Metropolitan Water Reclamation District of Greater Chicago

Stormwater Planning

Billions of Gallons for Climate Resiliency:

Site Selection for MWRD Flood Storage Project

IAFSM Conference, March 2024

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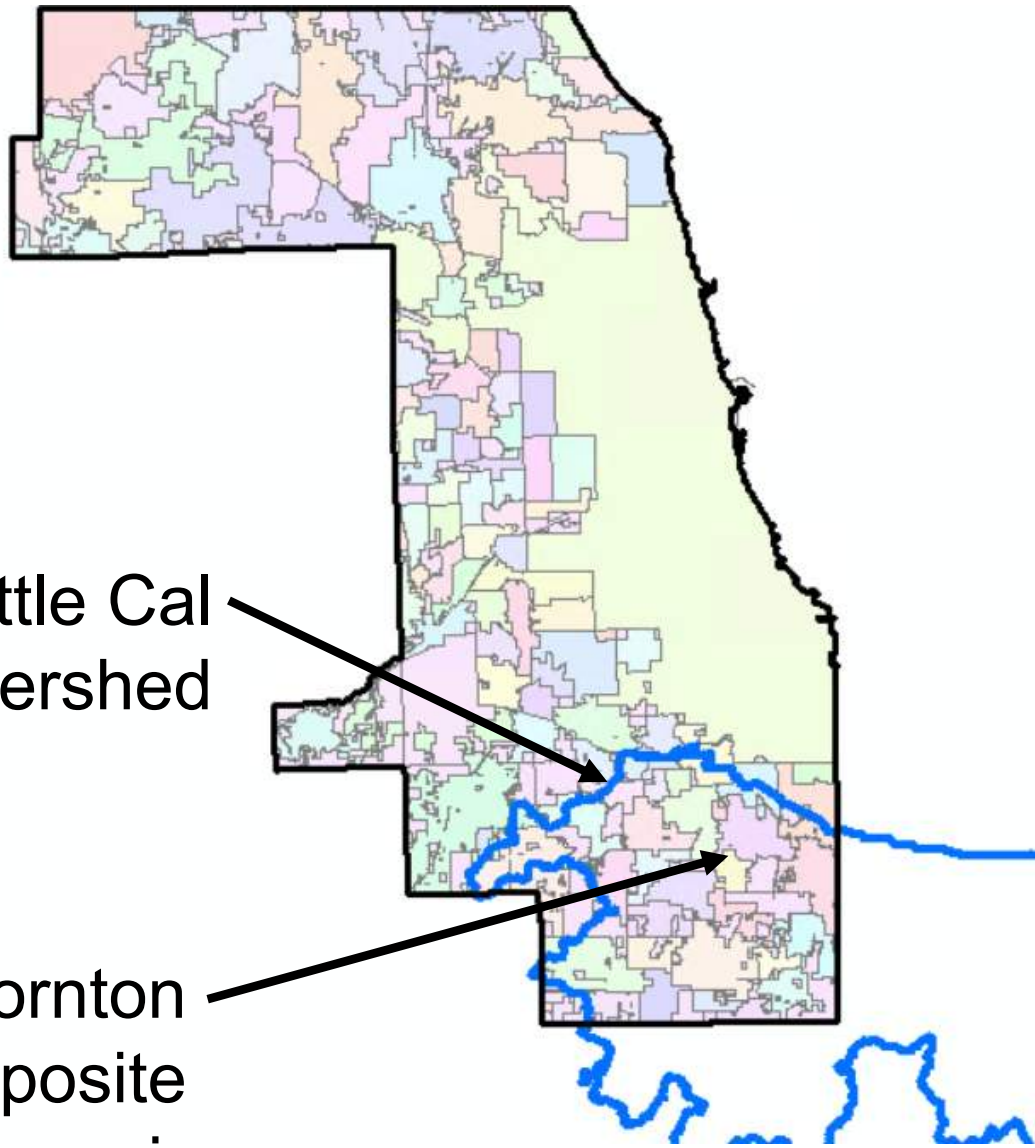
V3 Companies

Agenda

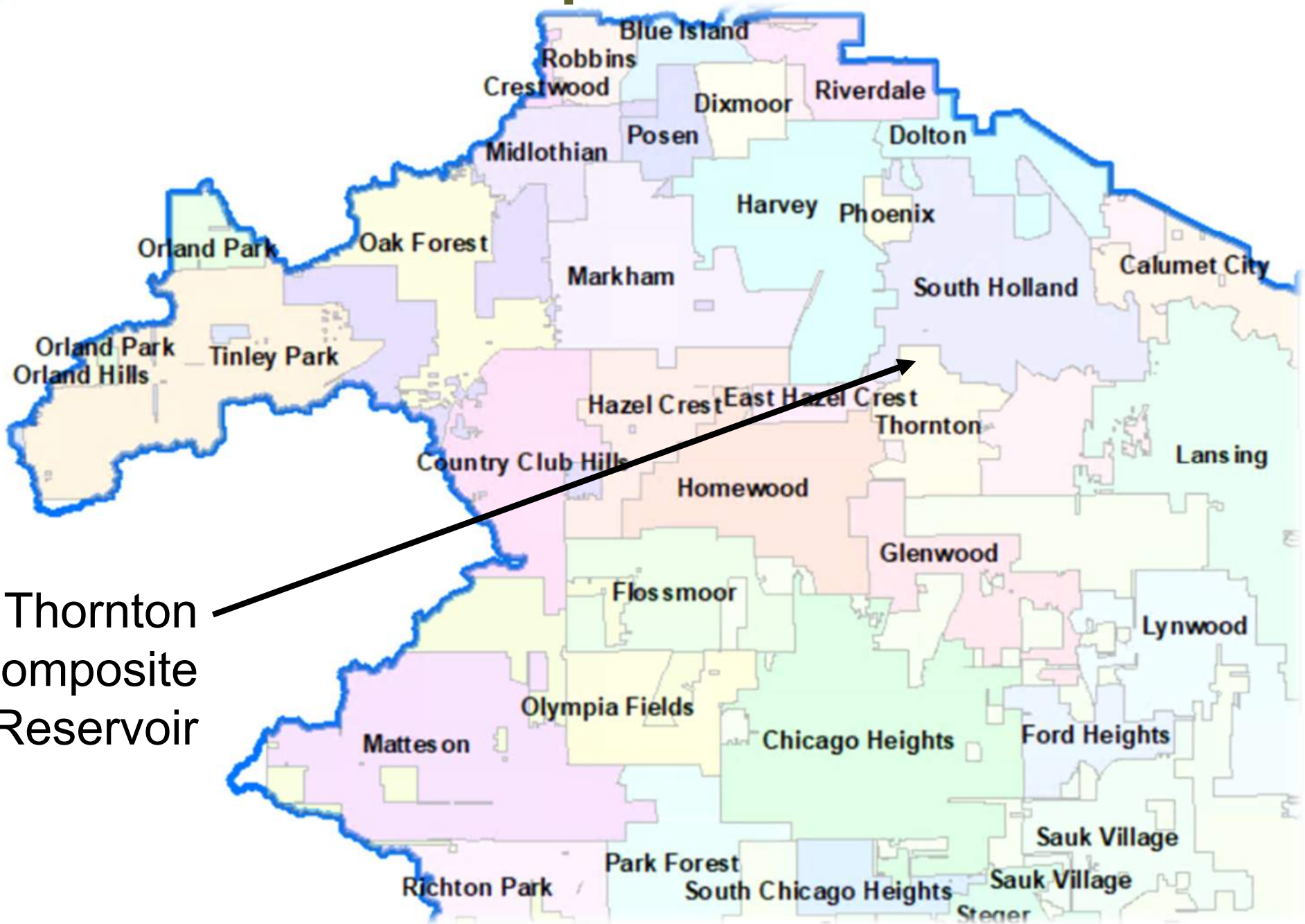
- Brief History of Thornton Composite Reservoir
- Why More Storage is Needed
- Site Selection Process for New Storage

Brief History of Thornton Composite Reservoir

Cook County

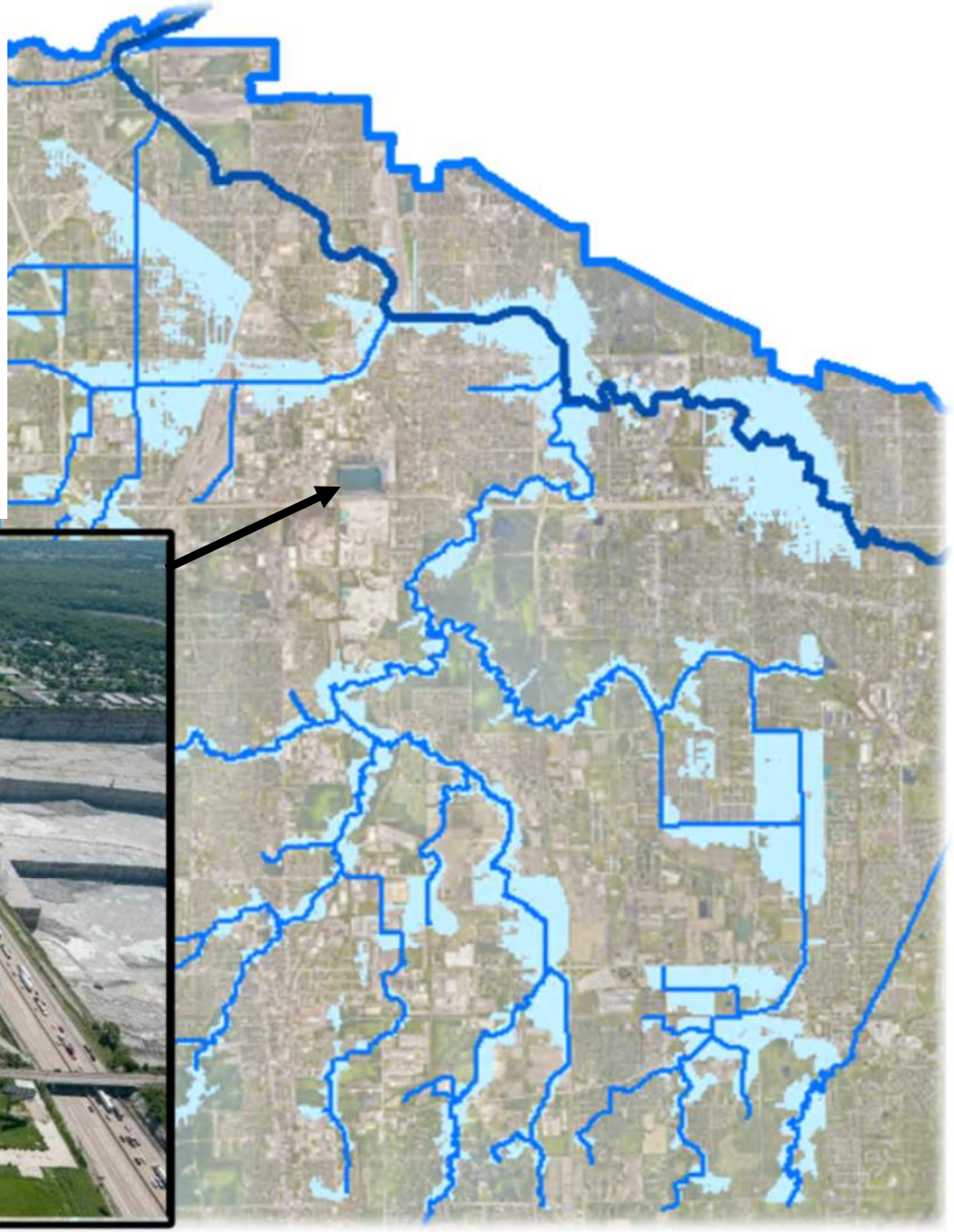


Brief History of Thornton Composite Reservoir



Brief History of Thornton Composite Reservoir

- **1998: NRCS Little Cal Watershed Plan** called for 3.1 BG flood storage to capture Thorn Creek
- **Thornton Comp Reservoir design:**
  3.1 BG from Thorn Creek plus
  4.8 BG combined sewage from Calumet TARP



Brief History of Thornton Composite Reservoir

- Thornton Composite Reservoir was to be finished 2015
- **Interim: Thornton Transitional Reservoir,** 3.1 BG, complete March 2003

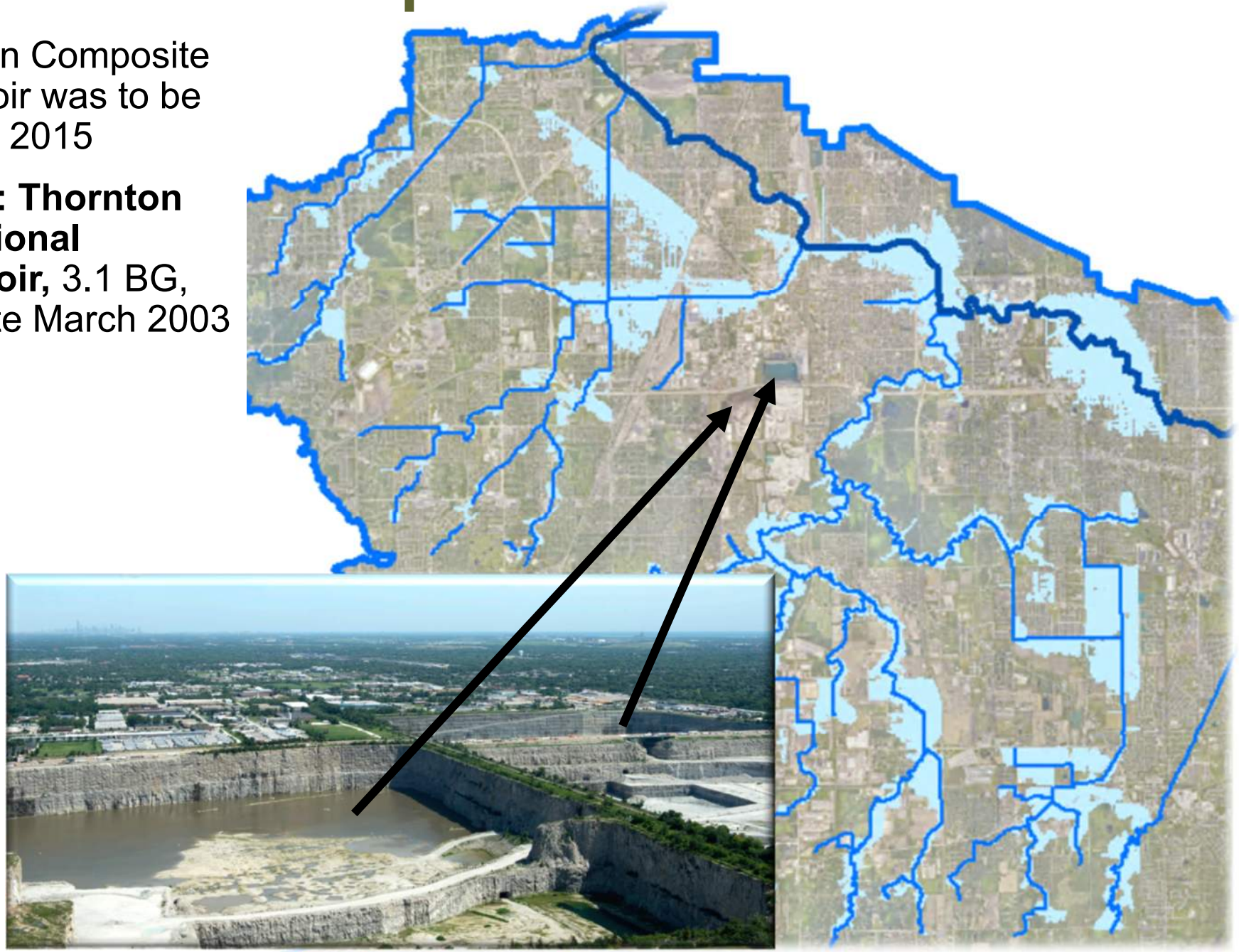
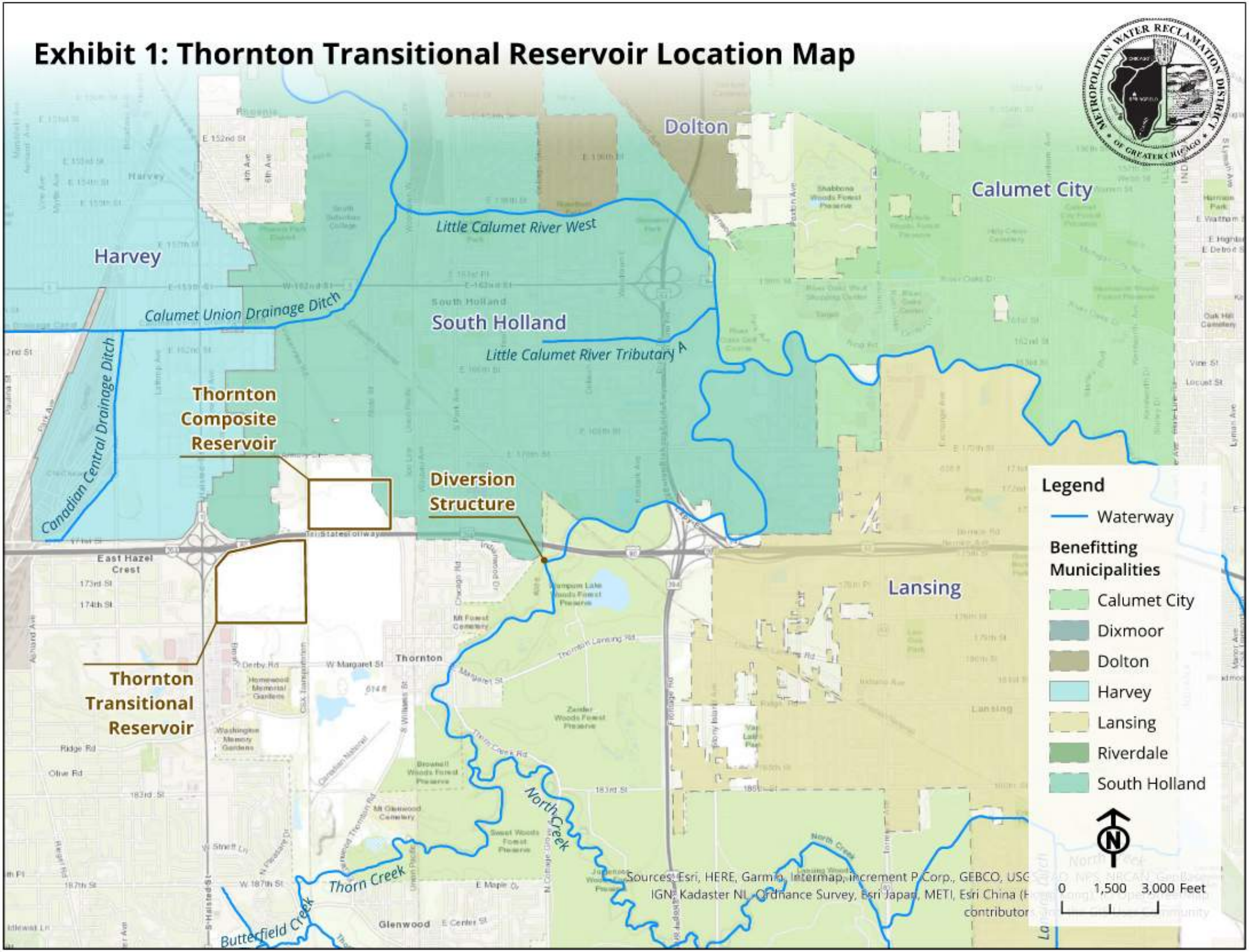


Exhibit 1: Thornton Transitional Reservoir Location Map



Brief History of Thornton Composite Reservoir

- Composite Reservoir completed in 2015.
- Transitional Reservoir was to be decommissioned in 2015, 5-yr lease extension granted
- MWRD study showed flood benefit if Transitional Reservoir storage remained

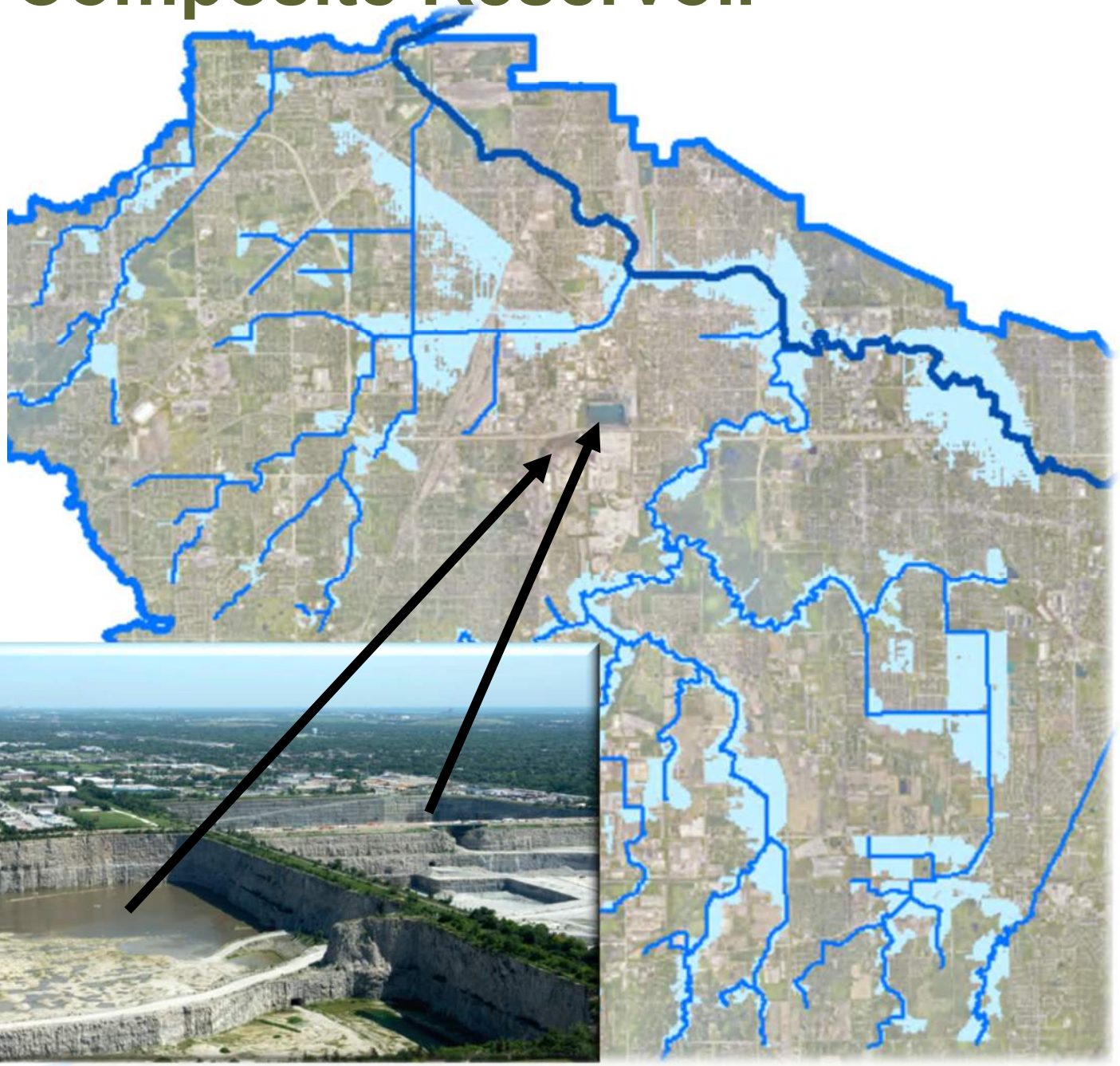
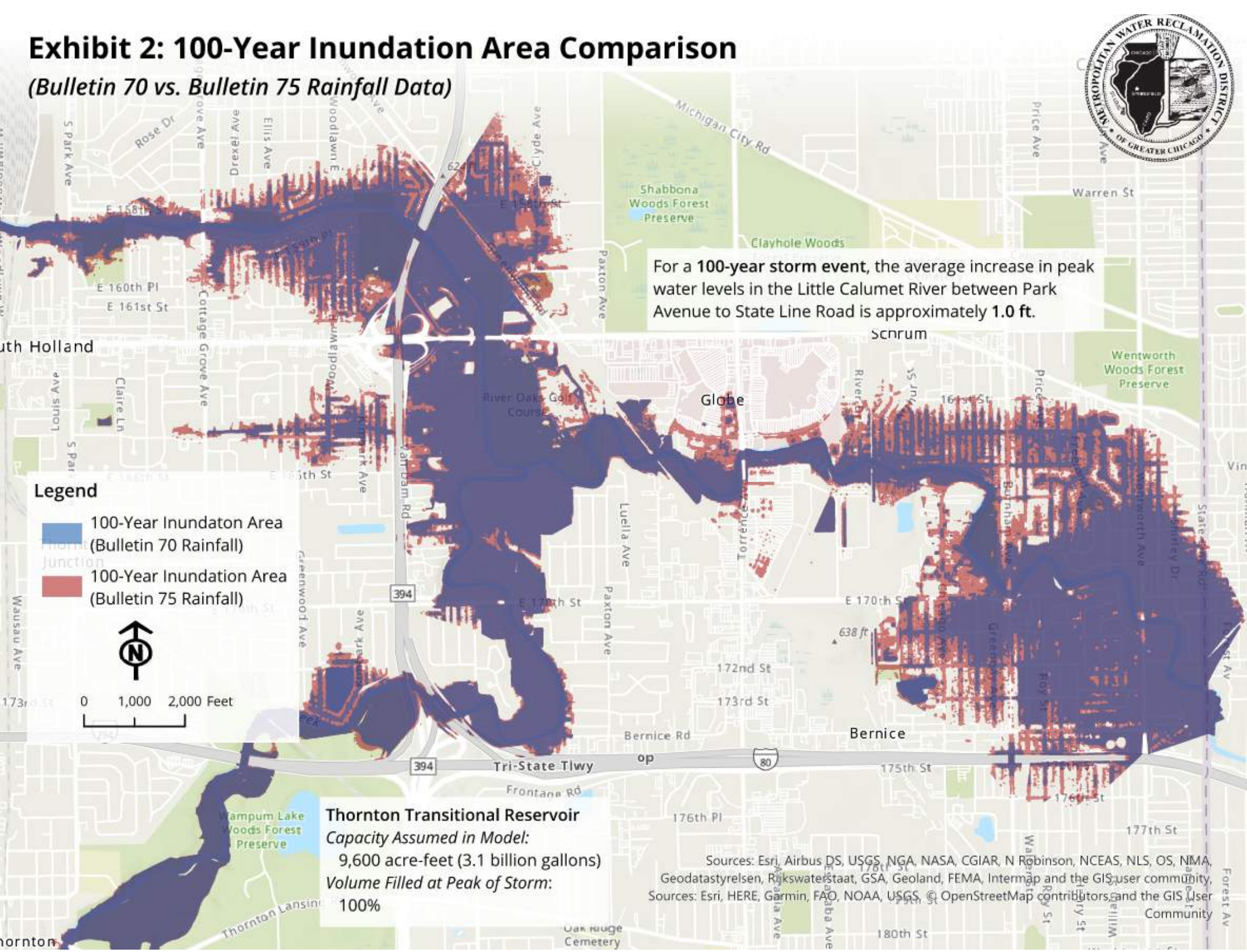


Exhibit 2: 100-Year Inundation Area Comparison

(Bulletin 70 vs. Bulletin 75 Rainfall Data)

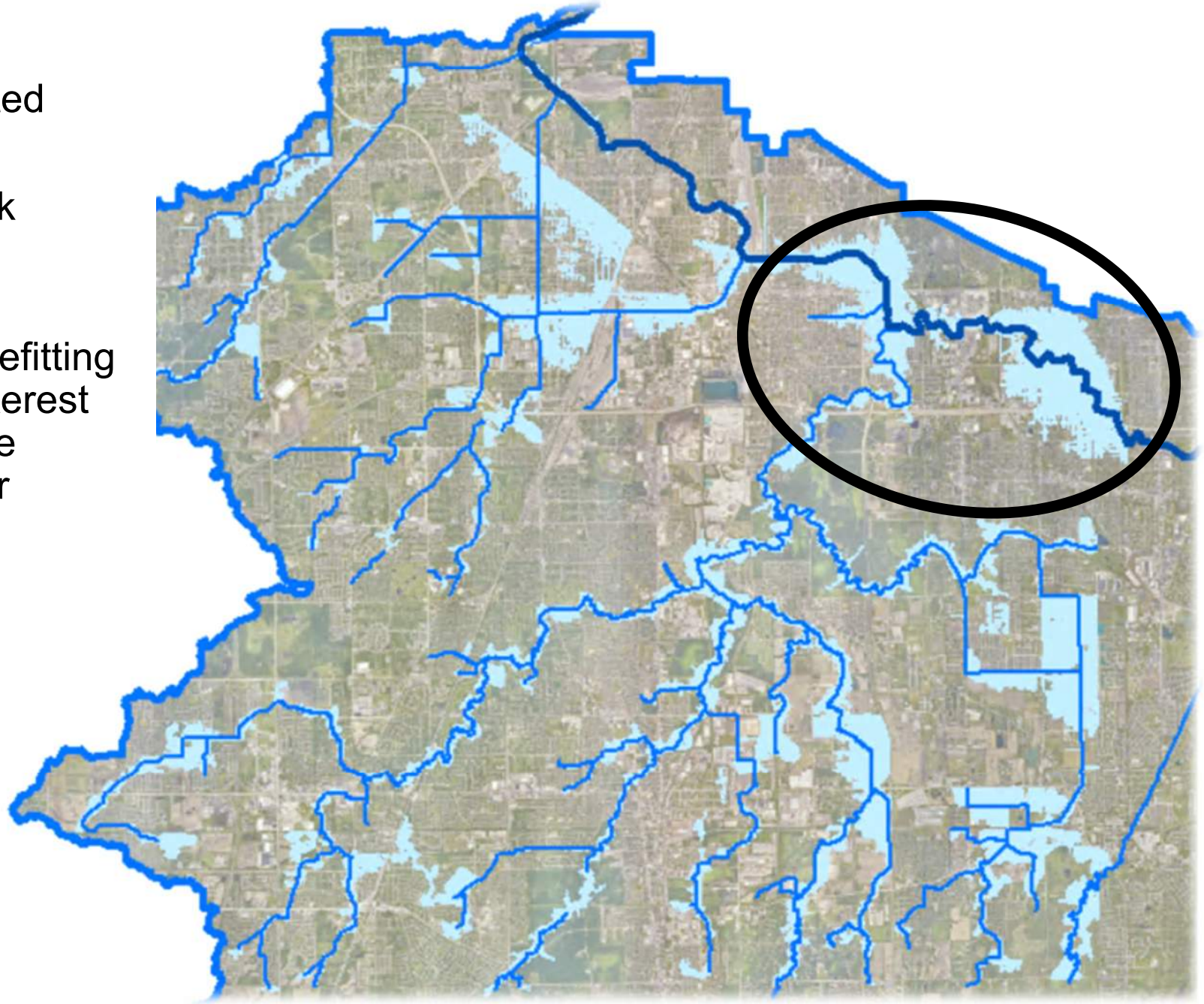


Brief History of Thornton Composite Reservoir

- Lease for Transitional Reservoir site could not be renewed
- Transitional Reservoir decommissioned September 2022
- MWRD initiated study to identify new storage locations

New Flood Storage Site Selection Process

- Site selection process initiated
- Sites all over southern Cook County were evaluated
- Focus on benefitting the area of interest along the Little Calumet River



New Flood Storage Site Selection Process

Vision:

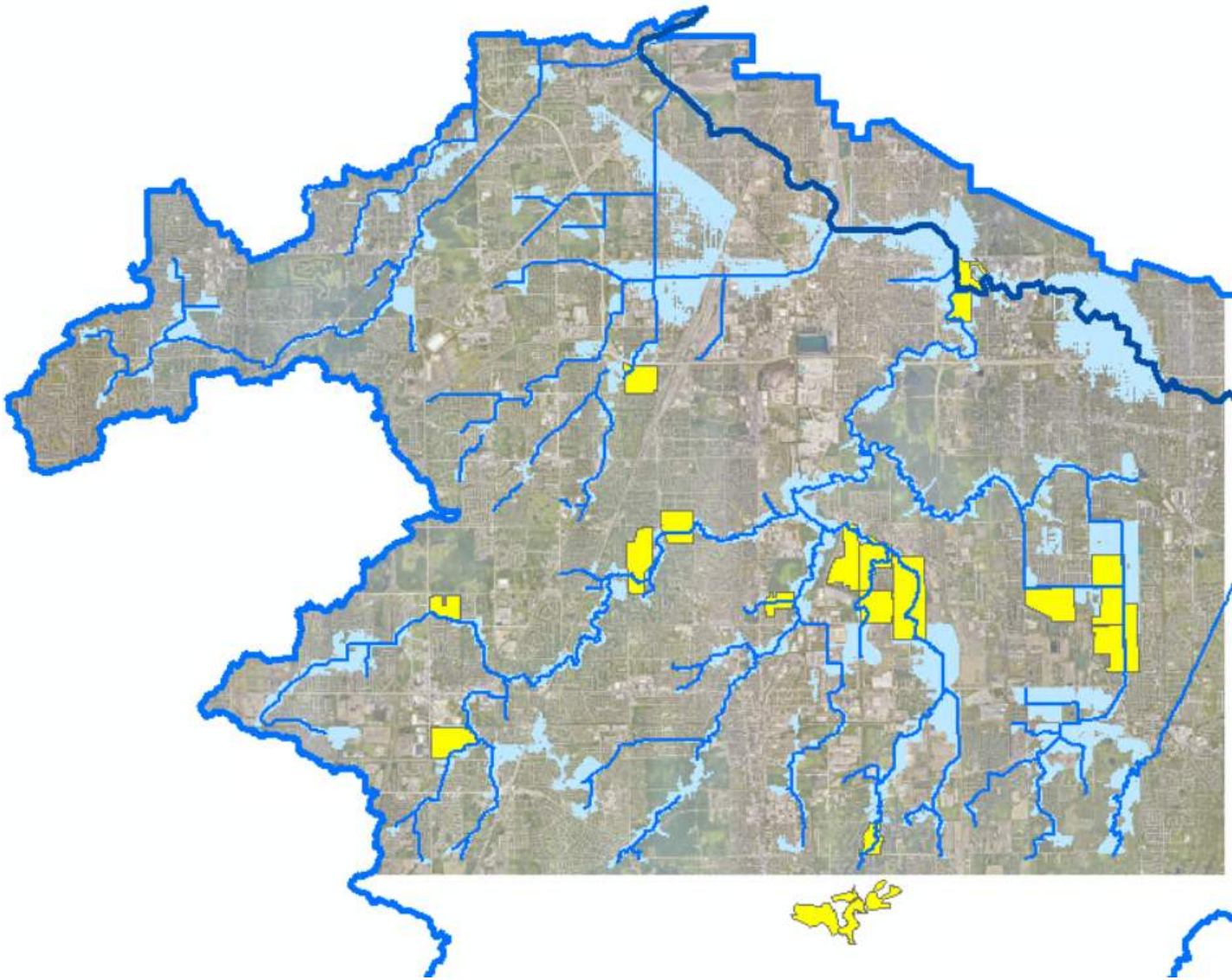
- New flood storage combined with recreational opportunities
- Partnership between MWRD, FPDCC, key stakeholders

New Flood Storage Site Selection Process

Site Identification Considerations

- Ag land or vacant land near a stream
- No significant floodplain
- Large areas, regular shapes (> 75 ac)
- Large upstream trib areas (> 10 sq mi)

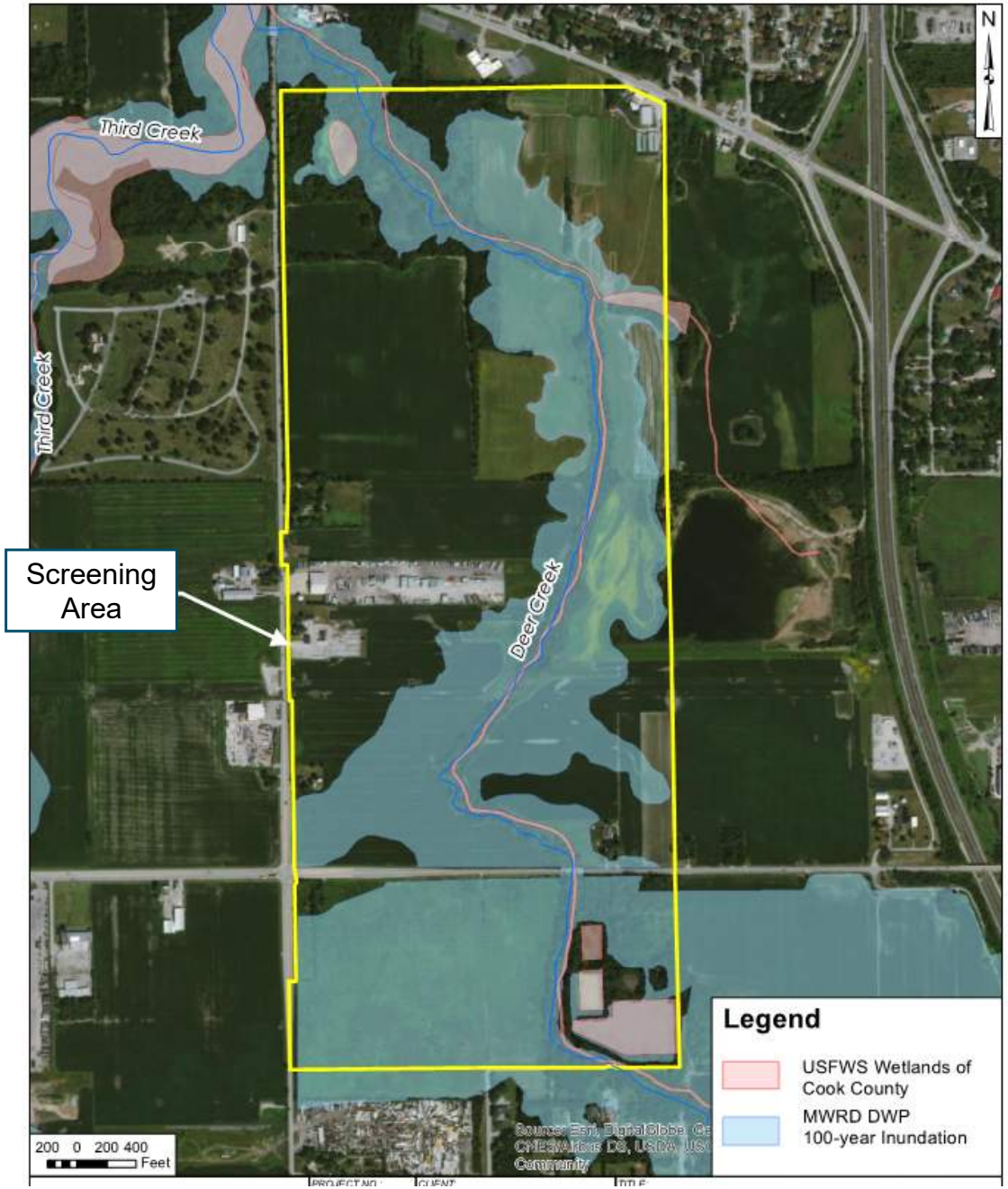
14 sites identified



New Flood Storage Site Selection Process

Wetland Assessment

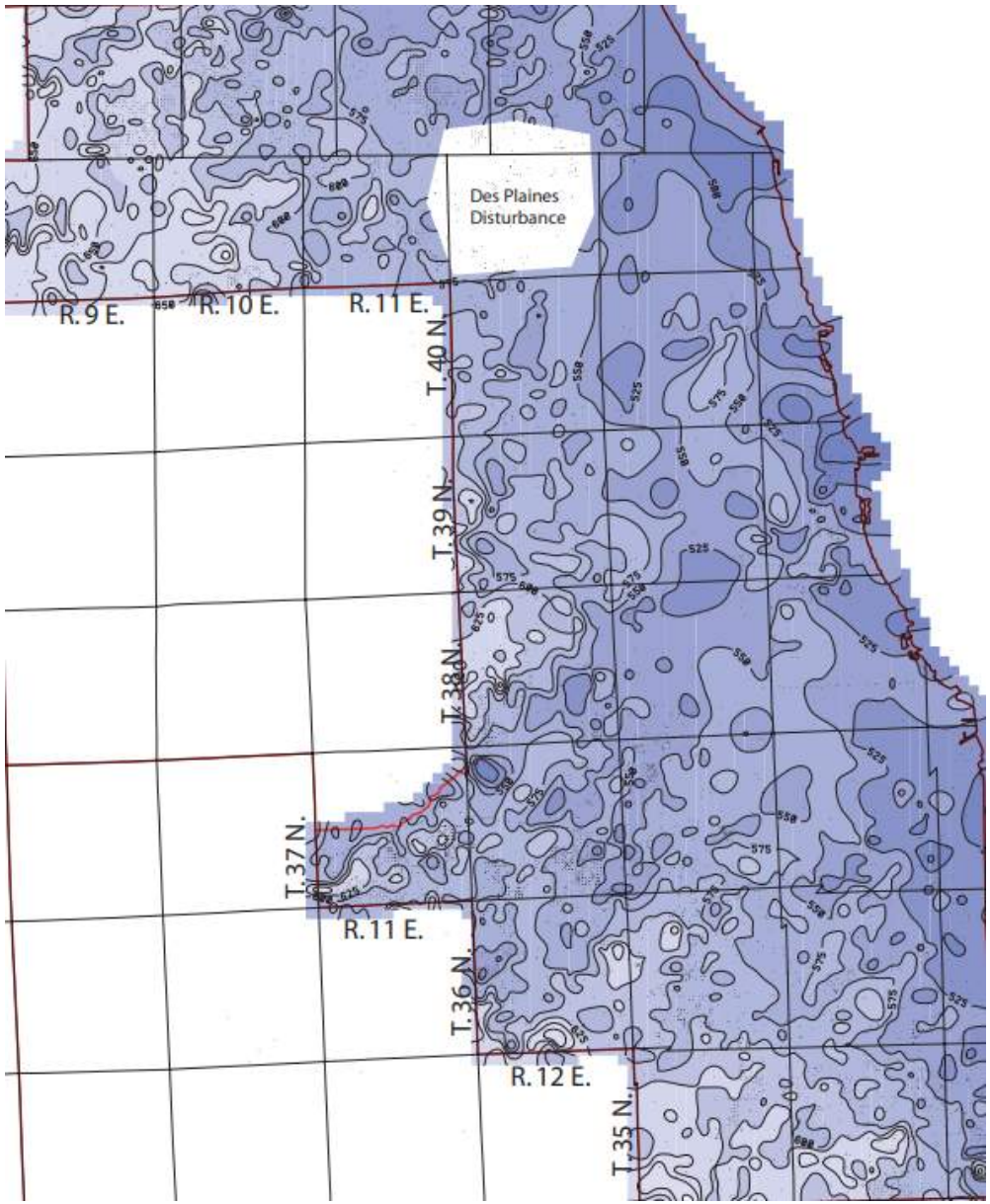
- Desktop wetland screening
- Identify possible size and location
- Identify possible permitting and mitigation requirements



New Flood Storage Site Selection Process

Geoscience Assessment

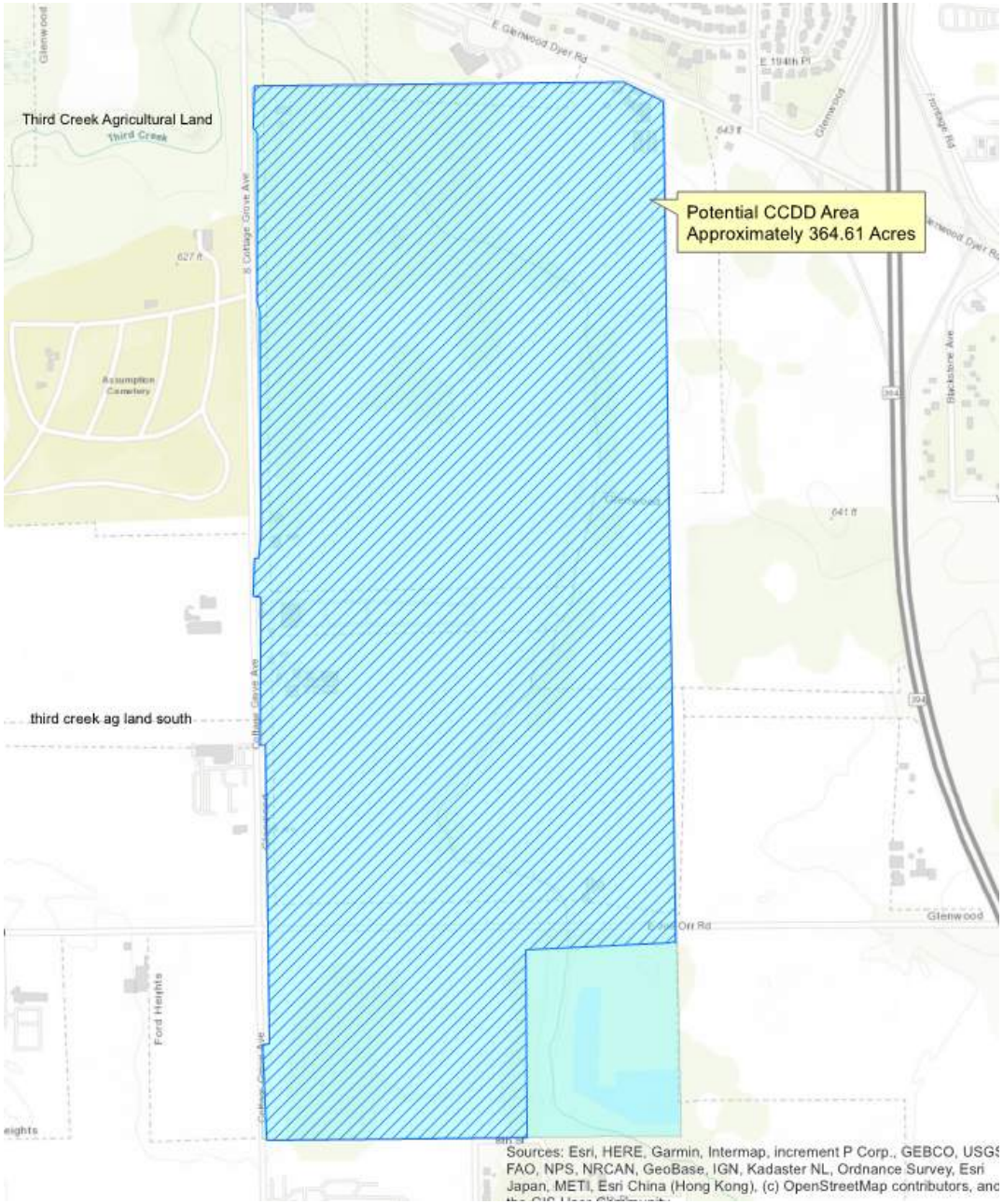
- Bedrock Evaluation
- Determine possible depth of excavation without blasting
- Determine potential for groundwater impacts



New Flood Storage Site Selection Process

Environmental Assessment

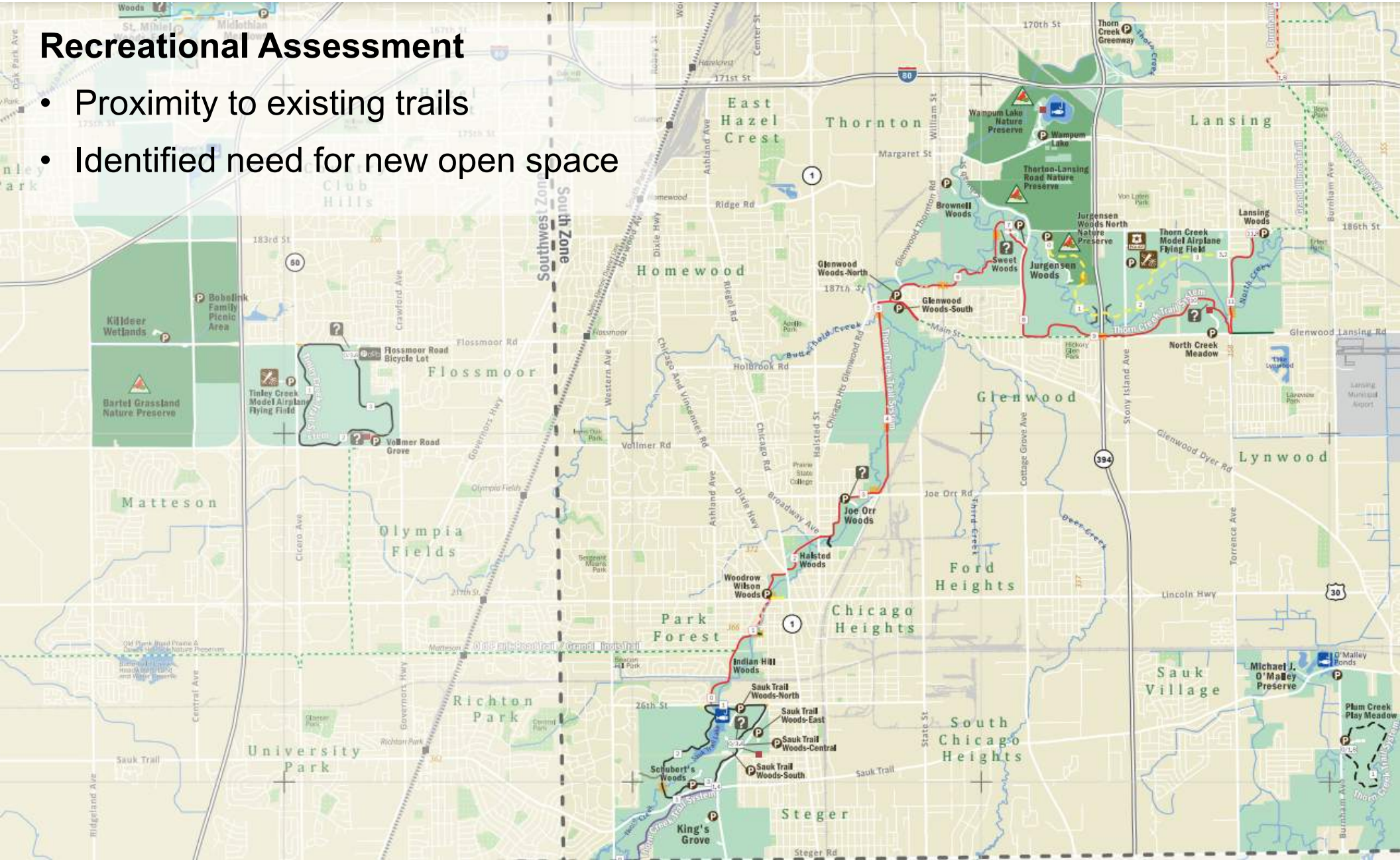
- CCDD screening
- Evaluation of historic land use
- Determine potential for disposal at CCDD site



New Flood Storage Site Selection Process

Recreational Assessment

- Proximity to existing trails
- Identified need for new open space



New Flood Storage Site Selection Process

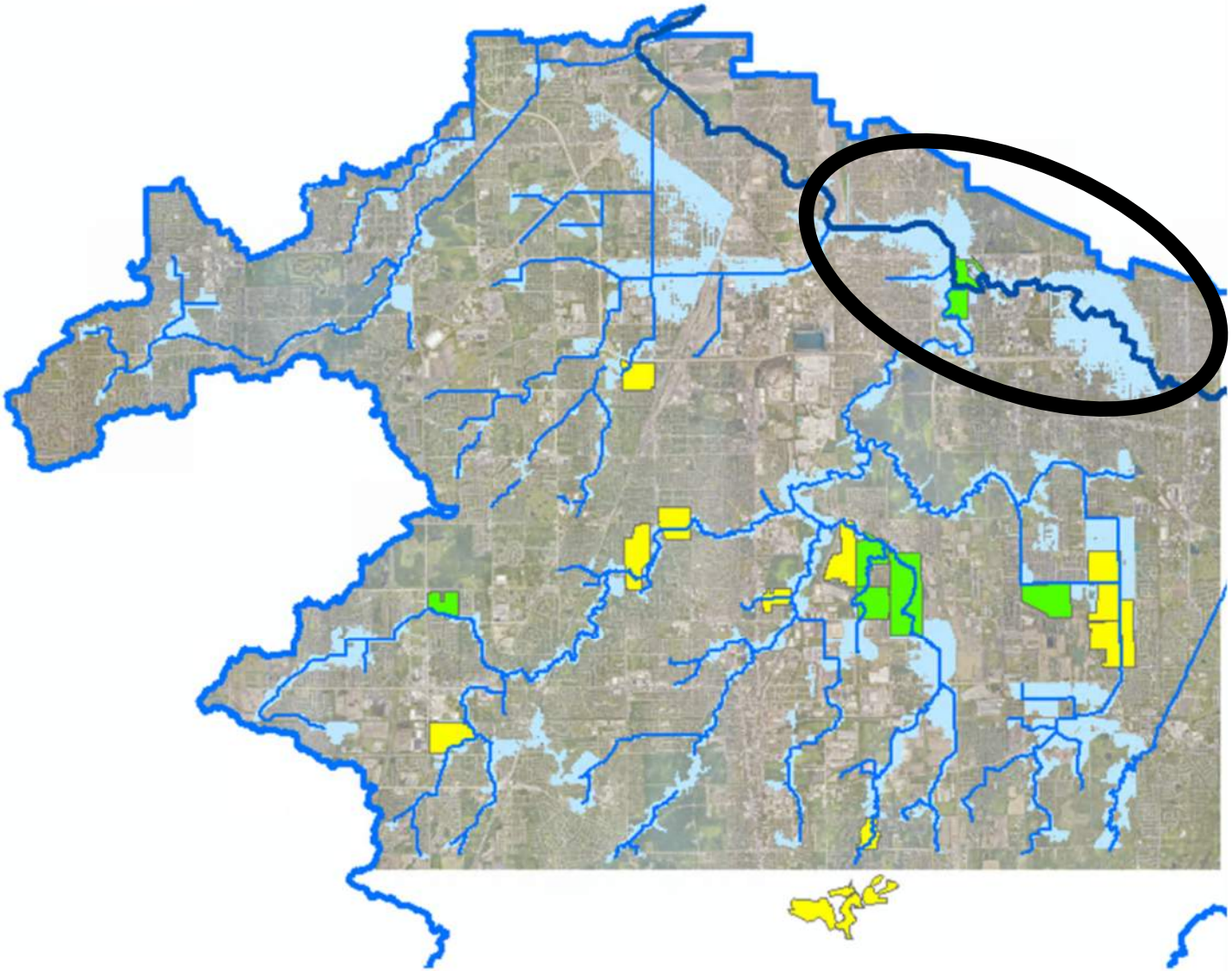
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Property Owner														
Subwatershed														
% CCDD														
% Wetlands														
% Floodplain														
% Floodway														
Storage Vol Potential														
Distance to TARP														
Gravity?														
Topo Condition														
Multi-use potential														
Stakeholder Potential														
Recommendation														

→ **Seven Sites Selected to Advance**
to Quantitative Analysis

New Flood Storage Site Selection Process

Quantitative Assessment

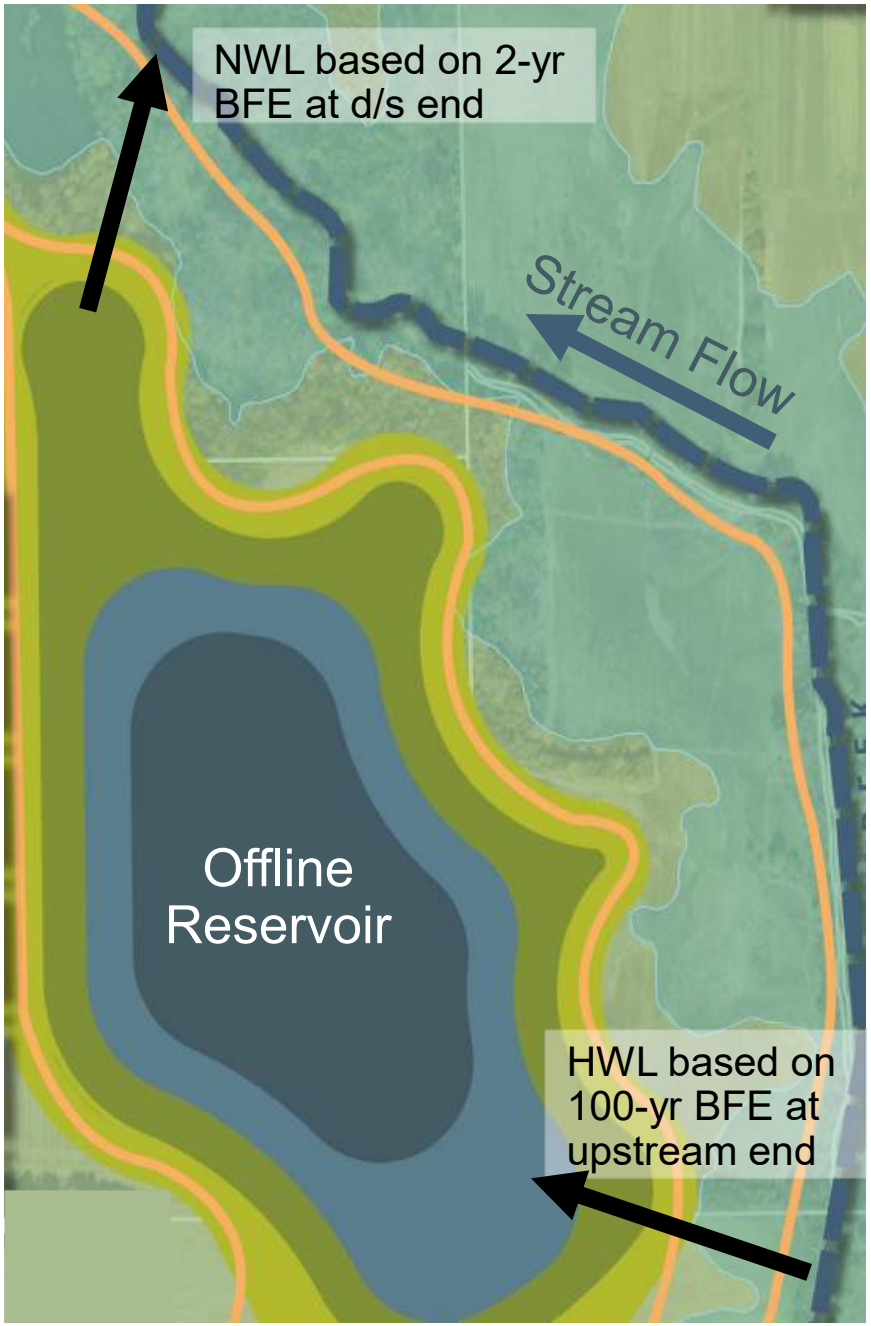
- Performed hydraulic modeling of 7 sites
- Focus was benefits to Little Calumet
- Storage potential for each site
- HEC-RAS:
  - Storage individually and in combinations
  - Gravity and Pumped



New Flood Storage Site Selection Process

Quantitative Assessment

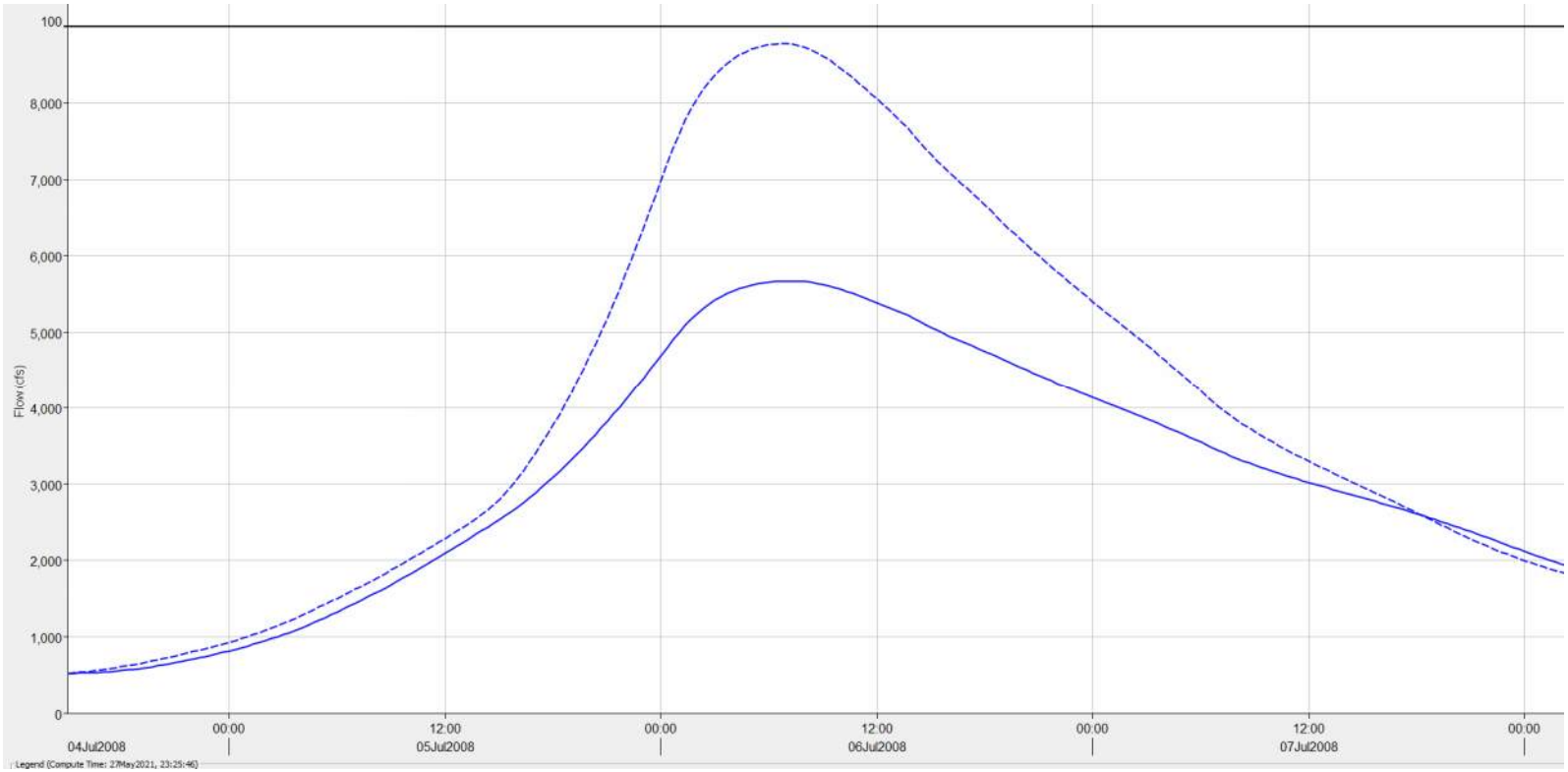
- Storage potential for each site:
  - HWL: 100-yr BFE
  - Gravity: 2-yr BFE
  - Pumped: bedrock
  - Shape: considered setbacks, floodplain



New Flood Storage Site Selection Process

Quantitative Assessment

- Results showed meaningful reductions in flow hydrographs with storage in place
- 100 yr BFE reduction on Little Cal varied from -0.1 ft to -1.5 ft



New Flood Storage Site Selection Process

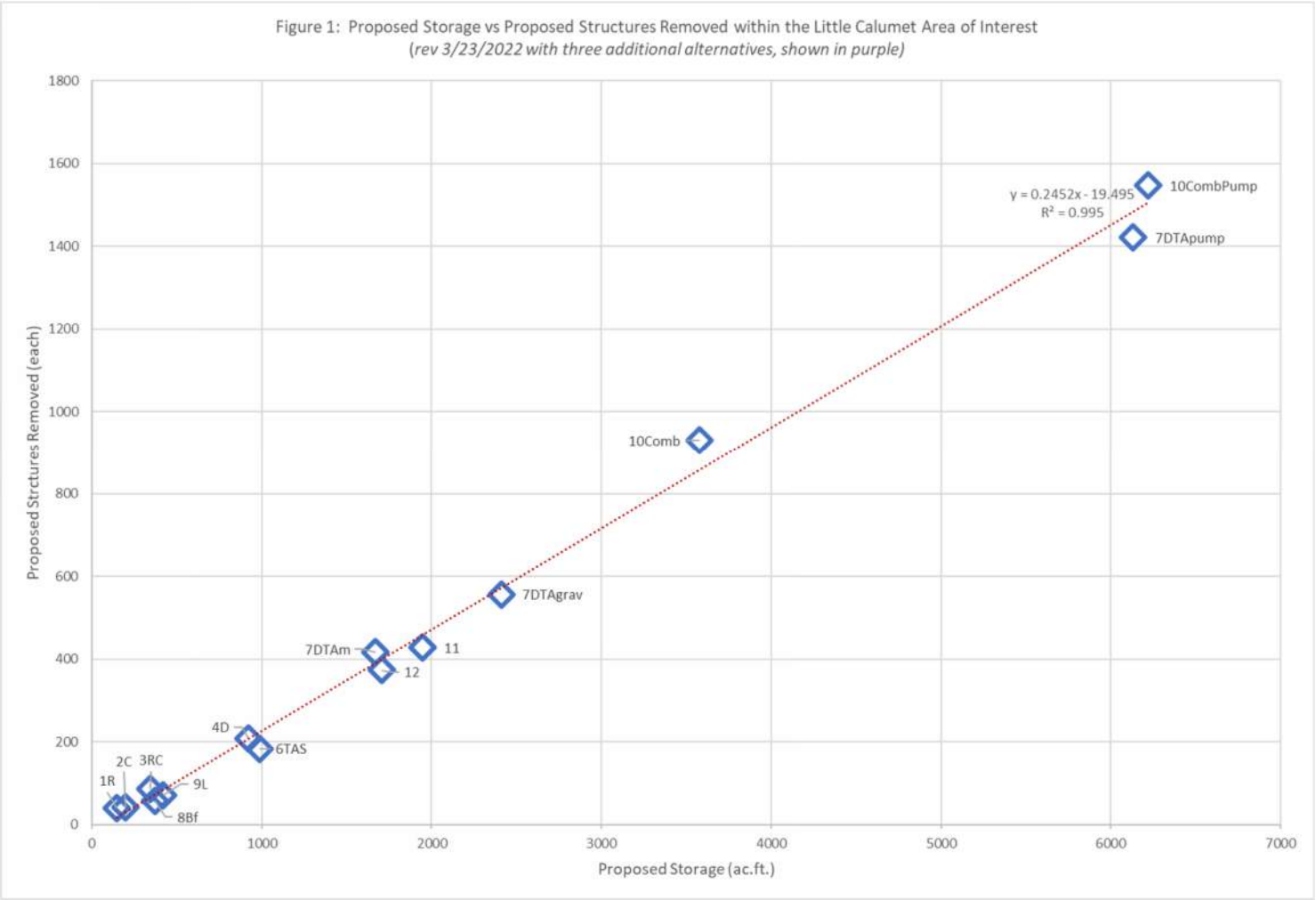
Quantitative Assessment

- GIS analysis of results
- Determined structures, parcels benefitted by each alternative

New Flood Storage Site Selection Process

Quantitative Assessment

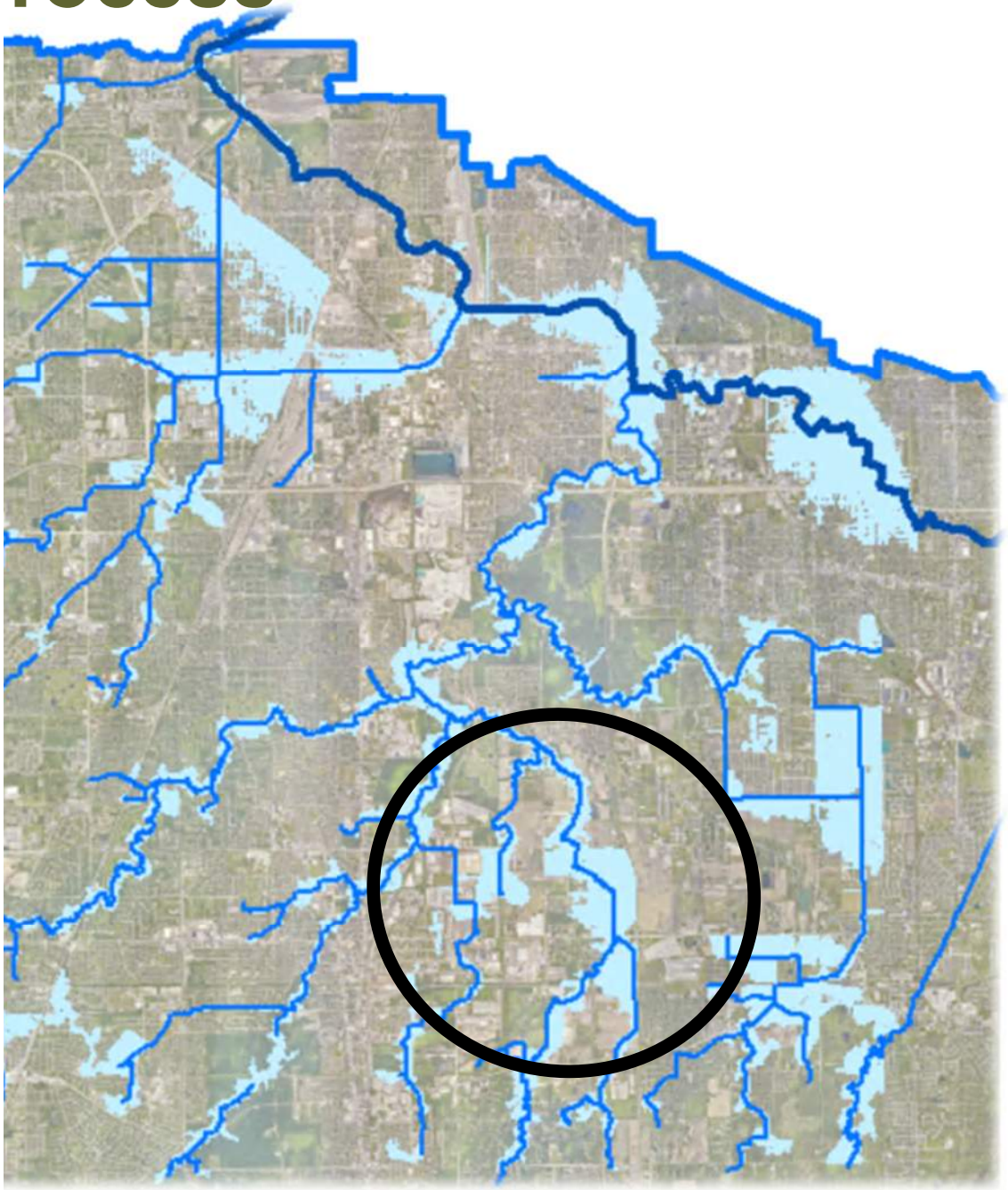
- Storage versus Benefit: linear relationship



New Flood Storage Site Selection Process

Current Status

- Area selected to advance to feasibility planning
- Hundreds of homes and parcels removed from floodplain
- Thousands of homes benefit from lower depths, shorter durations of flooding
- IGA between stakeholders
- Grant funding secured for feasibility planning, seeking funding for design and construction



New Flood Storage Site Selection Process

Questions?

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