

# Green Storm Water Management A Catalyst for Building Community Resiliency



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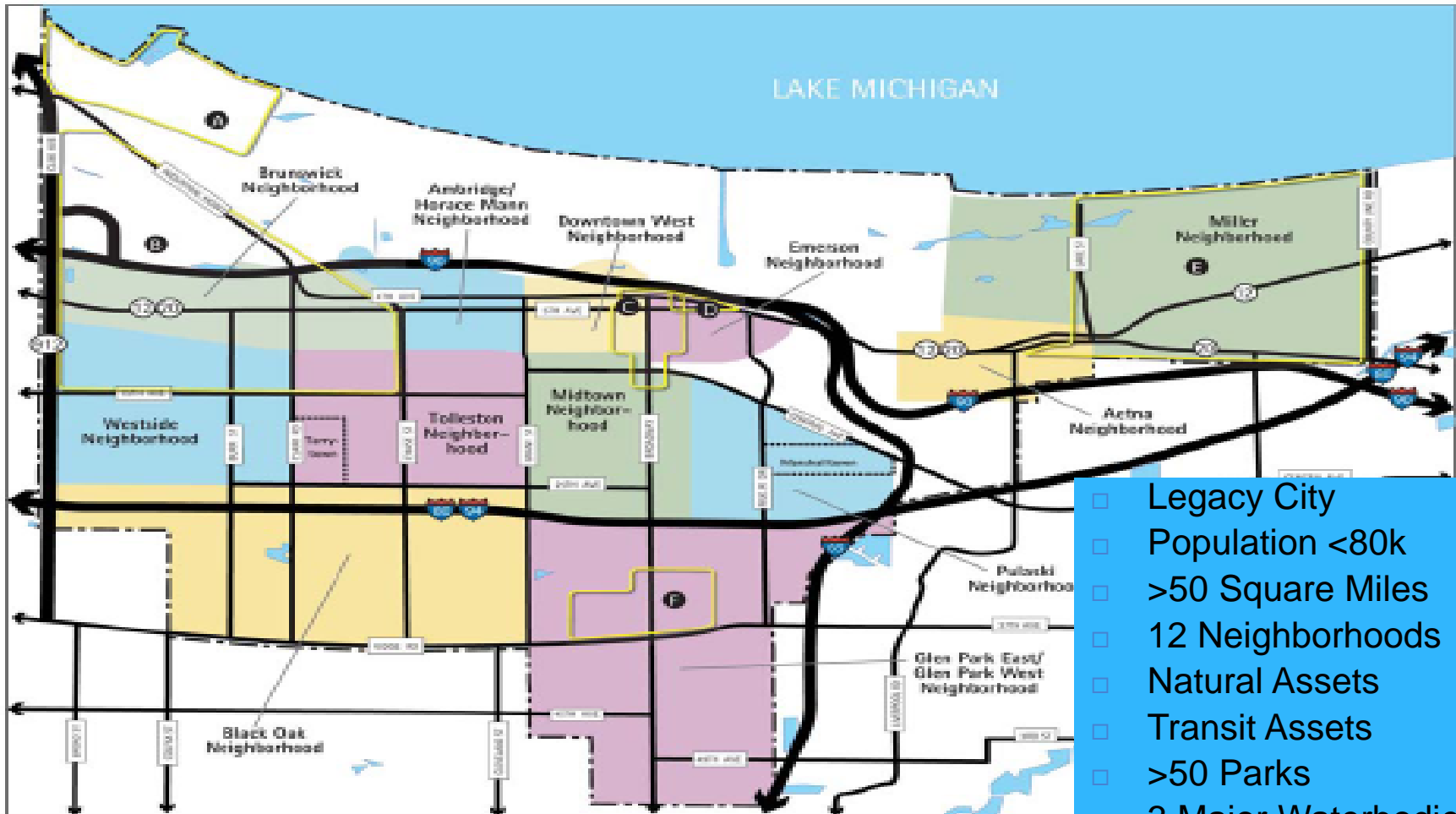
**The City of Gary's Green Urbanism Division** incorporates sustainable development principles in revitalization initiatives using research and best practices that support our achievement for a vibrant environment and socially engaged community with implementation strategies that invest in...



- **PEOPLE – Public Health**
- **PLANET – Natural Environments**
- **PROFITABILITY – Economic Vitality**



# About Gary Indiana



- ❑ Legacy City
- ❑ Population <80k
- ❑ >50 Square Miles
- ❑ 12 Neighborhoods
- ❑ Natural Assets
- ❑ Transit Assets
- ❑ >50 Parks
- ❑ 3 Major Waterbodies



# Natural Assets: Lake Michigan - Gary Marquette Beach

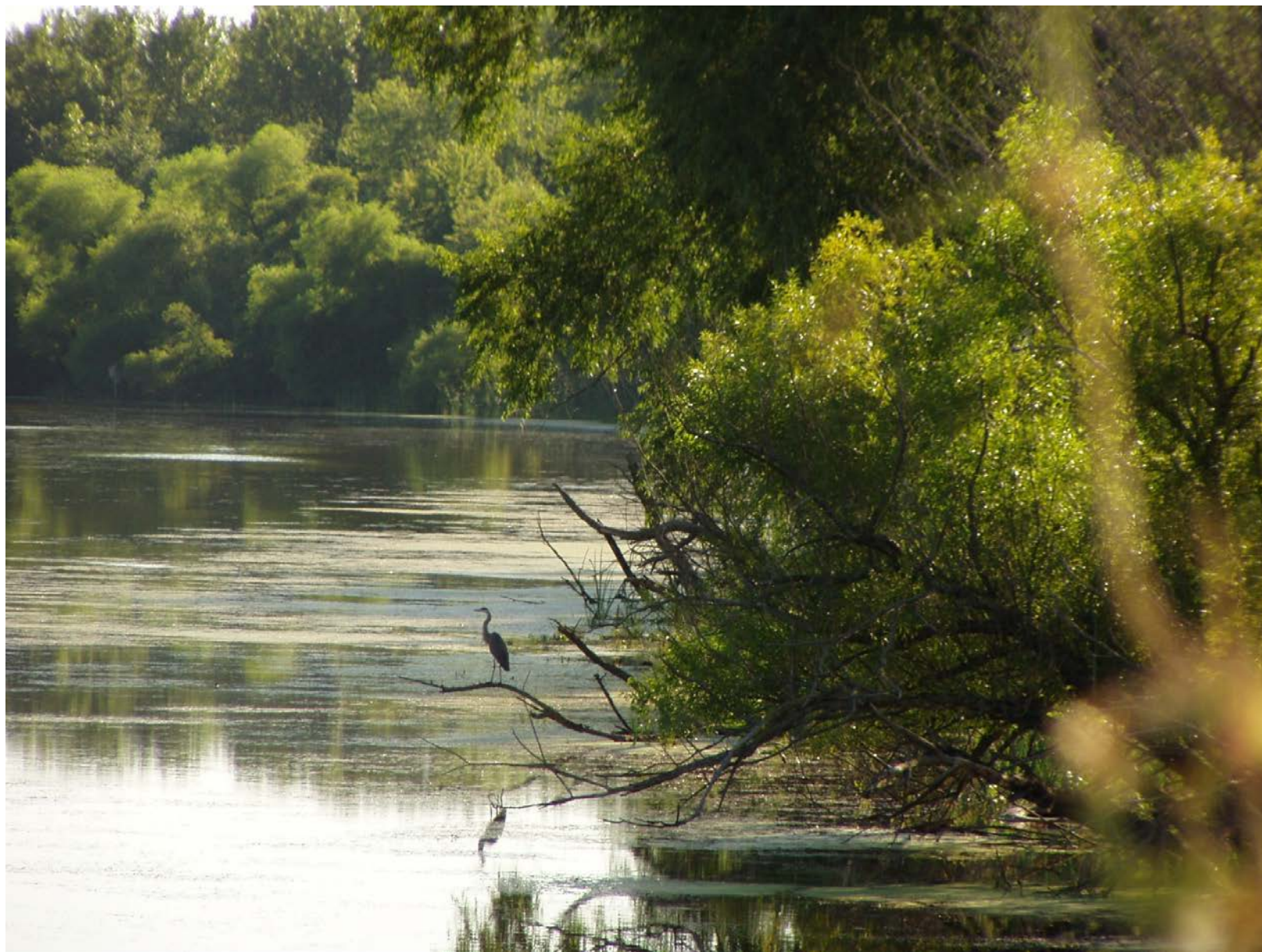


# Natural Asset: Grand Calumet River





# Natural Asset: Little Calumet River – Western Branch





# Community Challenges

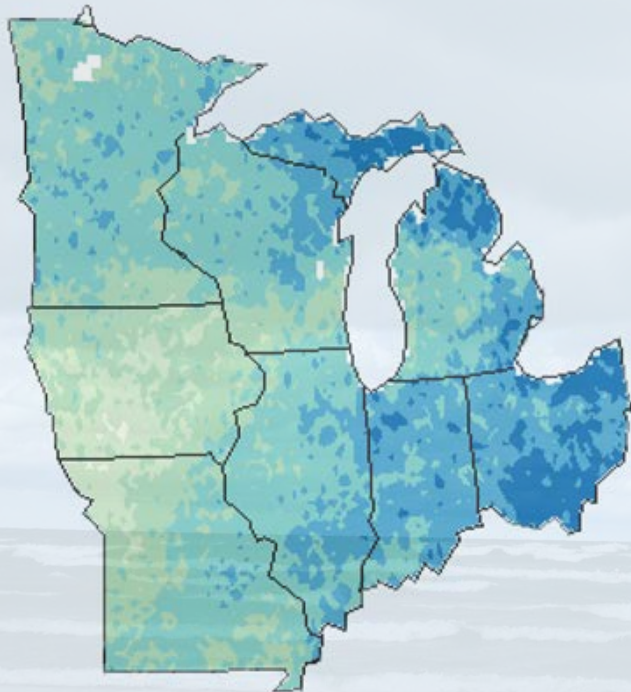
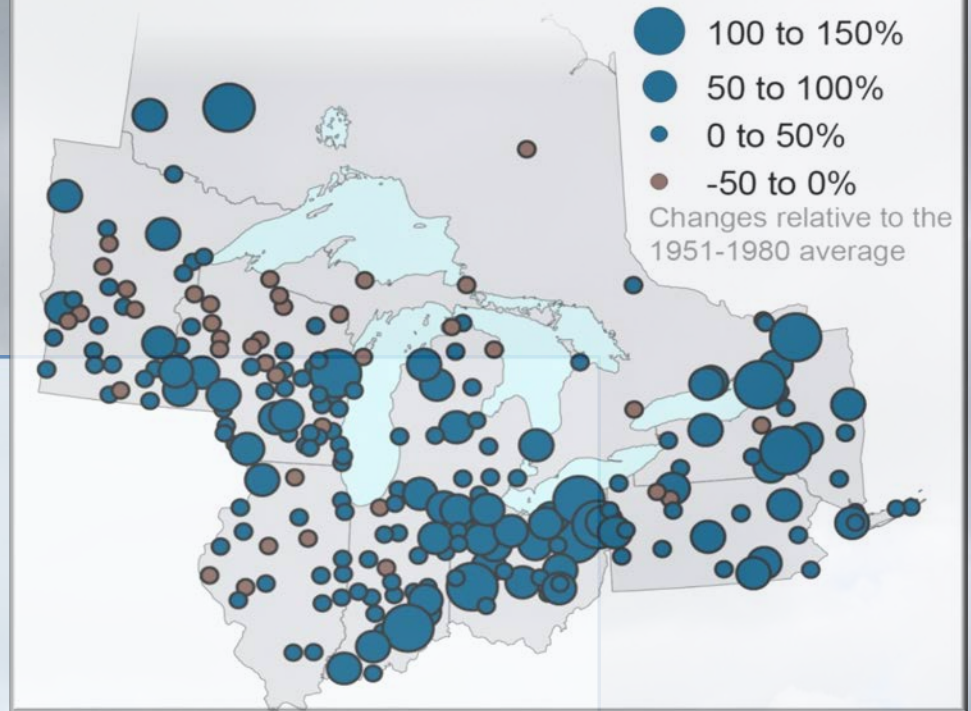
- Climate Change
- Combine Sewer Overflow
- Urban Run-off
- Degradation of Water bodies
- Toxic Air Pollution
- Divested Neighborhoods
- Dated Land Use Policies/Land Use Plan

**Challenges...Drivers for Building  
Resilient Communities**



# Climate Change: Extreme Weather Events in the Great Lakes

Percent Change in Days per Year  
Exceeding 1.25" of Precipitation from 1951-2012



Difference in Number of Days

0.0 0.3 0.6 0.9 1.2 1.5 →

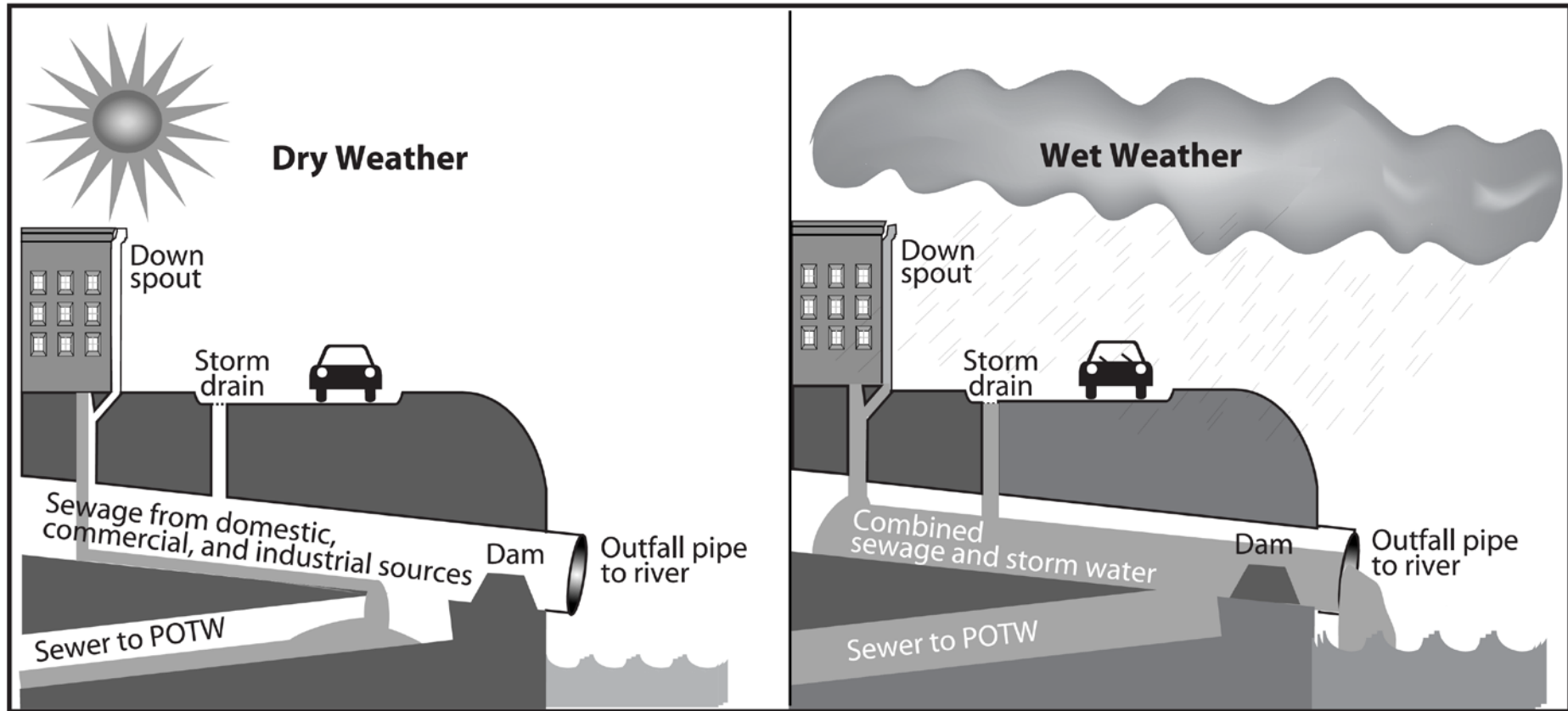
Northwest Indiana  
= 1.2 to 1.5 Days



# Climate Change: Floods in 2007 & 2008

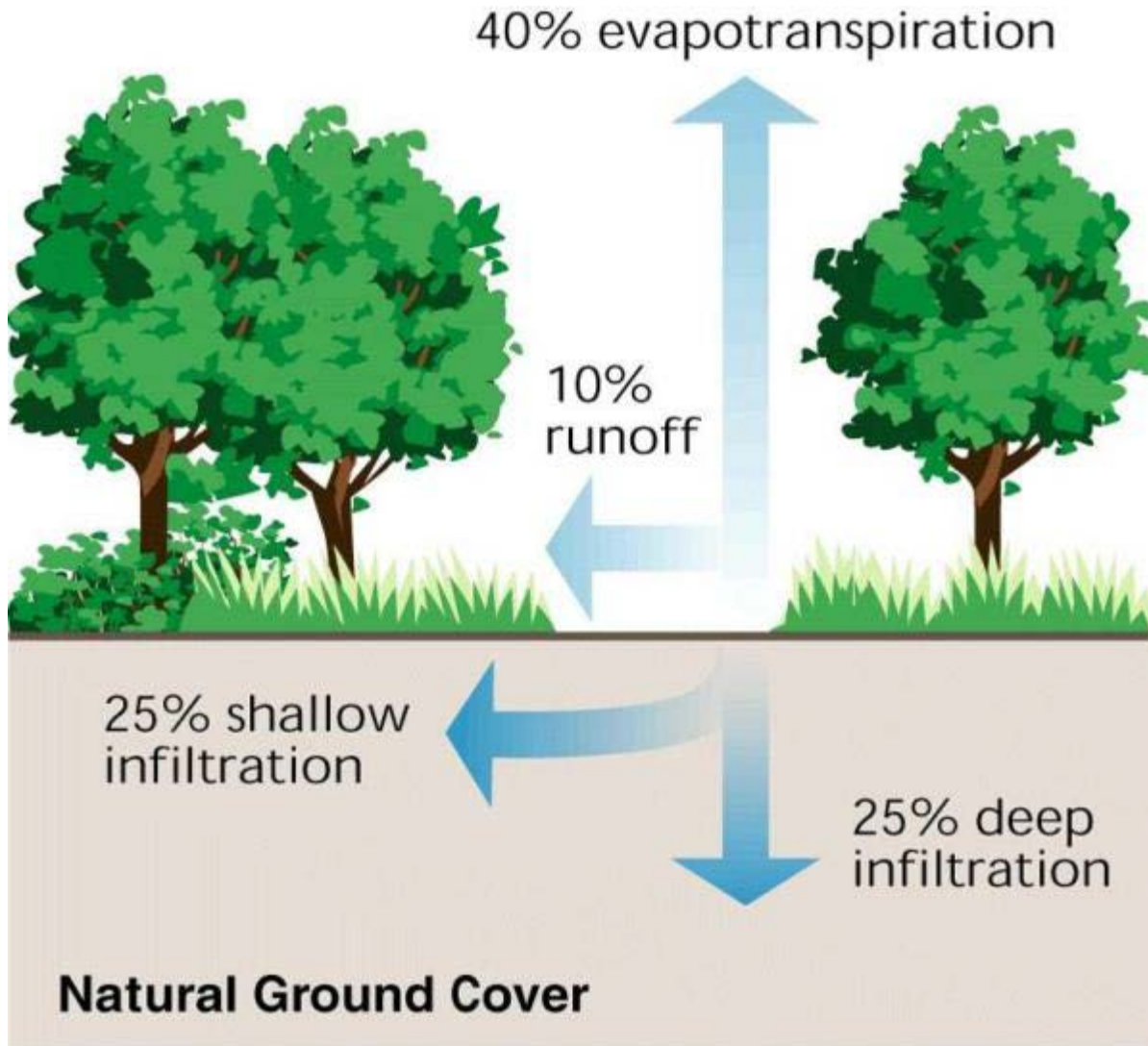


# Combined Sewer System






# Urban Runoff: Traditional Development



Natural landscapes  
replenish essential  
groundwater  
resources





“ Because of impervious surfaces like pavement and rooftops, a typical city block generates more than 5 times more runoff than a woodland area of the same size.

EPA 841-F-03-003

As little as 10 percent impervious cover in a watershed can result in stream degradation.”

EPA 841-F-03-003



# **TeamGary: Turning CHALLENGES into OPPORTUNITIES**

## **Building Resilient Communities Neighborhood by Neighborhood**

- Neighborhood Scale Plans/Watershed planning**
- Civic Engagement/Public Involvement**
- Job Creation: Urban Conservation Corps**
- Green Infrastructure Technical Support**
- Blight Elimination: Environmental and Public Health**



# *Our Environment...An Invaluable Asset*





# Green Stormwater Infrastructure Project

**Goal** – Our primary objective is centered on vacant land reuse that incorporates green infrastructure practices into the City’s overall planning and development processes. This greening approach to stormwater management involves collaborative urban green planning and implementation processes that ultimately protect water quality and quantity, development of design guidance, monitoring and evaluating cost-effective approaches to incorporate green infrastructure projects into broader municipal programs.

## **Strategic Value**

- Landscape: Grand Calumet River, Gary Green Link, Lake Michigan
- Key Issues: Urban Runoff; Storm Water Pollution Prevention; and Blight Elimination
- Existing Plans: GNRP Area, Creating Livable Cities, GreenLink Master Plan; Storm-water Management and Green Infrastructure Plan

# Integrated Neighborhood Planning & Strategies

- **SC2/GNRP** – Through the Strong Communities, Strong Cities Designation Gary is implementing Strategic Redevelopment. Gary Northside Redevelopment Project, University Park, Data Driven Gary.
- **Lakefront Development** - Includes themes of Complete Streets on Route 20; and Connections to local and regional bike paths
- **Creating Livable Centers Planning Development** – Focus Areas: Downtown, Emerson and Horace Mann to increase access to public transportation and green spaces
- **Choice Neighborhoods Initiative** - Focus Area is University Park East neighborhood master plan - \$500k planning grant from HUD.
- **FHWA Bike and Pedestrian Study** - A Partnerships with Federal Highway Administration, Federal Transit Administration, and Federal Railroad Administration
- **Green Infrastructure Project** – Vacant to Vibrant; Grey to Green; Grand Calumet River Green Stormwater Management; Green Link Master Plan

# Green Storm Water Management – What are some benefits?



Increased livability

Mitigated 'Heat Island' Effect

Increased Land Values

Reduced Energy Costs

Increased Cost Savings

Local Flood Protection





Green  
Infrastructure can  
make  
*hardscapes...*



...work more like  
*landscapes*



# Green Stormwater Infrastructure Project

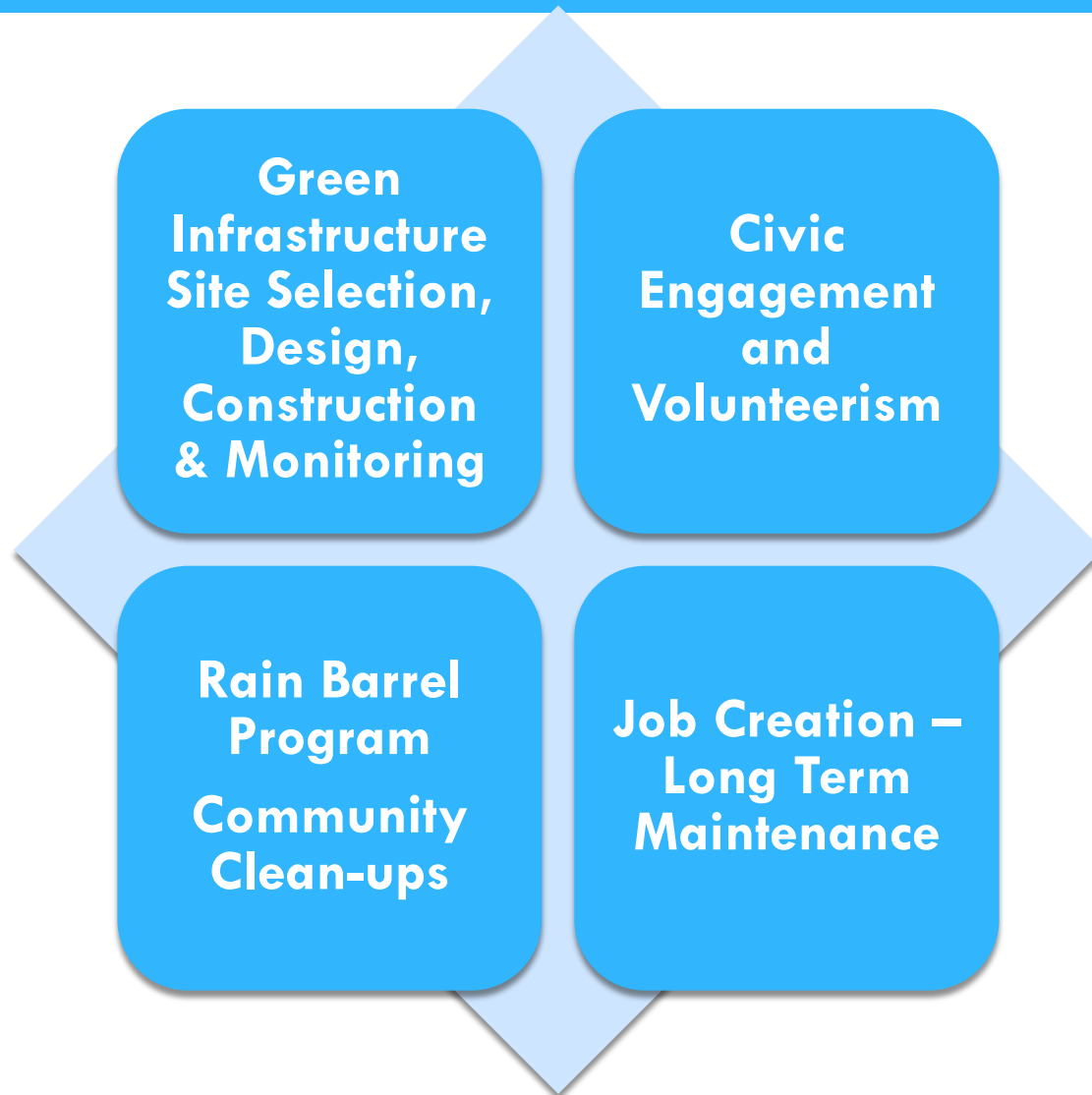
**Partners/Project Team** - Green Urbanism & Environmental Affairs; Parks Department; Redevelopment Department; GNRI Planning Team; Cleveland Botanical Garden,

## **Cost & Leverage**

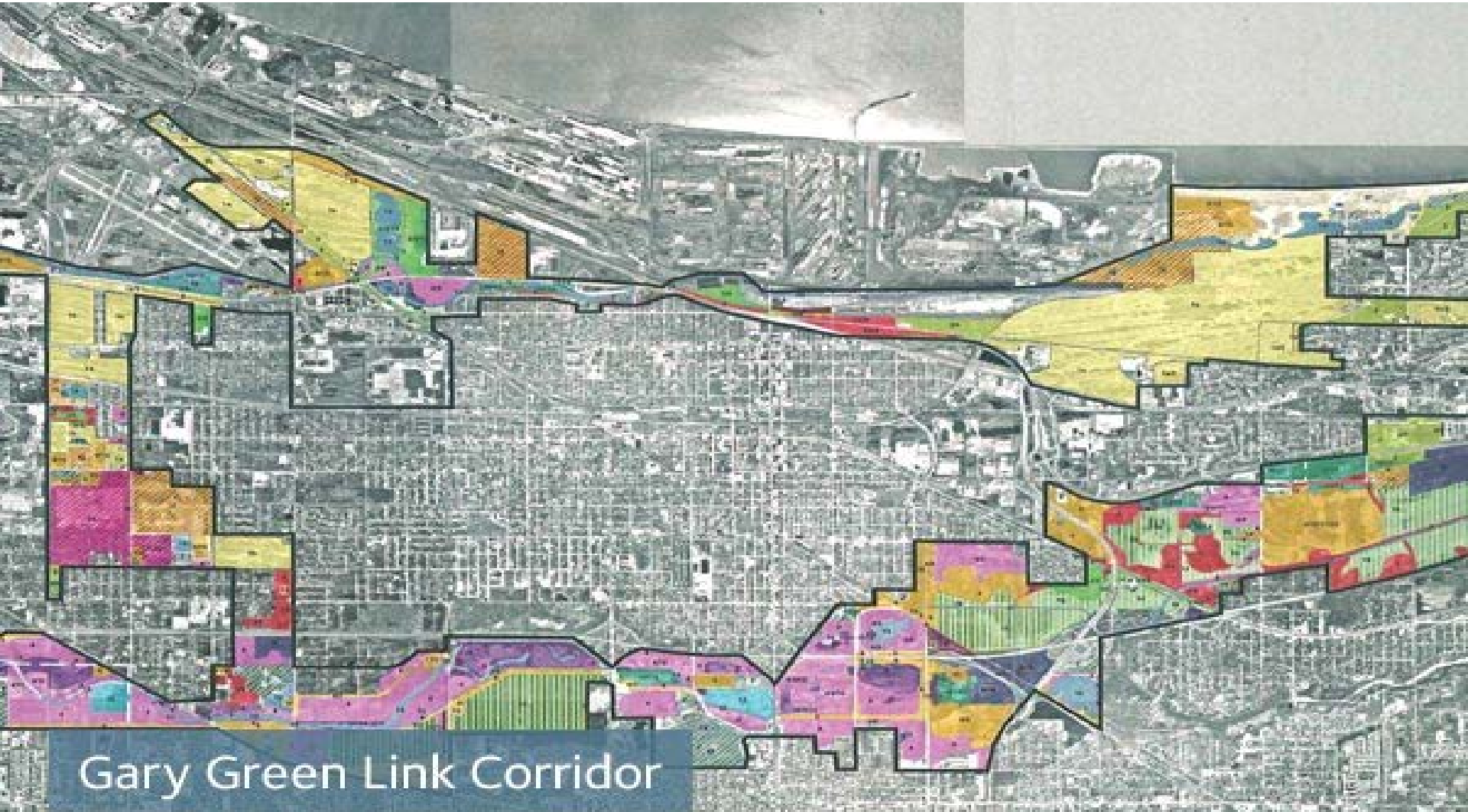
- Chi-Cal Rivers Fund \$259,263
- Great Lakes Protection Fund/CBG (Vacant to Vibrant-Gary) (\$902,000)
- EPA Great Lakes Shoreline Cities (\$250,000)
- Gary Storm Water Management District (\$250,000)
- Great Lakes Restoration Initiative (\$351,000)
- Redevelopment Department (\$6.645 million Demolition & End-Uses)
- Green Link – Phase 2 (\$1.3 million)
- Urban Conservation Team (Annual Maintenance/Community Engagement)



# Green Stormwater Infrastructure Project Activities



# Gary Green Link Master Plan



Gary Green Link Corridor

# From Brownfields to Green Space



**Former Sheraton Hotel**



# Grey to Green -- City Centre Plaza

Rain Gardens

Amphitheatre

Memorial  
Garden

Permeable  
Pavement

Art

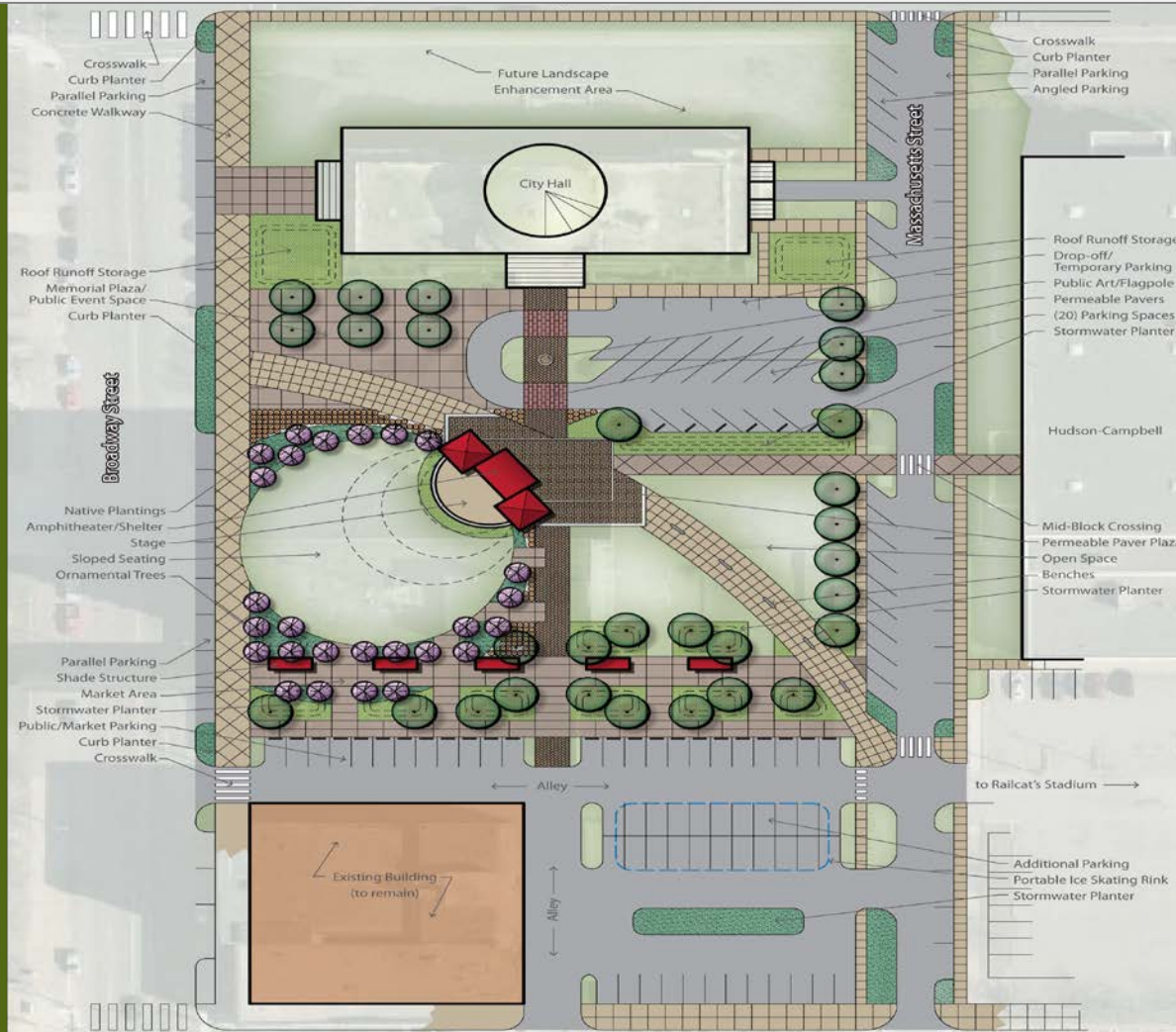
Walking Paths

Market Place

Tree Coverage

Recreation

Energy  
Efficiency



Native Plants

Rain Storage

Event Space

Permeable  
pavers

Fitness

Parking  
Improvements

Seating

Campus or  
Plaza

Connectivity

Passive

# Aetna Stormwater Parks

1200 Oklahoma Street – Gary, IN





# Aetna Stormwater Parks



**1200 Oklahoma Street**

**VACANT TO VIBRANT**



# Aetna Stormwater Parks



1200 Oklahoma Street – Gary, IN





**Green Infrastructure  
Street Designs**



# Rain Gardens





# Using Civic Engagement is... Key to Building Resilient Communities



Press Conferences



Green Gary Day



Rain Barrel



Community Cleanups



Community Gardening Workshops



HHW Collection Days



# Using Civic Engagement is Key to Building Resilient Communities



Community Meetings



Beach Clean Up



Youth Environmental Days



Environmental Art



Native Landscape Workshops



Municipal Good Housekeeping



# Green Stormwater Infrastructure Project

## **Project Outcomes –**

- Install 43,200 square feet of green stormwater infrastructure throughout the city. In addition
- Remove 22,950 square feet of impervious surface,
- Plant 85 native trees, and
- Install 200 rain barrels within the communities of Aetna, Glen Ryan, Downtown/Emerson, and Horace Mann.
- Add 1.4 million gallons of stormwater retention within the Grand Calumet River Area of Concern.
- Neighborhood green spaces,
- Increase public awareness of stormwater management issues, and
- Advance green stormwater infrastructure activities in Gary.

# Green Stormwater Infrastructure Project

## **Site Monitoring & Project Evaluation**

- USGS Stormwater Monitoring at City Centre Plaza (Grey-to-Green)
- CBG Stormwater Monitoring Equipment (Vacant-to-Vibrant)
- Project Team – Planning and Evaluation

## **Lesson Learned**

- Each GI installation is unique
- Technical site assessment is vital to decision making and design options
- Culture changes take time...NWI natural ecology
- Leveraging resources for greater impact





# Green Storm Water Management A Catalyst for Building Resilience Communities



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*Thank You!*