>
<tr>
<th>Street Number</th>
<th>Street Name</th>
<th>Municipality</th>
<th>PIN</th>
<th>Structure Type per FEMA Elevation Certificate</th>
<th>Garage</th>
<th>Property Category/Use</th>
<th>Sanitary</th>
<th>Septic</th>
<th>Well</th>
<th>Municipal Water</th>
<th>Damage Level, per EMA Protocol</th>
<th>Height of Water in Structure &amp; Floor Level</th>
<th>Comments</th>
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Flood Mitigation

- Identify hardest hit areas
- Summarize Field Data
- Coordinate with local units of government
- Identify availability of mitigation funds
  - Coordinate with IEMA
- Submit mitigation application
SMC's Role

Village of Gurnee
Funding

- Illinois Department of Commerce and Economic Opportunity: 71%
- Illinois Emergency Management Agency: 19%
- Gurnee District #56/Gurnee Park District: 10%
Lake County
All Natural Hazards Mitigation Plan
Lake County, Illinois

June 2012

Developed by:
Lake County
Lake Planning Committee

Plan coordinated by:
Lake County Stormwater Management Commission
and the
Lake County Emergency Management Agency

Planning assistance provided by:

Gurnee Grade School listed on Repetitive Loss list as a high mitigation priority
Sandbagging costs
Clean-up costs
Benefit-Cost Ratio = 3.57
Mitigation Applications submitted

Illinois Emergency Management Agency

Illinois Department of Commerce and Economic Opportunity
Illinois Department of Commerce and Economic Opportunity

71%

Gurnee District #56/Gurnee Park District 10%
Illinois Emergency Management Agency 19%
$2.8 million provided

- Environmental Survey of the site
- Purchase of the school
- Underground tank removal
- Contaminated soil testing
- Contaminated soil removal and disposal
Illinois Emergency Management Agency

19%
$750,000 provided

- Utility Disconnection
- Asbestos Abatement
- Demolition
- Site Grading
Gurnee District #56/Gurnee Park District

10%

Emergency Management Agency
$400,000 provided

- Site Design
- Trail System
- Permeable paver parking lot
- Rain Garden
- Commemorative Kiosk
- Soccer Fields
Planning/Design

Project Planning
- Environmental survey for asbestos & UST
- Long-term ownership of property
- Appropriate open space use
- Adjacency restrictions
- Parking District removals
- Site design

Demolition
- Remove Building
- Recycle Materials
- Clean Site

Pre-Demolition
- Asbestos Abatement
- Media Event
- Tree Clearing

Site Grading
- Filling foundation hole
- Soil lifts and compaction
- Install soccer field drain
Project Planning

- Environmental survey for asbestos & UST
- Long-term ownership of property
- Appropriate open space use
- Floodway restrictions
- Park District amenities
- Site design
Pre-Demolition

- Asbestos Abatement
- Media Event
- Tree Clearing
Interior
1,300 feet of transite pipe was removed

1,100 feet was bid
Asbestos Abatement

Media Event

Tree Clearing
Superintendent John Hutton presented with cornerstone
Officials kicked off the demolition
Demolition begins
Bricks were given away
Demolition

✅ Remove Building

✅ Recycle Materials

✅ Clean Site
Tear it down!
The bus barn
Remove Building
Recycle Materials
Clean Site
Asphalt was recycled
Metals were recycled
Concrete was reused
Concrete was crushed
CA-6 gradation was achieved
Recycle Material

Clean Site
Materials were hauled off site
Site Grading

- Filling foundation hole
- Soil lifts and compaction
- Install soccer field drain
Sandbags from April event
Site Grading

- Filling foundation hole
- Soil lifts and compaction
- Install soccer field drain
Nyoplast Basin with grate
Site is ready for winter
Final Steps
Site Grading

ATHLETIC FIELDS
Trail Installation
Rain Garden Installation
Hydroseed
4" PERFORATED UNDERDRAIN, TYP. • 1.0% MIN. CONNECT TO EXISTING 15" SEWER WITH "INSERTA TEE" OR APPROVED EQUAL.

PAINT PAVEMENT MARKING, 4" YELLOW, TYP.

DEPRESSED BARRIER CURB, TYPE B.6, TYP.

DEPRESSED CURB & GUTTER, TYPE B.6-12, TYP.

4" PERFORATED UNDERDRAIN, TYP. • 1.0% MIN. CONNECT TO INLET

INL. TY. B WITH TY. 1 F & O.L. CONSTRUCT OVER EX. 15" ST. SWR R=862.00 t=860.00 (MAX) l=858.47 (C&W)
Enjoy this new community asset
Thank You!

- mwarner@lakecountyil.gov
- cgaynes@lakecountyil.gov

Questions