

**COOK COUNTY
MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN
VOLUME 2 - Municipal Annexes**

Flossmoor Annex

FINAL

July 2019

Prepared for:



Cook County
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Hazard Mitigation Point of Contact

Primary Point of Contact	Alternate Point of Contact
John S. Brunke, Public Works Director 1700 Central Park Avenue, Flossmoor, IL. 60422 Telephone: 708-957-4100 Email Address: jbrunke@flossmoor.org	Keith Damm, Assistant Fire Chief 2828 Flossmoor Road, Flossmoor, IL. 60422 Telephone: 708-798-3885 Email Address: kdamm@flossmoor.org

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** 1924
- **Current Population:** The Village of Flossmoor has an estimated population of 9,237 according to the 2018 US Census estimates.
- **Population Growth:** Based on Census data from 2000 to 2010 there was a 1.75% growth in the Village of Flossmoor’s population. From 2010 to 2016, there was a slight decrease in population, but only around 1 percent.
- **Location and Description:** The Village of Flossmoor is located about 20 miles south of Chicago in Cook County, and borders the towns of Homewood to the north, Olympia Fields to the south, Hazel Crest to the west, and Chicago Heights to the east. According to the U.S. Census Bureau, the Village of Flossmoor has a total land area of 3.66 square miles.
- **Brief History:** Primarily a bedroom community, Flossmoor has roots well into the nineteenth century; it was first recognized as an affluent community in the 1920s when it became known as a cultural and recreational mecca of elite country clubs and stately golf courses. It was incorporated as a village in 1924. In the years since, Flossmoor was not only seen as the “status” suburb of south/southwest suburban Chicago but also as one of “the fashionable places to live in” nationally. Flossmoor’s allure attracted a diverse group of residents over time.
- **Climate:** The climate of Flossmoor and the Chicago area is classified as humid continental, with all four seasons distinctly represented: wet springs; hot and humid summers; pleasant autumns; and cold winters. Annual precipitation is average, and reaches its lowest points in the months of January and February, and peaks in the months of May and June. Winter proves quite variable. Seasonal snowfall in the Village has ranged from 9 – 90 inches. The daily average temperature in January at Midway Airport is 24.8 °F (–4.0 °C), and temperatures often stay below freezing for several consecutive days or even weeks in January and February. Temperatures drop to or below 0 °F (–18 °C) on 5.5 nights annually at Midway and 8.2 nights at O’Hare. Spring in the Chicago area is perhaps the areas wettest and unpredictable season. Winter like conditions can persist well into April and even occasionally into May. Thunderstorms are especially prevalent in the spring time as the areas lakeside location makes it a center of conflicts between large volumes of warmer and colder air, triggering many kinds of severe weather. Temperatures vary tremendously in the springtime; March is the month with the greatest span between the record highs and lows. On a typical summer day, humidity is usually moderately high and temperatures ordinarily reach anywhere between 78 and 92 °F (26 and 33 °C). The extreme heat that the Chicago area is capable of experiencing during the height of the summer season can persist into the autumn season. Temperatures have reached 100 degrees high and subzero lows below –18 °C. Fall can bring heavy thunderstorms, many of which are capable of producing flooding. The average first accumulating snow occurs around Nov 19.
- **Governing Body Format:** The Village of Flossmoor has an elected Mayor, and six elected Village Trustees, as well as a professional Village Manager. The Village operates with 6 departments

including Village Manager’s Office, Inspectional Services (Building Department), Finance Department, Fire Department, Police Department, Planning and Zoning Department, and the Public Works Department. This body of Government will assume the responsibility for the adoption and implementation of this plan.

- **Development Trends:** Flossmoor is predominately built out for residential units and is anticipating commercial development in its Tax Increment Financing (TIF) district, located at Vollmer Road and Crawford Avenue in the southwest corner of town. The build out of the TIF is not anticipated for several years. There is some new development in the downtown area of Flossmoor with a purchase of some land in 2018. A 37,500 square-foot plot of land in downtown Flossmoor that had been vacant for more than a decade is now slated for development, with village officials considering businesses, high-end apartments, restaurants and community space as potential options.

Capability Assessment

The assessment of the jurisdiction’s legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction’s fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction’s administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community’s National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY					
	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Codes, Ordinances & Requirements					
Building Code	Yes	No	No	Yes	2018 IBC adopted on 02/18/2019.
Zonings	Yes	No	No	Yes	Adopted 8/17/1981, last amended 01/07/2019.
Subdivisions	Yes	No	No	No	Subdivision Ord., 04/03/1961, Amended 1988.
Stormwater Management	Yes	No	Yes	Yes	State regulates industrial activity from Construction sites 1 acre or larger under section 402 CWA. Stormwater Management Ordinance, #1635, 08/05/2008. MWRD Watershed Management Ordinance effective 05/16/2019.
Post Disaster Recovery	No	No	No	No	
Real Estate Disclosure	No	No	Yes	Yes	(765 ILCS 77/) Residential Real

					Property Disclosure Act.
Growth Management	No	No	No	No	
Site Plan Review	Yes	No	No	No	Stormwater Management Ordinance, #1635, 08/05/2008. Flossmoor Zoning Code adopted 8/17/1981, last amended 01/07/2019.
Public Health and Safety	No	No	Yes	Yes	Cook County Board of Health.
Environmental Protection	No	No	No	No	
Planning Documents					
General or Comprehensive Plan	Yes	No	No	Yes	Adopted 2/3/1986, last update 2/1/1993.
<i>Is the plan equipped to provide linkage to this mitigation plan?</i>					No
Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	No	No	MWRD	No	Regional stormwater impacts are managed by MWRD. The Village lies within the Little Calumet River watershed planning area of MWRD's comprehensive Stormwater Master Planning Program.
Capital Improvement Plan	Yes	No	No	No	
<i>What types of capital facilities does the plan address?</i>					The Village maintains a Finance and Facilities Plan to address infrastructure needs and a Capital Equipment Fund which covers major

					equipment purchases and facilities maintenance items.
<i>How often is the plan revised/updated?</i>					These are both reviewed annually during the Village’s budget process.
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan	Yes	No	Yes	Yes	Ordinance # 1006 adopted 10/8/1991.
Shoreline Management Plan	No	No	No	No	
Response/Recovery Planning					
Comprehensive Emergency Management Plan	No	No	Yes	Yes	Cook County DHSEM
Threat and Hazard Identification and Risk Assessment	No	No	Yes	No	Cook County DHSEM Preparing THIRA
Terrorism Plan	No	No	Yes	Yes	Cook County DHSEM
Post-Disaster Recovery Plan	No	No	No	No	
Continuity of Operations Plan	No	No	Yes	No	Cook County DHSEM
Public Health Plans	No	No	Yes	No	Cook County DPH

TABLE: FISCAL CAPABILITY	
Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	No
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes, but must be within tax cap limitations.
User Fees for Water, Sewer, Gas or Electric Service	Yes

Incur Debt through General Obligation Bonds	Yes, if approved by voter referendum.
Incur Debt through Special Tax Bonds	Yes. Assumes Special Service Area Bonds, can levy tax to repay but can be stopped with petition.
Incur Debt through Private Activity Bonds	Yes, under limited circumstances.
Withhold Public Expenditures in Hazard-Prone Areas	No
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Yes

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Flossmoor Public Works, Director
Engineers or professionals trained in building or infrastructure construction practices	Yes	Flossmoor Public Works, Director
Planners or engineers with an understanding of natural hazards	Yes	Flossmoor Public Works, Director
Staff with training in benefit/cost analysis	Yes	Village of Flossmoor, All Department Directors
Surveyors	No	
Personnel skilled or trained in GIS applications	Yes	Cook County GIS Consortium
Scientist familiar with natural hazards in local area	No	
Emergency manager	Yes	Flossmoor Fire Department, Fire Chief
Grant writers	No	

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

What department is responsible for floodplain management in your jurisdiction?	Public Works
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Who is your jurisdiction’s floodplain administrator? (department/position)	Public Works Director
Are any certified floodplain managers on staff in your jurisdiction?	Yes, Public Works Director
What is the date of adoption of your flood damage prevention ordinance?	Floodplain Ordinance, #1634, 08/05/2008
When was the most recent Community Assistance Visit or Community Assistance Contact?	04/27/2012
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	No
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	Yes, Flossmoor is a Class 7 CRS community and we are working to improve classification.

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	Classification	Date Classified
Community Rating System	Yes	7	05/01/2013
Building Code Effectiveness Grading Schedule	Yes	3	06/01/2016
Public Protection/ISO	Yes	3	04/01/2015
StormReady	Yes	Gold (Countywide)	2014
Tree City USA	Yes	N/A	2018

Jurisdiction-Specific Natural Hazard Event

The information provided below was solicited from the jurisdiction and supported by NOAA and other relevant data sources.

The *Natural Hazard Events Table* lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 8
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0

TABLE: NATURAL HAZARD EVENTS			
Type of Event	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Hail	-	2/28/2017	-
Severe Winter Storm	FEMA-1960-DR-IL	2/1/2011	\$14,914.69
Wind Storm Damage	-	6/18/2010	\$15,740.56
Flood Event	FEMA-1800-DR-IL	9/13/2008	\$9,219.05
Wind/Rain Storm	FEMA-1729-DR-IL	8/19/2007	\$22,677.32

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Cook County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Dam/Levee Failure: The Village does not consider Dam/Levee Failure to be a hazard that would likely occur.

Flood: Within the Village, the Flossmoor Rd. viaduct at CN/Metra RR, Brookwood Bridge and Butterfield Cr. Culvert, Hagen Lane Rear Yards, Berry Lane between Sunset and Bob-o-Link Rd., Dartmouth Bike Bridge and Creek Stabilization, are all flood-prone areas.

Severe Weather: The Village is vulnerable to potential power outages at critical facilities in the event of high winds, including the following facilities: DPWSC, Vollmer Res. (water), Meinheit BS (water), Kedzie BS (water), Lift stations (Butterfield, Dartmouth, Sylvan, Heather, Commons). Back-up power is needed to mitigate the impact of this natural hazard.

Severe Winter Weather: Similar to the outcomes of high winds, the Village's critical facilities are subject to power outages as a result of ice storms. Back-up power is needed to prevent this impact.

Tornado: Similar to the impacts of high winds and ice storms, the Village's critical facilities are subject to power outages in the event of a tornado. Back-up power is needed to maintain the continuity of the Village's critical facilities during this hazard.

Earthquake: Although earthquakes or their effects are not commonly felt in Flossmoor, earthquakes have happened on several occasions in Illinois over the last few decades. Flossmoor continues to prepare and mitigate against this hazard.

Hazard Risk Ranking

The *Hazard Risk Ranking Table* below presents the ranking of the hazards of concern. Hazard area extent and location maps are included at the end of this chapter. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes.

TABLE: HAZARD RISK RANKING		
Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1	Severe Weather	54
2	Severe Winter Weather	54
3	Earthquake	32
4	Tornado	27
5	Flood	16
6	Drought	2
7	Dam Failure	0

Mitigation Strategies and Actions

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

The *Hazard Mitigation Action Plan Matrix Table* below lists the actions that make up the jurisdiction’s hazard mitigation plan. The *Mitigation Strategy Priority Schedule Table* identifies the priority for each action.

TABLE: HAZARD MITIGATION ACTION PLAN MATRIX						
Status	Hazards Mitigated	Objectives Met	Lead Agencies	Estimated Cost	Sources of Funding	Timeline/Projected Completion Date (a)
Action F1.1 —Replace the Brookwood Road bridge and culvert.						
Ongoing	Flood, Severe Weather	3, 4, 6, 9, 11, 12	Public Works	\$1.3 million; High	Village of Flossmoor, Grants	Short-term
Action F1.2 —Flossmoor Road viaduct sewer improvement.						
Ongoing	Flood, Severe Weather	3, 4, 6, 8, 9, 12, 13	Public Works	\$3 million; High	Grants	Long-term
Action F1.3 —Update Emergency Operations Plan.						
Ongoing	All	1, 2, 4, 5, 8, 12	Fire	Low	General Fund	Short-term
Action F1.4 —Butterfield Creek alternate flood wall project (BTCR-G3).						
Removed	Flood, Severe Weather	3, 4, 6, 7, 8, 9, 11, 12, 13	Public Works	Low	MWRD	Removed

Action F1.5 —Butterfield Road flood control project/creek widening.						
Ongoing	Flood, Severe Weather	3, 4, 6, 7, 8, 9, 11, 12, 13	Public Works	High	Unknown / Grants	Long-term
Action F1.6 —Dartmouth bike bridge/creek bank stabilization.						
Ongoing	Flood, Severe Weather	3, 6, 7, 9, 12, 13	Public Works	\$500,000; Low	Village of Flossmoor, Grants	Short-term
Action F1.7 —Cherry Creek East Branch Flood Control Project.						
Completed	Flood, Severe Weather	3, 4, 6, 7, 8, 9, 11, 12, 13	Public Works	\$3,304,500; High	MWRD	Completed
Action F1.8 —Early warning storm siren.						
Ongoing	All	5, 6, 8	Fire	Medium	Grants	Long-term
Action F1.9 —Where appropriate, support retrofitting, purchase, or relocation of structures in hazard-prone areas to prevent future structure damage. Give priority to properties with exposure to repetitive losses.						
Removed	All	7, 13	Village of Flossmoor	High	FEMA Hazard Mitigation Grants	Removed
Action F1.10 —Continue to support the countywide actions identified in this plan.						
Ongoing	All	All	Village of Flossmoor	Low	General Fund	Short- and Long-term
Action F1.11 —Actively participate in the plan maintenance strategy identified in this plan.						
Ongoing	All	3, 4, 6	DHSEM, Village of Flossmoor	Low	General Fund	Short-term
Action F1.12 —Consider participation in incentive-based programs such as the Community Rating System, Tree City, and StormReady.						
Ongoing	All	3, 4, 5, 6, 7, 9, 10, 11, 13	Village of Flossmoor	Low	General Fund	Long-term
Action F1.13 —Maintain good standing under the National Flood Insurance Program by implementing programs that meet or exceed the minimum NFIP requirements. Such programs include enforcing an adopted flood damage prevention ordinance, participating in floodplain mapping updates, and providing public assistance and information on floodplain requirements and impacts.						

Ongoing	Flooding	4, 6, 9	Village of Flossmoor	Low	General Fund	Short-term and Ongoing
Action F1.14 —Where feasible, implement a program to record high water marks following high-water events.						
Ongoing	Flooding, Severe Weather	3, 6, 9	Village of Flossmoor	Medium	General Fund; FEMA Grant Funds (Public Assistance)	Long-term
Action F1.15 —Integrate the hazard mitigation plan into other plans, programs, or resources that dictate land use or redevelopment.						
Ongoing	All	3, 4, 6, 10, 13	Public Works	Low	General Fund	Short-term
Action F1.16 —Hagen Ln. Rear Yards Drainage Improvement.						
New	Flood	9	Flossmoor	\$250,000; High	FEMA, MWRD, ACOE, Village	2020
Action F1.17 —8 Back-Up Generators at Critical Facilities.						
New	Earthquake, Flood, Extreme Heat, Lightning, Hail, High Wind, Snow, Blizzard, Extreme Cold, Ice Storms, Tornado	1, 2	Flossmoor	2 generators cost \$100,000 each and 6 cost \$60,000 each; High	Flossmoor & Grants	TBD
Action F1.18 —Cherry Creek East Branch Flood Control.						
New	Flood	9	MWRD	\$3,304,500	Unknown	Unknown
(a) Ongoing indicates continuation of an action that is already in place. Short-term indicates implementation within five years. Long-term indicates implementation after five years.						

TABLE: MITIGATION STRATEGY PRIORITY SCHEDULE

Action Number	Number of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/Budgets?	Priority (a)
1	6	Medium	Medium	Yes	Yes	Yes	High
2	7	High	High	Yes	Yes	No	Medium
3	6	High	Low	Yes	No	Yes	High
4	9	High	Low	Yes	Yes	No	High
5	9	Medium	High	Yes	Yes	No	Medium
6	6	Medium	Medium	Yes	Yes	No	High
7	3	High	Medium	Yes	Yes	No	High
8	2	High	High	Yes	Yes	No	Medium
9	13	Medium	Low	Yes	No	Yes	High
10	3	Medium	Low	Yes	Yes	Yes	High
11	9	Medium	Low	Yes	No	Yes	Medium
12	3	Medium	Low	Yes	No	Yes	High
13	3	Medium	Medium	Yes	Yes	No	Medium
14	5	Medium	Low	Yes	No	Yes	High
15	2	High	High	Yes	Yes	No	Medium
16	1	High	High	Yes	Yes	No	High-Low
17	2	Unknown	High	Unknown	Unknown	Unknown	High
18	1	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown

(a) See Chapter 1 for explanation of priorities.

New Mitigation Actions

The following are new mitigation actions created during the 2019 update.

Action F - 1.16

Mitigation Action	Hagen Ln. Rear Yards Drainage Improvement
Year Initiated	2019
Applicable Jurisdiction	Flossmoor
Lead Agency/Organization	Flossmoor
Supporting Agencies/Organizations	N/A
Applicable Goal	<ul style="list-style-type: none"> • Develop and implement sustainable, cost-effective, and environmentally sound risk-reduction (mitigation) projects. • Protect the lives, health, safety, and property of the citizens of Cook County from the impacts of natural hazards. • Involve stakeholders to enhance the local capacity to mitigate, prepare for, and respond to impacts of natural hazards. • Develop, promote, and integrate mitigation action plans. • Promote public understanding of and support for hazard mitigation.
Applicable Objective	<ul style="list-style-type: none"> • Provide or improve flood protection on a watershed basis with flood control structures and drainage maintenance plans.
Potential Funding Source	FEMA, MWRD, ACOE, Village
Estimated Cost	\$250,000
Benefits (loss avoided)	Eliminate structure flooding of 4 homes
Projected Completion Date	Summer of 2020
Priority and Level of Importance (Low, Medium, High)	High
Benefit Analysis (Low, Medium, High)	High—Project will provide an immediate reduction of risk exposure for life and property.
Cost Analysis (Low, Medium, High)	High—Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).
Actual Completion Date	

Recommended Mitigation Action/Implementation Plan and Project Description	
Action/Implementation Plan and Project Description:	

Mitigation Action and Project Maintenance		
Year	Status	Comments
2019	New	

2020		
2021		
2022		
2023		

Mitigated Hazards	
	All Hazards
	Dam/Levee Failure
	Drought
	Earthquake
X	Flood
	Extreme Heat
	Lightning
	Hail
	Fog
	High Wind
	Snow
	Blizzard
	Extreme Cold
	Ice Storms
	Tornado
	Epidemic or pandemic
	Nuclear Power Plant Incident
	Widespread Power Outage
	Coastal Erosion
	Secondary Impacts from Mass Influx of Evacuees
	Hazardous Materials Incident

Action F - 1.17

Mitigation Action	8 Back-Up Generators at Critical Facilities
Year Initiated	2019
Applicable Jurisdiction	Flossmoor
Lead Agency/Organization	Public Works
Supporting Agencies/Organizations	
Applicable Goal	<ul style="list-style-type: none"> Protect the lives, health, safety, and property of the citizens of Cook County from the impacts of natural hazards. Protect public services and critical facilities, including infrastructure, from loss of use during natural hazard events and potential damage from such activities.
Applicable Objective	<ul style="list-style-type: none"> Eliminate or minimize disruption of local government operations caused by natural hazards through all phases of emergency management. Increase the resilience of (or protect and maintain) infrastructure and critical facilities.
Potential Funding Source	Flossmoor & Grants
Estimated Cost	2 generators cost \$100,000 each and 6 cost \$60,000 each
Benefits (loss avoided)	Unknown
Projected Completion Date	Unknown
Priority and Level of Importance (Low, Medium, High)	High to Low (Village Hall Back-Up Highest Priority and Heather Lift Station Back-up Generator lowest (see list below - generators are listed from highest to lowest priority)
Benefit Analysis (Low, Medium, High)	Unknown
Cost Analysis (Low, Medium, High)	High
Actual Completion Date	Short-term Timeline

Recommended Mitigation Action/Implementation Plan and Project Description	
Action/Implementation Plan and Project Description:	Generators are listed in order of priority from high to low: Village Hall Back-up Generator, New and Existing, \$100,000 Butterfield Lift Station Back-up Generator, New, \$100,000 Meinheit Water Booster Station Back-up Generator, New, \$60,000 Public Works Service Center Back-up Generator, New, \$60,000 Sylvan Lift Station Back-up Generator, New, \$60,000 Dartmouth Lift Station Back-up Generator, New, \$60,000 Commons Lift Station Back-up Generator, New, \$60,000 Heather Lift Station Back-up Generator, New, \$60,000

Mitigation Action and Project Maintenance		
Year	Status	Comments
2019	New and Existing	7 only new and 1 new and existing

2020		
2021		
2022		
2023		

Mitigated Hazards	
	All Hazards
	Dam/Levee Failure
	Drought
X	Earthquake
X	Flood
X	Extreme Heat
X	Lightning
X	Hail
	Fog
X	High Wind
X	Snow
X	Blizzard
X	Extreme Cold
X	Ice Storms
X	Tornado
	Epidemic or pandemic
	Nuclear Power Plant Incident
	Widespread Power Outage
	Coastal Erosion
	Secondary Impacts from Mass Influx of Evacuees
	Hazardous Materials Incident

Action F - 1.18

Mitigation Action	Cherry Creek East Branch Flood Control
Year Initiated	2018
Applicable Jurisdiction	Village of Flossmoor
Lead Agency/Organization	MWRD
Supporting Agencies/Organizations	Village of Flossmoor
Applicable Goal	<ul style="list-style-type: none"> Develop and implement sustainable, cost-effective, and environmentally sound risk-reduction (mitigation) projects.
Applicable Objective	<ul style="list-style-type: none"> Provide or improve flood protection on a watershed basis with flood control structures and drainage maintenance plans.
Potential Funding Source	Unknown
Estimated Cost	\$3,304,500
Benefits (loss avoided)	Unknown
Projected Completion Date	Unknown
Priority and Level of Importance (Low, Medium, High)	Unknown
Benefit Analysis (Low, Medium, High)	Unknown
Cost Analysis (Low, Medium, High)	Unknown
Actual Completion Date	Unknown

Recommended Mitigation Action/Implementation Plan and Project Description	
Action/Implementation Plan and Project Description:	ID: CHEB-G3 Contract: 10-883-BF Watershed: Little Cal River Location: Flossmoor, IL Description: Construction of an overflow channel on Homewood-Flossmoor High School’s property, west of Governors Highway. Created flood shelf storage north of the school. Replaced two collapsed culverts and created shelf storage on Cherry Creek.

Mitigation Action and Project Maintenance					
Year	Status	Comments			
2018	New	FEMA map revision effective as of 10/26/2018			
2019	Ongoing	Construction substantially complete			
2020					
2021					
2022					

2023		
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Mitigated Hazards	
	All Hazards
	Dam/Levee Failure
	Drought
	Earthquake
X	Flood
	Extreme Heat
	Lightning
	Hail
	Fog
	High Wind
	Snow
	Blizzard
	Extreme Cold
	Ice Storms
	Tornado
	Epidemic or pandemic
	Nuclear Power Plant Incident
	Widespread Power Outage
	Coastal Erosion
	Secondary Impacts from Mass Influx of Evacuees
	Hazardous Materials Incident

Ongoing Mitigation Actions

The following are ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.

Action F - 1.1

TABLE: ACTION PLAN MATRIX		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# F—1.1	Replace the Brookwood Road bridge and culvert.	
Status Description: Yes	Phase I of this project is nearing completion with Phase II planned to start this year.	O
Completion status legend: N = New O = Action Ongoing toward Completion C = Project Completed R = Want Removed from Annex X = No Action Taken		

Action F - 1.2

TABLE: ACTION PLAN MATRIX		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# F—1.2	Flossmoor Road viaduct sewer improvement.	
Status Description: No	Waiting on grant funding	X
Completion status legend: N = New O = Action Ongoing toward Completion C = Project Completed R = Want Removed from Annex X = No Action Taken		

Action F - 1.3

TABLE: ACTION PLAN MATRIX		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# F—1.3	Update Emergency Operations Plan.	
Status Description: Yes	Ongoing	O
Completion status legend: N = New O = Action Ongoing toward Completion C = Project Completed R = Want Removed from Annex X = No Action Taken		

Action F - 1.5

TABLE: ACTION PLAN MATRIX		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# F—1.5	Butterfield Road flood control project/creek widening.	
Status Description: No	Waiting on grant funding	X
Completion status legend: N = New O = Action Ongoing toward Completion C = Project Completed R = Want Removed from Annex X = No Action Taken		

Action F - 1.6

TABLE: ACTION PLAN MATRIX		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# F—1.6	Dartmouth bike bridge/creek bank stabilization.	
Status Description: Yes	A portion of the creek bank was stabilized in coordination with MWRD, waiting on grant funding for bridge replacement and additional bank stabilization work.	O
Completion status legend: N = New O = Action Ongoing toward Completion C = Project Completed R = Want Removed from Annex X = No Action Taken		

Action F - 1.8

TABLE: ACTION PLAN MATRIX		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# F—1.8	Early warning storm siren.	
Status Description: No	No action has yet been taken on this item.	X
Completion status legend: N = New O = Action Ongoing toward Completion C = Project Completed R = Want Removed from Annex X = No Action Taken		

Action F - 1.10

TABLE: ACTION PLAN MATRIX		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# F—1.10	Continue to support the countywide actions identified in this plan.	
Status Description: Yes	This will be an ongoing process.	O
Completion status legend: N = New O = Action Ongoing toward Completion C = Project Completed R = Want Removed from Annex X = No Action Taken		

Action F - 1.11

TABLE: ACTION PLAN MATRIX		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# F—1.11	Actively participate in the plan maintenance strategy identified in this plan.	
Status Description: Yes	This will be an ongoing process	O
Completion status legend: N = New O = Action Ongoing toward Completion C = Project Completed R = Want Removed from Annex X = No Action Taken		

Action F - 1.12

TABLE: ACTION PLAN MATRIX		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# F—1.12	Consider participation in incentive-based programs such as the Community Rating System, Tree City, and StormReady.	
Status Description: Yes	This will be an ongoing process. Flossmoor is participating in the CRS as a Class 7 community and obtained Tree City USA status in 2019.	O
Completion status legend: N = New O = Action Ongoing toward Completion C = Project Completed R = Want Removed from Annex X = No Action Taken		

Action F - 1.13

TABLE: ACTION PLAN MATRIX		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# F—1.13	Maintain good standing under the National Flood Insurance Program by implementing programs that meet or exceed the minimum NFIP requirements. Such programs include enforcing an adopted flood damage prevention ordinance, participating in floodplain mapping updates, and providing public assistance and information on floodplain requirements and impacts.	
Status Description: Yes	This will be an ongoing process	O
Completion status legend: N = New O = Action Ongoing toward Completion C = Project Completed R = Want Removed from Annex X = No Action Taken		

Action F - 1.14

TABLE: ACTION PLAN MATRIX		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# F—1.14	Where feasible, implement a program to record high water marks following high-water events.	
Status Description: No	No action taken, we still need to develop this program.	X
Completion status legend: N = New O = Action Ongoing toward Completion C = Project Completed R = Want Removed from Annex X = No Action Taken		

Action F - 1.15

TABLE: ACTION PLAN MATRIX		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# F—1.15	Integrate the hazard mitigation plan into other plans, programs, or resources that dictate land use or redevelopment.	
Status Description: Yes		O
Completion status legend: N = New O = Action Ongoing toward Completion C = Project Completed R = Want Removed from Annex X = No Action Taken		

Completed Mitigation Actions

The following section represents completed mitigation actions, and serves as an archive of identified and completed projects.

Action F - 1.7

TABLE: ACTION PLAN MATRIX		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# F—1.7	Cherry Creek East Branch flood control project.	
Status Description: Yes	Work completed. FEMA flood change map has been approved after this project was completed, removing numerous properties from the flood plain.	C
Completion status legend: N = New O = Action Ongoing toward Completion C = Project Completed R = Want Removed from Annex X = No Action Taken		

Future Needs to Better Understand Risk/Vulnerability

The Village of Flossmoor is looking to seek funding for flood control projects that will reduce the footprint of the floodplain within the village, reducing flood damage and lowering the cost of flood insurance for our residents.

Additional Comments

The Village of Flossmoor is seeking to replace the Brookwood Road bridge and Butterfield Road culvert, located in an area that is prone to flooding so we can improve the structural integrity of the bridge and culvert. Both structures are experiencing significant wear and deterioration which is further amplified by the occurrence of flooding events along Butterfield Creek.

For the Flossmoor Road viaduct sewer improvement project, we are seeking to improve the storm sewers under the viaduct on Flossmoor Road that is prone to flooding. The flooding under the viaduct has caused the road to be shut down, forcing emergency services to seek alternative routes to the east side of town which forces the emergency responders to go a mile out of the way to bypass the flooded viaduct, severely hampering critical services in an emergency. This project will involve the construction of a relief storm sewer that will help drain the viaduct during larger storm events.

The Butterfield Road flood control project involves the construction of a flood water reservoir to increase flood storage capacity on Butterfield Creek. This project is located on Butterfield Road, upstream of the Brookwood Bridge.

The Dartmouth Bike Bridge and Stabilization Project involves the replacement of the existing bike bridge over Butterfield Creek and the construction of bank stabilization measures adjacent to the bike path. The existing bike bridge is in a severely deteriorated state and suffers damage to the wood deck during flood events. The creek banks are also severely eroded and measures need to be implemented to ensure that the bike path property is not lost to Butterfield Creek.

The Village of Flossmoor does not currently have an early warning storm siren in the event of a tornado and we rely on sporadic coverage from storm sirens in neighboring communities. The Village is seeking alternative funding sources to install and operate a storm siren warning system that would provide notification to residents when severe weather is imminent.

HAZUS-MH Risk Assessment Results

FLOSSMOOR EXISTING CONDITIONS	
2010 Population	9,464
Total Assessed Value of Structures and Contents	\$2,378,051,960
Area in 100-Year Floodplain	192.09 acres
Area in 500-Year Floodplain	200.98 acres
Number of Critical Facilities	21

HAZARD EXPOSURE IN FLOSSMOOR						
	Number Exposed		Value Exposed to Hazard		Total	% of Total Assessed Value Exposed
	Population	Buildings	Structure	Contents		
Dam Failure						
Buffalo Creek	0	0	\$0	\$0	\$0	0.00%
U. Salt Cr. #2	0	0	\$0	\$0	\$0	0.00%
Touhy	0	0	\$0	\$0	\$0	0.00%
U. Salt Cr. #3	0	0	\$0	\$0	\$0	0.00%
U. Salt Cr. #4	0	0	\$0	\$0	\$0	0.00%
Flood						
100-Year	189	58	\$23,549,555	\$11,774,777	\$35,324,332	1.49%

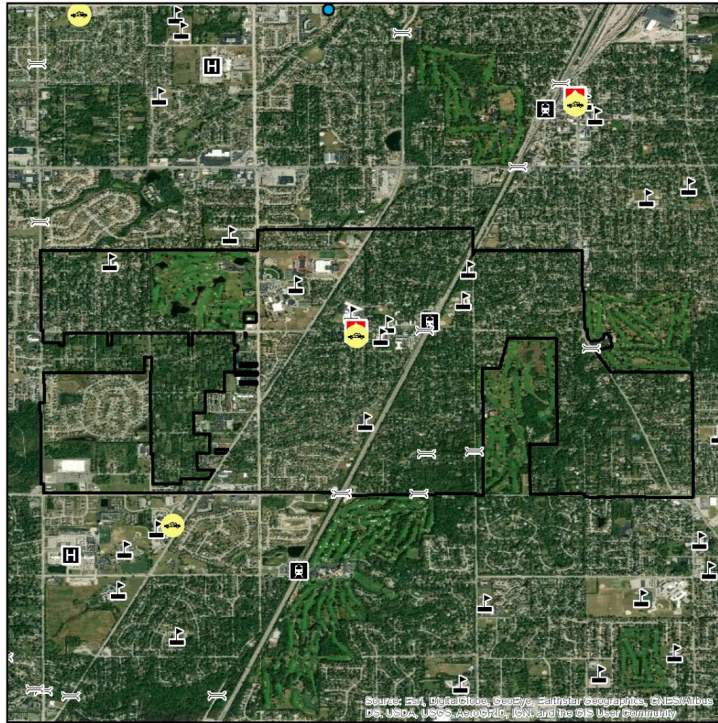
500-Year	218	67	\$27,669,134	\$13,834,567	\$41,503,702	1.75%
Tornado						
100-Year	—	—	\$300,033,642	\$151,695,356	\$451,728,998	19.00%
500-Year	—	—	\$691,700,241	\$449,935,356	\$1,141,635,598	48.01%

ESTIMATED PROPERTY DAMAGE VALUES IN FLOSSMOOR

	Estimated Damage Associated with Hazard			% of Total Assessed Value Damaged
	Building	Contents	Total	
Dam Failure				
Buffalo Creek	\$0	\$0	\$0	0.00%
U. Salt Cr. #2	\$0	\$0	\$0	0.00%
Touhy	\$0	\$0	\$0	0.00%
U. Salt Cr. #3	\$0	\$0	\$0	0.00%
U. Salt Cr. #4	\$0	\$0	\$0	0.00%
Earthquake				
1909 Historical Event	\$8,695,696	\$2,041,662	\$10,737,357	0.45%
Flood				
10-Year	\$463,995	\$206,958	\$670,953	0.03%
100-Year	\$2,211,148	\$931,044	\$3,142,193	0.13%
500-Year	\$3,382,540	\$1,432,277	\$4,814,818	0.20%

Tornado				
100-Year	\$30,003,364	\$15,169,536	\$45,172,900	1.90%
500-Year	\$100,988,235	\$65,690,562	\$166,678,797	7.01%

Hazard Mapping

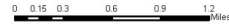


VILLAGE OF FLOSSMOOR

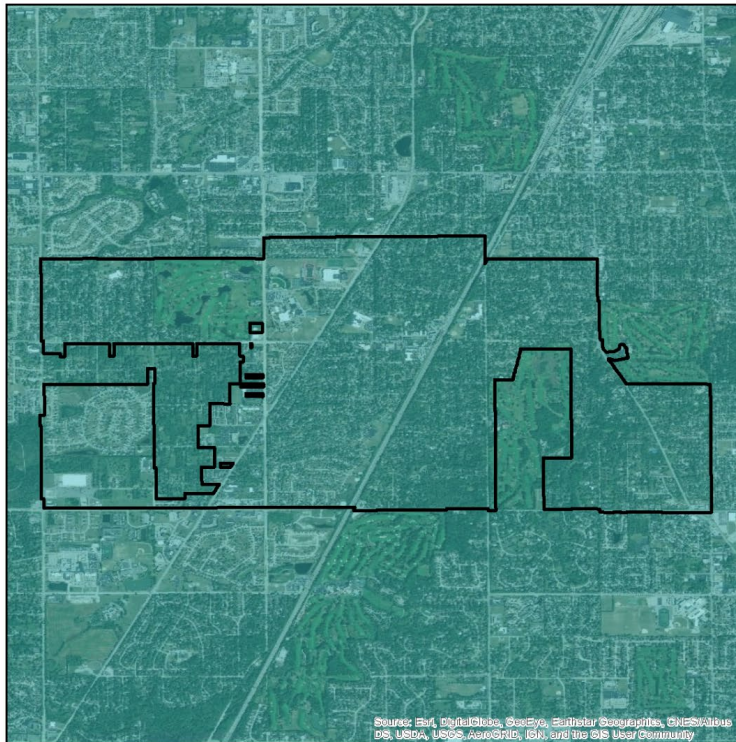
CRITICAL INFRASTRUCTURE

- Oil Facilities
- Transit Centers
- Military Facilities
- Police Stations
- Fire Stations
- Hazardous Waste
- Airports
- Hospitals
- Highway Bridges
- Warming Centers
- Cooling Centers
- Schools
- Railroad Stations

Base Map Data Sources:
Cook County, ESRI



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



VILLAGE OF FLOSSMOOR

PEAK GROUND ACCELERATION FOR A 100 YEAR EARTHQUAKE EVENT

Mercalli Scale, Potential Shaking
II-III Weak

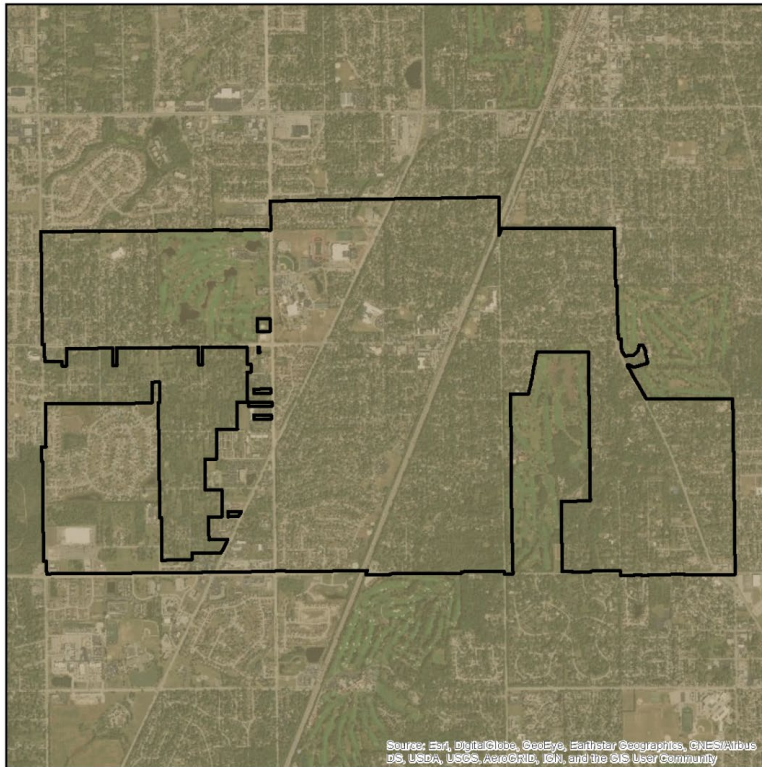
Data provided by the USGS Earthquake Hazards Program and Cook County.

Probabilistic seismic-hazard maps were prepared for the conterminous United States for 2014 portraying peak horizontal acceleration and horizontal spectral response acceleration for 0.2- and 1.0-second periods with probabilities of exceedance of 10 percent in 50 years and 2 percent in 50 years. All of the maps were prepared by combining the hazard derived from spatially smoothed historical seismicity with the hazard from fault-specific sources. The acceleration values contoured are the random horizontal component. The reference site condition is firm rock, defined as having an average shear-wave velocity of 760 m/s in the top 30 meters corresponding to the boundary between NEHRP (National Earthquake Hazards Reduction Program) site classes B and C.

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VILLAGE OF FLOSSMOOR

NATIONAL EARTHQUAKE HAZARD REDUCTION PROGRAM (NEHRP) SOIL CLASSIFICATION

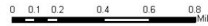
TYPE

- C - Very Dense Soil, Soft Rock
- D - Stiff Soil
- F - Site Specific Evaluation

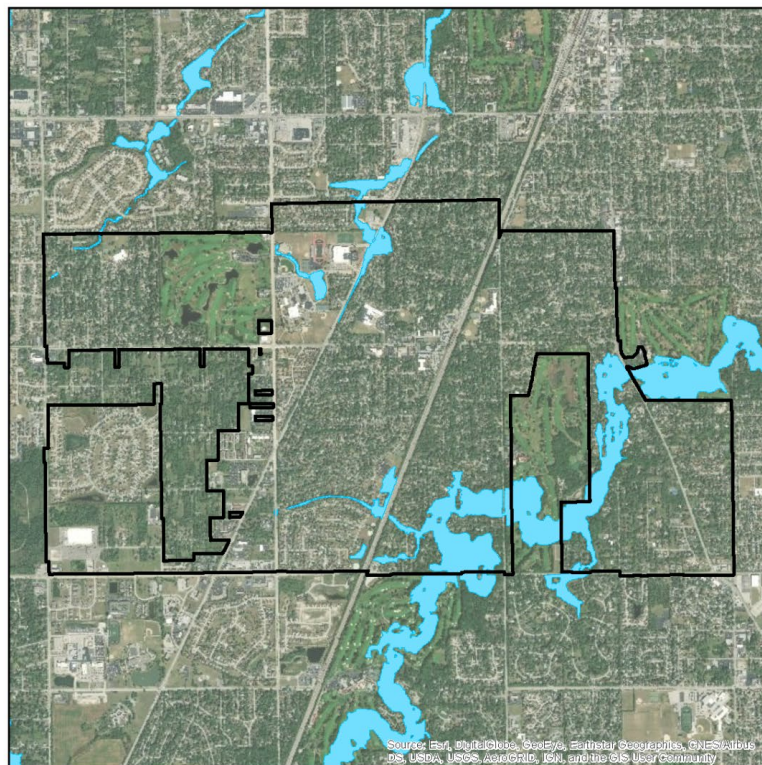
Data provided by the Illinois State Geological Survey and Cook County.

The Central United States Earthquake Consortium (CUSEC) State Geologists produced a regional Soil Site Class map (NEHRP Soil Profile Type M ap), a Liquefaction Susceptibility Map and a Soil Response Map for the 8 states to be used in the FEMA New Madrid Catastrophic Planning Initiative Phase I work. The USGS Geologic Investigation Series I-2789 Map of Surficial Deposits and Materials in the Eastern and Central United States (East of 102 degrees West Longitude) by David S. Fullerton, Charles A. Bush and Jean N. Pennell (2003) was the base map used for this work. Each State Geological Survey produced its own state map version of the Soil Site Class and Liquefaction Susceptibility maps. The procedures outlined in the NEHRP provisions (Building Seismic Safety Council, 2004) and the 2002 International Building Codes (International Code Council, 2002) were followed to produce the soil site class maps. CUSEC State Geologists used the entire column of soils material down to bedrock and did not include any bedrock in the calculation of the average shear wave velocity for the column, since it is the soil column and the difference in shear wave velocity of the soils in comparison to the bedrock which influences much of the amplification.

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VILLAGE OF FLOSSMOOR

COOK COUNTY MWRDGC 100-YEAR INUNDATION AREA

- 100-year Inundation Area

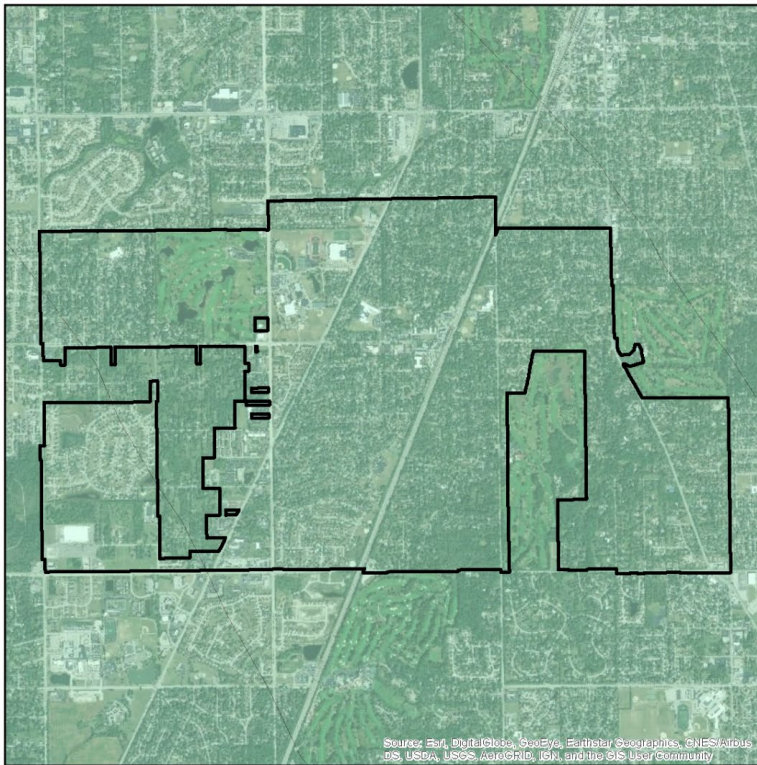
MWRDGC Data provided by Metropolitan Water Reclamation District of Greater Chicago and Cook County.

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DISCLAIMER: The Cook County MWRDGC 100-year Inundation Map is provided to show general flood risk information regarding floodplains and inundation areas. This map is not regulatory. Official FEMA Flood Insurance Study information and regulatory maps can be obtained from <http://www.fema.gov>.



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



VILLAGE OF FLOSSMOOR

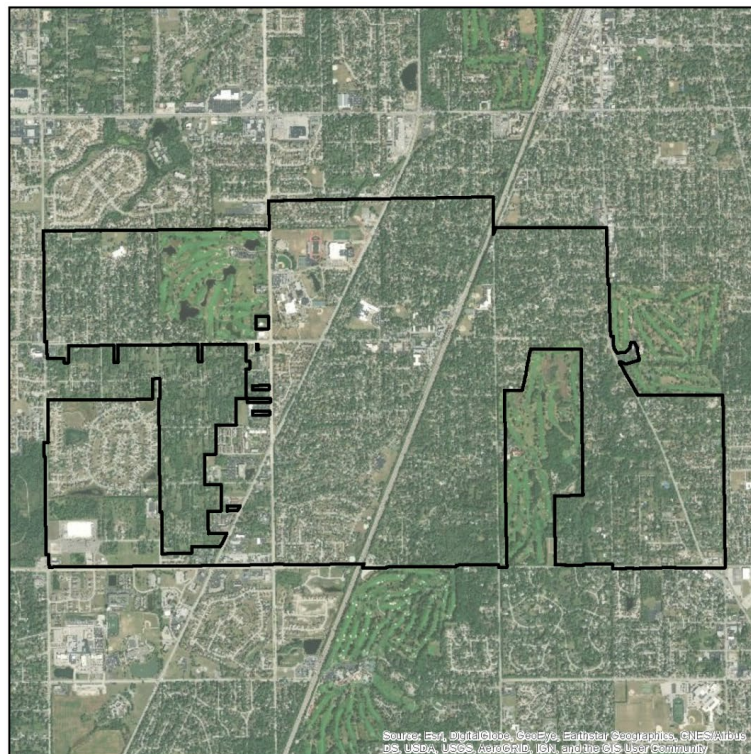
LIQUEFACTION SUSCEPTIBILITY



Data provided by the Illinois State Geological Survey and Cook County.

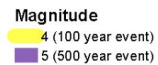
The Central United States Earthquake Consortium (CUSEC) State Geologists produced a regional Soil Site Class map (NEHRP Soil Profile Type Map), a Liquefaction Susceptibility Map and a Soil Response Map for the 8 states to be used in the FEMA New Madrid Catastrophic Planning Initiative Phase 3 work. The USGS Geologic Investigation Series I-2789 Map of Surficial Deposits and Materials in the Eastern and Central United State (East of 102 degrees West Longitude) by David S. Fullerton, Charles A. Butz and Juan N. Ponnell (2003) was the base map used for this work. Each State Geological Survey produced its own state map version of the Soil Site Class and Liquefaction Susceptibility maps. The procedures outlined in the NEHRP provisions (Building Seismic Safety Council, 2004) and the 2003 International Building Codes (International Code Council, 2002) were followed to produce the soil site class maps. CUSEC State Geologists used the entire column of soils material down to bedrock and did not include any bedrock in the calculation of the average shear wave velocity for the column, since it is the soil column and the difference in shear wave velocity of the soils in comparison to the bedrock which influences much of the amplification.

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VILLAGE OF FLOSSMOOR

100- AND 500- YEAR TORNADO EVENTS



Historic tornado data provided by NOAA/NWS showing the initial points and paths of all F4 and F5 events observed from 1950 to 2017.

