Metropolitan Water Reclamation District of Greater Chicago

Update on MWRD Stormwater Master Planning Process

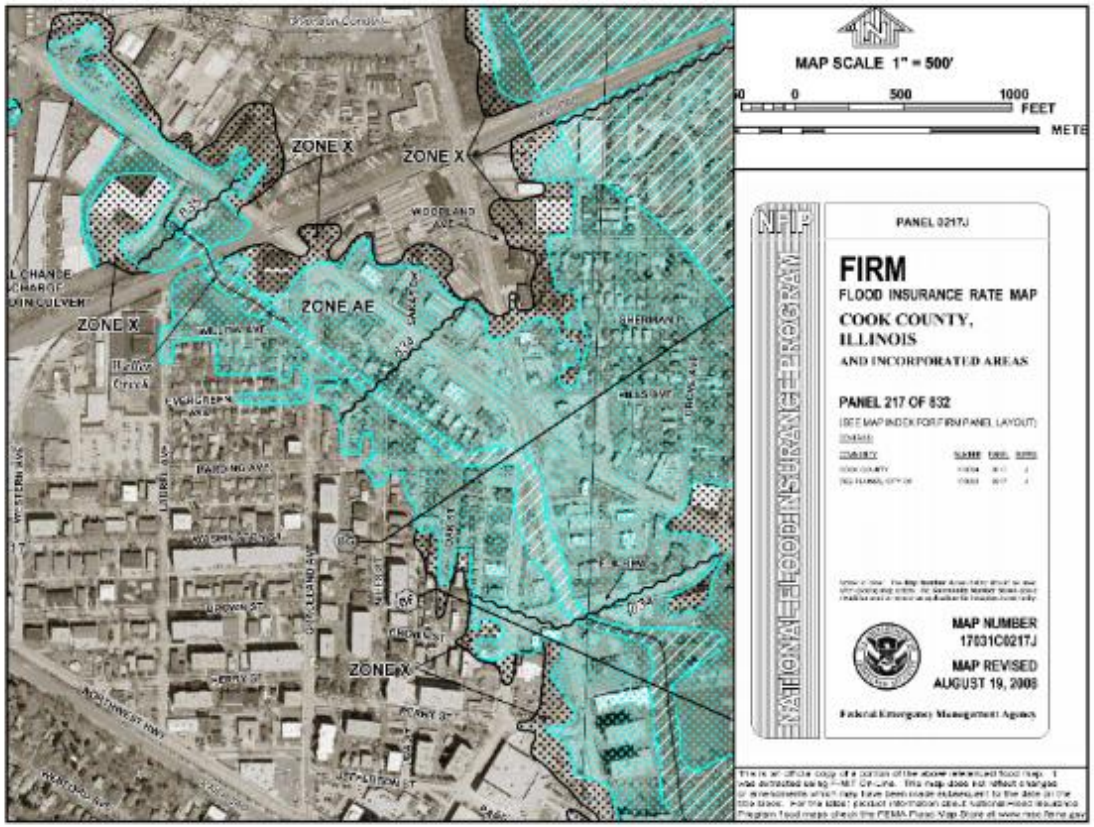
January 4, 2019

Meeting Agenda

1. Introducing Stormwater Master Planning (SMP) Program
2. Core Concepts for Stormwater Master Planning
3. Data Analysis & Study Area Selection Process
4. Questionnaire for Municipal Staff
5. Next Steps and Timeline

Introduction: Riverine vs. Urban Flooding

"Riverine flooding" occurs when excess run-off causes a natural drainage-way (river, creek, etc.) to exceed its capacity. These areas are identified as flood hazards by FEMA.



Introduction: Riverine vs. Urban Flooding

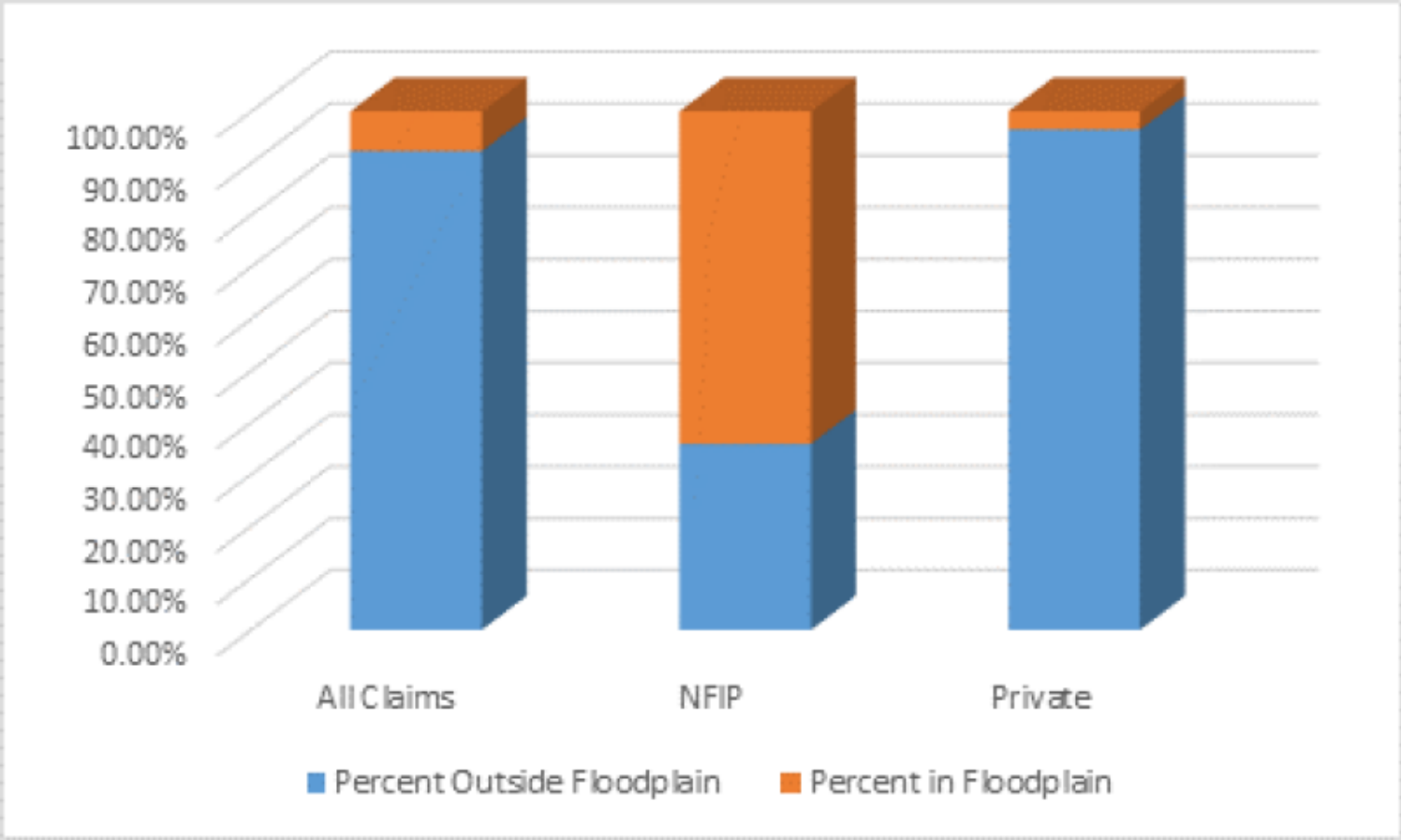


Figure 1.3: Between 2007 and 2014, most (96.5%) of private insurance claims are for structures outside the mapped floodplain; however, a significant number of NFIP claims (35.9%) are outside the mapped floodplain.

Stormwater Management Program

Phase I Projects
Identified from the DWPs to address overbank flooding “riverine flooding”

Phase II Projects
Working with local communities and agencies to address local drainage problems.

Stormwater Masterplans
Investigate “urban flooding” issues and evaluate potential green and gray infrastructure solutions.

2004 2011 2012 2013 2014 2015 2016 2017 2018

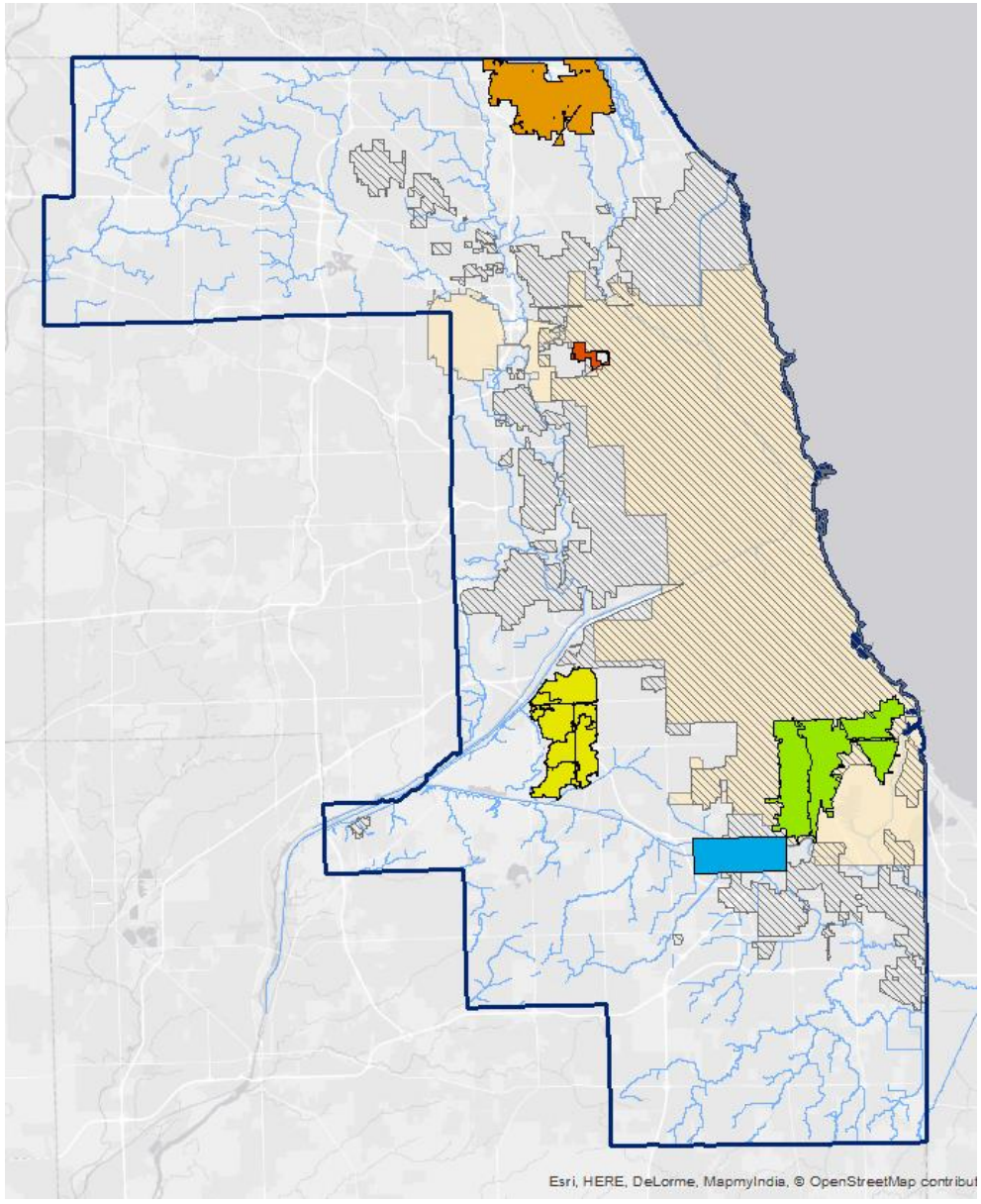
The authority for general supervision of stormwater management in Cook County was conveyed to the District by the Illinois State legislature.

Detail Watershed Plans (DWPs) completed for the 6 major watersheds of Cook County: Cal-Sag Channel, Little Calumet River, Lower Des Plaines, North Branch of the Chicago River, Poplar Creek, and Upper Salt Creek.

District’s authority was amended to allow for flood-prone property acquisition and to plan, implement, finance, and operate local stormwater management projects.

Introduction: Stormwater Masterplan Pilots

- Pilot study areas identified by four Councils of Government and the City of Chicago
- Study areas comprised of both separate or combined sewer areas
- Goal: identify flooding solutions to protect structures in storms up to a 100-year event



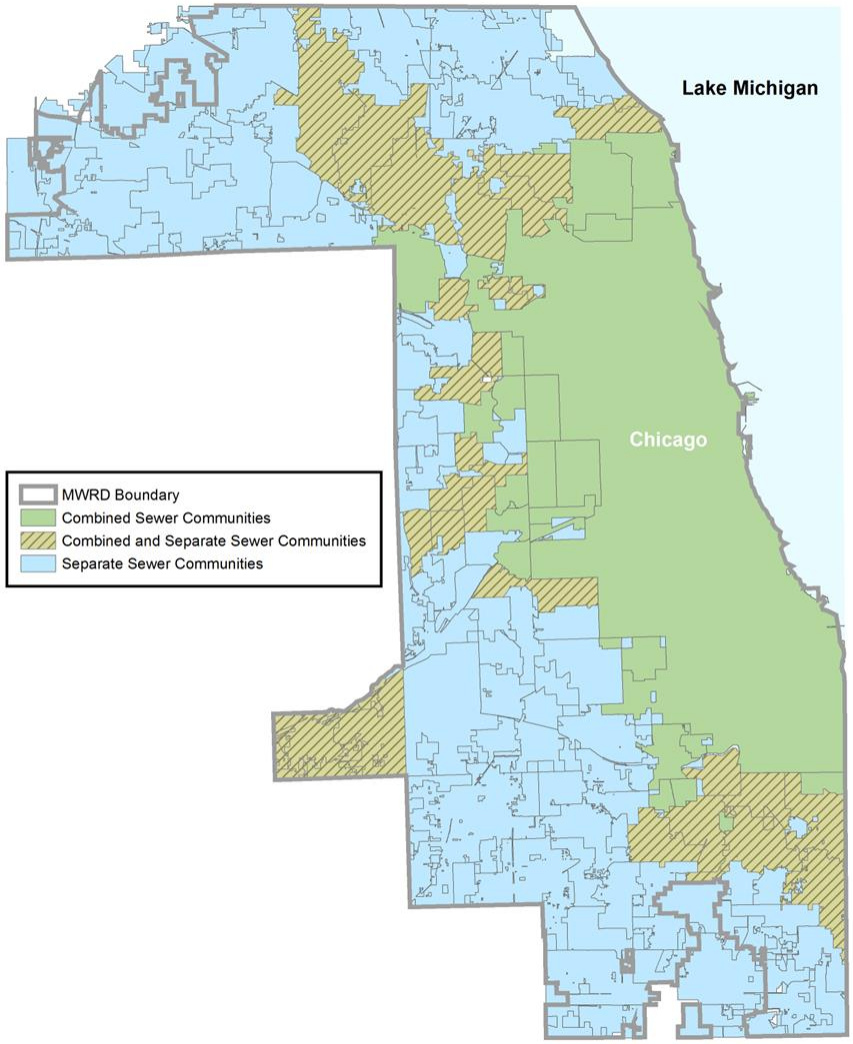

“Let’s design a flood control solution that will maximize local assets and spur economic development.”

Key Findings

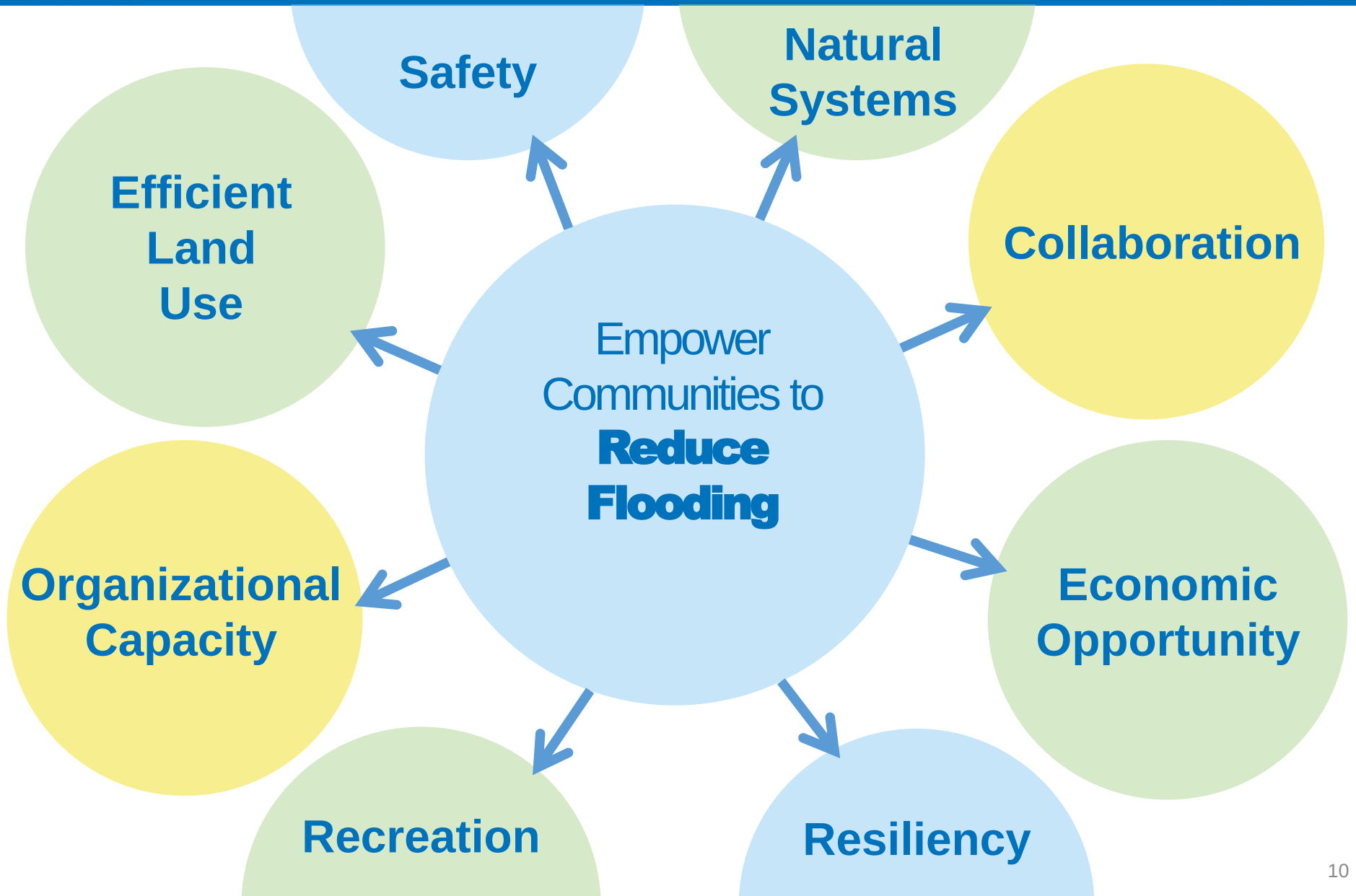
- The investment required to provide 100-year level of protection utilizing traditional grey, green or even hybrid grey and green public infrastructure is exorbitant
- Private property interventions can provide cost effective means for addressing flooding
- Efficiencies in construction should be leveraged through coordination with other infrastructure improvements such as transportation or other utilities
- Need to adopt a holistic approach in developing stormwater solutions that engages key partners and other stakeholders in the planning and implementation process.
- Prioritizing Master Planning throughout the county based on flood risk, targeting areas in need of planning resources.

Moving Forward after Pilot SMPs

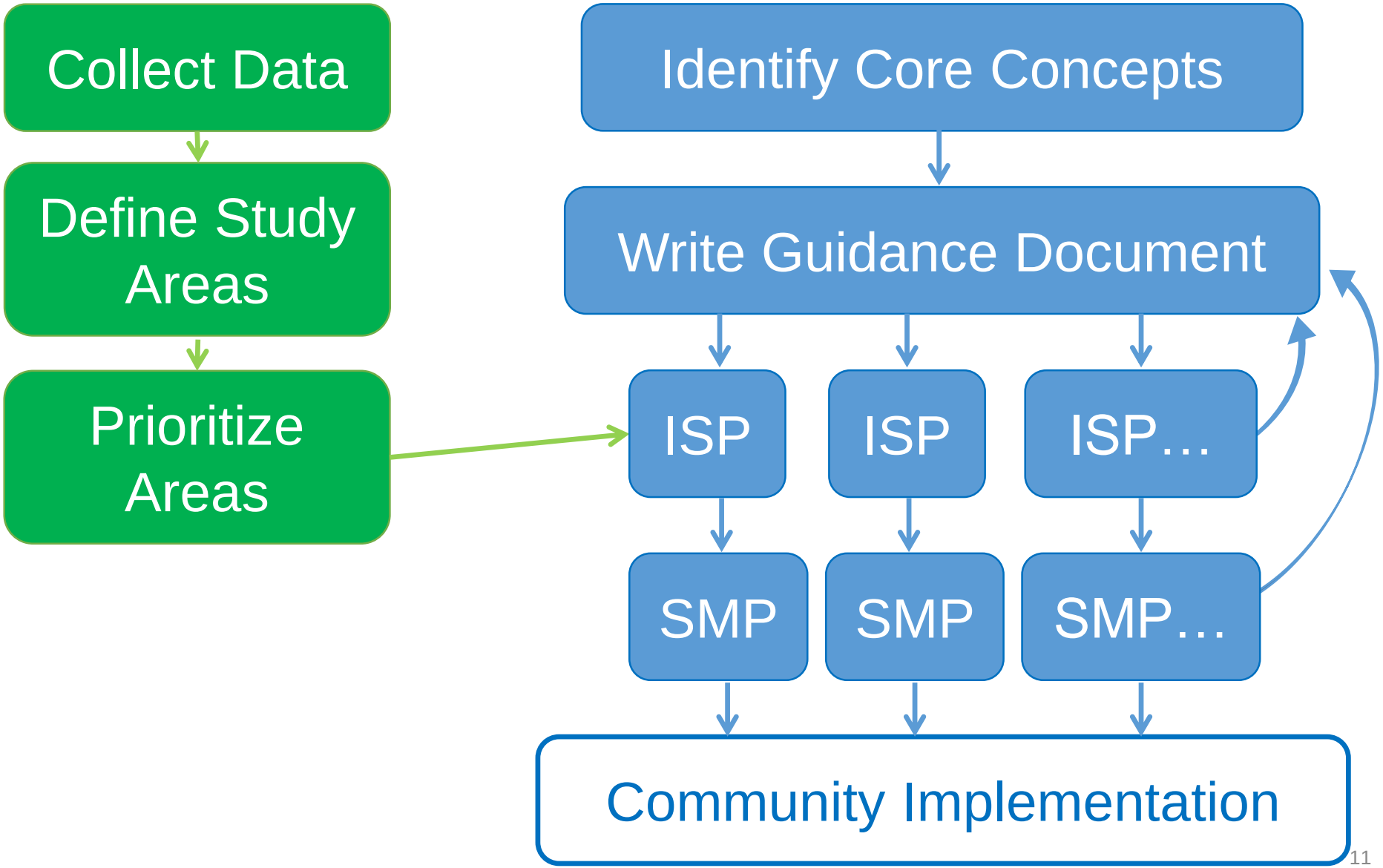
- Evaluate Master Planning needs throughout county
- Develop adaptive approach, centered on managing local stormwater issues with multi-disciplined teams
- Leverage and build upon work of others
- Develop a repeatable process
- Create actionable plans
- Teams focused on separate and combined areas



Program Outcomes

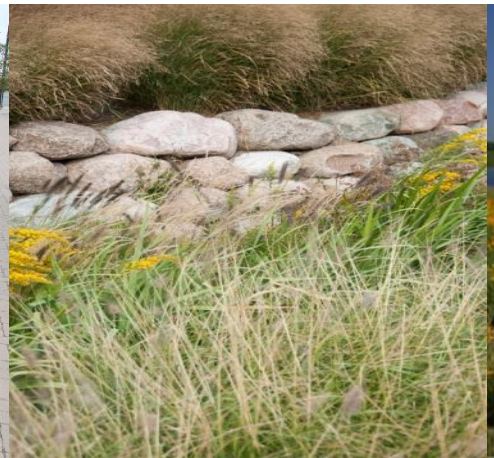


Program Timeline & Scope



Core Concepts for SMPs

- What is a core concept?
  - Suite of common elements for consideration
- Why include them?
  - Standardization
  - Encourage outside of the box thinking

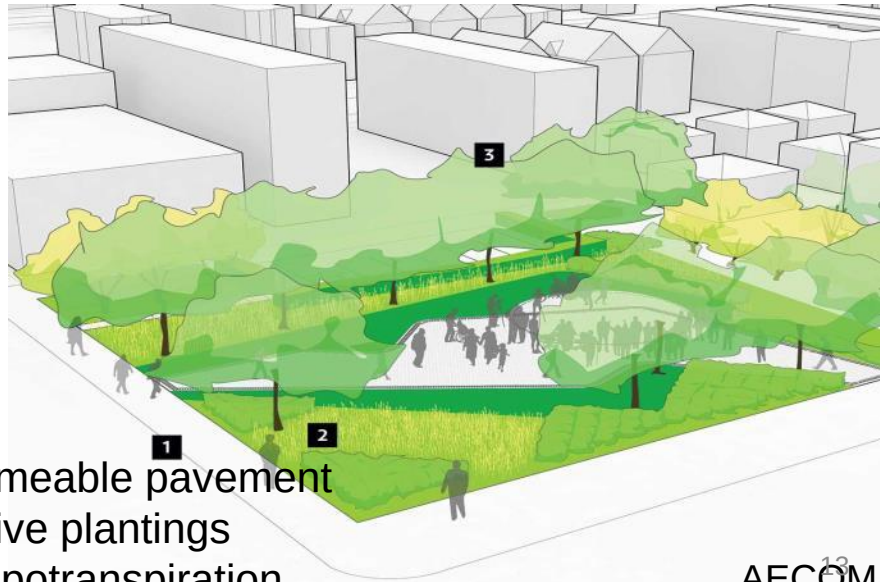




Core Concepts for SMPs

Redevelopment/Economic Development

- Maximize stormwater management opportunities
- Stormwater Parks could provide incredible asset to community, adding needed open space to many neighborhoods
- Vacant lots and abandoned buildings reduce quality of life and property values, discourage investment, and stress budgets

Cook County Assessor



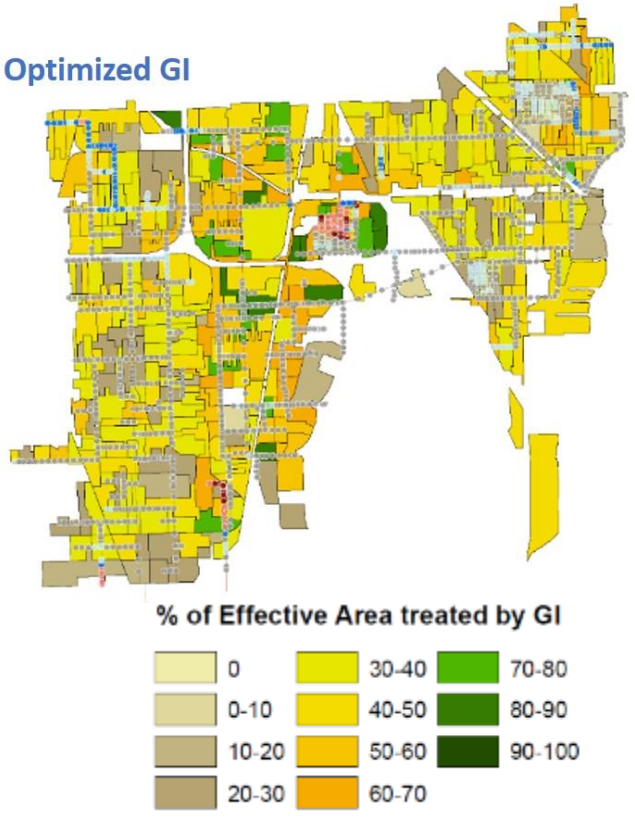
1. Permeable pavement
2. Native plantings
3. Evapotranspiration

AECOM

Core Concepts for SMPs

Technology and Innovation

- Real time controls - actively manage and monitor stormwater infrastructure, maximize storage
- Optimization - leverage analytical tools to evaluate and identify optimized solution

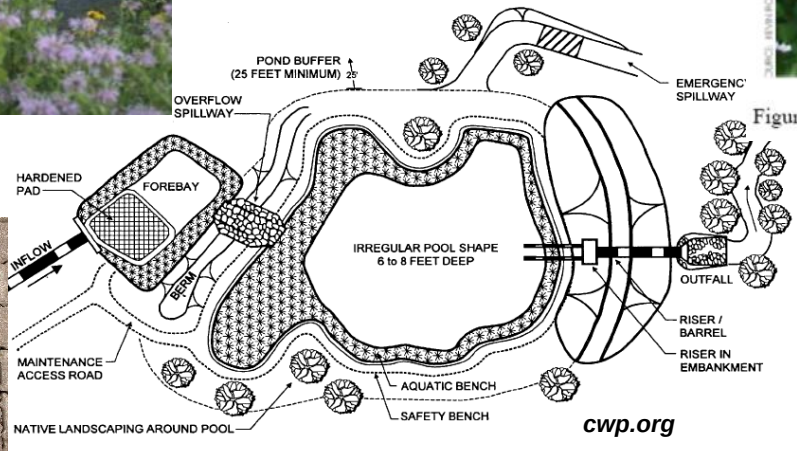


Core Concepts for SMPs

Green Infrastructure

- Integrate green infrastructure as component of stormwater management *infrastructure*

Figure 5-9: BMPs incorporated into a wide sidewalk (modified from San Mateo 2009)

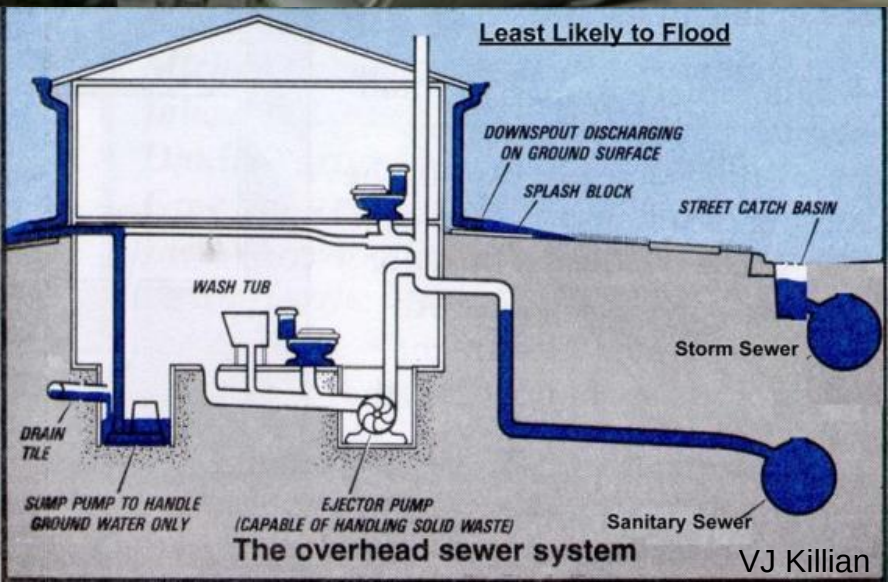


cwp.org

Core Concepts for SMPs

Programs and Policy

- Adopt policies and foster programs to enhance flood reduction efforts



Core Concepts for SMPs

Maximize Infrastructure Opportunities

- Modify existing infrastructure to fully utilize available and/or under-utilized capacity (wet bottom ponds, storm sewers, MWRDGC reservoirs)
- Look for regional storage opportunities
- Rethink roadway design
- Add stormwater improvements to capital projects.

Photo credit: Journal-topics.com, February 2012

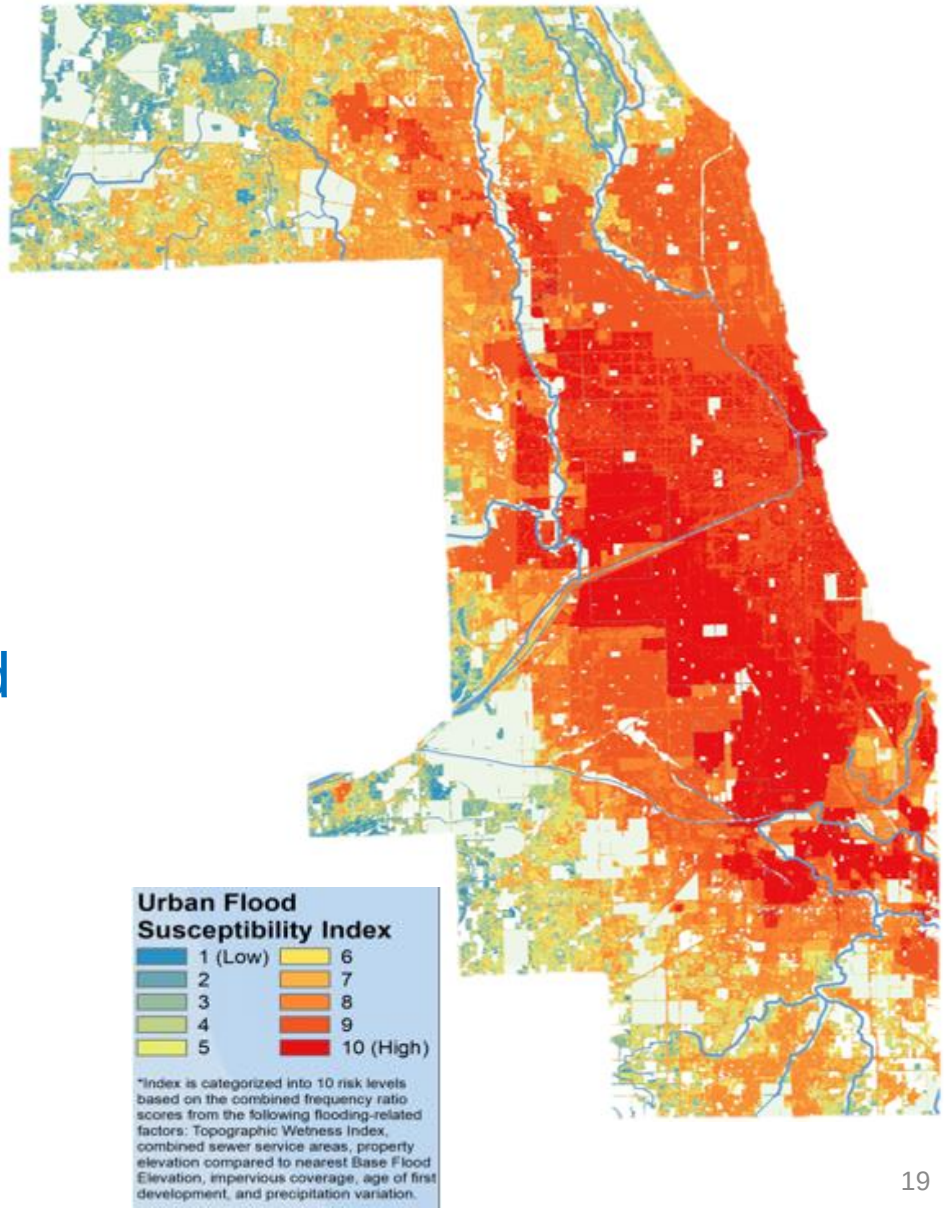
Core Concepts for SMPs

Land Use & Planning

- Balanced land use development
- Land use efficiency
- Mid and higher density developments
- Strong links to infrastructure

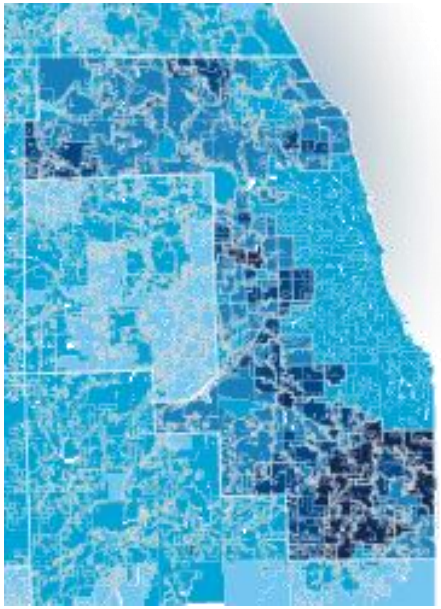
Data Analysis & Study Area Selection Process

- Primary goal is to address urban flooding in Cook County
- Teams tasked with dividing and prioritizing the County into study areas
- Aspects of prioritization process differ in Separate Sewer (SSA) and Combined Sewer Area (CSA)
- Reasons include:
  - Available data sets
  - Root causes of flooding (overland flow vs. sewer backups)



Data Analysis & Study Area Selection Process

- The Preliminary Research:
  - Identify readily available data
  - Compile an integrated database
  - Create intuitive visuals and evaluate data
  - Follow adaptive management strategy
  - Perform a gap analysis
- Identify Appropriate Evaluation Criteria
  - Stormwater & flooding criteria
  - Socio-economic criteria

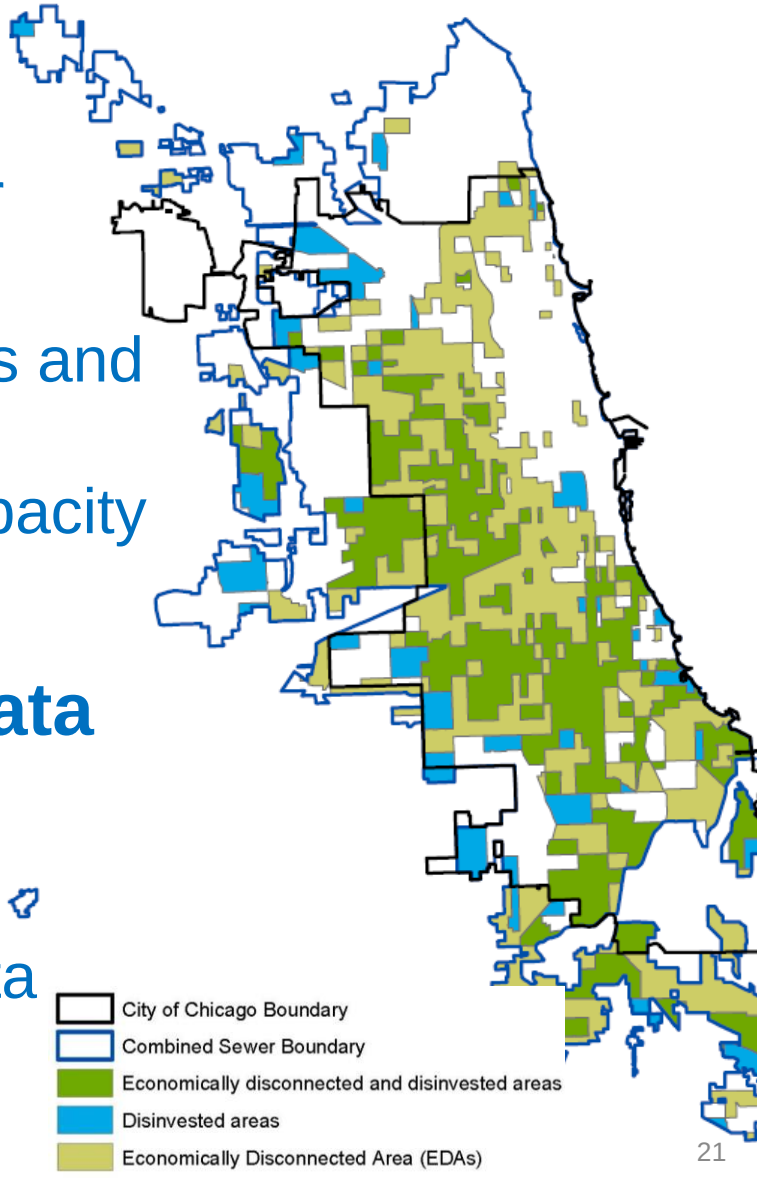


Effective composite commercial and industrial property tax 2014 , courtesy of CMAP

Data Analysis & Study Area Selection Process

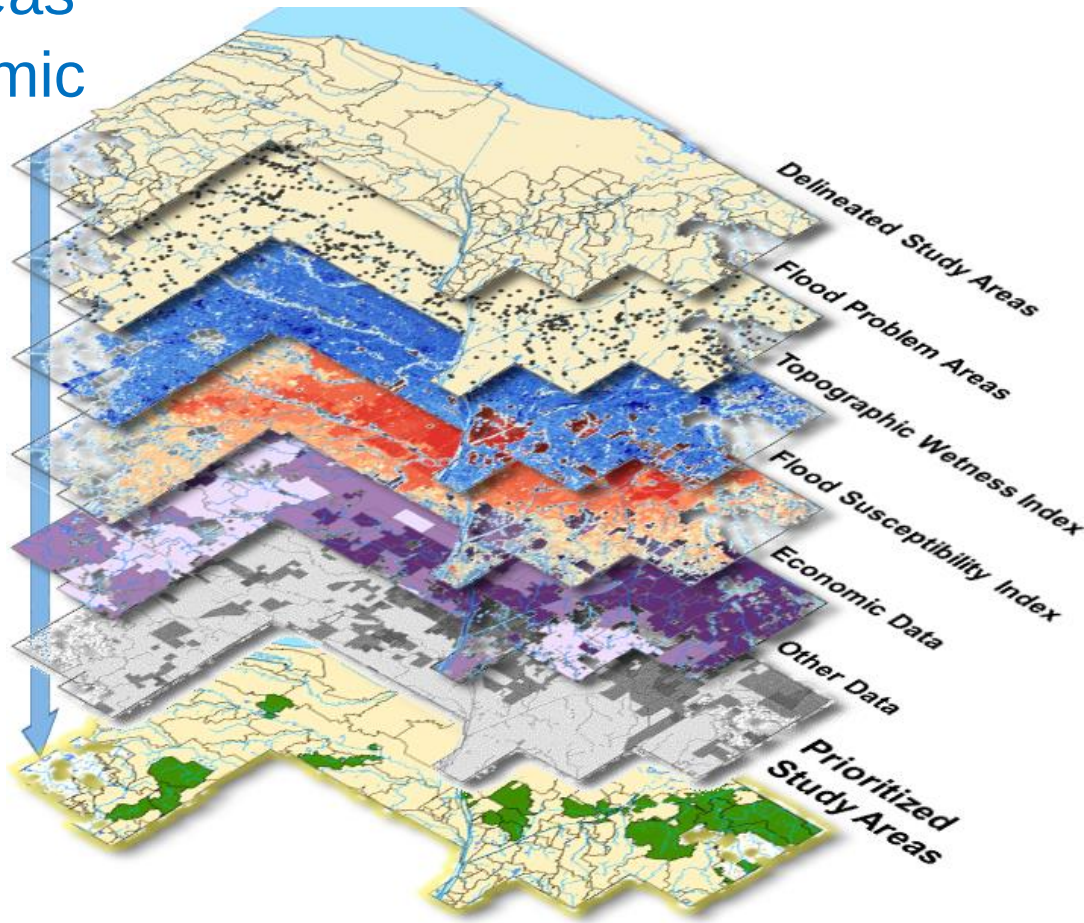
Data Examples:

- **CMAP (Leverage "ON TO 2050")**
  - Land use inventory & Land cover
  - Flood Susceptibility Index
  - Economically disconnected areas and disinvested areas
  - Municipal capacity: EAV/Tax Capacity
  - Parks & Open Space
- **City of Chicago & Municipal Data**
  - Sewer infrastructure data
  - Drainage areas/Catchments
  - Flood problem areas/311 call data
  - Stormwater modeling data
  - Prior studies & identified projects



Data Analysis & Study Area Selection Process

- Selection process is data driven
- Repeatable framework:
  - Identify flood risk areas
  - Identify socio-economic opportunities
  - Evaluation
- Prioritization process is expected to evolve throughout this program based on:
  - Additional data
  - Municipal questionnaire



Draft Questionnaire for Municipal Staff

Intent of Questionnaire is to determine:

- Location, frequency and severity of flood problems
- Whether flooding and flood solutions are an important need in the community
- Other top community needs
- If planning or engineering efforts have already been made to address stormwater issues

Draft Questionnaire for Municipal Staff

Two-Part Questionnaire

- Part 1: General Questions
  - Survey Monkey online
  - Hard copy

DRAFT

Part 1: General Information

1. Municipality information.
   Name of Municipality:_____

   Name of Respondent:_____ Title:_____

   Email of Respondent:_____Phone:_____

2. What would your municipal staff, elected officials, and public citizens say are the top three issues facing your municipality? Write 1, 2, and 3 in each column to indicate the top concerns for each type of person.

	Municipal Staff	Elected Officials	General Public
Affordable Housing			
Crime			
Drinking Water			
Economic Development			
Employment Rate			
Flooding (Urban Flooding)			
Local Revenue			
Parks and/or Open Space			
Pollution			
Public Transportation			
School / Education			
Taxes			
Traffic Congestion			
Transportation / Roads Infrastructure			
Underground / Sewer Infrastructure			
Other:			
Other:			
Other:			
Other:			

3. Has your municipality been impacted by urban flooding? Circle one: Yes No

4. If your municipality experiences recurrent urban flooding, when (month/year) were the last three occurrences?

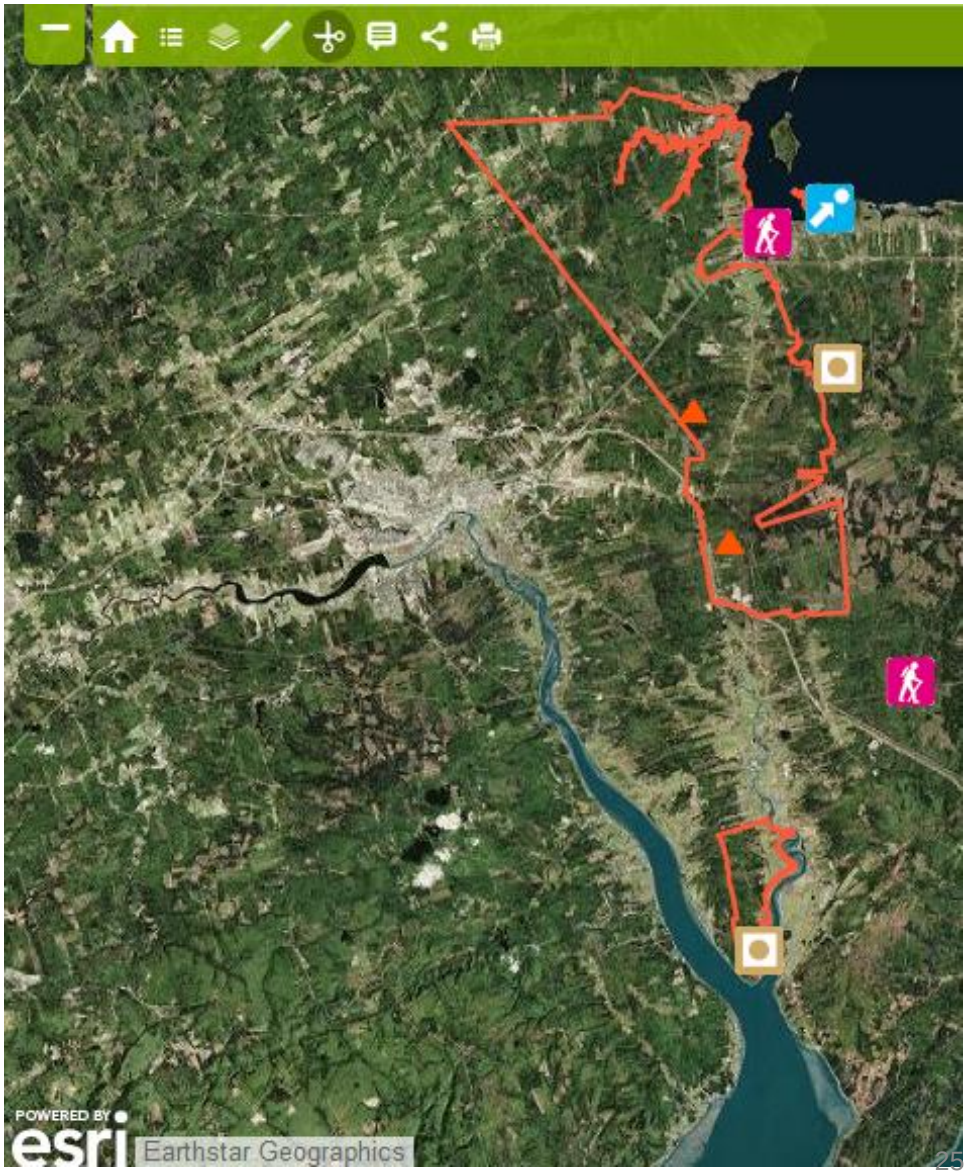
5. How would your municipality prioritize issues of urban flooding and mitigating urban flood damage compared to other issues facing your municipality? (circle one)

   High priority Medium priority Low priority Not a priority at all Other _____

Draft Questionnaire for Municipal Staff

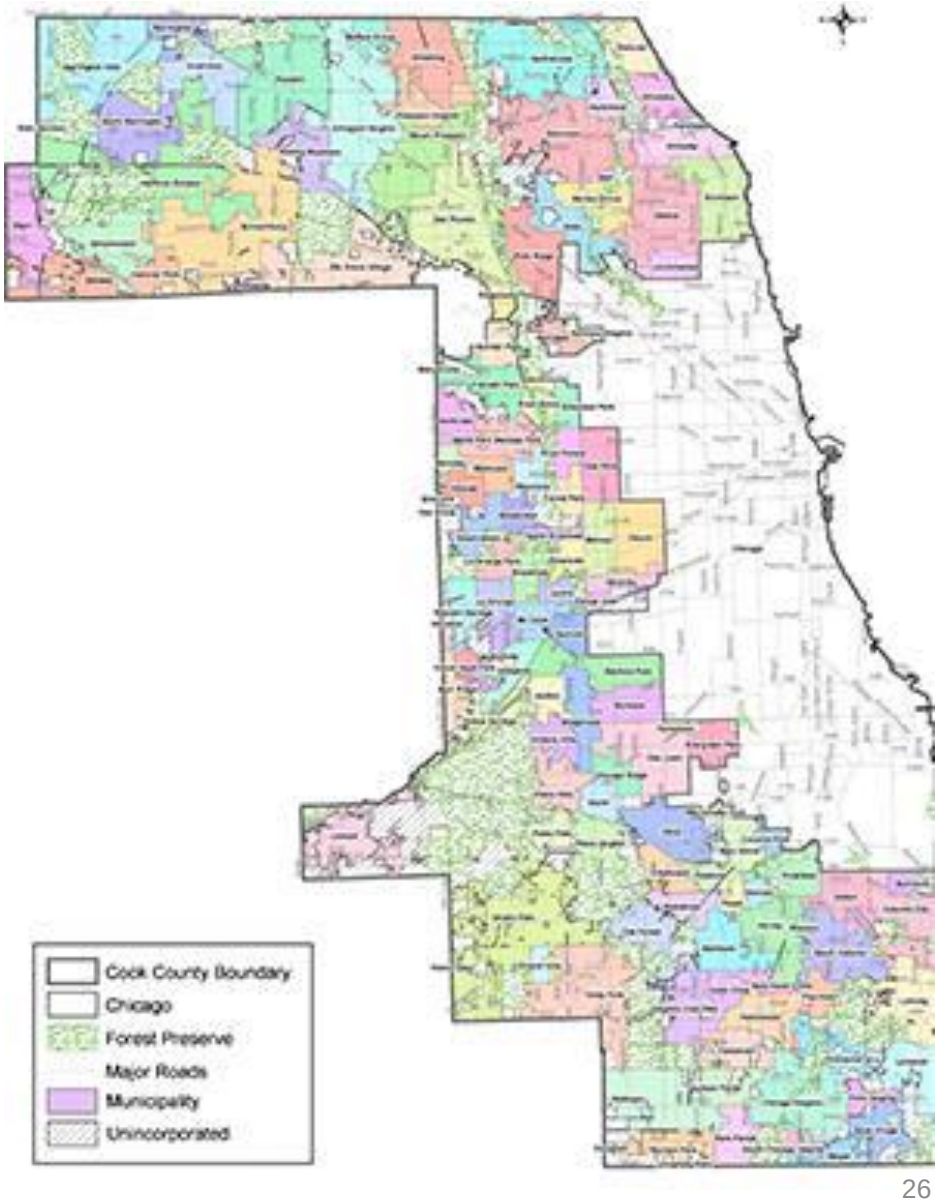
Two-Part Questionnaire

- Part 2: Show locations of flooding on a map
  - Interactive ArcGIS tool online
  - Hard copy



Draft Questionnaire for Municipal Staff

- Questionnaires will be sent to Village / City Administrators and Township contacts
- Distribution via email, using CMAP email list



Next Steps

- Program Management Teams:
  - Complete six ISPs by spring 2019
  - Finalize municipal questionnaire – distribute early ‘19
  - Collect municipal data and reprioritize areas to select second round for study
  - Prepare Request for Proposals (RFPs) based on the first six ISPs

Separate Sewer Areas
Richard Fisher
FisherR@mwrd.org
(312) 751-5479

Combined Sewer Areas
Brian Wawczak
WawczakB@mwrd.org
(312) 751-5836

Questions?

Richard Fisher, P.E., CFM
Senior Civil Engineer
MWRDGC
111 E. Erie Street
Chicago, IL 60643
FiisherR@mwrd.org
(312) 751-5479

Edward Jankun, P.E.
Assistant Civil Engineer
MWRDGC
111 E. Erie Street
Chicago, IL 60643
JankunE1@mwrd.org
(312) 751-3204