

Planning for Resilient Communities

SEMCOG University Workshop



Agenda

1. Welcome
2. Flooding & Resilience Plan for Southeast Michigan
 - Katie Grantham, Planner III, SEMCOG Environment & Infrastructure
3. Introduction to Resilience Planning & Zoning
 - Leah DuMouchel, AICP, Director of Programs and Communications, Michigan Association of Planning
4. Break
5. Infrastructure Planning & Coordination
 - Karyn Stickel, PE, Vice President, Hubbell, Roth & Clark, INC
6. Ann Arbor Stormwater Comprehensive Management Plan
 - Jennifer Lawson, C.S.M., City of Ann Arbor
7. Lunch
8. Building Resilience through Scenario Planning
9. Report Out & Wrap Up



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SEMCOG MEMBERS

★ 185 ★
TOTAL

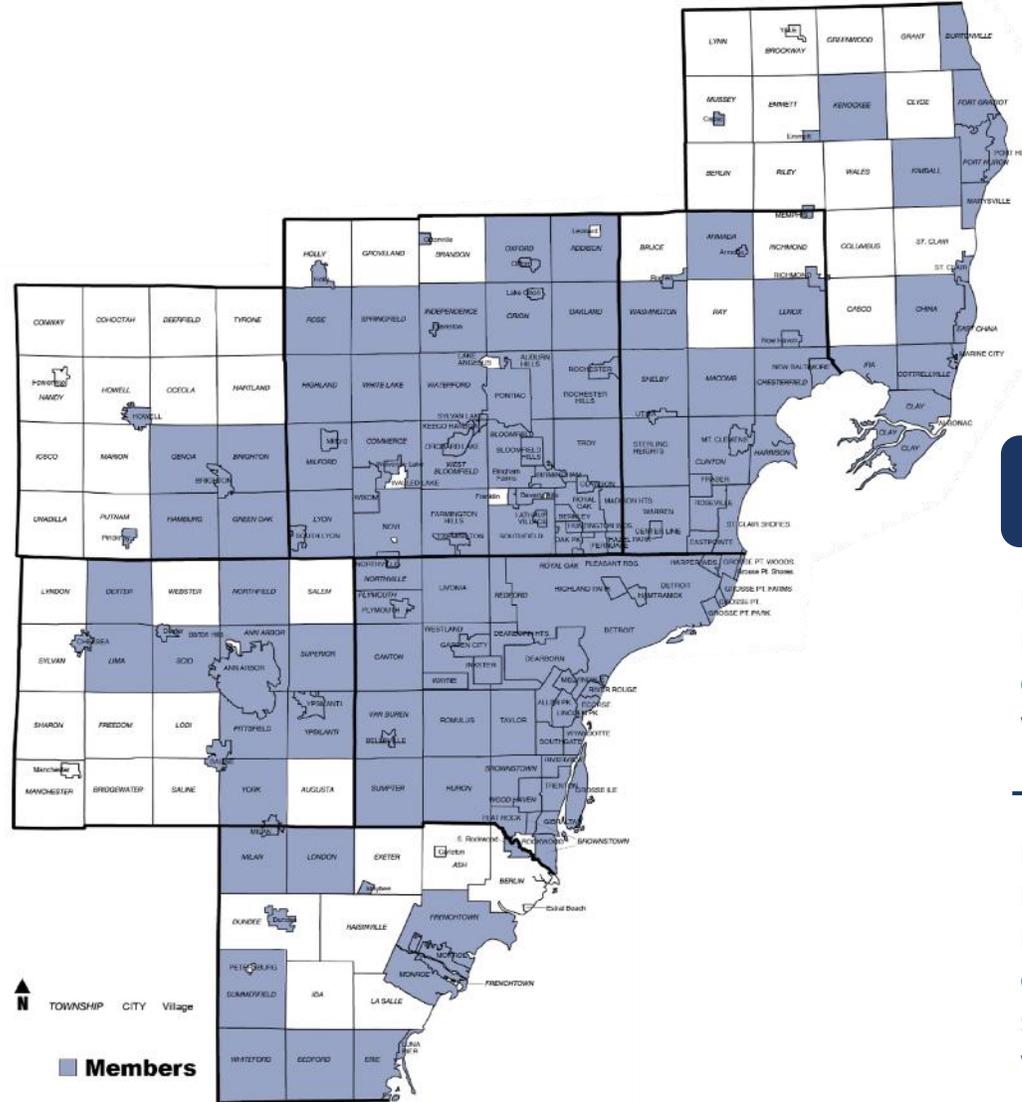
86 CITIES

16 VILLAGES

65 TOWNSHIPS

7 COUNTIES

Livingston, Macomb,
Monroe, Oakland, St. Clair,
Washtenaw, and Wayne



4 ISDs | 7 COMMUNITY

- Macomb Intermediate School District
- Monroe County Intermediate School District
- Oakland Schools
- Wayne County Regional Educational Service Agency

- Henry Ford Community College
- Macomb Community College
- Monroe Community College
- Oakland Community College
- Schoolcraft Community College
- Washtenaw Community College

Flooding in Southeast Michigan



Flooding in Southeast Michigan

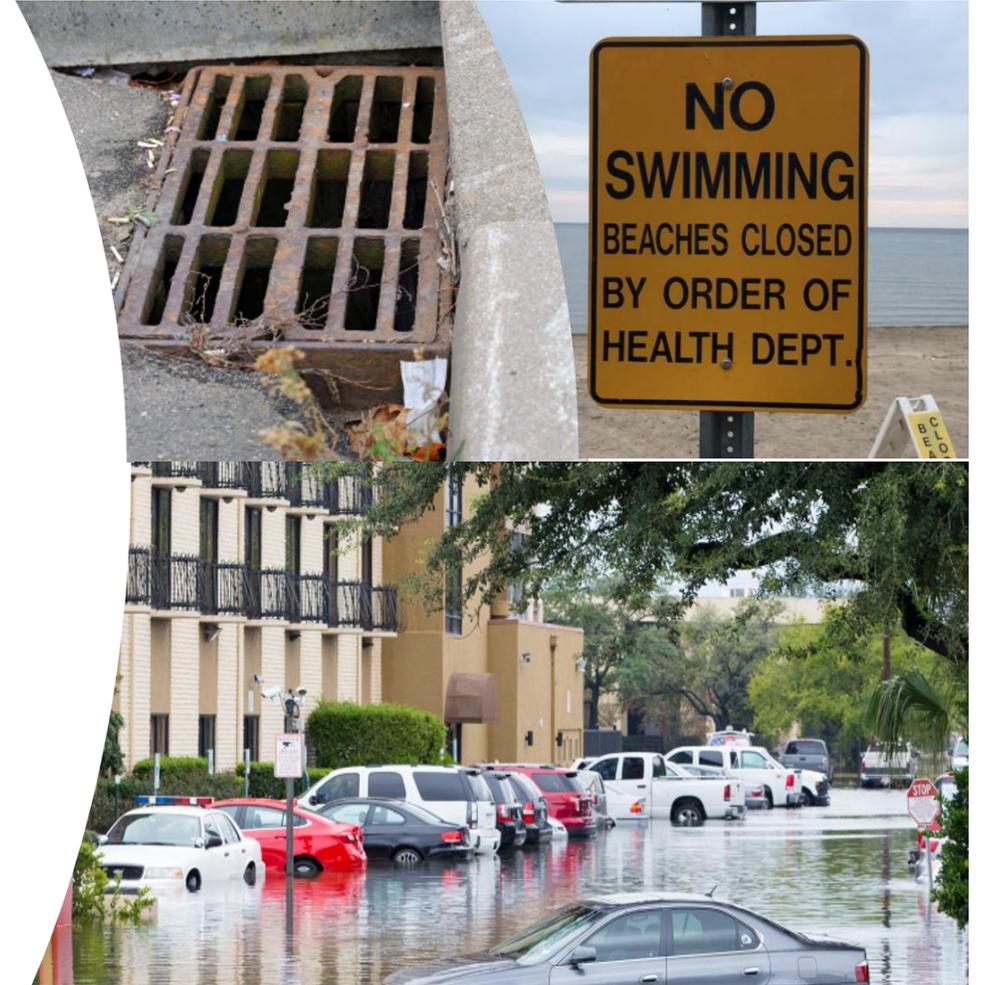
 **4** Michigan has had **four** federal disaster declarations due to flooding in the last **five years**.

 The 100-year rain event is now occurring multiple times in a single year.



Why Stormwater Matters

- Municipalities face:
 - Flooding (property damage, service disruption).
 - Water quality (NPDES permits, public health, recreation).
 - Aging infrastructure (pipes sized for past rainfall, costly to replace).
- More frequent & intense storms



SEMCOG Flooding & Resilience Plan

Developing the Plan

- Develop a coordinated plan for the region with a focus on project implementation and how to get there
- Focus groups to collect projects from stakeholders
- **Projects that are identified and included in the RIP are eligible for lower match through PROTECT**



A Closer Look at the Plan

Key Components:

- Consider current and future weather events
- Address existing hazard mitigation plans and evacuation route priorities,
- Identify small – and large-scale nature-based solutions
- Short- and long-range planning and needed investments

Flooding & Resilience Plan Outline

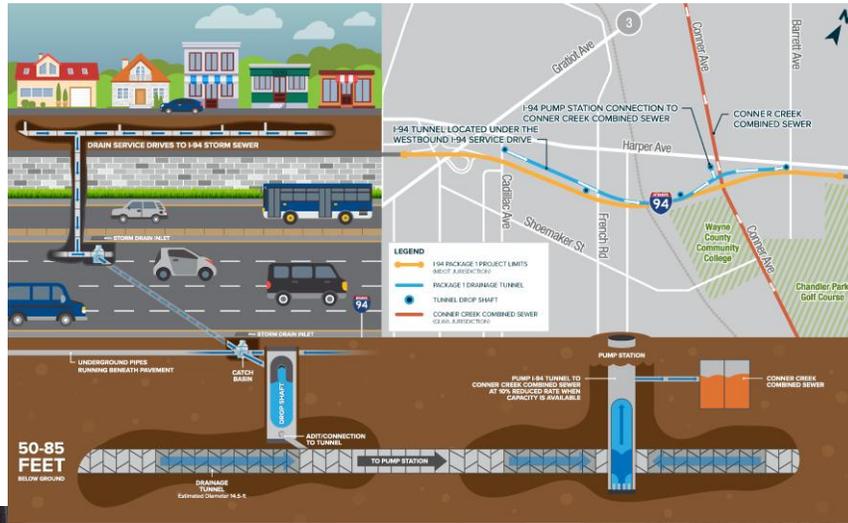
- I. Executive Summary
- II. Introduction
 - I. Introducing the Southeast Michigan Region and SEMCOG.
 - II. Highlighting the approach to resilience and key messages for the plan.
- III. Existing Conditions and Vulnerability Assessment
- IV. Stakeholder & Public Engagement
 - I. How we conducted engagement & how that fed back into the plan.
- V. Regional Policies
- VI. **Priority Project List** 
- VII. Funding & Implementation
- VIII. Future Efforts

Call for Projects



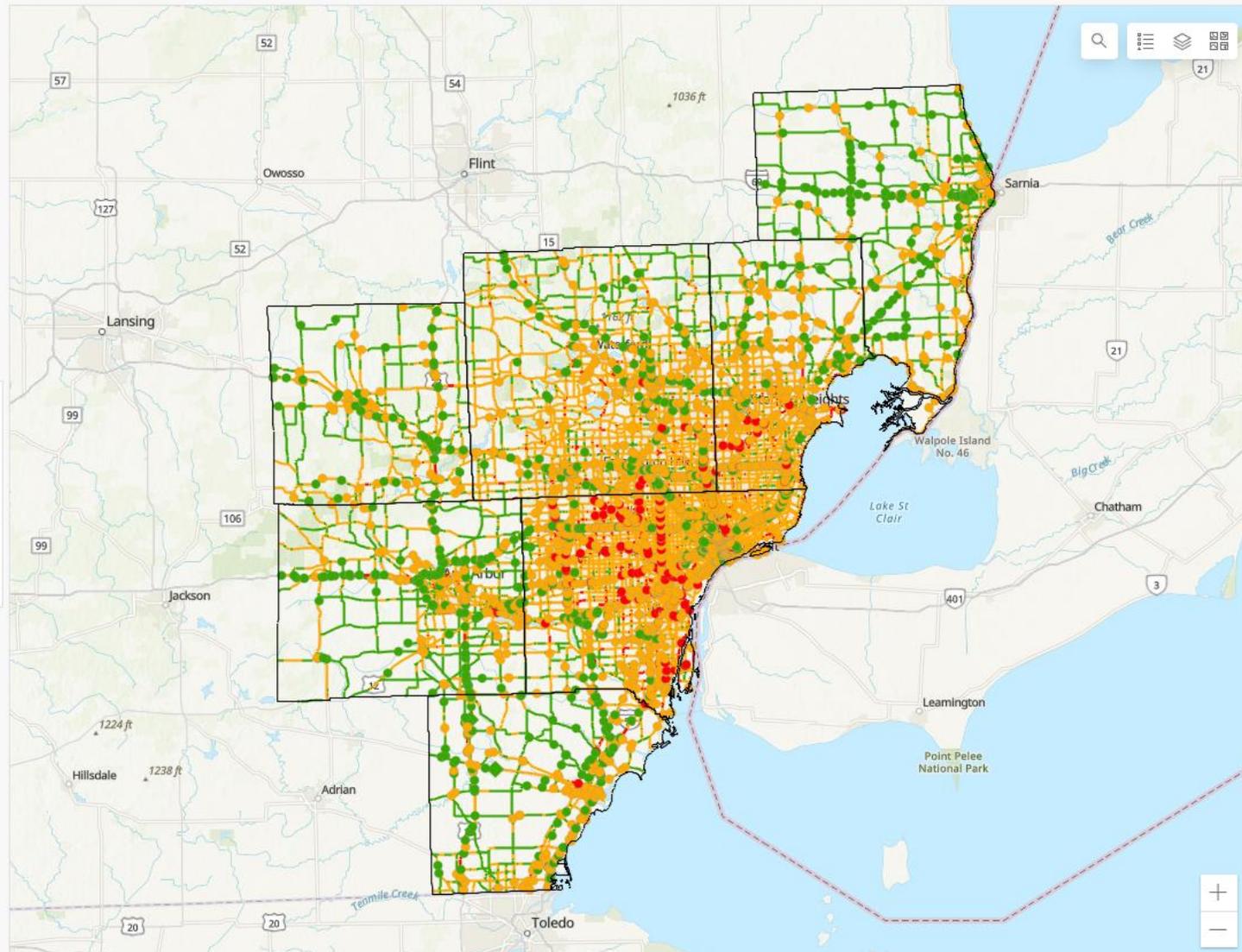
- **Types of Infrastructure Projects**
- **Where they're located**
- **How they support communities**
- **How SEMCOG can support your community with tools & resources**

Projects & Plans to Consider

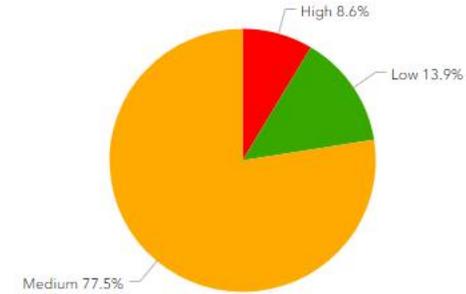


Flood Risk Tool Update

SEMCOG Flooding Risk Tool Dashboard



Roads Risk Rating Breakdown



Last update: 8 seconds ago

Roads Bridges Culverts Pump Stations

Top 5 Road Segments at Risk

Within Filtered Assets

Road Name: From: Outer - To: Outer/S I 75	Criticality Score: 4.0	Vulnerability Score: 3.9
Road Name: Inkster Rd From: Edward N Hines Dr - To: Inkster/Edward Hines Cutoff	Criticality Score: 3.7	Vulnerability Score: 4.0
Road Name: Inkster Rd From: Clairview Dr - To: Edward N Hines Dr	Criticality Score: 3.7	Vulnerability Score: 4.0
Road Name: Telegraph Rd From: Shiawassee Dr - To: N US 24/E M 102 RAMP	Criticality Score: 3.7	Vulnerability Score: 3.9
Road Name: Telegraph Rd From: Shiawassee Dr - To: N US 24/E M 102 RAMP	Criticality Score: 3.7	Vulnerability Score: 3.9

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Roads Bridges Culverts Pump Stations

Road Asset Count

71,599

Last update: 8 seconds ago

Bridge Asset Count

2,634

Last update: 8 seconds ago

Culverts Asset Count

2,634

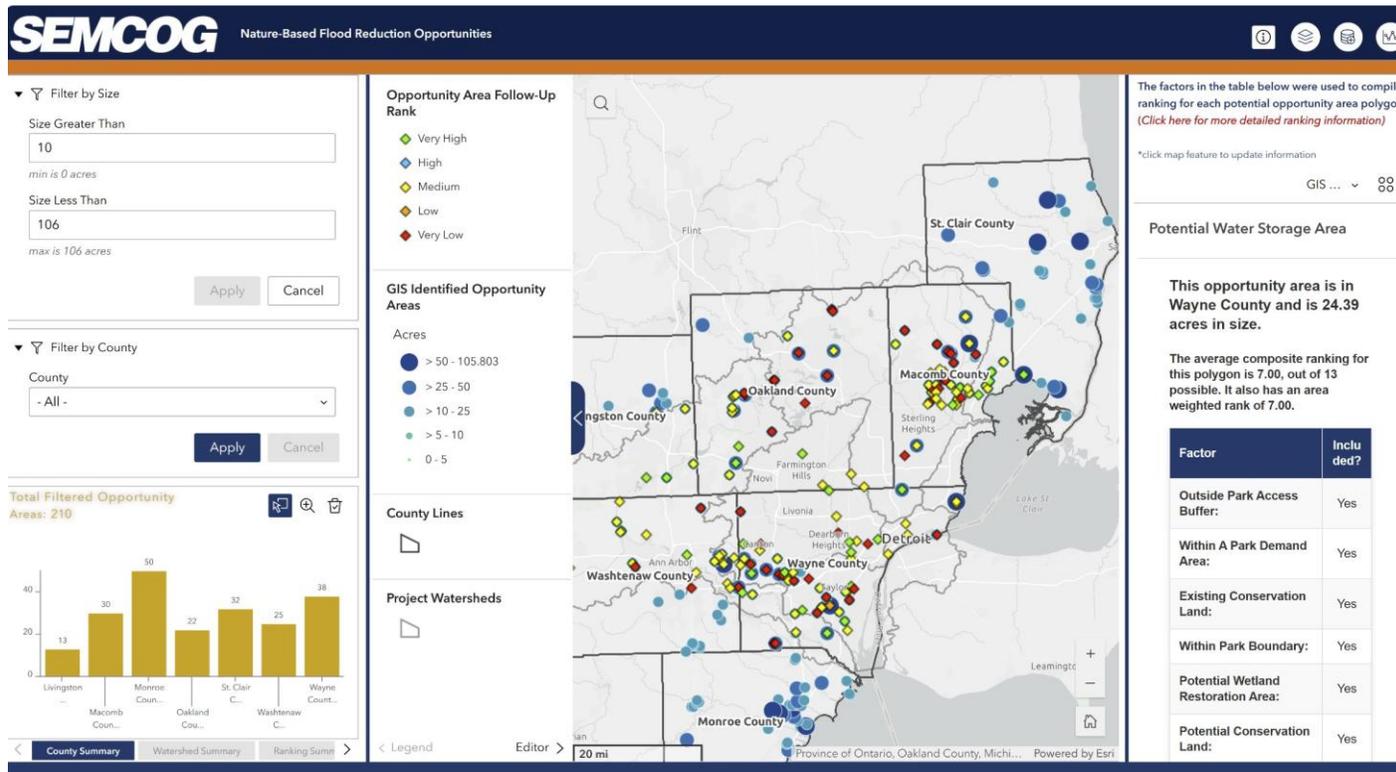
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Pump Stations Asset Count

143

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Identifying Large Scale Nature Based Solutions

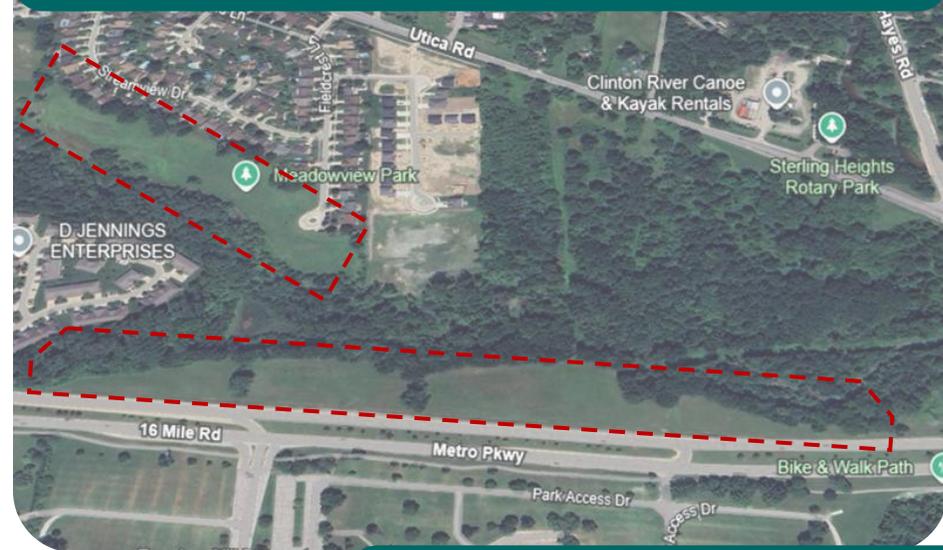


- Desktop Planning Assessment & Project Identification
- Concept Plan Development

Site: Millward Park
Location: City of Allen Park
Watershed: Detroit River (Ecorse Creek)



Site: Metro Parkway Park
Location: City of Sterling Heights
Watershed: Clinton River



Site: Farmington Pond
Location: City of Farmington Hills
Watershed: Rouge River



Site: Ann Arbor DPW
Location: City of Ann Arbor
Watershed: Huron River



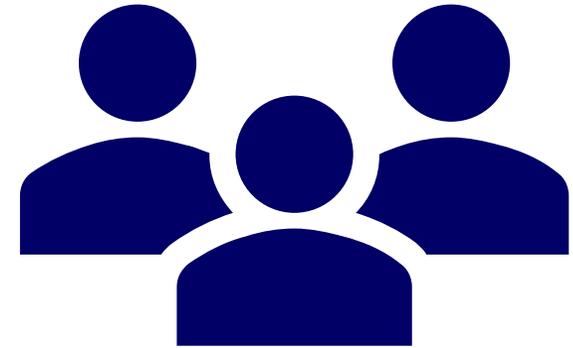
Flooding Task Force



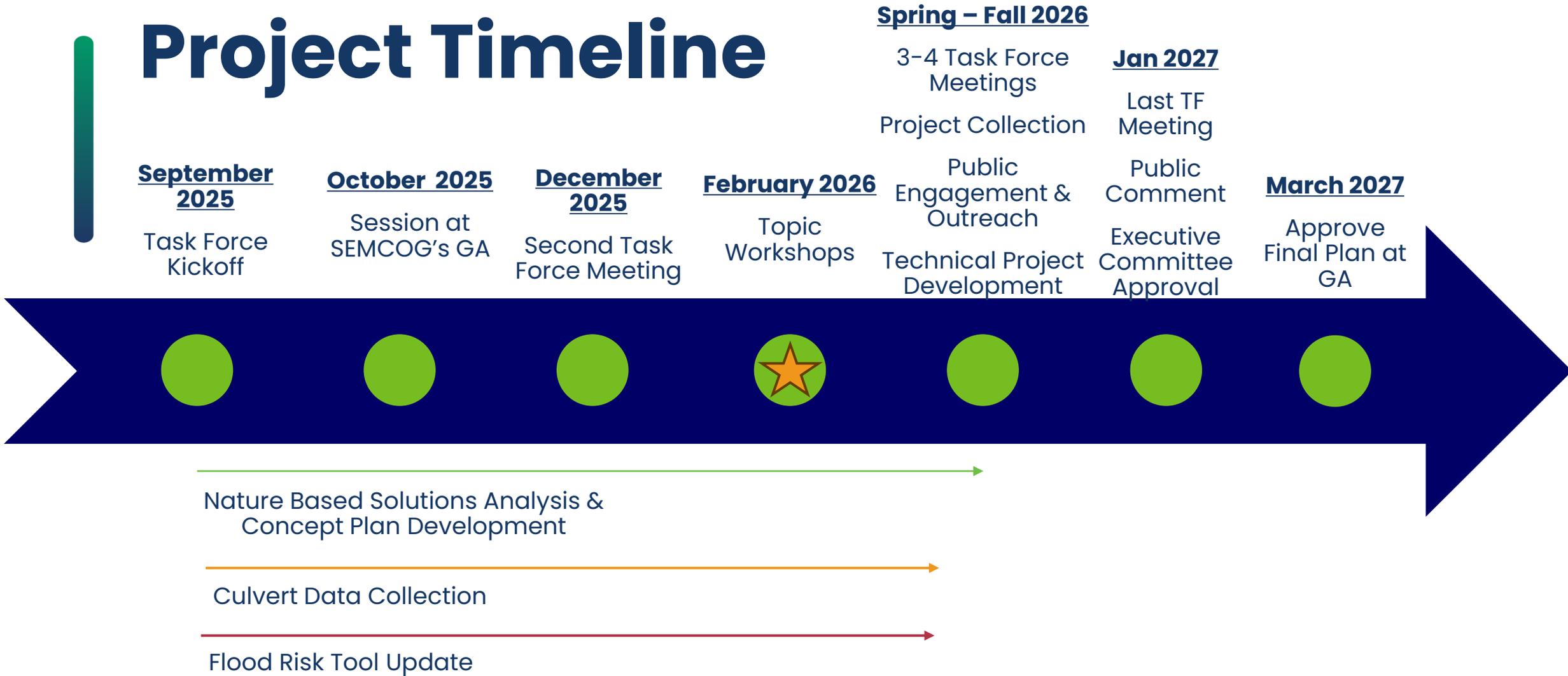
- Guide the development of the Flooding & Resilience Plan
- Establish a flooding collaboration framework with key messages for outreach and education
- Compile stormwater projects across sectors
- Identify and prioritize regional policies and actions

Public Outreach & Engagement

- Communicating with the public on regional resilience projects
- Understanding what's important to local communities for better planning
- Consistent messaging
- Outreach & educational materials



Project Timeline



Next Steps



Upcoming SEMCOG University Workshops

Emergency Planning, Coordination and Response

- **Date:** February 11th, 2025
- **Time:** 9:00 a.m. – 3 p.m.
- **Where:** SEMCOG Office

Engineering Flood Mitigation into the Future

- **Date:** March 10th, 2025
- **Time:** 9:00 a.m. – 3 p.m.
- **Where:** SEMCOG Office

Next Task Force Meeting

- Share the results of the Flood Risk Tool Analysis
- Public Engagement for the Flooding & Resilience Plan
- Discuss the Call for Projects

Join us for the Next Meeting!

April 29

Lunch: 12:30

**Meeting Time: 1:00 –
3:00 PM**

SEMCOG Offices



PLANNING AND ZONING FOR FLOOD RESILIENCE

MICHIGAN ASSOCIATION OF PLANNING
SOUTHEAST MICHIGAN COUNCIL OF GOVERNMENTS
FEBRUARY 3, 2026





LEAH DuMOUCHEL, AICP

DIRECTOR OF PROGRAMS
AND COMMUNICATIONS

MICHIGAN ASSOCIATION OF PLANNING

INFORMATION | **EDUCATION** | **ADVOCACY**

- Nonprofit, membership-based organization serving land use decision makers for more than 75 years
- Over 4,000 members across Michigan, including professional planners, local elected and appointed officials, and friends of planning in related fields
- Books, publications, workshops, training, conferences, networking, and more





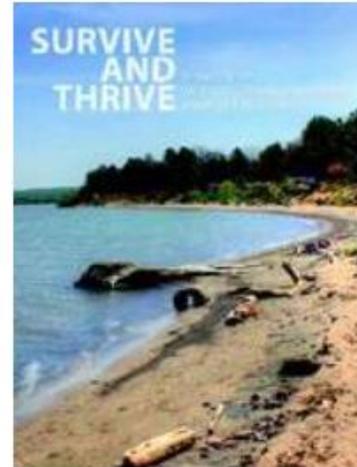
MAP and Water Resilience



Coastal Solutions Compendium

August 2025

Federal assistance for this project was provided by the Michigan Coastal Management Program, Water Resources Division, ECLC, with funding through the National Coastal Zone Management Program.



AGENDA

- Level Setting
- Planning for Flood Resilience
- Capital Improvements
- Zoning for Flood Resilience
- Development Review





LEVEL SETTING



WHAT IS FLOODING?

In the land use context, **flooding** happens when water expands into an area where development exists.

The development is a critical part of the “flood”





Evolution of the public approach to disasters

1800s

Disasters imposed by nature; government can relieve suffering



1900 Galveston Hurricane, deadliest natural disaster in US history

Early 1900s

Disasters can have human causal elements; relief tactics consider the source



Dust Bowl relief acknowledged an economic input to the disaster

Late 1900s

Human technology ALSO a disaster; Federal relief institutionalized



Nuclear devastation: a human disaster to rival any in nature

Today

Some disasters are predictable; shift risk to influence decision-making



Hurricane Katrina overwhelms a levee in New Orleans





SO: What is a resilient approach to flooding?

Resilience is about protection, preservation, and wise use





Local government controls where and how development happens

- We are the only ones who can regulate setbacks from natural features like waterbodies
- We issue the permits that allow residents and businesses to build.
- We invest public dollars in infrastructure
- We bear the costs of cleanup when disaster strikes.

WHY LOCAL GOVERNMENT MUST LEAD

Local leaders are charged with the hard job of balancing immediate apparent gain with long-term considered risk.

- Experience shows that the location of development does not respond to past, or even current, flood risk.
- Homes, structures, and infrastructure that are damaged by flooding become public hazards as well as public liabilities
- The traditional tools of choice for dealing with water management—built or “gray” infrastructure—incur a permanent and escalating cost. The cost is often public...and may still be inadequate.





If it's so important, why is this so hard?



MICHIGAN ENVIRONMENT WATCH

September 22, 2025

Report: 19% of Lake Michigan shore now armored, limiting public access

- New research shows a fivefold expansion of seawalls, riprap, groins and other hard armoring of Lake Michigan beaches in recent years
- Miles of armoring skyrocketed from 4% to 19% — or 69 miles — of the shoreline between 2014 and 2021
- Coastal armoring temporarily protects properties from erosion, but makes the problem worse in the long run

- **Political Will:** Intense pressure from property owners and fears of "takings" lawsuits.
- **Economic Pressure:** Flood risk is intertwined with existing investment.
- **Changing Approaches:** Best practices shift over time—but slowly
- **Technical Capacity:** Many communities lack the staff or expertise to draft new, complex ordinances—and then enforce them





PLANNING



What planning is good at

- Establishing priorities
 - Risk based approaches
- Cross communications
 - Alignment between planning (the department) and engineering
- Directing resources
 - Tied by law to capital improvements





PLANNING AND INVESTMENT

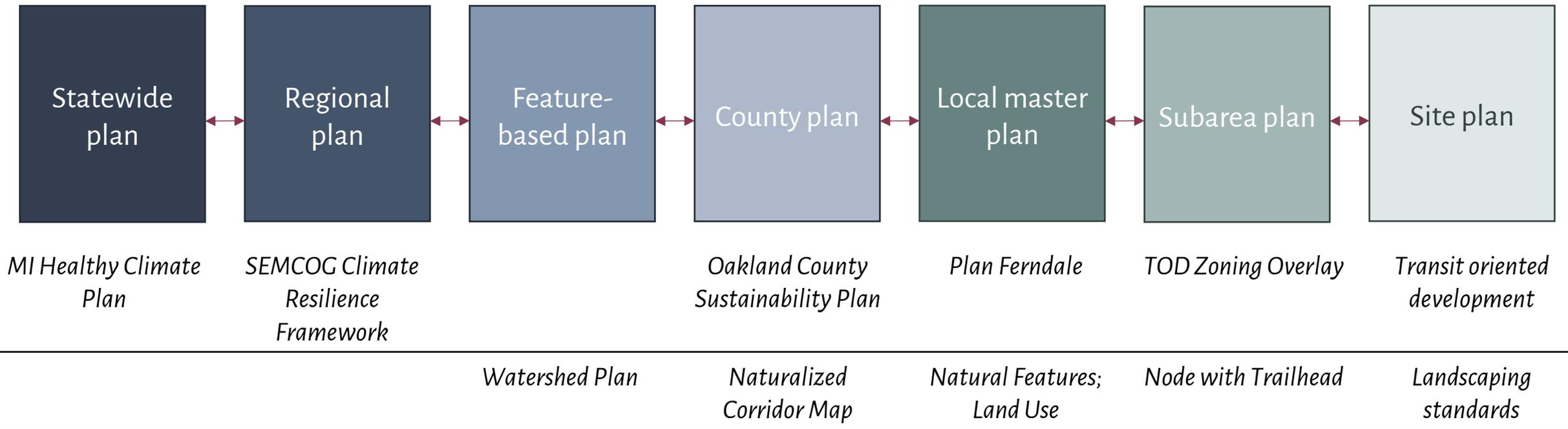




PLAN ALIGNMENT: ACROSS SCALES

Planning **can**, **should**, and **does** happen at various scales

Plan alignment is how broad-scale plans inform small-scale plans and vice versa. This “informing” goes in both directions.



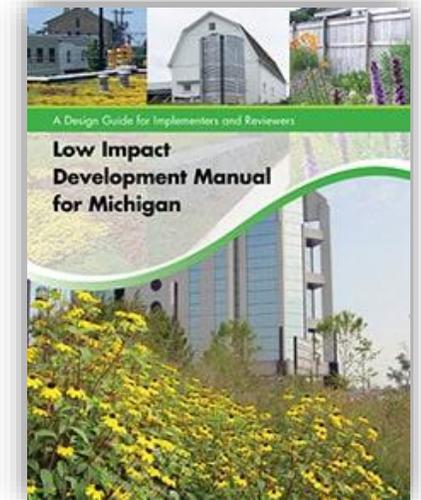
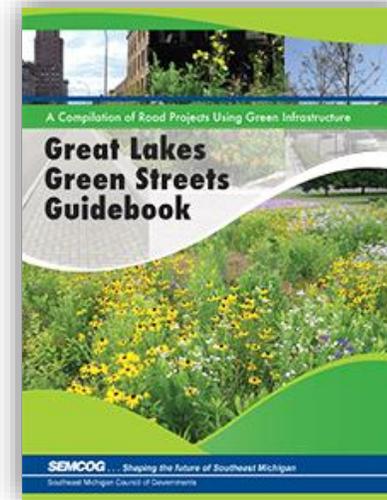
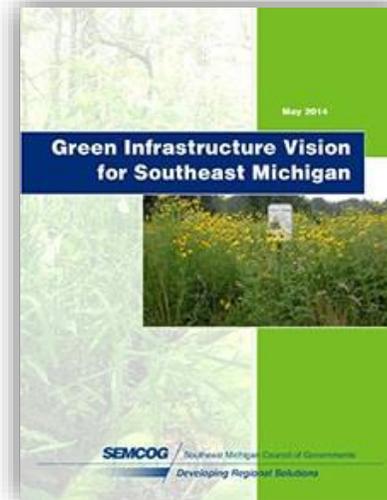
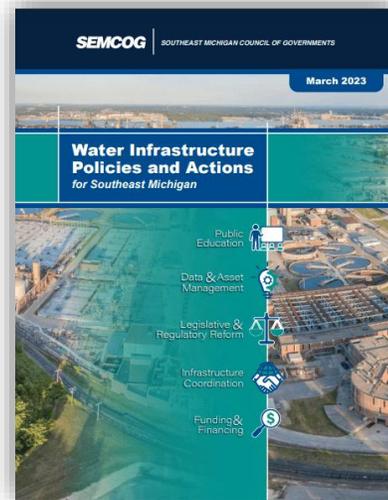
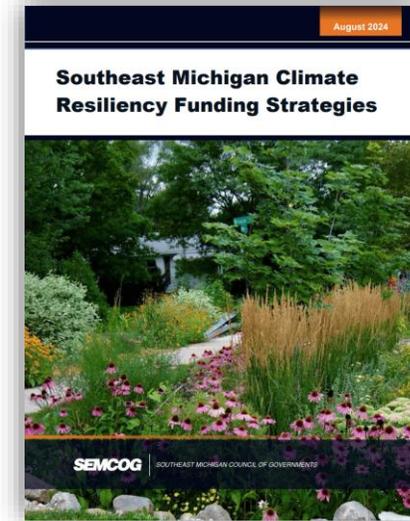


REGIONAL PLANNING

Supports systems that are larger than municipal boundaries (like water systems)

Especially good at providing

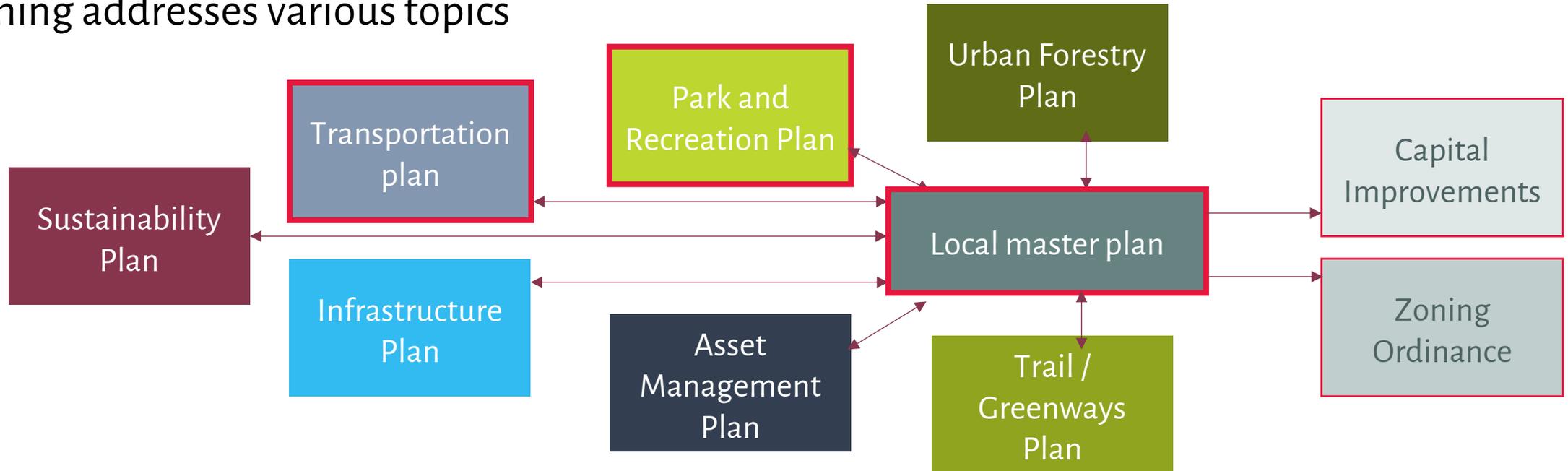
- data
- coordination
- best practices that have local context





PLAN INTEGRATION: WITHIN THE JURISDICTION

Planning addresses various topics



Plan integration is how detailed, topic-based plans are coordinated with the community’s master (or comprehensive) plan. This “informing” goes in both directions, but only the master plan forms the policy basis for capital improvements and regulation.





RESILIENCY IN THE TEXT OF THE MASTER PLAN

Traditional chapters

- Natural Features: Connect open space, vegetation, wetlands, landscaping requirements directly to flood risk and impact
- Infrastructure: Identify green infrastructure like tree canopy, connected watercourses, and riparian borders alongside gray; plan for its land use needs as well as maintenance
- Transportation: Prioritize infiltration in right-of-way design; identify where road improvements can serve flood mitigation goals

Dedicated “Resilience” chapter

- Connects resiliency efforts across the organization
- Defines resilience for the community’s purpose, and then develops and underscores a philosophical commitment to resilience as defined
- Generally refers in some way to resilience to flooding, and acknowledges a trajectory of increase with regard to flooding
- Offers room to address resiliency elements in detail, including flooding





FUTURE LAND USE MAP

- “Policy equivalent” of the zoning map. Particularly influences rezonings.
- Generally the only map consulted by the Planning Commission
- Based around “Future Land Use categories”
- But it can – and perhaps should! – show anything that impacts development decisions

RESILIENCE ELEMENTS

- Natural assets
- Flood risk
- Wetlands, including functional value for flood prevention





SUSTAINABILITY / RESILIENCE PLAN

WHAT IS IT?

- Looks at resource use over time
- Mitigation of factors contributing to climate change and adaptation to consequences of it
- Often includes relationships among elements

WHEN WOULD A COMMUNITY HAVE ONE?

- The community is committed to environmental management and / or leadership
- The community is experiencing or believes it will experience impacts related to a changing climate

RESILIENCE ELEMENTS

- Natural features inventory
- Green infrastructure evaluation, coordinated plan, and corresponding site recommendations
- May include greenhouse gas inventory and / or mitigation





PARK AND RECREATION PLAN

WHAT IS IT?

- MDNR-directed format, must be adopted every five years
- Includes community description, recreation specifics, community engagement, and projects / priorities

WHEN WOULD A COMMUNITY HAVE ONE?

Many (most?) communities have updated, compliant Five-Year Park and Recreation plans in order to be eligible for Michigan Natural Resource Trust Fund (MNRTF) grants.

RESILIENCE ELEMENTS

- Include stormwater management and green infrastructure as allowable uses
- Convert passive recreation areas to grow zones or natural areas rather than mowed turf grass
- Identify areas that can store excess stormwater for flood mitigation, like new wetlands along waterbodies or expanded floodplains to slow water flows.





TRANSPORTATION PLAN

WHAT IS IT?

- Manages the network that facilitates the movement of people and goods throughout an area and provides access to sites
- Represents an enormous land use in most communities, generally organized around impervious, drained surface

WHEN WOULD A COMMUNITY HAVE ONE?

Transportation planning for vehicles is most often done by the authority with jurisdiction by road type: MDOT, County Road Commissions, and cities and villages

RESILIENCE ELEMENTS

- Identify projects that can address and mitigate flooding using SEMCOG's Flood Risk Tool for roads, bridges, culverts, and pump stations:
<https://maps.semco.org/floodrisktool/>





TRAILS / GREENWAYS PLAN

WHAT IS IT?

- Manages the community's nonmotorized routes, including both development and connectivity
- May be considered part of the recreation network, the transportation network, or both

WHEN WOULD A COMMUNITY HAVE ONE?

- All communities can and should plan for nonmotorized mobility.
- Trail and greenway planning may support a community's economic development, natural area preservation, and transportation goals

RESILIENCE ELEMENTS

- Prioritize corridor acquisition. Preserve riparian corridors and connect stormwater assets
- Require resilient trail design and standardize maintenance in flood zones
- Integrate with transportation planning and sustainability goals





INFRASTRUCTURE, ASSET MANAGEMENT PLANS

WHAT IS IT?

- Infrastructure plans may focus on the need for new investments to meet projected demands
- Asset management plans comprehensively address all infrastructure needs including expansion, maintenance, and decommissioning

WHEN WOULD A COMMUNITY HAVE ONE?

Infrastructure is a core municipal concern, and all communities benefit from close, detailed, ongoing management of it.

RESILIENCE ELEMENTS

- Review and align projects for strategic cost savings across departments
- Implement collaborative processes that can draw disparate funding sources to tackle the same problems, especially around stormwater and transportation





URBAN FORESTRY PLAN

WHAT IS IT?

Frames a community's tree canopy as an infrastructure investment rather than solely as a natural feature

WHEN WOULD A COMMUNITY HAVE ONE?

- The community recognizes the multifaceted value that tree canopy provides
- The community is managing a tree deficiency or even disaster (such as emerald ash borer)

RESILIENCE ELEMENTS

- Target tree planting in flood prone areas
- Identify species and planting configurations that maximize water management
- Align tree recommendations with needs identified in transportation & stormwater management plans





Planning for Community Resilience in Michigan

<https://www.resilientmichigan.org/handbook.asp>

- Resource aimed directly at PLANNERS and their jobs
- Triple-bottom-line structure: people, natural / built environment, economy
- Makes connections between planning efforts
- Introduces tools like vulnerability assessments and scenario planning



The statements, findings, conclusions, and recommendations in this handbook are those of the authors and do not necessarily reflect the views of the Department of Environmental Quality and the National Oceanic and Atmospheric Administration.

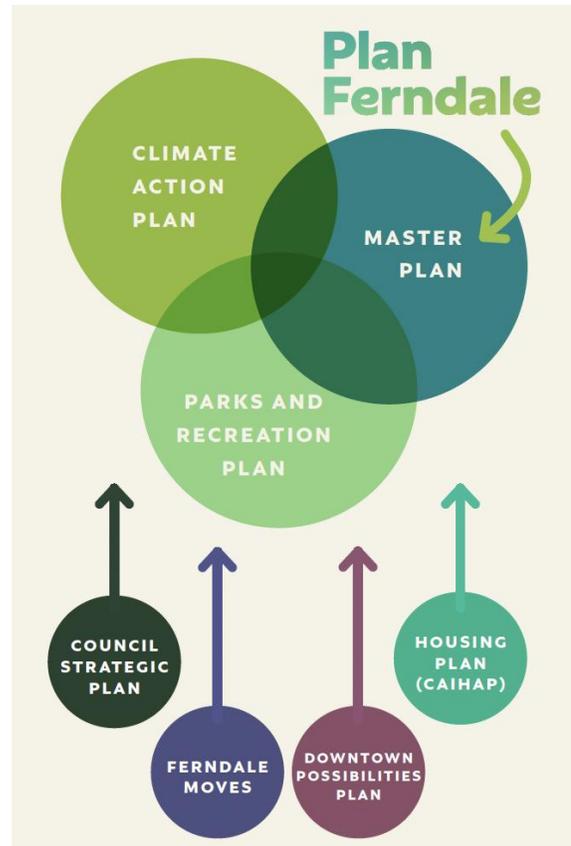




INTEGRATED PLANNING HONORABLE MENTION

Plan Ferndale

includes the Master Land Use Plan [informs ZO],
Climate Action Plan [directs change], and Parks and
Recreation Master Plan [funding mechanism]



Also clearly related:

- Public participation plan
- Community Accessible and Inclusive Housing Plan
- Greenhouse Gas Inventory Report
- Capital Improvement Plan
- Waste Recycling and Reduction Plan
- Stormwater Vulnerability Assessment
- Ferndale Moves (Transportation)





CAPITAL IMPROVEMENTS



CAPITAL IMPROVEMENTS PLAN (CIP)

The Michigan Planning Enabling Act directs the planning commission follow a master plan with a **program of public structures and improvements** that are “needed and desirable.”

(Or, the legislative body can decide to do it, or can delegate it to the chief elected or administrative official.)

The CIP

- Shows public structures and improvements in the general order of their priority (so, requires prioritization)
- Looks 6 years into the future, updated annually





[COORDINATED] CAPITAL IMPROVEMENTS PLAN

SEMCOG has an ongoing pilot project with the Michigan Infrastructure Council to collect local CIPs so that communities can make project selection decisions in a regional context

Opportunity for cross-communication WITH A BUDGET

- MPEA suggests that each department with authority for public structures or improvements furnish the planning commission with lists, plans, and estimates of time and cost
 - Coordinated capital planning is a key factor across planning and engineering
- Look at interdepartment CIP alignment across stormwater, transportation, asset management, recreation planning, etc.





ZONING



WHAT ZONING IS GOOD AT

- Consistent outcomes
 - “Due process” requires laws to be applied uniformly (plans have no such requirement)
- Preventing immediate harm
 - Zoning mostly tells us what we can't do





But: Zoning does not have a regional counterpart

Challenges

- Difficult to achieve consistent outcomes *across jurisdictions*
- Varying capacity for implementation
- Does not address existing conditions

Opportunity for regional support

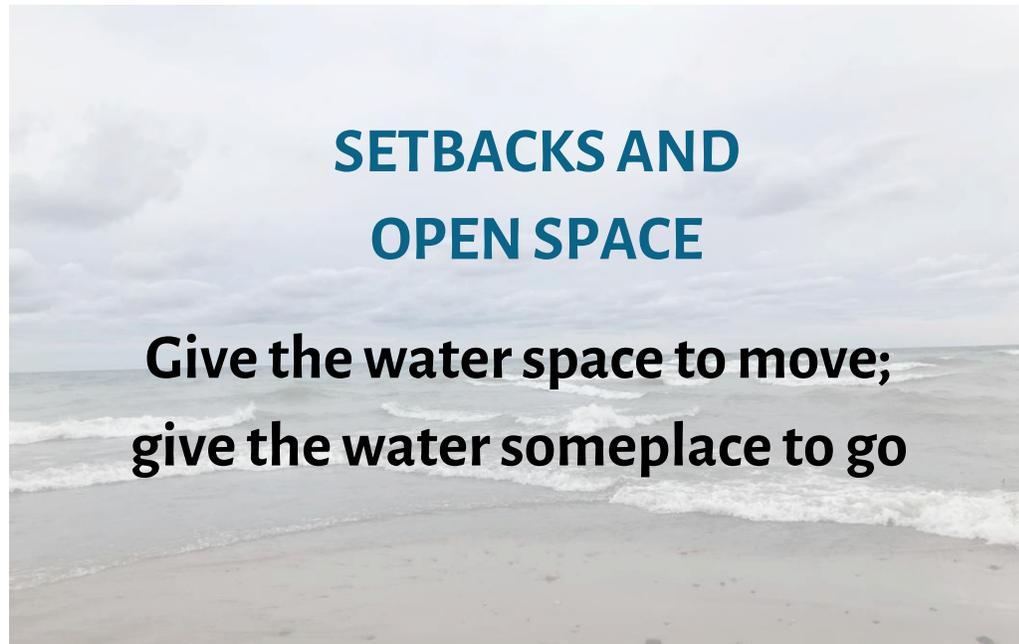
- Models
- Best practices
- Information about what neighbors are doing





Zoning for flood resilience

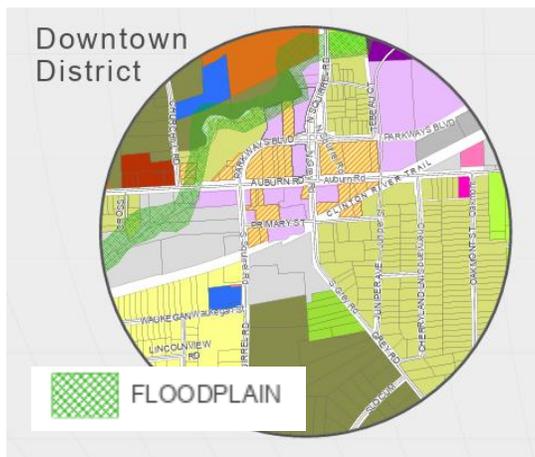
Other zoning tools implement these three ideas in specialized ways or circumstances





ZONING TOOL: OVERLAYS

A **zoning overlay** is a "layer" of regulation placed on top of existing zoning. It can cross multiple base zones to protect a feature.



HOW IT WORKS

What will the overlay apply to?	What will the overlay require?
<p><i>Examples</i></p> <ul style="list-style-type: none">• Shoreline• Wetlands• Floodplain	<p><i>Examples</i></p> <ul style="list-style-type: none">• Setback distance• Plantings: number, species• Construction protections

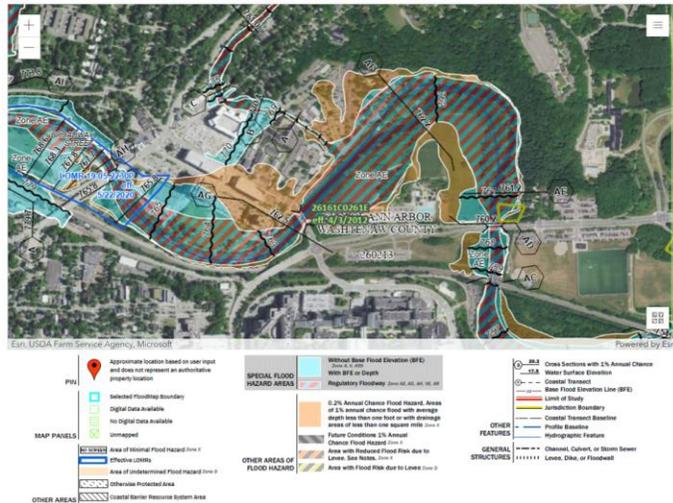




Floodplain Overlay Zone

What does the overlay apply to?

FEMA identifies and maps: areas of special flood, mudslide, and flood-related erosion hazards



What does the overlay require?

FEMA develops the regulation standards that the community adopts and enforces

FEMA Minimum Standards

- require permits for development in the flood zone
- require the lowest floor of all new residential buildings to be at or above the Base Flood Elevation
- restrict development in the floodway
- require construction materials and methods that minimize flood damage
- can require the building to be rebuilt to current floodplain management requirements

Why would a community adopt it?

Communities volunteer to adopt and enforce the minimum standards in exchange for access to federal flood insurance





Natural Features Protection Ordinance



**Often structured as an overlay.
Could apply to:**

- Waterbodies
 - Coasts
 - Shorelines
 - Riparian zones
- Wetlands
- Dunes
- Bluffs
- Woodlands
- Slopes
- Habitats
- Sensitive Environmental Areas

EXAMPLE City of Kalamazoo

- Master Plan
- Public Process
- Ordinance
- Interactive Map
- Review Board





Shoreline / Riparian Zone Standards

Protecting Michigan's Inland Lakes:

A Guide for Local Governments



- Connecting goals with options
- Sample ordinances
- Agency and organization contacts

Require

- vegetation preservation
- native plants
- mitigation
- public trust access
- nature-based erosion control
- wetland delineation
- onsite stormwater management
- minimum pervious surface

Prohibit

- paved surfaces
- primary structures
- grading
- fertilizer and pesticide
- mowing
- use of motorized vehicles
- septic tanks and drain fields
- any other soil disturbance or pollution.





Local Wetland Ordinances: Where



<https://maps.semco.org/wetlandsmapper/>

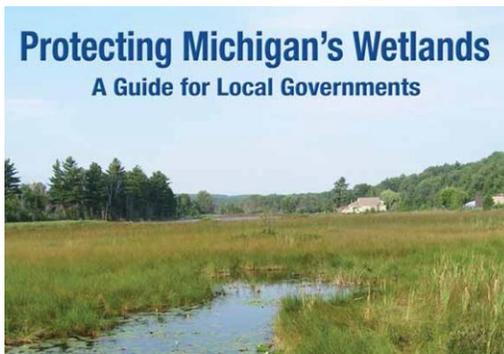
Data Support Tool: SEMCOG Southeast Michigan Wetland Mapper

- Identifies wetlands that function for flood control so that communities can prioritize them
- Illuminates where wetland restoration and expansion can increase stormwater management capacity





Local Wetland Ordinances: How



- Legal framework
- Sample ordinances
- Frequently asked questions

Wetlands less than 5 acres can be regulated by a local ordinance if:

- The ordinance uses the state definition of a wetland
- It doesn't require a permit for activities exempted by the legislation
- A wetland inventory is published before the ordinance is adopted
- The local local unit of government notifies EGLE

For wetlands less than 2 acres in size, the permit must be granted unless the wetland is “essential to the preservation of the community's natural resources.”





TREE ORDINANCES

Tree ordinances define certain specific trees as important for preservation, even in areas of active construction. They generally prohibit the removal of these “important” trees, or provide for an acceptable replacement if they “must” be removed (and define “must” in this context)

Criteria for tree preservation may include:

- **Size:** Mature, large trees provide a greater quantity of ecosystem services like flood mitigation, as well as shade and water filtration and cooling.
- **Species:** Species are often valued for being well-suited to a particular function, including water uptake, or for having specific characteristics such as leaf size that is compatible with gray drainage systems
- **Location:** Communities may prioritize locations for trees based on site characteristics, such as flood prone areas or areas that experienced historic public disinvestment

Woodland ordinances define a group of trees as a natural feature, usually by size of the area covered. The ordinance offers land use protections in that area. Woodlands may be protected as part of a natural features ordinance.





DEVELOPMENT STANDARDS

Since most land is privately owned and developed, the cumulative impact of development standards is what substantially shapes the community's physical outcomes



- Reduce impervious surfaces
 - Use lot coverage maximums, but also lot size, frontage, height, required yards, parking standards, and drainage facilities
- Maximize vegetated/landscaped areas that promote infiltration, evaporation, and evapotranspiration
 - Use open space requirements but also required landscaping, buffers, tree canopy, and drainage facilities
- Restore and protect natural functions of soils and vegetation
 - Use landscaping specifications but also buffering, required open space, tree canopy



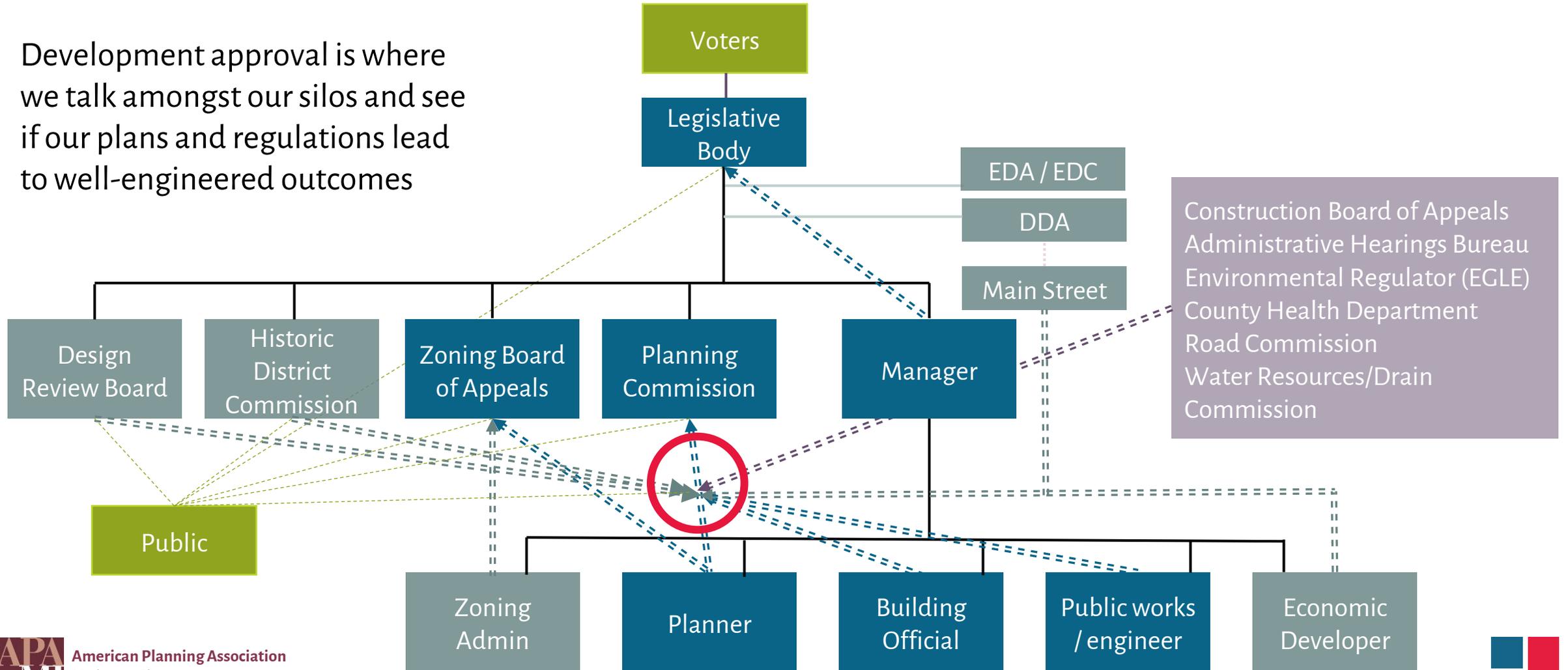


DEVELOPMENT REVIEW



The process is an outcome

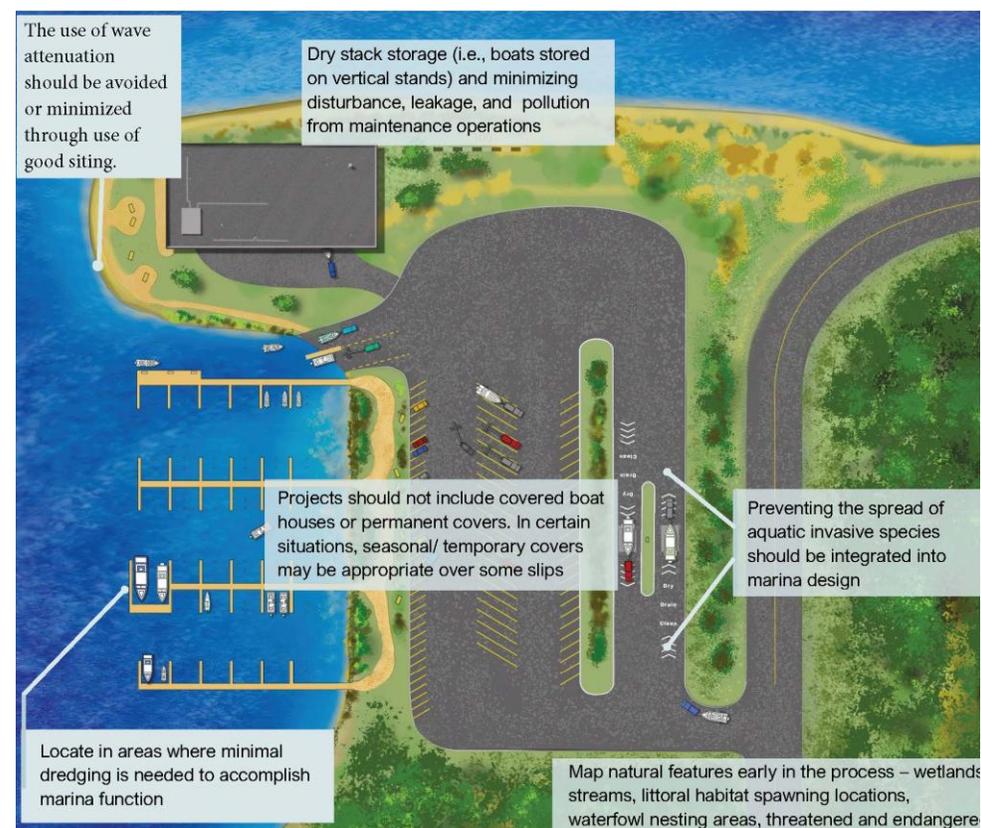
Development approval is where we talk amongst our silos and see if our plans and regulations lead to well-engineered outcomes





Site design discretion

- “Objectives” in a plan often contain the level of detail that points toward specific outcomes but does not direct how to accomplish them.
 - Example: “Implement green infrastructure wherever possible in order to reduce and mitigate flood risk.”
- Incorporate language into zoning ordinance purpose and intent statements to direct discretionary considerations
- Develop a decision-making guide to match site considerations with flood resilience features
- Define “low impact development” and “green infrastructure”





Standards and regulations

“Do I haaaaaaaaave to?”

“It’s just one little rule and it’s probably stupid anyway.”

“What difference does this actually make?”

“Surely you can’t REALLY care about this detail.”

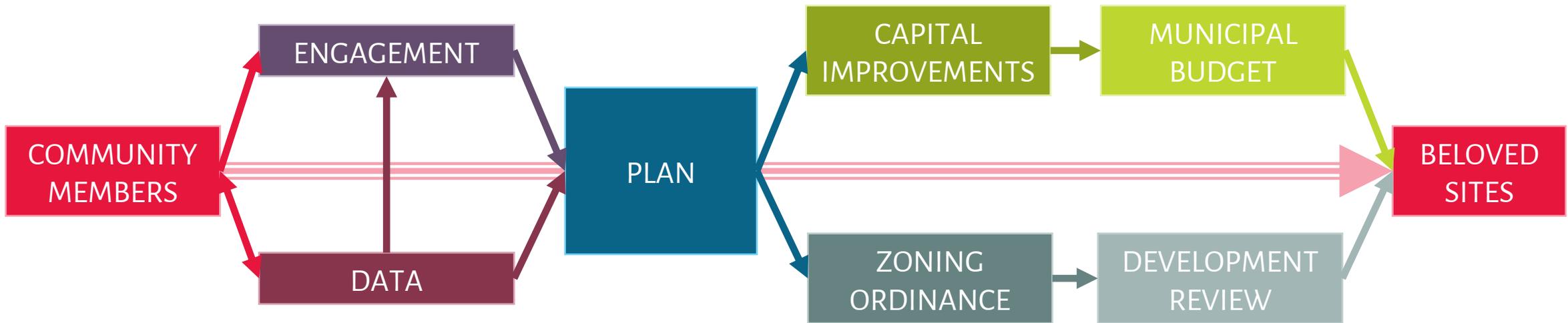
Why are you so nitpicky??

Remember: Since most land is privately owned and developed, the cumulative impact of standards is what substantially shapes the community’s physical outcomes

If the standard or regulation is serving the broader goal, uphold it.

If it’s not, preserve our credibility and get rid of it.





THE LINE OF SITE



If it's working the way we hope it is, the development process is what translates the community members' vision of how they want to live into a place they love.





**THANK
YOU**

**Michigan
Association
of Planning**
planningmi.org



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INFRASTRUCTURE PLANNING AND COORDINATION

Presented by: Hubbell, Roth & Clark

INTRODUCTION



- Karyn M. Stickel, P.E., Vice President
 - Asset Management
 - GIS
 - Utility Planning
 - Stormwater

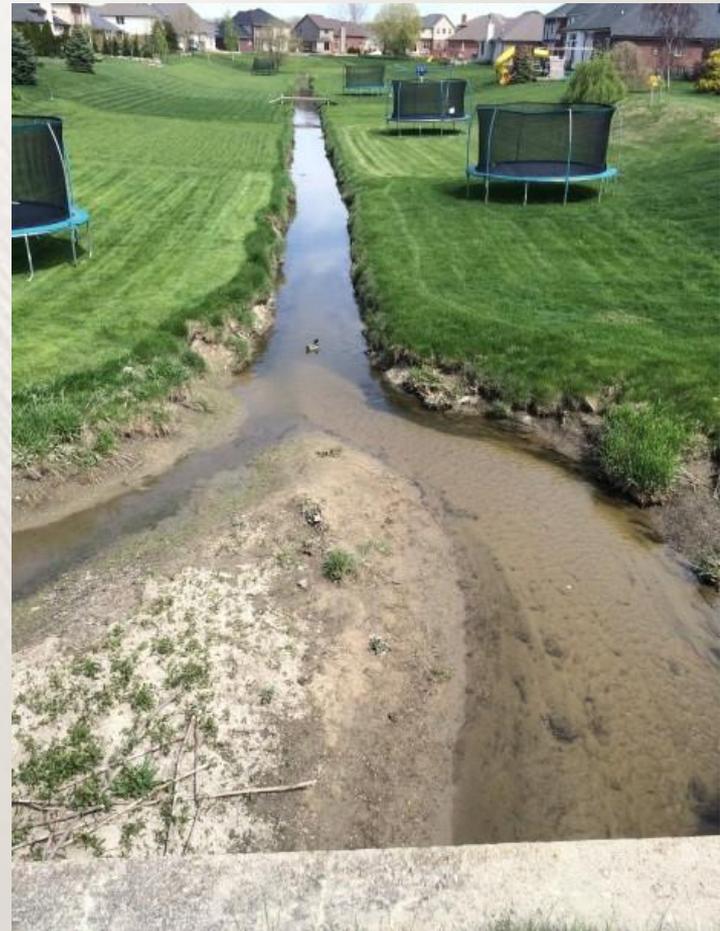
OVERVIEW



- Flooding and stormwater management remains a major issue in Southeast Michigan
- Community planning and zoning tools can help
- Infrastructure planning is the next step in addressing flooding and resiliency.

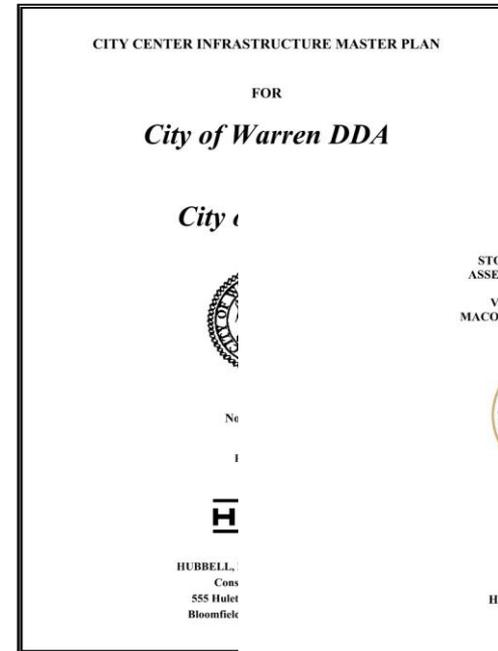
INFRASTRUCTURE PLANNING

- Infrastructure continues to age and over time needs to be addressed
- Infrastructure design standards have changed
- Storms are becoming more severe



STORMWATER PLANNING

- Stormwater Master Plans
- Asset Management Planning



STORMWATER SYSTEMS
ASSET MANAGEMENT PLAN
VILLAGE OF ROMEO
MACOMB COUNTY, MICHIGAN



OCTOBER 2019

HRC JOB NO. 20130687

 HRC
HUBBELL, ROTH & CLARK, INC.
CONSULTING ENGINEERS SINCE 1915

555 HULET DRIVE
P.O. BOX 824
BLOOMFIELD HILLS, MI, 48302
248-454-6800

STORMWATER MASTER PLANS



- Analyze stormwater system
- Alleviate flooding
- Address stormwater quality
- Review Regional Solutions



STORMWATER MASTER PLANS

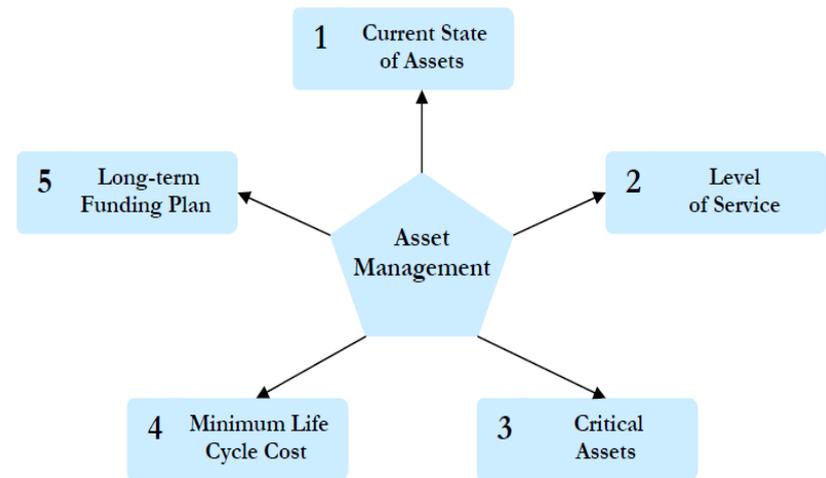
- Review stormwater sizing
- Prepare high level costs
- Review and update as changes are made in the system



ASSET MANAGEMENT PLANS

- Reviews the existing stormwater system for condition, criticality, and level of services
- Understand what is already in the ground and what condition of that infrastructure is.
- Develops long term funding

Flow Chart: The Five Core Questions of Asset Management Framework



ASSET MANAGEMENT PLANS



- Level of Service
 - Storm sewer systems are of varying ages and have been sized based on the standards at the time they were constructed (if any standards were in place).
 - Part of asset management planning is determining the level of service desired
 - Many residents would say that they want to eliminate all surface flooding, but costs to do that could be very high

ASSET MANAGEMENT PLANS

- Level of Service
 - In addition, storms are getting more intense and so design should be based upon newer rainfall frequency tables



PLANNING COORDINATION

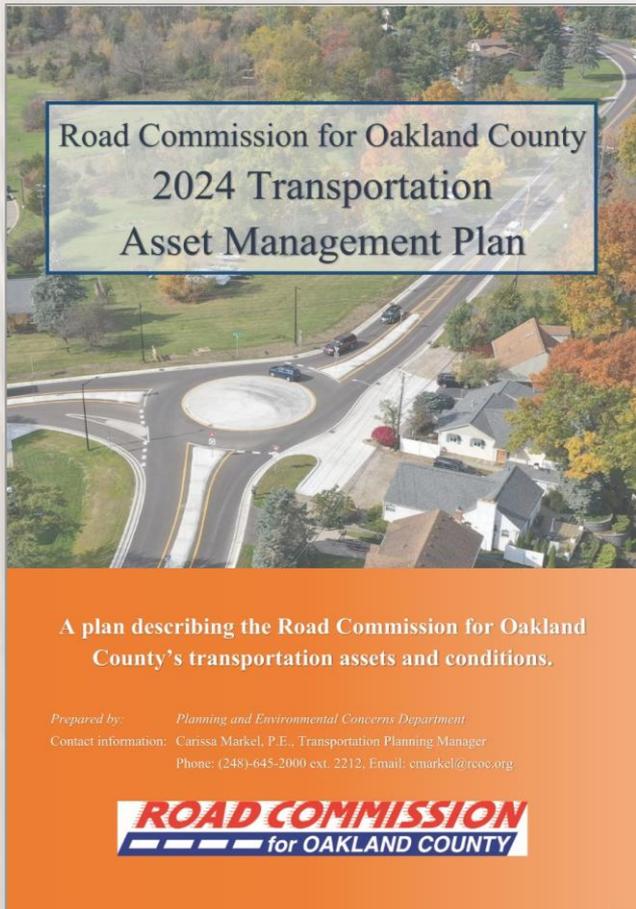


- Stormwater master planning should take into account existing asset management planning
 - Do not want to design something that does not have a viable outlet
 - Do not want to design something if the real fix is assuring that the existing system is working.

PROJECT FUNDING

- Stormwater projects have been historically underfunded.
- Often community storm systems are funded through general fund which means that those resources are fighting with other needs.
- Planning piece should include costs for proposed improvements so that communities can start to look for funding opportunities

TRANSPORTATION PLANNING



- Federal Aid Committees select projects for funding using state and federal money.
- Look for opportunities to complete stormwater projects as part of that work
- Communities should incorporate storm water improvements into the project costs so that appropriate money is allocated to address stormwater needs.

TRANSPORTATION PLANNING



COORDINATION WITH OTHER PROJECTS



- SEMCOG has been leader in project coordination
- Developed an Integrated Infrastructure Framework for Southeast Michigan
- Encourage communities to try to coordinate projects.

COORDINATION



SOUTHEAST MICHIGAN COUNCIL OF GOVERNMENTS

Figure 1
Transportation Planning Cycle and Opportunity to Incorporate Coordination



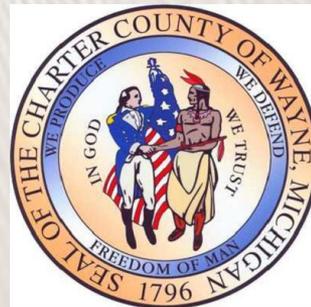
This planning cycle is ongoing for transportation projects. A critical component that has historically been missing is Infrastructure Coordination across sectors.

COMMUNITY PROJECTS

- Coordination internally with departments to assure that all aspects of work are being considered
- Utility projects should coordinate with roads
- Road projects should look at stormwater opportunities



COORDINATION WITH OUTSIDE AGENCIES

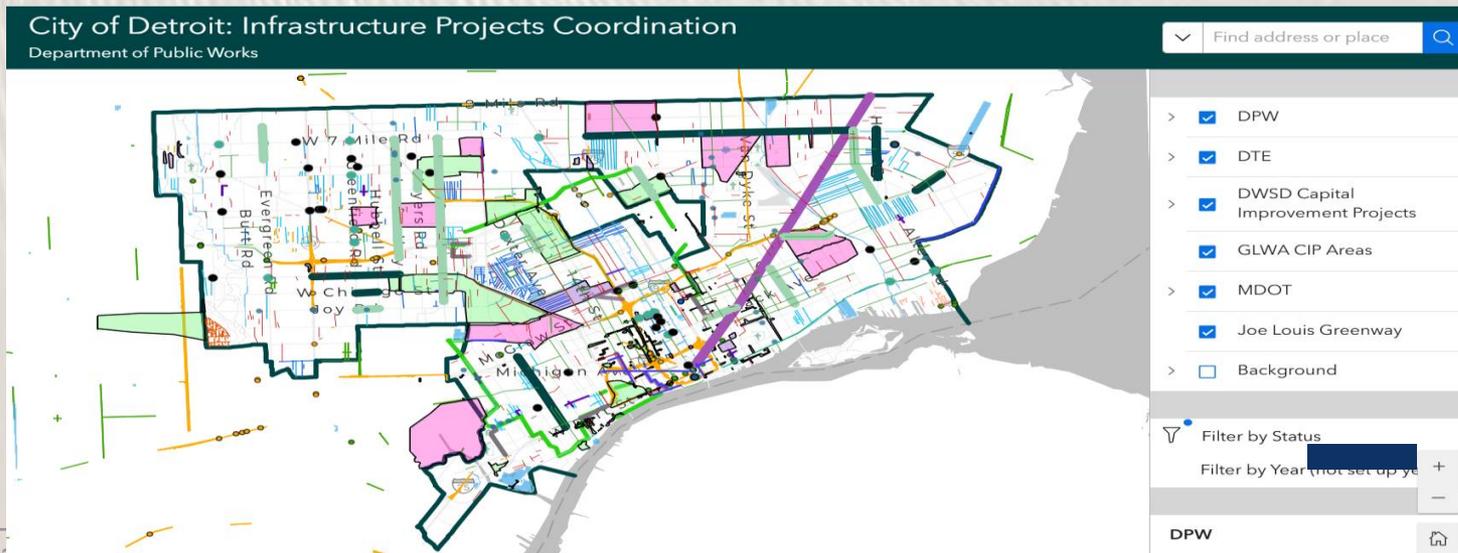


BENEFITS OF COORDINATION

- Coordination with other agencies offer many benefits
 - Saving money
 - Avoiding extended or continuous disruptions to residents/users
 - Avoiding tearing out new infrastructure

MIDIG PORTAL

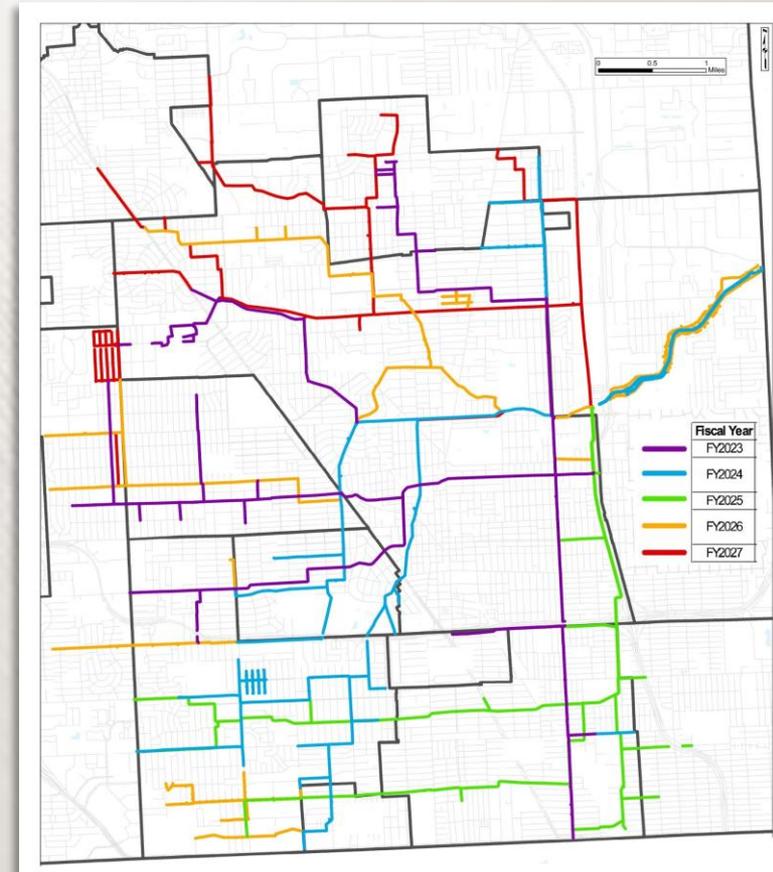
- The Michigan Infrastructure Council is rolling out a new coordination hub call the MiDig Portal
- Agencies will be able to upload CIP information into the portal so interested parties can look at potential coordination opportunities



COMMUNITY DATA INTEGRATION

Anticipate community data will likely be in one of three formats:

- **Mapped CIPs**—GIS map with mapped points, lines, and polygons
- *Consultant will resolve to match MiDIG schema and import into Portal*
- **“Paper” CIPs**—Published reports and plans, often typically PDFs or spreadsheets
- *Consultant will create GIS in MiDIG schema using the report/plan and import into Portal*
- **No formal CIP**
- *Consultant will review available asset data and prioritize potential future work for import into Portal*



SEMCOG ASSISTANCE

- SEMCOG has money available for communities to assist with entering data into the portal and is currently working on a pilot.
- Have contracted with HRC, DLZ, and TetraTech to help communities with this task.
- If you are interested, please see me after presentation.



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THANK YOU

Questions?

COMPREHENSIVE STORMWATER MANAGEMENT PLAN

City of Ann Arbor



Project Intent

PURPOSE



The creation and establishment of a **Comprehensive Stormwater Management Plan** to document the overarching principles, guidelines, and rules to guide decision-making and actions for years to come.

COMPONENTS



- Model Update
- Funding
- Stakeholder Acceptance
- Resiliency Planning
- Succession Planning
- Policy Consolidation



Goals

1 Assessment and Analysis

Document and evaluate the City's current stormwater management practices to best inform future strategies and enhancements.

2 Build on Past Successes

Build on existing strong stormwater management programs such as tree canopy and stormwater utility funding programs.

3 Prepare for the Future

Develop plans to address current and future challenges and ensure resiliency planning aligns with the A2ZERO Plan.

4 Lead by Example

Support the City's position as a regional and national leader in stormwater and water quality.

5 Dedication to Community

Listen to stakeholders by encouraging and incorporating their input into the process of shaping the City's stormwater future.

Topline Messages

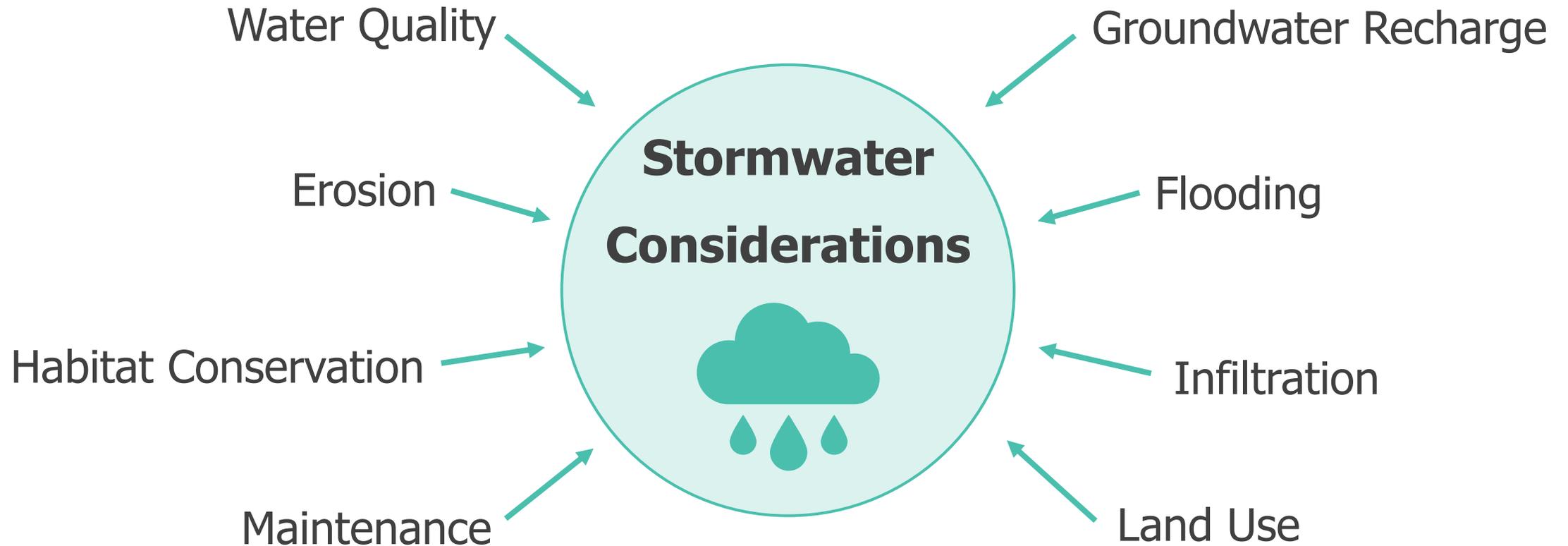
- 1 Stormwater will be considered holistically, considering its ecological benefit as an amenity.
- 2 Flooding is a natural occurrence, and the goal is not to control nature and eliminate all flooding.
- 3 This project is the first of its kind in the Great Lakes region.
- 4 Development/re-development and stormwater management are related; stormwater challenges in the City are not exclusively based on development density.
- 5 While not all the problems identified by stakeholders will be resolved or addressed in the Plan, the City does not dismiss these concerns or experiences.



Ann Arbor stands at the vanguard of Midwestern municipalities, spearheading innovative approaches to stormwater management.

Topline Messages

- 1 Stormwater will be considered holistically, considering its ecological benefit as an amenity.



Topline Messages

2 Flooding is a natural occurrence, and the goal is not to control nature and eliminate all flooding.

Control natural occurrences

Understand and plan for natural occurrences

Eliminate adverse stormwater outcomes

Minimize adverse stormwater outcomes and address them effectively

Prepare for negative outcomes and acknowledge the limitations of what we can control.



Topline Messages

3 This project is the first of its kind in the Great Lakes region.

ADVANTAGES

- Further solidifies the City's position as regional and national leader in stormwater management and water quality
- Acts as a positive example
- With fewer relevant existing examples to reference, Ann Arbor is a trailblazer and project concepts and intentions need to be clear.



Topline Messages

4

Consider the relationship between development/re-development and stormwater management; stormwater challenges in the City are not exclusively based on density.

Low Development and Low Impervious Coverage



High Development and High Impervious Coverage



Decreased Impervious Coverage
and Increased Infiltration

Increased Impervious Coverage
and Decreased Infiltration

While the general relationships above are relevant, **density alone is not responsible for stormwater issues.**

Topline Messages

5

While not all the problems identified by stakeholders will be resolved or addressed in the Plan, the City does not dismiss these concerns or experiences.

- ✓ Encourage and facilitate stakeholder involvement
- ✓ Incorporate stakeholder input wherever possible
- ✓ Acknowledge project scope and associated limitations
- ✓ Affirm the importance of issues that cannot be addressed

Implementing a Comprehensive Stormwater Management Plan provides a framework to address issues but will not mitigate all stormwater related concerns.

What are we learning?

- Asking the HARD questions
- Philosophical Changes are difficult
 - Tiered Stormwater Performance Standards for Public Infrastructure
 - Language shift – use the words that mean what you want to say.
- Conflicting initiatives within the community
 - Can there be opportunity for partnership and improvement?

Next Steps after completing the SWCP

- Evaluate the recommendations
 - Internal review
 - Cross-departmental review
- Identify the “easy” button recommendations
 - Update the zoning (UDC)
- Make a schedule for “difficult” recommendations
 - Need to include ALL stakeholders and decision makers
 - Update the zoning (UDC)
- This isn't about building “things” – it is establishing policy and having a PLAN.



Questions/Discussion



SEMCOG MEMBERS

★ 185 ★
TOTAL

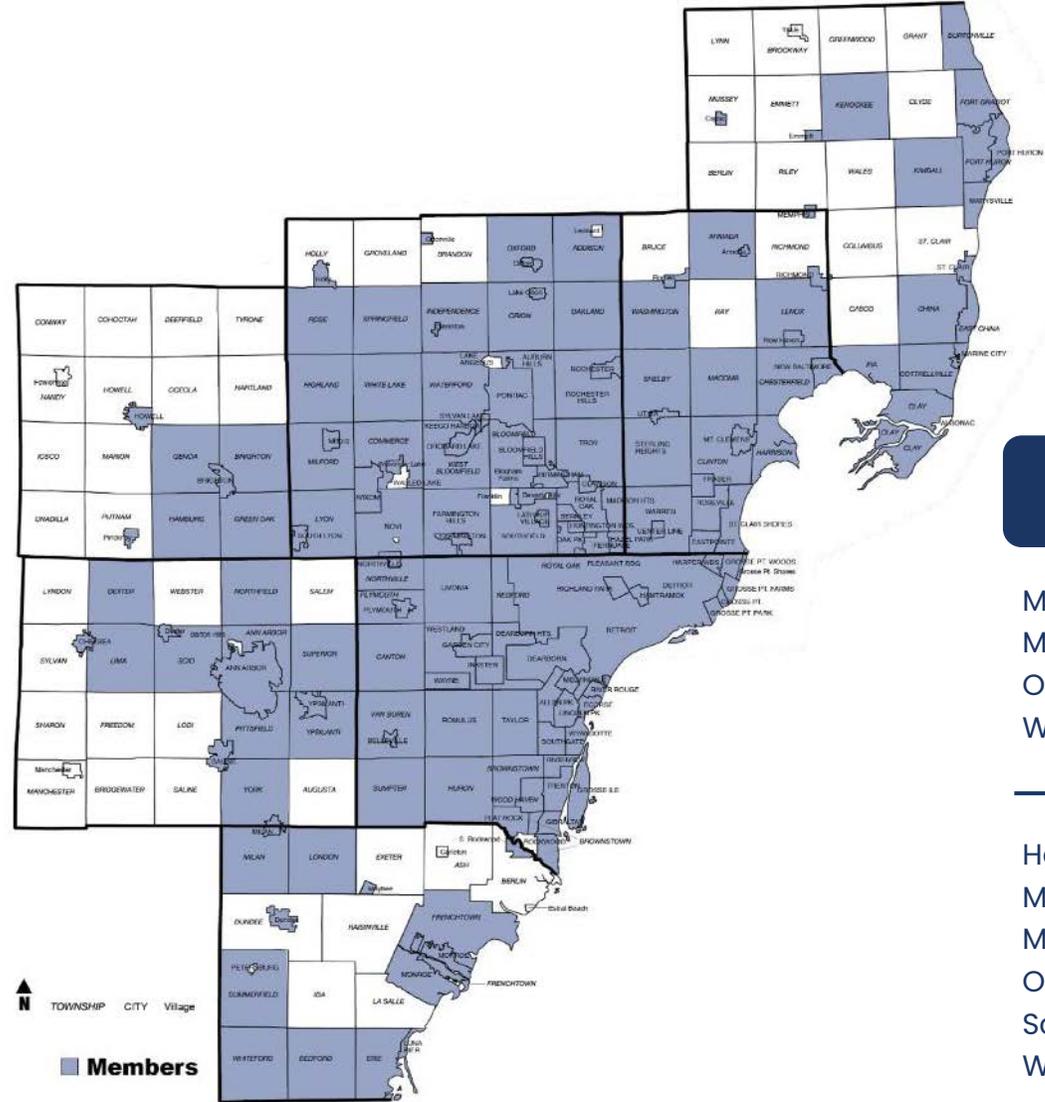
86 CITIES

16 VILLAGES

65 TOWNSHIPS

7 COUNTIES

Livingston, Macomb,
Monroe, Oakland, St. Clair,
Washtenaw, and Wayne

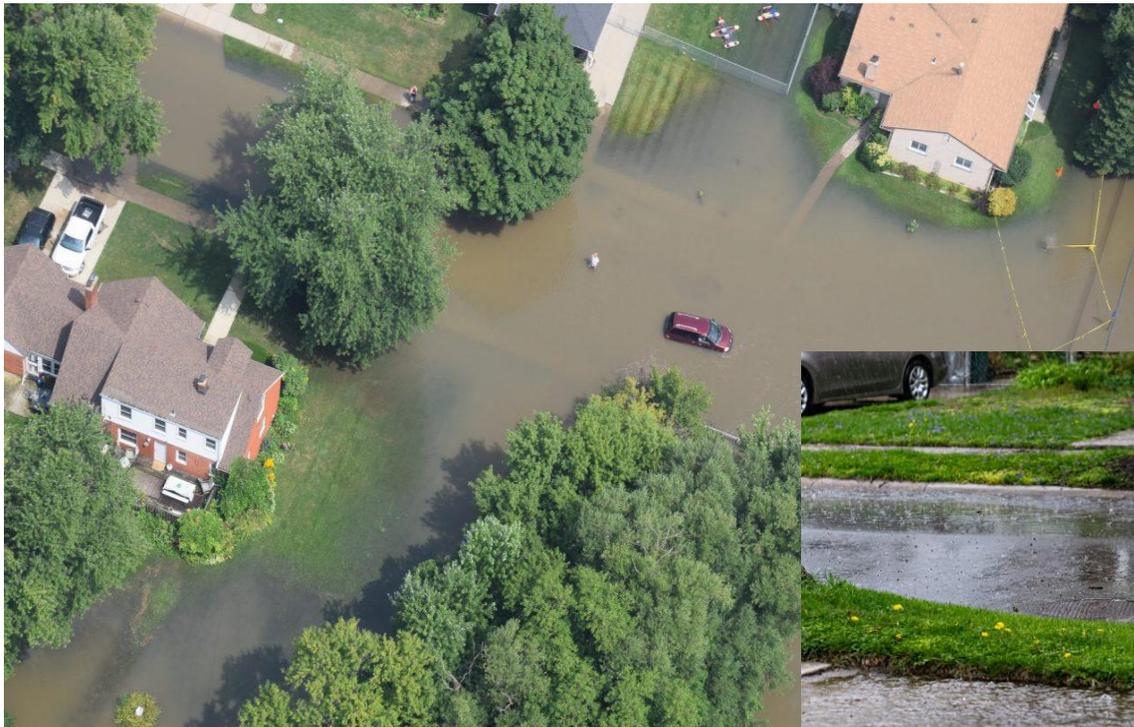


4 ISDs | 7 COMMUNITY

- Macomb Intermediate School District
- Monroe County Intermediate School District
- Oakland Schools
- Wayne County Regional Educational Service Agency

- Henry Ford Community College
- Macomb Community College
- Monroe Community College
- Oakland Community College
- Schoolcraft Community College
- Washtenaw Community College

Flooding in Southeast Michigan



Flooding in Southeast Michigan

4

Michigan has had **four** federal disaster declarations due to flooding in the last **five years**.

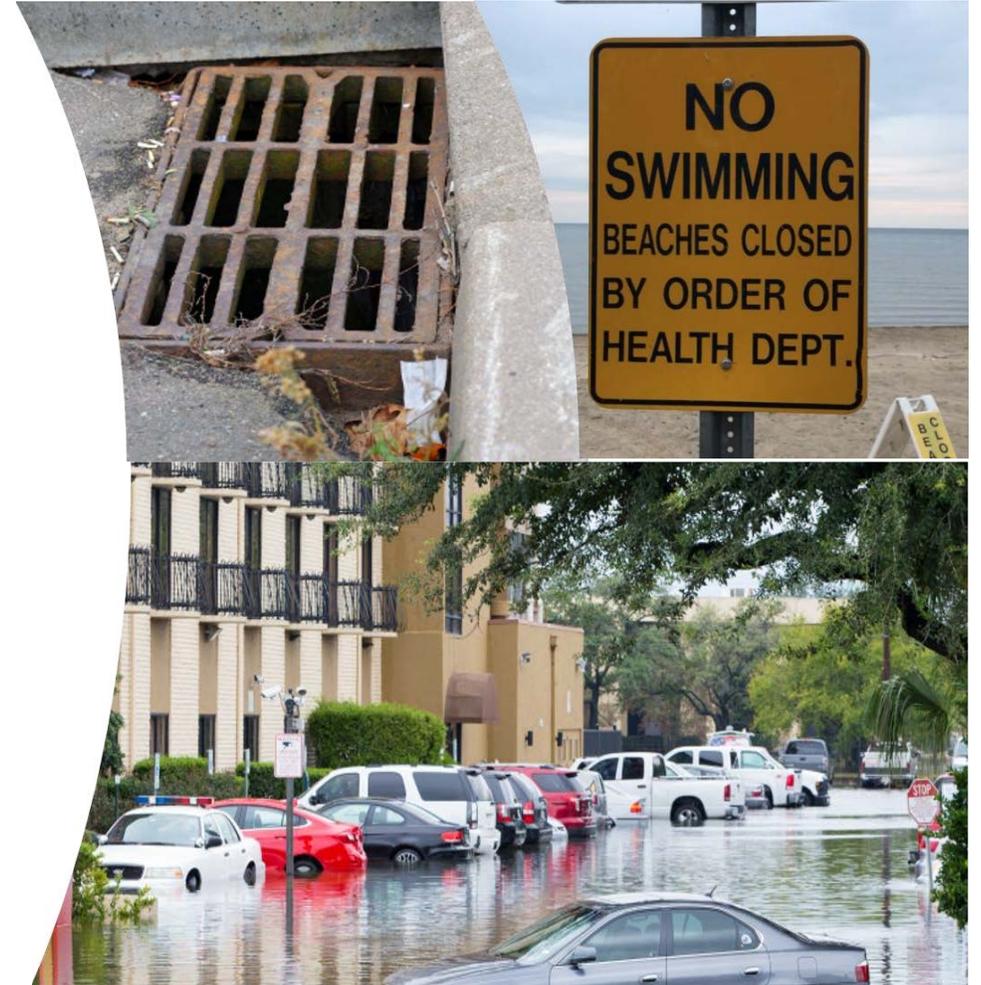


The 100-year rain event is now occurring multiple times in a single year.



Why Stormwater Matters

- Municipalities face:
 - Flooding (property damage, service disruption).
 - Water quality (NPDES permits, public health, recreation).
 - Aging infrastructure (pipes sized for past rainfall, costly to replace).
- More frequent & intense storms



Developing the Plan

- Develop a coordinated plan for the region with a focus on project implementation and how to get there
- Focus groups to collect projects from stakeholders
- **Projects that are identified and included in the RIP are eligible for lower match through PROTECT**



A Closer Look at the Plan

Key Components:

- Consider current and future weather events
- Address existing hazard mitigation plans and evacuation route priorities,
- Identify small – and large-scale nature-based solutions
- Short- and long-range planning and needed investments

Flooding & Resilience Plan Outline

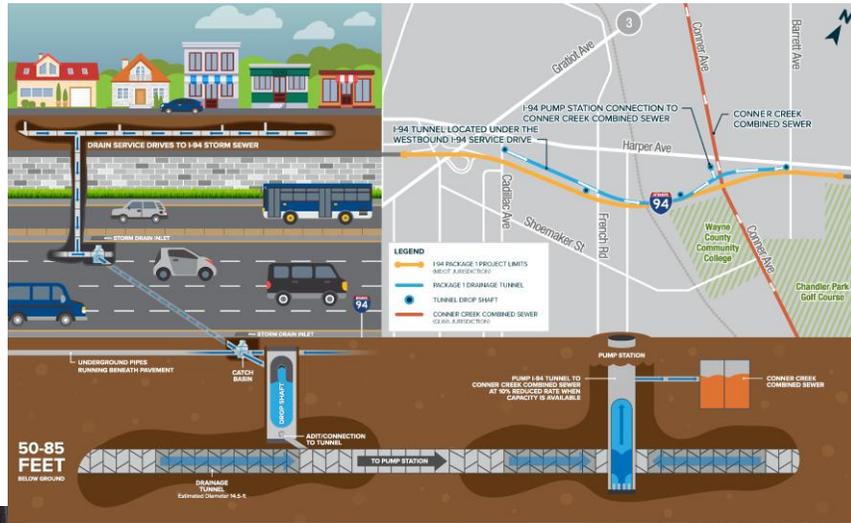
- I. Executive Summary
- II. Introduction
 - I. Introducing the Southeast Michigan Region and SEMCOG.
 - II. Highlighting the approach to resilience and key messages for the plan.
- III. Existing Conditions and Vulnerability Assessment
- IV. Stakeholder & Public Engagement
 - I. How we conducted engagement & how that fed back into the plan.
- V. Regional Policies
- VI. **Priority Project List** 
- VII. Funding & Implementation
- VIII. Future Efforts

Call for Projects



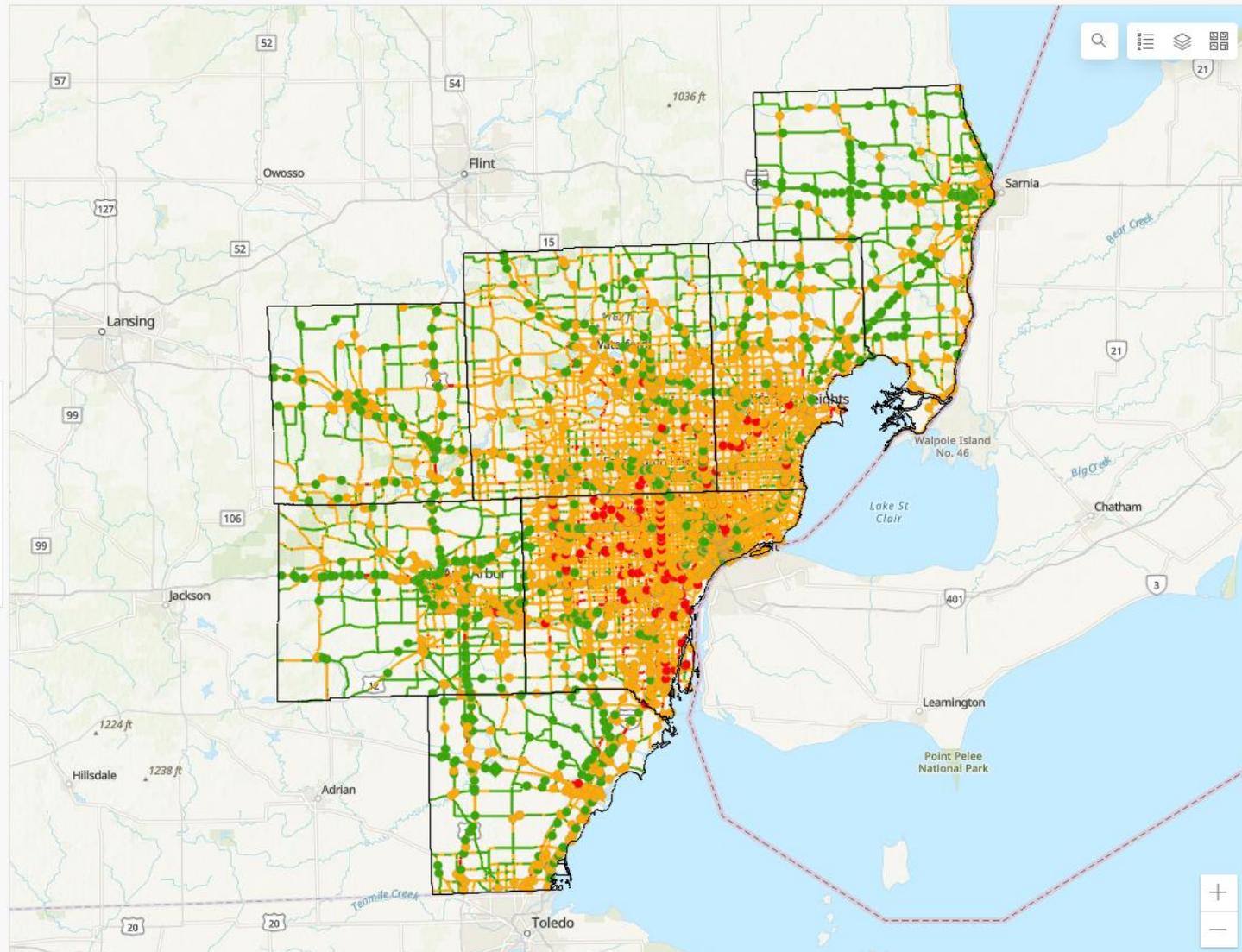
- **Types of Infrastructure Projects**
- **Where they're located**
- **How they support communities**
- **How SEMCOG can support your community with tools & resources**

Projects & Plans to Consider

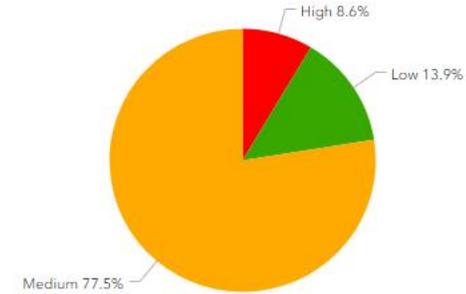


Flood Risk Tool Update

SEMCOG Flooding Risk Tool Dashboard



Roads Risk Rating Breakdown



Last update: 8 seconds ago

Roads Bridges Culverts Pump Stations

Top 5 Road Segments at Risk

Within Filtered Assets

Road Name: From: Outer - To: Outer/S I 75	Criticality Score: 4.0	Vulnerability Score: 3.9
Road Name: Inkster Rd From: Edward N Hines Dr - To: Inkster/Edward Hines Cutoff	Criticality Score: 3.7	Vulnerability Score: 4.0
Road Name: Inkster Rd From: Clairview Dr - To: Edward N Hines Dr	Criticality Score: 3.7	Vulnerability Score: 4.0
Road Name: Telegraph Rd From: Shiawassee Dr - To: N US 24/E M 102 RAMP	Criticality Score: 3.7	Vulnerability Score: 3.9
Road Name: Telegraph Rd From: Shiawassee Dr - To: N US 24/E M 102 RAMP	Criticality Score: 3.7	Vulnerability Score: 3.9

Last update: 8 seconds ago

Roads Bridges Culverts Pump Stations

Road Asset Count

71,599

Last update: 8 seconds ago

Bridge Asset Count

2,634

Last update: 8 seconds ago

Culverts Asset Count

2,634

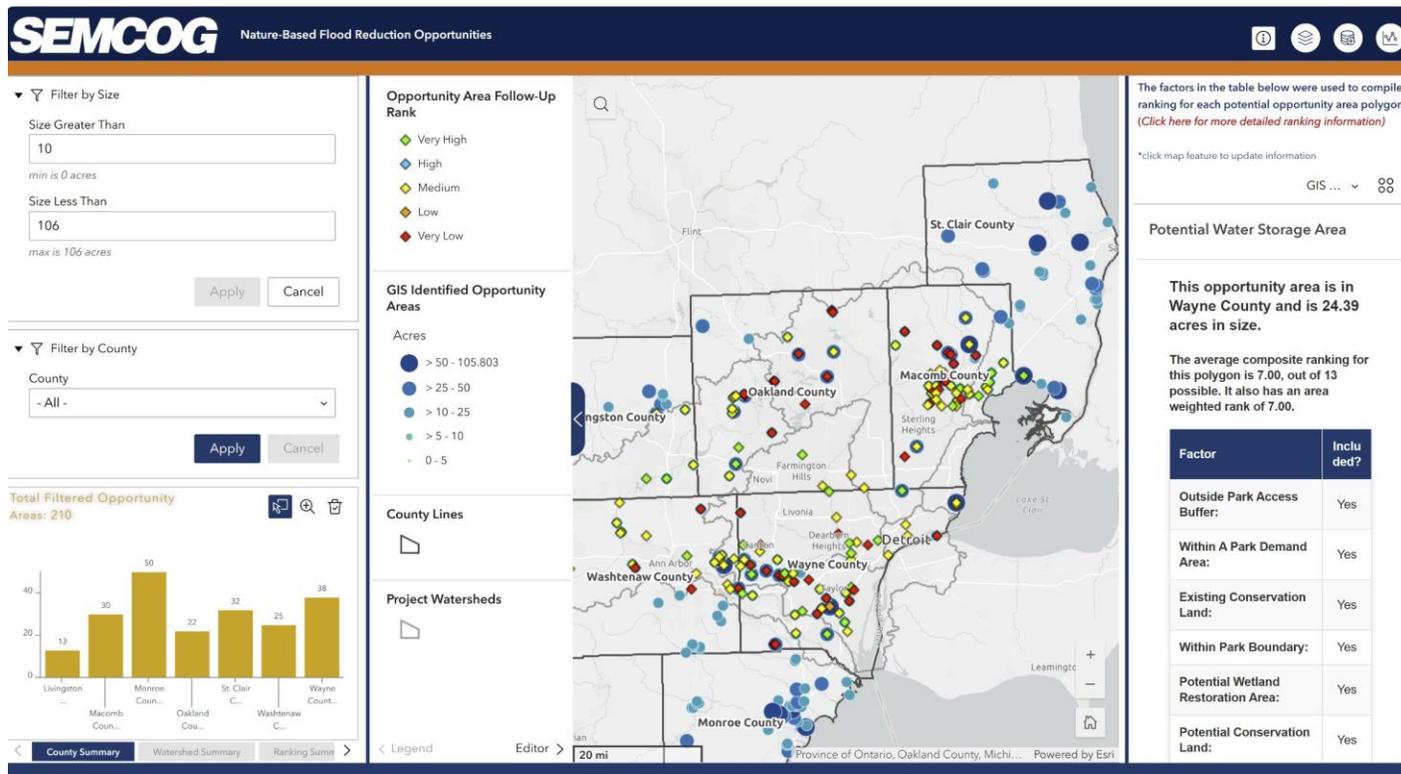
Last update: 8 seconds ago

Pump Stations Asset Count

143

Last update: 8 seconds ago

Identifying Large Scale Nature Based Solutions



- Desktop Planning Assessment & Project Identification
- Concept Plan Development

Site: Millward Park
Location: City of Allen Park
Watershed: Detroit River (Ecorse Creek)



Site: Metro Parkway Park
Location: City of Sterling Heights
Watershed: Clinton River



Site: Farmington Pond
Location: City of Farmington Hills
Watershed: Rouge River



Site: Ann Arbor DPW
Location: City of Ann Arbor
Watershed: Huron River



Flooding Task Force



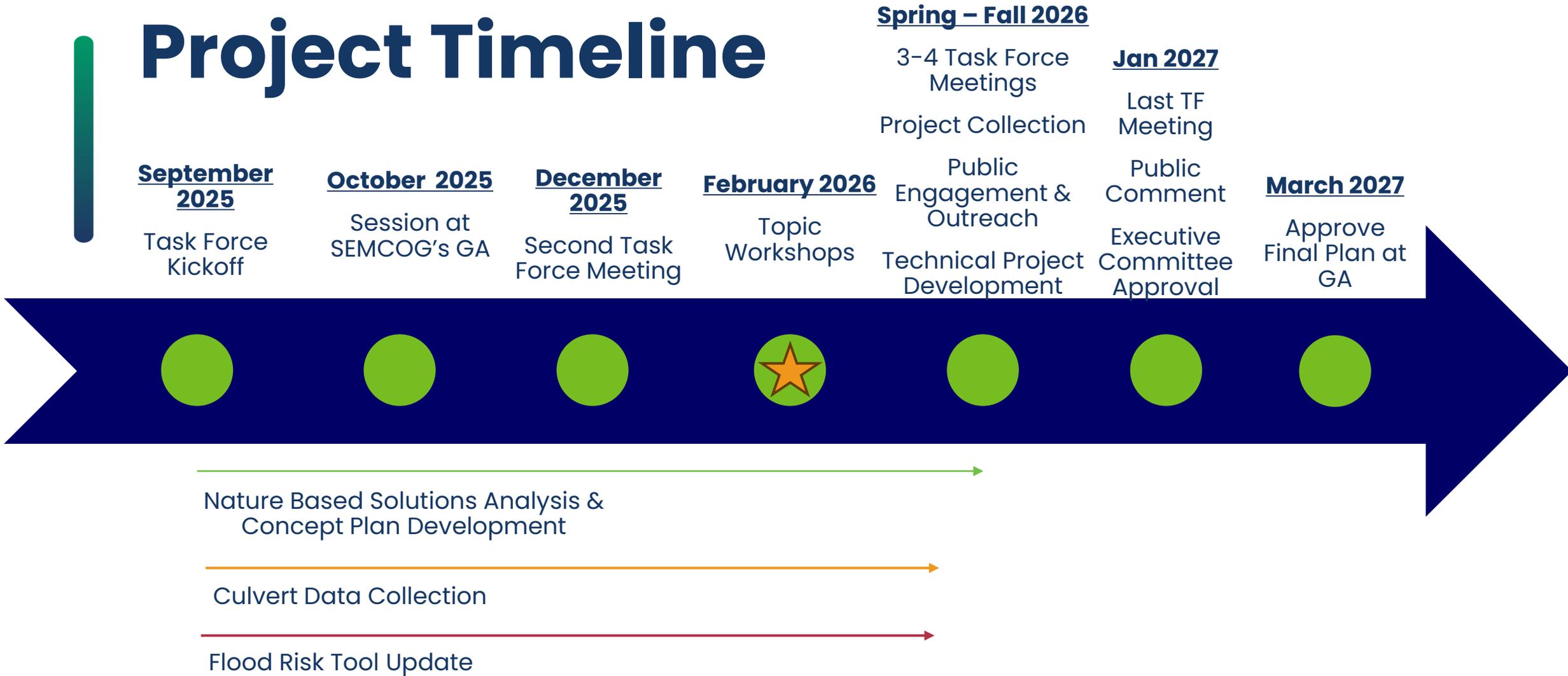
- Guide the development of the Flooding & Resilience Plan
- Establish a flooding collaboration framework with key messages for outreach and education
- Compile stormwater projects across sectors
- Identify and prioritize regional policies and actions

Public Outreach & Engagement

- Communicating with the public on regional resilience projects
- Understanding what's important to local communities for better planning
- Consistent messaging
- Outreach & educational materials



Project Timeline





Upcoming SEMCOG University Workshops

Emergency Planning, Coordination and Response

- **Date:** February 11th, 2025
- **Time:** 9:00 a.m. – 3 p.m.
- **Where:** SEMCOG Office

Engineering Flood Mitigation into the Future

- **Date:** March 10th, 2025
- **Time:** 9:00 a.m. – 3 p.m.
- **Where:** SEMCOG Office

Next Task Force Meeting

- Share the results of the Flood Risk Tool Analysis
- Public Engagement for the Flooding & Resilience Plan
- Discuss the Call for Projects

Join us for the Next Meeting!

April 29

Lunch: 12:30

**Meeting Time: 1:00 –
3:00 PM**

SEMCOG Offices



PLANNING AND ZONING FOR FLOOD RESILIENCE

MICHIGAN ASSOCIATION OF PLANNING
SOUTHEAST MICHIGAN COUNCIL OF GOVERNMENTS
FEBRUARY 3, 2026





LEAH DuMOUCHEL, AICP

DIRECTOR OF PROGRAMS
AND COMMUNICATIONS

MICHIGAN ASSOCIATION OF PLANNING

INFORMATION | **EDUCATION** | **ADVOCACY**

- Nonprofit, membership-based organization serving land use decision makers for more than 75 years
- Over 4,000 members across Michigan, including professional planners, local elected and appointed officials, and friends of planning in related fields
- Books, publications, workshops, training, conferences, networking, and more





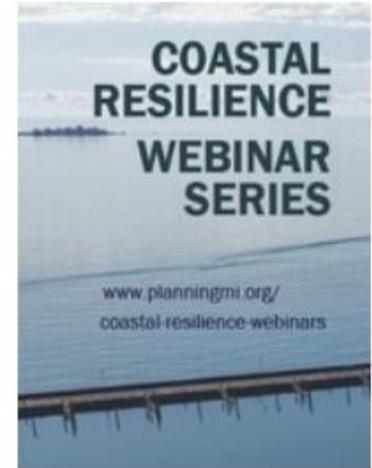
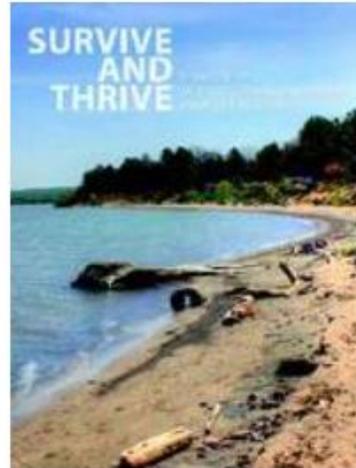
MAP and Water Resilience



Coastal Solutions Compendium

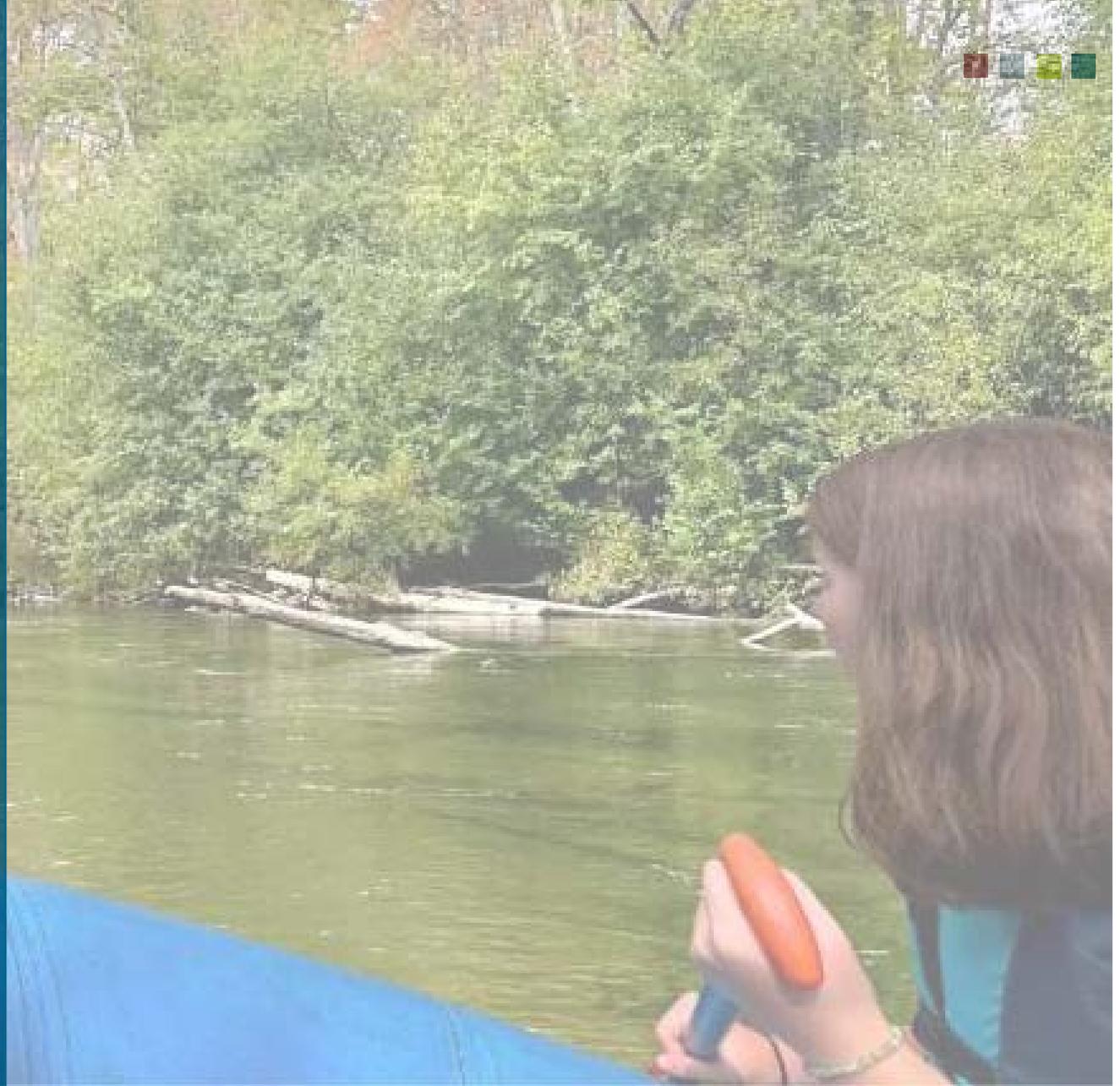
August 2025

Federal assistance for this project was provided by the Michigan Coastal Management Program, Water Resources Division, ECLC, with funding through the National Coastal Zone Management Program.



AGENDA

- Level Setting
- Planning for Flood Resilience
- Capital Improvements
- Zoning for Flood Resilience
- Development Review





LEVEL SETTING



WHAT IS FLOODING?

In the land use context, **flooding** happens when water expands into an area where development exists.

The development is a critical part of the “flood”





SO: What is a resilient approach to flooding?

Resilience is about protection, preservation, and wise use





Local government controls where and how development happens

- We are the only ones who can regulate setbacks from natural features like waterbodies
- We issue the permits that allow residents and businesses to build.
- We invest public dollars in infrastructure
- We bear the costs of cleanup when disaster strikes.

WHY LOCAL GOVERNMENT MUST LEAD

Local leaders are charged with the hard job of balancing immediate apparent gain with long-term considered risk.

- Experience shows that the location of development does not respond to past, or even current, flood risk.
- Homes, structures, and infrastructure that are damaged by flooding become public hazards as well as public liabilities
- The traditional tools of choice for dealing with water management—built or “gray” infrastructure—incur a permanent and escalating cost. The cost is often public...and may still be inadequate.





If it's so important, why is this so hard?



MICHIGAN ENVIRONMENT WATCH

September 22, 2025

Report: 19% of Lake Michigan shore now armored, limiting public access

- New research shows a fivefold expansion of seawalls, riprap, groins and other hard armoring of Lake Michigan beaches in recent years
- Miles of armoring skyrocketed from 4% to 19% — or 69 miles — of the shoreline between 2014 and 2021
- Coastal armoring temporarily protects properties from erosion, but makes the problem worse in the long run

- **Political Will:** Intense pressure from property owners and fears of "takings" lawsuits.
- **Economic Pressure:** Flood risk is intertwined with existing investment.
- **Changing Approaches:** Best practices shift over time—but slowly
- **Technical Capacity:** Many communities lack the staff or expertise to draft new, complex ordinances—and then enforce them





PLANNING



What planning is good at

- Establishing priorities
 - Risk based approaches
- Cross communications
 - Alignment between planning (the department) and engineering
- Directing resources
 - Tied by law to capital improvements





PLANNING AND INVESTMENT

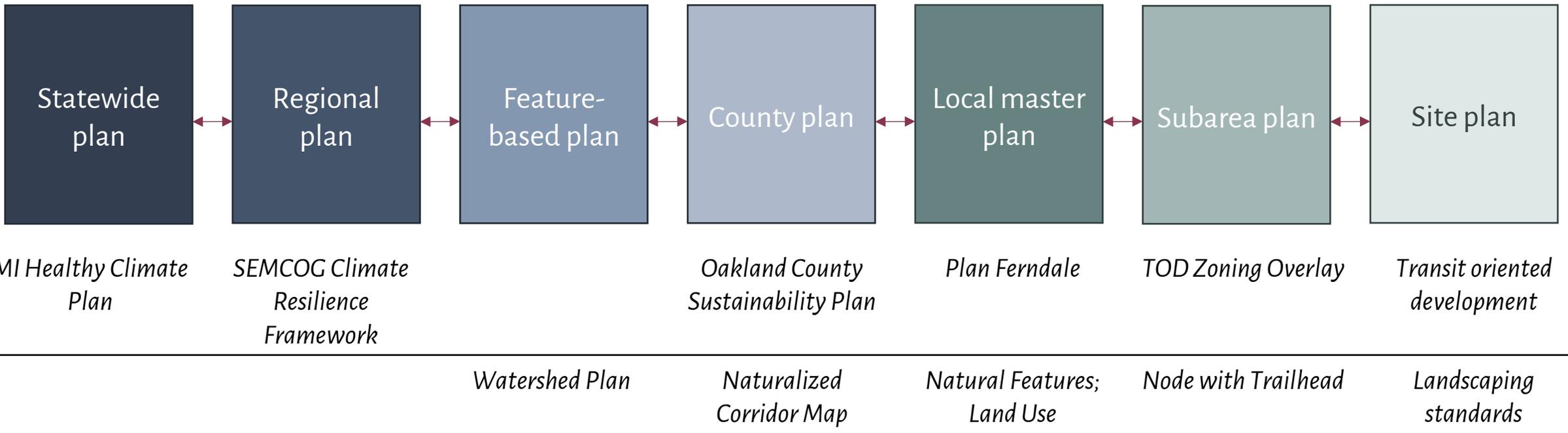




PLAN ALIGNMENT: ACROSS SCALES

Planning **can**, **should**, and **does** happen at various scales

Plan alignment is how broad-scale plans inform small-scale plans and vice versa. This “informing” goes in both directions.



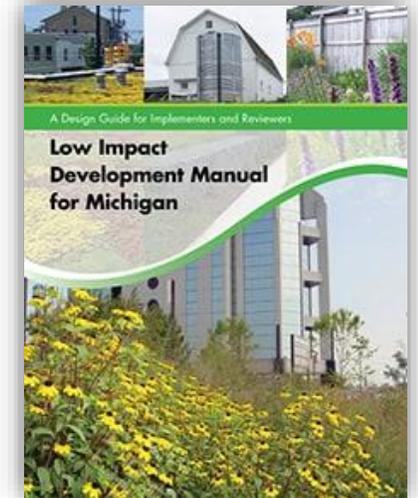
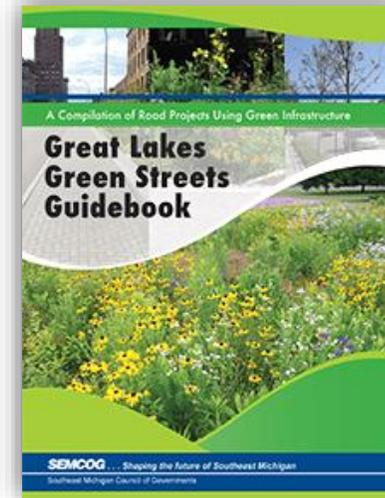
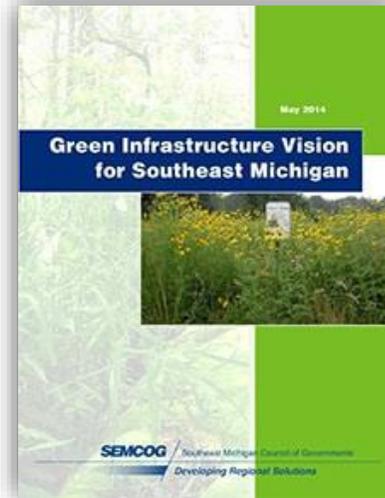
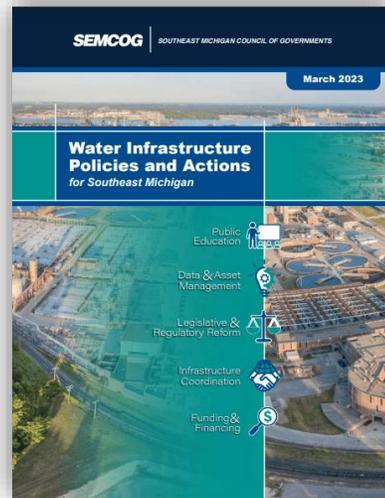
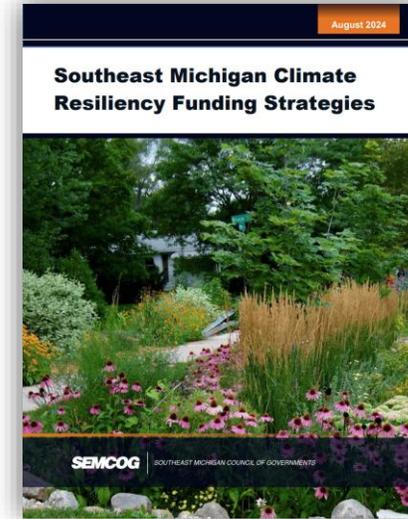


REGIONAL PLANNING

Supports systems that are larger than municipal boundaries (like water systems)

Especially good at providing

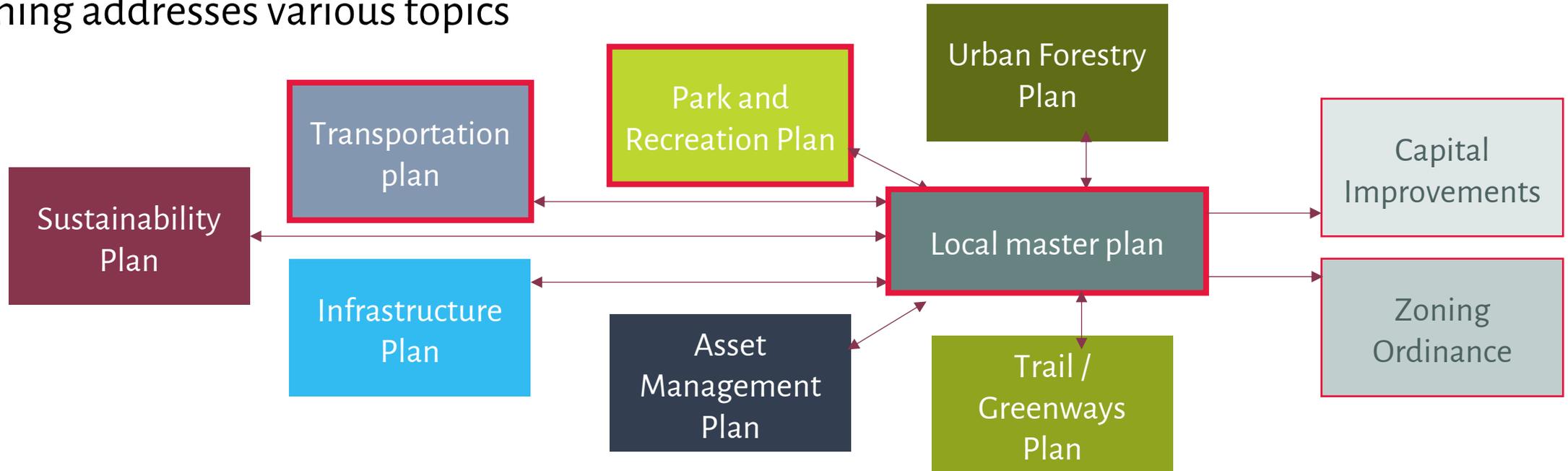
- data
- coordination
- best practices that have local context





PLAN INTEGRATION: WITHIN THE JURISDICTION

Planning addresses various topics



Plan integration is how detailed, topic-based plans are coordinated with the community’s master (or comprehensive) plan. This “informing” goes in both directions, but only the master plan forms the policy basis for capital improvements and regulation.





RESILIENCY IN THE TEXT OF THE MASTER PLAN

Traditional chapters

- Natural Features: Connect open space, vegetation, wetlands, landscaping requirements directly to flood risk and impact
- Infrastructure: Identify green infrastructure like tree canopy, connected watercourses, and riparian borders alongside gray; plan for its land use needs as well as maintenance
- Transportation: Prioritize infiltration in right-of-way design; identify where road improvements can serve flood mitigation goals

Dedicated “Resilience” chapter

- Connects resiliency efforts across the organization
- Defines resilience for the community’s purpose, and then develops and underscores a philosophical commitment to resilience as defined
- Generally refers in some way to resilience to flooding, and acknowledges a trajectory of increase with regard to flooding
- Offers room to address resiliency elements in detail, including flooding





FUTURE LAND USE MAP

- “Policy equivalent” of the zoning map. Particularly influences rezonings.
- Generally the only map consulted by the Planning Commission
- Based around “Future Land Use categories”
- But it can – and perhaps should! – show anything that impacts development decisions

RESILIENCE ELEMENTS

- Natural assets
- Flood risk
- Wetlands, including functional value for flood prevention





SUSTAINABILITY / RESILIENCE PLAN

WHAT IS IT?

- Looks at resource use over time
- Mitigation of factors contributing to climate change and adaptation to consequences of it
- Often includes relationships among elements

WHEN WOULD A COMMUNITY HAVE ONE?

- The community is committed to environmental management and / or leadership
- The community is experiencing or believes it will experience impacts related to a changing climate

RESILIENCE ELEMENTS

- Natural features inventory
- Green infrastructure evaluation, coordinated plan, and corresponding site recommendations
- May include greenhouse gas inventory and / or mitigation





PARK AND RECREATION PLAN

WHAT IS IT?

- MDNR-directed format, must be adopted every five years
- Includes community description, recreation specifics, community engagement, and projects / priorities

WHEN WOULD A COMMUNITY HAVE ONE?

Many (most?) communities have updated, compliant Five-Year Park and Recreation plans in order to be eligible for Michigan Natural Resource Trust Fund (MNRTF) grants.

RESILIENCE ELEMENTS

- Include stormwater management and green infrastructure as allowable uses
- Convert passive recreation areas to grow zones or natural areas rather than mowed turf grass
- Identify areas that can store excess stormwater for flood mitigation, like new wetlands along waterbodies or expanded floodplains to slow water flows.





TRANSPORTATION PLAN

WHAT IS IT?

- Manages the network that facilitates the movement of people and goods throughout an area and provides access to sites
- Represents an enormous land use in most communities, generally organized around impervious, drained surface

WHEN WOULD A COMMUNITY HAVE ONE?

Transportation planning for vehicles is most often done by the authority with jurisdiction by road type: MDOT, County Road Commissions, and cities and villages

RESILIENCE ELEMENTS

- Identify projects that can address and mitigate flooding using SEMCOG's Flood Risk Tool for roads, bridges, culverts, and pump stations:
<https://maps.semco.org/floodrisktool/>





TRAILS / GREENWAYS PLAN

WHAT IS IT?

- Manages the community's nonmotorized routes, including both development and connectivity
- May be considered part of the recreation network, the transportation network, or both

WHEN WOULD A COMMUNITY HAVE ONE?

- All communities can and should plan for nonmotorized mobility.
- Trail and greenway planning may support a community's economic development, natural area preservation, and transportation goals

RESILIENCE ELEMENTS

- Prioritize corridor acquisition. Preserve riparian corridors and connect stormwater assets
- Require resilient trail design and standardize maintenance in flood zones
- Integrate with transportation planning and sustainability goals





INFRASTRUCTURE, ASSET MANAGEMENT PLANS

WHAT IS IT?

- Infrastructure plans may focus on the need for new investments to meet projected demands
- Asset management plans comprehensively address all infrastructure needs including expansion, maintenance, and decommissioning

WHEN WOULD A COMMUNITY HAVE ONE?

Infrastructure is a core municipal concern, and all communities benefit from close, detailed, ongoing management of it.

RESILIENCE ELEMENTS

- Review and align projects for strategic cost savings across departments
- Implement collaborative processes that can draw disparate funding sources to tackle the same problems, especially around stormwater and transportation





URBAN FORESTRY PLAN

WHAT IS IT?

Frames a community's tree canopy as an infrastructure investment rather than solely as a natural feature

WHEN WOULD A COMMUNITY HAVE ONE?

- The community recognizes the multifaceted value that tree canopy provides
- The community is managing a tree deficiency or even disaster (such as emerald ash borer)

RESILIENCE ELEMENTS

- Target tree planting in flood prone areas
- Identify species and planting configurations that maximize water management
- Align tree recommendations with needs identified in transportation & stormwater management plans





Planning for Community Resilience in Michigan

<https://www.resilientmichigan.org/handbook.asp>

- Resource aimed directly at PLANNERS and their jobs
- Triple-bottom-line structure: people, natural / built environment, economy
- Makes connections between planning efforts
- Introduces tools like vulnerability assessments and scenario planning



The statements, findings, conclusions, and recommendations in this handbook are those of the authors and do not necessarily reflect the views of the Department of Environmental Quality and the National Oceanic and Atmospheric Administration.

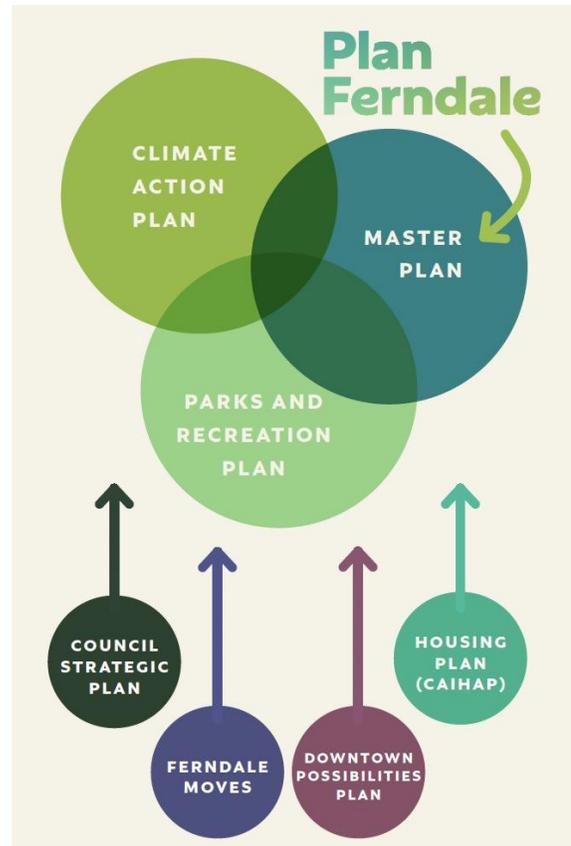




INTEGRATED PLANNING HONORABLE MENTION

Plan Ferndale

includes the Master Land Use Plan [informs ZO],
Climate Action Plan [directs change], and Parks and
Recreation Master Plan [funding mechanism]



Also clearly related:

- Public participation plan
- Community Accessible and Inclusive Housing Plan
- Greenhouse Gas Inventory Report
- Capital Improvement Plan
- Waste Recycling and Reduction Plan
- Stormwater Vulnerability Assessment
- Ferndale Moves (Transportation)





CAPITAL IMPROVEMENTS



CAPITAL IMPROVEMENTS PLAN (CIP)

The Michigan Planning Enabling Act directs the planning commission follow a master plan with a **program of public structures and improvements** that are “needed and desirable.”

(Or, the legislative body can decide to do it, or can delegate it to the chief elected or administrative official.)

The CIP

- Shows public structures and improvements in the general order of their priority (so, requires prioritization)
- Looks 6 years into the future, updated annually





[COORDINATED] CAPITAL IMPROVEMENTS PLAN

SEMCOG has an ongoing pilot project with the Michigan Infrastructure Council to collect local CIPs so that communities can make project selection decisions in a regional context

Opportunity for cross-communication WITH A BUDGET

- MPEA suggests that each department with authority for public structures or improvements furnish the planning commission with lists, plans, and estimates of time and cost
 - Coordinated capital planning is a key factor across planning and engineering
- Look at interdepartment CIP alignment across stormwater, transportation, asset management, recreation planning, etc.





ZONING



WHAT ZONING IS GOOD AT

- Consistent outcomes
 - “Due process” requires laws to be applied uniformly (plans have no such requirement)
- Preventing immediate harm
 - Zoning mostly tells us what we can't do





But: Zoning does not have a regional counterpart

Challenges

- Difficult to achieve consistent outcomes *across jurisdictions*
- Varying capacity for implementation
- Does not address existing conditions

Opportunity for regional support

- Models
- Best practices
- Information about what neighbors are doing





Zoning for flood resilience

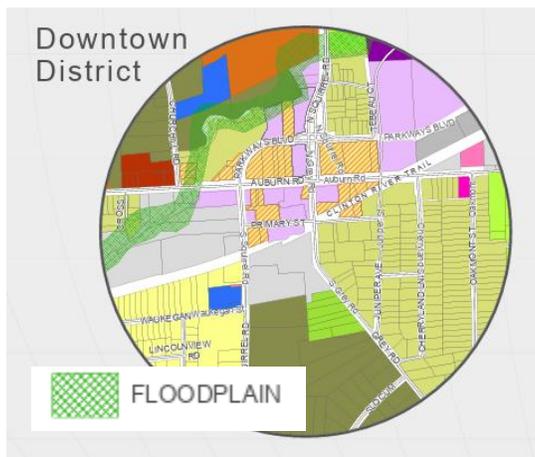
Other zoning tools implement these three ideas in specialized ways or circumstances





ZONING TOOL: OVERLAYS

A **zoning overlay** is a "layer" of regulation placed on top of existing zoning. It can cross multiple base zones to protect a feature.



HOW IT WORKS

What will the overlay apply to?	What will the overlay require?
<p><i>Examples</i></p> <ul style="list-style-type: none">• Shoreline• Wetlands• Floodplain	<p><i>Examples</i></p> <ul style="list-style-type: none">• Setback distance• Plantings: number, species• Construction protections

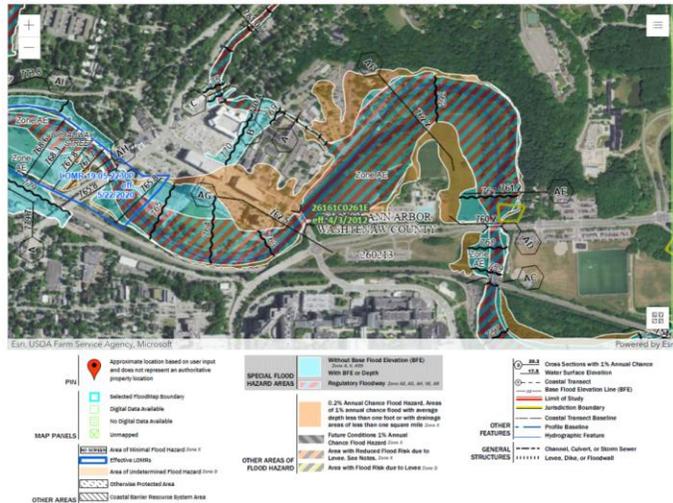




Floodplain Overlay Zone

What does the overlay apply to?

FEMA identifies and maps: areas of special flood, mudslide, and flood-related erosion hazards



What does the overlay require?

FEMA develops the regulation standards that the community adopts and enforces

FEMA Minimum Standards

- require permits for development in the flood zone
- require the lowest floor of all new residential buildings to be at or above the Base Flood Elevation
- restrict development in the floodway
- require construction materials and methods that minimize flood damage
- can require the building to be rebuilt to current floodplain management requirements

Why would a community adopt it?

Communities volunteer to adopt and enforce the minimum standards in exchange for access to federal flood insurance





Natural Features Protection Ordinance



**Often structured as an overlay.
Could apply to:**

- Waterbodies
 - Coasts
 - Shorelines
 - Riparian zones
- Wetlands
- Dunes
- Bluffs
- Woodlands
- Slopes
- Habitats
- Sensitive Environmental Areas

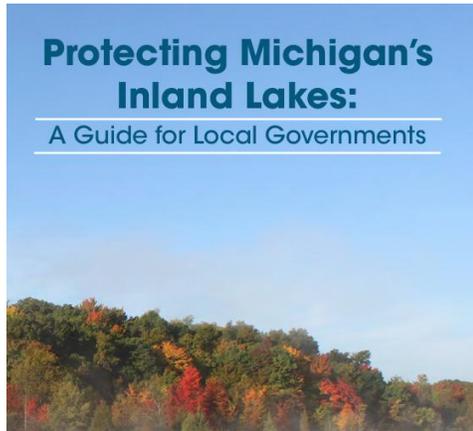
EXAMPLE City of Kalamazoo

- Master Plan
- Public Process
- Ordinance
- Interactive Map
- Review Board





Shoreline / Riparian Zone Standards



- Connecting goals with options
- Sample ordinances
- Agency and organization contacts

Require

- vegetation preservation
- native plants
- mitigation
- public trust access
- nature-based erosion control
- wetland delineation
- onsite stormwater management
- minimum pervious surface

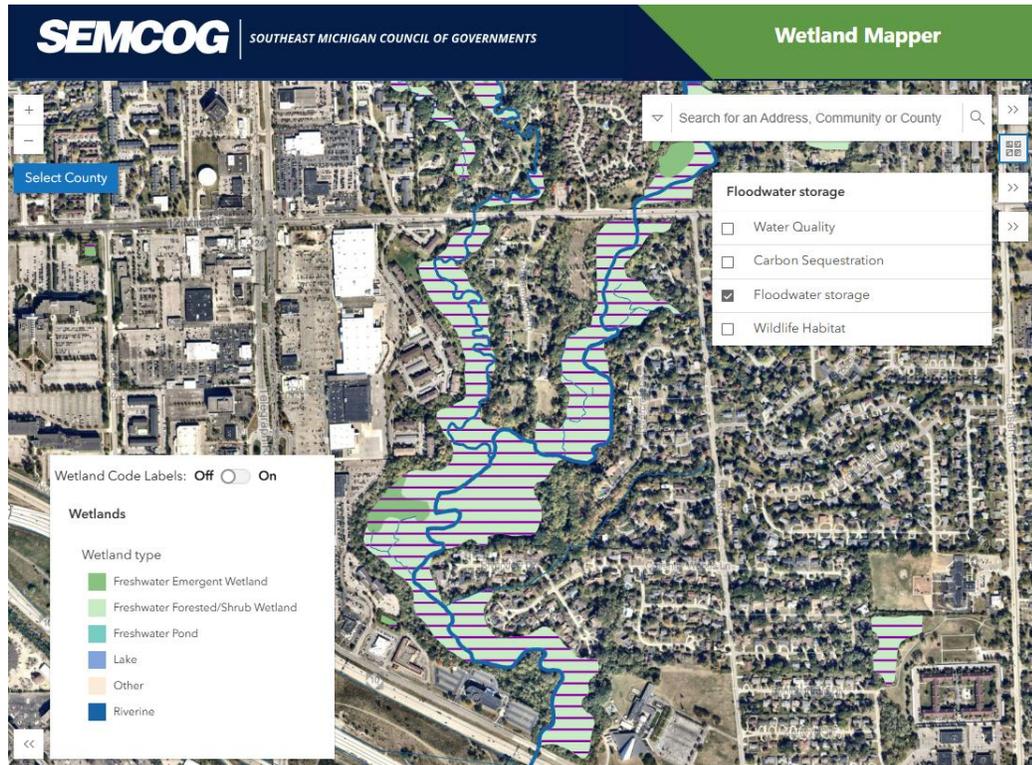
Prohibit

- paved surfaces
- primary structures
- grading
- fertilizer and pesticide
- mowing
- use of motorized vehicles
- septic tanks and drain fields
- any other soil disturbance or pollution.





Local Wetland Ordinances: Where



<https://maps.semco.org/wetlandsmapper/>

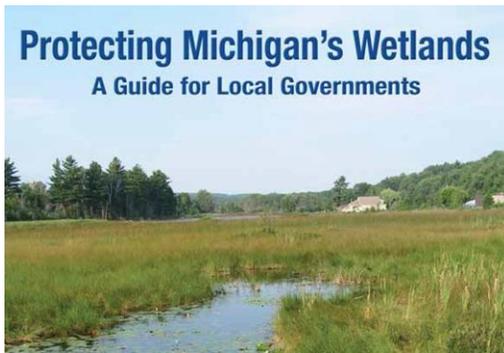
Data Support Tool: SEMCOG Southeast Michigan Wetland Mapper

- Identifies wetlands that function for flood control so that communities can prioritize them
- Illuminates where wetland restoration and expansion can increase stormwater management capacity





Local Wetland Ordinances: How



- Legal framework
- Sample ordinances
- Frequently asked questions

Wetlands less than 5 acres can be regulated by a local ordinance if:

- The ordinance uses the state definition of a wetland
- It doesn't require a permit for activities exempted by the legislation
- A wetland inventory is published before the ordinance is adopted
- The local local unit of government notifies EGLE

For wetlands less than 2 acres in size, the permit must be granted unless the wetland is “essential to the preservation of the community's natural resources.”





TREE ORDINANCES

Tree ordinances define certain specific trees as important for preservation, even in areas of active construction. They generally prohibit the removal of these “important” trees, or provide for an acceptable replacement if they “must” be removed (and define “must” in this context)

Criteria for tree preservation may include:

- **Size:** Mature, large trees provide a greater quantity of ecosystem services like flood mitigation, as well as shade and water filtration and cooling.
- **Species:** Species are often valued for being well-suited to a particular function, including water uptake, or for having specific characteristics such as leaf size that is compatible with gray drainage systems
- **Location:** Communities may prioritize locations for trees based on site characteristics, such as flood prone areas or areas that experienced historic public disinvestment

Woodland ordinances define a group of trees as a natural feature, usually by size of the area covered. The ordinance offers land use protections in that area. Woodlands may be protected as part of a natural features ordinance.





DEVELOPMENT STANDARDS

Since most land is privately owned and developed, the cumulative impact of development standards is what substantially shapes the community's physical outcomes



- Reduce impervious surfaces
 - Use lot coverage maximums, but also lot size, frontage, height, required yards, parking standards, and drainage facilities
- Maximize vegetated/landscaped areas that promote infiltration, evaporation, and evapotranspiration
 - Use open space requirements but also required landscaping, buffers, tree canopy, and drainage facilities
- Restore and protect natural functions of soils and vegetation
 - Use landscaping specifications but also buffering, required open space, tree canopy



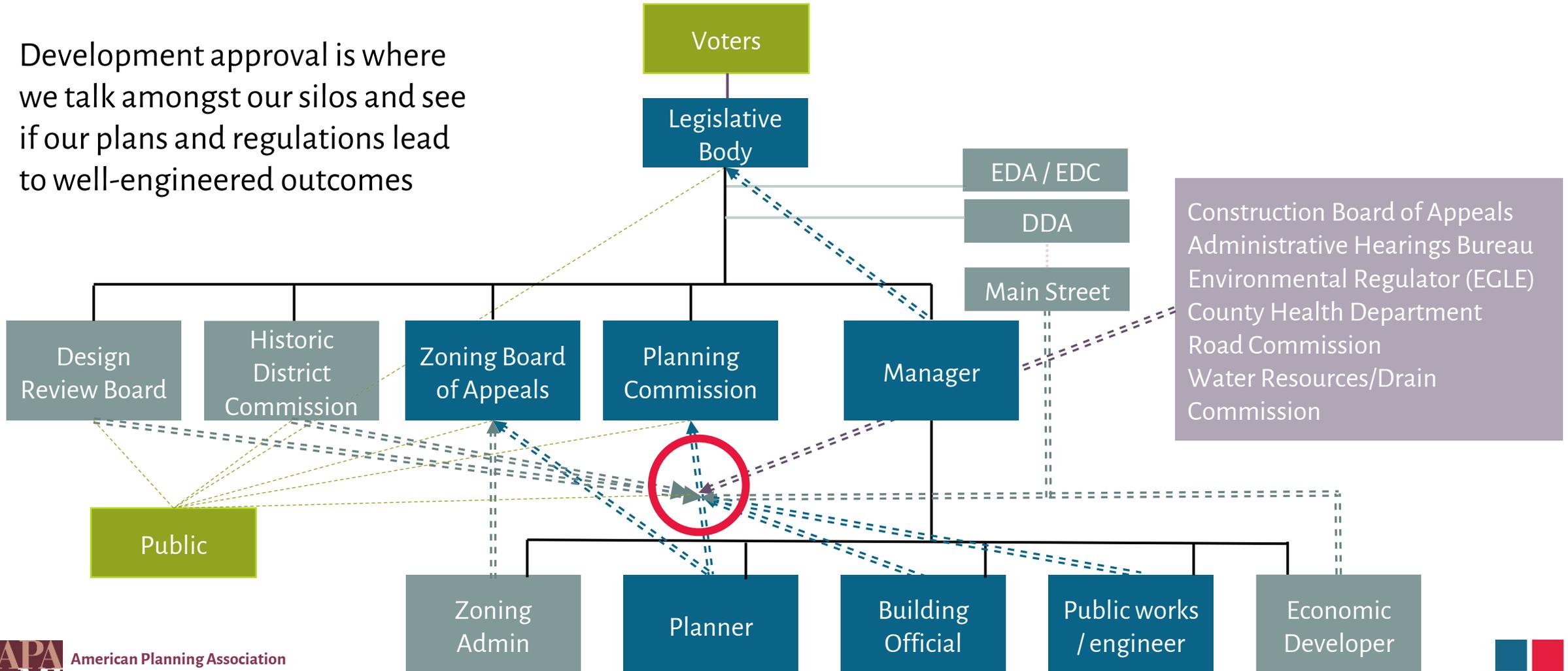


DEVELOPMENT REVIEW



The process is an outcome

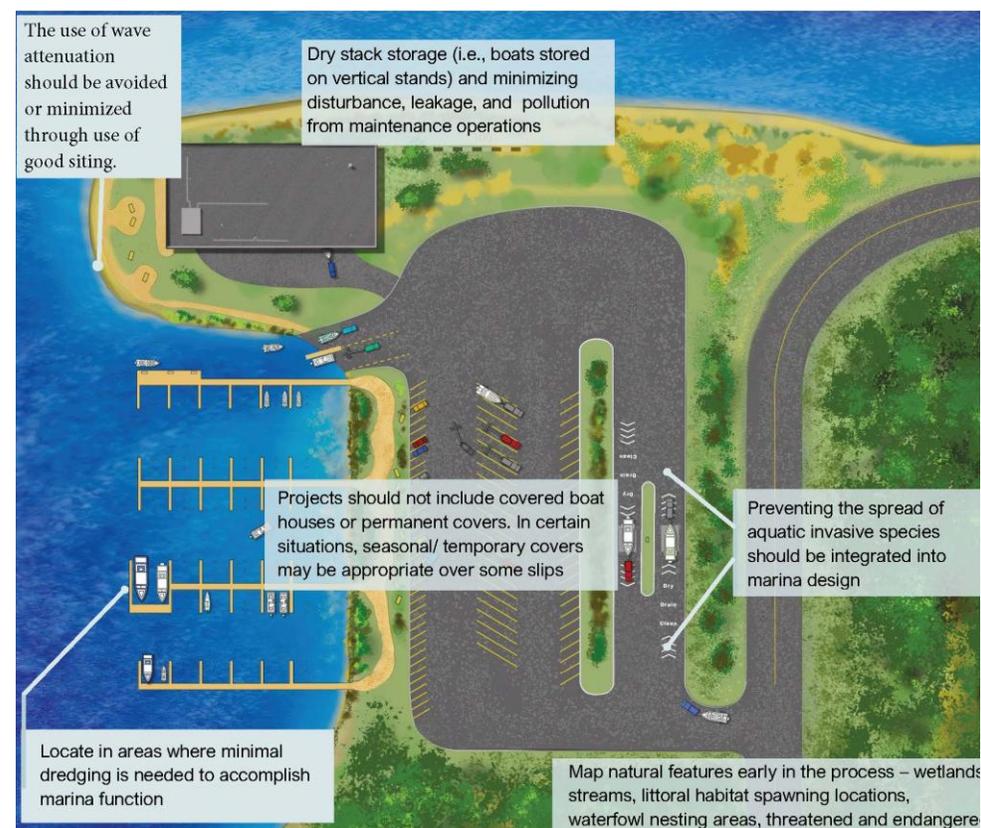
Development approval is where we talk amongst our silos and see if our plans and regulations lead to well-engineered outcomes





Site design discretion

- “Objectives” in a plan often contain the level of detail that points toward specific outcomes but does not direct how to accomplish them.
 - Example: “Implement green infrastructure wherever possible in order to reduce and mitigate flood risk.”
- Incorporate language into zoning ordinance purpose and intent statements to direct discretionary considerations
- Develop a decision-making guide to match site considerations with flood resilience features
- Define “low impact development” and “green infrastructure”





Standards and regulations

“Do I haaaaaaaaave to?”

“It’s just one little rule and it’s probably stupid anyway.”

“What difference does this actually make?”

“Surely you can’t REALLY care about this detail.”

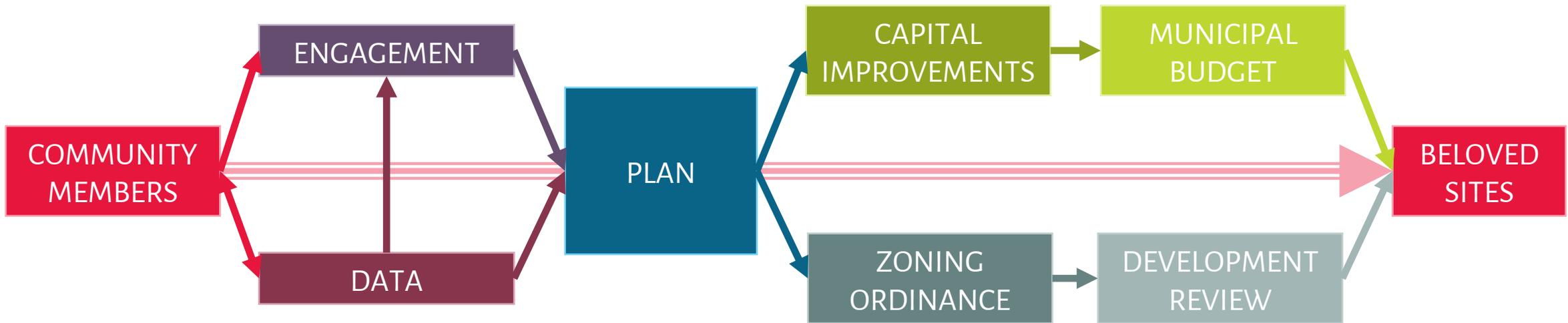
Why are you so nitpicky??

Remember: Since most land is privately owned and developed, the cumulative impact of standards is what substantially shapes the community’s physical outcomes

If the standard or regulation is serving the broader goal, uphold it.

If it’s not, preserve our credibility and get rid of it.





THE LINE OF SITE



If it's working the way we hope it is, the development process is what translates the community members' vision of how they want to live into a place they love.





**THANK
YOU**

**Michigan
Association
of Planning**
planningmi.org



HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915

INFRASTRUCTURE PLANNING AND COORDINATION

Presented by: Hubbell, Roth & Clark

INTRODUCTION



- Karyn M. Stickel, P.E., Vice President
 - Asset Management
 - GIS
 - Utility Planning
 - Stormwater

OVERVIEW



- Flooding and stormwater management remains a major issue in Southeast Michigan
- Community planning and zoning tools can help
- Infrastructure planning is the next step in addressing flooding and resiliency.

STORMWATER MASTER PLANS



- Analyze stormwater system
- Alleviate flooding
- Address stormwater quality
- Review Regional Solutions



ASSET MANAGEMENT PLANS



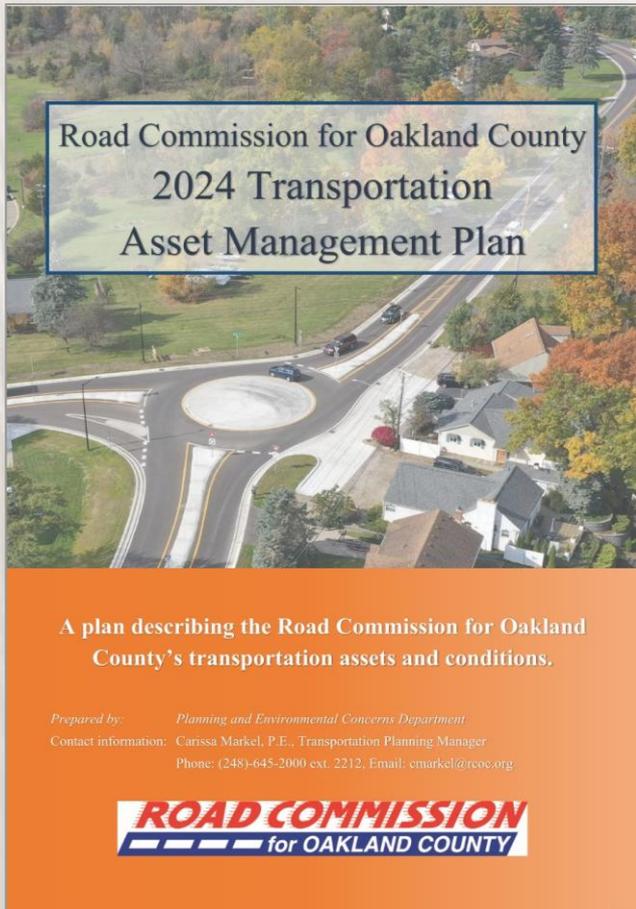
- Level of Service
 - Storm sewer systems are of varying ages and have been sized based on the standards at the time they were constructed (if any standards were in place).
 - Part of asset management planning is determining the level of service desired
 - Many residents would say that they want to eliminate all surface flooding, but costs to do that could be very high

PLANNING COORDINATION



- Stormwater master planning should take into account existing asset management planning
 - Do not want to design something that does not have a viable outlet
 - Do not want to design something if the real fix is assuring that the existing system is working.

TRANSPORTATION PLANNING



- Federal Aid Committees select projects for funding using state and federal money.
- Look for opportunities to complete stormwater projects as part of that work
- Communities should incorporate storm water improvements into the project costs so that appropriate money is allocated to address stormwater needs.

COORDINATION WITH OTHER PROJECTS



- SEMCOG has been leader in project coordination
- Developed an Integrated Infrastructure Framework for Southeast Michigan
- Encourage communities to try to coordinate projects.

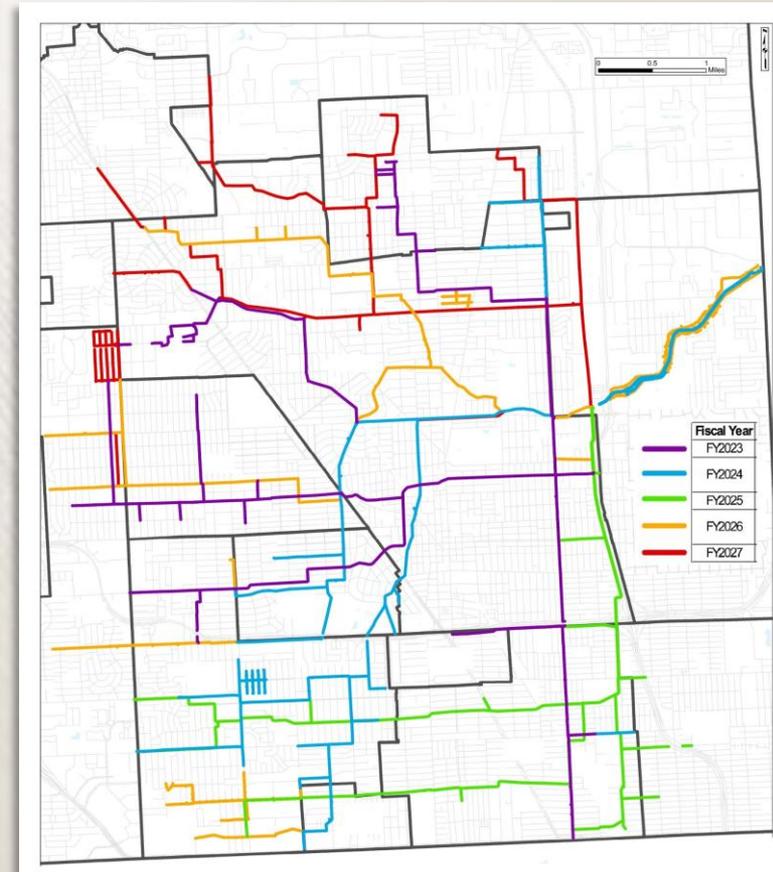
COORDINATION WITH OUTSIDE AGENCIES



COMMUNITY DATA INTEGRATION

Anticipate community data will likely be in one of three formats:

- **Mapped CIPs**—GIS map with mapped points, lines, and polygons
- *Consultant will resolve to match MiDIG schema and import into Portal*
- **“Paper” CIPs**—Published reports and plans, often typically PDFs or spreadsheets
- *Consultant will create GIS in MiDIG schema using the report/plan and import into Portal*
- **No formal CIP**
- *Consultant will review available asset data and prioritize potential future work for import into Portal*





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THANK YOU

Questions?

COMPREHENSIVE STORMWATER MANAGEMENT PLAN

City of Ann Arbor



Project Intent

PURPOSE



The creation and establishment of a **Comprehensive Stormwater Management Plan** to document the overarching principles, guidelines, and rules to guide decision-making and actions for years to come.

COMPONENTS

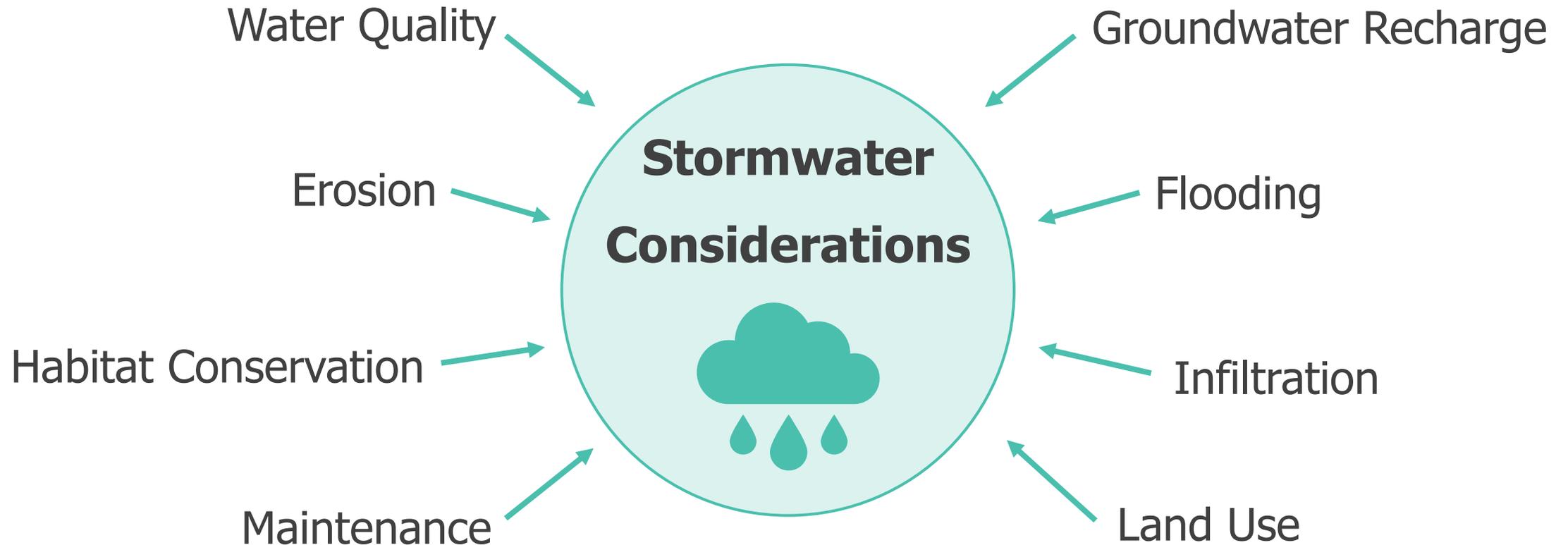


- Model Update
- Funding
- Stakeholder Acceptance
- Resiliency Planning
- Succession Planning
- Policy Consolidation



Topline Messages

- 1 Stormwater will be considered holistically, considering its ecological benefit as an amenity.



Topline Messages

2 Flooding is a natural occurrence, and the goal is not to control nature and eliminate all flooding.

Control natural occurrences

Understand and plan for natural occurrences

Eliminate adverse stormwater outcomes

Minimize adverse stormwater outcomes and address them effectively

Prepare for negative outcomes and acknowledge the limitations of what we can control.



Topline Messages

3 This project is the first of its kind in the Great Lakes region.

ADVANTAGES

- Further solidifies the City's position as regional and national leader in stormwater management and water quality
- Acts as a positive example
- With fewer relevant existing examples to reference, Ann Arbor is a trailblazer and project concepts and intentions need to be clear.





Questions/Discussion

