Crystal Lake Rain Gardens

April 21, 2022

City of Crystal Lake
Public Works and Engineering

Agenda

- History of Area and Current Efforts
- Existing Project Conditions
- Proposed Project Scope
- Future Maintenance
- Anticipated Schedule
- Questions or Comments

How Did This Area Develop?

- Development around the lake started as recreational uses with several resorts and hotels.
- People would travel from Chicago on the train (Chicago and Northwestern) and ride carriages to the lake to their hotel or resort.





Photos courtesy of Crystal Lake Historical Society

How Did This Area Develop?

- Hotels transitioned to resort cottages.
- Resort cottages transitioned to year-round homes.
- Subdivisions on the north and west shores of the lake were originally unincorporated.
- A lot of the current street system layout originated as roads to these resort areas (narrow pavement and right-of-ways)
- Some of the existing housing stock still consists of these cottages.
- Developed long before storm water and subdivision ordinances were enacted.



Photos courtesy of Crystal Lake Historical Society

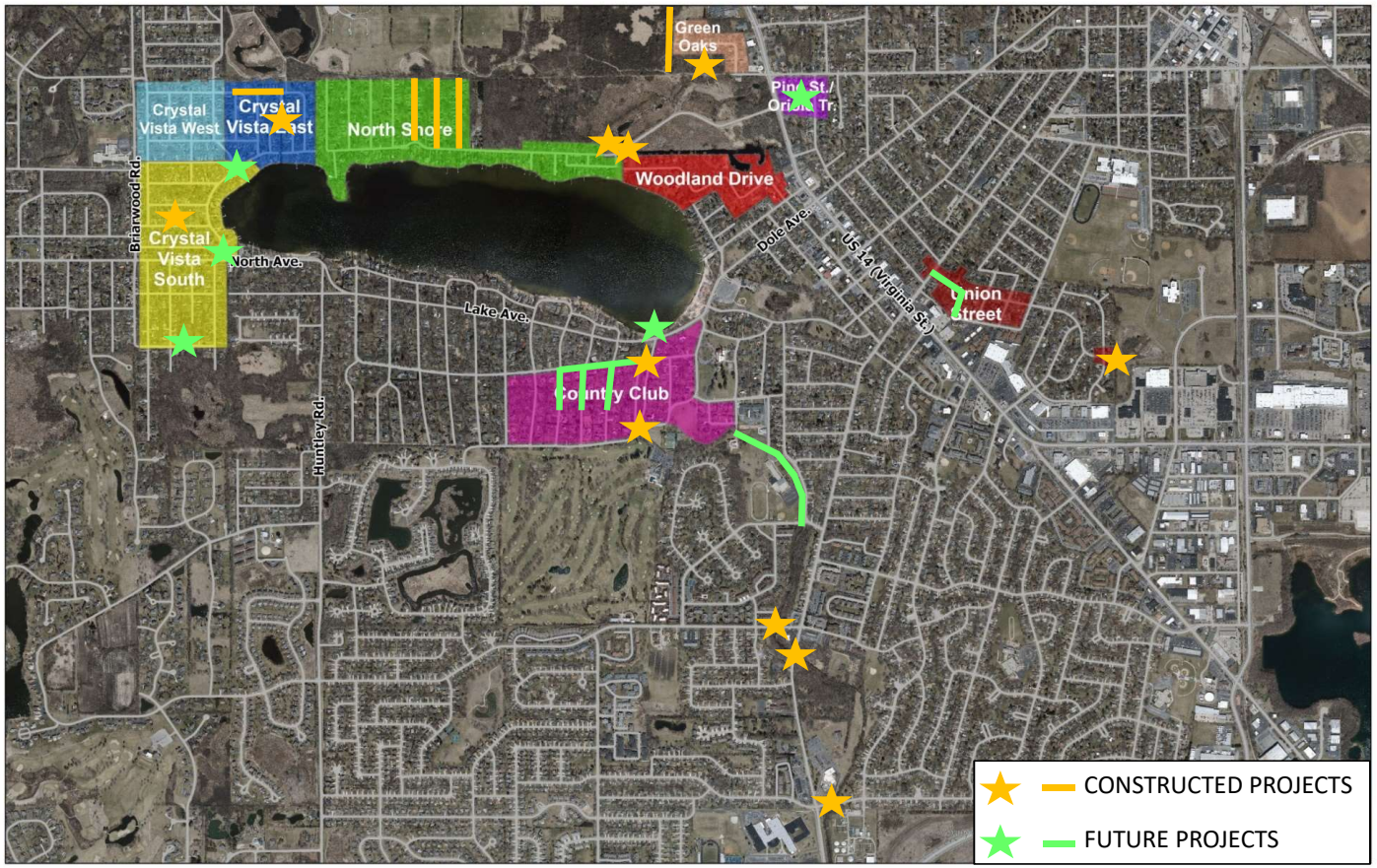
History Has Left Us With . . .

- Narrow roads and narrow rights-of-way surrounding the lake (20 feet – 50 feet)
- Drainage was not a part of these resort areas. Poor soils exist in several of these areas.
- As areas developed and then annexed to the City, ***the priority was the extension of sanitary sewer and drinking water to protect public health*** and the water quality of the lake.



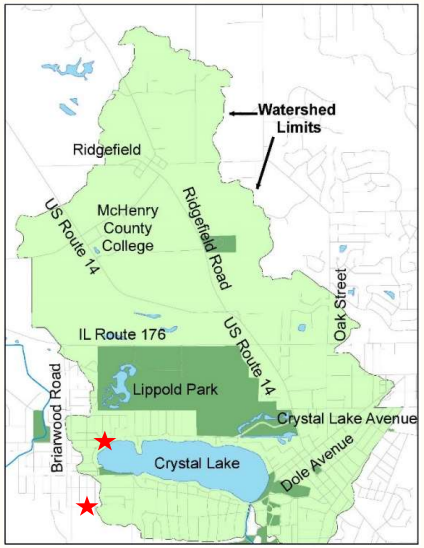
Stormwater Solutions Effort

- The City's Stormwater Solutions effort started in 2017 has dedicated $7.4 million in City funds and $1.9 million in grants to projects.



Existing Project Conditions

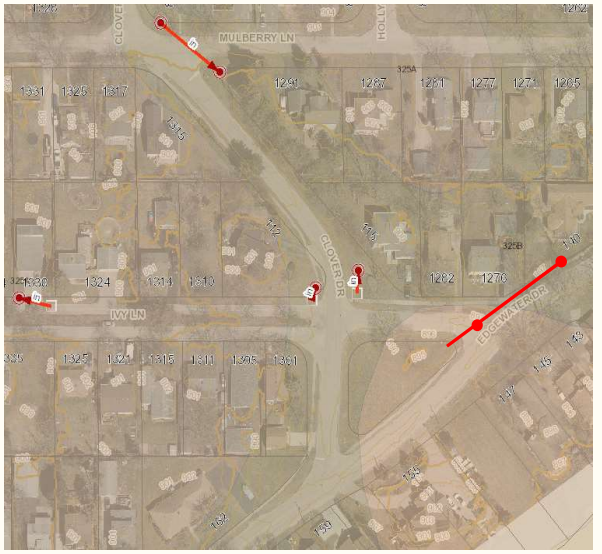
- The Crystal Vista and Crystal Gardens Subdivisions were developed in unincorporated McHenry County
- There is no existing storm sewer system and limited options to store water
- Illinois drainage law prohibits diverting water to lands that do not naturally receive this drainage
- The weir out of the Lake is at elevation 890.8
- The 100 year (1% storm) floodplain elevation is 893
- Areas that are between 891 and 893 will experience flooding



Crystal Vista Existing Conditions

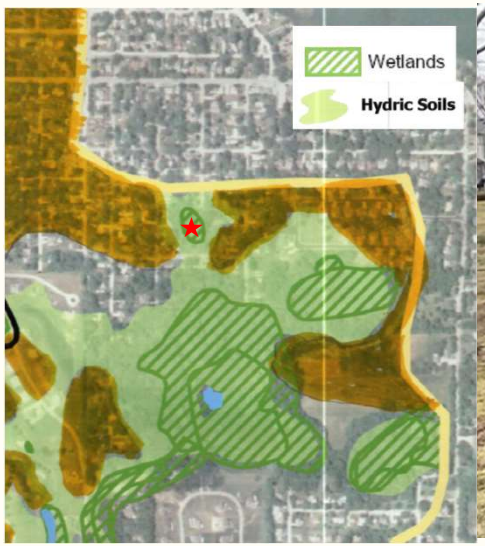
- Crystal Vista Subdivision is in Crystal Lake Watershed
- There is no existing storm sewer system and limited options to store water during heavy rainfall events.
- Storm Water Infiltration Structures are Feasible due to Soil Type

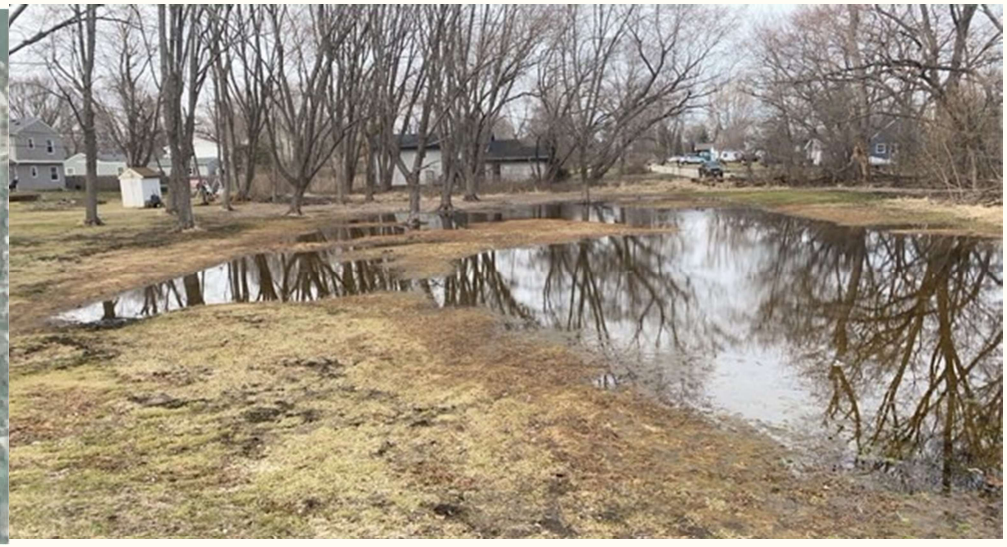




Crystal Lake Gardens Existing Conditions

- Crystal Lake Gardens Subdivision is in the Kishwaukee River Watershed
- No Storm Water Infrastructure or elevation change across subdivision (flat)
- Hydric Soils in Wetland – Infiltration is difficult







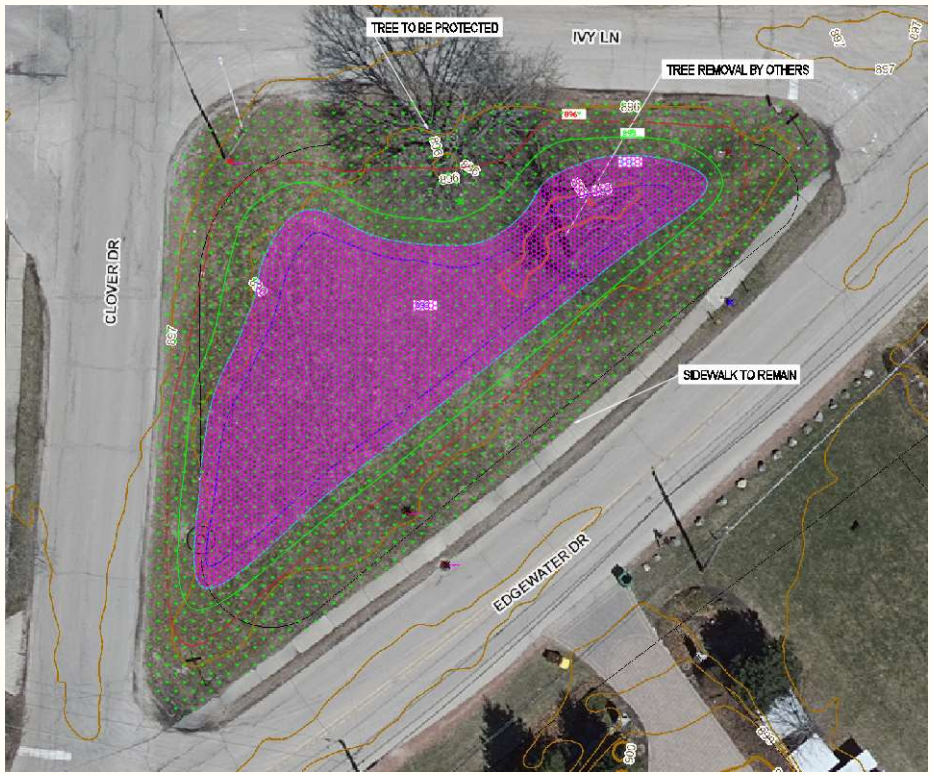
Proposed Project Scope

- Remove fill material to provide stormwater storage
- Plant native wetland seeds with a turf grass seed border
- Maintain and monitor plantings to ensure establishment
- Once plantings are established, the City will provide annual maintenance of the detention areas



Crystal Lake Vista Project Scope

- Basin will collect ***existing*** tributary area drainage
- Bottom will be above typical groundwater
- Grading will transition to existing roadway (max. 4:1 slope)
- Create over 93,500 gallons of storage (more than 2.5X existing storage)
- Infiltration Structure



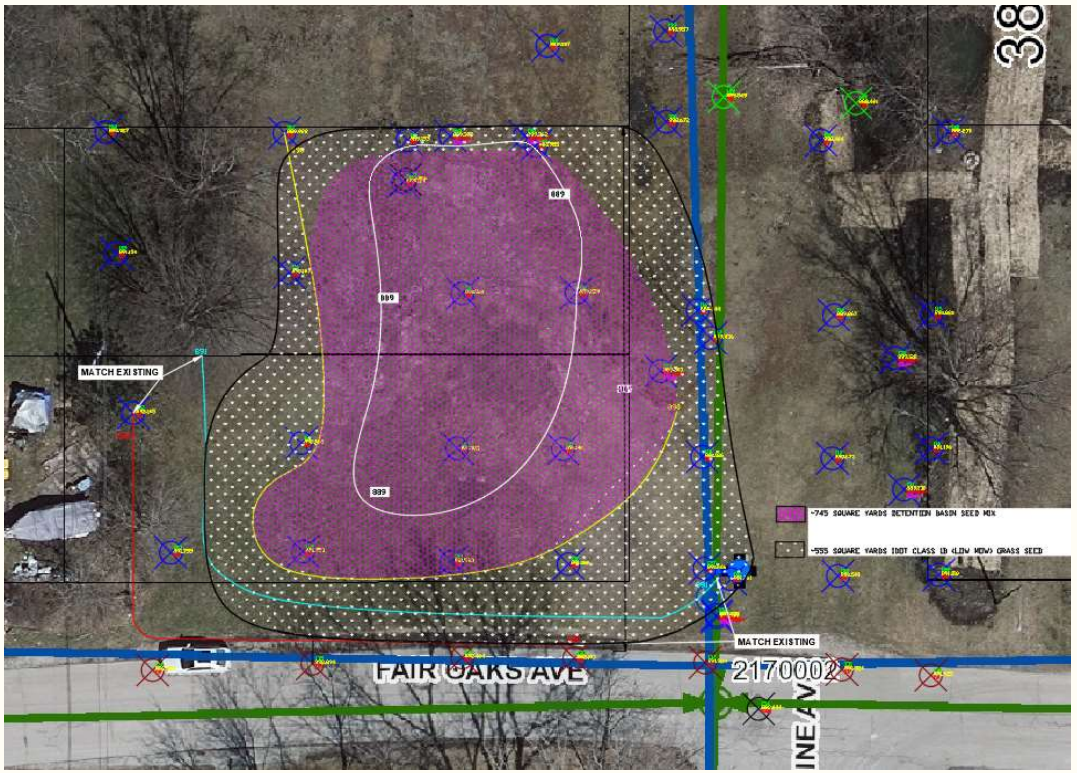
Crystal Lake Vista Project Scope

- Tributary Area drainage



Crystal Gardens Project Scope

- Bottom of rain garden will be near typical groundwater
- Grading will gradually transition to existing roadway and property lines (max. 6:1 slope)
- Create over 74,000 gallons of storage



Proposed Project Scope

Low Mow Grass Border

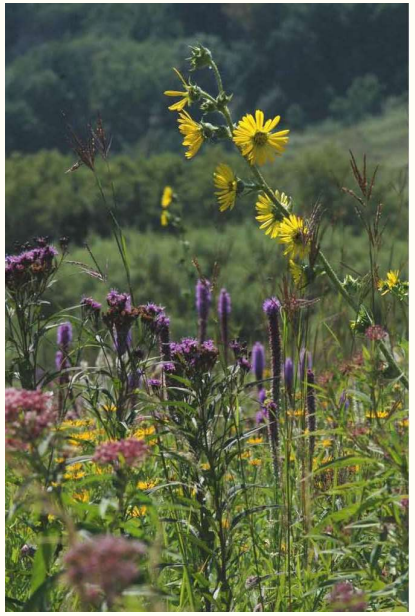


Description: Sustainable alternative to traditional high-resource lawn. Once established, Low Mow is a slow growing, low maintenance lawn.





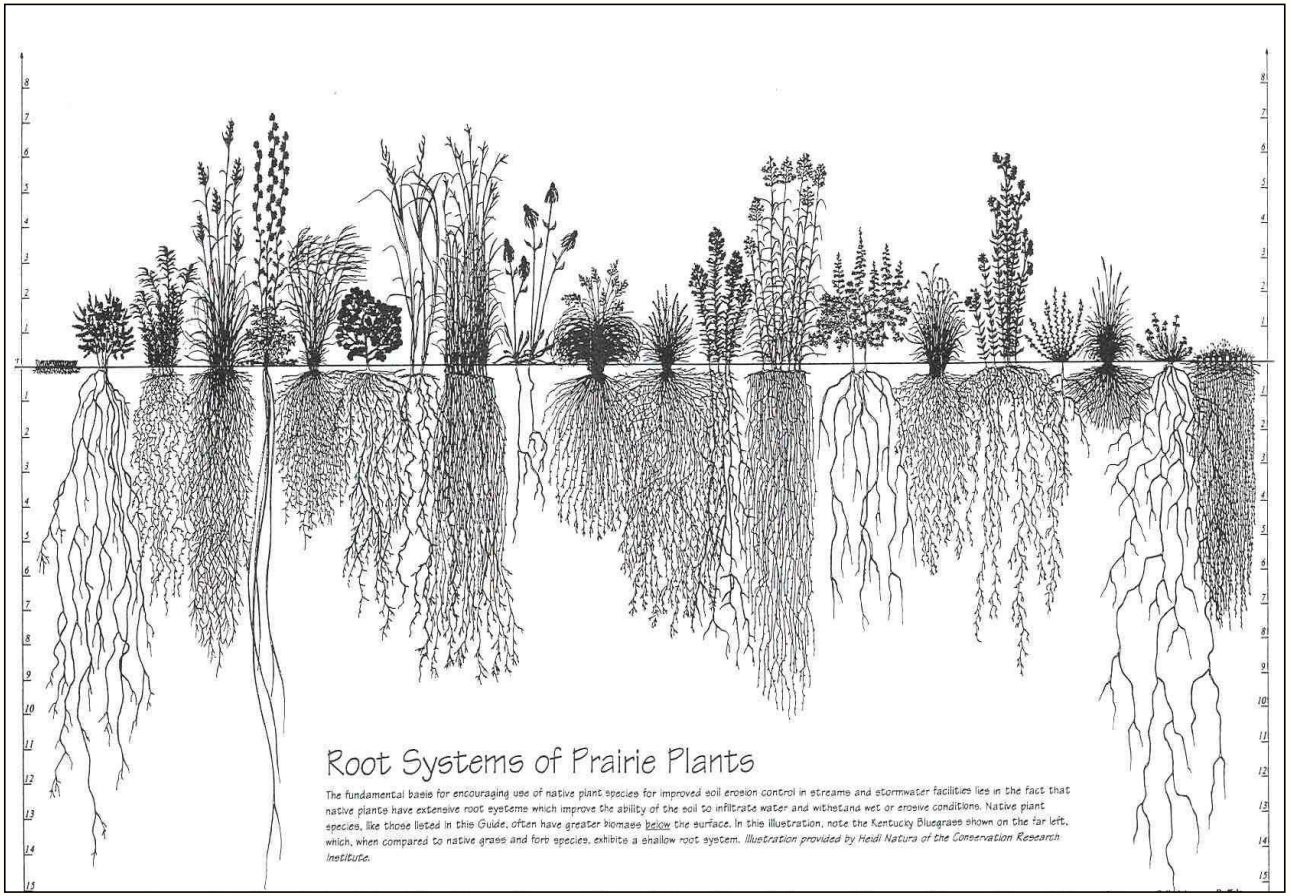
Lower Basin Mix



Description: This mix is designed for rainwater runoff detention basins containing species that tolerate fluctuating water levels. High diversity allows changes in species composition from the wet bottom to dryer slopes.

Why Wetland Plants?

- Native Prairie Plants have root structures that will extend down into groundwater (10 – 15 feet)
- Native plants create habitat for birds (mosquito predators) and pollinators
- Once established, require little maintenance
- Can withstand water and drought



North Shore Subdivision East End Basin Progress

Constructed December 2019



Year 1



Year 2



-Years 0-2 Focus on Invasive Specie Control
-By Year 3, Native Plant Root Systems are Developed
-Years 4-5, Plants are Established
-Routine Maintenance is Minimal Afterwards

Future Maintenance

- Area will flood during large storm events
- ***3-5 years to establish native plantings***
- Native areas to be managed by ecological contractor (same as other City properties)
- City to maintain turf areas (same as other City properties)
- City will treat for mosquitos if necessary (Clarke Environmental)

Anticipated Schedule

- Advertise for bids in late April/early May
- Award Contract in May
- Earthwork and Landscaping to be performed before September 1st

Thank You

Questions?