WEST AND SOUTHWEST WINNETKA STORMWATER MANAGEMENT STUDY

EXPLORATION PHASE PUBLIC MEETING • MARCH 2016

THE VILLAGE OF WINNETKA
SINCE 1869

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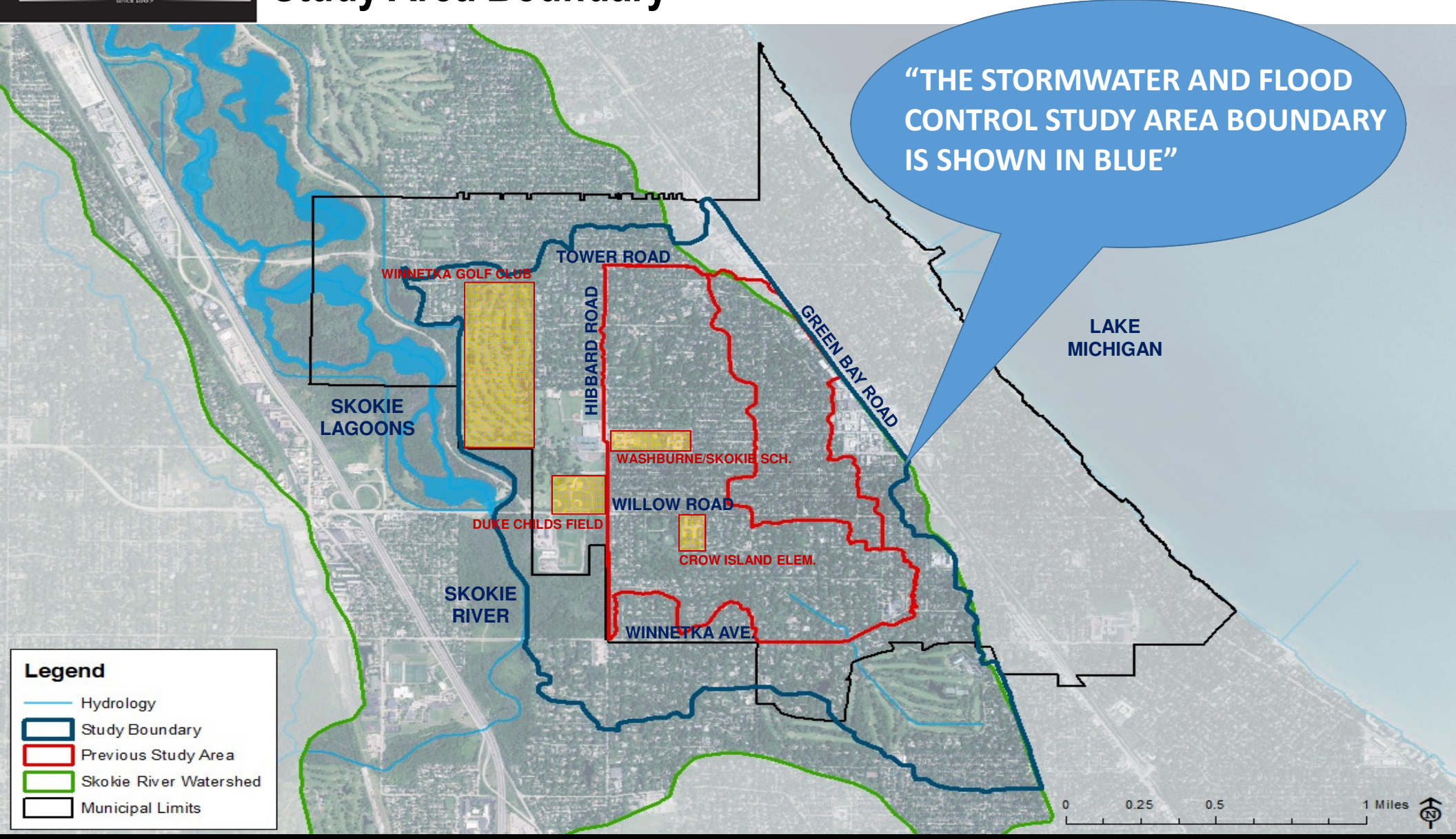
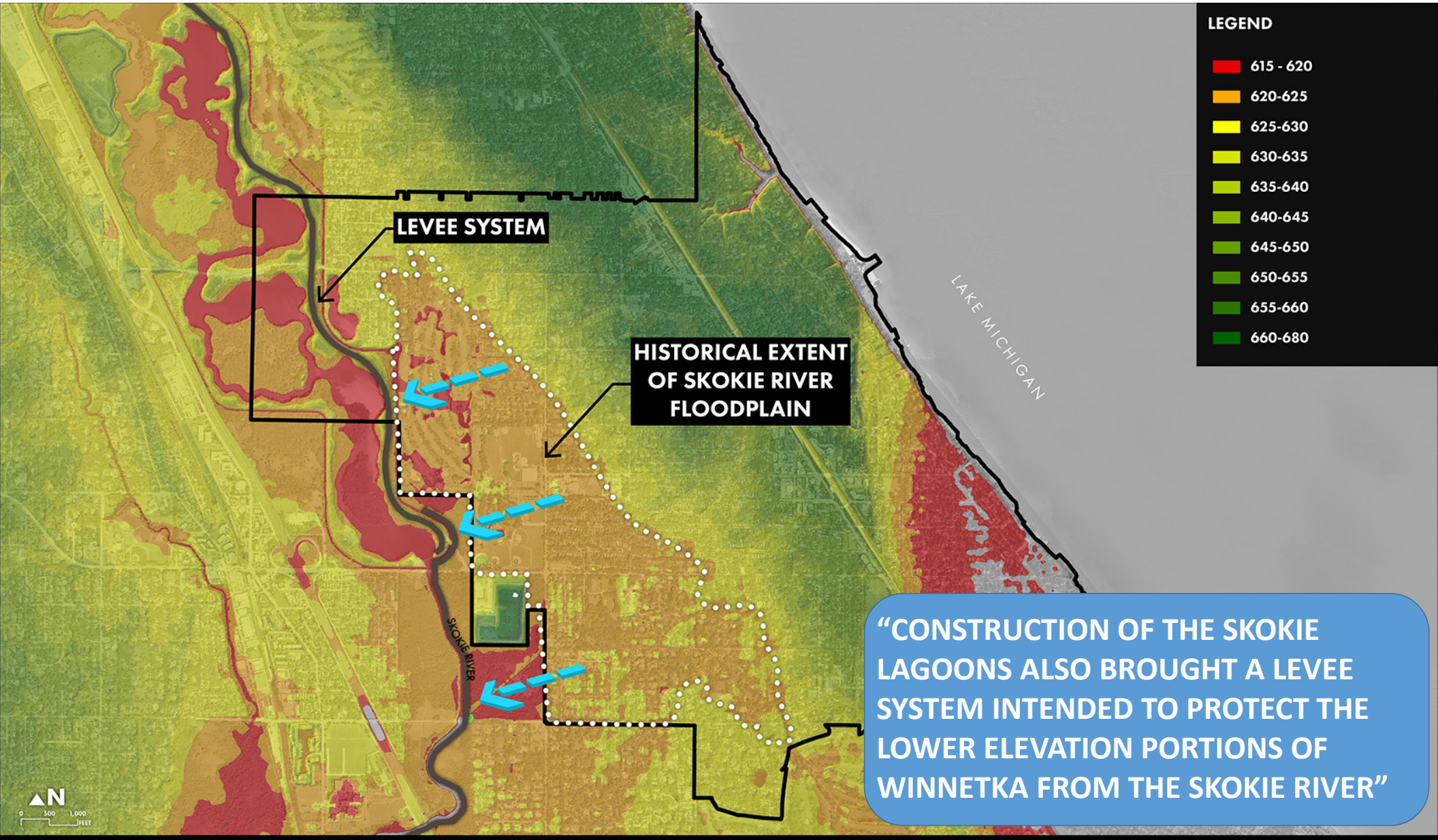
THE VILLAGE OF WINNETKA

Study Area Boundary



The character of the marsh varied from season to season.
During the spring and summer, water levels in the marsh ranged from a few inches to several feet deep."



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ELEVATION RANGES

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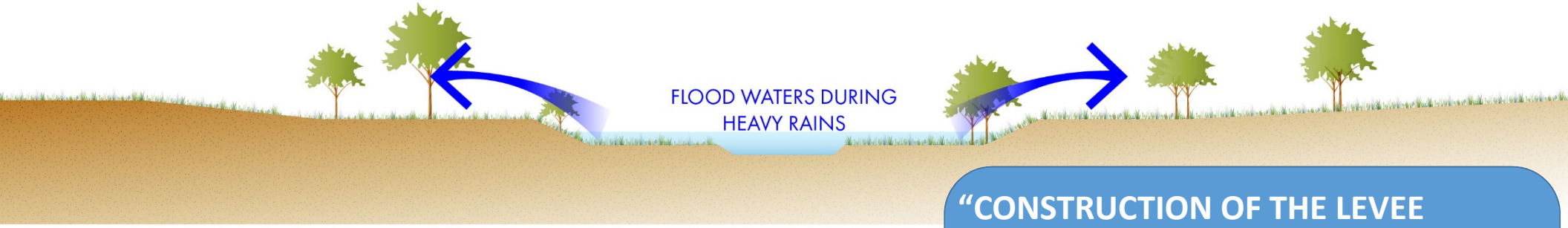
"HISTORICALLY, THE SKOKIE RIVER WAS ABLE TO OVERFLOW ITS BANKS"

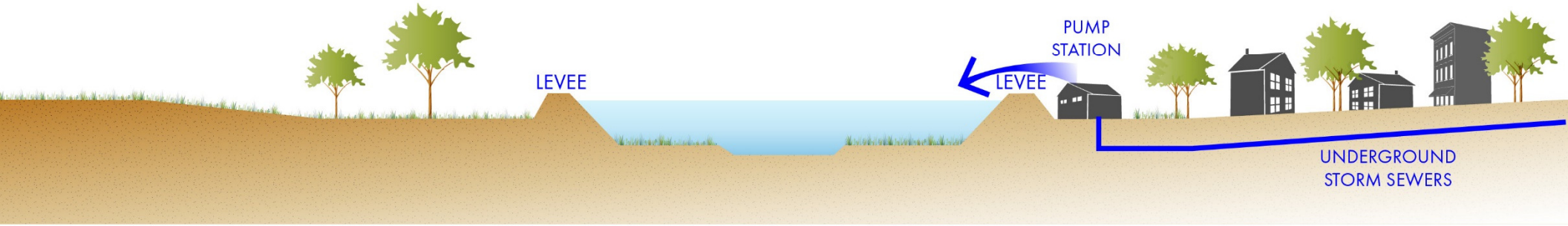
SKOKIE RIVER FLOODPLAIN



HISTORICAL CONDITION

"CONSTRUCTION OF THE LEVEE SYSTEM CONSTRICTED THE RIVER BUT ALSO IMPEDED NATURAL DRAINAGE OF WINNETKA TO THE RIVER, REQUIRING PUMPING OF STORMWATER OVER THE LEVEE"

SKOKIE RIVER FLOODPLAIN



CURRENT CONDITION

CONCEPTUAL GRAPHIC - NOT TO SCALE

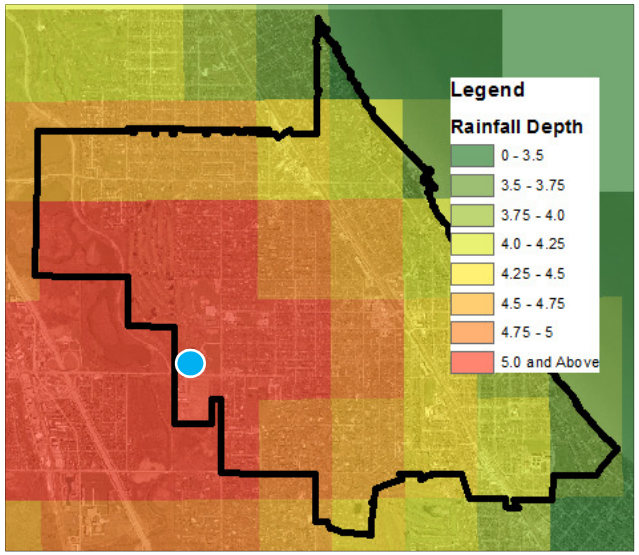
Project Progress Update

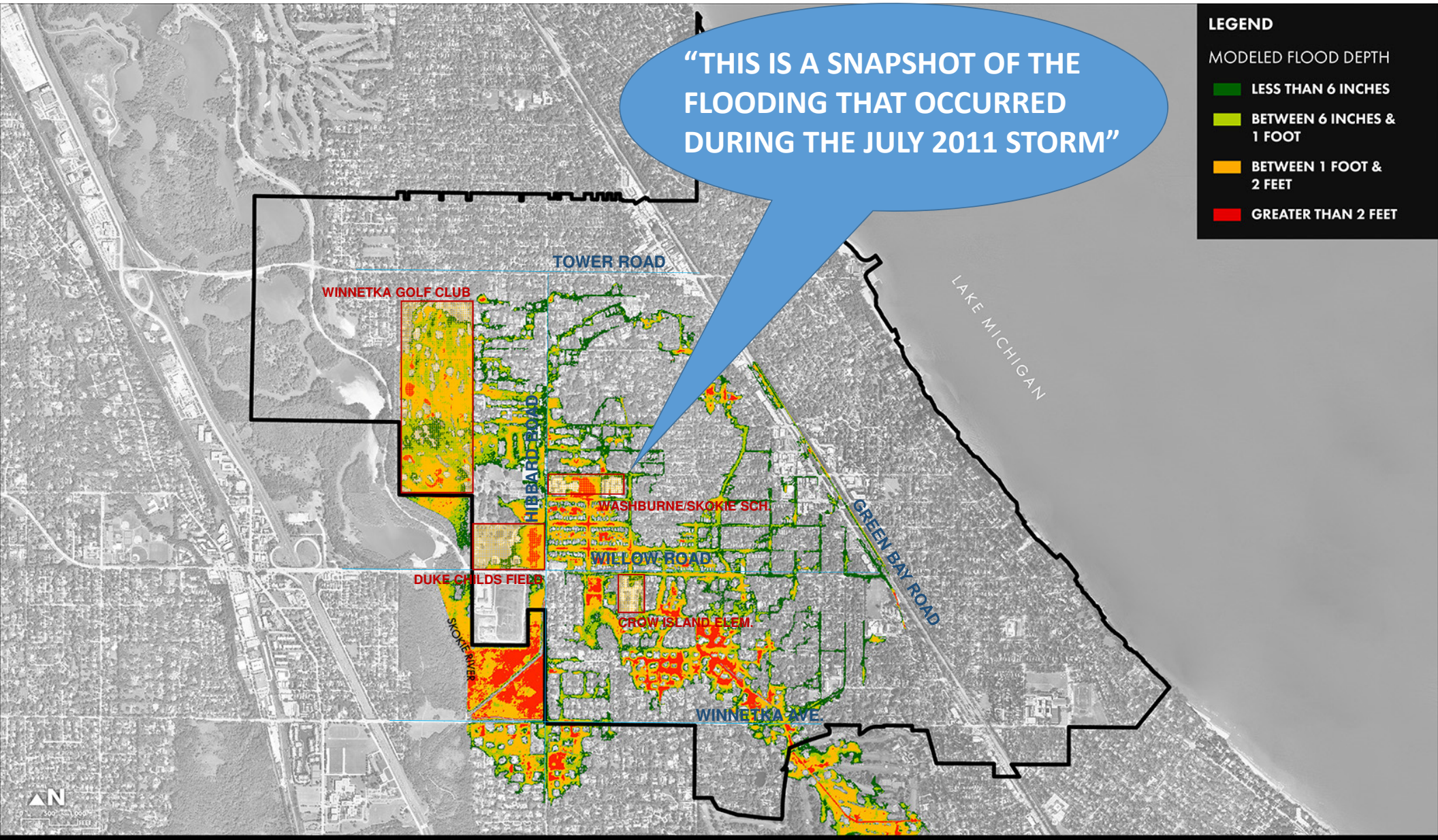
Updated XP-SWMM 2D Modeling

- Combined 6 independent models into 1 model
- Converted to an overland flow model
- Utilized LIDAR topographic data representing millions of individual ground elevations

"THE STORMWATER MODELING BEING USED FOR THIS STUDY IS SIGNIFICANTLY MORE SOPHISTICATED AND POWERFUL"

- Used actual rain gauge data in Winnetka, Evanston, Northbrook, Highland Park, and Wheeling (Chicago Executive Airport)
- Used historical rainfall input through Nexrad data to accurately distribute rainfall over the study area





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MODELED FLOOD DEPTHS: JULY 2011 EVENT

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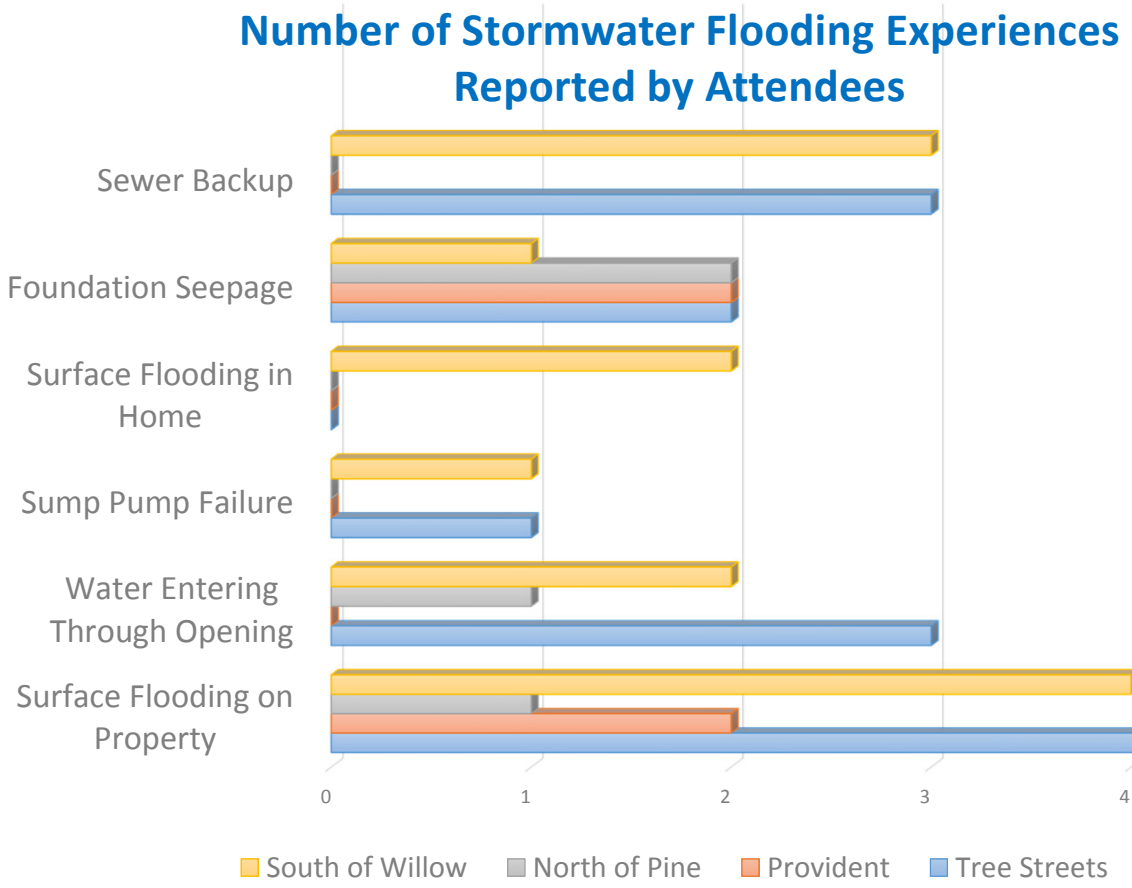
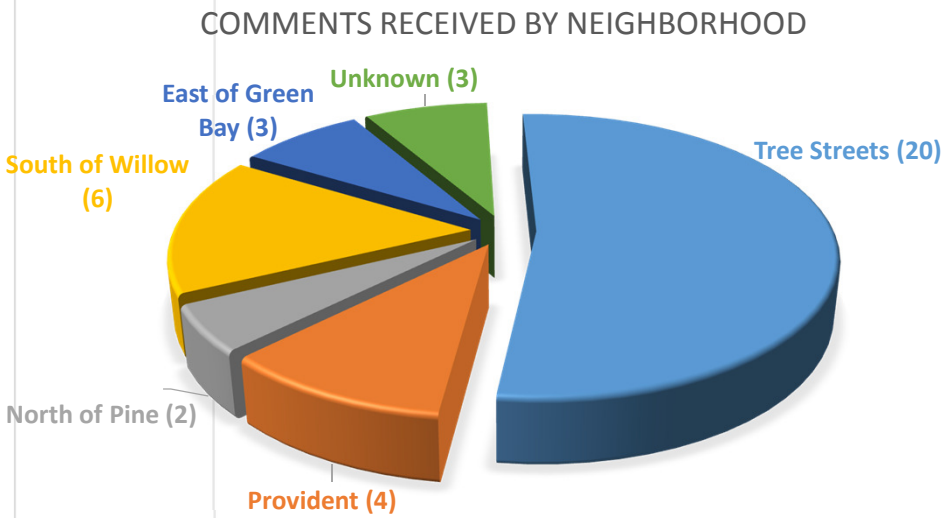
Public Meeting #1 Comments

- Comments received from 38 households at Jan. 23rd and 25th open houses
- Five neighborhoods represented

"VALUABLE INFORMATION WAS GATHERED IN OUR FIRST PUBLIC HEARINGS"





Project Progress Update

"SINCE OUR MEETINGS IN JANUARY WE HAVE BEEN IDENTIFYING OPPORTUNITIES AND CONTINUING OUR DISCUSSIONS WITH STAKEHOLDERS"

Developed Opportunities Matrix

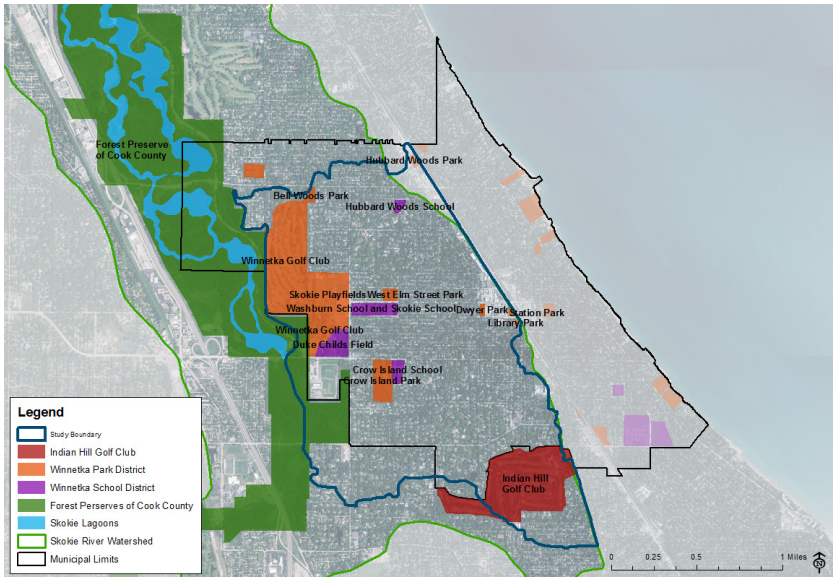
- "No Stone Unturned" approach

Evaluated and Modeled Opportunities

- Identified major issues and roadblocks
- Assessed feasibility
- Determined effectiveness and level of service

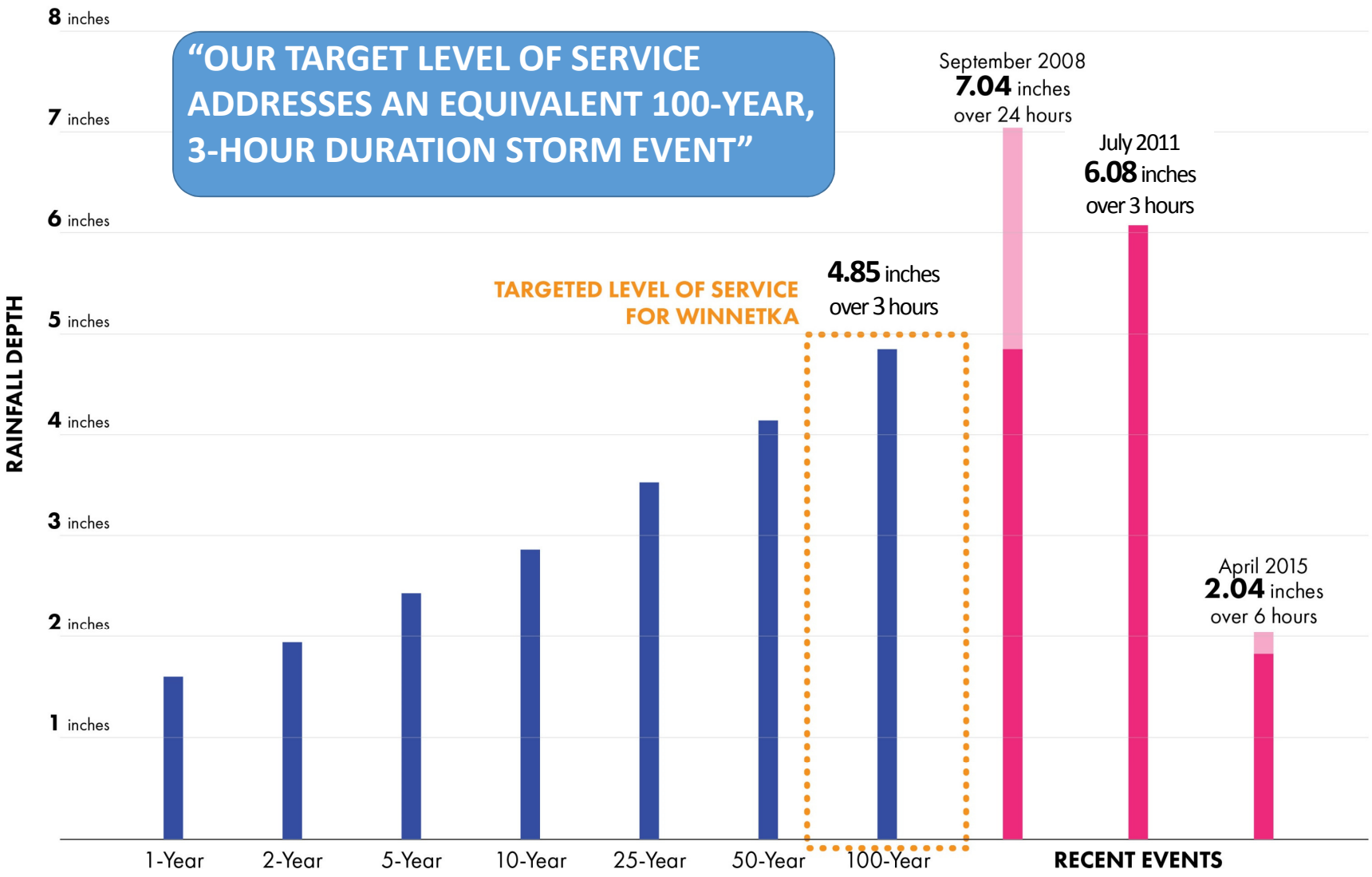
Stakeholder Engagement

- Meetings with other government agencies
- Resident input meetings and web site



THE VILLAGE OF WINNETKA

Target Level of Service

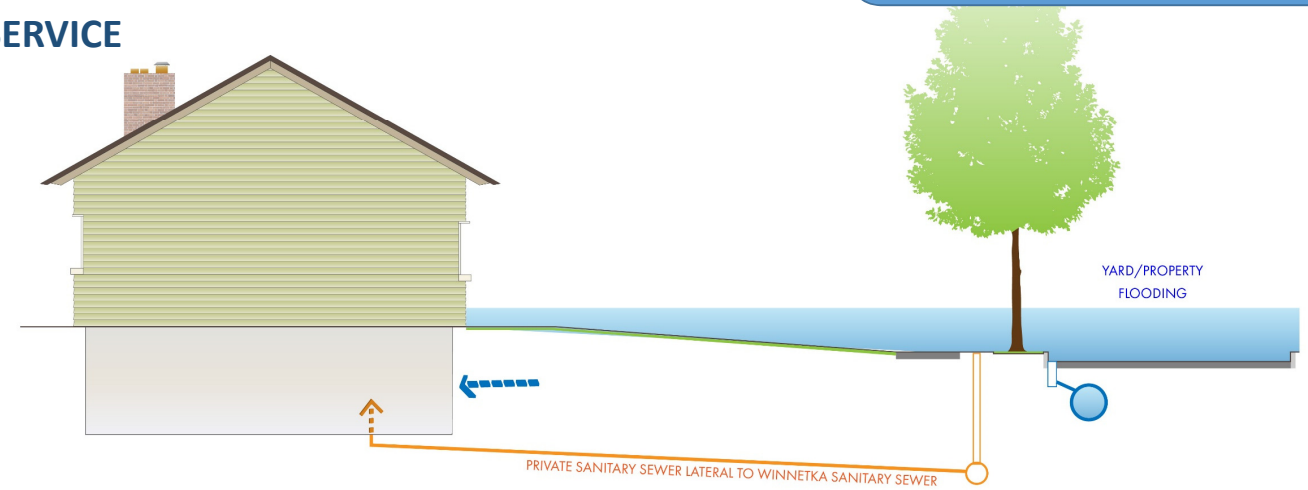


THE VILLAGE OF WINNETKA SINCE 1869

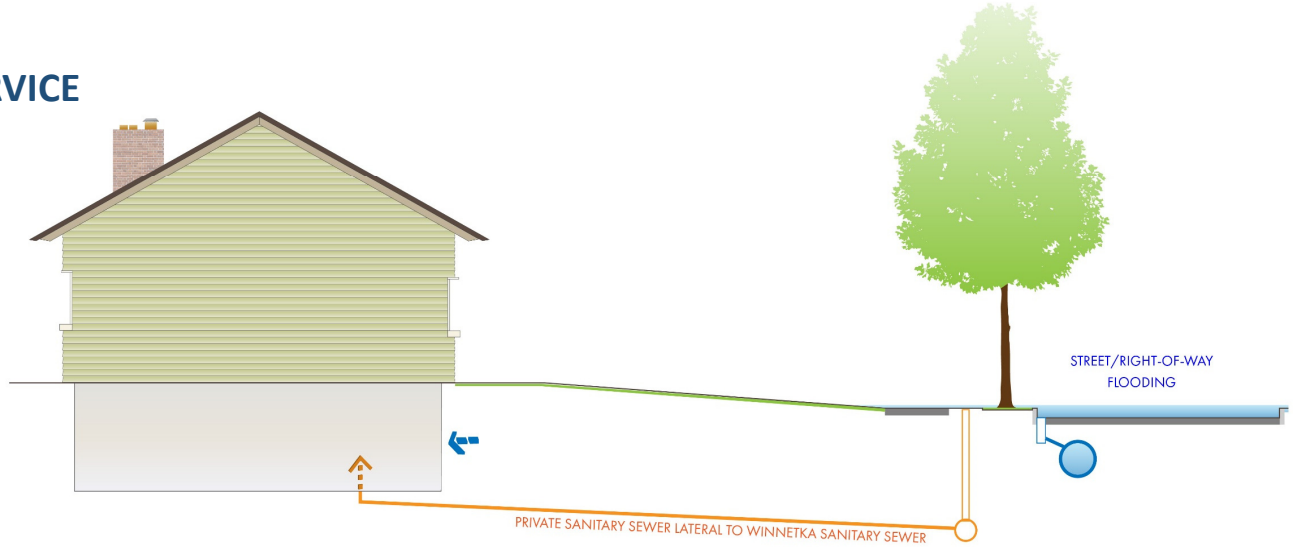
Target Level of Service

"OUR TARGET LEVEL OF SERVICE IS TO REDUCE FLOODING ON PRIVATE PROPERTY"

CURRENT LEVEL OF SERVICE

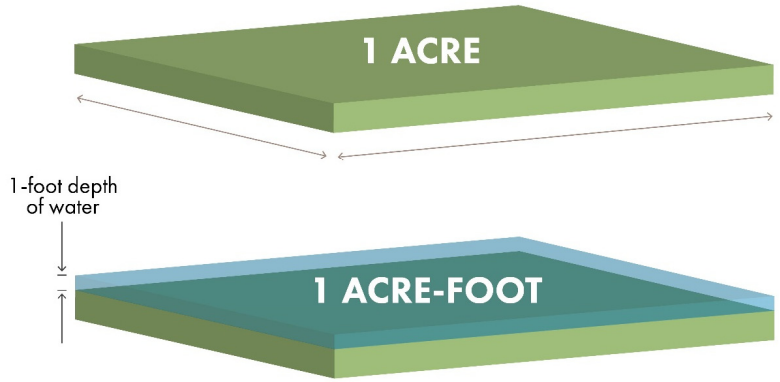


TARGET LEVEL OF SERVICE

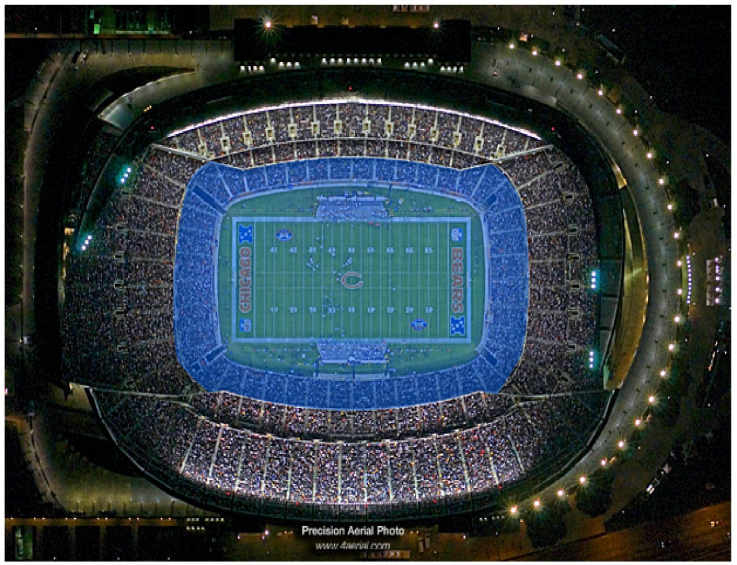


Target Level of Service

"TO ACHIEVE OUR LEVEL OF SERVICE WE NEED TO REMOVE 150 ACRE-FEET OF STORMWATER FROM STREETS AND HOMES"



1 ACRE-FOOT = 325,851 gallons



Source: precision Aerial Photo (www.4aerial.com)

150 ACRE-FEET — STORAGE NEEDED TO MEET THE TARGETED LEVEL OF SERVICE IN WINNETKA

35 FEET — DEPTH OF WATER IN **SOLDIER FIELD** (ALL OF SECTION 100)

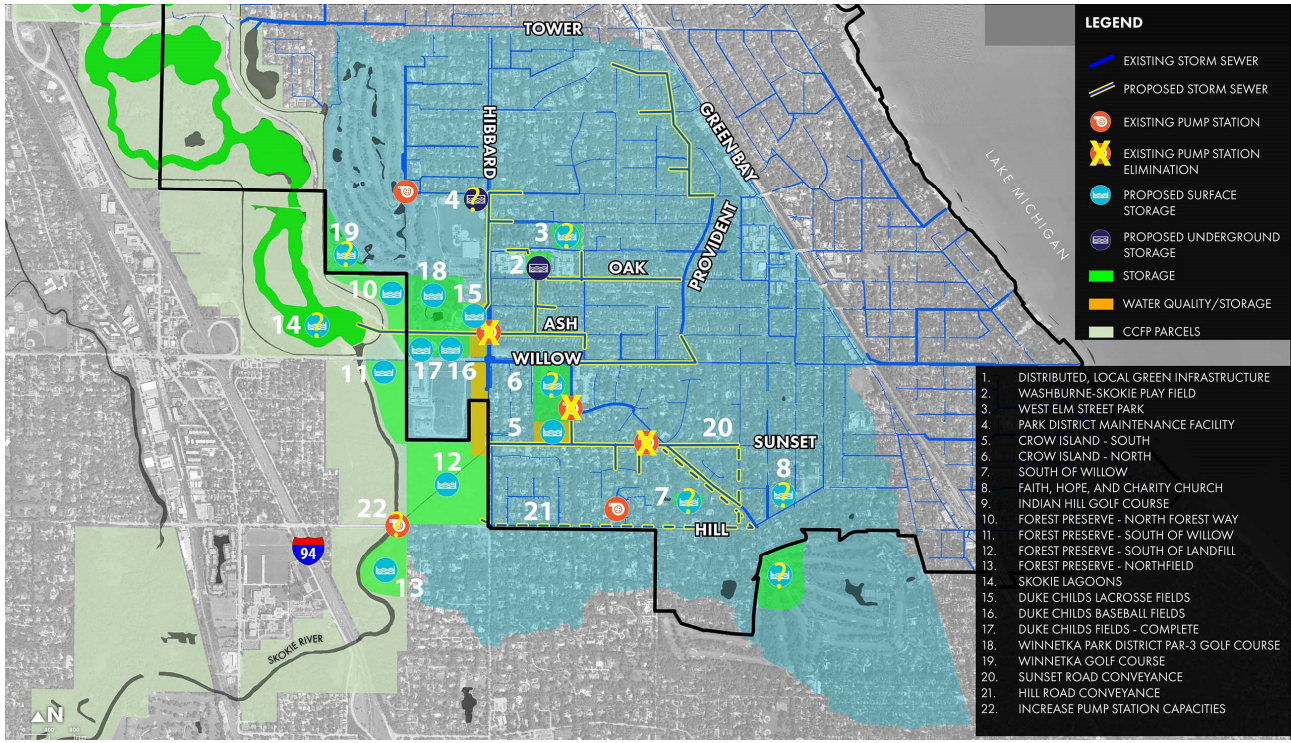
THE VILLAGE OF WINNETKA

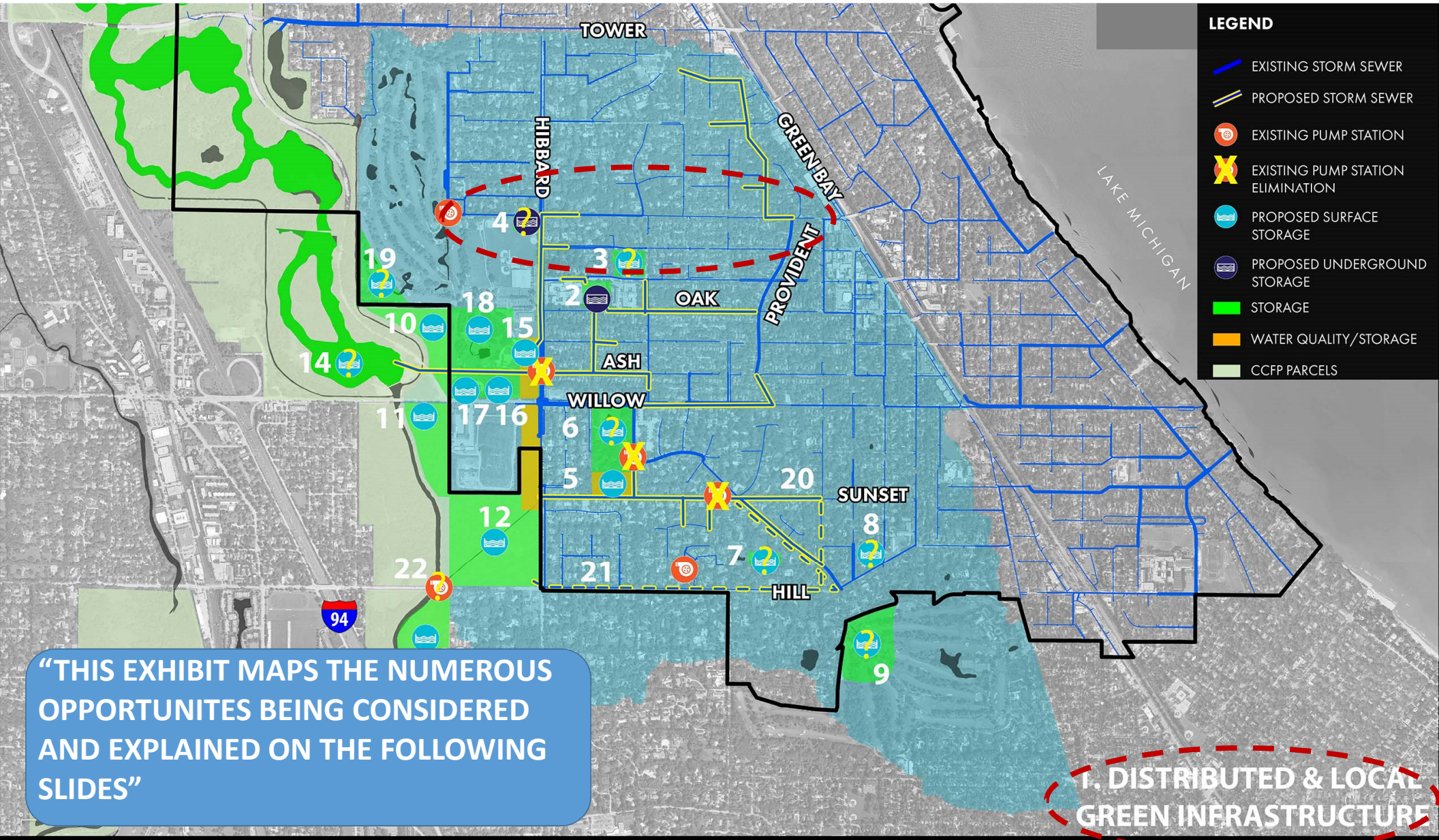
Stormwater Management Opportunities

"EVERY OPPORTUNITY IS BEING CONSIDERED AND A SHORTLIST IDENTIFIED"

"No Stone Unturned" Approach

- Identifying numerous opportunity types and variations
- Identifying the pros/cons/challenges
- Modeling the opportunities to determine potential benefits
- Evaluating technical feasibility
- Identifying the less-effective and technically infeasible options to narrow the list





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STORMWATER MANAGEMENT SYSTEM OPPORTUNITIES

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Stormwater Management Opportunities – Homeowner Level

1. Distributed Green Infrastructure

- 3,095 residential parcels in the study area
- Approximately 33% impervious

"THE VOLUME OF STORMWATER FROM A TYPICAL RESIDENTIAL PARCEL POSES A CHALLENGE FOR GREEN INFRASTRUCTURE"

Residential Parcels	Total Area (SF)	Impervious Area (SF)	2-Yr 3-Hr Storm (Gal)	10-Yr 3-Hr Storm (Gal)	50-Yr 3-Hr Storm (Gal)	100-Yr 3-Hr Storm (Gal)
Average Parcel	14,500	4,900	7,080	10,400	15,100	17,700

Stormwater Management Opportunities – Homeowner Level

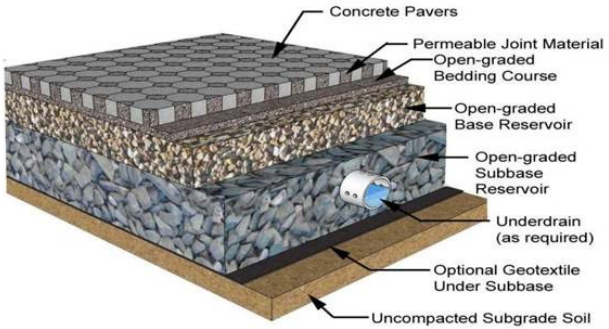
"GREEN INFRASTRUCTURE PROVIDES LIMITED OPPORTUNITIES"

1. Distributed Green Infrastructure

- Rain Barrels
  - 20 to 40% participation (600 to 1200 homes)
  - 2 barrels per property implemented over time
  - 0.2 to 0.4 Ac-Ft of total storage in the watershed

- Rain Gardens
  - 10 to 20% participation (310 to 620 homes)
  - 300 SF garden per home implemented over time
  - 3 to 6 Ac-Ft of total storage in the watershed

- Pervious Driveways
  - 3 to 8% participation (100 to 250 homes)
  - 1,200 SF driveway per home implemented over time
  - 2 to 5 Ac-Ft of total storage in the watershed



Stormwater Management Opportunities – Local Level

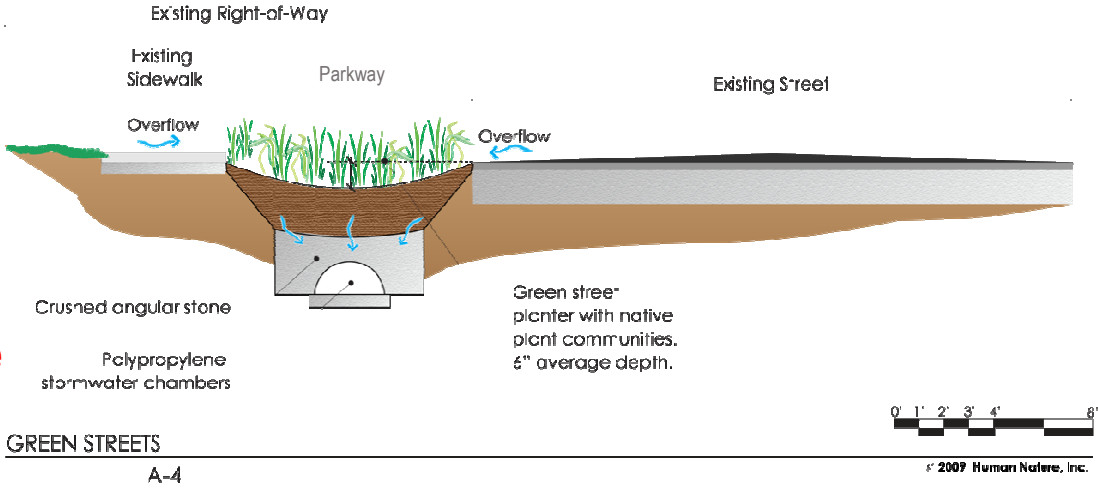
1. Local Green Infrastructure

"GREEN INFRASTRUCTURE PROVIDES LIMITED OPPORTUNITIES"

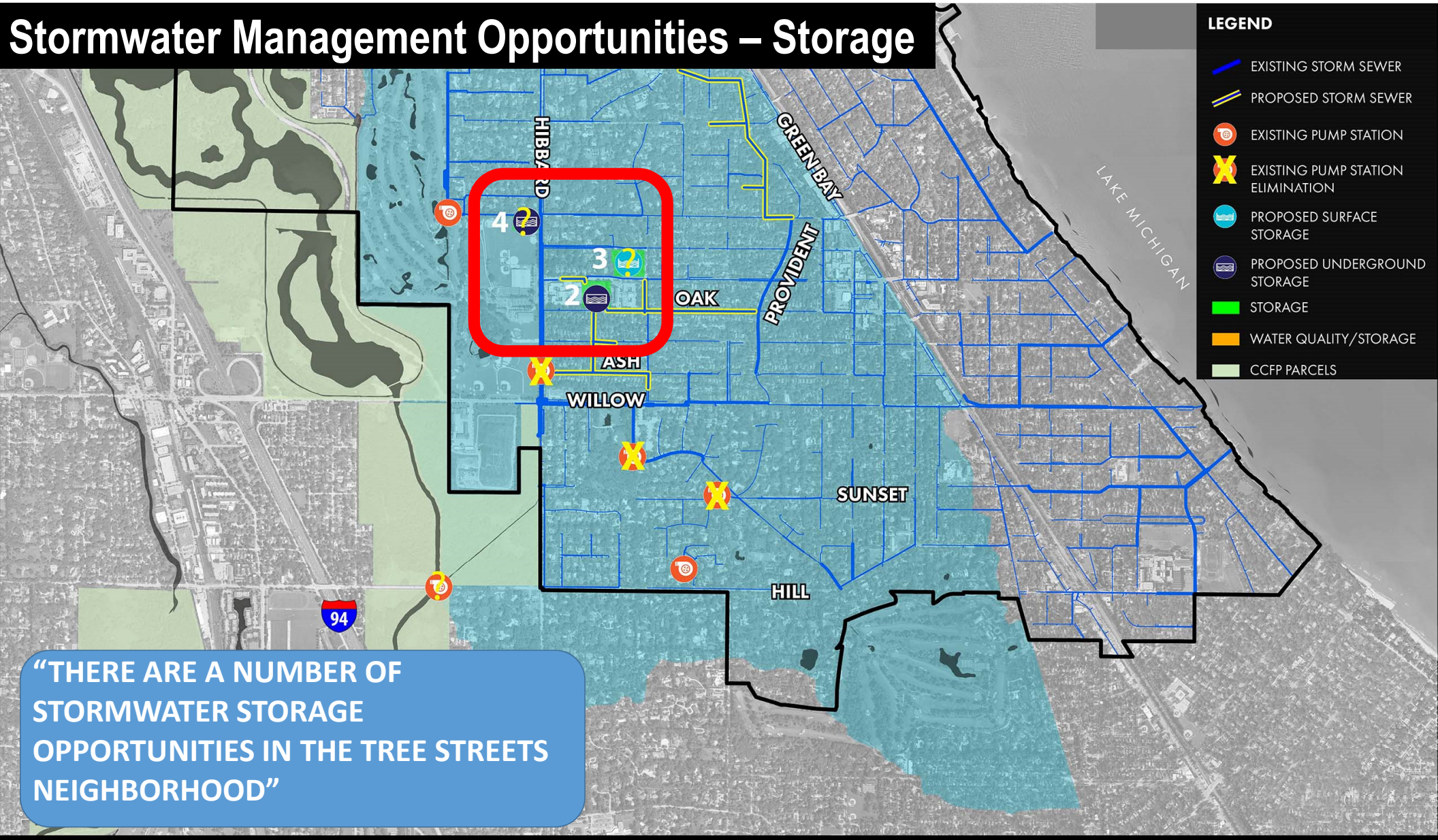
- Street Curb Bump Outs
  - 15 to 20 intersections
  - 4 per intersection
  - 0.4 to 0.6 Ac-Ft of total storage in the watershed

- Green Parkways with Storage Chambers
  - Adjacent to 20 to 30% of new storm sewer
  - Tree removal in parkways
  - 3 to 5 Ac-Ft of total storage in the watershed

- Green Intersections
  - Closing an intersection to traffic
  - 0.5 to 0.8 acre feet of total storage per intersection



Stormwater Management Opportunities – Storage

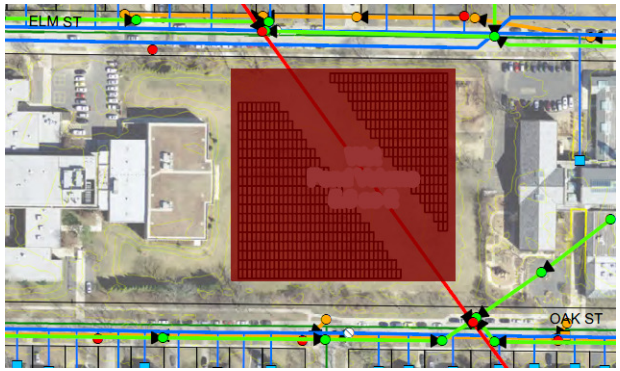


"THERE ARE A NUMBER OF STORMWATER STORAGE OPPORTUNITIES IN THE TREE STREETS NEIGHBORHOOD"

Stormwater Management Opportunities - Storage

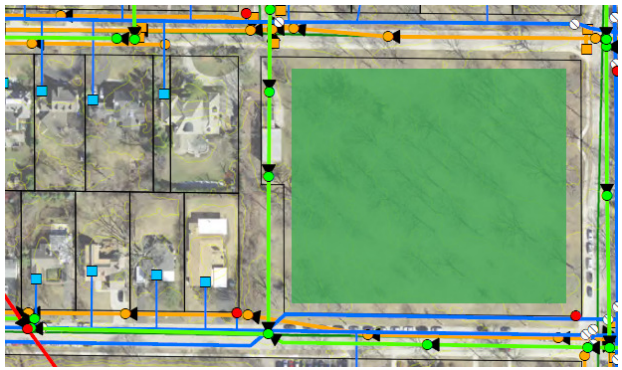
2. Washburne-Skokie Play Field

- Underground storage with grass or turf field above
- Provides direct relief to the Tree Streets
- 4 to 6 Ac-Ft of storage



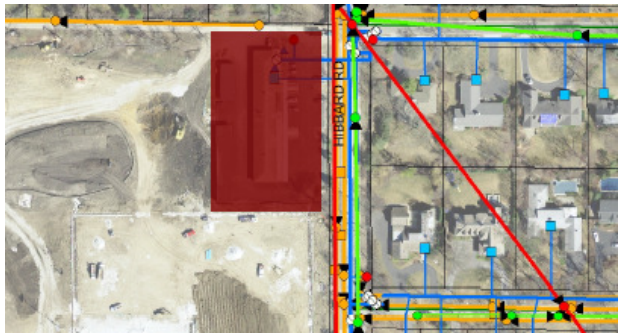
3. West Elm Street Park

- Above ground wet or wetland storage
- Mature, high quality tree removal
- Provides direct relief to the Trees Streets
- 8 to 12 Ac-Ft of storage

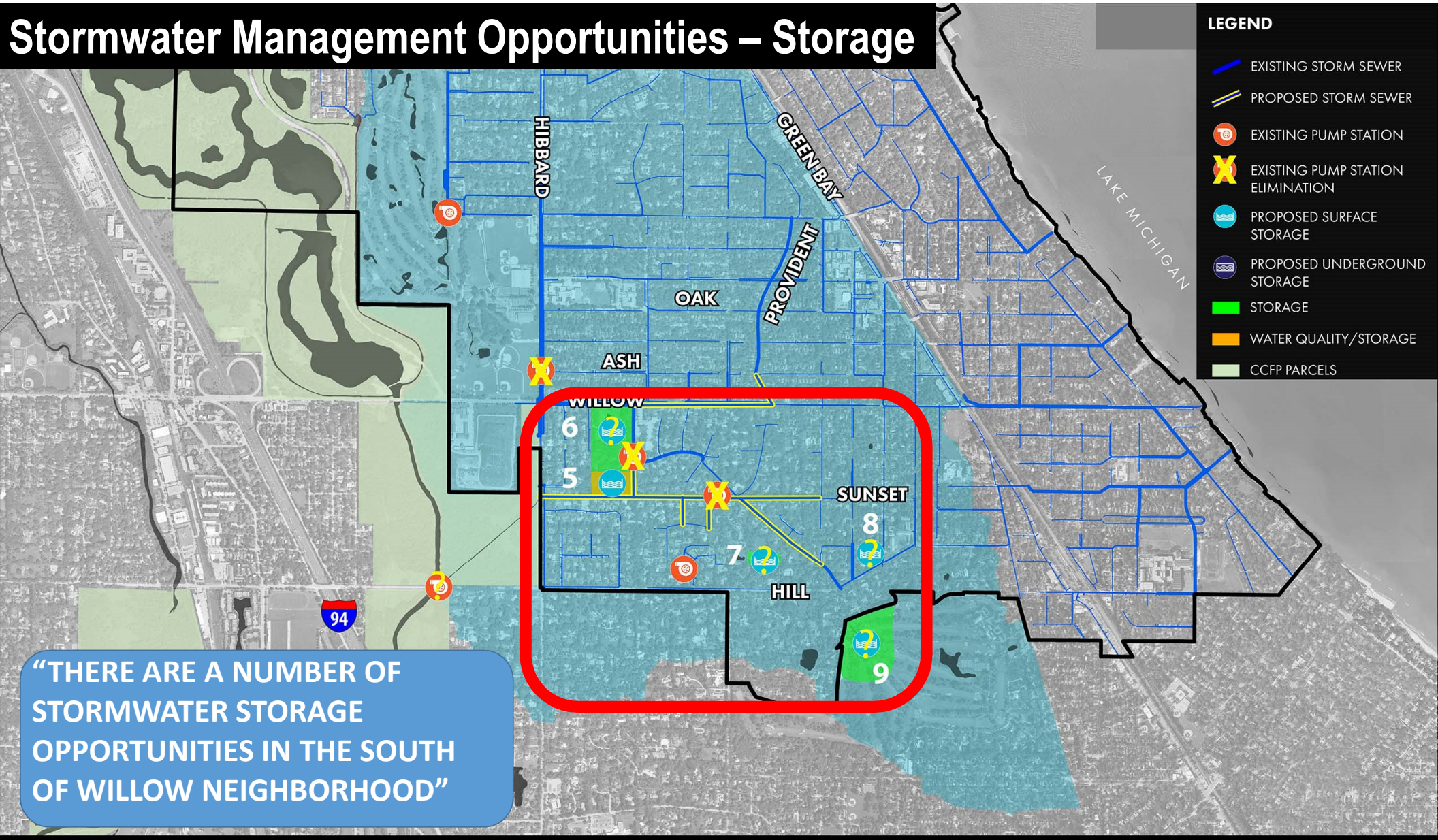


4. Park District Maintenance Facility

- Underground storage with turf field/parking lot
- Not significantly effective
- 2 to 3 Ac-Ft of storage



Stormwater Management Opportunities – Storage



"THERE ARE A NUMBER OF STORMWATER STORAGE OPPORTUNITIES IN THE SOUTH OF WILLOW NEIGHBORHOOD"

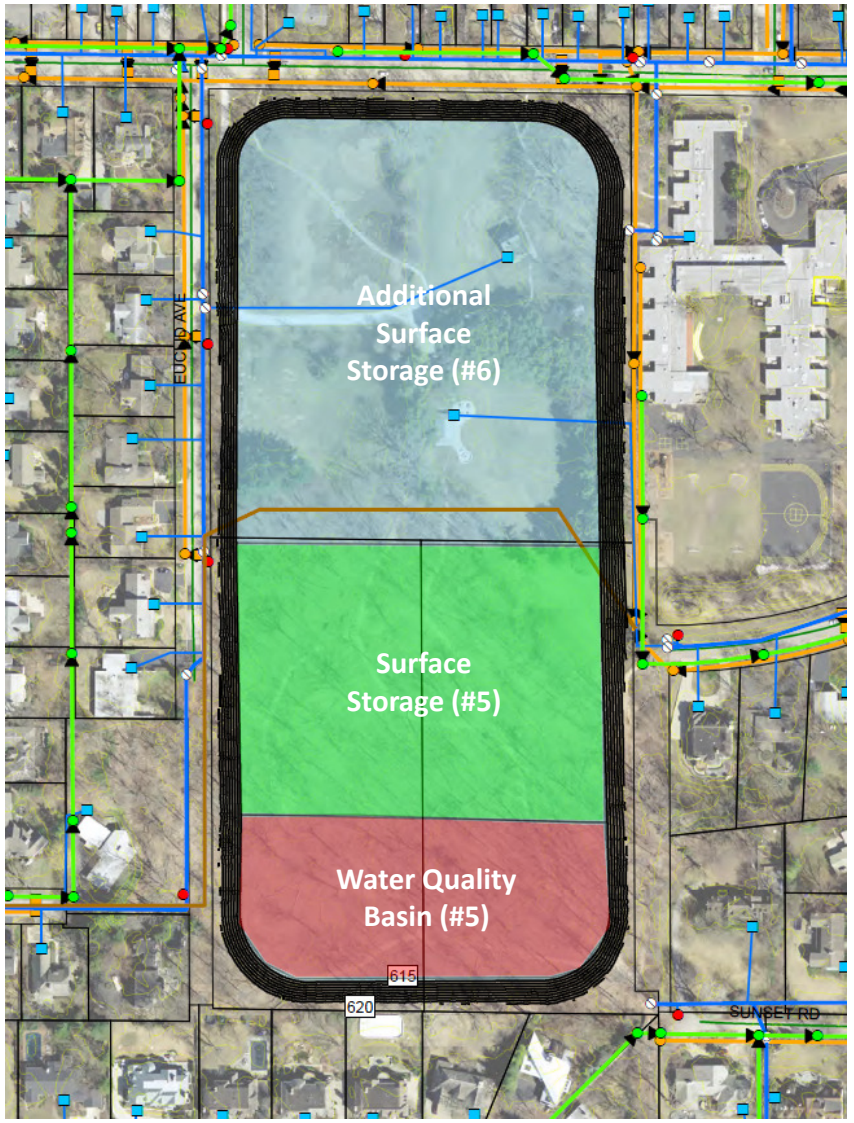
Stormwater Management Opportunities - Storage

5. Crow Island Park – South

- Above ground wet/wetland storage
- Provides critical water quality improvements
- Mature, high quality tree removal
- 20 to 35 Ac-Ft of storage

6. Crow Island Park – North

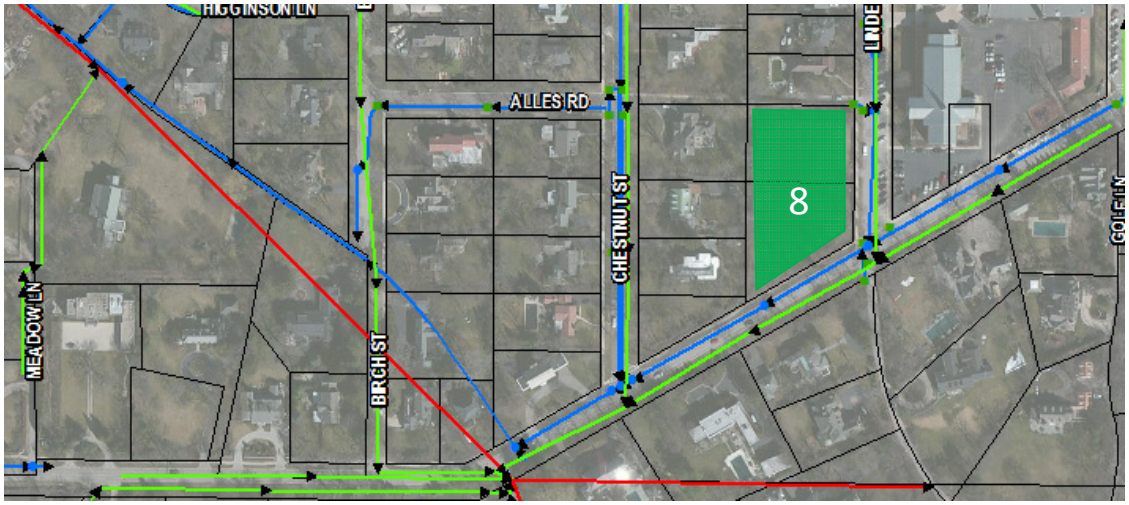
- Above ground wet/wetland storage
- Similar environment to current but loses park setting and historic structure
- 12 to 25 Ac-Ft of storage



Stormwater Management Opportunities - Storage

7. Vacant Parcels

- Above ground wet or wetland storage
- Location may not be connected
- 1 to 3 Ac-Ft of storage (per parcel estimated)

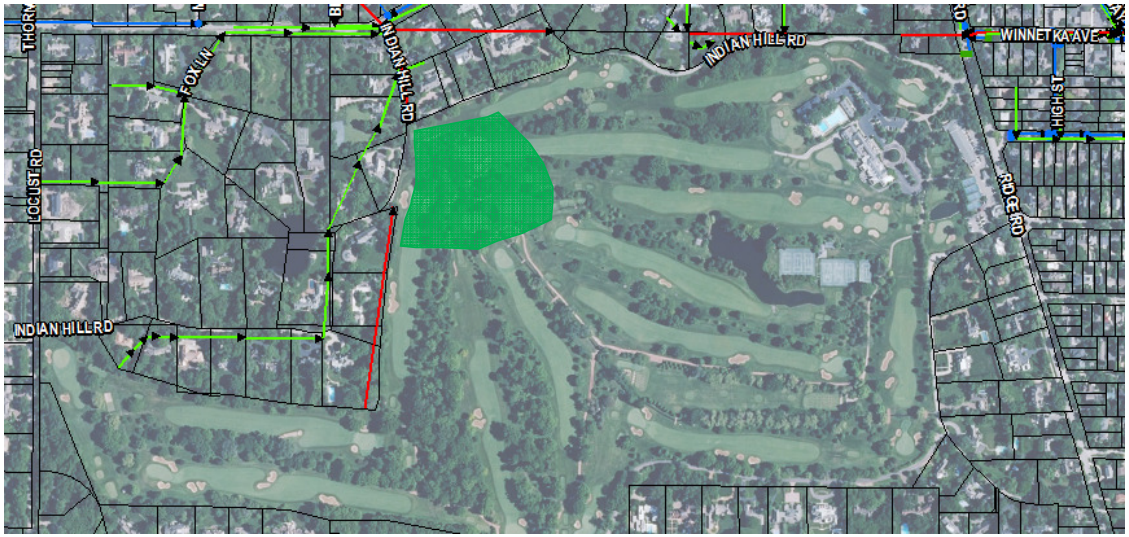


8. Faith, Hope and Charity Church

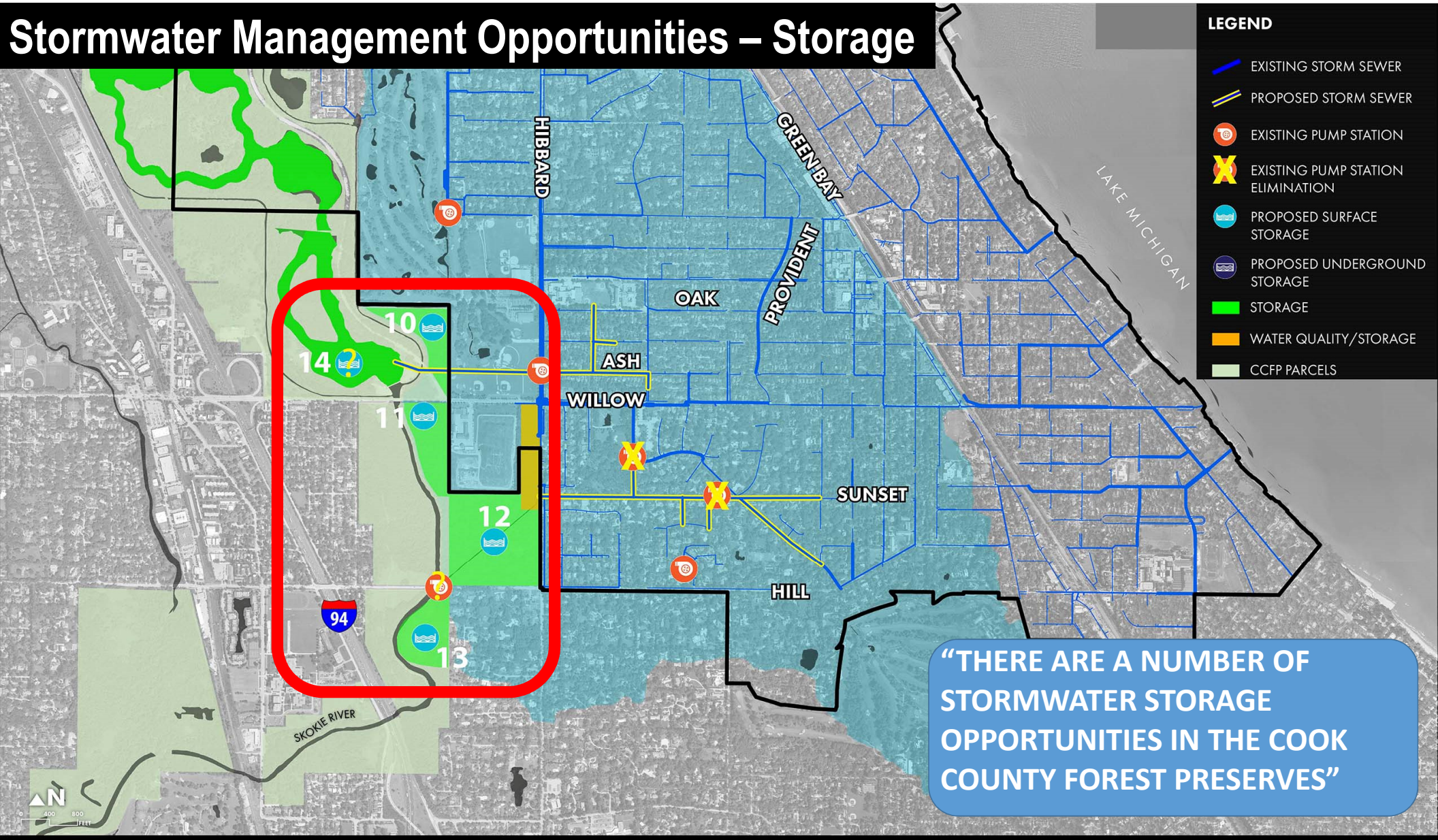
- Underground or surface storage
- Not significantly effective
- 2 to 3 Ac-Ft of storage

9. Indian Hill Golf Course

- Above ground wet or wetland storage
- Would be worked into existing course
- 4 to 6 Ac-Ft of storage



Stormwater Management Opportunities – Storage



"THERE ARE A NUMBER OF STORMWATER STORAGE OPPORTUNITIES IN THE COOK COUNTY FOREST PRESERVES"

Stormwater Management Opportunities - Storage

10. Forest Preserve – North Forest Way

- Above ground wet or wetland storage
- Significant tree cover, higher ground elevation
- 20 to 30 Ac-Ft of storage

11. Forest Preserve – South of Willow

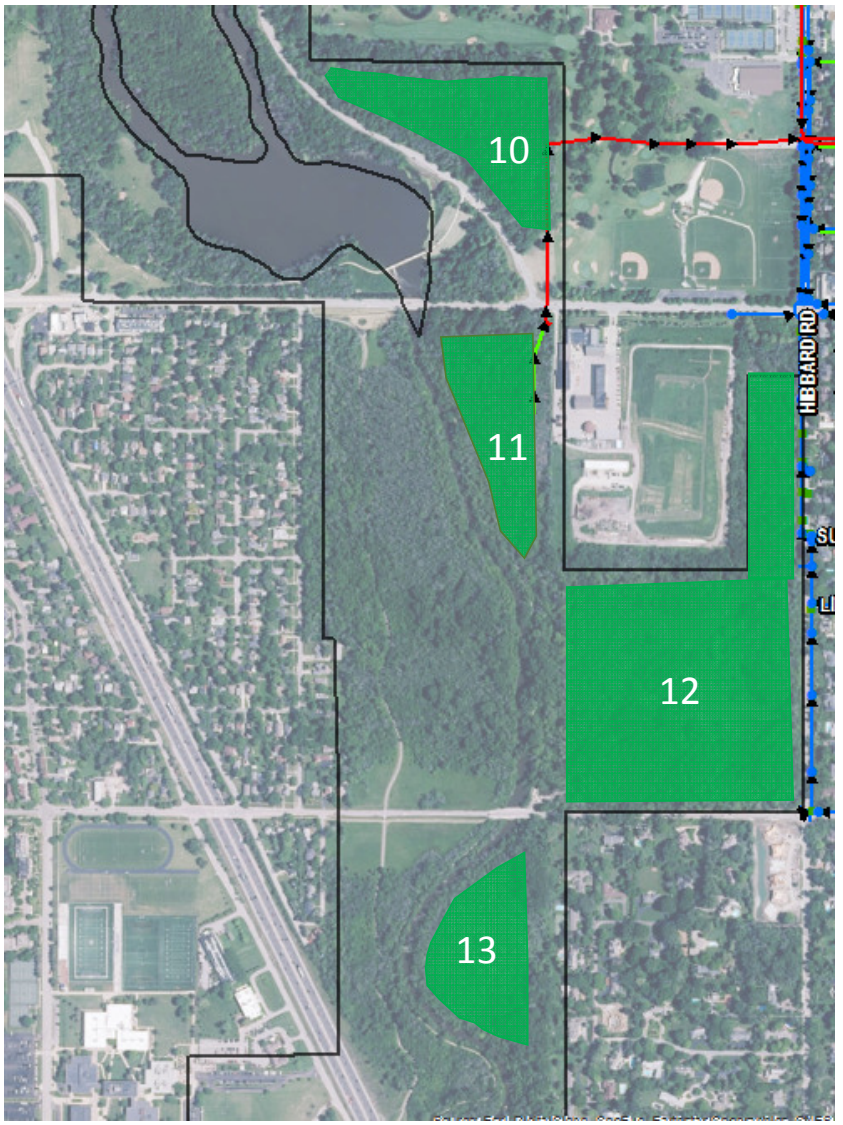
- Above ground wet or wetland storage
- Significant tree cover, higher ground elevation
- 20 to 35 Ac-Ft of storage

12. Forest Preserve – South of Landfill

- Above ground wet or wetland storage
- Current route for all runoff, significant tree cover
- 60 to 100 Ac-Ft of storage

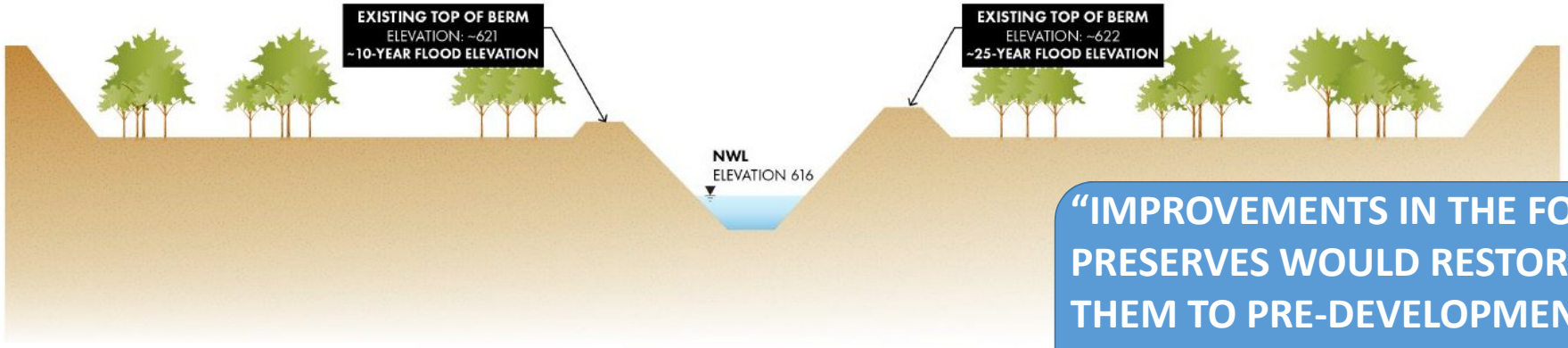
13. Forest Preserve – Northfield

- Above ground wet or wetland storage
- Significant tree cover, disconnected
- 15 to 25 Ac-Ft of storage



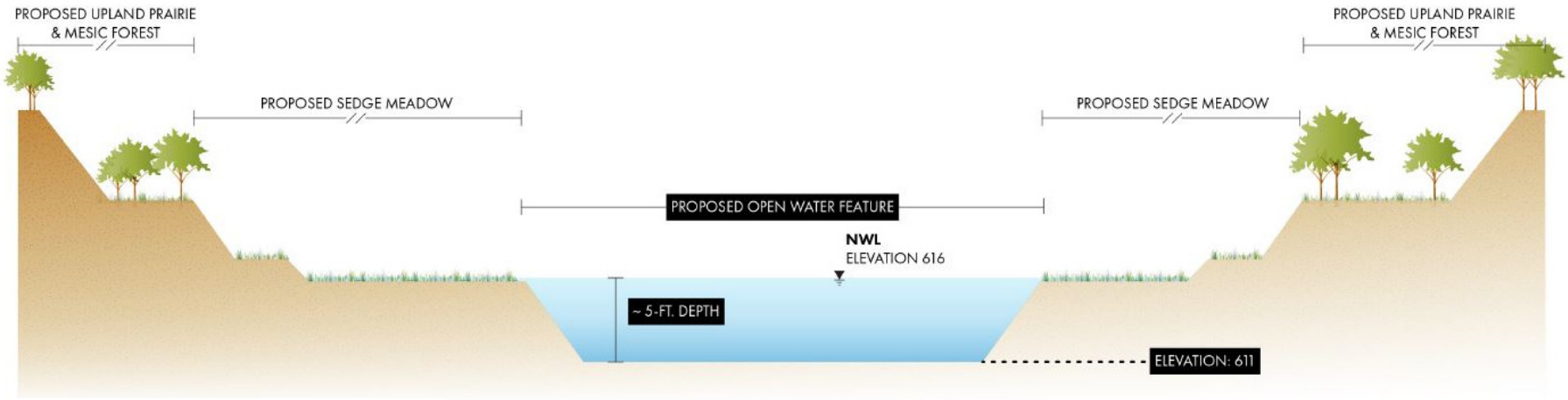
Stormwater Management Opportunities - Storage

Forest Preserve Example



Forest Preserve Ditch (NOT TO SCALE; SCHEMATIC IS VERTICALLY & HORIZONTALLY EXAGGERATED)

"IMPROVEMENTS IN THE FOREST PRESERVES WOULD RESTORE THEM TO PRE-DEVELOPMENT CONDITIONS "

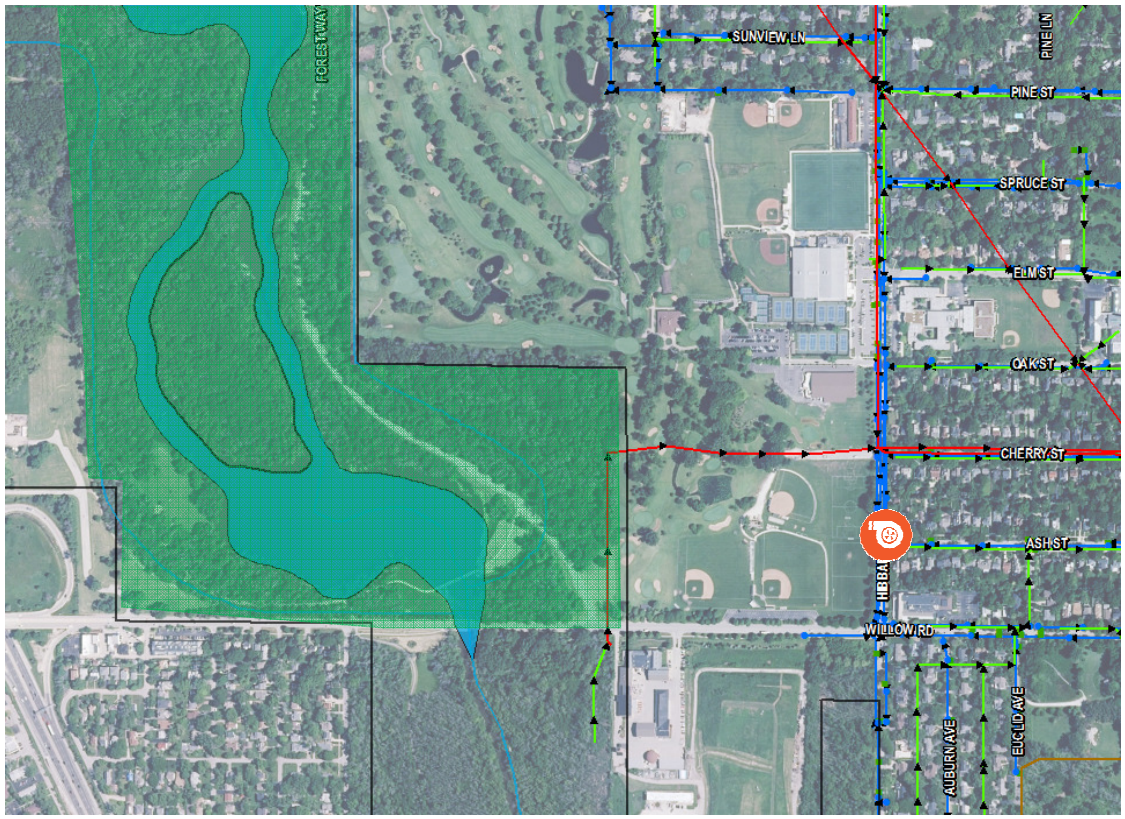


Forest Preserve Ditch (NOT TO SCALE; SCHEMATIC IS VERTICALLY & HORIZONTALLY EXAGGERATED)

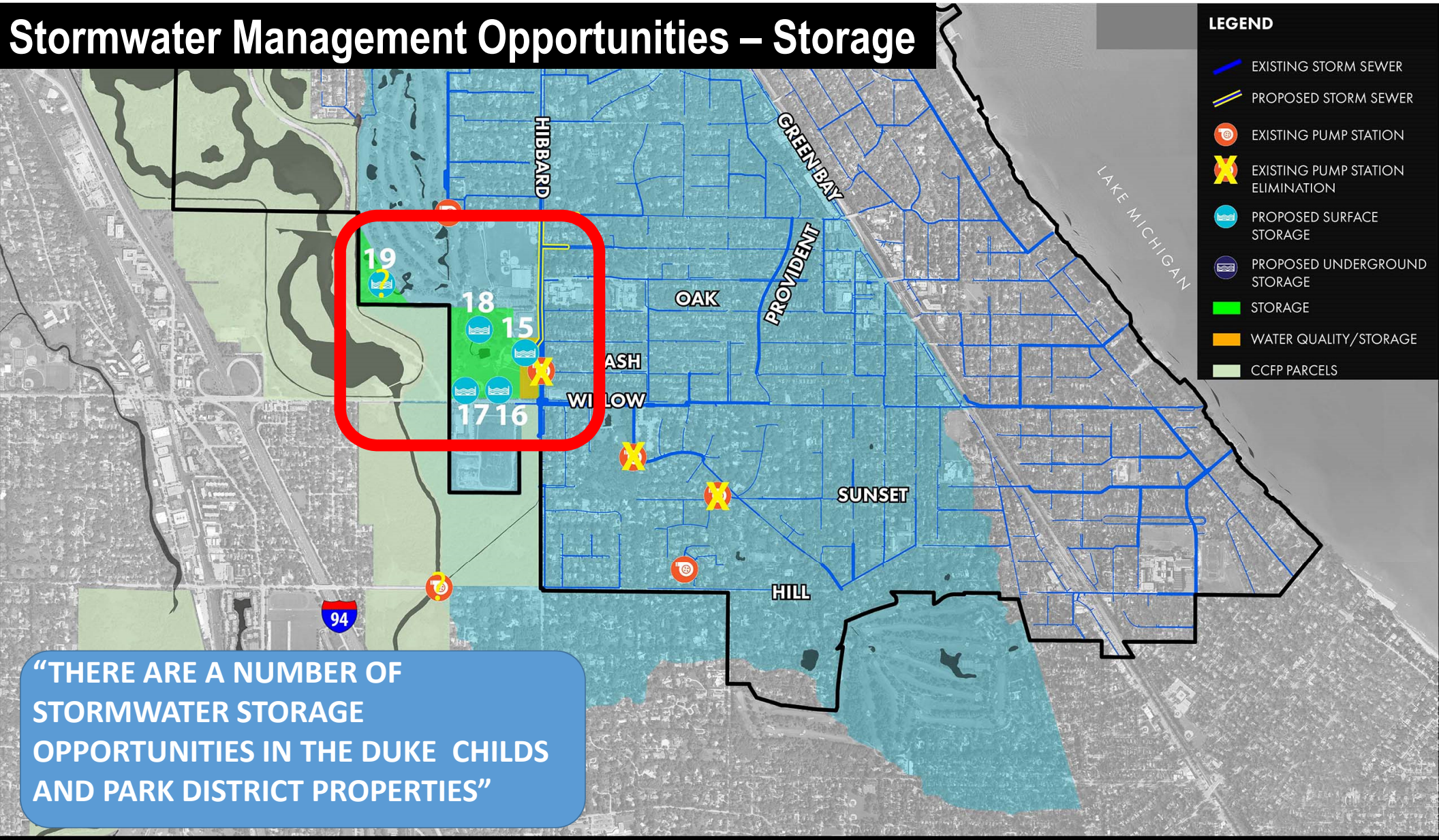
Stormwater Management Opportunities - Storage

14. Forest Preserve – Skokie Lagoons and Ash St. Pump Station

- Modification of normal water levels to provide additional storage potential
- Modifications to existing ecology
- Outside agency and other community approvals are required
- Requires significant new pumping facilities to convey into the lagoons
- 100 to 150 Ac-Ft of storage



Stormwater Management Opportunities – Storage



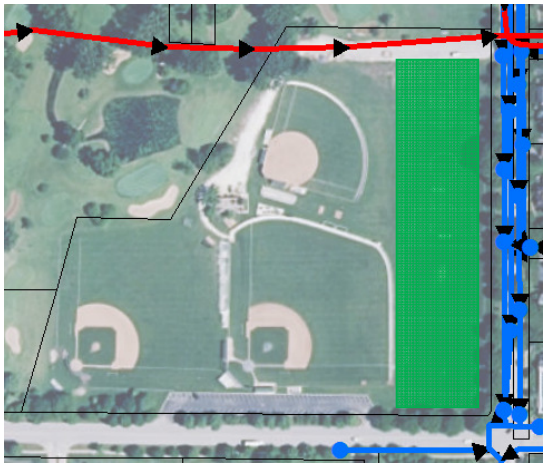
"THERE ARE A NUMBER OF STORMWATER STORAGE OPPORTUNITIES IN THE DUKE CHILDS AND PARK DISTRICT PROPERTIES"

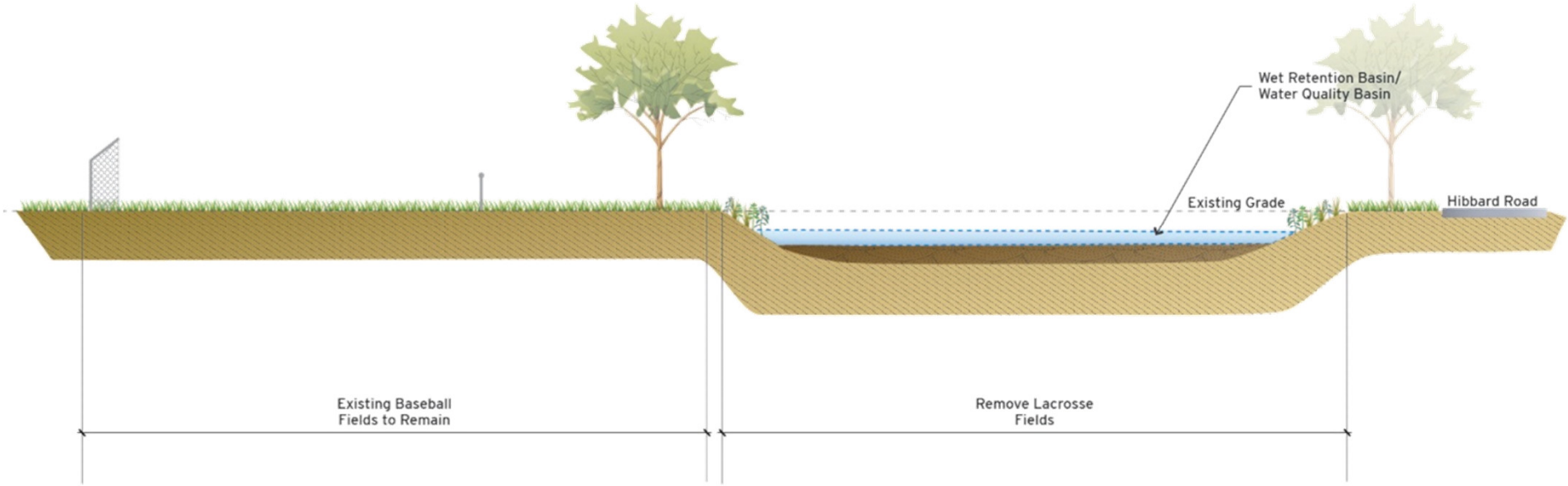
THE VILLAGE OF WINNETKA SINCE 1869

Stormwater Management Opportunities - Storage

15. Duke Childs – Relocate Lacrosse Fields to Landfill

- Above ground wet or wetland storage
- Provides critical water quality improvements
- Existing use can be transferred to the top of the landfill
- Provides direct relief to the Tree Streets neighborhood
- 12 to 16 Ac-Ft of storage

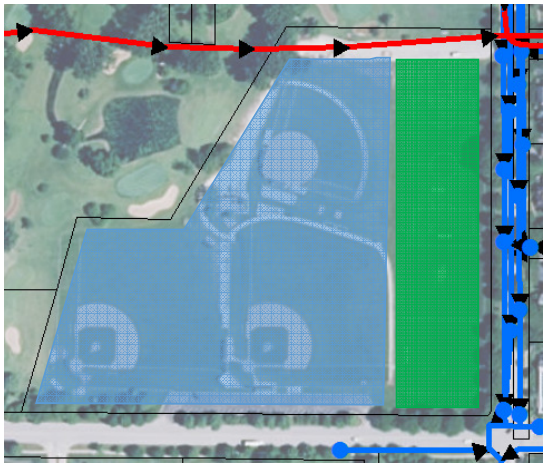


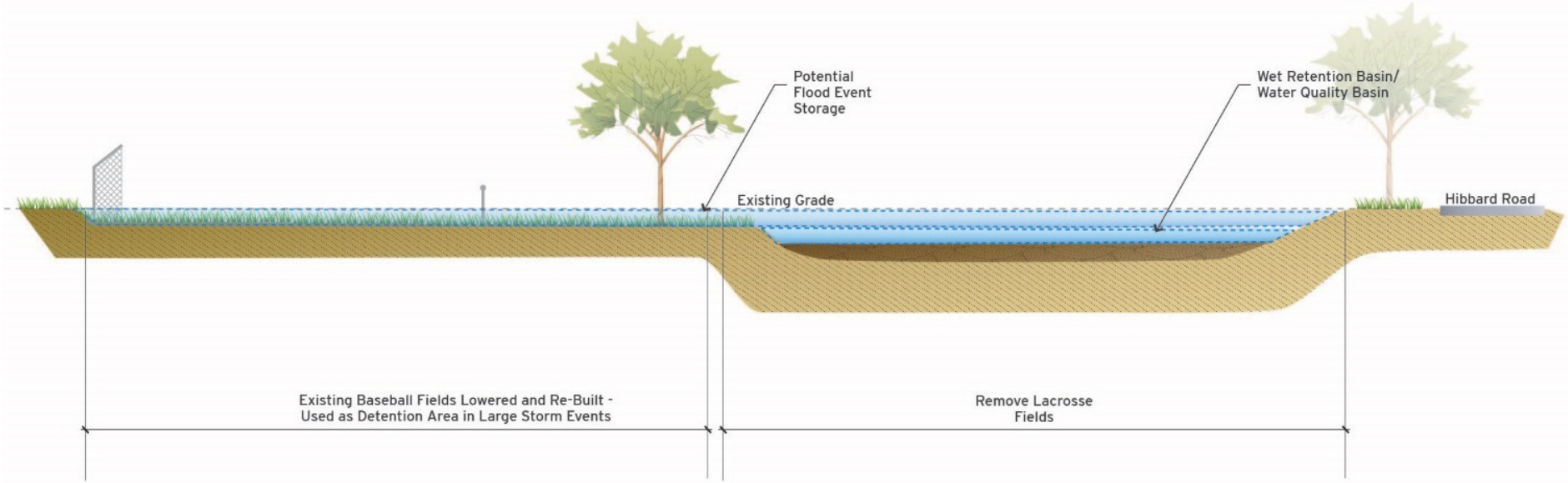


Stormwater Management Opportunities - Storage

16. Duke Childs – Maintain Existing Ball Fields

- Above ground dry storage
- Maintains day-to-day use of ball fields
- Ball fields would be unusable following certain rainfalls
- Provides direct relief to the Tree Streets neighborhood
- 24 to 32 Ac-Ft of storage

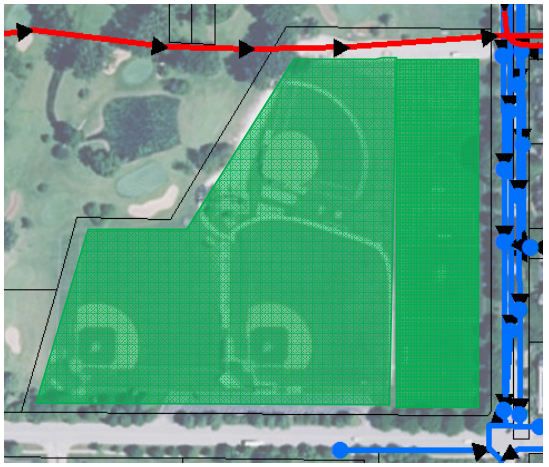


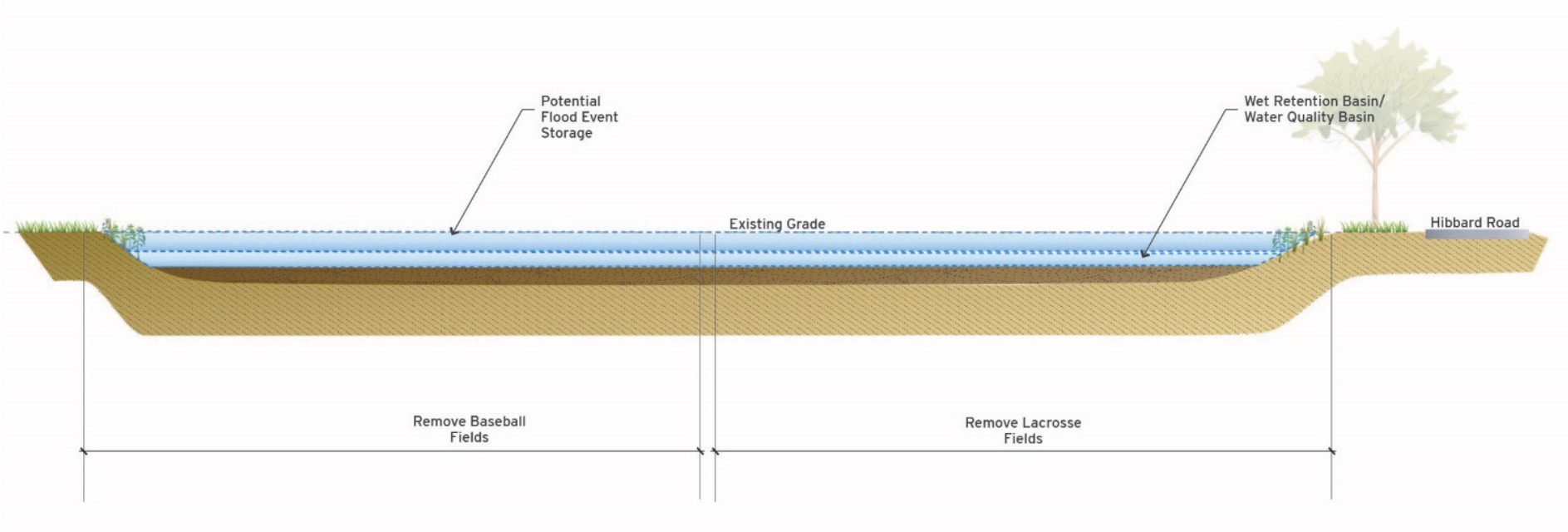


Stormwater Management Opportunities - Storage

17. Duke Childs – Relocate Ball Fields

- Above ground wet or wetland storage
- Eliminates current ball field use, ball fields would have to be relocated elsewhere
- 40 to 60 Ac-Ft of storage





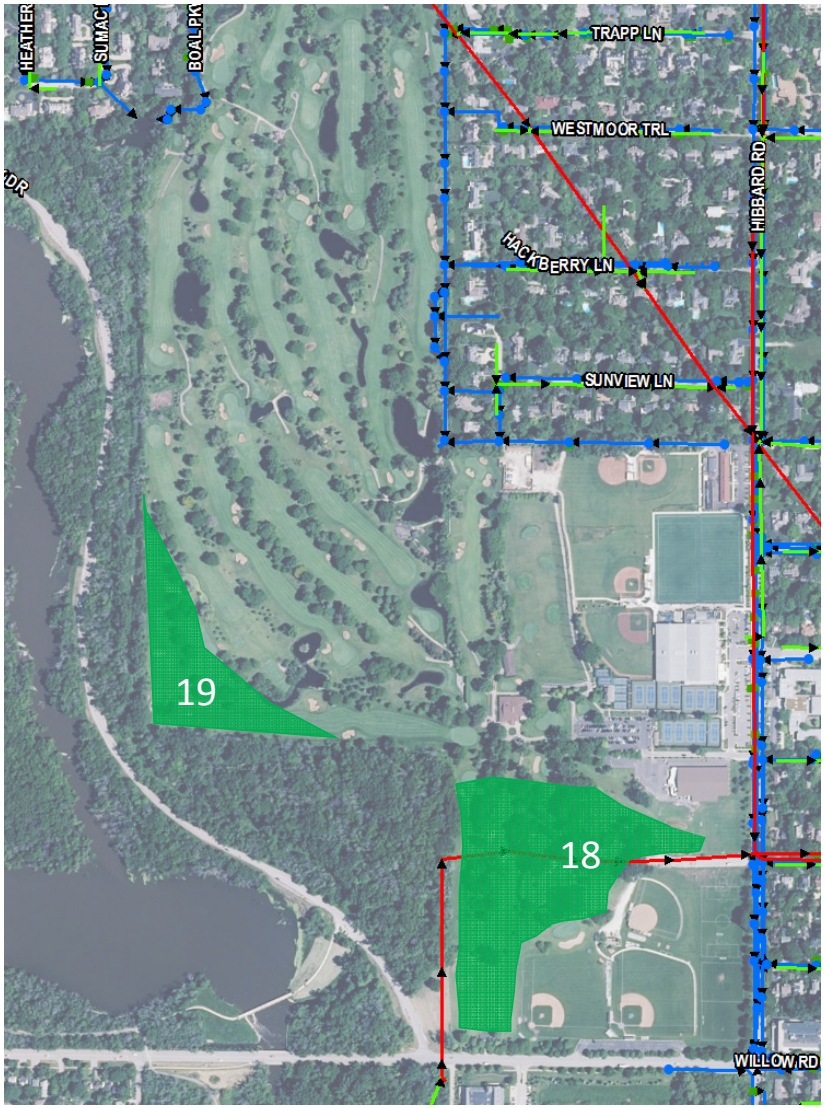
Stormwater Management Opportunities - Storage

18. Winnetka Park District Par 3 Golf Course

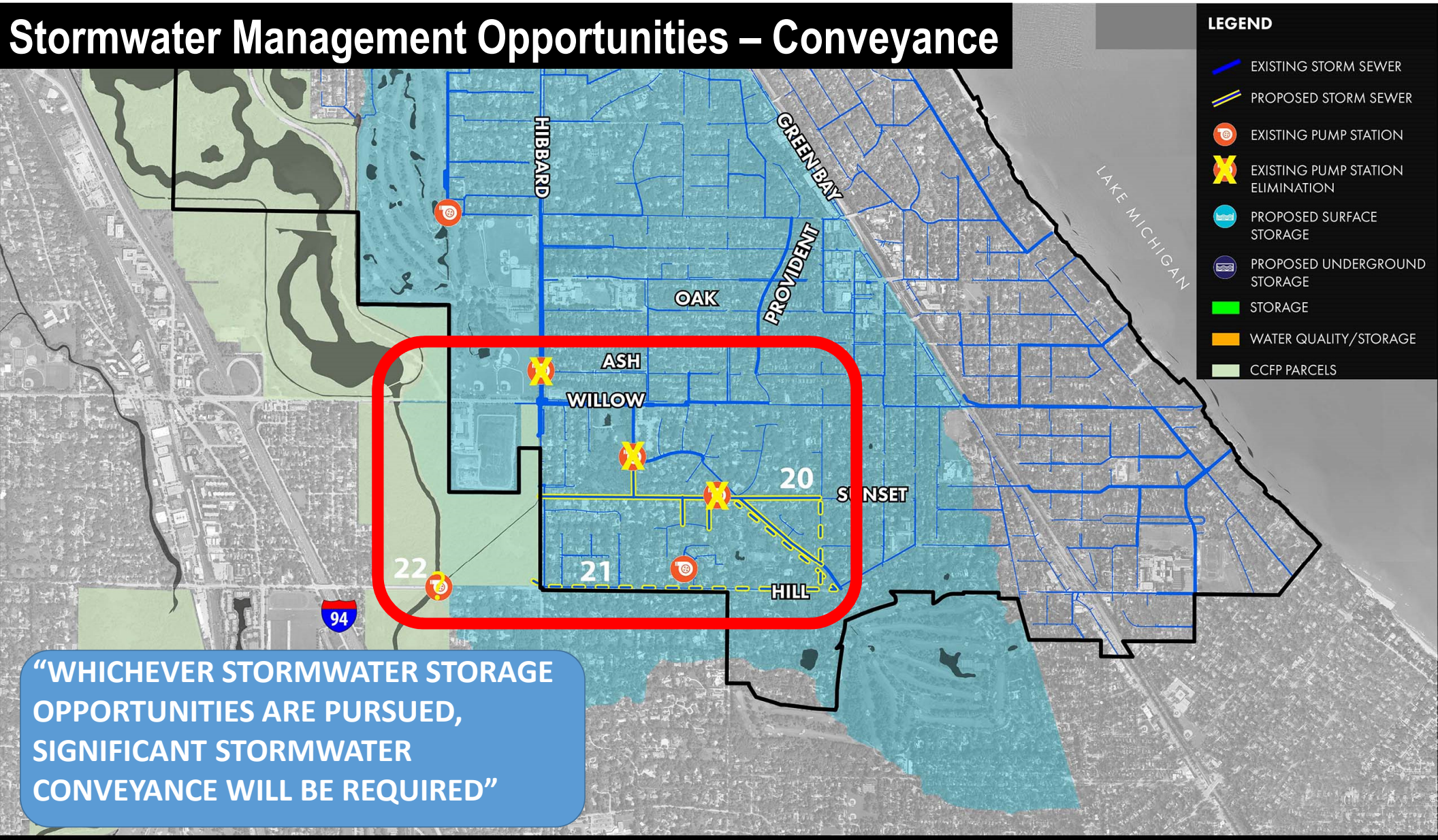
- Above ground wet or wetland storage
- Would lose the Par-3 golf course
- 15 to 35 Ac-Ft of storage

19. Winnetka Park District 18 Hole Golf Course

- Above ground wet or wetland storage
- Would be worked into existing golf course
- Higher ground elevation
- 4 to 6 Ac-Ft of storage



Stormwater Management Opportunities – Conveyance



"WHICHEVER STORMWATER STORAGE OPPORTUNITIES ARE PURSUED, SIGNIFICANT STORMWATER CONVEYANCE WILL BE REQUIRED"

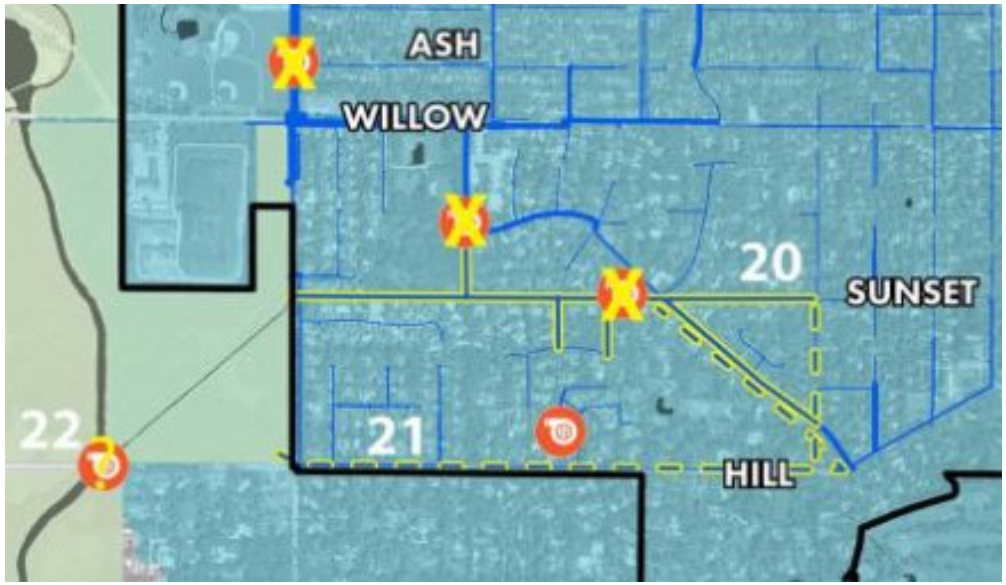
Stormwater Management Opportunities - Conveyance

20. Sunset Road Conveyance

- Convey flows to storage opportunities
- Large diameter piping or box culverts
- Requires roadway removal and replacement
- Would allow for removal of existing pumping

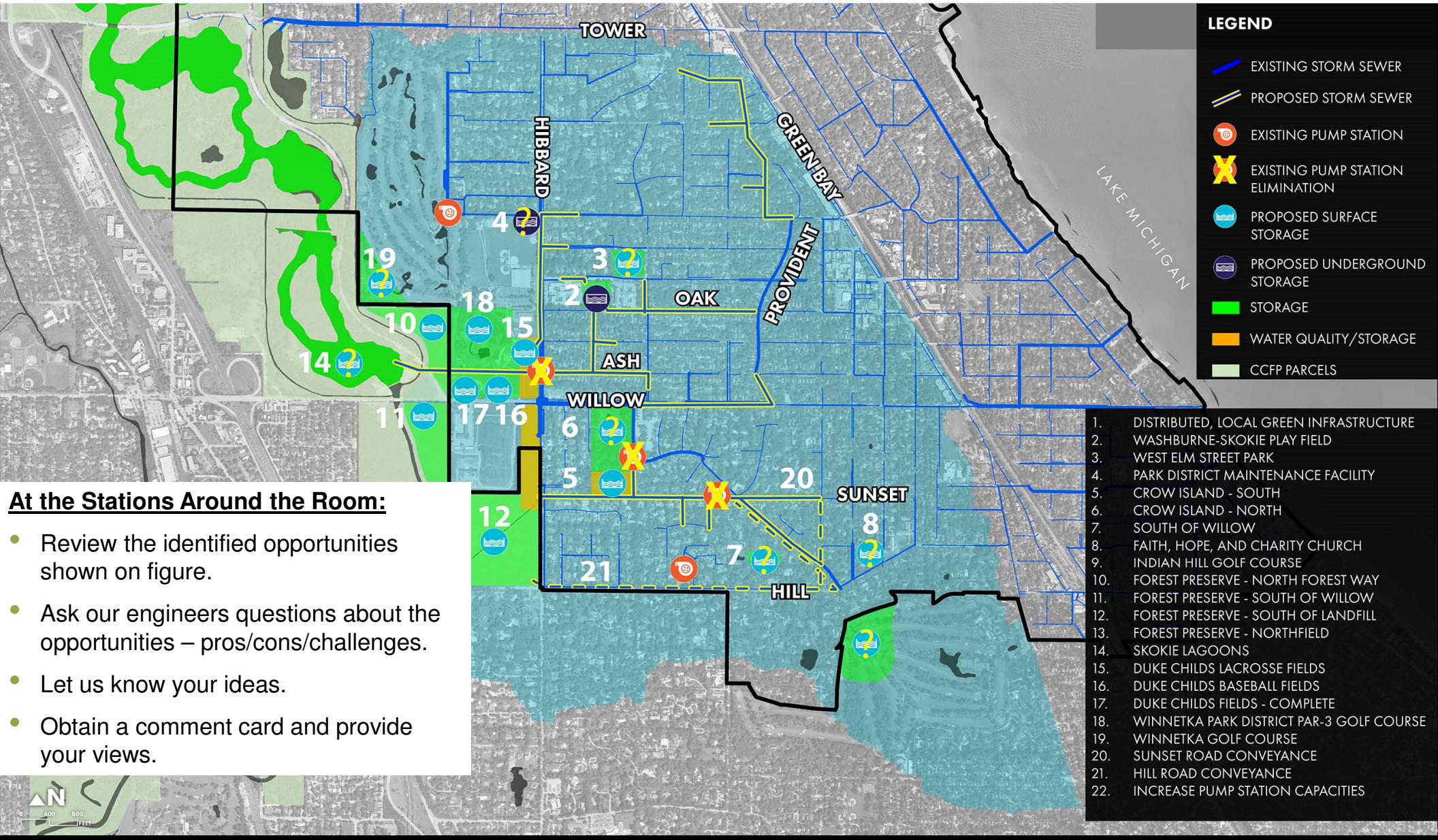
21. Hill Road Conveyance

- Convey flows to storage opportunities
- Large diameter piping or box culverts
- Requires roadway removal and replacement
- Requires additional local sewer
- May allow for removal of existing pumping



22. Increase Existing Pump Station Capacities

- Requires complete reconstruction of existing pumping stations
- Pumping increases in the range of 5 to 8 times current capacity
- Poses significant regulatory challenges
- Continues the Village's dependence on pumping



At the Stations Around the Room:

- Review the identified opportunities shown on figure.
- Ask our engineers questions about the opportunities – pros/cons/challenges.
- Let us know your ideas.
- Obtain a comment card and provide your views.

THE VILLAGE OF WINNETKA SINCE 1869

STORMWATER MANAGEMENT SYSTEM OPPORTUNITIES

WEST AND SOUTHWEST WINNETKA STORMWATER MANAGEMENT STUDY · MARCH 2016

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