

Northbrook

Hazard Mitigation Plan Point of Contact

Primary Point of Contact	Alternate Point of Contact
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Jurisdiction Profile

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

Date of Incorporation: 1901

Current Population: The 2020 U.S. Census population was 35,222. The 2022 U.S. Census estimate indicated the population was 34,182.

Population Growth: The overall population has increased by 3.06% between 2018 and 2022.

Location and Description: The Village of Northbrook is 25 miles North of Chicago, 17 miles North of O'Hare Airport, and 5 miles West of Lake Michigan. The Village is surrounded by four major highways and also utilizes Metra and Pace routes. Northbrook is 13 square miles and contains 14 public schools 4 private schools, and 28 places of worship. Northbrook is bordered by Wheeling to the west, Deerfield and Highland Park to the North, Glencoe and Northfield to the east, and Glenview to the south.

Brief History: The earliest recorded residents of the Northbrook area were the Potawatomi tribe. In 1833 the tribe ceded their land in Illinois and the Sherman family bought 159 acres in the northwest quarter of Section 10. This is the site of the Northbrook Central Business District. The town was originally named Shermerville after Mr. Frederick Schermer who donated the land for the first railroad station (Shermer Station and later Shermer Station). By the 1870s the region was a farm town with well-established brickyards. In 1901 following a close referendum, the town was incorporated as Shermerville with about 60 homes and 311 residents. By 1921, residents felt that the Shermerville name had a bad reputation, and the official name of Northbrook was adopted in 1923. At that time there were 500 residents. Northbrook did not grow rapidly until after World War II. In 1940, the population was 1,265, but by 1960 the population was 11,635. Another growth spurt was stimulated by the completion in 1963 of a water line to bring Lake Michigan water to Northbrook's new water treatment plant. By 1970 the population had more than doubled to 25,422.

Climate: Northbrook's climate is typical of the Midwest, which is a humid continental climate. There are four strong seasons with warm to hot summers, cold and snowy winters, and rain in all seasons. Temperatures can rise or drop rapidly; winds can be extreme; and the flow of dry or moist hot air from the subtropics clashing with incoming air from the subarctic can produce deadly tornadoes. In winter, snowstorms can bring heavy lake-effect snow to the area. Average summer temperatures are 76 °F with extremes in excess of 100 degrees, and average winter temperatures are 26 °F, with extremes in the negatives. The average annual rainfall is 33 inches, and snowfall is 39 inches.

Governing Body Format: The Village has a Council-Manager form of government which was adopted in 1953 by referendum. The Board is made up of the Village President and six trustees. All are elected for four-year terms on an at-large basis. Also elected for a four-year term is the Village Clerk. The Village has 22 boards, commissions, and task forces, which report to the Village Board. This body of Government will assume the responsibility for the adoption and implementation of this plan. The Village operates the following departments: finance, fire, police, public works, building, development and planning services, and general government.

Development Trends: Anticipated development levels for Northbrook are low to moderate, consisting of mostly residential development. Residential activity has seen an approximate annual increase of 15% since 2011, while commercial-related development has remained relatively flat over the same timeframe. The majority of the development activity in the Village has been for residential additions and alterations. The Village of Northbrook adopted a comprehensive plan in December 2010. The comprehensive plan helps guide land use, transportation, and economic development decisions for the Village. Future growth and development opportunities in the community will be managed as identified in the plan. Through the development of the remaining vacant commercial land and redevelopment of existing industrial and commercial areas, Northbrook has positioned itself for future new and existing business growth. Northbrook is currently home to the headquarters of internationally known companies such as Underwriters Laboratories, Inc. and Crate & Barrel as well as home for hundreds of local and regional businesses.

Changes in Community Priorities: There have been no significant changes in priority regarding the hazards that could potentially impact the community or changes in priority regarding resilience.

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 *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	Other Jurisdictional	State Mandated	(Updated) Comments

		Prohibitions	Authority		
Codes, Ordinances & Requirements					
Building Code	Yes	No	No	Yes	(2006) Ord. 07-46
Zonings	Yes	No	No	Yes	Originally Adopted 1988 Ord. 88- 62; most recent amendments (2012) Ord. 12-68
Subdivisions	Yes	No	No	Yes	(2012) Ord. 12-68
Stormwater Management	Yes	No	No	No	Northbrook's Master Stormwater Management Plan State regulates industrial activity from Construction sites 1 acre or larger under section 402 CWA. (Amd. 2011)
Post Disaster Recovery	Yes	No	Yes	No	(§8-1)
Real Estate Disclosure	No	No	Yes	Yes	(765 ILCS 77/) Residential Real Property Disclosure Act.
Growth Management	Yes	No	No	No	See Element 9 in the Comprehensive Plan; boundary agreements with multiple jurisdictions
Site Plan Review	Yes	No	No	No	(See §6-5) Amended (2007) Ord. 07-46
Public Health and Safety	Yes	No	No	No	Code 1966 (1966)
Environmental Protection	No	No	No	No	
Planning Documents					
General or Comprehensive Plan	Yes	No	No	No	Adopted 2010

<i>Is the plan equipped to provide integration to this mitigation plan?</i>					Yes
Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	Yes	No	Yes	No	MWRD Detailed Watershed Plan
Capital Improvement Plan	Yes	No	No	No	Updated. 2013
<i>What types of capital facilities does the plan address?</i>					Village facilities & infrastructure & vehicles
<i>How often is the plan revised/updated?</i>					Annually
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan	Yes	No	No	No	The Economic Development Commission is charged with reviewing all economic development-related programs and incentives including tax incentives offered through the Cook County 6b program. Adopted. 2005
Shoreline Management Plan	No	No	No	No	
Response/Recovery Planning					
Comprehensive Emergency Management Plan	Yes	Yes	Yes	No	Northbrook Emergency Operations Plan
Threat and Hazard Identification and Risk Assessment	No	No	Yes	No	Cook County EMRS Preparing THIRA
Terrorism Plan	Yes	No	Yes	No	Northbrook EOP
Post-Disaster Recovery Plan	Yes	No	Yes	No	Northbrook EOP
Continuity of Operations Plan	Yes	No	Yes	No	Northbrook EOP

Public Health Plans	Yes	No	Yes DIP	No	Northbrook EOP
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TABLE: FISCAL CAPABILITY	
Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	Can, but don't
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	

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	Director – Development/Planning Services Assistant Director – Development/Planning Services Senior Planner – Development/Planning Services Village Engineer – Public Works Project Manager – Public Works
Engineers or professionals trained in building or infrastructure construction practices	Yes	Village Engineer – Public Works Capital Projects Manager
Planners or engineers with an understanding of natural hazards	Yes	Village Engineer – Public Works Project Manager – Public Works
Staff with training in benefit/cost analysis	Yes	HR Manager
Surveyors	No	
Personnel skilled or trained in GIS applications	Yes	GIS Consortium (Municipal Government Partners)
Scientist familiar with natural hazards in local area	No	
Emergency manager	Yes	Fire Chief/Emergency Manager
Grant writers	Yes	Management Analysts in most departments

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	Public Works, Development/Planning Services
Who is your jurisdiction's floodplain administrator? (department/position)	Village Engineer/Public Works
Are any certified floodplain managers on staff in your jurisdiction?	Yes, Village Engineer
What is the date of adoption of your flood damage prevention ordinance?	Most recent amendments May 8, 2007

When was the most recent Community Assistance Visit or Community Assistance Contact?	We have not received a Community Assistance Visit
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	None that we are aware of
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?	Training and education is always welcomed.
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, The most recent NFIP CRS Cycle visit occurred on September 10, 2013

NFIP Participation Activities

Maintaining compliance under the NFIP is an important component of flood risk reduction. All planning partners that participate in the NFIP have identified actions to maintain their compliance and good standing. Cook County entered the NFIP on April 15, 1981. Structures permitted or built in the County before then are called “pre-FIRM” structures, and structures built afterward are called “post-FIRM.” The insurance rate is different for the two types of structures. The effective date for the current countywide FIRM is August 19, 2008. This map is a DFIRM (digital flood insurance rate map). The communities in Cook County that participate in the NFIP are shown in **Table: NFIP Participating Communities in Cook County** in **Volume I** of the Cook County MJ-HMP.

The NFIP makes federally-backed flood insurance available to homeowners, renters, and business owners in participating communities. The communities in Cook County that participate in the NFIP and their "Policies in Force," "Total Coverage," and "Total Written Premiums" are shown in **Table: Cook County Flood Insurance Policies** in **Volume I** of the Cook County MJ-HMP.

The following are NFIP-related activities completed by our community:

- Our staff provides the following services: permit reviews, GIS, inspections, and engineering capability.
- Our community's Floodplain Administrator is a Certified Floodplain Manager (CFM).
- Our community teaches property owners or other stakeholders about the importance of flood insurance through public outreach events, workshops, and/or seminars.
- Our community enforces local floodplain regulations and monitors compliance.
- Our floodplain development regulations meet or exceed Federal Emergency Management Agency (FEMA) or State minimum requirements.

Substantial Improvement Rule and the Substantial Damage Rule

The IDNR/OWR has developed a model ordinance for floodplain management, which has been adopted by most communities in Illinois. The ordinance includes the minimum requirements an NFIP participating jurisdiction must adopt and enforce, as well as additional higher regulatory requirements. The optional, higher regulatory standards include a minimum of one foot of freeboard above the base flood elevation and cumulative tracking of damage repairs and improvements to

establish substantial damage and substantial improvement compliance. Some jurisdictions have chosen to exceed the requirements of the model ordinance and have adopted more restrictive ordinances. This is most common in the communities in northeastern Illinois.

Existing Municipal Code:

Sec 8-205 Administration of Flood Hazard Regulations:

1. *Determination of Flood Status.* The Village Manager shall take all such actions as are necessary to ensure that all proposed development sites within the Village are reviewed to determine whether they are within the Flood Hazard Overlay District.
2. *Flood Plain Development Permit Required.* In the event that a development site is determined to be within the Flood Hazard Overlay District, a flood plain development permit must be issued by the Village Manager in accordance with section 11-403 of this Code prior to commencing any development activity. No flood plain development permit shall be issued for any activity which does not comply with the standards of this Part.
3. *Variations.* Applications for variations of the provisions of these Flood Hazard Overlay District regulations shall be limited to, and reviewed in accordance with, the provisions of Section 11-504 of this Code.

Sec. 8-211 Definitions:

Substantial Damage means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

Substantial Improvement means any repair, reconstruction or improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure either (a) before the improvement or repair is started, or (b) if the structure has been damaged, and is being restored, before the damage occurred. For the purposes of this definition, “substantial improvement” is considered to occur when the alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure. The term does not, however, include either (1) any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions or (2) any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places.

Substantially Improved Structure means a structure which has been repaired, reconstructed, or improved in such a manner that the cost of such repair, reconstruction or improvement equals or exceeds 50 percent of the market value of the structure, in accordance with 44. C.F.R. Section 59.1, as amended from time to time.

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	Classification	Date Classified
Community Rating System	Yes	Class 7	1995
Building Code Effectiveness Grading Schedule	Yes	Unknown	N/A
Public Protection/ISO	Yes	ISO Class 1	7/1/2017
StormReady	Yes	Gold (Countywide)	2014

Tree City USA	Yes	Participating	1994
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Opportunities to Expand and Improve Capabilities

At this time, the municipality did not include or identify any opportunities to expand and improve capabilities. Plans will be updated in the future should this change.

Plan Integration

The capability assessment describes opportunities to "link" or integrate the mitigation plan into other planning mechanisms. The process and mechanism to identify opportunities to integrate the Cook County MJ-HMP into other planning mechanisms will occur during the Annual Update Process and be reflected in the Jurisdictional Annual Report each year. Specific plan integration opportunities will include:

- The goals and actions of the Hazard Mitigation Plan will be considered in the next capital improvement planning process.
- The hazards, goals, and actions of the Hazard Mitigation Plan will be considered in the next update of the Comprehensive Plan.
- The hazards, goals, and actions of the Hazard Mitigation Plan will be considered in the next update of the jurisdiction's land use plans, zoning, and subdivision codes.

Emergency Plan Integration:

Cook County EMRS is supporting communities to develop and update their respective Emergency Operations Plans, Continuity of Operations Plan/Continuity of Government Plan, and Recovery Plan in 2024. This is an ongoing countywide initiative and is being implemented in all municipalities.

Emergency Operations Plan (EOP)

An EOP template was created for all municipalities. The 2019 Cook County MJ-HMP and the hazards in the mitigation plan have been integrated into the Situation and Assumptions section of the EOP. Within that section, the natural hazards based on the 2019 MJ-HMP were added in the Initial Analysis and Assessment and Identification of Hazards section of the EOP. The hazards in the 2019 plan and the 2024 MJ-HMP did not change apart from adding wildfires for the Forest Preserve and unincorporated areas of the County. Future updates of the EOP will take into consideration any additional new natural hazards that are added to subsequent updates to the MJ-HMP.

Continuity of Operations Plan (COOP)

The Continuity of Operations Plan (COOP) for the municipality includes a Situation section that is based on the 2019 Cook County MJ-HMP jurisdictional annex, and specifically the hazards identified in the annex. The COOP-specific risk assessment is hazard-specific and based on the likelihood of occurrence and severity of impact.

Recovery Plan

The goals of the Recovery Plan were developed to align with the 2019 Cook County MJ-HMP, and specifically prioritize the responsibility of officials under this plan to save lives, protect property, relieve human suffering, sustain survivors, repair essential facilities, restore services, and protect the environment. The plan acknowledges that hazard mitigation is an important priority and consideration during the rebuilding process.

Jurisdiction-Specific Natural Hazard Event History

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: 7 (6 Single Family, 1 Two-Four Family Residence)
- Number of FEMA-Identified Severe Repetitive Loss Properties: 1 (1 Two-Four Family Residence)
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 1

Federal Disasters Declared

Disaster Declaration Number	Date Declared	Event
DR-227	4/25/1967	Tornado
DR-351	9/4/1972	Flood
DR-373	4/26/1973	Flood
DR-509	6/18/1976	Severe Storm(s)
DR-643	6/30/1981	Severe Storm(s)
DR-776	10/7/1986	Flood
DR-798	8/21/1987	Flood
DR-997	7/9/1993	Flood
DR-1129	7/25/1996	Severe Storm(s)
DR-1188	9/17/1997	Severe Storm(s)
DR-1729	9/25/2007	Severe Storm(s)
DR-1800	10/3/2008	Severe Storm(s)
DR-1935	8/19/2010	Severe Storm(s)
DR-1960	3/17/2011	Snow
EM-3068	1/16/1979	Snow
EM-3134	1/8/1999	Snow
EM-3161	1/17/2001	Snow
EM-3230	9/7/2005	Hurricane – Katrina Evacuation
EM-3435	3/13/2020	Biological
DR-4116	5/10/2013	Flood
DR-4489	3/26/2020	Biological
DR-4728	8/15/2023	Severe Storm(s)
DR-4749	11/20/2023	Flood

State Disaster Declarations

Date Declared	Event
7/26/2010	Severe Storms, High Winds, Torrential Rain
1/31/2011	Winter Weather
4/25/2011 5/25/2011	High Wind, Tornadoes, Torrential Rain
4/18/2013	Severe Storms, Heavy Rainfall, Flooding, Straight-line Winds

4/20/2013 4/21/2013 4/25/2013 4/30/2013	
1/6/2014	Heavy Snowfall, Frigid Temperatures
7/12/2017 7/14/2017	Thunderstorms, Heavy Rainfall, Flooding
1/29/2019	Winter Storm
2/6/2020	Severe Storms
3/12/2020 – present (reissued monthly)	COVID-19
2/16/2021	Winter Storms
2/1/2022	Winter Storms
8/1/2022 (reissued monthly through 10/28/2022)	Monkeypox

TABLE: NATURAL HAZARD EVENTS			
Type of Event	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment/ Event Narrative
Winter Storm		2/5/2019	6.8 inches of snow in Northbrook.
Severe Storms/Flooding		6/9/2018	2.36 inches of rain in Northbrook
Severe Weather	-	9/5/2014	\$25,000 in property damage.
Hail	-	5/12/2014	-
Hail	-	5/12/2014	-
Hail	-	4/12/2014	-
Severe Weather/Wind		11/17/2013	There were two reports of winds estimated to 70 mph near Northbrook. Tree tops were bent horizontally.
Severe Storms/Flooding	DR-4116	4/26/2013	\$22,695
Severe Storms/Flooding		7/23/2011	In Northbrook, 5.33 inches of rain fell and four motorists had to be rescued from vehicles stranded in flood waters.
Severe Winter Storm and Snowstorm	DR-1960	1/31/2011	\$70,000
Winter Storm/Lake Effect Snow			7.4 inches of snow in Northbrook
Severe Storms/Flooding	DR-1935	7/19/2010	-
Severe Storms/Flooding		5/13/2010	2.58 inches of rain fell in Northbrook
Winter Storm		2/9/2010	13.2 inches of snow in Northbrook

Severe Storms/Flooding	DR-1800	9/13/2008	In Northbrook, an overflowing stream flooded Green Park.
Winter Storm		3/21/2008	6.5 inches of snow in Northbrook
Winter Storm		12/5/2007	6.9 inches of snow in Northbrook
Severe Weather/Wind		9/25/2007	More than 50 trees were snapped or damaged throughout Northbrook.
Severe Storms/Flooding	DR-1729	8/20/2007	-
Severe Storms/Flooding		10/2/2006	Edens Expressway closed near Willow Road from flooding, 2.74 inches of rain measured in Northbrook
Illinois Hurricane Katrina Evacuation	EM-3161	9/7/2005	-
Hail		7/17/2003	Tennis ball size hail was reported in Northbrook.
Wind		2/25/2001	Wind damage at construction sites
Illinois Severe Winter Storm	EM-3134	12/11/2000	-
Severe Weather/Wind		5/18/2000	Windows were blown out at the Allstate Insurance building in Northbrook.
Illinois Winter Snow Storm	EM-3068	1/1/1999	-
Severe Weather/Wind		6/18/1998	The gym roof at Field School in Northbrook was peeled off
Flooding	DR-1188	8/16/1997	-
Flooding	DR-1129	7/17/1996	-
Flooding	DR-997	4/13/1993	-
Severe Storms/Flooding	DR-798	8/13/1987	-
Severe Storms/Flooding	DR-776	9/21/1986	-
Severe Storms/Flooding/Tornadoes	DR-643	6/30/1981	-
Illinois Blizzards and Snowstorms	EM-3068	1/16/1979	-

Jurisdiction-Specific Hazards: Vulnerabilities and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2024 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.

Flood: Our flood-prone areas are identified in our Master Stormwater Management Plan.

Wind and Tornado: Wind, especially in conjunction with thunderstorms, has done considerable damage in the area.

Severe Cold and Winter Storms: Snowfall can reach high levels during storms in the area. In addition to winter storms, lake-effect snow can impact the area.

Indicator	Number	Percent
Families in poverty	435	2.9%
People with disabilities	4,897	9.2%
People over 65 years	14,662	27%
People under 5 years	2,625	4.8%
People of color	13,674	25.2%
Black	1,058	2%
Native American	81	0.1%
Hispanic	3,322	6.1%
Difficulty with English	1,798	3.5%
Households with no car	1,406	6.5%
Mobile homes	67	0.3%

Data are from the U.S. Census Bureau, American Community Survey. See methods for more information.

The community evaluated whether vulnerability, and subsequently the potential impacts, in hazard-prone areas had increased, decreased, or remained the same for each natural hazard identified in this Hazard Mitigation Plan. Climate change, infrastructure expansion, and economic shifts that can affect vulnerability were considered. For example, if planned development is in an identified hazard area or is not built to the updated building codes, it may increase the community's vulnerability to future hazards and disasters. On the other hand, if development occurred with mitigation practices in place, the vulnerability may have remained the same or decreased. Additionally, shifting demographics were taken into consideration when assessing development trends.

Jurisdiction-Specific Climate Change Vulnerability and Impacts

The table below outlines if climate change, as assessed by the local planning team, has increased or decreased the municipality's vulnerability/exposure, and thereby the potential impacts, to each natural hazard over the past five (5) years (**Current Vulnerability**), and the effect of climate change in the future probability of occurrence and impacts (**Future Vulnerability**) from each natural hazard.

Future studies are needed to better understand the impact of climate change on the community's assets.

Hazard	Vulnerability
Current Vulnerability	
Dam and Levee Failure	Remained the Same
Drought	Increased
Earthquake	Unknown
Flood (Riverine, Urban, Shoreline)	Increased
Severe Weather (Extreme Heat, Lightning, Hail, Fog, High Winds)	Increased
Severe Winter Weather (Ice Storms, Heavy Snow, Blizzards, Extreme Cold)	Increased
Tornado	Increased
Wildfire (Wildfire Smoke)	Increased

Hazard	Vulnerability
Future Vulnerability	
Dam and Levee Failure	No Change is Anticipated

Drought	Increase
Earthquake	Unknown
Flood (Riverine, Urban, Shoreline)	Increase
Severe Weather (Extreme Heat, Lightning, Hail, Fog, High Winds)	Increase
Severe Winter Weather (Ice Storms, Heavy Snow, Blizzards, Extreme Cold)	Increase
Tornado	Increase
Wildfire (Wildfire Smoke)	Increase

Jurisdiction-Specific Changes (or Expected Changes) in Development Trends in Hazard-Prone Areas

The table below outlines if development, as assessed by the local planning team, over the past five (5) years (**Current Vulnerability**) has increased or decreased the jurisdiction's vulnerability/exposure, and thereby the potential impacts, to these natural hazards, and the anticipated effects changes in development may have on the future probability of occurrence and impacts (**Future Vulnerability**) from these natural hazards.

Hazard	Vulnerability
Current Vulnerability	
Dam and Levee Failure	Remained the Same
Drought	Remained the Same
Earthquake	Remained the Same
Flood (Riverine, Urban, Shoreline)	Remained the Same
Severe Weather (Extreme Heat, Lightning, Hail, Fog, High Winds)	Remained the Same
Severe Winter Weather (Ice Storms, Heavy Snow, Blizzards, Extreme Cold)	Remained the Same
Tornado	Remained the Same
Wildfire (Wildfire Smoke)	Remained the Same

Hazard	Vulnerability
Future Vulnerability	
Dam and Levee Failure	No Change is Anticipated
Drought	No Change is Anticipated
Earthquake	No Change is Anticipated
Flood (Riverine, Urban, Shoreline)	No Change is Anticipated
Severe Weather (Extreme Heat, Lightning, Hail, Fog, High Winds)	No Change is Anticipated
Severe Winter Weather (Ice Storms, Heavy Snow, Blizzards, Extreme Cold)	No Change is Anticipated
Tornado	No Change is Anticipated
Wildfire (Wildfire Smoke)	No Change is Anticipated

Our community does not anticipate future major assets may be exposed or vulnerable to any of the natural hazards identified in this Hazard Mitigation Plan. Any new assets (e.g., new construction in hazard prone areas) will be constructed to adhere to the latest building codes and standards, and mitigation to protect them from identified and anticipated hazards, especially those that are expected to increase due to climate change.

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
1	Severe Weather
2	Severe Winter Weather
3	Earthquake
4	Tornado
5	Flood
6	Dam Failure
7	Drought

New Mitigation Actions

The following are new mitigation actions created during the 2024 update.

Action N3.26

Mitigation Action #26: Wescott/Oak/Maple storm water project					
Lead Agency/Department Organization: Administration	Supporting Agencies/ Organizations:	Estimated Cost: High	Potential Funding Source: General Fund State Special Funds Will require an increase on storm water fund fee in order to construct	Estimated Projected Completion Date: Short-term	Hazard(s) Mitigated: Flood (Riverine, Urban, Coastal/Shoreline)
Year Initiated		2028			
Applicable Jurisdiction		Village of Northbrook			
Applicable Goal		2			
Applicable Objective		9			
Cost Analysis (Low, Medium, High)		High			
Priority and Level of Importance (Low, Medium, High)		Medium			
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)		Medium			
Action/Implementation Plan and Project Description:		Wescott/Oak/Maple storm water project would provide underground storage to reduce the surface storage that was creating impacts to adjacent structures and properties. Approximately 1 ac-ft of underground volume storage would be provided on Wescott Road in two vaults. One vault is located in between			

	Maple Avenue and Oak Avenue. The other vault would located in between Oak Avenue and Illinois Road.
Actual Completion Date or Ongoing Indefinite	
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed	N

Ongoing Mitigation Actions

During the 2024 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.

Action N-3.1

Mitigation Action #1: Integrate the hazard mitigation plan into other plans, ordinances, or programs to dictate land uses within the jurisdiction					
Lead Agency/Department Organization: Fire, Public Works	Supporting Agencies/ Organizations:	Estimated Cost: Low	Potential Funding Source: General Fund	Estimated Projected Completion Date: Ongoing	Hazard(s) Mitigated: All
Year Initiated	2014				
Applicable Jurisdiction	Village of Northbrook				
Applicable Goal	1,5				
Applicable Objective	3,4,6,10,13				
Cost Analysis (Low, Medium, High)	Low				
Priority and Level of Importance (Low, Medium, High)	High				
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)	High				

Action/Implementation Plan and Project Description:	Floodplain regulations incorporated into the Village's Zoning Code and Engineering Standards Manual prevent development in the identified flood zone areas.
Actual Completion Date or Ongoing Indefinite	
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed	O

Action N-3.3

Mitigation Action #3: Increase capability for snow removal.					
Lead Agency/Department Organization: Public Works	Supporting Agencies/ Organizations:	Estimated Cost: High	Potential Funding Source: General Fund	Estimated Projected Completion Date: Long-term	Hazard(s) Mitigated: Severe Winter Weather
Year Initiated	2014				
Applicable Jurisdiction	Village of Northbrook				
Applicable Goal	1,2,3				
Applicable Objective	1, 6, 11				
Cost Analysis (Low, Medium, High)	High				
Priority and Level of Importance (Low, Medium, High)	Low				
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)	Medium				
Action/Implementation Plan and Project Description:	The Village continues to evaluate and invest in snow removal training and equipment, including the use of chemicals for pre-treatment of roadways before storms and snowfall.				
Actual Completion Date or Ongoing Indefinite					
Project Status & Changes in Priority	O				

Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed	
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Action N-3.4

Mitigation Action #4: Strive to capture perishable data after significant hazard events to support future updates to the risk assessment of this plan					
Lead Agency/Department Organization: Planning, Public Works	Supporting Agencies/ Organizations:	Estimated Cost: High	Potential Funding Source: General Fund BRIC, HMGP	Estimated Projected Completion Date: Long-term and ongoing	Hazard(s) Mitigated: All
Year Initiated	2014				
Applicable Jurisdiction	Village of Northbrook				
Applicable Goal	1,2,3				
Applicable Objective	3,6,8				
Cost Analysis (Low, Medium, High)	Medium				
Priority and Level of Importance (Low, Medium, High)	Medium				
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)	High				
Action/Implementation Plan and Project Description:	Improvements have been made to storm responses through the utilization of mobile devices, online service request, and integration in GIS.				
Actual Completion Date or Ongoing Indefinite					
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed	O				

Action N-3.5

Mitigation Action #5: 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.					
Lead Agency/Department Organization: Planning, Public Works	Supporting Agencies/ Organizations:	Estimated Cost: Low	Potential Funding Source: General Fund	Estimated Projected Completion Date: Ongoing	Hazard(s) Mitigated: Flooding
Year Initiated		2014			
Applicable Jurisdiction		Village of Northbrook			
Applicable Goal		1,2,5			
Applicable Objective		3,4,6,7,9			
Cost Analysis (Low, Medium, High)		Low			
Priority and Level of Importance (Low, Medium, High)		High			
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)		Medium			
Action/Implementation Plan and Project Description:		The Village actively is improving flood-related infrastructure with the planning and construction of stormwater improvement projects. The Village also actively participates in the Community Rating System that is part of the National Flood Insurance Program.			
Actual Completion Date or Ongoing Indefinite		Ongoing			
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed		O			

Action N-3.6

Mitigation Action #6: Consider the development of a post-disaster action plan, including a debris management plan					
Lead Agency/Department Organization: Public Works	Supporting Agencies/ Organizations:	Estimated Cost: Low	Potential Funding Source: General Fund	Estimated Projected Completion Date: Long-term	Hazard(s) Mitigated: All
Year Initiated		2014			
Applicable Jurisdiction		Village of Northbrook			
Applicable Goal		1,2,3,5			
Applicable Objective		1,6,8			
Cost Analysis (Low, Medium, High)		Low			
Priority and Level of Importance (Low, Medium, High)		High			
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)		Medium			
Action/Implementation Plan and Project Description:		The Village's EOP identifies the Recovery Checklist and a more comprehensive post-disaster plan is ongoing.			
Actual Completion Date or Ongoing Indefinite					
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed		O			

Action N-3.7

Mitigation Action #7: Maintain the municipality's tornado warning system					
Lead Agency/Department Organization: Police, Fire	Supporting Agencies/ Organizations:	Estimated Cost: Low	Potential Funding Source:	Estimated Projected Completion Date:	Hazard(s) Mitigated:

			BRIC, FMA, HMGP	Ongoing	Severe Weather, Tornado
Year Initiated	2014				
Applicable Jurisdiction	Village of Northbrook				
Applicable Goal	1,2,3,5,6				
Applicable Objective	1, 5, 6, 12				
Cost Analysis (Low, Medium, High)	Medium				
Priority and Level of Importance (Low, Medium, High)	High				
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)	High				
Action/Implementation Plan and Project Description:	The tornado warning system is properly maintained by a third party and tested at two initiation locations on the first Tuesday of every month.				
Actual Completion Date or Ongoing Indefinite	Ongoing				
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed	O				

Action N-3.8

Mitigation Action #8: Continue to support the countywide actions identified in this plan.					
Lead Agency/Department Organization: All Departments	Supporting Agencies/ Organizations:	Estimated Cost: Low	Potential Funding Source: General Fund	Estimated Projected Completion Date: Ongoing	Hazard(s) Mitigated: All
Year Initiated	2014				
Applicable Jurisdiction	Village of Northbrook				
Applicable Goal	1,5				
Applicable Objective	All				

Cost Analysis (Low, Medium, High)	Low
Priority and Level of Importance (Low, Medium, High)	High
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)	Medium
Action/Implementation Plan and Project Description:	The Village has collaborated and worked with Cook County EMRS in planning and executing local drills pertaining to the plan. The Village participates in NIPSTA exercises which help emphasize Village and mutual response.
Actual Completion Date or Ongoing Indefinite	
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed	O

Action N-3.9

Mitigation Action #9: Establish and continue partnerships between public and private sectors including CERT					
Lead Agency/Department Organization: All Departments	Supporting Agencies/ Organizations:	Estimated Cost: Low	Potential Funding Source: SHSP	Estimated Projected Completion Date: Ongoing	Hazard(s) Mitigated: All
Year Initiated	2014				
Applicable Jurisdiction	Village of Northbrook				
Applicable Goal	1,2,3,4				
Applicable Objective	3, 6, 8, 13				
Cost Analysis (Low, Medium, High)	Low				
Priority and Level of Importance (Low, Medium, High)	High				
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)	Medium				

Action/Implementation Plan and Project Description:	Partnerships continue to grow. Community CERT program and team members are active and engaged. CERT Team augments fire and police operations as appropriate.
Actual Completion Date or Ongoing Indefinite	
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed	O

Action N-3.10

Mitigation Action #10: Strive to implement processes or structures to protect high-risk areas affected by floods					
Lead Agency/Department Organization: Planning, Public Works	Supporting Agencies/ Organizations:	Estimated Cost: High	Potential Funding Source: HMGP, General Fund	Estimated Projected Completion Date: Long-term	Hazard(s) Mitigated: Flooding
Year Initiated	2014				
Applicable Jurisdiction	Village of Northbrook				
Applicable Goal	1,2,3				
Applicable Objective	2, 3, 6, 7, 9, 10				
Cost Analysis (Low, Medium, High)	High				
Priority and Level of Importance (Low, Medium, High)	High				
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)	High				
Action/Implementation Plan and Project Description:	The village continues to complete comprehensive flood reduction projects within the Village.				
Actual Completion Date or Ongoing Indefinite					
Project Status & Changes in Priority	O				

Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed	
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Action N-3.11

Mitigation Action #11: Actively participate in the plan maintenance strategy identified in this plan.					
Lead Agency/Department Organization: EMRS, Village Administration	Supporting Agencies/ Organizations:	Estimated Cost: Low	Potential Funding Source: General Fund	Estimated Projected Completion Date: Short-term	Hazard(s) Mitigated: All
Year Initiated	2014				
Applicable Jurisdiction	Village of Northbrook				
Applicable Goal	1,5				
Applicable Objective	3,4,6				
Cost Analysis (Low, Medium, High)	Low				
Priority and Level of Importance (Low, Medium, High)	High				
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)	Medium				
Action/Implementation Plan and Project Description:	A proactive maintenance program has been established for this plan by the Emergency Manager, including a quarterly review of the plan.				
Actual Completion Date or Ongoing Indefinite					
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed	O				

Action N3.23

Mitigation Action #23: Update Village's Emergency Operating Plan					
Lead Agency/Department Organization: Village Administration	Supporting Agencies/Organizations:	Estimated Cost: Low	Potential Funding Source: General Fund	Estimated Projected Completion Date: 2024	Hazard(s) Mitigated: All
Year Initiated		2023			
Applicable Jurisdiction		Village of Northbrook			
Applicable Goal		1,2,3,4,5			
Applicable Objective					
Cost Analysis (Low, Medium, High)		Low—The project could be funded under the existing budget. The project is part of or can be part of an ongoing existing program.			
Priority and Level of Importance (Low, Medium, High)		Medium			
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)		Up-to-date emergency response to allow for better preparation, communication, and execution during crisis events Low—Long-term benefits of the project are difficult to quantify in the short term.			
Action/Implementation Plan and Project Description:					
Actual Completion Date or Ongoing Indefinite					
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed		O Interdepartmental review and update to the Emergency Operating Plan			

Action N3.25

Mitigation Action #25: Implement Koepke Rd. Stormwater Management Project (Master Stormwater Management Plan Project 37)					
Lead Agency/Department Organization: Public Works	Supporting Agencies/ Organizations:	Estimated Cost: \$1,243,124	Potential Funding Source: BRIC, FMA, HMGP	Estimated Projected Completion Date: 2027	Hazard(s) Mitigated: Flooding
Year Initiated		2024			
Applicable Jurisdiction		Village of Northbrook			
Applicable Goal		2,3			
Applicable Objective					
Cost Analysis (Low, Medium, High)		Medium—The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.			
Priority and Level of Importance (Low, Medium, High)		Medium			
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)		Two properties will experience a reduction in property flooding and structure flooding. Medium—The project will have a long-term impact on the reduction of risk exposure for life and property, or the project will provide an immediate reduction in the risk exposure for property.			
Action/Implementation Plan and Project Description:		Engineering for the project is scheduled to occur in 2024/2024 and 2025/2026. Construction is scheduled to begin in 2026/2027 and consists of replacing and upsizing storm pipe and manhole structure to create a 10-year level of service.			
Actual Completion Date or Ongoing Indefinite					
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed		O			

Completed Actions

Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Completed Action Items
Update the municipality's emergency operations center
Implement Blackthorne Lane Stormwater Project- Improve street drainage collection system
Implement Brittany Road Stormwater Management Project (Master Stormwater Management Plan Project 24)
Implement Dehne Subdivision Stormwater Management Project (Master Stormwater Management Plan Project 24)
Implement First Street/Center Avenue Stormwater Management Project (Master Stormwater Management Plan Project 24)
Implement Landwehr Road/Sunset Trail Intersection Stormwater Management Project (Master Stormwater Management Plan Project 26)
Implement Longvalley Drive Stormwater Management Project (Master Stormwater Management Plan Project 27)
Implement Second Street Culvert Replacement
Implement Surrey Lane Stormwater Management Project (Master Stormwater Management Plan Project 28)
Implement Wendy Drive Stormwater Management Project (Master Stormwater Management Plan Project 28)
Willow Creek Subdivision (Master Stormwater Management Plan Project 31)

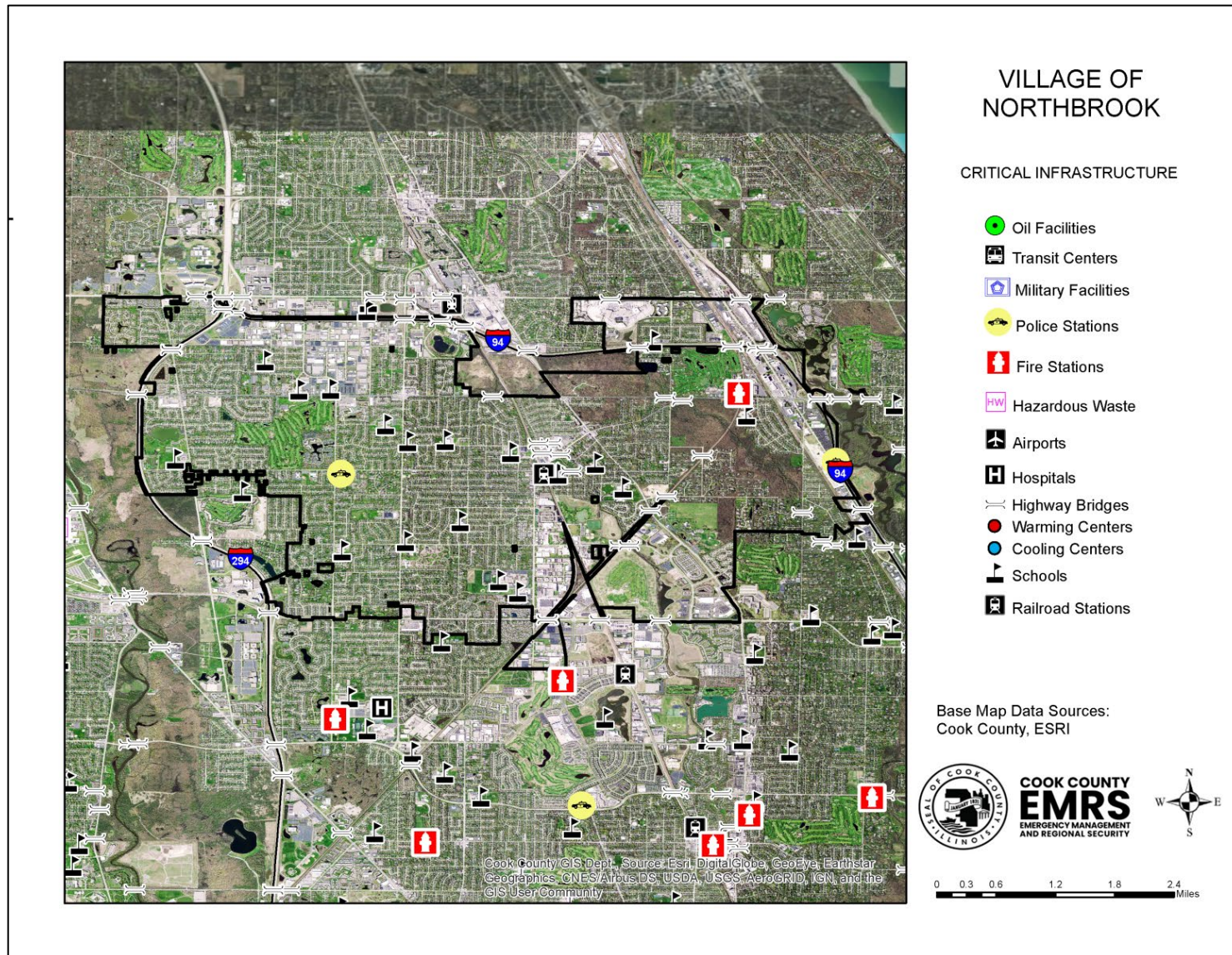
Future Needs to Better Understand Risk/Vulnerability

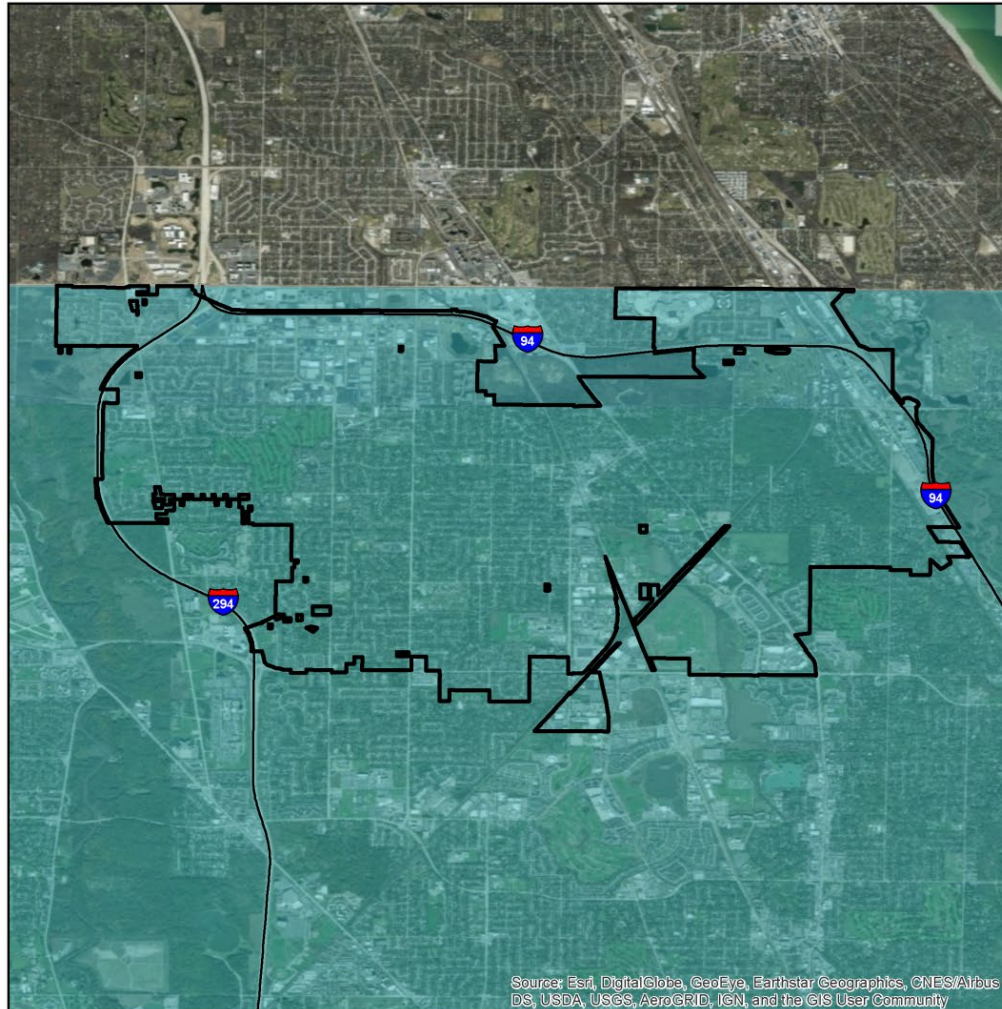
No needs have been identified at this time.

Additional Comments

No additional comments at this time.

Hazard Mapping





VILLAGE OF NORTHBROOK

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 780 m/s in the top 30 meters corresponding to the boundary between NEHRP (National Earthquake Hazards Reduction program) site classes B and C.

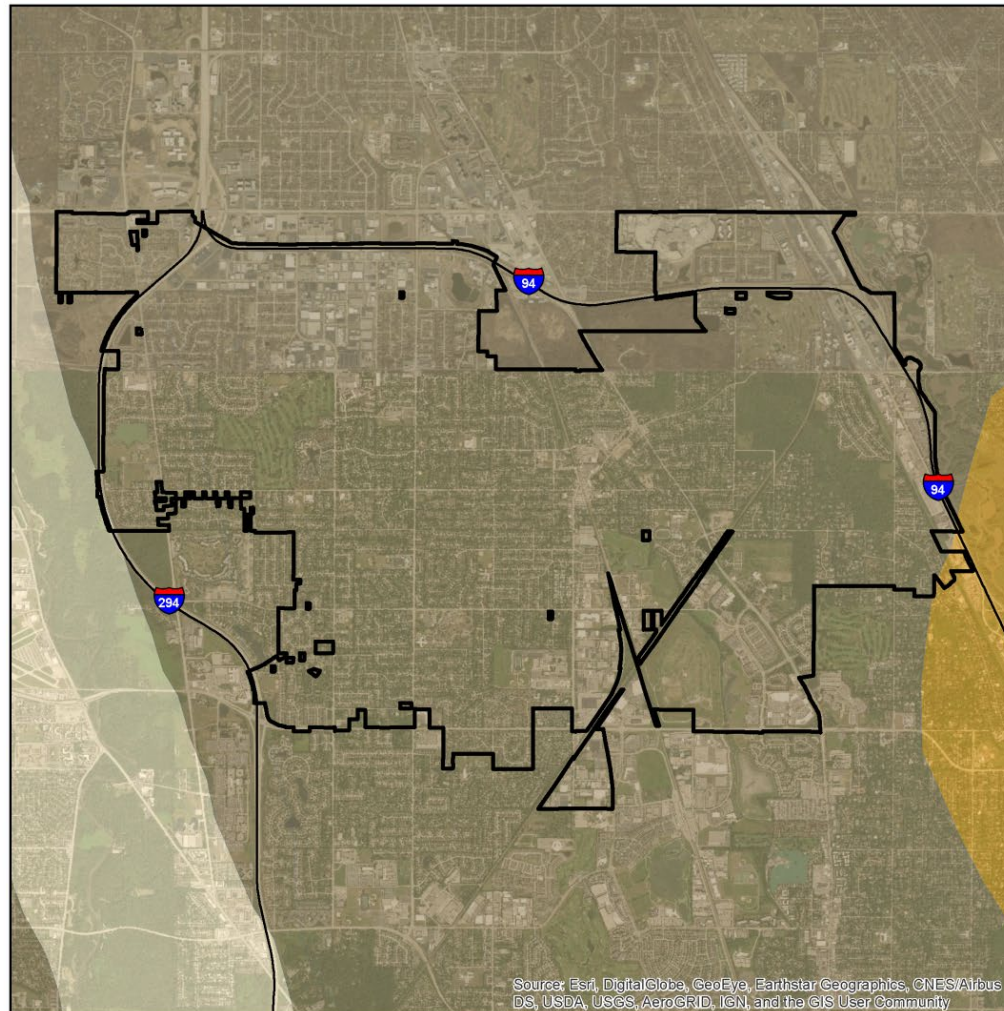
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COOK COUNTY
EMRS
EMERGENCY MANAGEMENT
AND REGIONAL SECURITY



0 0.3 0.6 1.2 1.8 2.4 Miles



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

VILLAGE OF NORTHBROOK

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 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 II work. The USGS Geologic Investigation Series I-2769 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. 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 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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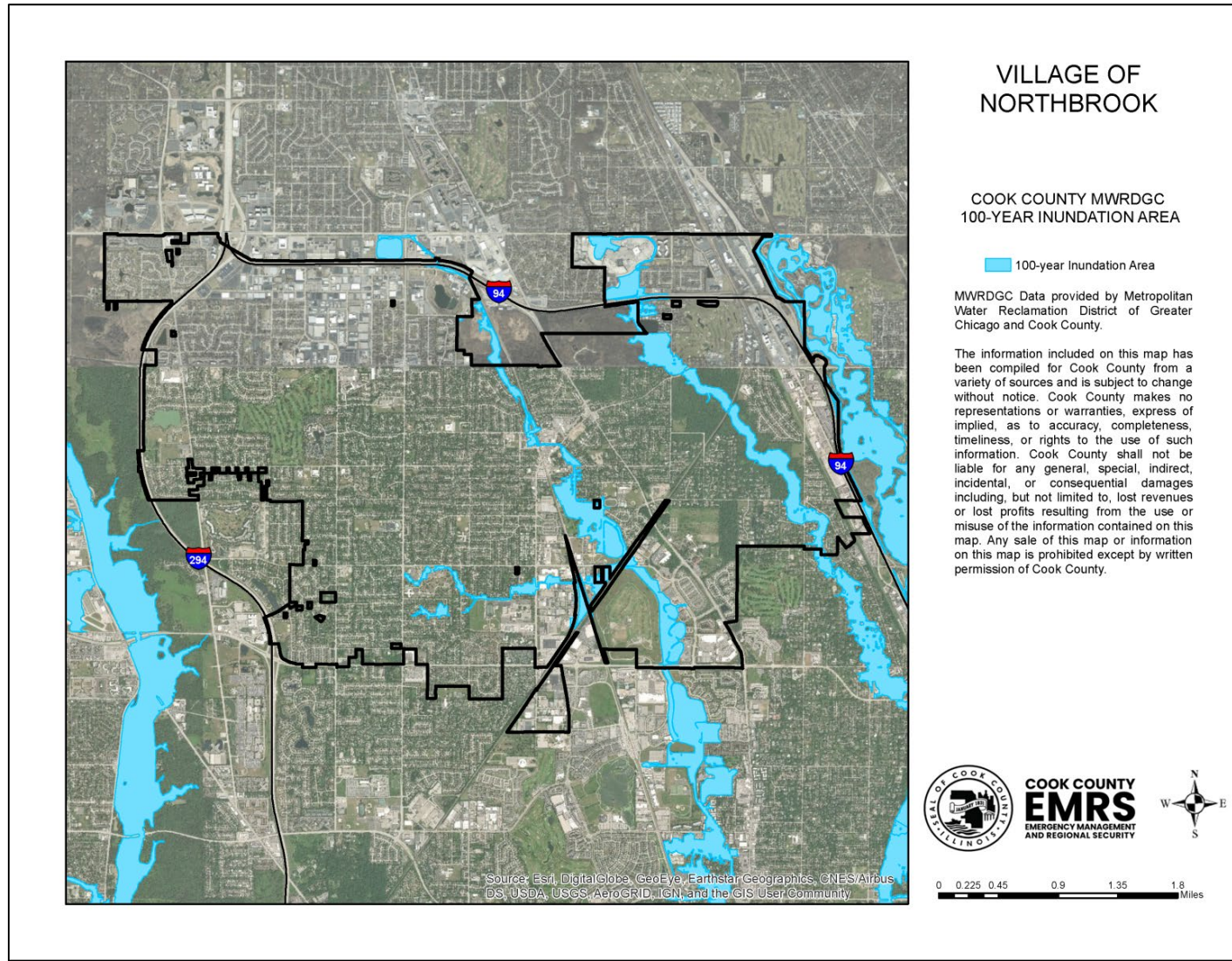


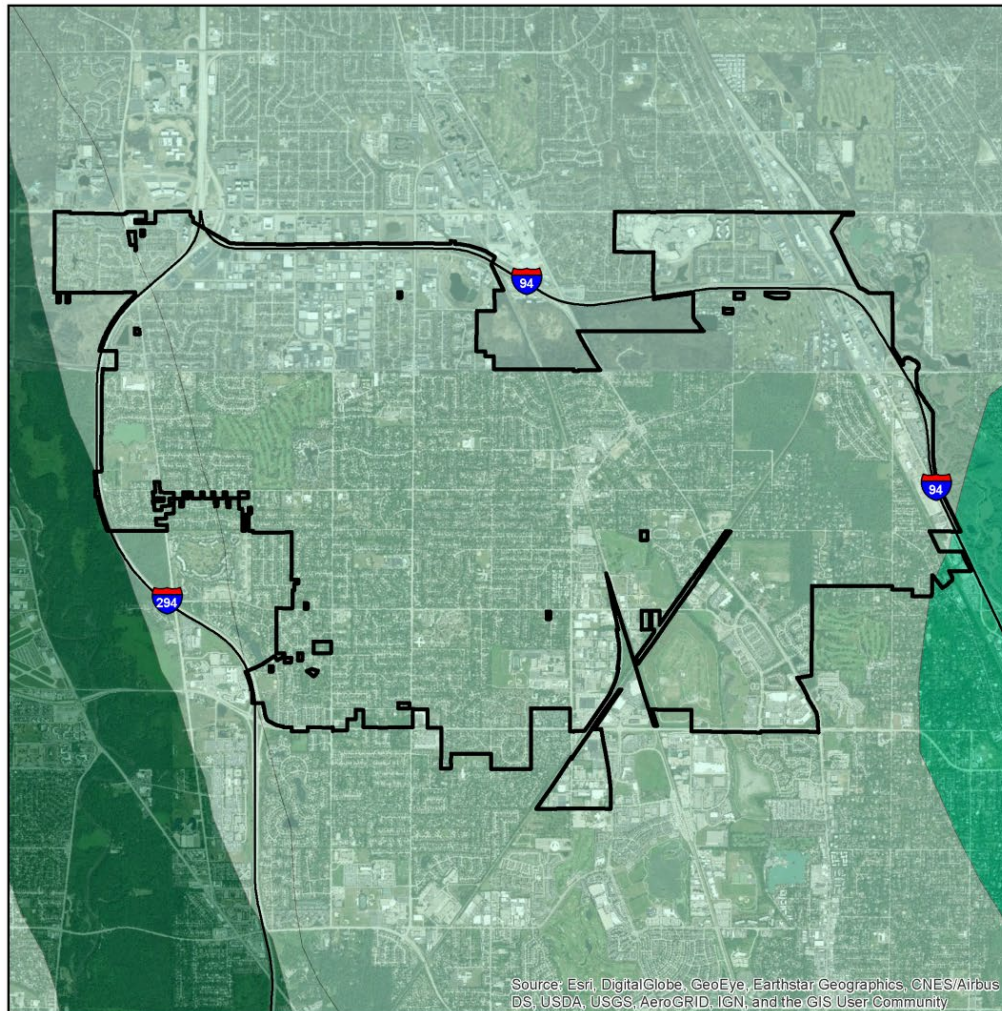
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0 0.225 0.45 0.9 1.35 1.8 Miles

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 NORTHBROOK

LIQUEFACTION SUSCEPTIBILITY

LIQUEFACTION SUSCEPTIBILITY

- high
- low
- very low

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 II 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. 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 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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0 0.225 0.45 0.9 1.35 1.8 Miles

