

An aerial photograph of a flooded residential area. In the foreground, a large, two-story brick house with a dark roof and multiple windows is partially submerged in brown floodwater. The water reaches up to the first floor of the house. In the background, other houses and trees are also surrounded by floodwater. The sky is overcast and grey.

# Lake County All-Natural Hazards Mitigation Plan

Lake County, Illinois

## 2018 Annual Evaluation Report

of 2017 All-Natural Hazard Mitigation Plan

# Lake County, Illinois

## 2017-18 Annual Evaluation Report

### All-Natural Hazards Mitigation Plan

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#### Overview

The Lake County Hazard Mitigation Planning Committee (HMPC), Lake County departments and agencies, Lake County municipalities, and other stakeholders together conducted the update of the August 2017 Lake County All-Natural Hazard Mitigation Plan (ANHMP). The HMPC has been in place since the development of the 2006 ANHMP and continues to meet annually. The Lake County Stormwater Management Commission (SMC) and Lake County Emergency Management Agency (LCEMA) coordinate the efforts of the HMPC.

This 2017 ANHMP is the second update of the 2006 ANHMP and assesses the natural hazards that affect Lake County, sets mitigation goals, considers mitigation efforts currently implemented, evaluates other mitigation strategies, and recommends the implementation of mitigation actions over the next five years. The mitigation actions undertaken by both the public and the private sectors aim to protect the people and assets of Lake County.

*Action Item 2: “Participation on the Hazard Mitigation Planning Committee and Plan Monitoring and Maintenance”* calls for the Lake County Hazard Mitigation Planning Committee (HMPC) to meet annually to evaluate and monitor progress on implementation of the ANHMP, and to organize for the next update of this ANHMP. The HMPC should submit the annual evaluation report to the County Board as an informational item.

The HMPC met on December 18, 2018 at the Lake County Central Permit Facility to develop this 2018 Annual Evaluation Report. This report is based on discussions at the meeting and information collected from the HMPC, Lake County departments and agencies, municipalities, and stakeholders. Appendix A to this report contains the agenda for the 2018 annual meeting.

# Lake County Natural Disaster Declarations *since 2017 Plan Development*

## July 2017 Storm and Flood Event

During a fourteen-hour period between July 11 and July 12, 2017, Lake County experienced rainfall amounts between 3.4 and 7.2 inches. This rainfall resulted in several different kinds of flooding countywide. Flash flooding and sewer backups began as the heavy rain overwhelmed stormwater infrastructure. River flooding began as early as July 12, 2017 along the Fox River and Chain O'Lakes in western Lake County. Rapid rises of several feet along the Des Plaines River led to widespread flooding of properties along the southern portion of that river, and slow rises of several feet on the Fox River and Chain O'Lakes impacted property owners throughout the region. Preliminary data indicates a record crest of the Fox River and a record crest of the Des Plaines River at the following locations:



The Lake County Emergency Operation Center and the Stormwater Management Commission Operation Center were activated on July 12 to monitor and respond to the flood. Lake County assisted our local communities as cities, villages and townships coordinated recovery efforts for flood victims. Flood response efforts persisted in localized areas throughout the week and into the following week. An estimated 9,553 structures were adversely affected by the storm events. The Lake County Board Chairman signed a disaster proclamation on July 13, as did several municipalities. About 353,000 sandbags were distributed through the Lake County Public Works department. More than a hundred pumps were collected and deployed to mitigate impacts to intersections, low lying buildings, sewer facilities, storage ponds, and other impacted locations. Many major roadways throughout the county were impacted by the rainfall and numerous road closures made travel difficult.



Near Route 132 and Old Grand Avenue in Gurnee, IL July 13, 2017

## Flood Event SMC Storm / Flood Summary

SMC analyzed the rainfall and flood stage data from select locations for the July 11 to 12<sup>th</sup>, 2017 storm/flood event. The goal was to provide an idea of the magnitude of the rainfall event and the subsequent flooding event. SMC decided the most appropriate way to achieve this goal was to estimate the return period, better known as the “Year” storm/flood. The goal was not to provide technical accuracy so the “year storm” and “year flood” were estimated using simple linear interpolation/extrapolation based on data from Appendix I in the Lake County Watershed Development Ordinance (WDO) which, in turn, is based on Illinois State Water Survey Bulletin 70. Rainfall data was taken from rain gages operated by the SMC, USGS and National Weather Service CoCoRaHS volunteers.

The peak storm consisted of three waves of thunderstorms over a 10-hour to 14-hour period (except the Lake Forest peak storm which only lasted four hours but dropped four inches of rain). The thunderstorms were travelling from northwest to southeast and the resulting heavy rainfall amounts observed followed the same general path. Below are the SMC estimated return periods for some municipalities that had observed rainfall amounts greater than five inches.

<b>Rainfall Return Frequency</b>	
<i>Location</i>	<i>Year Storm</i>
Gurnee	160
Lake Bluff	140
Lake Forest	70
Lake Villa	160
Libertyville	130
Lindenhurst	70
Mill Creek	40
Mundelein	50
Riverwoods	20
Wauconda	10
Waukegan	30

Rainfall over the previous weeks culminating in the heavy rains in Wisconsin, McHenry and Lake Counties contributed to both the flash flooding and longer term riverine flooding including, but not limited to, the Fox and Des Plaines Rivers and tributaries as well as along the North Branch of the Chicago River and Skokie River. SMC lead about ten storm/flood briefings with other County agencies to track observed and forecast rainfall as well as stream gages to track the extent of flooding. SMC estimated the flood return period on the Fox and Des Plaines Rivers by comparing the maximum observed crest at National Weather Service and USGS gaging locations to the Flood Insurance Study (FIS) flood profiles at those locations (SMC hopes to analyze additional locations as time allows). The “Year” flood was estimated by using linear interpolation between the flood profiles for the “10-year”, “50-year” and “100-year” regulatory flood profiles.

Please note that the “Year Storm” and the “Year Flood” are entirely different. The rainfall at any given point in a river’s watershed may contribute to the flood but does not cause an equivalent size flood. A “100-Year” rainstorm will not normally result in a “100-Year” flood.

<b>River</b>	<b>Year Flood</b>
Fox River at New Munster	105
Fox Lake near Lake Villa	54
Fox River at Algonquin Dam Tailwater	78
Des Plaines River at Russell	43
Des Plaines River at Gurnee	21
Des Plaines River at Lincolnshire	36

Once again, this information has been provided solely in attempt to allow people to gain a better understanding of the magnitude of the thunderstorm rainfall and subsequent riverine floods. More accurate and/or different methods may be utilized to obtain different return intervals.

## Status of Action Items

The Action Plan (Chapter 6) in the Lake County All-Natural Hazards Mitigation Plan contains 33 action items. These action items were taken from the hazard mitigation recommendations made in Chapter 3 through 5. The status of the implementation of the action items are summarized below.

### Action Item 1: Plan Adoption

Adoption of the *Lake County All-Natural Hazards Mitigation Plan* by resolution. See Table 1 for a list of communities and adoption dates.

Status: This Action Item was completed.

### Action Item 2: Participation on the Hazard Mitigation Planning Committee and Plan Monitoring and Maintenance

A Lake County Local Planning Committee (HMPC) meeting will be held at least once a year to evaluate and monitor progress on implementation of the ANHMP, and to organize for the next update of this ANHMP. An annual report should be submitted to the County Board by the HMPC as an information item.

Status: The HMPC met on December 18, 2018. This Action Item was completed.

### Action Item 3: Incorporate ANHMP into Other County and Municipal Plans

Lake County communities have a variety of plans and ordinances in place. Actions identified in this ANHMP should be incorporated into comprehensive, stormwater management, capital improvement, land-use and emergency management plans, zoning ordinances, building codes, and post-disaster mitigation policies and procedures. Each jurisdiction participating in this ANHMP will be responsible for reviewing their plans, ordinances and policies and, as appropriate, revising those documents.

Each community that has adopted this mitigation plan will take the following actions to facilitate the incorporation of mitigation actions into their plans and ordinances:

- Within one year of the adoption of the ANHMP by the community, the lead individual for each community (emergency manager, public works director, engineer or planner) will lead a local committee that will complete an evaluation of the Villages Plans, Codes and Ordinances to determine those that need to be modified to incorporate the action items of the ANHMP.
- When the plans, codes or ordinances are updated or modified for any purpose, a recommendation will be made to make the modifications noted in number 1 above.
- Next time the ANHMP is updated or modified, a review will be completed within one year of adoption to determine if any additional modifications must be made to local plans, codes, or ordinances.

Status: The Communities involved have incorporated suggestions from the ANHMP into their comprehensive emergency plans.

Communities include Bannockburn, Beach Park, Buffalo Grove, Fox Lake, Gurnee, Lake Barrington, Lake Bluff, Libertyville, Lincolnshire, Long Grove, Mundelein, North Chicago, and Volo

#### Action Item 4: Continued Implementation of the WDO and NFIP Requirements

Lake County and municipalities, whether certified or non-certified, should continue to fully implement and enforce the Lake County Watershed Development Ordinance (WDO) for all applicable developments.

The WDO incorporates the NFIP minimum standards, and while the PB&D administers the WDO for unincorporated Lake County, all NFIP municipalities are still ultimately responsible for ensuring that development within the regulatory floodplain meets the NFIP minimum standards.

Status:

- The County of Lake and 49 of the 52 communities have adopted amendments to the WDO effective October 13, 2015.
- The County of Lake and 49 of the 52 communities adopted the amended Appendix C of the WDO, which included a comprehensive list of all FIRMs for the county. In order for Lake County to remain in good standing with FEMA and their National Flood Insurance Program (NFIP), Lake County adopted revised maps effective February 17, 2016.

Communities Include Antioch, Bannockburn, Beach Park, Buffalo Grove, Deer Park, Deerfield, Fox River Grove, Grayslake, Green Oaks, Gurnee, Hainesville, Highland Park, Highwood, Indian Creek, Island Lake, Kildeer, Lake Barrington, Lake Bluff, Lake Forest, Lake Villa, Lake Zurich, Libertyville, Lincolnshire, Lindenhurst, Long Grove, Mettawa, Mundelein, North Barrington, North Chicago, Old Mill Creek, Park City, Port Barrington, Riverwoods, Round Lake, Round Lake Beach, Round Lake Heights, Round Lake Park, Third Lake, Tower Lakes, Vernon Hills, Volo, Wadsworth, Wauconda, Waukegan, Winthrop Harbor, and Zion.

#### Action Item 5: Improve Natural Hazards Public Information Efforts with focus on the Promotion of Flood Insurance and How People Can Protect Themselves and Their Property

Education regarding natural hazards that can impact Lake County should be provided to all Lake County property owners and residents. Many public information efforts have been implemented, but these efforts should be improved to reach people more effectively and to provide effective messages regarding life, health and safety and property protection. Public information and education efforts should focus on severe summer and winter storms, floods and tornadoes and materials should be developed specifically for Lake County and tailored to Lake County needs.

Status: Many communities involved have information posted on their respective websites. Less common alternatives include Facebook, email newsletters, and e-blasts.

Communities include Bannockburn, Barrington, Beach Park, Buffalo Grove, Deer Park, Deerfield, Fox Lake, Gurnee, Hawthorn Woods, Highland Park, Lake Barrington, Lake Bluff, Lincolnshire, Lindenhurst, Long Grove, Mundelein, North Chicago, Park City, Riverwoods, Round Lake, Round Lake Beach, Round Lake Park, Third Lake, Vernon Hills, Volo, Wadsworth, Wauconda, and Winthrop Harbor.

## Action Item 6: Identify Needs and Obtain Alternate Power Sources for Critical Facilities and Shelters

The July 2011 storms in Lake County highlighted the need for alternate power sources at critical facilities. The HMPC recognizes that FEMA mitigation funds are not available for this action item but recognizes the importance of all agencies and facility and shelter owners determining back-up power source needs and obtaining equipment and/or service.

Status: The Communities involved have backup generators at their critical facilities. Critical facilities include, but are not limited to, town halls and/or police stations. The village of Bannockburn has identified three critical facilities within the Village that need alternate power sources.

Communities include Bannockburn, Beach Park, Buffalo Grove, Deer Park, Deerfield, Gurnee, Hawthorn Woods, Highland Park, Lake Villa, Lake Zurich, Lincolnshire, Long Grove, Mundelein, North Chicago, Round Lake Heights, Round Lake Park, Vernon Hills, Volo, and Wadsworth.

## Action Item 7: Review of Critical Facilities and Implement of Appropriate Mitigation Measures

Critical facilities should be evaluated to determine their vulnerability to tornadoes, severe storms and floods. The availability of safe rooms and sheltering should be reviewed. Critical facilities have been mapped in the County's GIS. As the County further examines building footprints and floodplains as part of the stormwater management program, the review of critical facilities should be included. Approximately 20 Lake County critical facilities are in the floodplain, and other critical facilities are vulnerable to wind and severe storms. Where necessary, critical facilities should be mitigated and protected from identified natural hazards.

Status: Deer Park is repairing one of their village buildings to tolerate minor water infiltration. In 2018 Lincolnshire spent \$10,000 on preventive tree clearing for a power line that serves a critical sanitary lift station. The village of Long Grove made electrical improvements at their water treatment plant as well as investigated the possibility of having a generator at their village hall. Lastly, Volo begin repairs to their backup generators (located at their water treatment facility).

Communities include Deer Park, Lincolnshire, Long Grove, North Chicago, and Volo.

## Action Item 8: Improve Capacity of Drainage Systems and/or Provide Additional Storage of Flood Waters

When opportunities arise and when downstream areas are not adversely impacted (or mitigated), communities should strive to increase the capacity of drainage systems. Drainage improvements may include opening restrictive culverts or bridges, storm sewer improvements, etc. When appropriate and when opportunities are identified, the systems should be augmented with additional detention or retention to reduce runoff rates and runoff volumes.

Status: The Village of Barrington took the initiative to excavate a parcel of open land with intention of providing additional stormwater volume adjacent to a known localized flooding area.

The project also upsized an adjacent storm sewer to improve drainage capacity for the area. With the assistance of SMC, Beach Park made stormwater improvements in the Maplewood Manor subdivision. Additionally, the Village has continued their annual Bull Creek debris removal and invasive vegetation management program. Buffalo Grove recently completed a large streambank stabilization project for sections of Buffalo Creek and Aspen Ditch. The City of Mundelein funded a 'flood control' project related to the July 2017 flood event. Other communities are actively maintaining and repairing their current stormwater infrastructure as well as working to identify reoccurring problem areas. Some communities have even gone as far as to draft plans to update infrastructure.

Communities involved: Barrington, Beach Park, Buffalo Grove, Deer Park, Deerfield, Hawthorn Woods, Highland Park, Lake Barrington, Lake Bluff, Mundelein, North Chicago, Third Lake, and Wadsworth.

### **Action Item 9: Implement Maintenance Programs for Drainage Systems, Including Streambank and Ravine Stabilization Efforts**

The County, municipalities, and townships should develop and implement formal and regular drainage system maintenance programs. This effort should include the inspection of privately maintained drainage facilities. It is understood that each municipality and township will make these considerations based on available staffing and financial resources. Both urban and rural streams need maintenance. Also, bridges and culverts (active or abandoned) that restrict flood flows should be evaluated. The removal or enlargement of stream crossings, in cases where a modification will not cause an increase in downstream flooding, should be considered and funded. Streambank and ravine or shoreline stabilization efforts should also be evaluated and implemented. Public information should be provided to property owners on how best to protect streambanks and shorelines.

Status: Most of the Communities involved have formal written plans for conducting inspections. There are a few communities that use informal systems or only make inspections after rain events.

Communities Include: Barrington, Buffalo Grove, Deer Park, Gurnee, Hawthorn Woods, Highland Park, Lake Bluff, Lake Villa, Lake Zurich, Lincolnshire, Mundelein, Round Lake, Third Lake, Vernon Hills, and Wadsworth.

### **Action Item 10: Implement Property Protection Projects for Flood Mitigation**

Properties that are exposed to flood damage, severe storms, and severe erosion throughout Lake County should be protected through property protection measures where regional structural projects are not feasible. Property protection measures should include, but not be limited to, acquisition, elevation, floodproofing, or retrofitting. Priority should be given to repetitive loss properties and homes subject to the impacts of severe erosion, however, all flood prone properties (floodplain, depression storage or SMC problem areas) including critical facilities should be included.

Status: The City of Gurnee has three homes currently slated to be purchased and demolished. Gurnee routinely works with SMC and IEMA to obtain homes in flood prone areas. The City of



Mundelein bought out a home on Wellington Avenue (located outside of the Special Flood Hazard Area (SFHA)) that was the subject of repeat flooding. In December of 2018 the City of North Chicago made improvements to critical storm water flows for a condominium in the southwest quadrant of the city. Other communities have created a master plans to identify areas that are repeatedly affected by flooding, still other communities have begun working with homeowners on the possibility of buying out homes in the flood plain.

Communities Include: Beach Park, Deer Park, Gurnee, Highland Park, Lake Barrington, Lake Bluff, Libertyville, Lincolnshire, Long Grove, Mundelein, North Chicago, Park City, Riverwoods, Round Lake, Round Lake Beach, and Round Lake Park.

### **Action Item 21: Reduce Inflow and Infiltration to Protect Against Sewer Backups**

Municipalities should evaluate options and implement programs to reduce the inflow and infiltration (I/I) of stormwater into the sanitary sewer system to reduce the wastewater treatment plant flow during severe storm and flood events. Efforts can be undertaken on a regional basis.

Status: The Village of Barrington recently completed a 2-Year sanitary sewer replacement project. In an effort to improve hydraulics and eliminate I/I approximately 5,000 feet of sanitary main and associated service connections were replaced. The Village also inspects sump pump connections during permitted improvements and requires disconnection and elimination of existing connections to sanitary sewer. Deerfield offers a 20% rebate to homeowners that disconnect their storm discharges from the sanitary main. Each year the City of Highland Park lines several miles of sanitary system to reduce I/I and minimize surcharging. Additionally, the City offers its residents a Voluntary Sewer Lateral Cost share program. The program provides up to \$1,260 in funding assistance to qualified residents for sanitary sewer lateral improvements such as lining or complete pipe replacements. Lake Zurich has spent upwards of 3 million dollars on sanitary sewer lining to reduce I/I. Round Lake Park has been relining clay sanitary sewer lines and sealing sanitary manholes since 2005. Their last relining project was in 2015, and since then they have received additional Community Development Block Grant (CDBG) funds for infrastructure improvements. Other Communities involved are either in the process of conducting evaluations to identify areas of I/I or drafting plans to address known areas of I/I.

Communities involved: Bannockburn, Barrington, Beach Park, Deerfield, Fox Lake, Gurnee, Highland Park, Lake Bluff, Lake Zurich, North Chicago, Round Lake, and Round Lake Park.

### **Action Item 2: Identify Wind Mitigation Opportunities for the Protection of Buildings, and to Provide Safe Rooms and Sheltering**

Wind mitigation, and safe rooms and sheltering, needs can arise though planning efforts, building design efforts, and retrofitting opportunities. When needs, safety, and sheltering deficiencies are identified, alternatives for providing mitigation should be developed and funding sought.

Status: Fox Lake adopted and follows the 2015 ICC Codes as they relate to construction of residential and commercial buildings. They adhere to the wind and snow design loads as well as the requirements for the seismic categories for that area. They also provide shelter areas for weather conditions and storms.

Communities involved: Fox Lake.

### **Action Item 33: Continue Participation or Consider Participation in Tree City USA (Urban Forestry)**

Lake County municipalities that are Tree City USA communities will maintain their status in the nationwide program, and communities that are not in the program will consider joining the program. It is understood that each municipality will make these considerations based on available staffing and financial resources.

Status: The Communities involved are Tree City USA communities.

Communities involved: Bannockburn, Deer Park, Deerfield, Gurnee, Lake Bluff, Lake Zurich, Lincolnshire, Mundelein, North Chicago, Round Lake Heights, Vernon Hills, and Volo.

### **Action Item 44: Continue Work for NIMS Compliance**

The county and all municipalities should ensure that they are NIMS compliant. Training opportunities for all first responders and other identified personnel on NIMS and ICS should be shared with all agencies.

Status: The Communities involved are NIMS compliant.

Communities involved: Bannockburn, Barrington, Buffalo Grove, Deer Park, Gurnee, Hawthorn Woods, Lake Barrington, Lake Villa, Lake Zurich, Lincolnshire, Long Grove, Mundelein, North Chicago, and Round Lake Heights.

### **Action Item 55: Improve Building Codes and Building Code Enforcement**

Communities that have not adopted the International Code series of building codes should do so, and for all communities, future code revisions should be pursued to strengthen new buildings against damage by high winds, tornadoes, hail, earthquakes, and flooding. The Building Code Effectiveness Grading Schedule (BCEGS) program is designed to evaluate the code adoption and enforcement efforts of a community, with emphasis on natural hazard mitigation. The County and most municipalities participate in BCEGS and communities should strive to improve their rating to a 4/4, if not already attained. Requiring tornado “safe rooms” in certain structures should be considered. The floodplain provisions (design flood elevation) should also be considered in conjunction with the Lake County WDO.

Training should be developed and conducted for building department staff on building code administration, enforcement, the natural hazards aspects of the International Codes, regulation of mobile home installation, flood provisions, and any other provisions applicable to hazard mitigation.

Status: The Village of Barrington adopted the 2018 International Building Code. Vernon Hills had two changes to their BCEGS: 1 & 2 Family is rated 4 and Commercial is rated 4.

Communities involved: Barrington and Vernon Hills.

## **Action Item 66: Seek Mitigation Grant Funding for Additional Mitigation Planning and Cost Beneficial Projects**

The County, municipalities, other agencies and institutions should apply for mitigation grant funding through available IEMA and FEMA programs for mitigation planning and mitigation projects. As required by IEMA and FEMA programs, projects must be cost beneficial. FEMA hazard mitigation funding including PDM, HMGP, FMA and Section 406 of the Stafford Act (for facilities and infrastructure damaged due to a presidentially declared disaster) should be considered.

Status: Communities involved have sought grant funding for addition mitigation planning and cost beneficial projects. Gurnee has 3 residential parcels in queue for purchase and removal. Lake Barrington has investigated and supported a Home Owners Association's grant application for a LCWMB grant. Lincolnshire has coordinated with SMC on participation in FEMA's repetitive loss program.

Communities involved: Gurnee, Lake Barrington, Lincolnshire, North Chicago, and Wadsworth

## **Action Item 77: Continue Participation or Consider Participation in StormReady**

Lake County municipalities that are National Weather Service StormReady communities will maintain their status in the nationwide program, and Lake County communities, other agencies, and colleges should consider joining the StormReady program. The StormReady program has been developed to provide communities guidelines to improve the timeliness and effectiveness of hazardous weather-related warnings for the public.

Status: The Communities involved are StormReady communities.

Communities involved: Beach Park, Buffalo Grove, and Gurnee

## **Action Item 88: Improve Emergency Response and Develop Assessment Teams**

Lake County and the municipalities should work to improve emergency response and to develop assessment teams for emergency management response, health department concerns and needs and for post-disaster mitigation.

If a community waits until a disaster occurs to plan post-disaster mitigation policies and procedures, they are too late. The time to prepare is before the disaster occurs. Preparation includes assigning post disaster tasks to:

- Determine the extent of the damages, including whether the structures are substantially damaged as defined in the WDO
- Determine the health and safety needs
- Ensure that the public is aware of actions that they should be taking, and that the community is taking to mitigate damages, as well as encouraging property owners and renters to work with their insurance agents to help cover their losses
- Ensuring that residents have the proper permits before repairing structures and ensuring that the repair is completed according to code

- Determine what mitigation actions are appropriate given the extent of damages
- Determine whether any temporary permit and construction moratoriums need to be put in place after the disaster

Response teams should be developed through the LCEMA and other county agencies and the HMPC. Individuals that may be needed for post disaster activities should be trained, should be aware of their potential assignments and should prepare documents that they may need to use after the disaster occurs.

Status: Communities involved have updated their Emergency Operation Plan. Lake Bluff has expanded the volunteer fire department to include paid-on-premise firefighters to reduce response times.

Communities involved: Barrington, Beach Park, Buffalo Grove, Deer Park, Lake Barrington, Lake Bluff, River Woods, and Vernon Hills

### **Action Item 99: Enhance Response and Recovery Information Sharing and Collaboration and Identify Additional Training Opportunities**

Improve information sharing between Lake County, municipal/township agencies and services providers, such as ComEd, during and after natural hazard events. Systems should be put in place to help ensure that response and recovery efforts are coordinating. Additional training opportunities should be identified, including annual exercises and tabletop exercises.

Status: Most of the Communities involved have used tabletop exercises to update their Emergency Operation Plan.

Communities Involved: Beach Park, Buffalo Grove, Gurnee, Lake Barrington, Lake Bluff, Long Grove, Mundelein, Volo, and Wadsworth

### **Action Item 20: Continue Participation or Consider Participation in the NFIP's Community Rating System**

Municipalities that participate in the NFIP should consider participating in the Community Rating System (CRS). Lake County and a number of communities already participate in CRS, and they should also continue their participation.

Status: Ongoing.

### **Action Item 101: Continue to Map Natural Hazard Impacts and Continue Vulnerability Assessments**

Lake County should continue to identify the number and type of existing structures, infrastructure and critical facilities at risk to natural hazards and to map available data and information. Also, the potential dollar losses from vulnerable hazards should be assessed and used to evaluate potential hazard mitigation projects.

Status: This action item was completed by Lake County.

## Action Item 112: Continue with Identification and Implementation of SMC Flood Mitigation Projects

Based on the findings in Chapter 3 of this ANHMP, it is important for the Lake County SMC to continue with their watershed management efforts for flood mitigation in unincorporated Lake County and within the Lake County municipalities. The SMC should continue making use of their annual funding and available FEMA grant funding to provide flood mitigation. Based on the number of SMC flood problem areas identified (Chapter, **Error! Reference source not found.**), the SMC recognized the Des Plaines River and the Fox River watersheds as priority areas.

### 1. Priority actions for the **Des Plaines River Watershed** in the next five years include:

- Floodplain buyout program  
Status: Ongoing
- Floodplain remapping/studies for Newport Creek, Indian Creek, Bull Creek and Mill Creek  
Status: Ongoing
- Watershed planning/coordination for Des Plaines River - Phase II, North Mill Creek, Newport Creek, Bull Creek and Indian Creek  
Status: Ongoing

Communities involved: Antioch, Beach Park, Buffalo Grove, Green Oaks, Grayslake, Gurnee, Hainesville, Hawthorn Woods, Indian Creek, Kildeer, Lake Forest, Lake Zurich, Libertyville, Lincolnshire, Lindenhurst, Long Grove, Mettawa, Mundelein, Old Mill Creek, Park City, Riverwoods, Round Lake Beach, Round Lake Park, Third Lake, Vernon Hills, Wadsworth, Wheeling, Zion

### 2. Priority actions for the **Fox River Watershed** in the next five years include:

- Floodplain buyout program  
Status: Ongoing
- Floodplain remapping/studies for Fish Lake Drain, Sequoit Creek, Squaw Creek, and Round Lake Drain/Eagle Creek/Long Lake  
Status: Ongoing
- Watershed planning/coordination for Fish Lake Drain  
Status: Ongoing

Communities involved: Antioch, Barrington, Barrington Hills, Deer Park, Fox Lake, Fox River Grove, Grayslake, Hainesville, Hawthorn Woods, Island Lake, Lake Barrington, Lake Villa, Lake Zurich, Lakemoor, Lindenhurst, Mundelein, North Barrington, Port Barrington, Round Lake, Round Lake Beach, Round Lake Heights, Round Lake Park, Tower Lakes, Wauconda, Volo.

### 3. Priority actions for the **North Branch of the Chicago River Watershed** in the next five years include:

- Increase flood storage capacity and detention
- Floodplain buyout program
- Watershed planning/coordination for Skokie River
- Flood response/damage assessments

Communities involved: Bannockburn, Deerfield, Green Oaks, Gurnee, Highland Park, Highwood, Lake Bluff, Lake Forest, Lincolnshire, Mettawa, Park City, North Chicago, Riverwoods, Waukegan.

4. Priority actions for the **Lake Michigan Watershed** in the next five years include:

- Floodplain buyout program
- Floodplain remapping/studies for Kellogg Creek
- Watershed planning/coordination for Dead Creek and Kellogg Creek
- Flood response/damage assessments

Communities involved: Beach Park, Highland Park, Highwood, Lake Forest, Lake Bluff, North Chicago, Wadsworth, Waukegan, Winthrop Harbor, Zion.

5. Ongoing and anticipated efforts of the SMC in the next five years for **all four major watersheds** include:

- Flood response/damage assessments
- Local drainage project cost-share program  
Status: Continue WMB & SIRF programs.
- Rain gauge program
- GIS mapping and countywide base flood elevation layer, LOMA/LOMRs
- Implementation of Watershed Development Ordinance (WDO)  
Status: The WDO continues to be administered county-wide.

### **Action Item 123: Develop of Flood Stage Maps**

Flood stage maps should be developed to show varying depths of flooding and the respective area of inundation for floodplain areas within Lake County's major watersheds. The maps should be developed by watershed based on available hydrologic and hydraulic models. Flood stage maps can be used by all agencies to determine early protection actions.

Status: The Village of Gurnee has developed and published a Flood Inundation Map on their village website.

Involved Community: Gurnee

### **Action Item 134: Develop or Enhance the Community's Snow Removal Plan**

Severe winter storms are a priority hazard for Lake County. People and businesses are impacted by heavy snow and blizzard conditions. Impassable roads are a problem for emergency services. Products and techniques for clearing roads or dealing with icy conditions are changing. Some of the newer approaches help protect the environment.

Status: Each involved community has a Snow Removal Plan that is updated annually.

Communities involved: Buffalo Grove, Gurnee, Highland Park, and Lincolnshire

### **Action Item 145: Utility Tree Trimming**

Trees and branches on power lines is a common hazard. Down power lines can impact significant areas. More attention and better scheduling (rotation) of tree trimming would benefit communities and unincorporated Lake County.

Status: Ongoing

### **Action Item 156: Sump Pump Disconnects**

Sump pumps, when operating properly can keep basements dry from rainwater that collects around foundations. In many areas of the county, sump pumps discharge directly into the underground sewer system. The discharge contributes to the amount of sanitary sewage that needs to be treated at wastewater treatment plants, or contributes to the total runoff that storm sewers need to carry. This action item calls for the disconnection of sump pump discharge from the sewer system(s), and for the discharge to be above ground. This could be to lawns or French drains. Communities should consider changes in regulations to accomplish the disconnects; other communities could consider rebate or other incentive programs.

Status: The village of Deerfield offers a 20% rebate to homeowners that disconnect their storm discharges from the sanitary main.

Involved Community: Deerfield

### **Action Item 167: Conduct Local Drainage Studies**

Urban flooding and local drainage issues should be investigated by communities and by the SMC to determine alternatives to reduce the impact of flooding to buildings and infrastructure.

Status: Deerfield has an ongoing study to minimize the frequency and severity of roadway flooding and Lake Zurich has drainage improvements in progress in their downtown area.

Communities involved: Deerfield and Lake Zurich

### **Action Item 178: Increase Stormwater Detention Capacity**

Where opportunities are identified, additional stormwater detention capacity should be created. This may include the expansion of storage capacity at existing sites or new sites. While the Lake County WDO required storage of runoff due to developed, a large remedial effort is needed to detain and retain stormwater from older development.

Status: Barrington has created additional stormwater volume in a local flood hazard area as part of their 2017/2018 Sanitary Sewer Replacement Project.

Involved Community: Barrington

### **Action Item 189: Investigate Countywide Warning System**

Warning dissemination for natural hazard events is key to protecting life and safety. Some areas of the County have some warning systems in-place. Additional warning systems should be

investigated that would be effective for various seasons and various patterns of populated locations (e.g., daytime or nighttime). The investigation should examine alternatives, costs, potential phasing, and so forth.

Status: Buffalo Grove has several warning systems in place such as: sirens, Everbridge system to alert residents, and tv screen warning through their EAS.

Involved Community: Buffalo Grove

### **Action Item: 30 Investigate Future Conditions and the Impact on Depth and Frequency of Flooding**

Future conditions can include new development, redevelopment or changing weather and weather patterns, and should be investigated with new studies or updates to existing studies to determine potential increases in flood characteristics (depth and extent) and in frequency.

Status: Ongoing

### **Action Item 191: Lincolnshire Creek Improvements**

Lincolnshire Creek in Lincolnshire should be studied to identify alternatives to reduce flood losses.

Status: Action Item in progress by Lincolnshire.

### **Action Item 202: Mitigate Septic Discharge; Leaching into Waterways**

Maintenance of septic systems is important for the protection of water quality for both surface water and groundwater. Preventing ground water pollution from failing septic systems should be a priority of every community and every homeowner. Contamination of the ground water source can lead to pollution of local wells, lakes, streams and ponds – exposing family, friends and neighbors to waterborne diseases and other health risks. When a septic system fails, inadequately treated domestic waste can reach the ground water. Bacteria and viruses from human waste can cause dysentery, hepatitis, and typhoid fever. Many serious outbreaks of these diseases have been caused by contaminated drinking water. Nitrates and phosphates, also found in domestic wastewater, can cause excessive algae growth in lakes and streams called algal blooms. These blooms cause aesthetic problems and impair other aquatic life. Nitrate is also the cause of methemoglobinemia, or blue baby syndrome, a condition that prevents the normal uptake of oxygen in the blood of young babies.

Status: The Village of Beach Park uses their website, newsletter, and public informational meetings to educate residents about best practices.

Involved Community: Beach Park

### **Action Item 213: Implement the Federal Flood Risk Management Standard (FFRMS)**

Executive Order 13690 calls for a flood protection standard for projects implemented with federal funds. New construction and substantial improvements implemented through private



developers or property owners must meet the flood standard within the Lake County WDO, which is the base flood elevation plus 2 feet of freeboard. If a federal agency sets a standard as a result of the FFRMS, that exceeds the WDO standard, then communities must meet the higher standard when federal dollars are included in a community project.

Status: Ongoing

<b>Community Name</b>	<b>Date of Adoption Resolution</b>	<b>Community Name</b>	<b>Date of Adoption Resolution</b>
Village of Antioch	10/13/2017	Village of Libertyville	10/10/2017
Village of Bannockburn	9/25/2017	Village of Lincolnshire	10/9/2017
Village of Barrington	10/9/2017	Village of Lindenhurst	9/25/2017
Village of Barrington Hills	10/23/2017	Village of Long Grove	9/26/2017
Village of Beach Park	10/30/2017	Village of Mettawa	10/17/2017
Village of Buffalo Grove	9/26/2017	Village of Mundelein	9/25/2017
Village of Deer Park	9/21/2017	Village of North Barrington	2/28/2018
Village of Deerfield	10/2/2017	City of North Chicago	10/16/2017
Village of Fox Lake	9/27/2017	Village of Old Mill Creek	10/10/2017
Village of Fox River Grove	McHenry Co.	City of Park City	9/21/2017
Village of Grayslake	12/5/2017	Village of Port Barrington	9/20/2017
Village of Green Oaks	9/27/2017	Village of Riverwoods	9/19/2017
Village of Gurnee	10/9/2017	Village of Round Lake	10/2/2017
Village of Hainseville	9/26/2017	Village of Round Lake Beach	10/23/2017
Village of Hawthorn Woods	10/23/2017	Village of Round Lake Heights	10/10/2017
City of Highland Park	10/9/2017	Village of Round Lake Park	10/3/2017
City of Highwood	10/10/2017	Village of Third Lake	9/18/2017
Village of Indian Creek	10/10/2017	Village of Tower Lakes	9/18/2017
Village of Island Lake	2/8/2018	Village of Vernon Hills	10/3/2017
Village of Kildeer	9/19/2017	Village of Volo	10/3/2017
Village of Lake Barrington	10/10/2017	Village of Wadsworth	10/3/2017
Village of Lake Bluff	9/25/2017	Village of Wauconda	9/18/2017
City of Lake Forest	10/2/2017	City of Waukegan	2/22/2018
Village of Lake Villa	9/27/2017	Village of Winthrop Harbor	11/7/2017
Village of Lake Zurich	10/6/2017	City of Zion	9/19/2017
Village of Lakemoor	9/20/2017	Lake County	10/10/2017



**LAKE COUNTY ALL-NATURAL HAZARDS MITIGATION PLAN  
ANNUAL MEETING**  
Tuesday, December 18, 2018  
1:00 – 3:00 p.m.  
Lake County Central Permit Facility  
2<sup>nd</sup> Floor Conference Room, 500 W. Winchester Rd., Libertyville, IL

**Welcome, Introductions** – Sharon Østerby, SMC

**ANHMP Update Completed 2017**

**Natural Hazard Mitigation Activities - Sharon Østerby, SMC**

SMC Floodplain Buyout Program

2017 and 2018 Grant Applications

Other Mitigation Efforts (community/watershed-wide initiatives, special projects)

2017-18 WMB & SIRF Project

Other Special Projects

Jamie Phase II & the Skokie Overland Flow Path-Kurt Woolford

Bull Creek-Ernesto Huaracha

North Branch Flooding (Mike Warner)

**Break**

**Natural Hazards and Emergency Management Activities 2017-2018 (LCEMA)**

LCEMA Review of 2017 Flood Impacts and Improvements (Dan Eder & Paul Mazzino)

**Review of the Yearly Report Requirements, Action Plan Items** – Sharon Østerby, SMC

2018 Annual Reporting - Spreadsheets due by January 1, 2019

Roundtable of Local Mitigation Activities, Natural Hazard Incidents, Challenges, Lessons Learned

**Drawing**

**Adjourn**