



“We Aint Down Yet”  
Overcoming floods  
in the City of Vassar

Andrew Niedzinski  
City Manager

Crest 24.82 Ft  
9/12/1986



Crest 24.82 Ft  
9/12/1986

Crest 20.8 Ft  
03/20/1948



Crest 24.82 Ft  
9/12/1986

Crest 20.8 Ft  
03/20/1948

Crest 19 Ft  
03/18/1942

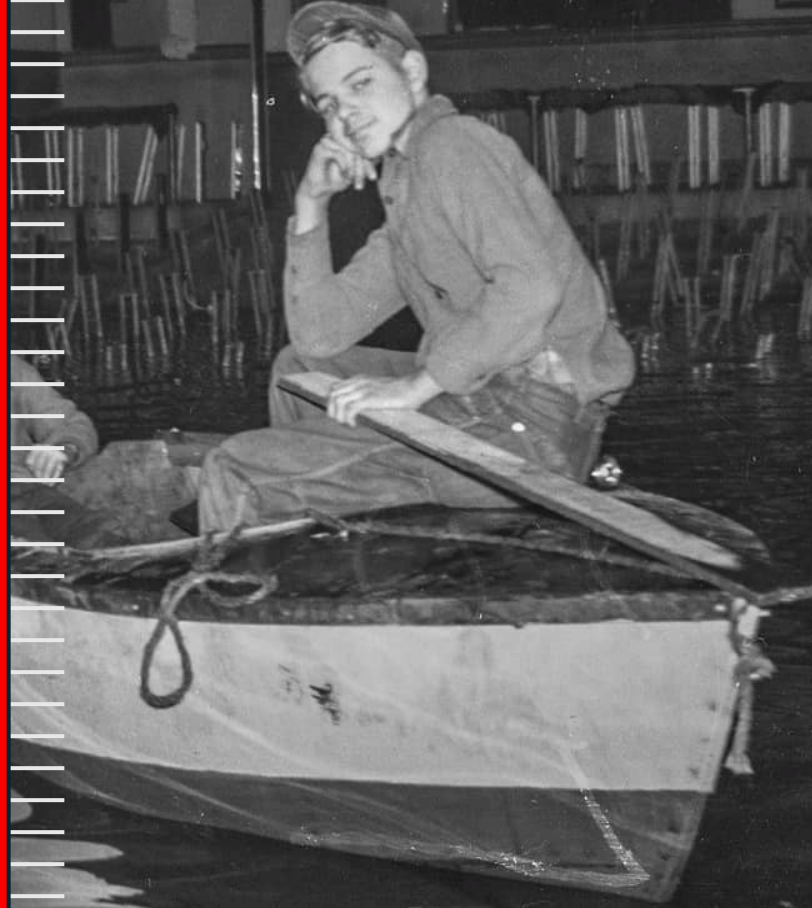


Crest 24.82 Ft  
9/12/1986

Crest 20.8 Ft  
03/20/1948

Crest 19 Ft  
03/18/1942

Crest 18.9 Ft  
03/30/1916





Crest 24.82 Ft  
9/12/1986

Crest 20.8 Ft  
03/20/1948

Crest 19 Ft  
03/18/1942

Crest 18.9 Ft  
03/30/1916

Crest 18.5 Ft  
05/22/1996



Crest 24.82 Ft  
9/12/1986

Crest 20.8 Ft  
03/20/1948

Crest 19 Ft  
03/18/1942

Crest 18.9 Ft  
03/30/1916

Crest 18.5 Ft  
05/22/1996

Crest 18.5 Ft  
04/06/1929



Crest 24.82 Ft  
9/12/1986

Crest 20.8 Ft  
03/20/1948

Crest 19 Ft  
03/18/1942

Crest 18.9 Ft  
03/30/1916

Crest 18.5 Ft  
05/22/1996

Crest 18.5 Ft  
04/06/1929

Crest 18.2 Ft  
02/22/1997







OLD MARKET  
JEWELRY - GEMS  
SERVICES - REPAIRS

PHARMACY

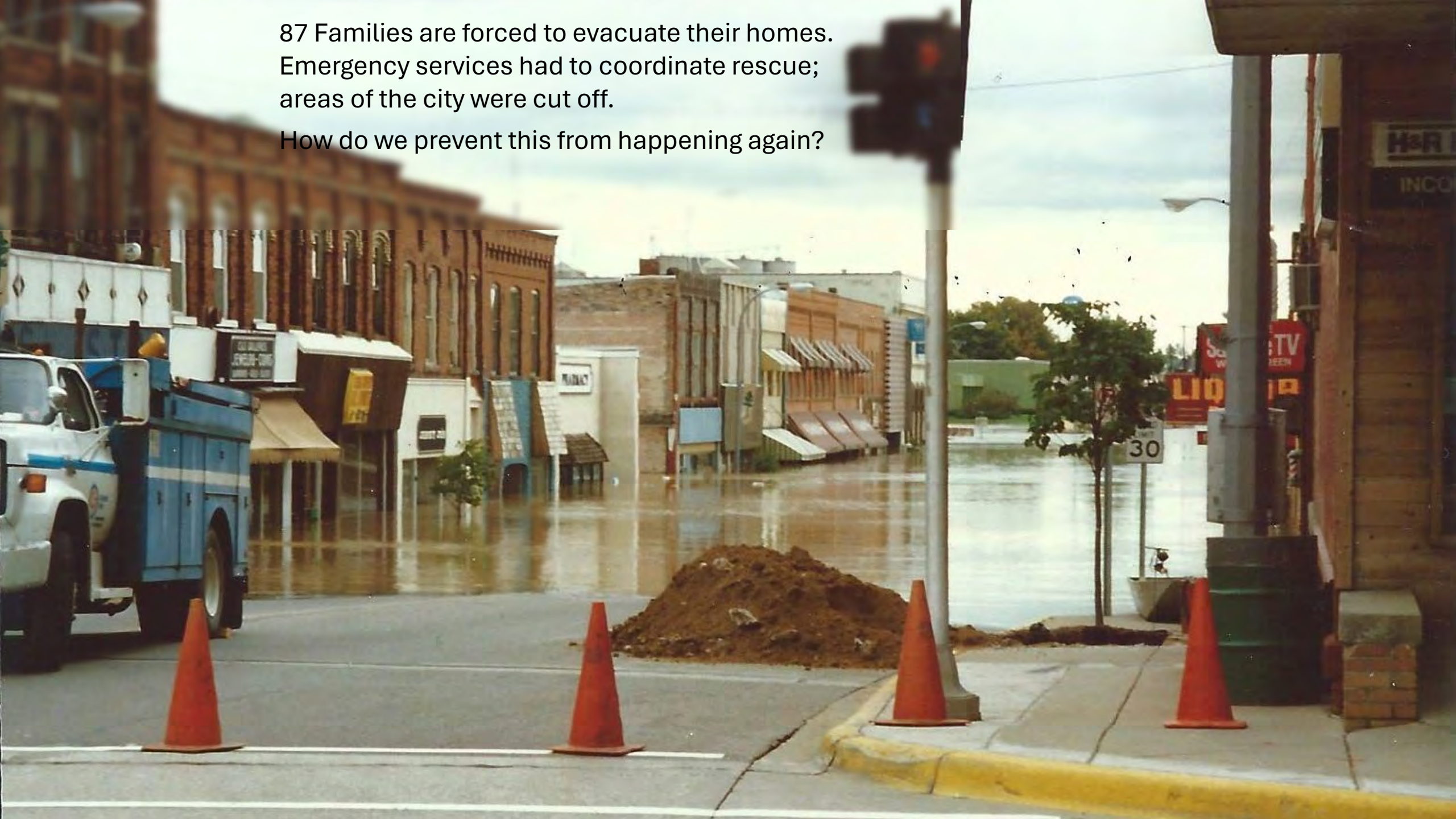
30

See TV  
LIQ

HER  
INCO

87 Families are forced to evacuate their homes.  
Emergency services had to coordinate rescue;  
areas of the city were cut off.

How do we prevent this from happening again?





Install large pump stations and deploy bladder bags



Relocate the Moore Drain



Demolish homes and relocated families out of the Special Hazard Floodway. Lift homes that choose to remain in their homes



Install one way flood gates to ensure Cass River can not flow into the Moore Drain.



Construct a Berm on the Banks of the Cass River to ensure floodwaters are contained.





Install large impoundments and deploy bladder bags



Relocate the Moore Drain



Demolish homes and relocated families out of the Special Hazard Floodway. Lift homes that choose to remain in their homes



Install one way flood gates to ensure Cass River can not flow into the Moore Drain.



Construct a Berm on the Banks of the Cass River to ensure floodwaters are contained.



- The 100-year flood covers this first floor by 3.2 feet. It was proposed to elevated the home at least 1 foot above the 100-year food elevation under the Vassar Flood Mediation assistance program. It was eventually elevated 8.2 feet in total.



- The 100-year flood covers this first floor by 6.1 feet. It was proposed to elevated the home at least 1 foot above the 100-year food elevation under the Vassar Flood Mediation assistance program. It was eventually elevated 7.9 feet in total.





Moore Drain overflow  
Retention Basin



Demolish homes and relocated families out of the Special Hazard Floodway. Lift homes that choose to remain in their homes



Install one way flood gates to ensure Cass River can not flow into the Moore Drain.



Construct a Berm on the Banks of the Cass River to ensure floodwaters are contained.







Moore Drain overflow  
Retention Basin



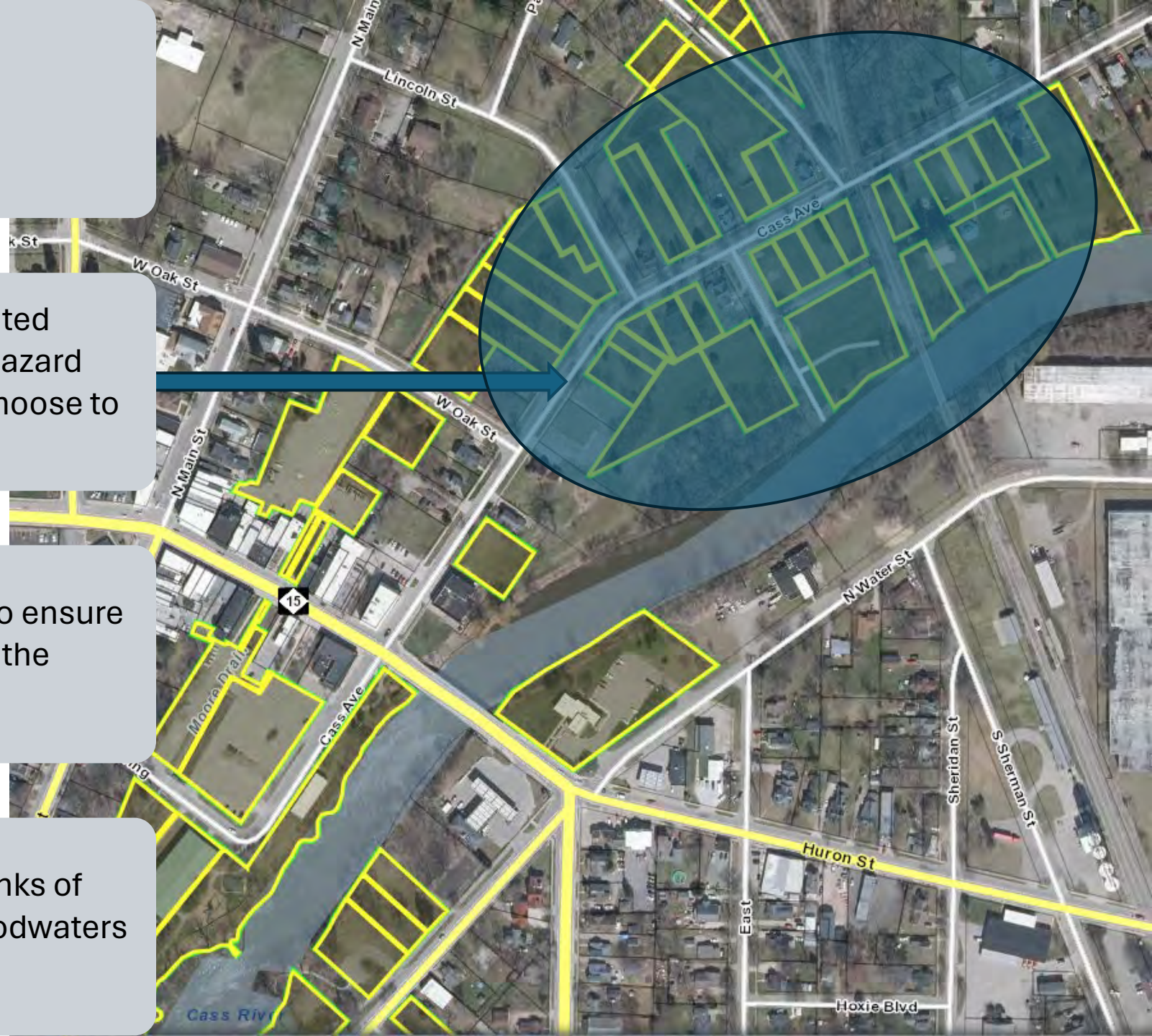
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Moore Drain overflow  
Retention Basin



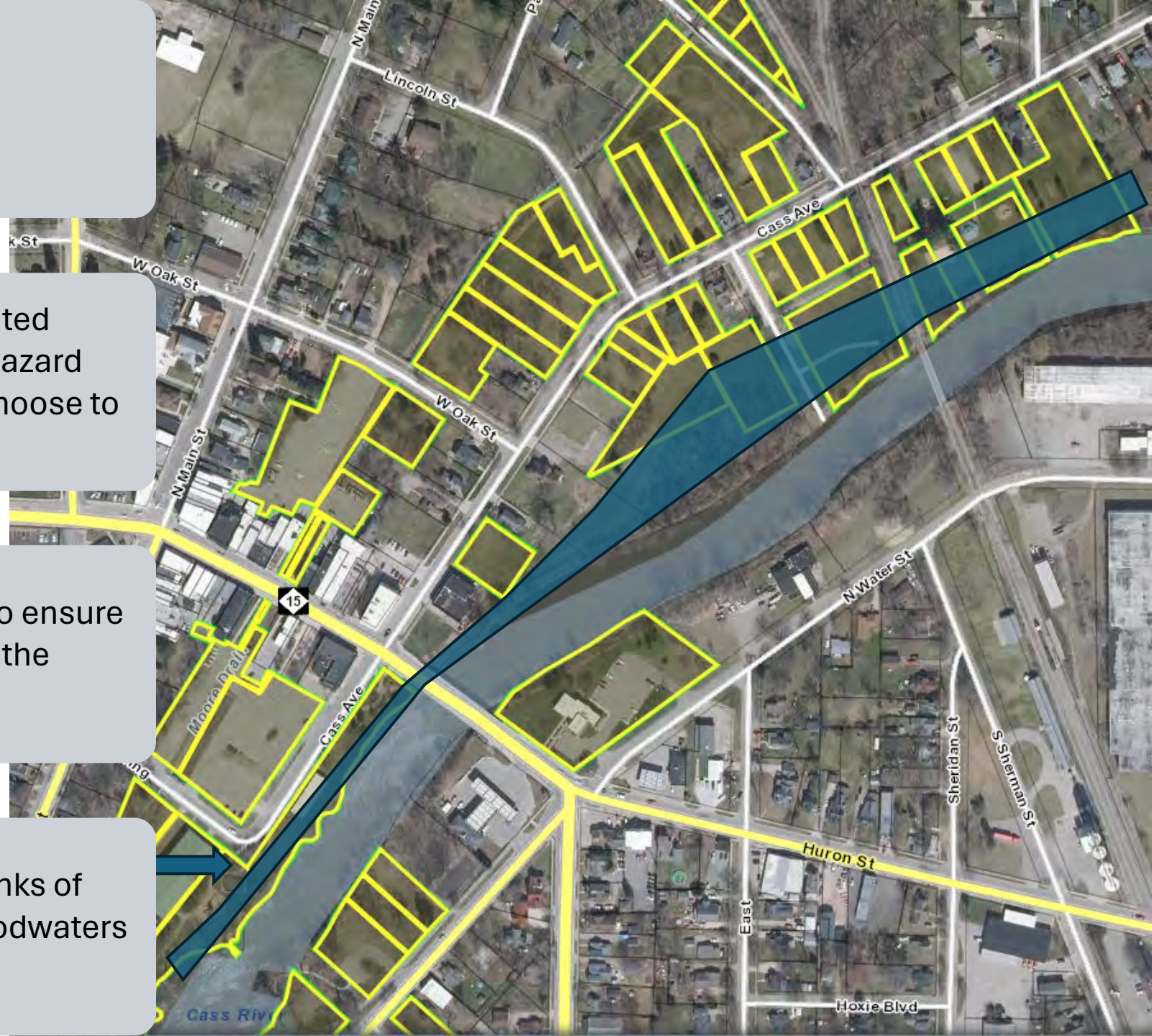
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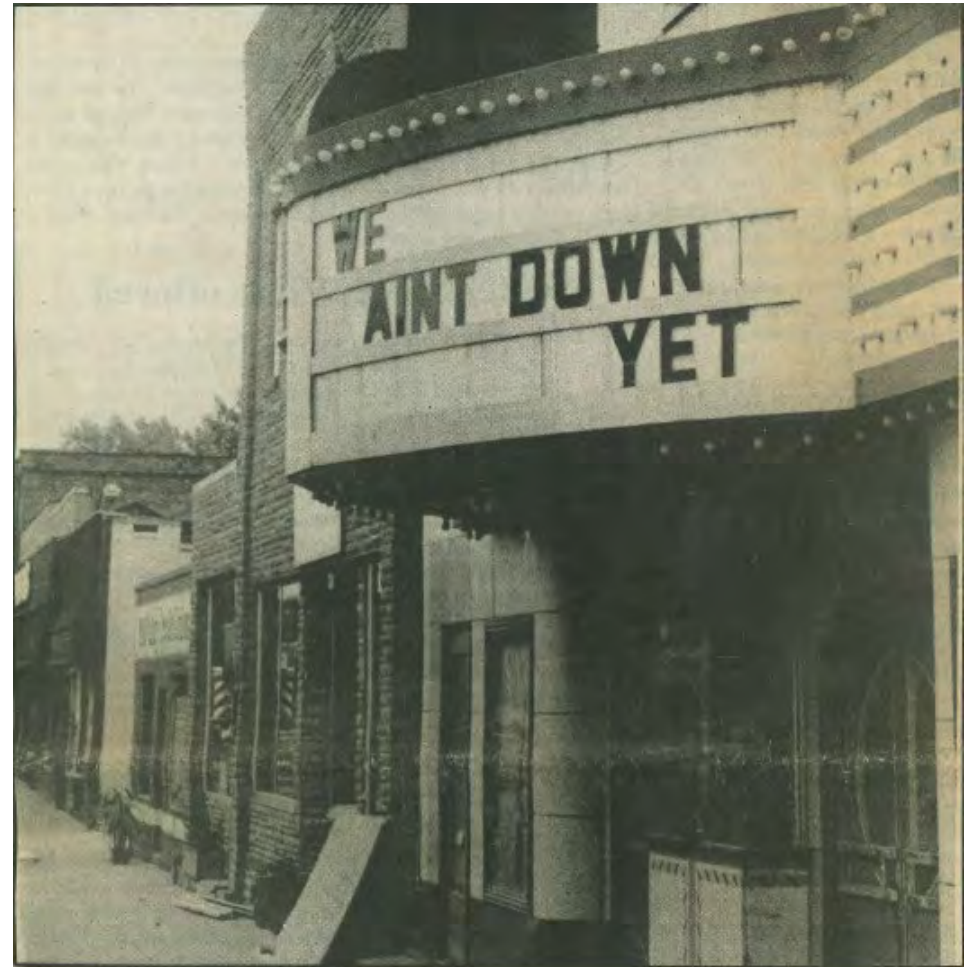
# Success in 2018!

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15.05 Feet 2/22/2018







# FLOODING AND COASTAL PLANNING/RESILIENCY IN SOUTHWEST MICHIGAN

**Marcy Hamilton**

Senior Planner/Deputy Executive Director  
Southwest Michigan Planning Commission

The logo for the Southwest Michigan Planning Commission (SWMPC) features the letters 'SWMPC' in a stylized font. The 'S' is orange, the 'W' is blue, the 'M' is blue, and the 'PC' is blue. A thin orange horizontal line is positioned below the letters.

SOUTHWEST MICHIGAN PLANNING COMMISSION

# FLOODING AND COASTAL PLANNING/RESILIENCY IN SOUTHWEST MICHIGAN

**Marcy Hamilton**

Senior Planner/Deputy Executive Director

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# COASTAL PLANNING USING NATURE BASED SOLUTIONS

- ▶ **Bridgman – Shoreline Resiliency Committee**

- ▶ Flow Path Mapping



- ▶ **Benton Harbor**

- ▶ Ox Creek Revitalization
- ▶ Riverview Drive High Water Mitigation



# BRIDGMAN SHORELINE RESILIENCY COMMITTEE

- ▶ Gene Schoon
- ▶ Jon Bonkoske
- ▶ Sara Ball
- ▶ Juan Ganum
- ▶ Brad Mattner
- ▶ John Wilk
- ▶ Mary Kay Steele
- ▶ Advisor: Marcy Hamilton



- Established by Bridgman City Council
- Apolitical advisory committee
- Keep abreast of information concerning fluctuating Great Lake water levels and shoreline dynamics
- Educate the public
- Inform local governing bodies in Bridgman area
- Assist with adopting informed planning and zoning practices that will ensure a resilient coastline for long-term community health and well-being.

<https://www.bridgman.org/292/Shoreline-Resiliency-Committee>

# EGLE CZM GRANT - BRIDGMAN FLOW PATH MAPPING



## Understanding the Flow Lines



**Red Lines: Stop! Water flow in this area is significant.**

**Yellow/Orange Lines: Proceed with caution.**

**Green Lines: Install Green Infrastructure and help our community be "clean and green".**

# Benton Harbor Water Resources

Lake Michigan

Water Treatment Plant/Jean Klock Park

Paw Paw River

Ox Creek

St. Joseph River

Willow Creek

Proposed Non-motorized Trail

Proposed Non-motorized Trail Terminus

Hall Park

Boys and Girls Club of BH

MLK Jr. Elementary

Harbor Plating

Empire Ave.

Legacy Oil & Gas

E. Napier Ave.

Pipestone Commercial Corridor Storm Runoff

The Orchards Mall

Home Depot

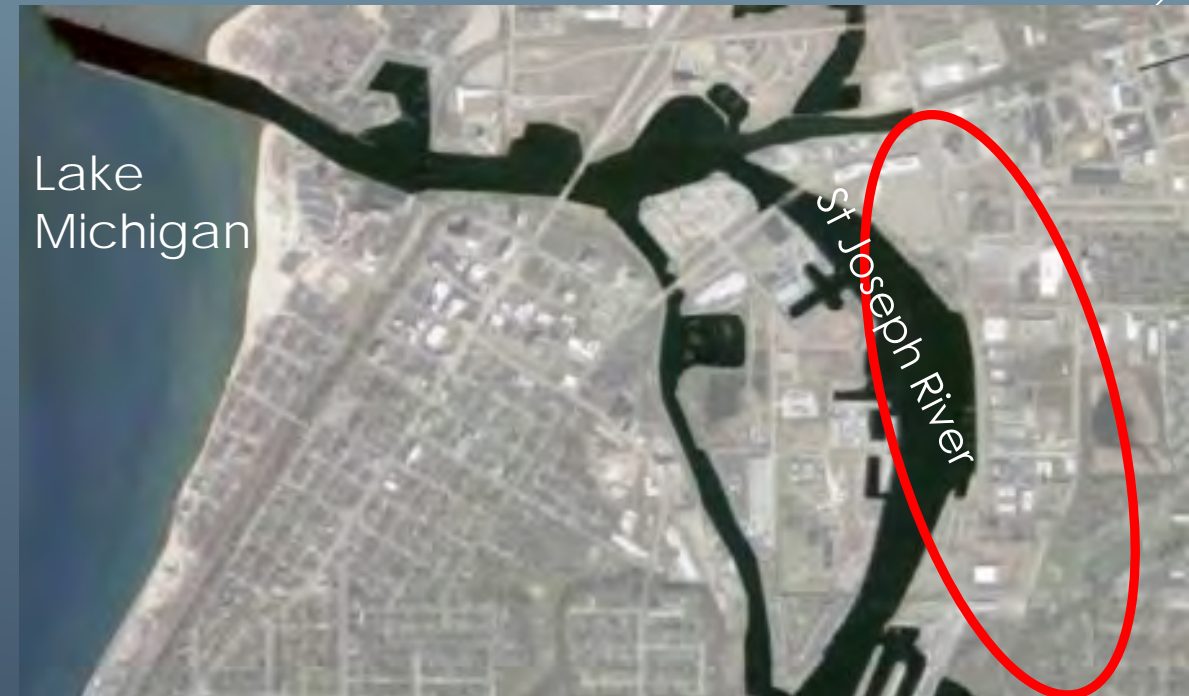
Google



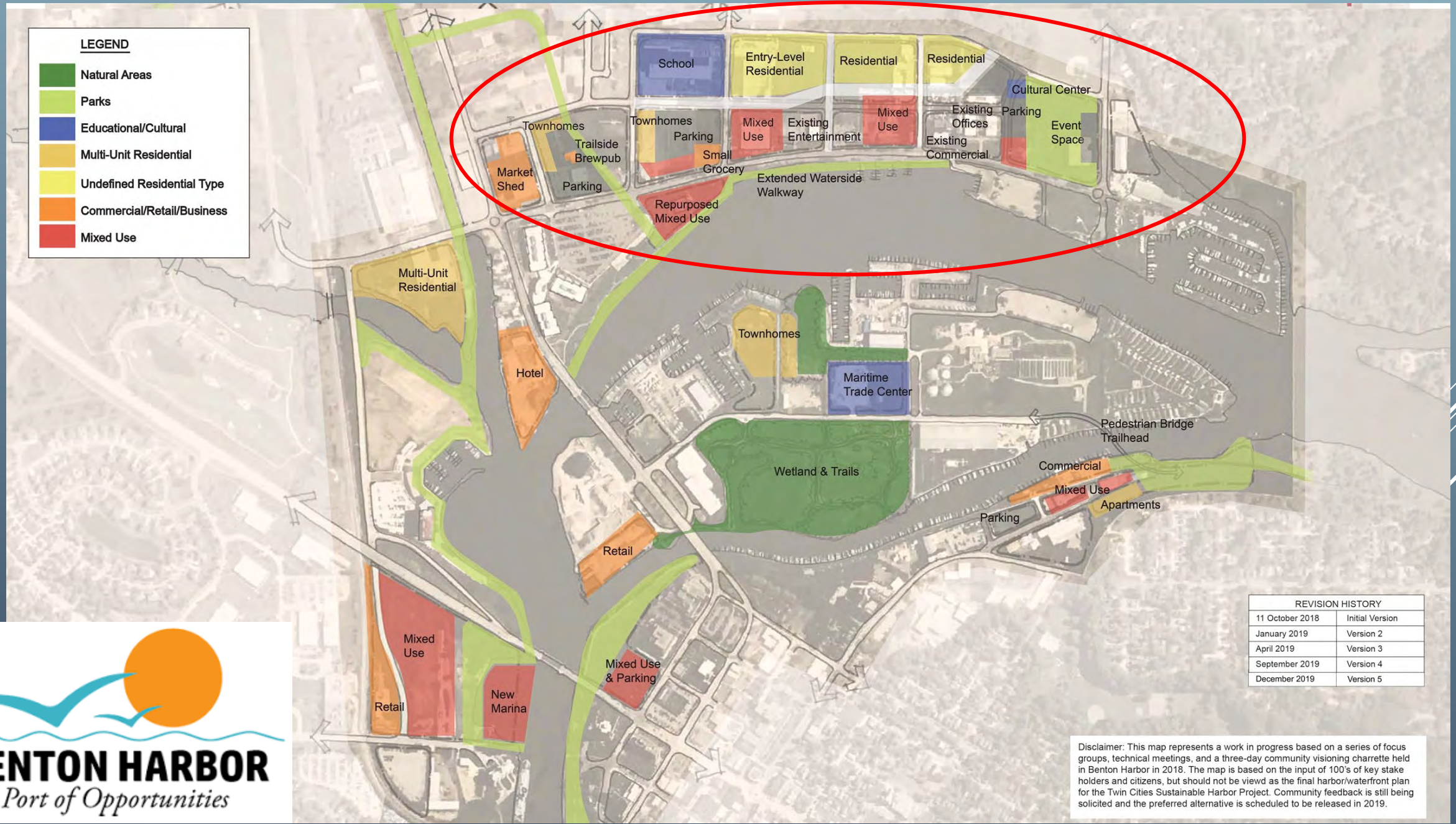
# BENTON HARBOR - FLOODING PROBLEM

The St. Joseph riverfront is prone to flooding due to its location within the backwaters of Lake Michigan and the influence of the St. Joseph River watershed.

- ▶ Long term Lake Michigan water level cycles
- ▶ Short term wind events, storm runoff, and rainfall events
- ▶ Combine, resulting in both short- and long-term high-water events.



# Twin Cities Harbor Vision (V5): 2040



REVISION HISTORY	
11 October 2018	Initial Version
January 2019	Version 2
April 2019	Version 3
September 2019	Version 4
December 2019	Version 5

Disclaimer: This map represents a work in progress based on a series of focus groups, technical meetings, and a three-day community visioning charrette held in Benton Harbor in 2018. The map is based on the input of 100's of key stakeholders and citizens, but should not be viewed as the final harbor/waterfront plan for the Twin Cities Sustainable Harbor Project. Community feedback is still being solicited and the preferred alternative is scheduled to be released in 2019.



# BENTON HARBOR RIVERVIEW DRIVE - HIGH WATER INFRASTRUCTURE PROJECT OVERVIEW

## EGLC COASTAL ZONE MANAGEMENT PROGRAM

- ▶ Opportunity to create an amazing waterfront offering:
  - ▶ public access and recreation,
  - ▶ stormwater management
  - ▶ better habitat for fish,
  - ▶ while enhancing redevelopment opportunities.



Develop a concept-level design of the Riverview Drive corridor between West Main Street and West Empire Avenue.

# Benton Harbor Ox Creek Revitalization Project



Address **nonpoint source pollution** to reduce **flash flooding**, sedimentation and pollutant runoff.



Restore the **creek and its corridor** and create improved opportunities for **public access**.

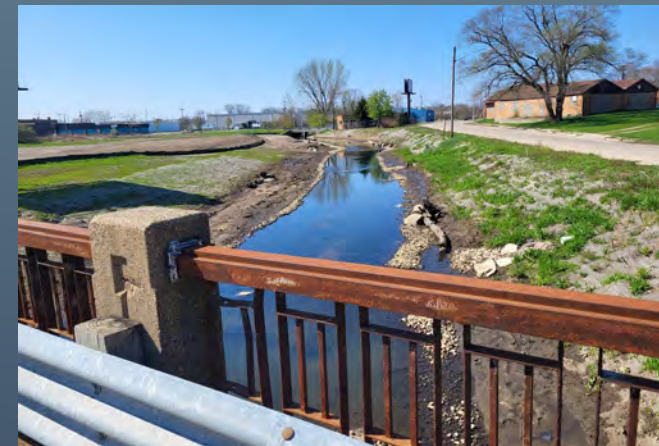
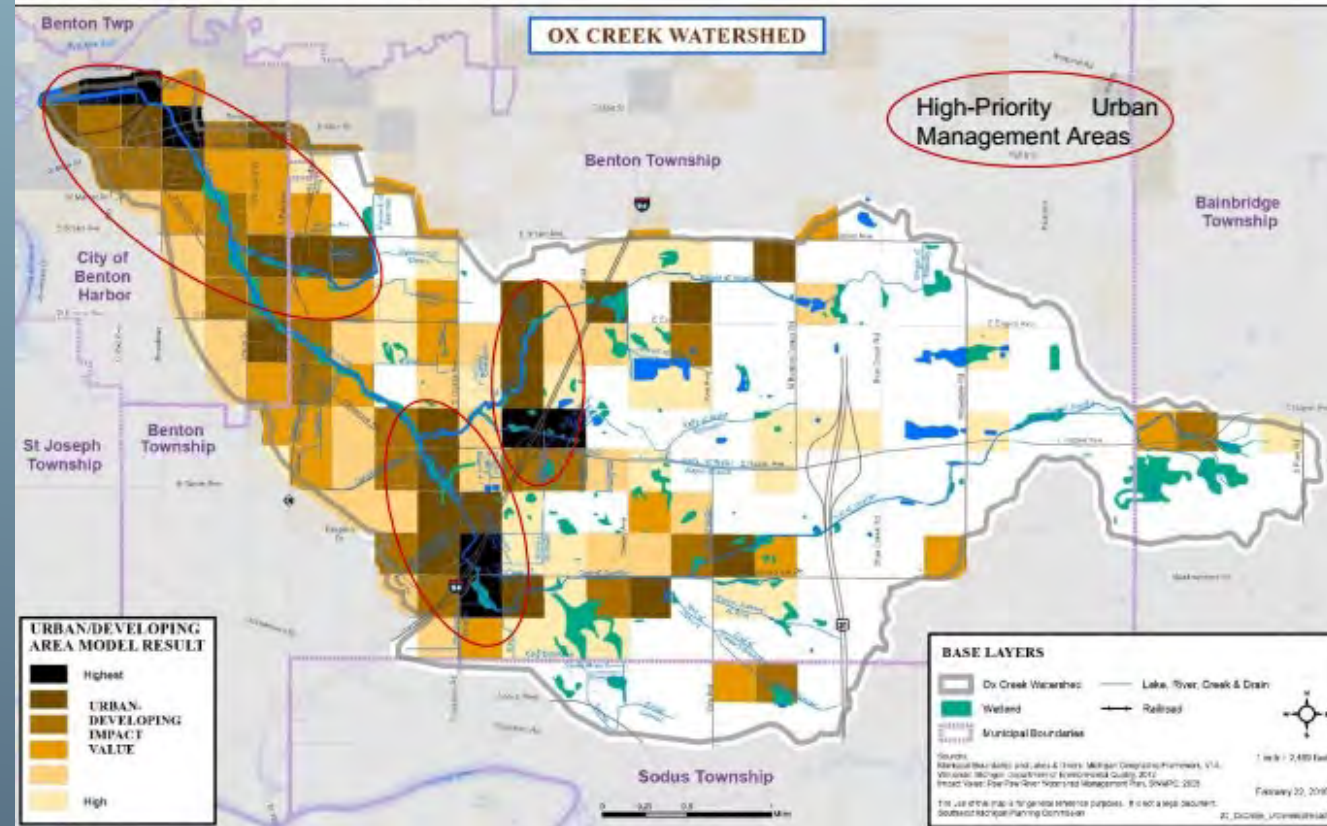


Clean up and stop **illegal dumping** occurring along the corridor.



Address **legacy contamination** to create opportunities for recreation/redevelopment.

Figure 34. High-Priority Urban Management Areas





# OX CREEK – RAIN GARDENS

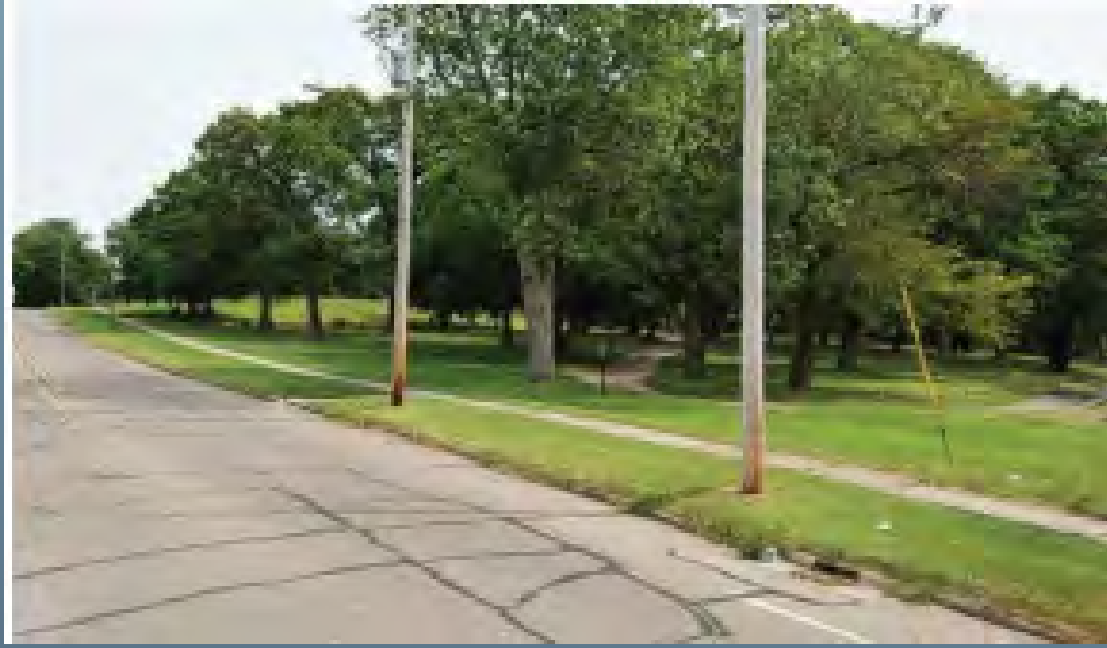


**Completed:**  
Wightman  
Meijer

**Up Next:**  
Home Depot (funded)  
Walmart (funding pending)  
Hall Park (funded)



# Ox Creek Rain Gardens – Hall Park



# OX CREEK AND HARBOR FUNDING

## ▶ Ox Creek Revitalization

- ▶ **\$2,501** EGLE Water Resources Division MiCorps grant - volunteer clean up along Ox Creek
- ▶ **\$3,000** Berrien Community Foundation – Ox Creek and Hall Park Vision signage
- ▶ **\$3 million** Upton FY23 Community Project for Ox Creek Corridor
- ▶ **\$200,000** Army Corps of Engineers – Technical Assistance for floodplain modeling
- ▶ **\$958,000** MDNR Spark Grant – Hall Park (pathways, basketball courts, etc)
- ▶ **\$1,000,000** NOAA, Coastal Habitat Restoration & Resilience Grant for Underserved Communities
- ▶ **\$27,400** U.S. Dept. of Ag Forest Service Great Lakes Restoration Initiative, Cooperative Weed Management Area grant
- ▶ **\$5,000** Heart of Cook Earth Day Grant - Earth Day Event at Hall Park on April 22, 2023
- ▶ **\$1,050,000** GLRI Noncompetitive – Improved access, stormwater BMPs at Hall Park & retail area
- ▶ **\$150,000** Google Home State Grant – Stream Habitat Restoration
- ▶ **\$600,000** NFWF Sustain Our Great Lakes - stream restoration
- ▶ **EPA Brownfield Assessment Grant and TAB** – technical assistance
- ▶ **\$1,000,000** EGLE NPS (pending) - stormwater BMP at Walmart
- ▶ **\$1,500,000** NOAA Marine Debris Removal (LOI accepted)

## ▶ Harbor Funding

- ▶ **\$392,920** EGLE High Water Infrastructure Grant – Riverview Drive
- ▶ **\$15,000,000** NOAA Climate Resilience Regional Challenge for Ox Creek and Riverview Dr (pending)





EASTSIDE  
COMMUNITY  
NETWORK

MAP Resilience Summit

ECN develops  
people, places, and  
plans for  
sustainable  
neighborhood  
growth on Detroit's  
eastside.

# Our Approach: Neighborhoods First Engagement Model



# Guiding Principles

**Sustainability:** Management of natural, human, and manufactured resources for the inclusive social wellbeing of community members, now and in future generations.

**Racial Equity:** Causes, consequences, and solutions are not distributed equitably

Solutions must:

- Be rooted in advancing racial and economic justice
- Be driven by people most impacted



# Program Departments

- Stoudamire Wellness Hub
- Community Economic Development
- Youth Development
- Climate Equity
- Community Organizing and Powerbuilding
- Sustainable Housing

# Impact Areas

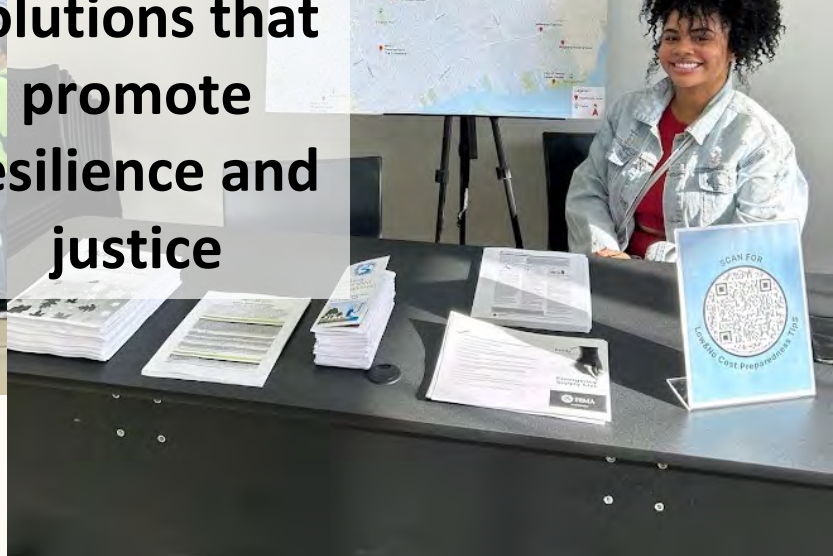




**Strengthening impact of community leaders across generations**



**Piloting climate solutions that promote resilience and justice**



**WHAT DO WE DO?**



**Building community power and collective voice**

## Strengthening and Transforming the Lower Eastside

Supporting LEAP Phase III

THIS STUDY EXAMINES OPPORTUNITIES TO LEVERAGE GREEN STORMWATER INFRASTRUCTURE INVESTMENTS IN DETROIT'S GOODSTOCK NEIGHBORHOOD TO GENERATE MULTIPLE BENEFITS FOR INVESTORS AND THE COMMUNITY.



GOODSTOCK NEIGHBORHOODS LAND USE FRAMEWORK



# Resident Driven Planning Reports

# Strengthening and Transforming the Lower Eastside

## Supporting LEAP Phase III




Figure 3.5: There are 1,000 mortgage foreclosures in the Chandler Park neighborhood from 2005 to 2013. Source: City of Detroit, Field Investigation February-March 2017. Data are available on Mass City Mapping: U.S. Census Bureau, TIGER/Line All Roads, 2014 (see Appendix A).




Figure 3.9: Vacant lots are distributed throughout the Chandler Park neighborhood, with a high concentration in the Heights in the northwest corner. Source: City of Detroit, Field Investigation February-March 2017. Data are available on Mass City Mapping: U.S. Census Bureau, TIGER/Line All Roads, 2014 (see Appendix A).

**Strengthening the Chandler Park Neighborhood**

LEAP Phase III's goal of strengthening Chandler Park builds on LEAP Phases I and II, which sought to "stabilize active residential and commercial districts, which in turn greatly improve the quality of life." The LEAP Steering Committee saw an opportunity to reinforce Chandler Park as an active residential district.

 **Reduce Blight**

 **Encourage Green Stormwater Infrastructure**

 **Support Investment in Hamilton Academy Rain Garden Learning Lab**

**Transforming Open Space**

LEAP Phase III aims to support land transformation and neighborhood stabilization. The open space portion of this plan proposes a systematic approach to transforming vacant land in a coordinated manner, based on historical and existing natural features. In contrast to a series of stand-alone projects, the suggested projects can accumulate over time to provide ecological benefits to the entire Lower Eastside. Suggested projects for open space transformation differ inside and outside multi-family housing investment areas, where development is more likely.

# Hamilton Rainscape Learning Lab



**KNIGHT  
FOUNDATION**



**INSTITUTE FOR  
Sustainable  
Communities**



**THE KRESGE FOUNDATION**









COMING SOON:

## HAMILTON LEARNING LAB

An outdoor classroom and stormwater park brought to you by the Eastside Community Network

INSITE  
design studio, inc.  
landscape architecture



EASTSIDE  
COMMUNITY  
NETWORK





# CAPE LEARNING L







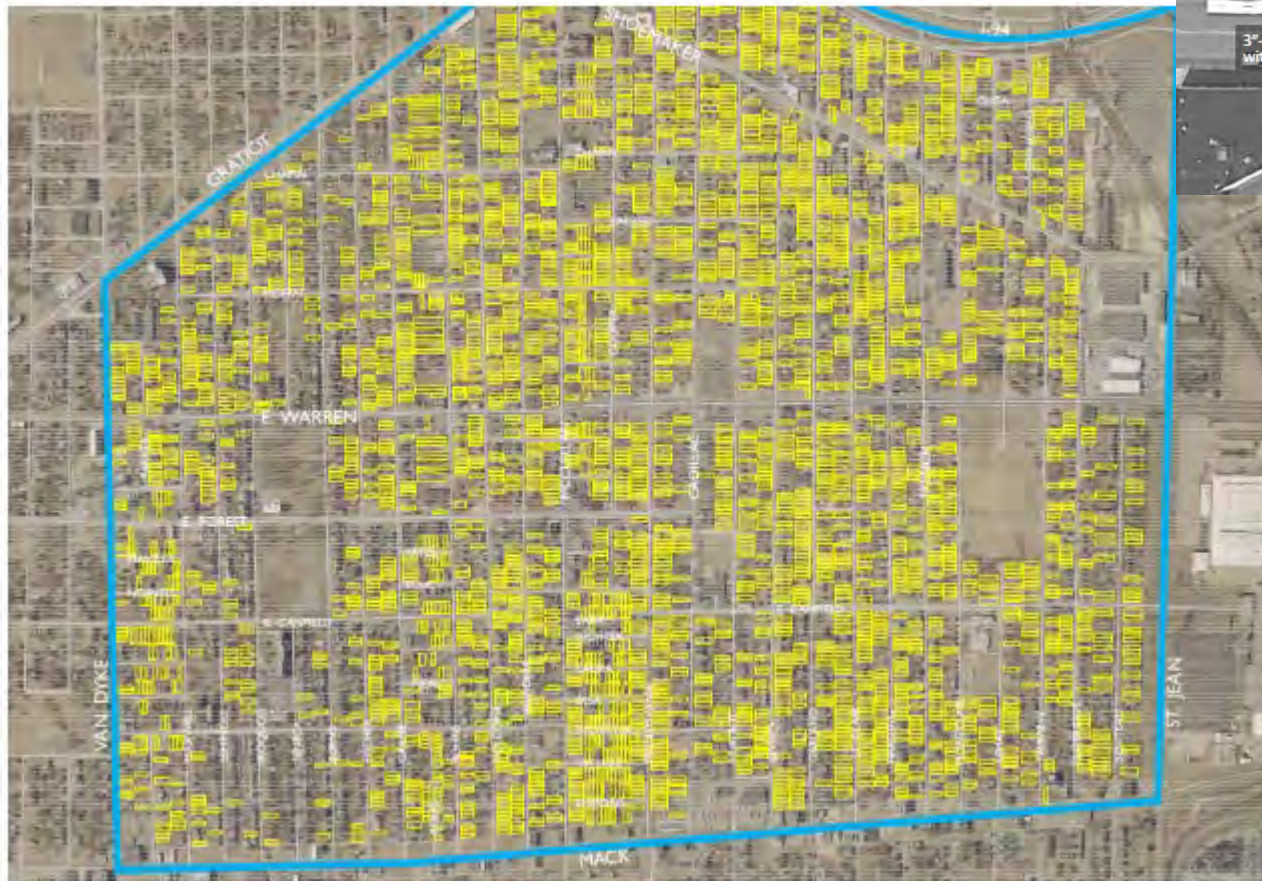
**HAMILTON RAINSCAPE LEARNING LAB**

**Responsible Storm**

When it rains, the water runs off your roof and driveway, down the street, and into the storm drain. This water can carry pollutants like oil, paint, and trash into the water table and eventually into the Great Lakes. A rain garden is a simple way to capture and filter rainwater before it reaches the storm drain. Rain gardens are planted with native plants that absorb water and filter out pollutants. They are a great way to reduce runoff and improve water quality in your neighborhood.

# Expanding GSI in neighborhoods

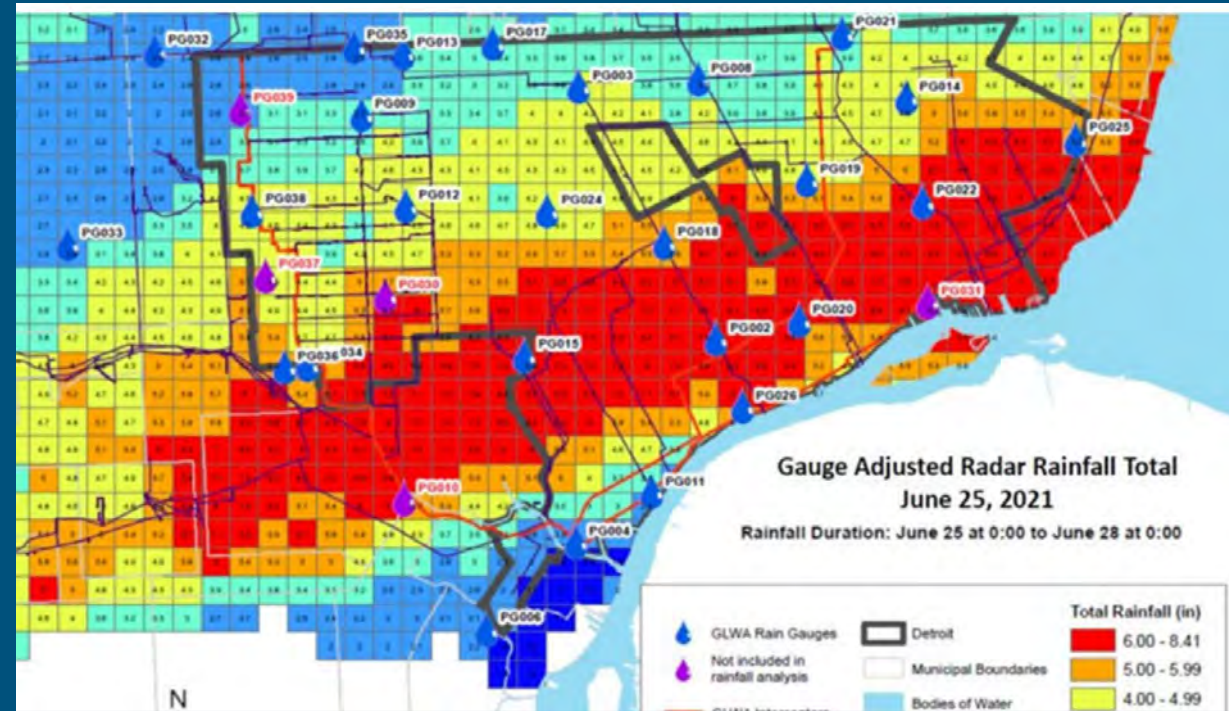
## ► Goodstock Offsite Credit Research



Map of the Goodstock area highlighting parcels owned by the Detroit Land Bank Authority.



# Catastrophic Flooding 2021



FEMA Total Damage  
\$78.3M (\$230M)

Valid Registrations - 49,941 Approved - 23,167 (46%)



Map of Flooding Reports from the  
City of Detroit

# Rain Ready Homes



*This garden infiltrates rain water from the roof to improve the health of our local rivers*

**rain ready**



The diagram illustrates the rain garden system. It shows a cross-section of a house with a yellow roof. A blue arrow indicates rain falling from the roof into a gutter. Another blue arrow shows water flowing down into a garden bed below the house. The garden bed contains several plants, including yellow and pink flowers. A third blue arrow points from the gutter down into the garden bed, indicating the path of the rainwater.



EASTSIDE  
COMMUNITY  
NETWORK



Friends  
of the  
**ROUGE**

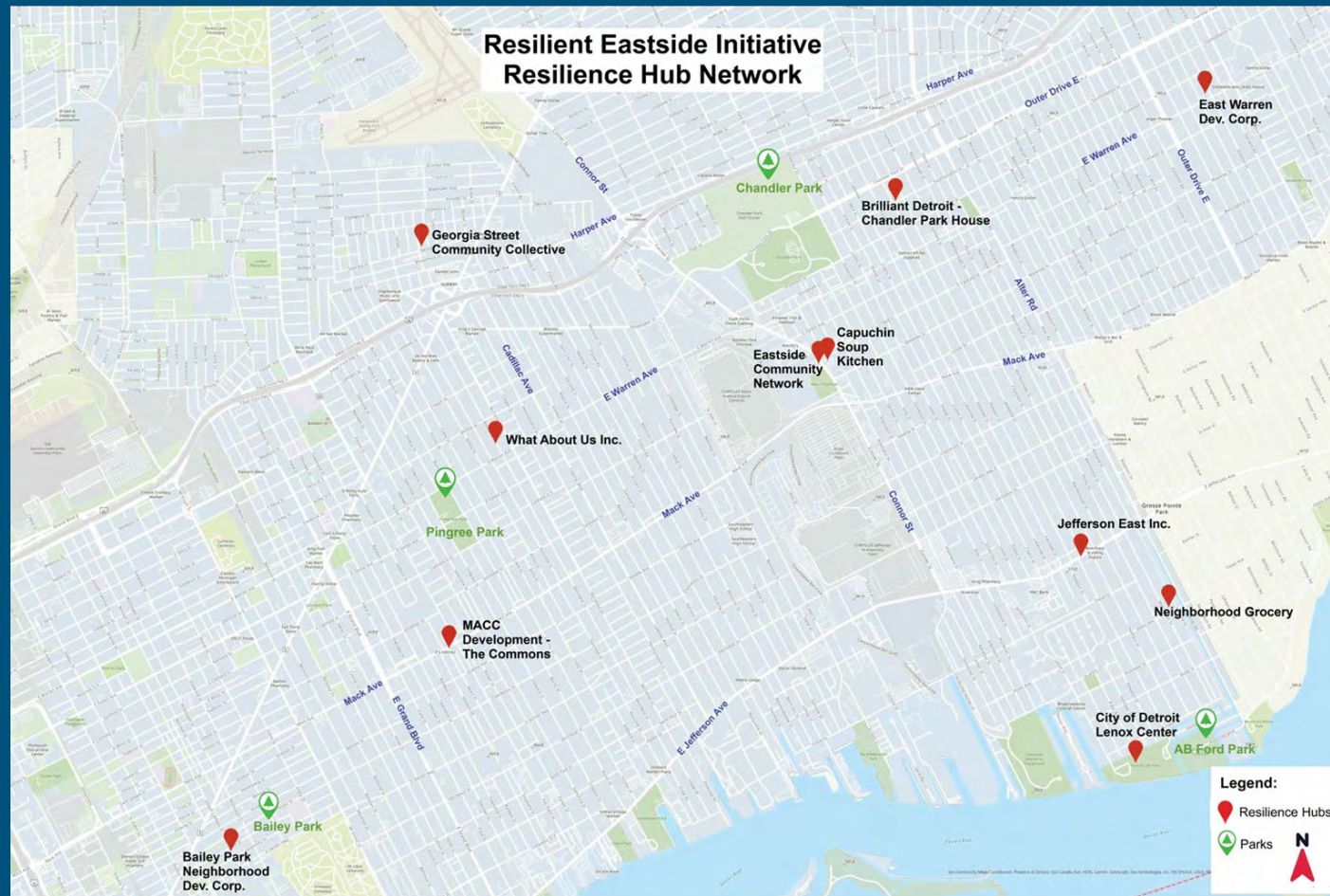


ELEVATE ENERGY  
Smarter energy use for all



**CNT**

# Resilient Eastside Initiative



Extreme weather events are rapidly increasing in frequency



Detroit infrastructure and institutions have been long disinvested



Michigan ranks fourth highest nationwide for average annual power interruptions



The Eastside has the greatest concentration of poverty in the state



This confluence of disinvestment means Detroit's eastside has greater exposure and sensitivity to climate events and low resilience

# What could this look like in practice?

## Resilient Structure

- Energy and water efficient
- Solar, storage, and backup power
- Flood mitigation and water management
- Resilient and redundant communications systems
- High indoor air quality
- Secure and accessible

## Emergency Services

- Heating/cooling centers
- Communications hub
- Food, water, and medical supply storage and distribution
- Safe, secure, and accessible space
- Transportation for mobility-challenged

## Engagement & Communications

- Disruption planning and protocols
- Community needs and resilience gap assessments
- Strengthening outreach before, during, and after disruptions
- Training for resiliency

## Programmatic Services

- Everyday, mission-driven services
- Emergency services during disruptions
- Logistics and coordination during disruptions
- Water, energy, and resilience strategies for the community
- Resources and comms





# ECAC

EASTSIDE CLIMATE ACTION COALITION

THE STOU DAMIRE

WHAT TOPICS OR ISSUES WOULD YOU LIKE TO SEE THE EASTSIDE CLIMATE ACTION COALITION CELEBRATE AND ADDRESS?

- green space: the problem of Hanz Farms
- AIR POLLUTION
- air purifier water purifier
- Transpiration from trees
- OZONE
- Transpiration reduces heat
- Air Pollution + Flooding + safety
- What's ever is to be
- What's ever is to be
- What's ever is to be

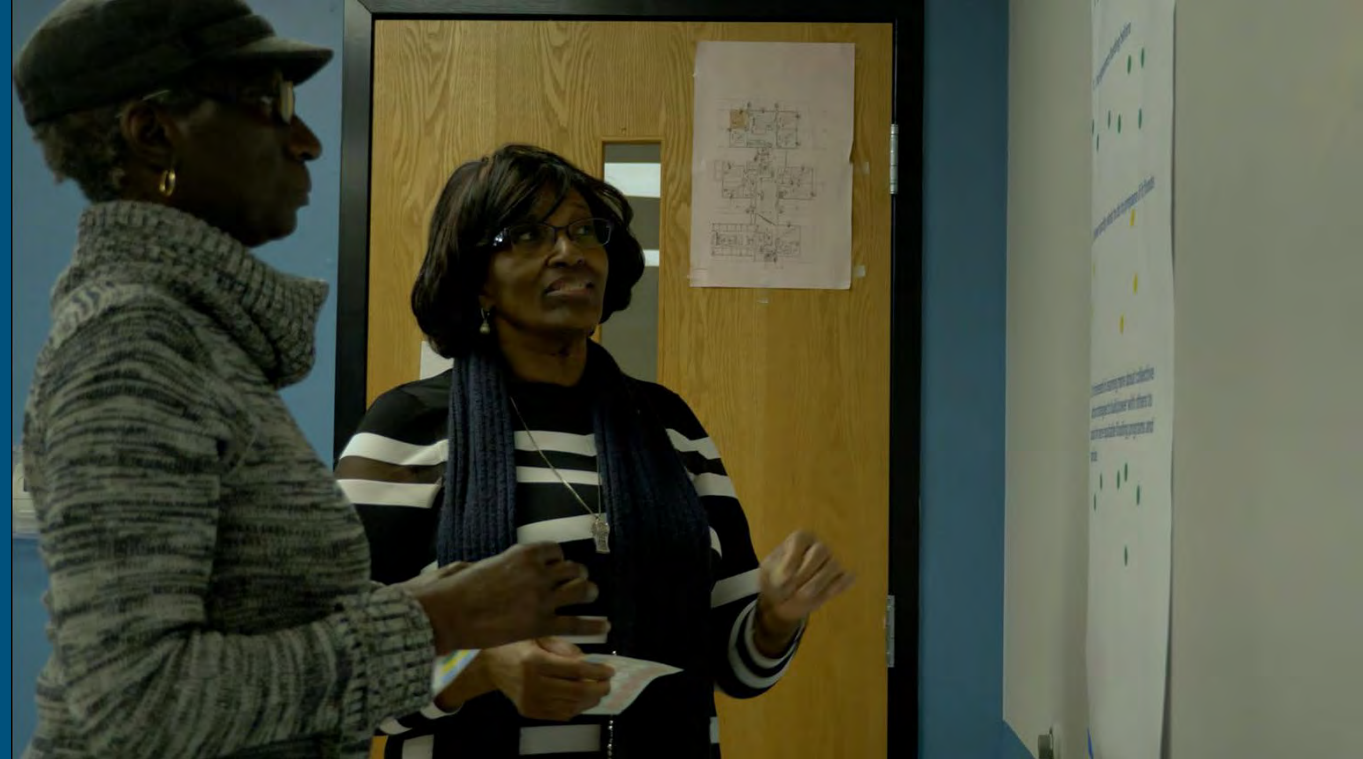


# Eastside Flooding Task Force

Developing a shared understanding and advocacy agenda.

Our demands:

1. Timely Flooding Alert Communication
2. Streamlined (Universal) Application for Resources
3. Green and Gray Stormwater Infrastructure
4. Green and Gray residential retrofitting





# Stay Connected

*Stronger, Together*



EASTSIDE  
COMMUNITY  
NETWORK

**Ricky Ackerman, Chief Sustainability  
Officer**

[rackerman@ecn-detroit.org](mailto:rackerman@ecn-detroit.org)

313-331-3044

For more information about  
**ECN please visit** [WWW.ECN-DETROIT.ORG](http://WWW.ECN-DETROIT.ORG)

**TEXT: 55469 ENTER MESSAGE "ECN"**



**LIKE US ON FACEBOOK:**

EASTSIDE COMMUNITY NETWORK

**FOLLOW US ON INSTAGRAM:**

@ECN\_DETROIT

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