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

Orland Hills Annex

FINAL

July 2019

Prepared for:

Cook County
Department of Homeland Security and Emergency Management
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Hazard Mitigation 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:** 1961
- **Current Population:** 7,082 as of the 2018 U.S. Census population estimate.
- **Population Growth:** The population of Orland Hills has stabilized with the Village being land-locked and with only small parcels available for future residential development. In 1978, a special census indicated that Westhaven (Orland Hills) had a population of 2,034. From incorporation through the mid-1980s, development and construction of new homes brought the population to just under 5,000 residents. In 1986, through the passage of an ordinance, the name of the Village was changed to Orland Hills. The 2010 U.S. Census population for Orland Hills was 7,149 and the current estimate is similar with an estimate of 7,082.
- **Location and Description:** The Village of Orland Hills is located 30 miles southwest of the City of Chicago. The Village is situated between the two larger suburbs of Tinley Park and Orland Park. The Village is primarily bounded by 159th Street on the north and 171st Street on the south. The western boundary is 94th Avenue with some residential and commercial development west of 94th Avenue on 167th Street. There is also multi-family residential development west of LaGrange Road and just north of 167th Street. The eastern boundary is 88th Avenue. Fire service is provided by the Orland Fire Protection District. Fresh water delivery and sanitary sewer service is provided by the Illinois American Water Company. Library service is provided to Orland Hills residents by the Orland Hills Library District through an intergovernmental agreement with the Tinley Park Library. According to the U.S. Census Bureau, the Village of Orland Hills has a total land area of 1.14 square miles.
- **Brief History:** Orland Hills is the youngest Village in Southwest Cook County and was formerly known as Westhaven. There is very little official record regarding the Westhaven area prior to incorporation in 1961. The 1960s and 1970s brought many annexations which expanded the town to its present boundaries. The Village is primarily residential in nature with an abundance of park land and open space located within and adjacent to the municipal boundaries.
- **Climate:** Orland Hills witnesses weather similar to all other Northeastern Illinois suburbs that lie within the humid continental climate zone and experience four distinct seasons. Summers are hot and humid. Winters are cold and snowy with few sunny days. Spring and autumn are mild seasons with low humidity. Orland Hills can experience extreme winter cold waves that may last for several consecutive days. There are also many mild winter and summer days. Thunderstorms are not uncommon during the spring and summer months which may sometimes produce hail, high winds and tornadoes.
- **Governing Body Format:** The Village of Orland Hills is incorporated as a Village governed by a “strong Mayor” form of government under the laws of the State of Illinois. This body of Government will assume the responsibility for the adoption and implementation of this plan. Orland Hills is a non-home-rule unit of government. The Village President (Mayor), Village Clerk and six Village Trustees are elected “at-large”. These elected positions are all considered as “Part-Time” positions. The Mayor, Clerk and three Trustees are elected every four years and two

years later the other three Trustee positions are elected to four year terms. According to Illinois Law, this is an alternating term method which provides continuity in governance. The Village of Orland Hills operates 4 departments including the Recreation Department, Police Department, Local Services, and Building Department. Orland Hills is part of the Orland Fire Protection District.

- **Development Trends:** Since incorporation in 1961, the Village of Orland Hills has continued to grow in a positive and well-planned manner. Adopting a Comprehensive Plan in 2004 renewed Village efforts to place an emphasis on future development of residential and commercial prospects in Orland Hills. Over the past 15 years, significant residential and commercial development has taken place with measurable population growth.

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	In accordance with Public Act 096-0704, Illinois has adopted the IBC as its state Building Code. 1995
Zonings	Yes	No	No	Yes	Orland Hills Code of Ordinances Title XV, Section 159/1995
Subdivisions	Yes	No	No	No	Orland Hills Code of Ordinances Title XV, Section 159/1995
Stormwater Management	Yes	No	Yes	Yes	State regulates industrial activity from Construction sites 1 acre or larger under section 402 CWA. Orland Hills Code of Ordinances Title XV, Section 153/ 1995

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	Orland Hills Code of Ordinances / 1995
Public Health and Safety	Yes	No	Yes	No	Orland Hills Code of Ordinances 1995 Title IX Section 93/1995
Environmental Protection	No	No	No	No	
Planning Documents					
General or Comprehensive Plan	Yes	No	No	No	Orland Hills Comprehensive Plan / 2004
Is the plan equipped to provide linkage to this mitigation plan?					Yes
Floodplain or Basin Plan	Yes	No	No	No	Orland Hills Code of Ordinances Title XV, Section 153/1995
Stormwater Plan	Yes	No	No	No	Regional storm water impacts are managed by MWRD. The Village lies within the Marley Creek, Cal Sag, and Little Calumet watershed planning area of MWRD's comprehensive Storm water Master Planning Program.

Capital Improvement Plan	No	No	No	No	
What types of capital facilities does the plan address?					N/A
How often is the plan revised/updated?					N/A
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan	No	No	Yes	Yes	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
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	Yes	No	No	No	Orland Hills Emergency Response Plan / 2012
Continuity of Operations Plan	Yes	No	Yes	No	Orland Hills Emergency Response Plan/ 2012
Public Health Plans	No	No	Yes	No	Cook County DPH

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	No
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No

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	B. Brink, CFM
Engineers or professionals trained in building or infrastructure construction practices	Yes	Christopher Burke Engineering, Ltd.
Planners or engineers with an understanding of natural hazards	Yes	B. Brink, CFM
Staff with training in benefit/cost analysis	Yes	B. O'Neill, Assistant Administrator
Surveyors	Yes	Christopher Burke Engineering, Ltd
Personnel skilled or trained in GIS applications	Yes	Cook County GIS Consortium
Scientist familiar with natural hazards in local area	Yes	Christopher Burke Engineering, Ltd
Emergency manager	Yes	T. Scully, Police Chief
Grant writers	Yes	C. Kiebles, Administrator

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	Engineering & Building and Public Works
Who is your jurisdiction's floodplain administrator? (department/position)	B. Brink, CFM
Are any certified floodplain managers on staff in your jurisdiction?	Yes B. Brink, CFM
What is the date of adoption of your flood damage prevention ordinance?	1995
When was the most recent Community Assistance Visit or Community Assistance Contact?	October, 2013
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, Yes

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System	Yes	5	October 2013
Building Code Effectiveness Grading Schedule	Yes	5	January 2013
Public Protection/ISO	Unknown	Unknown	Unknown
StormReady	Yes	Gold (Countywide)	2014
Tree City USA	Yes	N/A	November 2013

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: 0
- 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
Severe Storms	DR-4116	2013	-
Severe Winter Storms	DR-1960	2011	-
Severe Storms/Flooding	DR-1935	2010	-
Severe Storms/Flooding	DR-1800	2008	-
Severe Storms/Flooding	DR-1729	2007	-
Severe Winter Storm	EM-3161	2000	-
Winter Snow Storm	EM-3134	1999	-
Flooding	DR-1188	1997	-
Flooding	DR-1129	1996	-
Severe Storms/Flooding	DR-997	1993	-
Severe Storms/Flooding	DR-798	1987	-
Severe Storms/Flooding	DR-776	1986	-

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.

Flood: The Stormwater Channel System through town is subject to erosion causing it to be less effective. In addition, some areas in town are too flat causing stormwater to flood many backyards.

Extreme Heat: The Village's vulnerability to the impacts of extreme heat would be mitigated by emergency relocation centers. The Village also needs backup generators as a redundant power source in case this natural hazard occurs.

High Winds: The Village's vulnerability to the impacts of high winds would be mitigated by emergency relocation centers. The Village also needs backup generators as a redundant power source in case this natural hazard occurs.

Blizzards: Build as salt shortage facility at our Public Works building in order to ensure proper inventory in cases of extreme snow and ice events.

Extreme Cold: Given the Village's vulnerability to extreme cold, the community would benefit from burying all overhead power lines so the buildup of ice does not cause them to break and fail.

Ice Storms: Given the Village's vulnerability to ice storms, the community would benefit from burying all overhead power lines so the buildup of ice does not cause them to break and fail.

Tornado: The Village's vulnerability to the impacts of tornadoes would be mitigated by emergency relocation centers. The Village also needs backup generators as a redundant power source in case this natural hazard occurs.

Earthquake: On 4/18/2008 at 09:36:59, a magnitude 5.4 earthquake occurred 217.0 miles away from the city center.

Dam/Levee Failure: The Village plans to mitigate by providing naturalized channel stabilization/flood control on Tinley Creek, from Lake Lorin to 88th Avenue in Orland Hills.

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	54
5	Flood	70
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 Completed Date (a)
Action O6.1—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 loses.						
Ongoing	All	7, 13	Village of Orland Hills	High	FEMA Hazard Mitigation Grants	Long-term (depending on funding)
Action O6.2—Continue to support the countywide actions identified in this plan.						
Ongoing	All	All	Village of Orland Hills	Low	General Funds	Short- and long-term
Action O6.3—Actively participate in the plan maintenance strategy identified in this plan.						
Ongoing	All	3, 4, 6	DHSEM, Village of Orland Hills	Low	General Funds	Short-term
Action O6.4—Maintain participation in incentive-based programs such as the Community Rating System (CRS), Tree City, and StormReady.						

Ongoing	All	3, 4, 5, 6, 7, 9, 10, 11, 13	Village of Orland Hills	Low	General Funds	Long-term
Action O6.5—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.						
Ongoing	Flooding	4, 6, 9	Village of Orland Hills	Low	General Funds	Short- and long-term
Action O6.6—Where feasible, implement a program to record high water marks following high-water events.						
Ongoing	Flooding, Severe Weather	3, 6, 9	Village of Orland Hills	Medium	General Fund; FEMA Grant Funds (Public Assistance)	Long-term
Action O6.7—Integrate the hazard mitigation plan into other plans, programs, or resources that dictate land use or redevelopment.						
Ongoing	All	3, 4, 6, 10, 13	Village of Orland Hills	Low	General Funds	Short-term
Action O6.8—Consider the development and implementation of a Capital Improvements Program (CIP) to increase the Village's regulatory, financial and technical capability to implement mitigation actions.						
Ongoing	All	1, 2, 7	Public Works	High	CIP component of general fund (if implemented	Long-term
Action O6.9—Improve sirens.						
Ongoing	Tornado, Severe Weather	1, 3, 5, 8	Orland Fire Protection District and Village	High	FEMA	Short-term
Action O6.10—Improve flood control structures.						
Ongoing	Flooding, Severe Weather	1, 8, 9	Metropolitan Water Reclamation District	High	FEMA	Long-term
Action O6.11—Install backup generators at all village facilities						

New	Earthquake, Flood, Extreme Heat, Lightning, Hail, Fog, High Wind, Snow, Blizzard, Extreme Cold, Ice Storms, Tornado, Epidemic or Pandemic, Widespread Power Outage, Secondary Impacts from Mass Influx of Evacuees	1, 2	Orland HIlls	$1,000,000; High	Unknown	Unknown
Action O6.12 - Install new underground drainage system along with one or more lift stations to mitigate flooding.						
New	Flood	1, 2, 7, 9	Orland Hills	$2,000,000; High	Unknown	Unknown
Action O6.13 - Replace current HMP Village parking lot with porous material.						
New	Earthquake, Flood, Hail, Snow, Blizzard, Extreme Cold, Ice Storms	3, 13	Orland Hills	$2,000,000; High	Unknown	Unknown
Action O6.14 - Replace existing overhead power lines to underground.						
New	Earthquake, Lightning, Hail, Fog, High Wind, Snow, Blizzard, Extreme	1, 2, 3, 7	Orland Hills	$2,000,000; High	Unknown	Unknown

	Cold, Ice Storms, Tornado, Epidemic or pandemic, Widespread Power Outage					
Action O6.15 - Construct a salt storage facility in order to ensure proper inventory of snow removal supplies.						
New	Snow, Blizzard, Extreme Cold, Ice Storms, Tornado, Hazardous Materials Incident	13	Orland Hills	$500,000; High	Unknown	Unknown
Action O6.16 - Streambank Stabilization & Flood Control Project along Tinley Creek.						
New	Dam/Levee Failure, Flood	2, 7, 9	MWRD	$664,000; High	MWRD	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	2	High	High	Yes	Yes	No	Medium
2	13	Medium	Low	No	No	Yes	High
3	3	Medium	Low	Yes	Yes	Yes	High
4	9	Medium	Low	No	No	Yes	Medium
5	3	Medium	Low	No	No	Yes	High
6	3	Medium	Medium	Yes	Yes	No	Medium

7	5	Medium	Low	No	No	Yes	High	
8	3	High	High	No	No	No	Medium	
9	4	High	High	Yes	Yes	No	High	
10	3	Medium	High	Yes	Yes	No	High	
11	2	High	High	Yes	Unknown	Unknown	High	
12	4	High	High	Yes	Unknown	Unknown	High	
13	2	High	High	Yes	Unknown	Unknown	High	
14	4	High	High	Yes	Unknown	Unknown	High	
15	1	High	High	Yes	Unknown	Unknown	High	
16	3	High	High	Yes	Yes	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 O6.11

Mitigation Action	Install backup generators at all village facilities
Year Initiated	2019
Applicable Jurisdiction	
Lead Agency/Organization	Orland Hills
Supporting Agencies/Organizations	
Applicable Goal	• 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. • Protect public services and critical facilities, including infrastructure, from loss of use during natural hazard events.
Applicable Objective	• 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.
Potential Funding Source	N/A
Estimated Cost	$1,000,000
Benefits (loss avoided)	Reduce the risk of a power outage crippling the village's ability to manage a natural disaster
Projected Completion Date	TBD
Priority and Level of Importance (Low, Medium, High)	High priority
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).

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

Action O6.12

Mitigation Action	Install new underground drainage system along with one or more lift stations to mitigate flooding.
Year Initiated	2019
Applicable Jurisdiction	
Lead Agency/Organization	Orland Hills
Supporting Agencies/Organizations	
Applicable Goal	• 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. • Protect public services and critical facilities, including infrastructure, from loss of use during natural hazard events.
Applicable Objective	• 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. • Retrofit, purchase, or relocate structures in high hazard areas, including those known to be repetitively damaged. • Provide or improve flood protection on a watershed basis with flood control structures and drainage maintenance plans.
Potential Funding Source	N/A
Estimated Cost	$2,000,000
Benefits (loss avoided)	Reduction of flood risk to more than 100 homes. Reduction of sediment accumulating in Lake Lorin.
Projected Completion Date	TBD
Priority and Level of Importance (Low, Medium, High)	High Priority
Benefit Analysis (Low, Medium, High)	High - Project will provide and 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	TBD

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 O6.13

Mitigation Action	Replace current HMP Village parking lot with porous material
Year Initiated	2019
Applicable Jurisdiction	
Lead Agency/Organization	Orland Hills
Supporting Agencies/Organizations	
Applicable Goal	• 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. • Protect public services and critical facilities, including infrastructure, from loss of use during natural hazard events. • Involve stakeholders to enhance the local capacity to mitigate, prepare for, and respond to the impacts of natural hazards. • Develop, promote, and integrate mitigation action plans. • Promote public understanding of and support for hazard mitigation.
Applicable Objective	• Consider the impacts of natural hazards on future land uses in the planning area, including possible impacts from climate change. • Encourage hazard mitigation measures that result in the least adverse effect on the natural environment and that use natural processes.
Funding Source	N/A
Estimated Cost	$2,000,000
Benefits (loss avoided)	Reduce flooding overall by replacing HMP surfaces with porous
Projected Completion Date	TBD
Priority and Level of Importance (Low, Medium, High)	High Priority
Benefit Analysis (Low, Medium, High)	High - Project will provide and 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	TBD

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
X	Earthquake
X	Flood
	Extreme Heat
	Lightning
X	Hail
	Fog
	High Wind
X	Snow
X	Blizzard
X	Extreme Cold
X	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 O6.14

Mitigation Action	Replace existing overhead power lines to underground
Year Initiated	2019
Applicable Jurisdiction	
Lead Agency/Organization	Orland Hills
Supporting Agencies/Organizations	
Applicable Goal	• 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. • Protect public services and critical facilities, including infrastructure, from loss of use during natural hazard events.
Applicable Objective	• 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. • Protect public services and critical facilities, including infrastructure, from loss of use during natural hazard events and potential damage from such activities. • Retrofit, purchase, or relocate structures in high hazard areas, including those known to be repetitively damaged.
Potential Funding Source	N/A
Estimated Cost	$2,000,000
Benefits (loss avoided)	Reduce the risk of residents losing power during an extreme weather event
Projected Completion Date	TBD
Priority and Level of Importance (Low, Medium, High)	High Priority
Benefit Analysis (Low, Medium, High)	High - Project will provide and 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	TBD

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

Action O6.15

Mitigation Action	Construct a salt storage facility in order to ensure proper inventory of snow removal supplies
Year Initiated	2019
Applicable Jurisdiction	
Lead Agency/Organization	Orland Hills
Supporting Agencies/Organizations	
Applicable Goal	• 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. • Protect public services and critical facilities, including infrastructure, from loss of use during natural hazard events.
Applicable Objective	• Encourage hazard mitigation measures that result in the least adverse effect on the natural environment and that use natural processes.
Potential Funding Source	N/A
Estimated Cost	$500,000
Benefits (loss avoided)	Mitigate run off of de-icing supplies currently stored outside
Projected Completion Date	TBD
Priority and Level of Importance (Low, Medium, High)	High Priority
Benefit Analysis (Low, Medium, High)	High - Project will provide and 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
	Flood
	Extreme Heat
	Lightning
	Hail
	Fog
	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
X	Hazardous Materials Incident

Action O6.16

Mitigation Action	Streambank Stabilization & Flood Control Project along Tinley Creek
Year Initiated	2019
Applicable Jurisdiction	Village of Orland Hills
Lead Agency/Organization	MWRD
Supporting Agencies/Organizations	Village of Orland Hills
Applicable Goal	• 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. • Protect public services and critical facilities, including infrastructure, from loss of use during natural hazard events.
Applicable Objective	• Protect the lives, health, safety, and property of the citizens of Cook County from the impacts of natural hazards. • Retrofit, purchase, or relocate structures in high hazard areas, including those known to be repetitively damaged. • Provide or improve flood protection on a watershed basis with flood control structures and drainage maintenance plans.
Potential Funding Source	MWRD
Estimated Cost	$664,000
Benefits (loss avoided)	N/A
Projected Completion Date	N/A
Priority and Level of Importance (Low, Medium, High)	N/A
Benefit Analysis (Low, Medium, High)	N/A
Cost Analysis (Low, Medium, High)	High
Actual Completion Date	

Recommended Mitigation Action/Implementation Plan and Project Description	
Action/Implementation Plan and Project Description:	ID: TICR-5 Contract: 10-882-DF Watershed: Cal-Sag Channel

	Location: Orland Hills; Orland Park, IL Provided naturalized channel stabilization/flood control on Tinley Creek, from Lake Lorin to 88th Avenue in Orland Hills.

Mitigation Action and Project Maintenance		
Year	**Status**	**Comments**
2019	New	Construction substantially complete. Under maintenance & monitoring period,.
2020		
2021		
2022		
2023		

Mitigated Hazards	
	All Hazards
X	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 O6.1

TABLE: ACTION PLAN MATRIX						
Status	**Hazards Mitigated**	**Objectives Met**	**Lead Agencies**	**Estimated Cost**	**Sources of Funding**	**Timeline/Projected Completed Date (a)**
Action O6.1—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 loses.						
Ongoing	All	7, 13	Village of Orland Hills	High	FEMA Hazard Mitigation Grants	Long-term (depending on funding)
(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.						

Action O6.2

TABLE: ACTION PLAN MATRIX						
Status	**Hazards Mitigated**	**Objectives Met**	**Lead Agencies**	**Estimated Cost**	**Sources of Funding**	**Timeline/Projected Completed Date (a)**
Action O6.2—Continue to support the countywide actions identified in this plan.						
Ongoing	All	All	Village of Orland Hills	Low	General Funds	Short- and long-term
(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.						

Action O6.3

TABLE: ACTION PLAN MATRIX						
Status	**Hazards Mitigated**	**Objectives Met**	**Lead Agencies**	**Estimated Cost**	**Sources of Funding**	**Timeline/Projected Completed Date (a)**
Action O6.3—Actively participate in the plan maintenance strategy identified in this plan.						
Ongoing	All	3, 4, 6	DHSEM, Village of Orland Hills	Low	General Funds	Short-term
(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.						

Action O6.4

TABLE: ACTION PLAN MATRIX						
Status	**Hazards Mitigated**	**Objectives Met**	**Lead Agencies**	**Estimated Cost**	**Sources of Funding**	**Timeline/Projected Completed Date (a)**
Action O6.4—Maintain participation in incentive-based programs such as the Community Rating System (CRS), Tree City, and StormReady.						
Ongoing	All	3, 4, 5, 6, 7, 9, 10, 11, 13	Village of Orland Hills	Low	General Funds	Long-term
(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.						

Action O6.5

TABLE: ACTION PLAN MATRIX						
Status	**Hazards Mitigated**	**Objectives Met**	**Lead Agencies**	**Estimated Cost**	**Sources of Funding**	**Timeline/Projected Completed Date (a)**
Action O6.5—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.						
Ongoing	Flooding	4, 6, 9	Village of Orland Hills	Low	General Funds	Short- and long-term
(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.						

Action O6.6

TABLE: ACTION PLAN MATRIX						
Status	**Hazards Mitigated**	**Objectives Met**	**Lead Agencies**	**Estimated Cost**	**Sources of Funding**	**Timeline/Projected Completed Date (a)**
Action O6.6—Where feasible, implement a program to record high water marks following high-water events.						
Ongoing	Flooding, Severe Weather	3, 6, 9	Village of Orland Hills	Medium	General Fund; FEMA Grant Funds (Public Assistance)	Long-term
(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.						

Action O6.7

TABLE: ACTION PLAN MATRIX						
Status	**Hazards Mitigated**	**Objectives Met**	**Lead Agencies**	**Estimated Cost**	**Sources of Funding**	**Timeline/Projected Completed Date (a)**
Action O6.7—Integrate the hazard mitigation plan into other plans, programs, or resources that dictate land use or redevelopment.						
Ongoing	All	3, 4, 6, 10, 13	Village of Orland Hills	Low	General Funds	Short-term
(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.						

Action O6.8

TABLE: ACTION PLAN MATRIX						
Status	**Hazards Mitigated**	**Objectives Met**	**Lead Agencies**	**Estimated Cost**	**Sources of Funding**	**Timeline/Projected Completed Date (a)**
Action O6.8—Consider the development and implementation of a Capital Improvements Program (CIP) to increase the Village's regulatory, financial and technical capability to implement mitigation actions.						
(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.						

Action O6.9

TABLE: ACTION PLAN MATRIX						
Status	**Hazards Mitigated**	**Objectives Met**	**Lead Agencies**	**Estimated Cost**	**Sources of Funding**	**Timeline/Projected Completed Date (a)**
Action O6.9—Improve sirens.						
Ongoing	Tornado, Severe Weather	1, 3, 5, 8	Orland Fire Protection District and Village	High	FEMA	Short term
(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.						

Action O6.10

TABLE: ACTION PLAN MATRIX						
Status	**Hazards Mitigated**	**Objectives Met**	**Lead Agencies**	**Estimated Cost**	**Sources of Funding**	**Timeline/Projected Completed Date (a)**
Action O6.10—Improve flood control structures.						
Ongoing	Flooding, Severe Weather	1,8,9	Metropolitan Water Reclamation District	High	FEMA	Long term
(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.						

Completed Mitigation Actions

Orland Hills has no completed actions at this time.

Future Needs to Better Understand Risk/Vulnerability

No needs have been identified at this time.

Additional Comments

No additional comments at this time

HAZUS-MH Risk Assessment Results

ORLAND HILLS EXISTING CONDITIONS	
2010 Population	7,149
Total Assessed Value of Structures and Contents	$824,297,416
Area in 100-Year Floodplain	70.00 acres
Area in 500-Year Floodplain	78.23 acres
Number of Critical Facilities	6

HAZARD EXPOSURE IN ORLAND HILLS

	Number Exposed		Value Exposed to Hazard			% of Total Assessed Value Exposed
	Population	Buildings	Structure	Contents	**Total**	
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	0	0	$2,570,861	$1,285,431	**$3,856,292**	0.47%

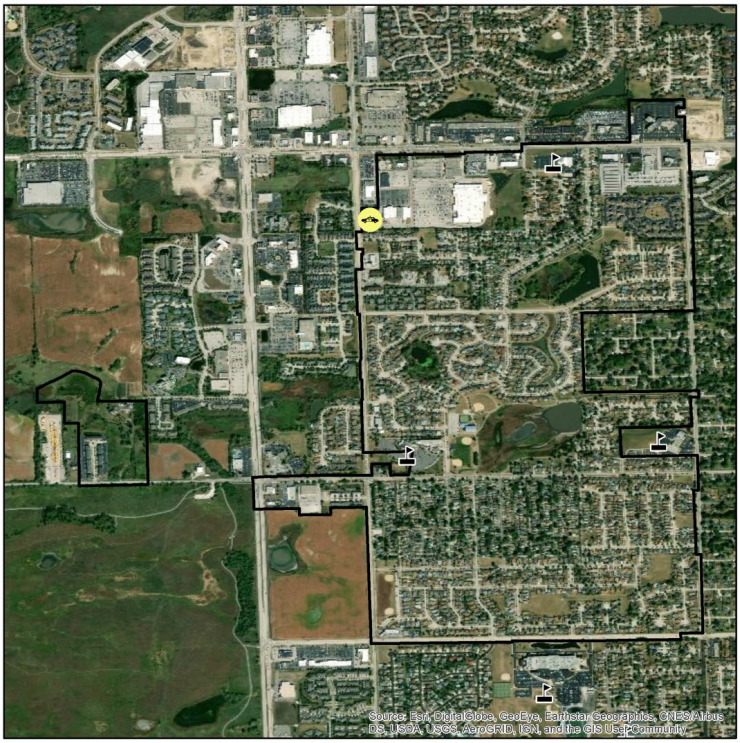
500-Year	0	0	$5,033,567	$2,516,783	**$7,550,350**	0.92%
Tornado						
100-Year	—	—	$139,475,130	$92,809,177	**$232,284,307**	28.18%
500-Year	—	—	$320,658,539	$181,421,589	**$502,080,127**	60.91%

ESTIMATED PROPERTY DAMAGE VALUES IN ORLAND HILLS

	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	$8,365,068	$2,526,519	**$10,891,587**	1.32%
Flood				
10-Year	$0	$0	**$0**	0.00%
100-Year	$0	$0	**$0**	0.00%
500-Year	$383,375	$155,375	**$538,751**	0.07%

Tornado				
100-Year	$13,947,513	$9,280,918	**$23,228,431**	2.82%
500-Year	$46,816,147	$26,487,552	**$73,303,699**	8.89%

Hazard Mapping



VILLAGE OF ORLAND HILLS

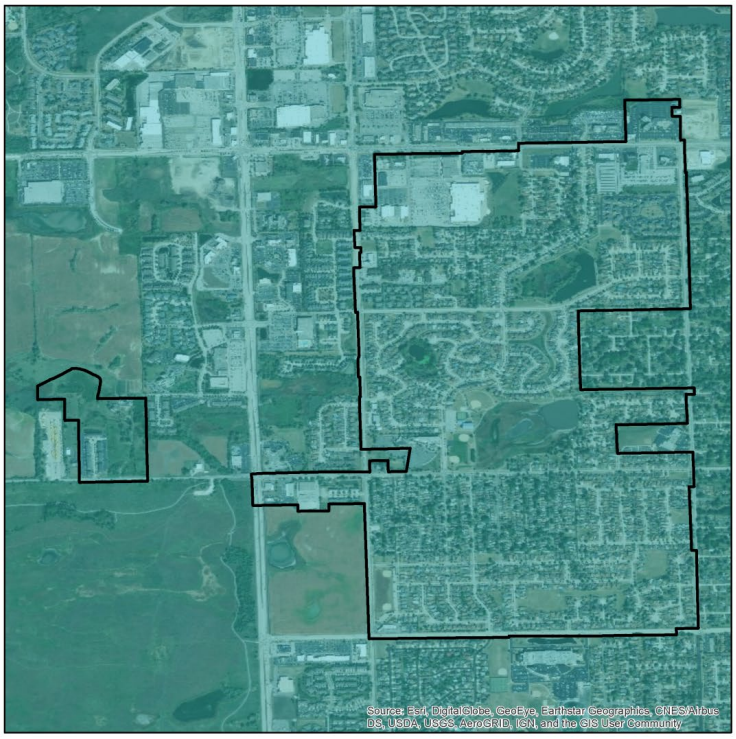
CRITICAL INFRASTRUCTURE

- 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

N W E S

0 0.075 0.15 0.3 0.45 0.6 Miles



VILLAGE OF ORLAND HILLS

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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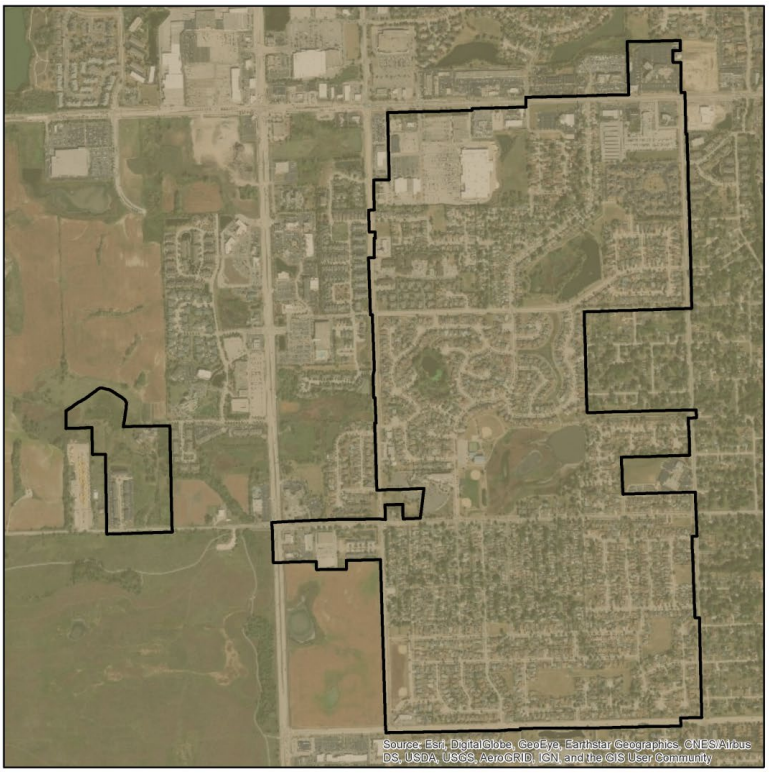
N W E S

0 0.075 0.15 0.3 0.45 0.6 Miles



VILLAGE OF ORLAND HILLS

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-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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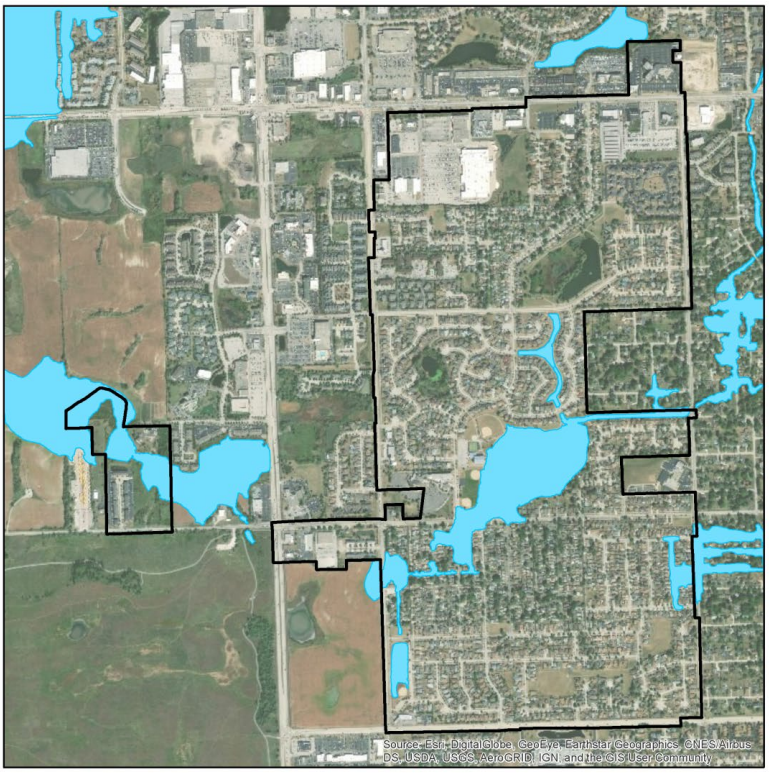
N W E S

0 0.05 0.1 0.2 0.3 0.4 Miles



VILLAGE OF ORLAND HILLS

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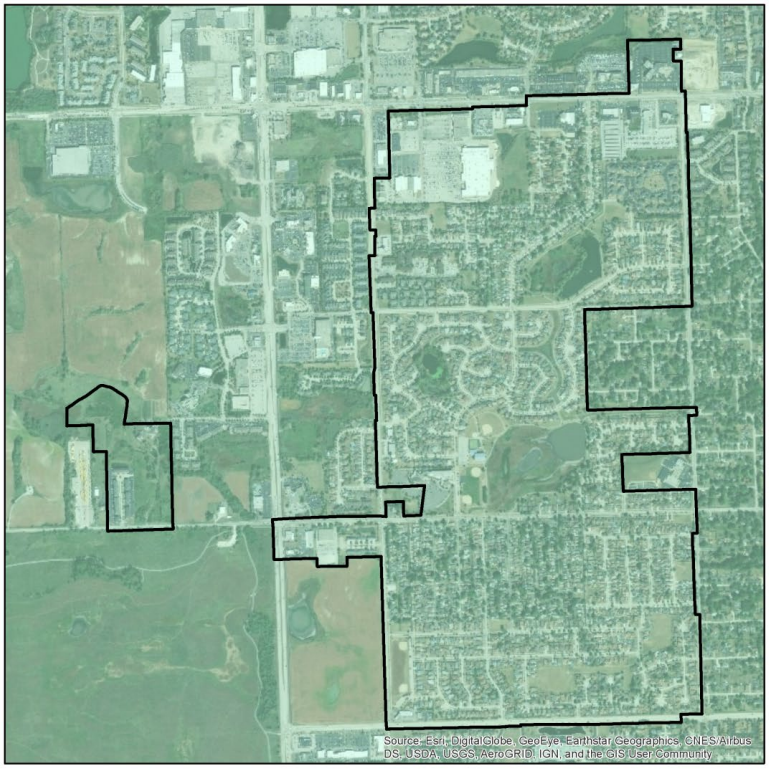
DISCLAIMER: The Cook County MWRDGC 100-year Inundation Map is provided to show general flood risk information regarding floodplains and inundation areas. This map is not regulatory. Official FEMA Flood Insurance Study information and regulatory maps can be obtained from http://www.fema.gov.

N W E S

0 0.05 0.1 0.2 0.3 0.4 Miles



VILLAGE OF ORLAND HILLS

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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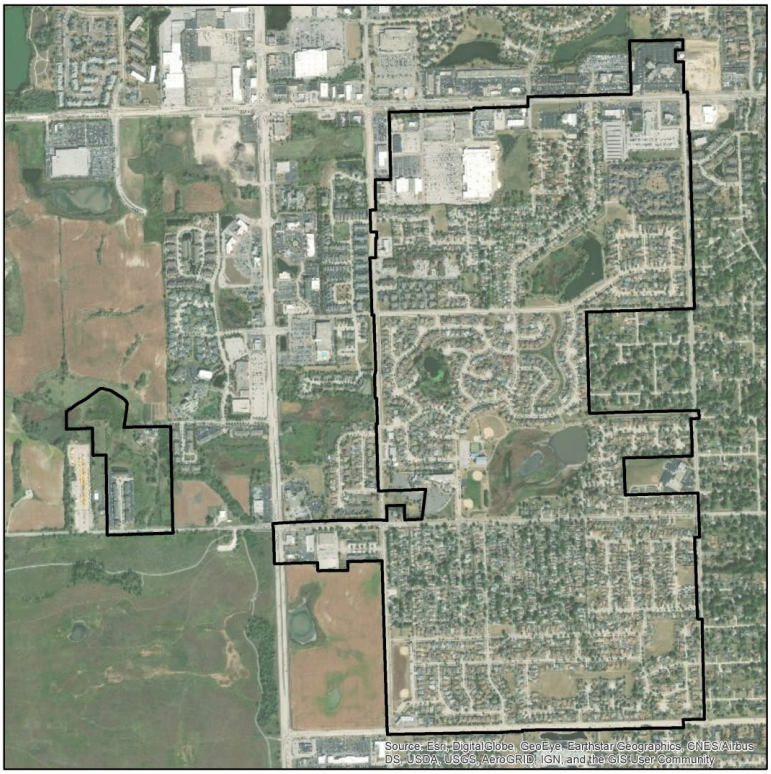
N W E S

0 0.05 0.1 0.2 0.3 0.4 Miles



VILLAGE OF ORLAND HILLS

100- AND 500- YEAR TORNADO EVENTS

Magnitude

- 4 (100 year event)
- 5 (500 year event)

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

N W E S

0 0.05 0.1 0.2 0.3 0.4 Miles