Lake County Illinois
July 2017 Flood
Modern Technological Systems for
Flood Response Operations

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Engineering Technician
EMERGENCY ALERT

FLOOD WARNING FOR ALL OF LAKE COUNTY

EXPECT SEVERE THUNDERSTORMS & INTENSE HEAVY RAINS
The Disaster Declaration Process

1. Disaster Occurs. Local Response. Local Proclamations. Request to State.
2. Governor’s Proclamation. Response Continues.
3. Initial Reports compiled locally. IA and PA reported through County.
4. Joint PDA with FEMA / IEMA / Local to verify Initial Reports (IA & PA)
5. FEMA Recommendation to President, based on PDA Findings
6. Federal Disaster Declaration. Specific programs based on declaration.
Lake County Illinois
July 2017 Flood
Cloud-Based
Virtual Emergency Operations Center
The Lake County Storm Water Management Commission has moved to Red Alert Flood Response Level due to the moderate flooding that is occurring in Lake County. You are requested to check in to the July 12, 2017 Flash Flood VEOCI coordination room. Please report all flooding incidents in VEOCI. A flood briefing is sent by (me).

Subject: July 12, 2017 Flash Flood Event - VEOCI Check-in Request
<table>
<thead>
<tr>
<th>Task ID</th>
<th>Task Description</th>
<th>Progress</th>
<th>Assigned To</th>
<th>Due Date</th>
<th>Modified By</th>
<th>Creator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1344</td>
<td>Prepare request for CERT to assist with DA</td>
<td>Complete</td>
<td>(Multiple Assigned) Mike Jackson</td>
<td>No Due Date</td>
<td>Scott Robertson</td>
<td>Kent McKenzie</td>
</tr>
<tr>
<td>1338</td>
<td>Compile Initial Public Assistance (PA) data and input into reporting</td>
<td>Complete</td>
<td>Sharon Osterby</td>
<td>24-Jul-2017</td>
<td>Sharon Osterby</td>
<td>Kurt Woolford</td>
</tr>
<tr>
<td>1364</td>
<td>Pumping in Long Grove</td>
<td>Acknowledged</td>
<td>Mike Grinnell</td>
<td>No Due Date</td>
<td>Mike Grinnell</td>
<td>Kent McKenzie</td>
</tr>
<tr>
<td>1363</td>
<td>Kamoer Drive Drone Flyover, Port Barrington</td>
<td>In Progress</td>
<td>(Multiple Assigned) Kelcey Traynoff</td>
<td>25-Jul-2017</td>
<td>Kelcey Traynoff</td>
<td>Kurt Woolford</td>
</tr>
<tr>
<td>1362</td>
<td>Williams Park Drone Flyover</td>
<td>Complete</td>
<td>(Multiple Assigned) Kelcey Traynoff</td>
<td>25-Jul-2017</td>
<td>Kelcey Traynoff</td>
<td>Kurt Woolford</td>
</tr>
<tr>
<td>1361</td>
<td>Call Back Wauconda Township Highway Commissioner. 847-951-9891</td>
<td>Complete</td>
<td>Kent McKenzie</td>
<td>No Due Date</td>
<td>Kent McKenzie</td>
<td>Alex Carr</td>
</tr>
<tr>
<td>1360</td>
<td>Bar in Third Lake in need of a pump(s)</td>
<td>Complete</td>
<td>Mike Grinnell</td>
<td>No Due Date</td>
<td>Mike Grinnell</td>
<td>Dan Eder</td>
</tr>
<tr>
<td>1356</td>
<td>Needs Housing</td>
<td>Acknowledged</td>
<td>(Multiple Assigned) Amy McEwan</td>
<td>22-Jul-2017</td>
<td>Amy McEwan</td>
<td>Mike Belmonde</td>
</tr>
<tr>
<td>1351</td>
<td>Grandwood Park Lake Dam Inspection</td>
<td>In Progress</td>
<td>Mike Warner</td>
<td>21-Jul-2017</td>
<td>Mike Warner</td>
<td>Kurt Woolford</td>
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<tr>
<td>1345</td>
<td>Assess floating bog obstruction at the upstream side (south) of Rout</td>
<td>Complete</td>
<td>(Multiple Assigned) Mike Warner</td>
<td>20-Jul-2017</td>
<td>Mike Warner</td>
<td>Kurt Woolford</td>
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<tr>
<td>1348</td>
<td>Would either of you be able to talk with CBS 2 at 5 am, 5:30 am, 8:00</td>
<td>Complete</td>
<td>(Multiple Assigned) Mike Warner</td>
<td>No Due Date</td>
<td>Mike Warner</td>
<td>Alex Carr</td>
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<tr>
<td>1349</td>
<td>Request for additional Sandbags and Sand</td>
<td>Complete</td>
<td>Mike Grinnell</td>
<td>21-Jul-2017</td>
<td>Mike Grinnell</td>
<td>Kurt Woolford</td>
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<tr>
<td>1355</td>
<td>Bog Jam (spelled correctly) on Squaw Creek at Route 59 in Fox Lake</td>
<td>Complete</td>
<td>(Multiple Assigned) Mike Grinnell</td>
<td>21-Jul-2017</td>
<td>Mike Grinnell</td>
<td>Mike Belmonde</td>
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<tr>
<td>1354</td>
<td>Debris Clean Up Resource</td>
<td>Acknowledged</td>
<td>Mike Grinnell</td>
<td>21-Jul-2017</td>
<td>Mike Grinnell</td>
<td>Mike Belmonde</td>
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<tr>
<td>1353</td>
<td>Route 120 Closed</td>
<td>Complete</td>
<td>Mike Grinnell</td>
<td>No Due Date</td>
<td>Mike Grinnell</td>
<td>Mike Belmonde</td>
</tr>
<tr>
<td>1352</td>
<td>Potentially compromised railroad</td>
<td>Complete</td>
<td>Mike Grinnell</td>
<td>No Due Date</td>
<td>Mike Grinnell</td>
<td>Mike Belmonde</td>
</tr>
<tr>
<td>1360</td>
<td>SMC Field Team 3 deploying for IDA assistance - RLB/RLB - per PB...</td>
<td>Complete</td>
<td>(Multiple Assigned) Glenn Westman</td>
<td>20-Jul-2017</td>
<td>Glenn Westman</td>
<td>Glenn Westman</td>
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<tr>
<td>1367</td>
<td>Compile list of affected properties in Fox Lake incorporated limits (be...</td>
<td>Complete</td>
<td>Jeff Laramy</td>
<td>No Due Date</td>
<td>Jeff Laramy</td>
<td>Kurt Woolford</td>
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<tr>
<td>1346</td>
<td>Call reporter regarding SMC shovelies</td>
<td>Complete</td>
<td>(Multiple Assigned) Glenn Westman</td>
<td>20-Jul-2017</td>
<td>Glenn Westman</td>
<td>Kurt Woolford</td>
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<tr>
<td>1357</td>
<td>Deliver 1 yards sand and 500 sand bags, Brickyard Condos 3061 Be...</td>
<td>Complete</td>
<td>Jeff Laramy</td>
<td>No Due Date</td>
<td>Jeff Laramy</td>
<td>Kurt Woolford</td>
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<tr>
<td>1347</td>
<td>Debris Clean Up Resource 2</td>
<td>Complete</td>
<td>Mike Dacey</td>
<td>16-Jul-2017</td>
<td>Mike Dacey</td>
<td>Rob Scaramella</td>
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<tr>
<td>1346</td>
<td>Drone flights review &amp; correlation for IDA</td>
<td>Complete</td>
<td>Mike Dacey</td>
<td>16-Jul-2017</td>
<td>Mike Dacey</td>
<td>Rob Scaramella</td>
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<tr>
<td>1345</td>
<td>Request for Clean Up Kits</td>
<td>Complete</td>
<td>Jeff Laramy</td>
<td>No Due Date</td>
<td>Jeff Laramy</td>
<td>Kurt Woolford</td>
</tr>
</tbody>
</table>
Partner Resource Dashboard

- Damage Assessment Forms / Instructions
- Inundation Maps
- Proclamations and Policy Documents

EM Partner Information Submission

SAVE your form with your township or community name in front.

EMAIL form(s) as attachments to room 43200@room.veoci.com
## Public Resource Dashboard

- Damage Assessment Forms / Instructions
- Inundation Maps
- Resource Links

### Fox / Chain Flooding Maps
- Fox River - Far North Forecast
- Chain Overall Forecast - 7/15/17
- Chain - North Forecast - 7/15/17
- Chain - N Central Fct - 7/15/17
- Chain - S Central Fct - 7/15/17
- Chain - South Forecast - 7/15/17
- Fox River - South Forecast

### Des Plaines Flooding Maps
- DPR Inundation Maps - IDNR
- DPR Impacted Structures - LCSMC

### Red Cross Reception Centers
These Red Cross centers are open today, July 17, 2017. The need for having reception centers open will be assessed daily, and this list may change. Please check back here for updates.

- Magee Middle School
  500 N. Cedar Lake Road
  Round Lake

- Jefferson Middle School
  600 South Lewis Avenue
  Waukegan

Red Cross Flood Hotline: 847-220-7495

### Links
- Alert Lake County
- Flood Safety Tips
- Local Road Closures
- IDNR - Fox Closure - South
- IDNR - Fox Closure - North
- Lake Co Disaster Proclamation
SELF-REPORT FORMS - residents could enter their location, contact information, damage description, amount of water, help needed? insured?
Lake County Illinois
July 2017 Flood
Rainfall and River Analyses
The precipitation output files have changed formats.

As of approximately 8:15 pm EDT, on June 27, the precipitation file formats were updated as discussed in this Service Change Notification.

Last Update: 09/11/2017 1343 GMT

Network Common Data File

Observed Rainfall (Radar) 3m/5km

General Information

The precipitation data are quality-controlled, multi-sensor (radar and rain gauge) precipitation estimates obtained from National Weather Service (NWS) River Forecast Centers (RFCs) and mosaicked by National Centers for Environmental Prediction (NCEP). The original data from NCEP is in GRI (Grid-based Regularly-distributed Information in Binary format) format (files pre-March 22nd, 2017) are in XHRQ format and projected in the Hydrologic Rainfall Analysis Project (HRAP) grid coordinate system, a polar stereographic projection true at 00°N / 105°W.

Use the form above to download these files. To automate or download multiple datasets, you can download a program called wget. Due to increased web security, the anonymous FTP server is no longer available.

If you wish to use wget (see above) or to manually download the data see:

- QPE data derived from NCEP Stage IV Data post-March 22nd, 2017
- QPE data derived from Stage III analysis pre-March 22nd, 2017

If you have any questions or problems, please contact AHPS.Precip@noaa.gov

Metadata

The following links provide more information about the observed precipitation, normal precipitation, and derived precipitation products:

- Observed precipitation
- Normal precipitation
- Departure from normal precipitation
- Percent of normal precipitation
Rain Gauge Program

- 8 online SMC Gauges
- 45 other online gauges
- 3 USGS
- 36 CoCoRaHS
- 6 COOP

- National Weather Service forecast and forecast discussion
- Storm Prediction Center (SPC)
- Weather Prediction Center (WPC)
- Weather Underground Wundermap
- Advanced Hydrologic Prediction Service (AHPS) hydrographs and river forecasts for:
  - Fox River at New Munster, Fox River at Algonquin Dam Tailwater; Des Plaines River at Russell, Des Plaines River at Gurnee and Des Plaines River at Lincolnshire
  - USGS river gage information for Fox Lake near Lake Villa, North Branch Chicago River and the Skokie River
- Fox River and Chain of Lakes update from the IDNR/OWR
- Coordination with the National Weather Service Forecasters on an as-needed basis
- Rain gauges
  - SMC rain gauges
  - USGS rain gauges
- National Weather Service Co-Op sites
- National Weather Service CoCoRaHS
- National Weather Service – River Forecast Center Radar Estimated Rainfall distribution graphics
- Any other source of reliable information that could be identified
Lake County Illinois
July 2017 Flood
Inundation Maps
Chain of Lakes Inundation

- Most of area is a level pool
- "Canned" inundation layers at 0.5' increments
- Intersect Lake County building polygons with inundation layers (Potentially Affected Structures)
- Use parcel layer to come up with Potentially Affected Properties
- Surveyed structure database with elevations
Lower Fox Inundation

- Develop profile for the system based on surveyed high water marks at various locations
- Intersect Lake County building polygons with inundation layers (Potentially Affected Structures)
- Use parcel layer to come up with Potentially Affected Properties
- Surveyed structure database with elevations
Des Plaines Inundation

- IDNR – Office of Water Resources Des Plaines River Inundation Model
- Intersect Lake County building polygons with inundation layers (Potentially Affected Structures)
- Use parcel layer to come up with Potentially Affected Properties
- Surveyed structure database with elevations
July 2017 Flood Event
Potentially Affected Structures
based on Inundation Layers

Approx 6000 Potentially Affected Structures

Approx 1700 Potentially Affected Structures in the Des Plaines Watershed

Approx 4300 Potentially Affected Structures in the Fox Watershed

No Inundation Layers for the North Branch or Lake Michigan Watersheds

Other Flooding Locations?

Legend:
- Lake County Boundary
- Approximate Inundation
- Potentially Affected Structures
July 2017 Flood Event
Potentially Affected Structures
based on Inundation Layers
and Veoci Self Reporting Tool

Approx 6000 Potentially Affected Structures

Approx 1700 Potentially Affected Structures
in the Des Plaines Watershed

Approx 4300 Potentially Affected Structures
in the Fox Watershed

3568 Veoci Self Reports
335 reports of water in 1st Floor

2767 Addresses/Properties submitted to IEMA
Lake County Illinois
July 2017 Flood
Field Tools
Good Old Fashion Paper Maps
Over 200 paper map products produced to assist field crews, decision makers, and local officials
Tablets, Smart Phones, Laptops
ArcGIS Explorer App
Flood Event Viewer
Public Web Mapping Application

2017 Flood Event Viewer
Find aerial photographs at various geographic locations along flooded areas. Click the points to view a thumbnail, and click the thumbnail to view an enlarged image. For more information and the latest updates, please visit the 2017 Flood Information page.
Lake County SMC sUAS Program

NEIL SCHINDELAR

PC: DJI
What is an sUAS?

SMC Policy and FAA Regulations

Uses and efficiencies provided by sUAS’s

Imagery and Data Results
What is an sUAS?

- Small Unmanned Aerial System
- Synonymous with UAV (Unmanned Aerial Vehicle) and Drone
- Unmanned and Under 55 pounds
Selecting a drone!

Features:
- GPS Assistance
- Adjustable Camera
- 4K Video
- High megapixel photos
- Collision Detection

Usability:
- Flight automation
- Apps (Pix4D, Litchi, AutoPilot)
- tablet vs built-in controller
SMC sUAS Policy and FAA Regulations

- Remote Pilot Certification is required for all commercial/government use
- Policy is closely based off the FAA Part 107 Regulations
  - Cannot fly over people
  - Cannot fly higher than 400 feet, unless within 400 feet of a structure
  - Cannot fly over private property without permission (except in an emergency, in which we will not fly low enough to see into buildings)
  - MUST fly within Visual Line of Sight (VLOS) and follow Visual Flight Rules (VFR)
  - Cannot fly within 5 miles of an airport with controlled airspace without prior authorization from the FAA or the tower’s Air Traffic Controller (ATC)
- **FAA sUAS Airspace Map**: LAANC System (Low Altitude Authorization Notification Capability)
Uses and Efficiencies

- Regulatory Site Inspections
- Project Progress Video
- Generate site-specific Topography (Orthos, DTM, DSM, contours)
- Building/Facility inspections (roofs, bridges, towers)
- Indoor and Underground Applications
- Disaster/Emergency Response — Flood Response!
- Dirty Jobs Video
FLOOD RESPONSE - DRONE FLIGHT STATS

35 Total Flights
3 Total Hours
20 Total Miles
The flood inundation maps represent potential areas that could be flooded due to river rises. Although the flood-inundation maps represent the boundaries of inundated areas with a distinct line, some uncertainty is associated with these maps. The flood boundaries shown were estimated based on a given gage height (water-surface elevation) and existing county-wide topography. Additional areas may be flooded due to local heavy rain amounts or other hydrologic and/or hydraulic anomalies. The accuracy of the floodwater extent portrayed on these maps also varies with the accuracy of the digital elevation model used to simulate the land surface.

Inundated areas shown should not be used for navigation, regulatory, permitting, or other legal purposes. These maps are being provided on an as-is basis for a quick reference, emergency planning tool but SMC assumes no legal liability or responsibility resulting from the use of this information.
Questions?
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