DES PLAINES

Repetitive Loss Area Analysis

Adopted by the City Council
July 2019
Resolution R - 119 - 19

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UrbanHydro

Executive Summary

The purpose of this Repetitive Loss Area Analysis is to identify options for both the City and homeowners within the repetitive loss areas to reduce the flood risk. This report discusses the City's current programs and projects to reduce flood risk and evaluates each property within the Repetitive Loss Areas. As part of the property evaluation, mitigation options for each property are identified. This report is part of the City's overall floodplain management program, which includes participation in the Community Rating System (CRS) program.

Due to the 245 properties in the City defined as Repetitive Loss Properties, this report is required by the CRS program, as part of a strategy to reduce flood damages in our community. The development of this report followed a five-step process.

Step 1. Advise all the properties in the repetitive loss areas that the analysis will be conducted and request their input on the hazard and recommended actions.

Step 2. Contact agencies and organizations that may have plans or studies that could affect the cause or impacts of the flooding. The agencies and organizations must be identified in the analysis report.

Step 3. Visit each building and collect basic data.

Step 4. Review alternative approaches and determine whether any property protection measures or drainage improvements are feasible.

Step 5. Document the findings. A separate analysis report must be prepared for each area.

Based on the analysis presented in this report, there are seven recommendations for the City to reduce the occurrence of flooding in the 15 repetitive loss areas:

1. The City should continue to send an annual outreach letter to properties in the repetitive loss areas. The letter will include an offer to meet property owners to discuss site-specific options to reduce flood losses. A typical example is provided in Appendix C.
2. The City should continue to enforce all regulations designed to reduce flood damages to insurable structures, including compensatory storage and substantial improvement regulations.
3. The City should continue participation in the Community Rating System.
4. The City should continue to pursue additional mitigation funds for acquisition/demolition of flood-prone properties.
5. The City should continue public outreach encouraging residents to consider property protection, explaining substantial improvements rules, encouraging flood insurance, promoting CodeRED, and monitoring of the NOAA river gauge.
6. The City should continue to promote and fund the Flood Rebate Program.
7. The City should continue to perform damage inspections and tracking of substantial damage and substantial improvements to structures in the Special Flood Hazard Area.

Background

Over the nearly fifty years of the National Flood Insurance Program (NFIP), floodplain management efforts have reduced the number of new floodplain structures. However, many older, existing buildings were built in areas that experience repetitive flooding. These existing buildings are generally referred to as Pre-FIRM (Flood Insurance Rate Map) buildings, built before a community's flood risk was identified on a community's flood map. FEMA estimated in 2005 that 90% of **Repetitive Loss Properties** were built before 1975. These properties also account

for 30% of all flood insurance claims in the history of the NFIP.

In an effort to reduce damages to repetitive loss properties, FEMA developed a Repetitive Loss Strategy. Under the strategy, FEMA provides communities with information annually on their repetitive loss properties and provides mitigation funds to target these properties. The CRS program has also prioritized the reduction of flood losses from these properties.

Repetitive Loss Property

A property with two or more flood insurance claims of more than $1,000 within any 10-year period since 1978.

Repetitive Loss Area

A delineation of all the properties, including the repetitive loss property or properties, which have a similar exposure to repetitive flooding.

Repetitive Loss Requirements under CRS

Repetitive loss data must be maintained and updated annually in order to participate in the CRS. Additional requirements are based on the number of repetitive loss properties in a community. Under the *2017 CRS Coordinator's Manual*, a community with fifty or more unmitigated repetitive loss properties must either prepare a floodplain management plan that covers all repetitive loss properties (areas) or prepare a repetitive loss area analysis (RLAA).

A floodplain management plan is a review of all floodplain areas within the community, prepared through a 10-step planning process conducted by a committee. This is a community wide plan, which does not look at individual properties. The RLAA differs in that it is a more detailed look at each repetitive loss property to determine what other properties have similar flood risk and what can be done to reduce that risk. All similarly at-risk properties combined with the repetitive loss properties are defined as the Repetitive Loss Area.

The City experienced significant flooding and subsequent damage to residential structures in 1979, 1982, 1983, 1987, 1994, 1996, 1997, 1999, 2002, 2007, 2008, 2011, 2013 (the flood of record), and 2017. Following the flooding in September 2008, the flood of record in April 2013, and July 2017 there are 245 official repetitive loss properties in Des Plaines. This analysis provides an opportunity for the City to identify mitigation options for the properties within the Repetitive Loss Areas.

Note: The Privacy Act of 1974 (5 U.S.C. 552a) restricts the release of flood insurance claim data to the public. Therefore, this report does not directly identify the repetitive loss properties or include specific flood insurance claim information for any property.

Preliminary Data Analysis

Storm data, river gage heights, insurance claims, and topography were reviewed in order to develop the preliminary repetitive loss areas. The 245 addresses were plotted on a map and visited. Properties subject to the same flood hazard were grouped into Repetitive Loss Areas. The grouping includes properties not on FEMA's list that are at the same elevation or otherwise exposed to the same flooding that damaged those on FEMA's list. Since property owners often drop their flood insurance once their mortgage is paid in full and insurance is no longer required, there is typically a larger number of affected properties than flood insurance claims. It is assumed that had they been insured at the time the flooding occurred, they too, would be on FEMA's list. Further, all of the properties within the repetitive loss areas would benefit from the mitigation actions recommended in this plan.

Flood Events, Gage Heights, and Claims Analysis

Per claims data, the majority of claims (63%) resulted from the April 2013, September 2008, and August 1987 storms. Since 1978, there have been 1,204 flood insurance claims paid to property owners in Des Plaines totaling $30.5 Million. A description of some of the major flood events in Des Plaines is provided in Table 1.

Table 1. Des Plaines Major Flood Events

1986	The 1986 flood exceeded the 100-year flood elevation in effect at the time. However, a more recent study of the Des Plaines River concluded that the earlier Flood Insurance Study under estimated the true risk.
9/21/86 – 10/4/86	Northeastern Illinois received almost one inch of rain daily from September 21 through October 4, 1986. On some days, there was as much as three inches. Over this two-week period, the watershed received 12.9 inches of rain, which is significantly more than the normal monthly average of 3 inches. The flood damaged 2,200 homes and 150 businesses. According to the 2000 Flood Insurance Study for Cook County, the 1986 flood is now considered between the 10-year and 50-year flood, based on elevation and discharge.
8/13/87 – 8/16/87	For the second time in less than a year, the Des Plaines River and its tributaries overflowed their banks. Nearly 13 inches of rain fell over four days, flooding many of the same areas that were just recovering from the 1986 flood. Damages from the two floods in Lake, Cook, and DuPage counties are estimated at more than $140 million. Unlike the 1986 flood, the heaviest rainfall occurred in a short period of time over the northwest suburbs. This produced the second highest flood on the Des Plaines River at Des Plaines, since flood insurance became available.
8/24/07	The City began responding to the August 24, 2007 flood by placing over 250 jersey concrete barriers. The County, SWAT, and U.S. Coast Guard teams assisted residents with sandbags and IEMA provided 24-hour phone coverage. The 911 Call Center had received over 1,000 calls on power outages, flooded basements, and power lines on fire. Police closed roads and placed barricades at the flooded locations throughout the City. Cook County President Stroger declared the County a disaster area. On August 26th, the City started damage assessments. The Red Cross provided over 200 cleanup kits.
9/13/08	Over 100 homes in the Big Bend area were evacuated and there were more than 2,500 reports of residential damage. The Big Bend area (Hawthorne Lane to the Des Plaines River), Shagbark area (Des Plaines River Road to the Des Plaines River, north of Algonquin Road), Willow Avenue (Graceland to Lee Street), and Fargo Avenue. (Fargo Avenue, east to the Des Plaines River) amongst other areas had houses that received a considerable amount of first floor damage, along with basements filled with water. Homes went without power for several days. The basements had to be pumped out slowly, so the basement walls did not collapse due to the excessive hydrostatic pressure. Furnaces, water heaters, and washer and dryers were the major appliances damaged. The floors, from the joists up to the finished surface, were warped. Up to three feet of drywall all along the perimeter of the first floor was mold covered. All doors in the basements and first floors were non-functional and lower cabinets in the kitchens were destroyed. The City began its recovery efforts on September 15, 2008 after the Des Plaines River crested. Public Works crews, ARC Disposal and Cook County SWAP assisted in removing debris as well as sandbags. The Salvation Army distributed over 3,000 cleanup kits to residents and businesses. The City completed its final damage assessments, assisted FEMA, and IEMA as they did damage assessments of the City. The Governor, along with FEMA, declared Des Plaines and the State a Federal Disaster. FEMA set up a Disaster Recovery Center in Des Plaines, which allowed residents and small businesses to apply for grants and low interest loans. The duration of this flooding event and its aftermath lasted over nine days.
4/18/13	Record rainfalls in April 2013 now mark it as the Chicago Area's wettest April on record in the 143 years history of Chicago observational data. At 3:00 p.m. on April 18, 2013, a Declaration of State of Disaster was signed on the advice of the Incident Management Team. During the next 6-10 weeks, the Incident Management Team utilized the necessary mutual aid resources from County/State/Federal resources, non-governmental organization resources and other stakeholders. A President's Declaration of State of Disaster was declared. FEMA recovery teams visited 1,566 homes and businesses in Des Plaines that were affected by the flooding.
6/26/13	Due to continuing heavy rainfall and thunderstorms, weather spotting staff was deployed in Des Plaines at approximately 2:00 a.m., June 26, 2013. At approximately 3:00 a.m., surface streets were flooded severely enough to warrant numerous street closures. The National Weather Service issued a flash flood warning on June 26; at 5:26 a.m. Driving was difficult as excessive runoff from heavy rainfall caused flooding of small creeks and streams, highways, viaducts and underpasses in Des Plaines. At 9:30 a.m., a State of Emergency was signed.
7/13/17	A significant rainfall event occurred in the Des Plaines River watershed within southern Lake County. This rainfall event cause near record flooding between July 12 and July 14, 2017 with numerous street closures and resident/business relocations and shut downs.

Federal Disasters were declared for Cook County in August 1987, September 2008, July 2010, and April 2013. The insurance claims in Des Plaines from each storm with two or more claims are summarized in Table 2.

Table 2. Des Plaines Insurance Claims

Date of Flooding	Disaster Declaration	Number of Claims	Total Claims Paid	Average Claim
'78–'81		29	$56,364	$1,944
Jul-82		19	$63,948	$3,366
'82–'85		15	$47,173	$3,145
Oct-86		61	$1,292,514	$21,189
Aug-87	DR-798	139	$2,267,906	$16,316
'89-'84		12	$50,283	$4,190
May-96		23	$236,273	$10,273
Feb-97		35	$208,004	$5,943
Apr-99		8	$69,977	$8,747
Oct-01		16	$50,653	$3,408
Apr, Jun-'02		2	$2,217	$1,108
Aug-02		8	$48,283	$6,035
May-04		7	$56,739	$8,105
Sep-08	DR-1800	387	$13,300,000	$34,367
Dec-08		6	$22,233	$3,706
Mar-09		2	$1,490	$745
Jun-09		7	$20,482	$2,926
Jul-10	DR-1935	4	$81,679	$20,420
Jul-11		66	$599,405	$9,082
Aug-12		2	$12,290	$6,145
Apr-13	DR-4116	321	$11,004,983	$34,283
Jun-13		9	$22,803	$2,534
Total*		1,178	$29,515,699	$25,056

**The total listed above only includes events with two or more flood insurance claims. As noted at the beginning of this section, there have been 1,204 flood insurance claims paid to property owners in Des Plaines since 1978, totaling $30.5 Million (including those with only one claim).*

As shown in Table 2, the average flood insurance claim ranges from less than $1,000 to more than $34,000. In general, the larger storm events result in higher average claims, since the flood depths are higher and the resulting damage is greater for these events. The April 2013 flood is the record flood for the City, though the September 2008 flood had more flood insurance claims and a higher average claim amount. The list of claims data for properties in Des Plaines was obtained from FEMA, which is summarized in the Table 3.

Table 3.Des Plaines Flood Insurance Claims Summary

Policy Type	Policies in Force	Premium	Insurance in Force	# of Closed Paid Losses	$ of Closed Paid Losses
Single Family	536	$891,640	$115,380,500	1,010	$21,100,444.98
2-4 Family	34	$31,016	$5,490,100	48	$499,529.61
Other Residential	1,273	$463,200	$264,343,200	45	$1,205,576.97
Non-Residential	53	$269,886	$20,997,200	101	$7,770,837.09
Total	**1,896**	**$1,655,742**	**$406,211,000**	**1,204**	**$30,576,388.65**

The RLAA Process

The RLAA planning process incorporated requirements from Section 510 of the 2017 *CRS Coordinator's Manual*. Most specifically, this RLAA included all five planning steps included in the 2017 manual:

Step 1. Advise all the properties in the repetitive loss areas that the analysis will be conducted and request their input on the hazard and recommended actions.

Step 2. Contact agencies and organizations that may have plans or studies that could affect the cause or impacts of the flooding. The agencies and organizations must be identified in the analysis report.

Step 3. Visit each building and collect basic data.

Step 4. Review alternative approaches and determine whether any property protection measures or drainage improvements are feasible.

Step 5. Document the findings. A separate analysis report must be prepared for each area.

Beyond the 5 planning steps, additional credit criteria must be met, which includes the following:

- The community must delineate at least one repetitive loss area.
- The repetitive loss area(s) must be mapped.
- The repetitive loss area analysis report must be submitted to the community's governing body and made available to the media and the public. The complete repetitive loss area analysis report must be adopted by the community's governing body or by an office that has been delegated approval authority by the community's governing body.
- The community must prepare an annual progress report for its area analysis.
- The community must update its repetitive loss area analyses in time for each CRS cycle verification visit.

Step 1. Advise Property Owners of Analysis and Request Input

A letter was mailed to 902 individual addresses and 30 property managers of multi-unit properties within the 15 repetitive loss areas identified. Properties that have been acquired by the City as part of their buyout program were removed from the address list as there are no longer insurable structures on these parcels. The letter explained the repetitive loss area analysis and requested participation from property owners through the completion of a Floodplain Questionnaire (See Appendix B). The questionnaire was sent along with the letter. A link to the on-line survey was also provided to allow property owners to complete the survey electronically. The questions asked the type of foundation, dates of flooding, causes of flooding, depth of flooding, and property protection measures that have been implemented.

One hundred eighty-one (181) of the 929 surveys were completed for a return rate of 19 percent. One hundred thirteen (113) respondents indicated that they have experienced flooding. It should be noted that not all questions were answered and some questions allowed for multiple responses. Some important findings include:

- 62% of the respondents suffered flooding
- 86% of the structures have a below grade level, basement, or crawlspace
- 76% of the respondents have installed flood protection measures on their property
- The majority of respondence cited overbank flooding, sewer backups, and/or power outages as the source of flooding.

Step 2. Contact Agencies and Organizations

During the planning process, outside agencies and City departments were contacted for details on recent construction, studies, and capital improvement plans as they relate to reducing flooding within the repetitive loss areas. The agencies and organizations that were contacted and the materials that were provided by each are summarized in Table 4.

Table 4. Other Agency Reports and Studies

Agency / Organization	Documents Provided
Des Plaines Public Works and Engineering Department	Properties included in the City's Buyout Program GIS files of parcels, buildings, and other data Historical flooding data 2002 Repetitive Loss Area Analysis 2016-2020 Capital Improvement Plan 2003 Stormwater Master Plan 1986 Stormwater Master Plan
Des Plaines Community Development Department	City Comprehensive Plan & City Zoning Map
Des Plaines Public Works Department	Maintenance Records
Des Plaines Emergency Management Department	City's Annex to the Cook Co. Hazard Mitigation Plan
Des Plaines Park District	Park District's Strategic Plan
Metropolitan Water Reclamation District	Detailed Watershed Plans
Chicago Metropolitan Agency for Planning	City Comprehensive Plan Vulnerability Analysis and Stormwater Appendix
Cook County Dept. of Transportation & Highways	-
Illinois Emergency Management Agency	Repetitive Loss Property Addresses
Illinois Department of Natural Resources	Repetitive Loss Property Addresses
Illinois Department of Transportation	Flooding Records of State Routes in Des Plaines (1985 to 2016)
Federal Emergency Management Agency, Region V	Repetitive Loss Property Addresses Flood Insurance Claims Data
U.S. Army Corps of Engineers, Chicago District	Des Plaines River - Phase II Feasibility Report & Environmental Assessment

2002 Repetitive Loss Area Analysis

The 2002 Repetitive Loss Plan was prepared to comply with FEMA's repetitive loss planning criteria at that time and to identify the most cost-effective ways the City can reduce repetitive flooding. It focused on 11 separate repetitive loss areas. The recommended flood loss reduction measures contained in the 2002 Plan included pursuing US Army Corps of Engineers and IDNR flood control projects, providing technical and financial assistance for those areas where property protection measures would be most useful, and finally to work with the

residents with minimal flood protection from flood control projects and where most property protection measures are not appropriate, to determine the best protection measures for each building. The 2002 Plan does not meet the criteria for a Repetitive Loss Area Analysis under the 2013 CRS manual, it was used as a reference document for this 2019 Plan.

2016-2020 Capital Improvement Plan

The Capital Improvement Plan represents staff's recommendation of the City's street, utility, and drainage infrastructure project needs from 2016 to 2020 given current financial resources and outlooks. Proposed projects are listed by year, with anticipated cost and source of revenue to fund the improvements shown.

Priority is given to projects based on need and condition of the infrastructure item recommended to be improved or replaced. The stormwater improvements included in the plan are scheduled according the City's 2003 Stormwater Master Plan and subsequent new phases. Included in the 2016-2020 plan are drainage systems improvements, all of which are coordinated with proposed roadway reconstruction projects.

2003 Stormwater Master Plan

During the storm event that occurred on October 13, 2001, significant flooding occurred throughout the City of Des Plaines. The 2003 Stormwater Master Plan was prepared to evaluate each of the 12 areas reporting flooding during the 2001 storm and provide recommendations to reduce flooding in those areas. Included in the 2003 stormwater master plan is a map showing the approximate location where flooding was reported and the locations of the Problem Areas that were analyzed. After comparing the Problem Areas to the Repetitive Loss Areas, there were no common areas analyzed between this Repetitive Loss Analysis and the Stormwater Master Plan. There was, however, flooding reported in 9 of the 15 repetitive loss areas.

1986 Stormwater Master Plan

The primary objective of this plan is to provide a comprehensive program for effectively improving the City's stormwater management capabilities by (1) reducing the risk of damage and inconvenience resulting from poor drainage, (2) providing a basis for the design of stormwater management facilities to serve future developments, (3) reducing the adverse effects of urban runoff on water quality, and (4) minimizing the overall cost of stormwater management. This plan included 24 recommended projects to be implemented over 20 years. The investment of public funds averaged $2.3 million per year.

City Comprehensive Plan

The 2019 Comprehensive Plan for the City of Des Plaines includes recommendations for Water Resource Management Implementation. There are six water resources goals included in the plan and eleven recommended action items for the City to meet those goals, which are:

1) Support the Implementation of Capital Projects for Long-Term Sustainability
    a) Continue pursuing buyouts in flood-prone areas
2) Integrate Stormwater Management Practices into the City's Capital Improvement Programs and other Public Investments
    a) Continue using Capital Improvement Programs to improve stormwater management.
    b) Invest in green and gray infrastructure solutions in public rights-of-way.
3) Continue to Implement Plans that Address Flooding
4) Continue Advanced Development Practices to Encourage Stormwater Management
    a) Update and expand regulatory standards.

5) Pursue stormwater retrofits through redevelopment.
6) Promote Stormwater Improvements on Private Property
    a) Consider expansion of the Flood Rebate Program.
    b) Educate homeowners.
    c) Encourage flood insurance among private property owners.
7) Improve Habitat and Water Quality
    a) Develop a tree preservation ordinance.
    b) Pursue Section 319 funding for green infrastructure.
    c) Restore the edges of streams and rivers.

A planning-level stormwater analysis was included in the Des Plaines Comprehensive Plan. The approach used GIS data to identify low-lying areas throughout the City and match those areas with available vacant land. The results of the GIS analysis were further refined by reviewing the recommendations in studies conducted by other agencies. This high-level analysis is often used as a first step in identifying potential flood-relief projects for engineering analysis.

City's Annex to the Cook County Hazard Mitigation Plan

The City's Annex to the Cook County Hazard Mitigation Plan identified seven (7) natural hazards that could affect the City.

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

Natural hazards were ranked based on their probability and impact. Flooding was ranked as the City's number one hazard, with severe weather ranked second. The Plan includes a list of seventeen (17) actions for the City to take to reduce its risk from the seven natural hazards. All of the actions listed are noted to mitigate future flooding.

Des Plaines Park District's Strategic Plan

The purpose of the 2015-2020 Strategic Plan is to establish a direction for the Des Plaines Park District to continue to improve the operations, programs, financial stability, and maintain the exceptional standards that have been in place for years. The original document created in 2003 has been revised annually. The current document reflects revisions and updates from both internal and external changes. This plan identifies eight goals of the Des Plaines Park District, two of which are relevant to stormwater management and flood reduction within the City:

1. **Maximize and Expand Recreational Resources:** This Goal addresses the need to maximize the use of existing resources available to the District and develop a plan to acquire, preserve, and develop open spaces and high-quality natural areas to meet existing and future park and recreation needs of Des Plaines Park District residents. The District has many resources ranging from special facilities to open space, which need to be examined for optimal use and future opportunities. The Park District will seek to creatively find open space through partnerships and cooperative uses within the community.

2. **Promote Environmental Stewardship and Sustainable Practices throughout the Park System:** The purpose of developing an environmental plan and an environmental committee for the District is to assume a leadership role in the development and use of sound environmental policies, practices and

educational opportunities.

Based on the City's relationship with the Des Plaines Park District and the above goals outlined in the Park District's Strategic Plan, there may be opportunities for the City to partner with the Des Plaines Park District. The City is creating open space as part of their buyout program, which could present an opportunity for additional recreational areas and educational opportunities.

Detailed Watershed Plans

The scope of the Lower Des Plaines River Detailed Watershed Plan (DWP) includes the development of stormwater improvement projects to address regional problem areas along open waterways. The primary goals of the DWPs are as follows:

- Document stormwater problem areas.
- Evaluate existing watershed conditions using hydrologic and hydraulic models.
- Produce flow, stage, frequency, and duration information about flood events along regional waterways.
- Estimate damages associated with regional stormwater problems.
- Evaluate potential solutions to regional stormwater problems.

Alternatives were recommended based upon consideration of the project's ability to reduce stormwater damages and to address regional problems reported by communities. Eight alternatives within the City of Des Plaines were analyzed as part of this study as summarized in Table 5.

Table 5.Alternatives Considered Within Des Plaines

Alternative	Watershed	Resolution
DPR-2A	Des Plaines River	This is a local problem
DPR-2B	Des Plaines River	Recommended
DPR-3A	Des Plaines River	Recommended
FRCR-DP-FL-01	Farmer's Creek	This is a local problem
FRCR-DP-SM-01	Farmer's Creek	This is a local problem
PRCR-DP-FL-01	Farmer's Creek	This is a local problem
FHDT-DPFL-01	Feehanville Ditch	This is a local problem
FHDT-DPSM-01	Feehanville Ditch	This is a local problem

As shown in Table 4, six of the eight alternatives that were considered were found to be local problems and were not recommended to move forward within MWRD's program.

Flooding Records of State Routes

The Illinois Department of Transportation (IDOT) provided the City of Des Plaines a log of their flooding records. Flooding of state routes within the City is tracked by intersection or roadway segment. One hundred and eighty-one (181) flooding records have been logged by IDOT at Forty-four locations within the City limits between 1985 and 2016. The six locations with the most flooding reported are shown in Table 6.

Table 6.State Routes in Des Plaines with the Most Flooding Reported

Named Route	Location	Flooding Occurences
Golf Road	At UP Railroad (at Wolf Road)	39
Golf Road	At UP Railroad (at Des Plaines River)	21
Higgins Road	At CP Railroad (E/O Mannheim Rd)	17
Northwest Highway	At UP / CN RR	15
Central Road	At East River Road to River Road	10
Des Plaines River Road	At Touhy Avenue to Thacker Street	7

Des Plaines River Phase II Feasibility Report & Environmental Assessment

The Phase II Study was prepared by the U.S. Army Corps of Engineers, which provides an opportunity to develop a more comprehensive solution to address ongoing occurrences of flooding and restore the degraded aquatic ecosystems within the Upper Des Plaines River watershed. The study authorization directs the Secretary to evaluate plans to manage flood risk and address environmental restoration and protection on both the mainstem and tributaries. Three plans are included in the study. The impact from each plan is summarized in Table 7.

Table 7. USACOE Plan Summary

Plan	Flood Protection	Non-structural Flood Risk Management	Annual Net Economic Benefits
Combined NED/NER Plan	862 Structures	377 Structures	$4,641,000
CAP Plan	73 Structures	-	$193,000
Comprehensive Plan	935 Structures	486 Structures	$8,636,000

This study was completed in 2015; however, the project implementation plan extends into 2031. Recommendations for dam removals, floodwater storage, and acquisition of flood-prone properties within the City's Repetitive Loss Areas are included in the study.

Voluntary Buyouts

The City of Des Plaines is working with FEMA, IEMA, IDNR, and MWRD on a large-scale buyout program to acquire flood-prone homes that are continually experiencing overbank flooding from the Des Plaines River. The Base Flood Elevation within the area is approximately 3 feet above the first-floor elevation of the adjacent residential homes. Considering the depth of flooding, occurrence of severe structural flooding, damage to the existing structures, and the inability for emergency vehicles to access the area during flood events, the City has determined that property acquisition is the best mitigation alternative in this area.

Weather Forecasting/StormReady

In 2010, the National Weather Service conducted a verification of the City of Des Plaines's preparedness for local hazardous weather operations and public awareness during severe weather incidents. After the verification process, the City was notified that it met all the necessary requirements needed to be recognized as a StormReady community.

When a flood threat is identified, the Incident Management Team members will be alerted. Increased observation and surveillance procedures will be implemented. Based on the information gathered, an evaluation of all threat(s) to life/property will be made by Public Works and Engineering and Emergency Management, which evaluation may include:

1. Potential inundation areas;
2. Warning and evacuation requirements;
3. Safe areas - temporary shelters;
4. Resources required; and
5. Potential need for upgrading EOC activation level.

When a flash flood warning or flood warning is issued and the risk is substantiated by the National Weather Service, or actual flooding occurs and life/property is threatened, the EOC will be at a level 3 activation. Warnings and evacuations will be completed, and shelter provided to those people requiring temporary housing. Resources not already pre-positioned to mitigate the threat will be moved into position.

An Incident Command Post will be established in the vicinity of the affected areas(s) to coordinate on-scene actions, and/or provide a link between on scene agencies and the Incident Commander (IC). The first response to a flood event will be by city responders. When the event is so large that local resources are unable to handle

it, additional assistance may be requested via the declaration process. The Planning Section Chief will coordinate the Recovery Action Plan to sustain life and property. All efforts will be taken to restore public facilities as quickly as possible. Damage assessment and evaluation will proceed as needed.

Step 3: Building Data

Before building data could be collected, the City defined 15 repetitive loss areas. The 245 repetitive loss properties were mapped and any properties that have been demolished as part of the City's Buyout Program, were removed from the list. Repetitive Loss Areas were then identified and the list of addresses within each RL Area was created using GIS. Multi-unit addresses were removed from the list and the address of the management company for each multi-unit building was added. A map of the repetitive Loss Areas can be found on page 20.

The field survey for this analysis was conducted March - May, 2019. Data collected in the field was directly uploaded into GIS to allow integration with other GIS data. The GIS data was exported to Excel and the analysis was completed using the Excel spreadsheet. The spreadsheet is included in Appendix E. (Note: In accordance with the Privacy Act of 1974, Appendix E will not be shared with the general public).

Prior to the field survey, previous GIS data was used to establish much of the building data. Flood insurance claims data was also reviewed but was not included in the spreadsheet due to privacy concerns. A GIS application was developed and the remaining building data was collected in the field for each property along with one or photos. Data collected included:

- Address
- Repetitive Loss Area
- Building Elevation
- Building Condition
- Foundation Type
- Location of Air Conditioner
- Elevation of Air Conditioner
- Drainage Pattern
- Drainage Direction
- If Downspouts Drain Away from Structure

Following a more detailed look at the topography and the location of each repetitive loss property, a total of 902 single family homes and 30 multi-unit addresses were included in the data review. For purposes of this report elevation at the building elevation is the highest elevation within the building footprint, as determined from LIDAR data.

Step 4: Alternative Protection Measure Review

This section provides an overview of various types of protection measures that can be implemented at an individual property level. These protection measures have been separated into seven categories.

1. Non-Structural Measures
2. Green Infrastructure
3. Grading Improvements
4. Plumbing Improvements

5. Wet Floodproofing
6. Dry Floodproofing
7. Elevation, Relocation, and Demolition

Other measures that are more regional in nature, such as regional flood control projects and levees, are evaluated as part of other planning efforts. The City's Stormwater Master Plan includes structural flood-relief projects and MWRD has evaluated flood-relief projects on a regional level; therefore, this analysis focuses on measures that can be implemented by individual property owners.

The 2014 Homeowner's Guide to Retrofitting, FEMA P-312 provides additional details on many of the methods discussed and will be frequently referenced. The guide is available online, at City Hall, and at the Des Plaines Public Library. Caution must be taken when choosing any of the protection measures. Some techniques require permitting and may not be allowed under the MWRD Watershed Management Ordinance. Professional assistance is recommended when selecting a protection measure.

Non-Structural Measures

Preventive activities can reduce development in flood-prone areas and provide some protection for existing structures in those areas. Some non-structural measures that can be implemented include:

- Flood Insurance
- Maintenance of drainage systems
- Increased public education
- Ordinances and zoning regulations
- Protection of natural areas
- Review of emergency procedures

Non-structural measures can be implemented at both the individual property level and at the community level. Although flood insurance will not reduce property damage, it may be the only way for property owners to receive financial assistance to clean and repair their homes after a flood. Educating residents, especially those within the Repetitive Loss Areas, will help property owners understand the causes of repetitive flooding and ways they can protect their buildings from damage. Ordinances, zoning regulations, and protecting natural areas can reduce increases in flooding due to development. Finally, the City is continually reviewing its emergency procedures, which reduces response time during an emergency.

Green Infrastructure

US EPA describes green infrastructure as using vegetation, soils, and natural processes to manage water and create healthier urban environments. Green infrastructure mimic nature by soaking up and storing water. Some of the types of green infrastructure practices that could be implemented on a residential lot include:

- Bio-retention / Rain Gardens
- Vegetated Swales
- Green Roofs
- Impervious Area Disconnection
- Infiltration Trenches
- Porous Pavement
- Rainwater Harvesting
- Urban Infiltration Planters
- Dry Wells

The small size of green infrastructure practices provides great flexibility and makes them easy to integrate into an existing site. Green infrastructure should be designed considering the site characteristics and specific objectives for the project.

Grading Improvements

Properties that do not have adequate grading can re-grade their yards. The ground around the perimeter of the building should slope away from the structure to prevent stormwater runoff from ponding against the foundation wall, where it can seep into the building. Some of the advantages and disadvantages to regrading landscaped areas are as follows:

Table 8. Grading Advantages and Disadvantages

Advantages	Disadvantages
Very effective in areas with shallow flooding	Cooperation is needed from adjacent property owners
Less expensive than structural flood mitigation strategies	Areas within the regulatory floodplain are restricted in that they cannot place fill in those areas
Can benefit the surrounding properties	Flood insurance premiums will not be reduced

If re-grading a yard is found to be the best alternative to reduce structural flooding, the following points should be considered:

- An elevation change of at least 1 foot over 100 feet (1% slope) from the exterior wall of the home is needed to adequately direct water away from the structure,
- Lot grading should direct water to an acceptable drainage outlet, and
- Discharges of stormwater should not negatively impact neighboring properties.

Areas where water naturally flows toward the structure can benefit from re-grading the yard. If water flows toward the building, a new swale or wall can direct the flow to the street or drainage-way. Filling and grading next to the building can also direct shallow flooding to the yard. When these types of drainage modifications are made, care must be taken not to adversely affect the drainage patterns of adjacent properties.

Often, water flows to a low entry point, such as a basement window well or patio door. Regrading around the structure can reduce the occurrence of structural flooding. Some ways to improve the grading around the structure include:

- Overland flow swales,
- Foundation backfill,
- Driveway berms, and
- Barriers (berms/levees/floodwalls)

Plumbing Improvements

A plumber or contractor who is fully versed in home and municipal drainage systems can determine the risk of flooding for a particular structure. A typical residential home has a sanitary sewer that drains toilet waste, laundry tubs, and, in some cases, the floor drains to the sanitary sewer main in the street. Clean stormwater and groundwater are handled by downspouts, footing drains, and sump pumps.

Often flooding is caused by the storm and sanitary sewer systems being interconnected, which occurs in areas with combined sewers or in separate sewer areas when illegal connections between the two sewer systems are made. During a heavy rain, stormwater enters the sanitary sewers, overloading the main lines and causing the sewage to backup into basements and other low areas of buildings. Understanding the risks of flooding and the plumbing of the structure will help to ensure that the best course of action is taken to reduce future flooding.

Sewer backups can be caused by a blockage in a sewer pipe; failure of equipment; too much water entering the sewers from storm runoff; or an undersized sewer. In many urban areas, sewer backup is the major cause of repetitive flooding. Backup of sanitary sewers into a structure is a major concern due to the health hazards. Some approaches to protect a structure against sewer backups include:

- Plumbing repairs,
- Backflow valves,
- Internal drainage systems, and
- Overhead sewer systems.

The recommended plumbing repairs or improvements for an individual home must consider source of flooding and the existing plumbing system in the home.

Wet Floodproofing

Wet Floodproofing prevents or provides resistance to damage from flooding while allowing floodwaters to enter the structure. Generally, wet floodproofing involves raising mechanical equipment and utilities above the Base Flood Elevation (BFE) or sealing areas with flood resistant materials and allowing floodwaters to enter the structure through flood openings.

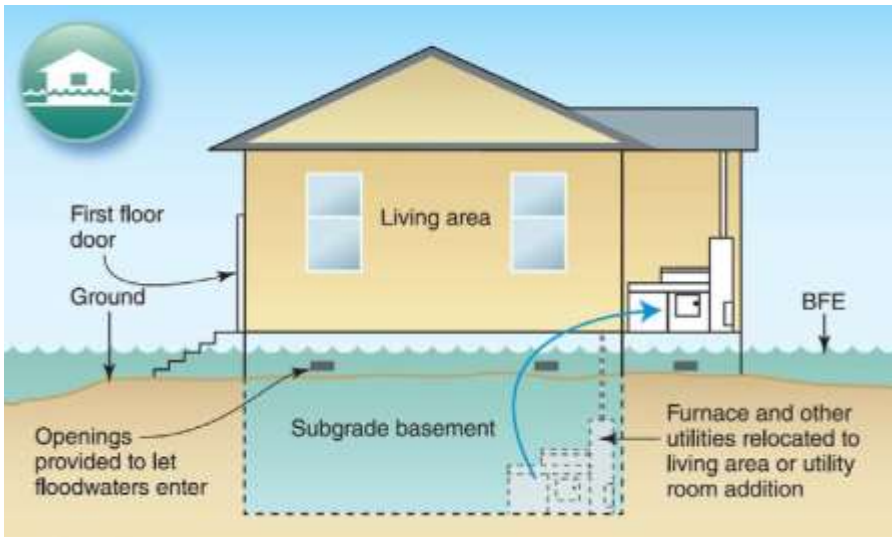

Figure 1. Wet Floodproofing

Application of wet floodproofing as a flood protection technique under the National Flood Insurance Program (NFIP) is limited to enclosures below elevated residential and non-residential structures and to accessory structures that have been issued variances by the community.

Dry Floodproofing

Dry floodproofing completely seals the exterior of a building, below the anticipated water level, to prevent the entry of floodwaters keeping the interior of the structure dry. Unlike wet floodproofing, which allows water to enter the building through wall openings, dry floodproofing seals all openings below the flood level and relies on the walls of the building to keep water out. Even if a structure is dry floodproofed, water can still seep through small openings in the sealant system or through the gaskets of shields that are protecting openings. Internal drainage systems are required to remove any water that has seeped through and remove water collected from any necessary underdrain systems in the below-grade walls and floor of the home.

Dry floodproofing is not a good option for areas where floodwater is deep or flows quickly. The hydrostatic pressure and/or hydrodynamic force can structurally damage the building by causing the walls to collapse or causing the entire structure to float. Because the walls are exposed to floodwaters and the pressures they exert, dry floodproofing is practical only for homes with walls constructed of masonry or poured concrete and only where flood depths are low (no more than 2 feet).

Figure 2. Dry Floodproofing

Areas that have minimal velocity and low depth, dry floodproofing can be a good option. Dry floodproofing may not be used to bring a substantially damaged or substantially improved residential structure into compliance with the local floodplain management ordinance. Dry floodproofing techniques include:

- Raised Window Wells;
- Glass Block Basement Windows;
- Continuous Impermeable Walls;
- Floodproofed Core Interior Areas;
- Permanent Flood Shields for Exterior Openings; and
- Removable Flood Shields for Exterior Openings.

The recommended dry floodproofing technique(s) to use on an individual home must consider source of and depth of flooding as well at the type of foundation and other features of the structure.

Elevation, Relocation, and Demolition

For some structures, dry or wet floodproofing cannot provide adequate protection from future flooding and greater measures must be taken. Other mitigation options include structure elevation, relocation and demolition.

Elevation

If the floodwaters are too high for dry floodproofing and the inhabited area is too low for wet floodproofing, it may be necessary to raise the structure. Short of relocating a structure outside a flood-prone area, the best way to protect it from surface flooding is to raise it above the flood level. When a structure is elevated, the area below the flood level is left open to allow floodwaters to flow under the building, causing little or no damage. Elevation is usually most cost-effective for buildings on crawlspaces because it is easiest to get lifting equipment under the floor and disruption of the habitable part of the house is minimal.

Figure 3. Elevated Structure in Des Plaines.

Relocation

Relocation, or moving a structure out of the flood hazard area, offers the best protection from flooding. However, relocation usually is the most expensive mitigation strategy. The relocation process involves lifting a home off its foundation, placing it on a heavy-duty flatbed trailer, hauling it to a new site outside the flood hazard area, and lowering it onto a new foundation. The process requires careful planning and is not recommended for all structures.

Demolition

Acquisition and demolition are more cost-effective measures to take in areas subject to severe flood hazards, where there is repetitive flooding, or where other property protection measures are not feasible. Acquisition, followed by demolition, is most appropriate for buildings that are too expensive to move, such as large homes with slab foundations and masonry structures. Also, homes that have fallen into disrepair may not be worth protecting.

The long-term maintenance and ownership of vacant parcels must be considered prior to pursuing buyouts. If federal money is used for acquisition, the property is often restricted to open space uses in the future. Therefore, the property can never be redeveloped and the City will be responsible for maintaining the property.

Figure 4. Demolitions in Des Plaines. The City of Des Plaines is working with FEMA, IEMA, IDNR, and MWRD on a large-scale buyout program to acquire flood-prone homes that are continually experiencing overbank flooding from the Des Plaines River. Repetitive Loss Area 3 is shown in the above image. All of the parcels without a structure have been demolished.

Step 5: Detailed Area Analysis

FEMA's list of repetitive loss properties includes 245 addresses in the City of Des Plaines. The addresses and their flood insurance claim history are protected by the Privacy Act and are not listed in this public document. However, the Engineering Department has the detailed data and can review this information with property owners.

Properties subject to the same flood hazard were grouped into Repetitive Loss Areas. The grouping includes properties not on FEMA's list that are at the same elevation or otherwise exposed to the same flooding that damaged those on FEMA's list. This grouping process resulted in 15 repetitive loss areas in the City of Des Plaines as shown in Figure 5.

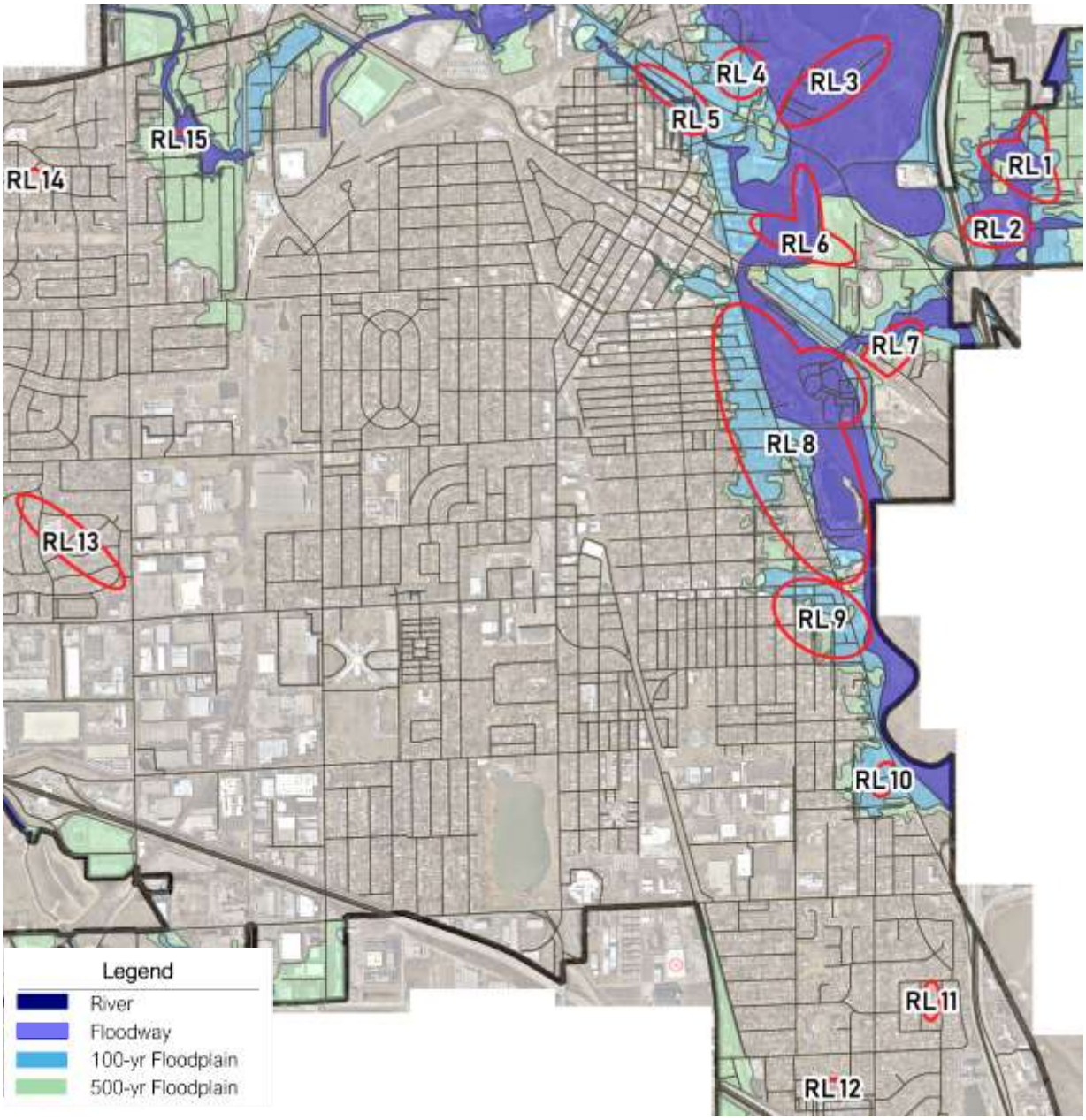

Figure 5. Des Plaines 15 Repetitive Loss Areas

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As shown in Figure 5, twelve of the fifteen repetitive loss areas are on the east side of the City, ten of which are along the Des Plaines River and Farmer's Creek. Repetitive Loss Areas 11, 12, 13 and 14 are low-lying urban areas that are not adjacent to a waterway. Repetitive Loss Area 15 is along Weller Creek.

This plan focuses on the areas rather than individual properties. A summary of the Repetitive Loss Areas is provided in Table 9.

Table 9. Des Plaines Repetitive Loss Area Summary

Area	Flood source	Flood Data				No. of Bldgs.
		FIRM Zone	Flood way	Velocity (fps)	Warning time	
1. Bellaire / Lyman	FC/DPRBW	AE	Yes	0.5	< 1 hour	60
2. Forest Edge	FC/DPRBW	X	N/A	0.7	< 1 hour	5
3. Big Bend	Des Plaines River	AE	Yes	0.4	1+ day	34
4. Elk Blvd.	Des Plaines River	AE	Yes	0.4	1+ day	44
5. Willow	WC/DPRBW	AE	Yes	1.0	1+ day	97
6. Miner & Mill	Des Plaines River	AE	No	1.0	1+ day	13
7. Apple Creek	FC/DPRBW	AE	No	N/A	< 1 hour	19
8. River Road	Des Plaines River	AE	Yes	1.0	1+ day	373
9. Oakton & Bennett	Des Plaines River	AE	N/A	1.0	1+ day	131
10. Birchwood	Local drainage	X	N/A	N/A	< 1 hour	19
11. Craig Drive	Local drainage	X	N/A	N/A	< 1 hour	17
12. Nimitze	Local drainage	X	N/A	N/A	< 1 hour	17
13. Devonshire	Local drainage	X	N/A	N/A	< 1 hour	86
14. Westmere	Local drainage	X	N/A	N/A	< 1 hour	7
15. Washington	Weller Creek	AE	Yes		< 1 hour	10
					Total	932

FC/DPRBW = Farmers Creek / Des Plaines River backwater flooding
WC/DPRBW = Weller Creek / Des Plaines River backwater flooding
fps = feet per second

Each repetitive loss area is described in detail in the following sections.

Area 1: Bellaire & Lyman

Repetitive Loss Area 1 is in the eastern portion of the City, within the Farmers Creek watershed. The area is generally bounded by Church Street on the north, Seminary Avenue on the south, Bellaire Avenue on the west, and Good Avenue on the east. Farmer's Creek runs through the center of the repetitive loss area as shown in Figure 6.

The properties within this area are located either partially or completely within the regulatory floodplain or floodway of Farmer's Creek. The applicable flood data for this area is summarized below:

Source of Flooding: Farmers Creek.
FIRM Zone: AE
Approx. Base Flood Elevation: 631.2
Velocity: 0.2 fps
Warning Time: < 1 hour (Farmers Creek),
1 day (Des Plaines River backwater)
Type of Flooding: Overbank

There are 60 single family homes in this area, the majority of which are within the regulatory floodway or floodplain of Farmers Creek. The homes are on basement or crawlspace foundations. The terrain in the area is very flat with ground elevations ranging between 630 near the creek and 633 further away from the creek.

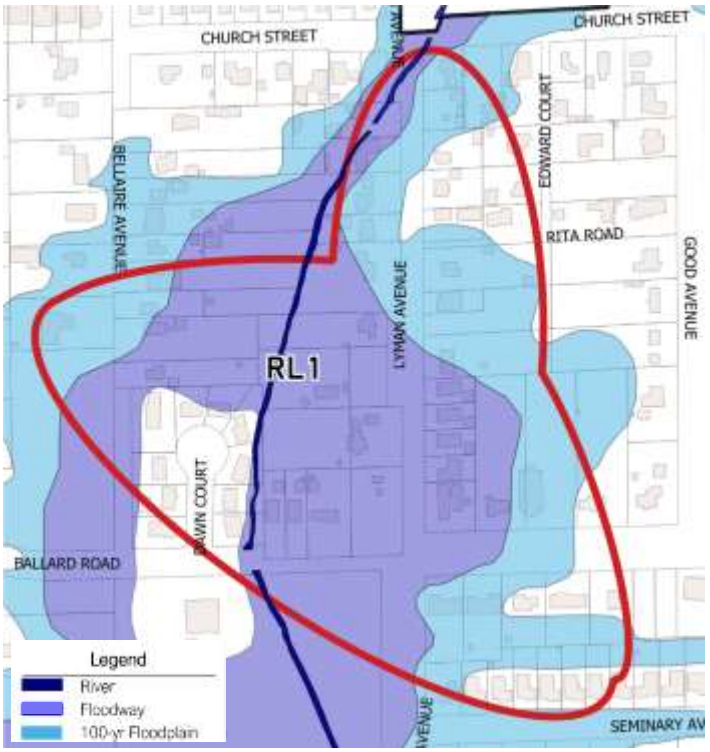

Figure 6. Repetitive Loss Area 1: Bellaire & Lyman

Questionnaire Responses:

Nine (9) questionnaires were returned from this area. Seven of the nine respondents indicated they have experienced flooding. Flooding was reported in the following years: 1986, 1987, 1988, 2013, and 2014. The flooding was reported to be in yards, crawlspaces, and basements with the longest duration of flooding lasting 5 days. Residents have used sand bags, installed sump pumps, and re-graded their yards. The City staff also noted several air conditioners have been elevated in this area as shown in Figure 7.

Figure 7. Elevated AC units in Repetitive Loss Area 1

Area 2: Forest Edge

Repetitive Loss Area 2 is located south of Repetitive Loss Area 1 in the eastern portion of the City. This area is also within the Farmer's Creek watershed, at the confluence with Prairie Creek. The area is northeast of the Dempster Street and I-294 interchange, which includes a portion of Lyman Avenue and the end of Forest Edge Lane. Farmer's Creek runs along the eastern boundary of the repetitive loss area as shown in Figure 8.

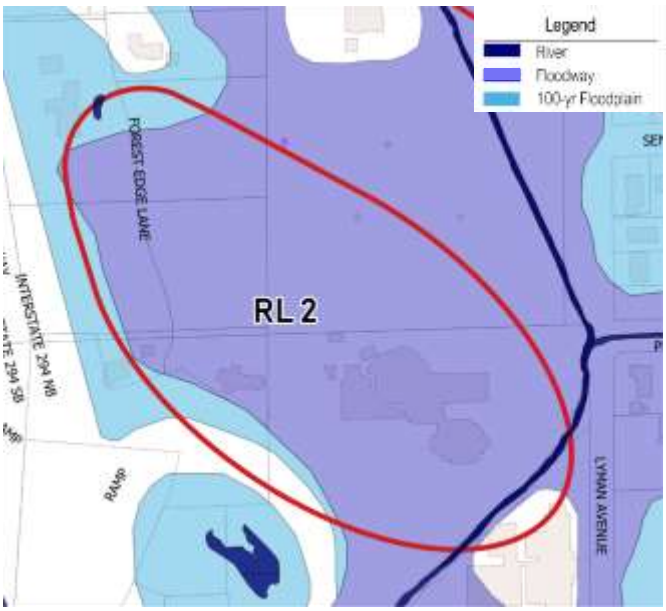

Figure 8. Repetitive Loss Area 2: Forest Edge

The properties within this area are located either within the regulatory floodplain or floodway of Farmer's Creek. The applicable flood data for this area is summarized below:

Source of Flooding: Farmers Creek.
FIRM Zone: AE
Approx. Base Flood Elevation: 631.1
Velocity: 0.2 fps
Warning time: < 1 hour (Farmers Creek),
1 day (Des Plaines River backwater)
Type of Flooding: Overbank

There are three single family homes in this area, two commercial buildings, and three vacant parcels. All structures within this Repetitive Loss Area are located within the regulatory floodway of Farmers Creek.

Questionnaire Responses:

There were no questionnaires returned within this area; However the City is aware of flooding on Forest Edge Lane and has acquired and demolished one residential structure in this area as shown in Figure 9.

Figure 9. Forest Edge Lane Property Acquisition. *The image on the left shows the former building footprint and contours at 710 Forest Edge. This structure has been demolished as part of the City's buyout program as shown in the image on the right.*

Area 3: Big Bend

Repetitive Loss Area 3 is located in the eastern portion of the City, on the west side of I-294. This area is within the Des Plaines River watershed. The area is bounded by the Des Plaines River on the north and east, Rand Road on the south, and Hawthorne Lane on the west as shown in Figure 10.

The properties within this area are all located within the regulatory floodway of the Des Plaines River. The applicable flood data for this area is summarized below:

Source of Flooding: Des Plaines River
FIRM Zone: AE
Approx. Base Flood Elevation: 634.2
Velocity: 0.7 fps
Warning time: 1 day

Figure 10. Repetitive Loss Area 3: Big Bend

There are 34 single family homes in this area, which are located within the regulatory floodway of the Des Plaines River. The homes are primarily on basement foundations. The terrain in the area is very flat with ground elevations ranging between 630 near the river and 632 further away from the river.

Questionnaire Responses:

Eight (8) questionnaires were returned from this area. Seven of the eight respondents indicated they have experienced flooding. Flooding was reported in the following years: 1986, 1987, 1996, 2008, 2013, and 2017. The flooding was reported to be in yards, crawlspaces, basements, and first floors with the longest duration of flooding lasting at least 5 days (some could not remember the duration of flooding). Residents have used sand bags, installed sump pumps, and installed generators. The City is aware of flooding in this area and has a buyout program to acquire and demolish flood-prone properties. City staff noted several generators and raised window wells in this area as shown in Figure 11.


Figure 11. Generator and Raised Window Wells in RL 3. As shown above, residents in this area have generators and raised window wells to protect their homes from flooding.

Area 4: Elk Blvd.

Repetitive Loss Area 4 is located west of Repetitive Loss Area 3 in the eastern portion of the City. This area is within the Des Plaines River watershed. The area is centered around Grove Avenue, including portions of Sherman Place, Hills Avenue, and Elk Boulevard as shown in Figure 12.

The properties within this area are all located within the regulatory floodway or floodplain of the Des Plaines River. The applicable flood data for this area is summarized below:

Source of Flooding: Des Plaines River
FIRM Zone: AE
Approx. Base Flood Elevation: 634.9
Velocity: 0.2 fps
Warning time: 1 day

There are 44 single family homes in this area, which are located within the regulatory floodway of the Des Plaines River. The homes are primarily on basement foundations. The terrain in the area is very flat with ground elevations ranging between 633 near the river and 635 further away from the river.

Figure 12. Repetitive Loss Area 4: Elk Blvd.

Questionnaire Responses:

Twelve (12) questionnaires were returned from this area. Seven of the twelve respondents indicated they have experienced flooding. Flooding was reported in the following years: 1987, 1988, 2008, 2012, 2013, and 2018. The flooding was reported to be in yards, crawlspaces, and basements with the longest duration of flooding lasting 4 to 5 days. Residents have used sand bags, installed sump pumps, sealed basement floors/walls, and have used additional pumps to remove floodwater. The City staff noted a few downspouts in this area have been extended to drain away from the structure shown in Figure 13.

Figure 13. Downspouts in Repetitive Loss Area 4. *Downspouts in Repetitive Loss Area 4. The image on the left shows a downspout that has been extended away from the structure and the image on the right shows one that has not been extended.*

Area 5: Willow

Repetitive Loss Area 5 is located southwest of the intersection of Rand Road and Des Plaines River Road. This area is within the Weller Creek watershed and is centered around Willow Avenue, including portions of Lee Street, Oak Street, and Alles Street as shown in Figure 14.

The properties within this area are all located within the regulatory floodway or floodplain of Weller Creek. The applicable flood data for this area is summarized below:

Source of Flooding: Weller Creek

FIRM Zone: AE

Approx. Base Flood Elevation: 634.9

Velocity: 0.5 fps

Warning time: 1 day

There are 92 single family homes and 5 multi-family homes in this area, which are located within the regulatory floodplain of Weller Creek. The homes are primarily on basement foundations. The terrain in the area is very flat with ground elevations ranging between 630 near the creek and 632 further away from the creek.

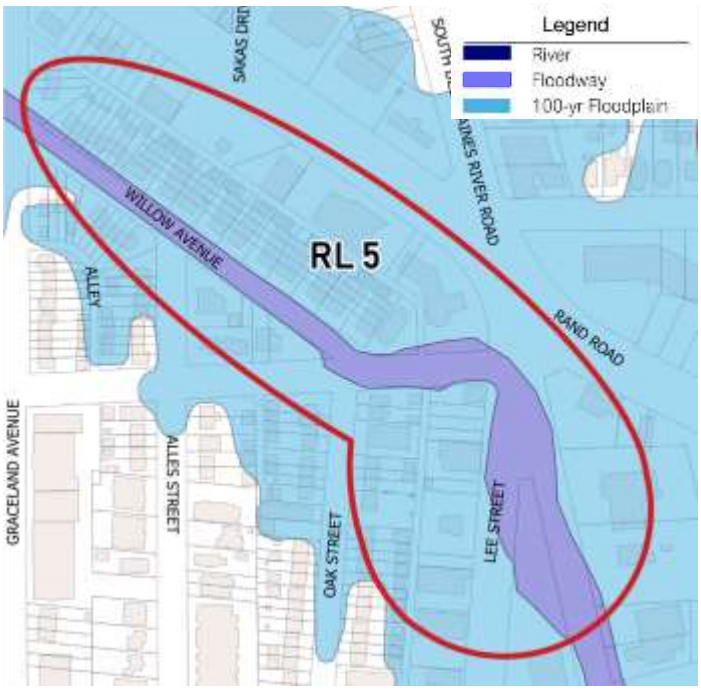

Figure 14. Repetitive Loss Area 5: Willow

Questionnaire Responses:

Sixteen (16) questionnaires were returned from this area. Thirteen of the sixteen respondents indicated they have experienced flooding. Flooding was reported in the following years: 1964-1966, 2008, 2010, 2011, 2013, 2015, and 2017. The flooding was reported to be in yards, first floors, and basements with the longest duration of flooding lasting 4 days. Residents have used sand bags, installed sump pumps, installed overhead sewers, sealed exterior walls, and installed flood shields at doorways. The City is aware of flooding in this area and noted many of the property owners have extended downspouts to allow for positive drainage away from the structure as shown in Figure 15.

Figure 15. Typical building within Repetitive Loss Area 5. As shown above, many of the buildings in this area have extended their downspouts and sump pump discharges to drain away from the building.

Area 6: Miner & Mill

Repetitive Loss Area 6 is located on the eastern portion of the City, along the Des Plaines River. This area is centered around the Des Plaines River, north of Miner Street and east of Des Plaines River Road, including portions of Miner Street, Mill Street, and River Street as shown in Figure 16.

The properties within this area are all located within the regulatory floodway or floodplain of Weller Creek. The applicable flood data for this area is summarized below:

Source of Flooding: Des Plaines River

FIRM Zone: AE

Approx. Base Flood Elevation: 633.7

Velocity: 1 fps

Warning time: 1 day

There are ten single family homes and 3 multi-family homes in this area, which are located within the regulatory floodplain and floodway of the Des Plaines River. The structures are primarily on slab foundations. The terrain in the area is very flat with ground elevations ranging between 629 near the river and 632 further away from the river.

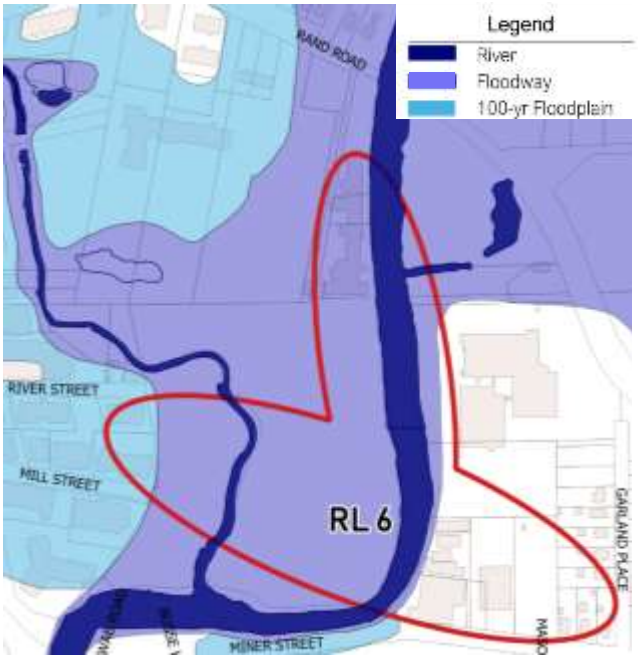

Figure 16. Repetitive Loss Area 6: Miner & Mill

Questionnaire Responses:

One (1) questionnaire was returned from this area. The respondent indicated they have not experienced flooding in the two years they have owned the home.

Figure 17. Structures within Repetitive Loss Area 6. *On the left is a typical multi-unit building within Repetitive Loss Area 6. On the right is the Chicago Behavioral Hospital, which is considered a critical facility in the Des Plaines River Floodway within Repetitive Loss Area 6.*

Area 7: Apple Creek

Repetitive Loss Area 7 is located on the eastern portion of the City, along Farmers Creek. This area is along Busse Highway east of Des Plaines River Road and also includes properties on Apple Creek Lane as shown in Figure 18.

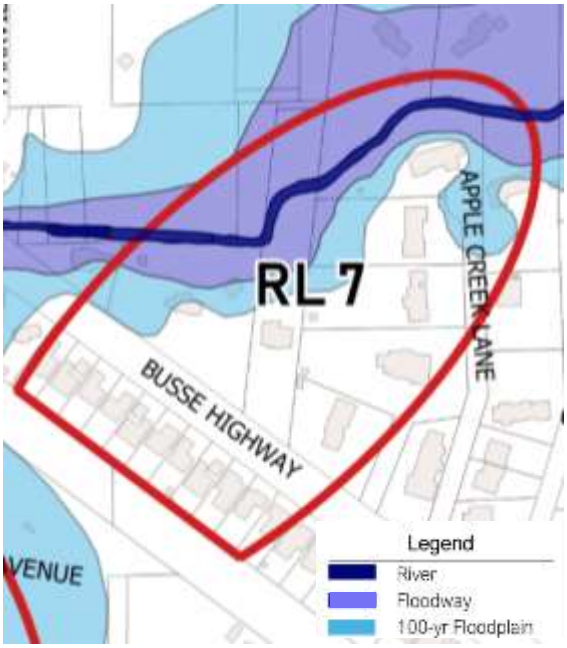

Figure 18. Repetitive Loss Area 7: Apple Creek

The properties within this area are all located within the regulatory floodway or floodplain of Farmers Creek. The applicable flood data for this area is summarized below:

Source of Flooding: Farmers Creek

FIRM Zone: AE

Approx. Base Flood Elevation: 630

Velocity: 1.2 fps

Warning time: < 1 hour (Farmers Creek),
1 day (Des Plaines River)

There are nineteen single family homes in this area. The properties backing up to Farmers Creek are located within the regulatory floodplain and floodway. The structures are primarily on crawlspace foundations. The terrain in the area is very flat with ground elevations ranging between 624 near the creek and 633 further away from the creek.

Five (5) questionnaires were returned from this area. Two of the five respondents indicated they have experienced flooding. Flooding was reported in 2008 and another indicating flooding occurs every 3-4 years. The flooding was reported to be in yards, crawlspaces, and basements with the longest duration of flooding lasting 3 days. Residents have used sand bags, installed sump pumps, installed check valves, and have installed generators. The City is aware of overbank flooding along Farmers Creek. A typical residential structure is shown in Figure 19.

Figure 19. Typical residential structure in Repetitive Loss Area 7

Area 8: River Road

Repetitive Loss Area 8 is the largest of the repetitive loss areas and is located along Des Plaines River Road between Thacker Street and Oakton Avenue on the east side of the City. The limits are shown in Figure 20.

Figure 20. Repetitive Loss Area 8: River Road

The majority of the properties within this area are located within the regulatory floodway or floodplain of the Des Plaines River. The applicable flood data for this area is summarized below:

Source of Flooding: Des Plaines River

FIRM Zone: AE

Approx. Base Flood Elevation: 633.3

Velocity: 1.4 fps

Warning time: 1 day

There are 358 single family homes and 15 multi-unit buildings in this area, most of which are located within the regulatory floodplain and floodway of the Des Plaines River. There is a combination of basement, crawlspace, and slab foundations in this area.

Questionnaire Responses:

Seventy-one (71) questionnaires were returned from this area. Forty-five of the Seventy-one respondents indicated they have experienced flooding. Flooding was reported in 1986, 1987, 1991, 1992, and every year from 1997 to 2013. The flooding was reported to be in yards, crawlspaces, first floors, and basements with the longest duration of flooding lasting 7 days. Residents have used sand bags, and installed sump pumps, check valves, standpipes, overhead sewers, yard drains, generators, water-resistant membranes, and floodwalls. The City is aware of flooding in this area and has included properties in this area in their buyout program. City staff noted several raised air conditioners, generators, and a floodwall in this area as shown in Figure 21.

Figure 21. Elevated AC unit and private floodwall within Repetitive Loss Area 8

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Area 9: Oakton & Bennett

Repetitive Loss Area 9 is located south of Repetitive Loss Area 8, along the Des Plaines River. This area is primarily west of Des Plaines River Road, south of Oakton Avenue, north of Everett Avenue, and east of Sycamore Street as shown in Figure 22.

The majority of the properties within this area are located within the regulatory floodway or floodplain of the Des Plaines River. The applicable flood data for this area is summarized below:

Source of Flooding: Des Plaines River

FIRM Zone: AE

Approx. Base Flood Elevation: 631.5

Velocity: 1.3 fps

Warning time: 1 day

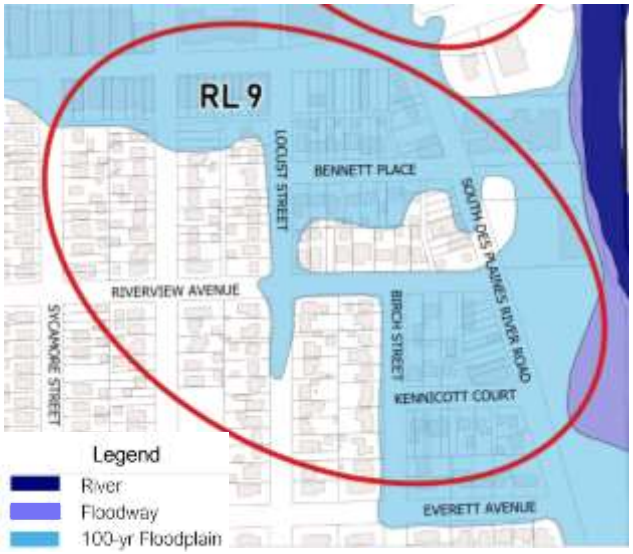


Figure 22. Repetitive Loss Area 9: Oakton / Bennett

There are 128 single family homes and 3 multi-unit buildings in this area, many of which are located within the regulatory floodplain of the Des Plaines River. There is a combination of basement, crawlspace, and slab foundations in this area. The terrain in the area is flat with ground elevations ranging between 630 near the river and 635 further away from the river.

Questionnaire Responses:

Twenty-eight (28) questionnaires were returned from this area. Fifteen of the twenty-eight respondents indicated they have experienced flooding. Flooding was reported in 1986, 1987, 2002, 2008 - 2013, 2017- 2019. The flooding was reported to be in yards, crawlspaces, first floors, and basements with the longest duration of flooding lasting 9 days. Residents have used sand bags, and installed sump pumps, check valves, generators, and exterior waterproofing. The City is aware of flooding in this area and noted many of the property owners have extended downspouts and sump pump discharges to allow for positive drainage away from the structure as shown in Figure 23.

Figure 23. Typical building within Repetitive Loss Area 9. *In the image on the left, the sump pump discharge pipes have been extended to allow positive drainage away from the structure. Another alternative, shown in the image on the right, is a stone swale sloped away from the structure.*

Area 10: Birchwood

Repetitive Loss Area 10 is located within the Des Plaines River watershed, west Des Plaines River Road on Birchwood Avenue and Welwyn Avenue as shown in Figure 24.

All of the properties within this area are located within the regulatory floodplain of the Des Plaines River. The applicable flood data for this area is summarized below:

Source of Flooding: Des Plaines River

FIRM Zone: AE

Approx. Base Flood Elevation: 631

Velocity: 0.6 fps

Warning time: 1 day

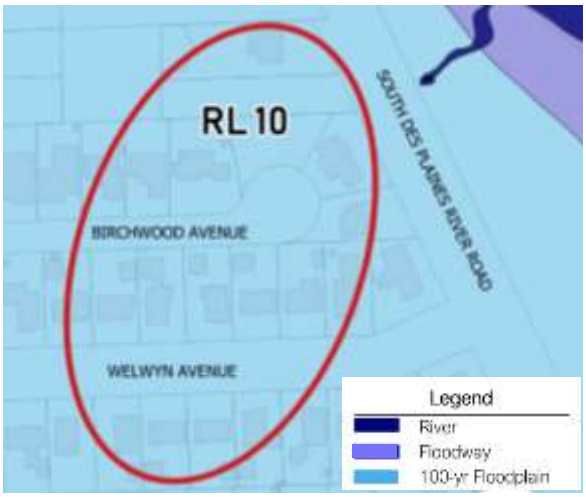


Figure 24. Repetitive Loss Area 10: Birchwood

There are 18 single family homes and 1 multi-unit building in this area, all of which are located within the regulatory floodplain of the Des Plaines River. The structures are primarily on slab foundations. The terrain in the area is very flat with ground elevations ranging between 628 to 630.

Questionnaire Responses:

Three (3) questionnaires were returned from this area. All of the three respondents indicated they have experienced flooding. Flooding was reported in 2008 and 2013. The flooding was reported to be in yards, and first floors with the longest duration of flooding lasting 3 days. Residents have used sand bags and have sealed their foundations to reduce future flooding. The City staff noted a few downspouts in this area have been extended to drain away from the structure shown in Figure 13.

Figure 25. Typical downspouts in Repetitive Loss Area 10. *As shown above, many of the downspouts within Repetitive Loss Area 10 were not extended. The majority of structures in this area do not have basements; therefore, seepage and continually running sump pumps may not be an issue.*

Area 11: Craig Drive

Repetitive Loss Area 11 is located west of Des Plaines River Road, south of Touhy Avenue. The area includes properties on Craig Drive and Pearle Drive, south of David Drive as shown in Figure 26.

All of the properties within this area are located outside the regulatory floodplain. The applicable flood data for this area is summarized below:

Source of Flooding: Local drainage

FIRM Zone: X

Approx. Base Flood Elevation: N/A

Velocity: N/A

Warning time: < 1 hour

There are 17 single family homes in this area, which are not located within the regulatory floodplain. The structures are primarily on basement foundations. The terrain in the area is flat with ground elevations ranging between 634 along the rear property lines to 637 near the structures.

Figure 26. Repetitive Loss Area 11: Craig Drive

Questionnaire Responses:

Two (2) questionnaires were returned from this area. Both of the respondents indicated they have not experienced flooding. The City staff found that many of the downspouts in this area have been extended to allow for positive drainage away from the structures as shown in Figure 27.

Figure 27. Typical Structure in Repetitive Loss Area 11.
Many of the downspouts in this area have been extended; as shown in the above image.

Area 12: Nimitz Drive

Repetitive Loss Area 12 is located west of Scott Street and south of Pratt Avenue. The area includes residential properties along Nimitz Drive and North Shore Avenue, west of Eisenhower Drive as shown in Figure 28.

All of the properties within this area are located outside the regulatory floodplain. The applicable flood data for this area is summarized below:

Source of Flooding: Local drainage

FIRM Zone: X

Approx. Base Flood Elevation: N/A

Velocity: N/A

Warning time: < 1 hour

There are 17 single family homes in this area, which are not located within the regulatory floodplain. The structures are primarily on basement foundations. The terrain in the area is flat with ground elevations ranging between 636 along on Nimitz Drive to 638 near the structures.

Figure 28. Repetitive Loss Area 12: Nimitz Drive

Questionnaire Responses:

Three (3) questionnaires were returned from this area. Two of the three respondents indicated they have experienced flooding. Flooding was reported over many years, including 2008 and 2013. The flooding was reported to be in basements with the longest duration of flooding lasting 3 days. Residents have used sand bags, backup generators, and have sealed their foundations to reduce future flooding. The City staff noted that many of the property owners have extended downspouts and sump pump discharges to allow for positive drainage away from the structure as shown in Figure 29.

Figure 29. Typical Structure in Repetitive Loss Area 12. Many of the downspouts and sump pump discharges in this area have been extended; as shown in the above image.

Area 13: Devonshire

Repetitive Loss Area 13 is located west of Mount Prospect Road, between Algonquin Road and Oakton Street. The area is centered around Devonshire Elementary School and includes properties on Pennsylvania Avenue, West Roxbury Lane, Phoenix Drive, Winsor Drive, Jeffery Lane, Lancaster Lane, Dover Drive, and Danbury Lane as shown in Figure 30.

Figure 30. Repetitive Loss Area 13: Devonshire

All of the properties within this area are located outside the regulatory floodplain. The applicable flood data for this area is summarized below:

Source of Flooding: Local drainage
FIRM Zone: X
Approx. Base Flood Elevation: N/A
Velocity: N/A
Warning time: < 1 hour

There are 83 single family homes and 3 multi-unit structures in this area, which are not located within the regulatory floodplain. Structures in this area are primarily on basement foundations. The terrain in the area is flat with ground elevations ranging between 655 in the southeast corner to 658 in the northwest corner, with low areas in the rear yards.

Questionnaire Responses:

Nineteen (19) questionnaires were returned from this area. Twelve of the nineteen respondents indicated they have experienced flooding. Flooding was reported over many years, including 1987, 1988, 1990, 1994, 2000, 2005, 2007, 2008, 2010, 2011, 2012, 2013, 2018, and 2019. The flooding was reported to be in basements, crawlspaces and yards with the longest duration of flooding lasting 3 days. Residents have used sand bags, backup generators, additional sump pumps, valves, standpipes, and have sealed exterior walls to reduce future flooding. The City staff found that many of the downspouts in this area have been extended to allow for positive drainage away from the structures as shown in Figure 31.


Figure 31. Typical Structures in Repetitive Loss Area 13. The property owners for both of the structures pictured above in Repetitive Loss Area 13 extended their downspouts to an area where the runoff would drain away from the structure.

Area 14: Westmere

Repetitive Loss Area 14 is located north of Dempster Street and west of Mount Prospect Road. The area includes properties on Westmere Road, between Dara James Road and Farthing Lane and Bradley Court as shown in Figure 32.

All of the properties within this area are located outside the regulatory floodplain. The applicable flood data for this area is summarized below:

Source of Flooding: Local drainage

FIRM Zone: X

Approx. Base Flood Elevation: N/A

Velocity: N/A

Warning time: < 1 hour

There are 7 single family homes in this area, which are not located within the regulatory floodplain. All of the structures in this area are on basement foundations. The terrain in the area drains from north to south with ground elevations ranging between 649 near Westmere Road to 652 in Bradley Court.

Questionnaire Responses:

There were no questionnaires returned within this area. The City staff found that some of the downspouts in this area have been extended as shown in Figure 33.

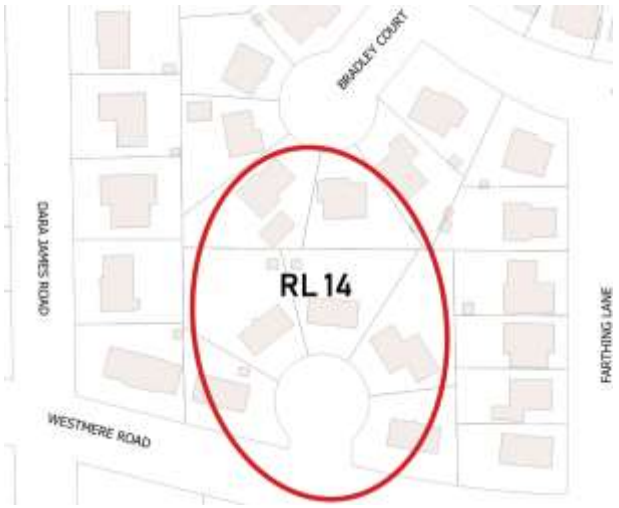


Figure 32. Repetitive Loss Area 14: Westmere

Figure 33. Typical Structure in Repetitive Loss Area 14. *The owner of this property in Repetitive Loss Area 14 has a small extension on their downspouts and a splash pad. If seepage is a problem, a longer downspout extension would drain runoff away from the structure more efficiently.*

UrbanHydro

Area 15: Washington

Repetitive Loss Area 15 is located south of Golf Road and east of Mount Prospect Road, within the Weller Creek watershed. The area includes properties north and south of Washington Street, east of South Westgate Road as shown in Figure 34.

The properties in this area are located within the regulatory floodplain and floodway of Weller Creek. The applicable flood data for this area is summarized below:

Source of Flooding: Weller Creek

FIRM Zone: AE

Approx. Base Flood Elevation: 645.2

Velocity: 1.6 fps

Warning time: < 1 hour

There are 10 single family homes in this area. All of the properties within this area are either entirely or partially located within the regulatory floodplain or floodway. All of the structures in this area have basements. The terrain in the area drains from west to east with ground elevations ranging between 644 near Weller Creek to 647 near South Westgate Road.

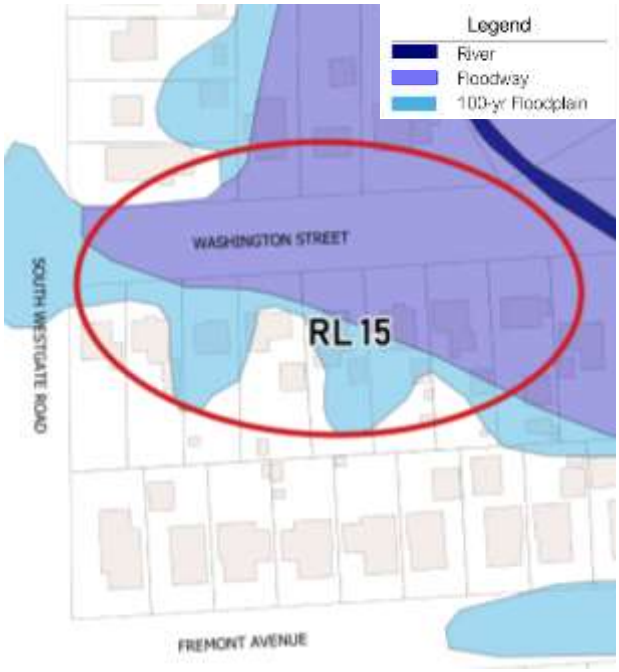


Figure 34. Repetitive Loss Area 15: Washington

Questionnaire Responses:

Two (2) questionnaires were returned from this area. Both respondents indicated they have experienced flooding. Flooding was reported in 1967 and 1987. The flooding was reported to be in yards and basements with the longest duration of flooding lasting 10 hours. Residents have installed sump pumps to reduce future flooding.

Figure 35. Typical Structure in Repetitive Loss Area 15. *Structures in this area typically have at-grade air conditioning units and do not have extended downspouts.*

Detailed Analysis Summary

A flood depth of greater one foot was set for the recommendation of elevation, relocation, or demolition. Structures with basement flooding of more than one foot were given additional recommendations for wet and dry floodproofing. Mitigation options for structures that do not experience structural flooding include green infrastructure, grading improvements, and plumbing improvements. The building data table in Appendix E lists the recommended mitigation for each structure. The table below summarizes the recommendations.

Flooding Type & Depth	Recommended Mitigation	Number of Structures
Base Flood Depth > 1 Foot Above **First Floor**	▪ Elevation, Relocation and Demolition	212
Base Flood Depth > 1 Foot Above **Basement Floor**	▪ Elevation, Relocation and Demolition ▪ Wet Floodproofing ▪ Dry Floodproofing	404
No First-Floor or Basement Flooding (within the floodplain)	▪ Green Infrastructure ▪ Grading Improvements (excavation only) ▪ Plumbing Improvements	165
Urban flooding (outside the floodplain)	▪ Green Infrastructure ▪ Grading Improvements ▪ Plumbing Improvements	119

Notes:

- *Thirty-one (32) addresses within the 15 Repetitive Loss Areas do not currently have an insurable structure; therefore, no recommended mitigation is included for those addresses.*
- *A recommendation is provided for all addresses containing an insurable structure; however, structures that do not experience flooding would not need to take any action.*
- *Multi-unit structures, including those parcels with multiple structures on one parcel, are treated as one structure*
- *Non-Structural Measures described in Step 4 are recommended City-wide.*

The Director of Public Works and Engineering sends an annual letter to each property in the Repetitive Loss Areas. The letter includes an offer for a site visit and information on the seven topics/messages as outlined in the Program for Public Information. A sample letter is provided in Appendix C.

Recommendations, Adoption, and Updates

Based on the analysis of the building data, property protection measures, existing studies and reports, and existing mitigation efforts, the City proposes the mitigation measures outlined in this report be implemented and annually reviewed.

The City's CRS Coordinator will prepare an annual evaluation report no later than September 1 of each calendar year. The review will provide updates on mitigation activities by the City and individual property owners, flood insurance coverage rates, and property visits for flood protection advice. The report will be submitted to the City Council and made available to the public and the media. The property owners and residents will be advised of the report in the annual outreach letter to the Repetitive Loss Areas.

1. The City should continue to send an annual outreach letter to properties in the repetitive loss areas. The letter will include an offer to meet property owners to discuss site-specific options to reduce flood losses. A typical example is provided in Appendix C.
2. The City should continue to enforce all regulations designed to reduce flood damages to insurable structures, including compensatory storage and substantial improvement regulations.
3. The City should continue participation in the Community Rating System.
4. The City should continue to pursue additional mitigation funds for acquisition/demolition of flood-prone properties.
5. The City should continue public outreach encouraging residents to consider property protection, explaining substantial improvements rules, encouraging flood insurance, promoting CodeRED, and monitoring of the NOAA river gauge.
6. The City should continue to promote and fund the Flood Rebate Program.
7. The City should continue to perform damage inspections and tracking of substantial damage and substantial improvements to structures in the Special Flood Hazard Area.

Appendix A: Definitions and Acronyms

Base Flood	Often referred to as the 100-year flood or the regulatory floodplain. This is the area shown on the FIRM as the Special Flood Hazard Area subject to the 1% Annual Chance Flood. This flood has statistically, a 1% chance of being equaled or exceeded in any given year.
Base Flood Elevation	The elevation reached by the 1% Annual Chance Flood
CRS	Community Rating System
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map, maps showing the flood risk in a community.
NFIP	National Flood Insurance Program
Repetitive Loss Property	A property for which two or more flood insurance claims of more than $1,000 have been paid within any 10-year period since 1978.
Repetitive Loss Area	Repetitive Loss Area, the area subject to similar flooding conditions as one or more repetitive loss properties.
RLAA	Repetitive Loss Area Analysis, a detailed plan to reduce flood losses in one or more repetitively flooded areas.
USACOE	United States Army Corps of Engineers

Appendix B: Survey Questionnaire

DES PLAINES
ILLINOIS

Public Works & Engineering
1420 Miner Street, Des Plaines, IL 60016
P: 847.391.5390 | W: desplaines.org

February 13, 2019

Subject: Repetitive Loss Area Analysis

Dear Des Plaines Resident:

Our records indicate that your property is in one of the City's Fifteen (15) designated repetitive loss areas. As part of the City of Des Plaines' participation in the National Flood Insurance Program's (NFIP) Community Rating System (CRS), the Public Works and Engineering Department is evaluating properties that have experienced repetitive flood damage. This analysis will include the review of all previous flood data and studies conducted in these locations.

The repetitive loss analysis involves the collection of the following property information:

- Building permit records
- Structure and site elevation information
- Tax ID, lot, and parcel number
- Building property value on record
- Land property value on record
- Building codes/floodplain development regulations exceeding minimum standards
- Historical flood event information

In addition, City staff will visit each property to document the flood risk and take photographs. Property owners are encouraged to provide any relevant flooding information. The inspectors will be looking at the type and condition of the foundation, drainage patterns on the lot, and whether outside mechanical equipment is elevated.

The results of the repetitive loss area analysis will include a review of alternative approaches for property protection measures or drainage improvements where feasible. Once the analysis is complete, a copy of the report can be obtained from the Public Works and Engineering Department or by calling (847) 391-5390.

You can help us perform this analysis by completing and returning the attached questionnaire by within the next two weeks and returning it to the City Hall (1420 Miner Street). This survey can also be completed online at the following website: https://www.surveymonkey.com/r/VQ9M7DW. If you have any questions, please contact the City of Des Plaines Public Works and Engineering Department at (847) 391-5390.

Sincerely,

Jon Duddles, P.E., CFM
Assistant Director of Public Works and Engineering

Flood Protection Questionnaire

Property Address: _____

If you wish to remain anonymous list street and block number, i.e. 1400 block Miner St

1. Mow many years have you lived in the home/building at this address?

2. Do you rent or own this home/building? ☐ Rent ☐ Own

3. What type of foundation does the home/building have?

   ☐ Slab ☐ Crawlspace ☐ Basement ☐ Other _____

4. Has this home/building or property ever been flooded or had a sanitary sewer backup?

   ☐ Yes ☐ No (If "no" please skip to number 10)

5. Do you have flood insurance: ☐ Yes ☐ No

6. In what year(s) did it flood?

7. Where did you get water and how deep did it get?

   ☐ In basement: _____ feet deep ☐ In crawl space: _____ feet deep

   ☐ In first floor: _____ feet deep ☐ In yard: _____ feet deep

   ☐ Water kept out of house by sand bagging, sewer valve or other protective measure

8. What was the longest time that water stayed in the house/building?

   _____ hours or _____ days. What year did this flooding occur?

9. What do you feel was the cause of your flooding? Check all that affect your home/building.

   ☐ Storm sewer backup ☐ Sanitary sewer backup ☐ Standing water next to house/building

   ☐ Drainage from nearby properties ☐ Saturated ground/leaks in basement walls

   ☐ Overbank flooding from _____ River ☐ Other: _____

10. Have you installed any flood protection measures on the property?

    ☐ Sump pump ☐ Waterproofed the outside walls ☐ Re-graded yard to keep water away

    ☐ Moved things out of basement ☐ Installed backup power system/generator ☐ Sandbagged

    ☐ Other :_____

To complete this survey online, type the below website into your web browser, or scan the QR code on the right with the camera on your smart phone.

https://www.surveymonkey.com/r/VQ9M7DW

Appendix C: Sample Letter to Repetitive Loss Area Homeowners

DES PLAINES
ILLINOIS

Public Works & Engineering
1420 Miner Street, Des Plaines, IL 60016
P: 847.391.5390 | W: desplaines.org

December 27, 2017

Subject: Flooding and Flood Protection

Dear Des Plaines Resident:

Our records indicate that your property is in or near a Special Flood Hazard Area (SFHA), as mapped by the Federal Emergency Management Agency (FEMA), or one of the City's sixteen (16) designated repetitive loss areas. In an effort to help you reduce your flood insurance premiums, we are providing information on the following:

- ✓ Flood hazards in Des Plaines,
- ✓ Floodproofing measures to reduce future flood damages,
- ✓ Flood insurance to help recover from flooding,
- ✓ Flood protection regulations to prevent flooding,
- ✓ Flood safety tips, and
- ✓ Natural and beneficial functions of floodplains.

Please know that the City of Des Plaines is implementing a variety of flood protection activities, including periodic cleaning of ditches and channels, regulating new construction in the floodplain, and acquiring and preserving flood-prone areas as open space. The City is also in the process of securing additional grant funds for a buyout of homes on the FEMA repetitive loss list. If you have experienced flooding in the past, some things you can do to prevent future damages include:

- ✓ Investigate how the water is entering your home and then contact the Public Works and Engineering Department for assistance,
- ✓ Understand your risk of flooding or sewer backup from FEMA's floodplain mapping and the City's historical flooding information,
- ✓ Protect your home with appropriate floodproofing measures,
- ✓ Obtain flood insurance coverage for your home and contents, and
- ✓ Report violations of the City ordinances to the Building & Code Enforcement Department at (847) 391-5370.

If you need flood protection advice, historical flooding information, or flood elevation information, contact the City of Des Plaines Public Works and Engineering Department at (847) 391-5390.

Sincerely,

Timothy P. Oakley, P.E., CFM
Director of Public Works and Engineering

TPO/jd

The Flood Hazard

Properties in Des Plaines' repetitive flooding areas are subject to three types of flooding: overbank flooding, local drainage (overland flooding), and sewer backups. You could be faced with one, two, or all three of these hazards described below.

Overbank Flooding: Overbank flooding occurs when a river overtops its banks, flooding the adjacent areas. The City's most significant flooding is along the Des Plaines River. The worst flood in Des Plaines' history occurred in April 2013 when the river reached a flood stage of 20.92'.

Local Drainage (Overland Flooding): Des Plaines is very flat and most of the City was developed before stormwater detention was required. As a result, water collects in yards, which can cause or aggravate basement flooding. Drainage swales and storm sewers are designed to drain streets and low-lying areas, but they can be overloaded by heavy rains or blocked by debris. Stormwater can sit for hours or days, waiting for the ditches and sewers to drain.

Even residents living behind Levee 50 (along the east side of the Des Plaines River between Oakton Street and Golf Road) need to be aware of flooding. Levees can be overtopped by a larger storm than anticipated. Additionally, Levee 50 does not provide flood protection from Prairie Creek or Farmers Creek. More information about Levee 50 is available from the City's website (www.desplaines.org/levee50).

Sewer Backup: During heavy storms, sewers can become overloaded and backup into basements and streets. We encourage you to consider an overhead sewer, backflow valve, or other type of flood control system for your home. If you have a sewer 20 years old or older, we encourage you to get it televised to check for water tightness. You can call 391-5370 or 391-5390 for more information.

Floodproofing

Floodproofing can reduce future flood damages by making alterations to your home. There are many different floodproofing techniques may be appropriate for your home. If you have experienced flooding and want to floodproof your home, we encourage you to call the Engineering Division at (847) 391-5390 to schedule a free consultation. During the investigation, an engineer will come to your property, investigate the problem, and discuss alternatives that are appropriate for your particular property.

Also, your project may be eligible for the Flood Rebate Program which pays for 30% (up to $2,000) for an appropriate flood control device. Information about this program can be found at www.desplaines.org/floodrebate.

Emergency measures: Some last minute emergency measures can help reduce flood damages. Whatever emergency protection measures you use (moving valuable items to a higher floor, placing sandbags, etc.), it is best to have a written plan in advance to make sure you don't forget anything after you hear the flood warning. During a flood, keep in mind the flood safety tips listed on page 3.

What are the Flooding Sources in Des Plaines?

The seven sources of overbank flooding in Des Plaines are:

- Des Plaines River
- Feehanville Ditch
- Weller Creek
- Farmers Creek
- Prairie Creek
- Higgins Creek
- Willow Creek

Detailed information regarding past flooding in Des Plaines can be found in the City's Hazard Mitigation Plan, which can be found at www.desplaines.org

Where can I find the current stage of the Des Plaines River?

Check the current height of the Des Plaines River on line at http://water.weather.gov under river levels. You can sign up for weather alerts at water.usgs.gov/wateralert

Where can I find floodproofing information?

Some resources available to help you identify measure that can protect your home from future flooding are:

- Public Works and Engineering Department Staff can help you identify alternatives to protect your property.
- Homeowner's Guide to Retrofitting: Six Ways to Protect Your House from Flooding is available at the library, request a free copy from FEMA by calling 1-800-480-2520 or download a pdf copy at www.fema.gov/library
- Guide to Flood Protection in Northeastern Illinois is available at the library or www.illinoisfloods.org/publications.html.

Flood Insurance

Flood insurance is mandatory if your home is located within the 100-year floodplain and you have a federally regulated / insured mortgage. If you refinance and your home is in the 100-year floodplain, flood insurance will be required. Due to the continued threat of flooding, we encourage you to purchase flood insurance for both your home (structure) and building contents through the National Flood Insurance Program (NFIP).

Though flood insurance is not required for homes outside the floodplain, any house in Des Plaines can be covered by a flood insurance policy and flood insurance for structures outside the regulatory floodplain can be very affordable. Detached garages and accessory buildings are covered under the policy for the primary building on the property. There are three types of coverage that can be purchased:

1. Structural coverage for everything that stays with a house when it is sold, including the furnace, cabinets, built-in appliances, and wall-to-wall carpeting;

2. Contents coverage for furniture and other personal possessions except for money, valuable papers, etc. Renters can buy contents coverage, even if the owner does not buy structural coverage on the building; and

3. Sump pump failure or sewer backup coverage might be available as an addition to your homeowner's insurance policy. Each insurance company has different amounts of coverage, exclusions, deductibles, and arrangements. Most policies exclude damage from surface flooding that would be covered by an NFIP policy.

Please note that there is no coverage for things outside the house, like the driveway and landscaping. Some people have purchased flood insurance because it was required by the bank in order to get a mortgage or home improvement loan. Usually these policies only cover the building's structure and not the contents. If you have a policy, check it closely. During the kind of flooding that happens in Des Plaines, there is usually more damage to the furniture and contents than there is to the structure.

Elevation Certificates: In order to obtain a flood insurance policy, you may need to provide your insurance agent an Elevation Certificate (EC). An EC is prepared by a licensed land surveyor, documenting critical elevations of the structure and the Base Flood Elevation at the structure, which is used to determine flood risk. All elevation certificates for structures that have been elevated are available for inspection at the Public Works and Engineering Department.

Letters of Map Revision: If you feel that your home should not be located within the 100-year floodplain, you can apply for a Letter of Map Amendment (LOMA) from FEMA. If the home meets FEMAs requirements, the LOMA process will remove it from the 100-year floodplain. Typically, a surveyor is needed to complete some of the information on the LOMA. You can find more information about the LOMA process on FEMA's website (www.fema.gov).

When should I purchase Flood Insurance?

Don't wait for the next flood to buy insurance protection.

There is a 30-day waiting period before National Flood Insurance Program (NFIP) coverage takes effect. Contact your insurance agent for more information on rates or call NFIP for a referral at 800-427-4661.

Additional information is also available at www.floodsmart.gov.

Flood Safety Tips:

The following tips can help keep you safe during a flood:

- Do not walk through flowing water,
- Do not drive through a flooded area,
- Stay away from downed power lines and electrical wires,
- Turn off the electricity,
- Look out for animals that have been flooded out of their homes,
- Be alert for gas leaks,
- Unplug the sanitary sewer ejector pit in the basement,
- Clean everything that got wet,
- Beware of carbon monoxide exhaust from generators or other gasoline-powered machines , and
- Protect yourself by using gloves, boots, and face masks when cleaning up from a flood.

More flood safety tips can be found at www.floodsmart.gov.

FloodSmart.gov
The official site of the NFIP

Flood Protection Regulations

When properties are developed, they are designed for the stormwater runoff to flow away from the home. Over time, the original grading is changed by the installation of fences, landscaping, and re-grading. To protect properties from flooding, the City has the following requirements:

- A permit is needed for any improvements to your property that will change the grading. Always check with the Building Department (847) 391-5370 before you build on, fill, alter or regrade your property. Violators will be subject to a $750.00 per day fine and possible prosecution in the Cook County Circuit Court.
- Every piece of trash can contribute to flooding. Even grass clippings and branches can accumulate and plug channels or inlets. If your property is next to a ditch or storage basin, please help to keep these areas clear of brush and debris.
- Do not dump or throw anything into ditches or storage basins. Dumping in ditches and storage basins is a violation of City Code. If you see dumping in ditches, near property lot lines, or in the floodplain without a permit sign posted, contact the Building & Code Enforcement Department at 847-391-5370.
- Contact the Public Works and Engineering Department at (847) 391-5464, if you notice excessive debris in the curb or ditch.

New buildings in the floodplain must be protected from flood damage. The City's Flood Control Ordinance (Title 14) requires that new residential buildings must be elevated two feet above the base flood level. The ordinance also requires that a substantial improvement to a building be treated as a new building.

Why do we have floodplain regulations?

Floodplain regulations that require you keep the drainage system clear and get the proper permits before you build are designed to protect you and your neighbors.

What is a substantial improvement?

A substantial improvement is when the cumulative value of additions, alterations, repairs, and improvements exceed 50% of the value of the existing building. Substantial improvements may require the entire building to be elevated and the basement removed. This requirement also applies to homes that have been flooded or otherwise damaged.

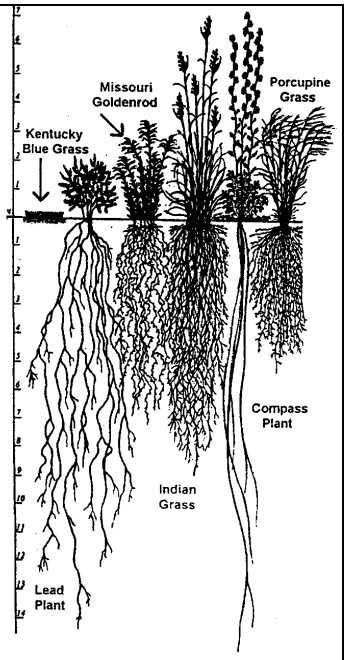
For additions that are not a substantial improvement, only the addition must be protected.

Natural and Beneficial Functions of Floodplains

Floodplains are not just hazardous locations for human development. Open and natural areas, such as Forest Preserves, absorb much more rain and floodwater than urbanized areas, reducing flooding downstream.

The many Forest Preserve and Park District properties along area streams have been kept or restored close to their natural state as woodlands and prairies. These flood-prone areas provide habitat for fish, animals, insects, and birds. It is important that we preserve these natural areas and wetlands. While some development is allowed, the City, County, State, and Federal agencies make sure that the natural benefits of these areas are maintained.

In addition to providing flood protection, natural areas filter stormwater runoff, but we have to do our part too. The storm sewer system carries untreated stormwater runoff directly to our streams. Pouring oil, anti-freeze, paint, fertilizer, and pesticides in storm sewers pollutes the water, destroy plants, and endanger wildlife. Please do your part to help keep our streams and storm drains free of pollutants. More information about improving water quality can be found on the Illinois Environmental Protection Agency (IEPA) website (www.epa.illinois.gov).



Native prairie and wetland plants have deep root systems that absorb and hold stormwater better than typical lawns. Preserving these plants reduces flooding and drainage problems.

Appendix D: Resources and References

CRS Coordinator's Manual, FEMA, 2013

Design Manual for Retrofitting Flood Prone Residential Structures, FEMA 114, September 2007

Engineering Principals and Practices for Retrofitting Flood Prone Residential Structures FEMA P-259

Federal Flood Insurance: The Repetitive Loss Problem, CRS Report for Congress, June 2005

The Guidebook to Conducting Repetitive Loss Area Analysis, Draft Report, Center for Hazard Assessment, University of New Orleans

Homeowners Guide to Retrofitting- 3rd Edition, FEMA P-312, 2014 Protecting Building Utilities from Flood Damage, FEMA P-348 River-Dumoulin Flood Control Plan, April 2004.
Selecting Appropriate Mitigation Measures for Flood-Prone Structures, FEMA 551, March 2007

NFIP, Write Your Own Company Bulletins, April 1 2015 Program Changes, April 1, 2016 Program Changes and April 1, 2017 Program Changes

Appendix E: Building Data (Not for Public Release)

Appendix F: Individual Building Photographs (Not for Public Release)

Appendix G: Individual Survey Responses (Not for Public Release)