COLLINS PARK
STREAM RESTORATION FEASIBILITY STUDY

PROJECT OVERVIEW

PROJECT AREAS, ISSUES, GOALS

This project is funded through the Great Lakes Restoration Initiative Program and is working in partnership with the City of Toledo, National Oceanic and Atmospheric Administration, and Great Lakes Commission.

PROJECT OVERVIEW

- Goal was to determine the restoration potential of ½ mile portion of Duck Creek that runs through the Collins Park Municipal Golf Course
- This segment of Duck Creek is situated between York Street and Consaul Street and is upstream of Toledo's highly industrialized waterfront on the Maumee River and downstream of Toledo's water plant lime sludge sediment ponds.

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Public Feedback

- Outcome of Initial Public Meeting and Engagement Survey
  - Overwhelming support for continuing golf at Collins Park
  - Interested in restoring habitat

- Responses to “What do you like most about Collins Park?

How We Listened

- Planned habitat improvements around golf play

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ASSESSMENT

EVALUATION OF EXISTING CONDITIONS

ASSESSMENT

- Existing Conditions
  - **Existing Wetlands** – 0.40 acres of existing wetland
    - ORAM Scores: Wetland 1: 27, Wetland 2: 27.5, Wetland 3: 27, Wetland 4: 29
  - **Topographic Survey -** 4 to 9 inches of topsoil at ground surface with stiff to hard cohesive soils underlying the top soil with occasional interbeds of granular soils
    - Results of chemical testing showed no detectable amounts of contaminants analyzed
  - **Stream Habitat Evaluation (QHEI**) – Habitat Survey showed both sites in the Very Poor narrative range with QHEI scores of 19.5 and 20 out of 100

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ASSESSMENT

- Existing Conditions
  - **Fish Survey** – two fish species found at most downstream portion of stream. No fish found in upstream sample location.
  - **Macroinvertebrate Survey** – Community predominately made up of leeches, worms, non-biting flies, and snails. Very Poor / Poor Narrative Scores.
- Evaluate Opportunities to Modify Past Impairments
  - Straightened / Culverted Ditch Alignment
- Ditch Configuration / Channelization
  - Ineffective for sediment transport
  - Accumulates sediment

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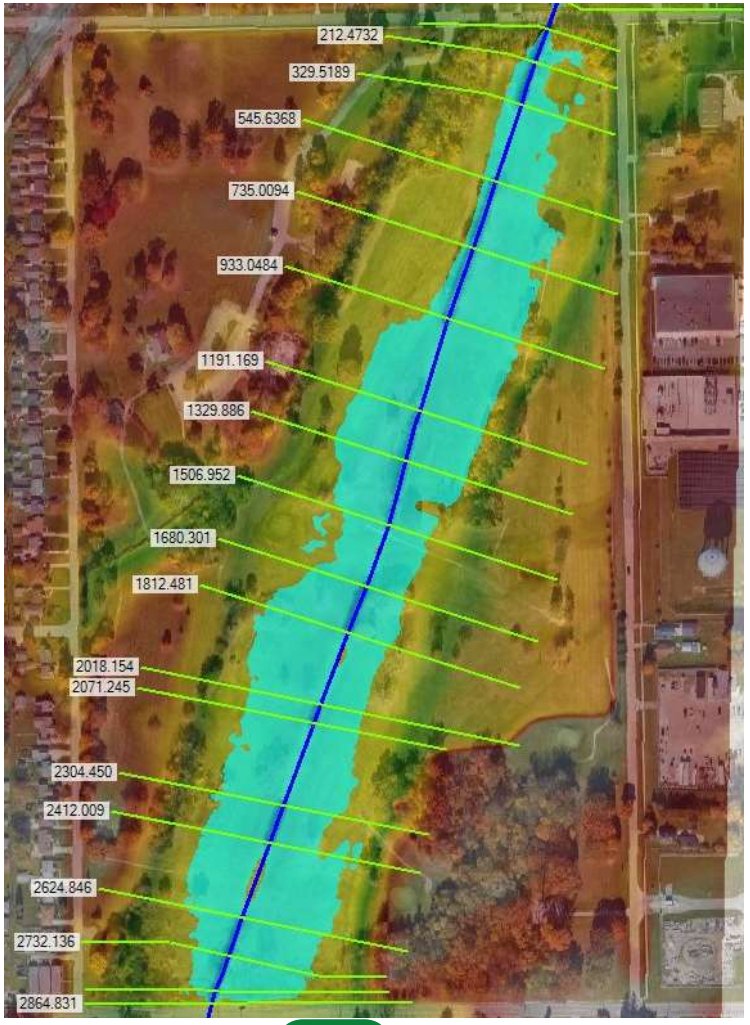
CONCEPTUAL PLAN

PROPOSED IMPROVEMENTS

DESIGN APPROACH

1. Proposed Improvements to Condition & Shape of the base flow channel
   - Daylight Stream from Culverted Areas
   - Channel Re-alignment / Re-meandering
   - Floodplain Creation
   - Wetland Restoration
   - Riparian Restoration / Reforestation
2. Proposed Benefits
   - Integrate Natural Areas into the Golf Course where feasible
   - Improve base flow condition = improve water quality
   - More effective sediment transport “self-maintaining”
   - Reconnect to the floodplain
   - Habitat Improvements (Fish & Wildlife)
3. Model the Proposed Conditions



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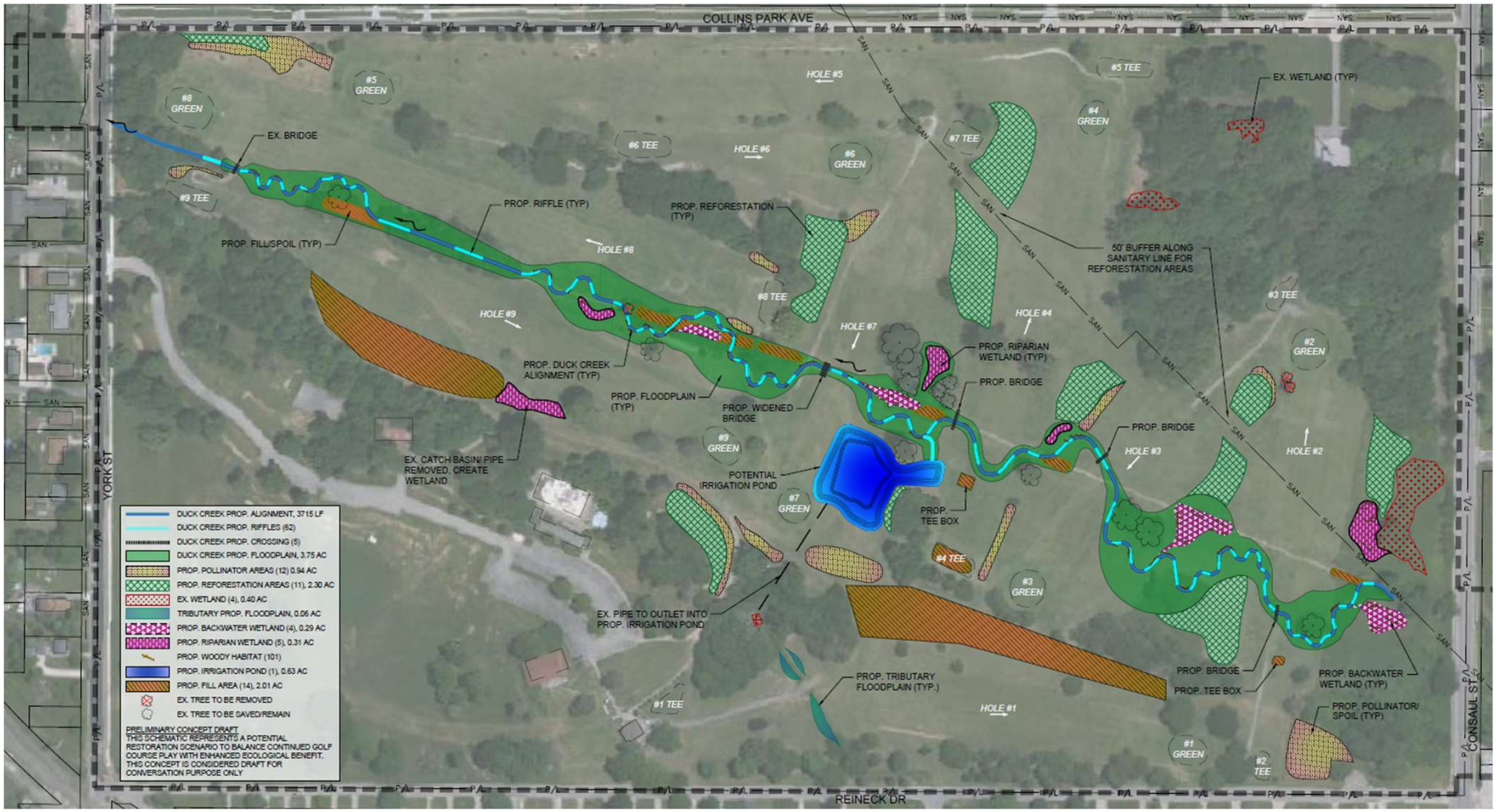

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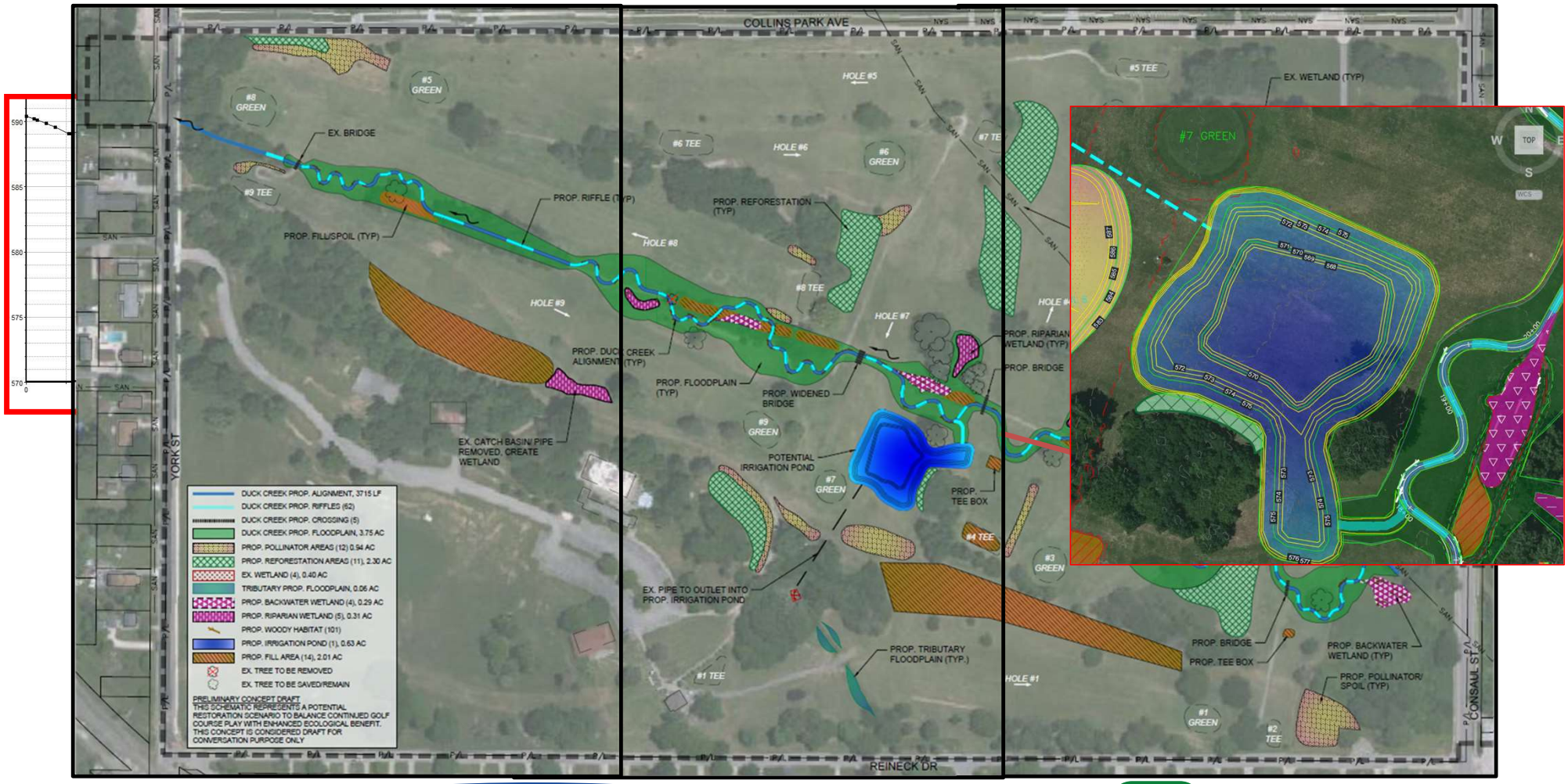

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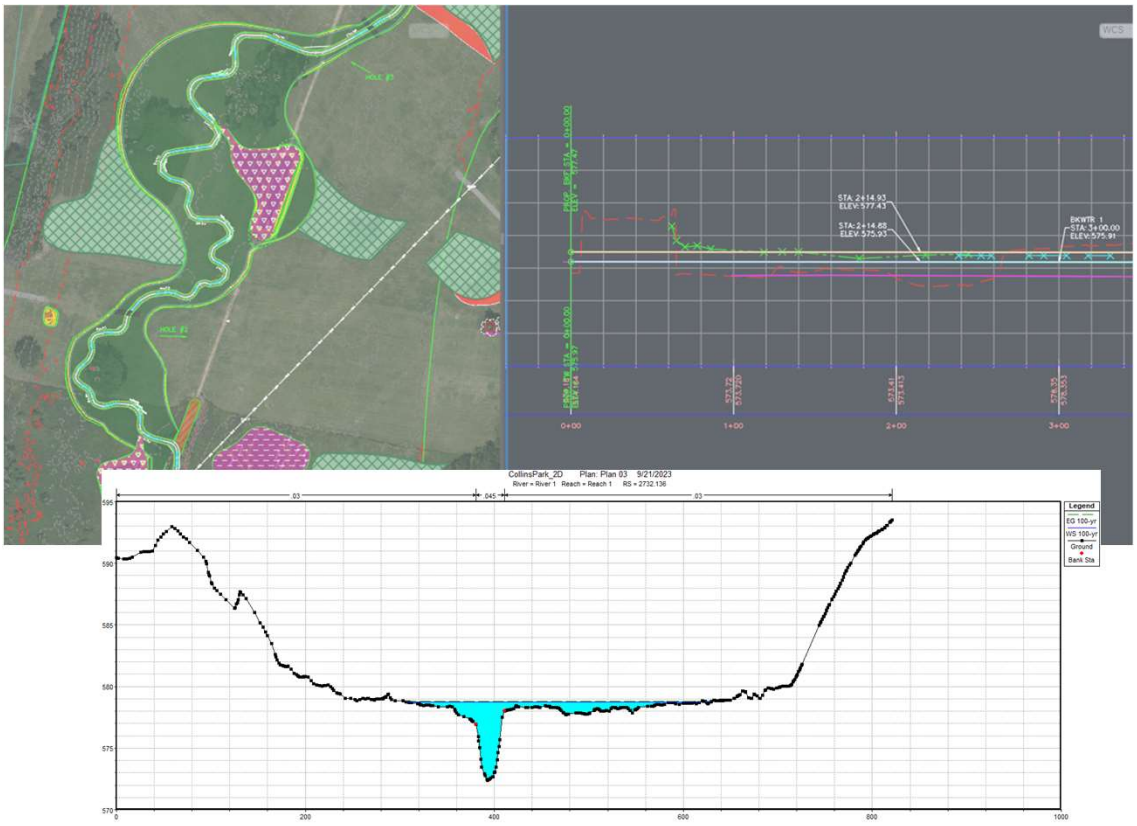
DUCK CREEK: CONCEPTUAL DESIGN SUMMARY

- **Proposed Duck Creek**
  - 3,715 linear feet with proposed alignment
  - 5 proposed stream crossings
  - 3.75 acres of proposed floodplain
  - 0.94 acres of proposed pollinator areas
  - 0.29 acres of proposed backwater wetland
  - 0.31 acres of proposed riparian wetland
  - 0.63 acre potential pond
- Tributary
  - 0.06 ac proposed floodplain



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CONCLUSIONS

- Improvements to stream functionality and habitat
  - Water quality improvements
  - Self maintaining
- Increased hydraulic efficiency through two-stage channels
  - Improves sediment transport
  - Alleviates maintenance needs
- Additional storm water storage capacity by accessing existing floodprone areas
  - Lowers water surface elevations
- Attenuation of peak flows for high frequency storms
  - Diverts flows to storage areas and relieves flood risks to other properties

TIMELINE

- Complete Feasibility Study: 4th Quarter 2023
- Engineering and Design: 2nd Quarter 2024 through 2nd Quarter 2025
- Construction: Late 2025/2026

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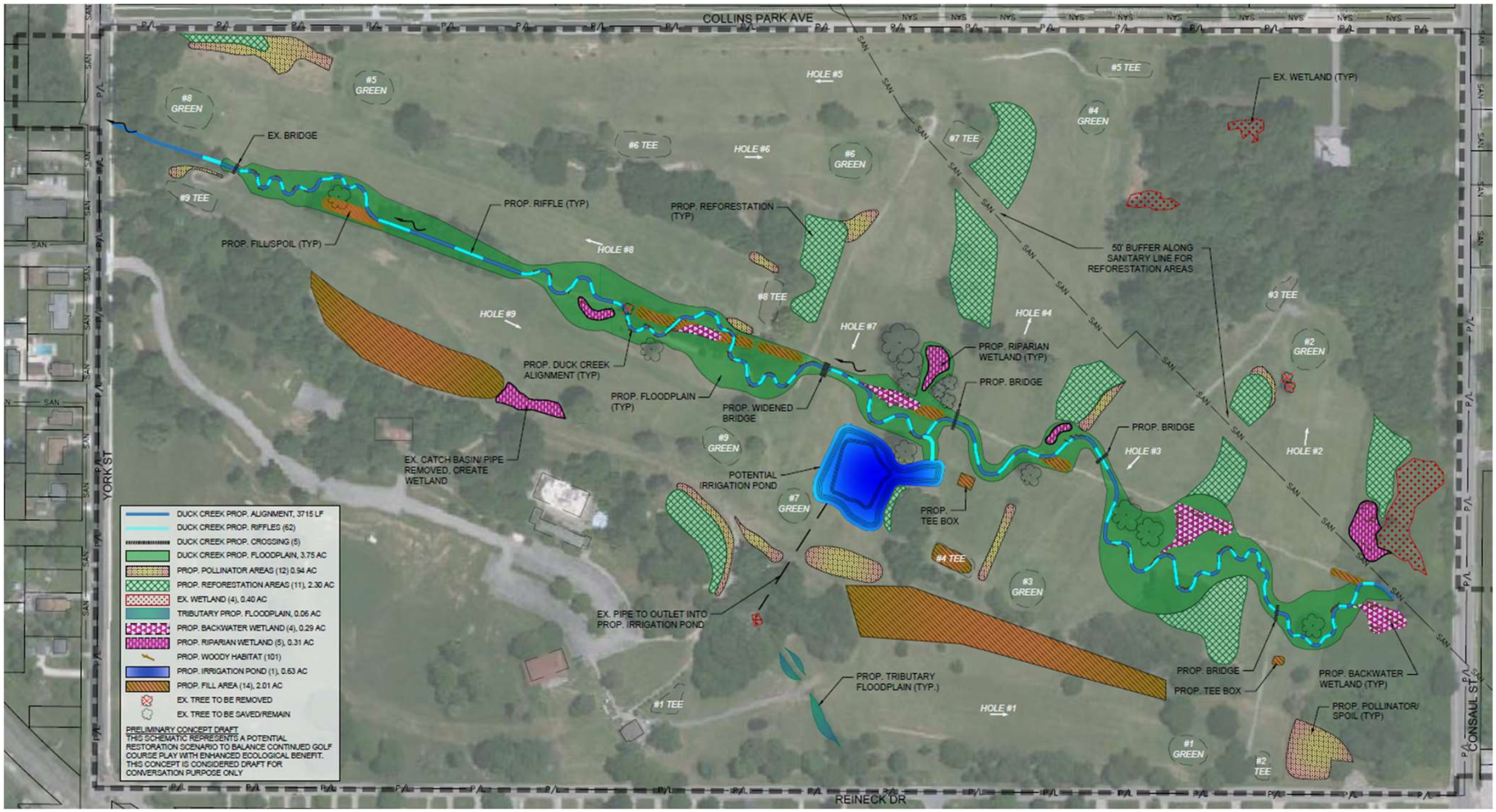
Changes to Golf Play at Collins Park



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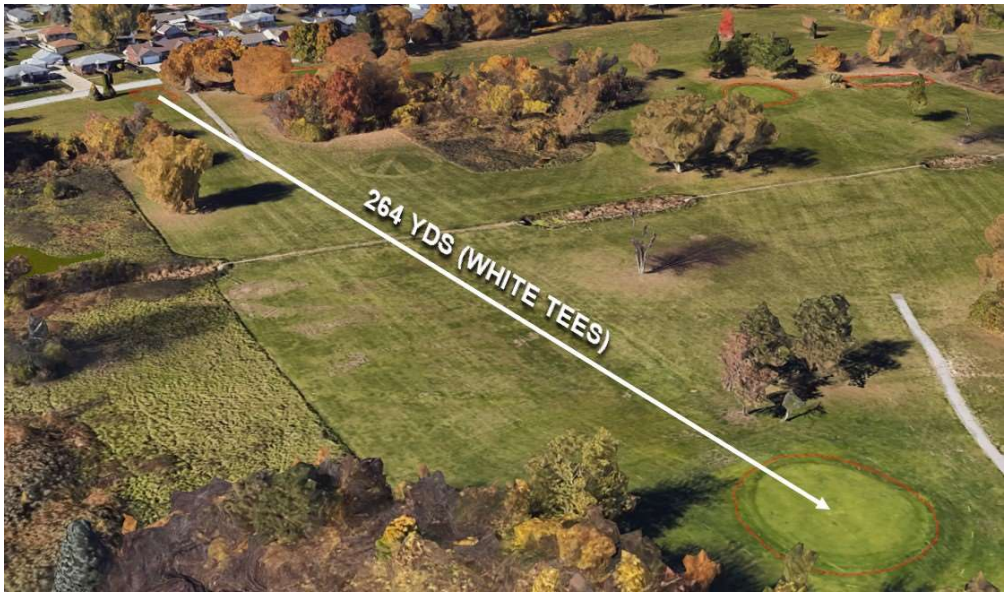
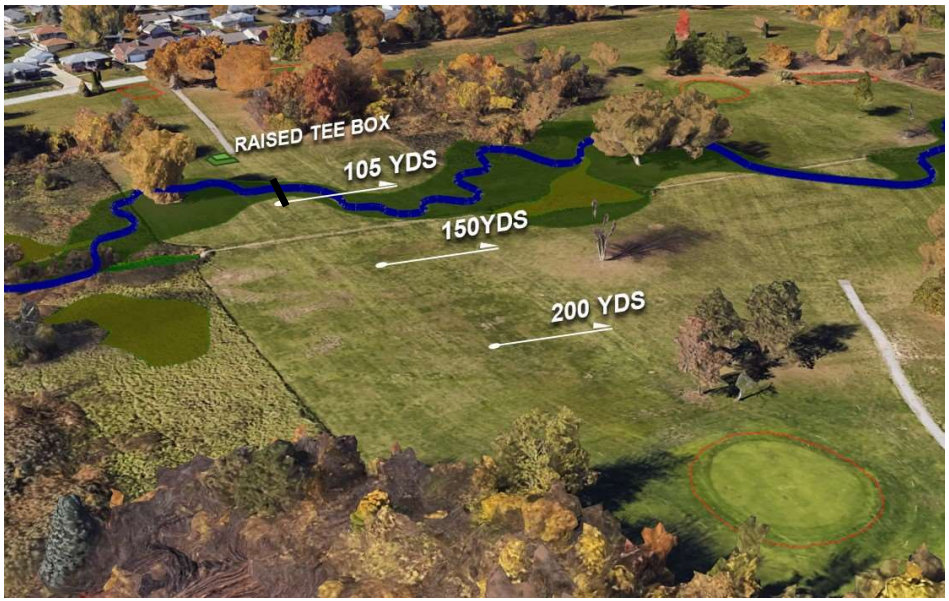
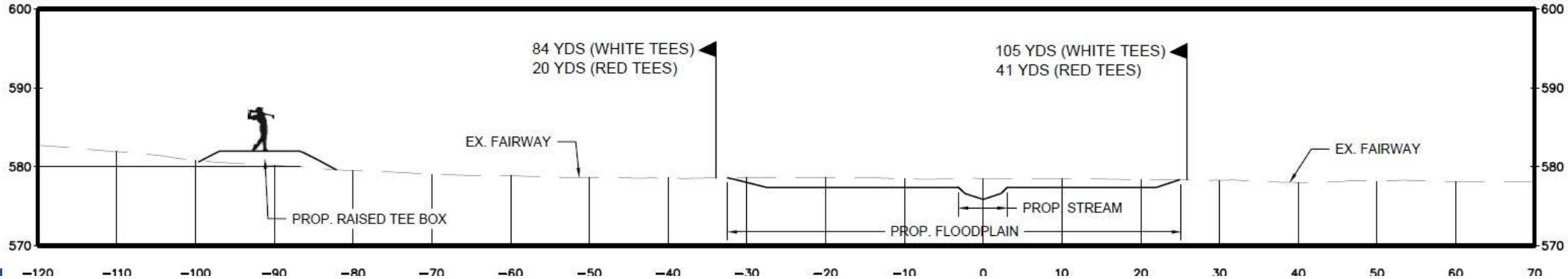
Hole #2

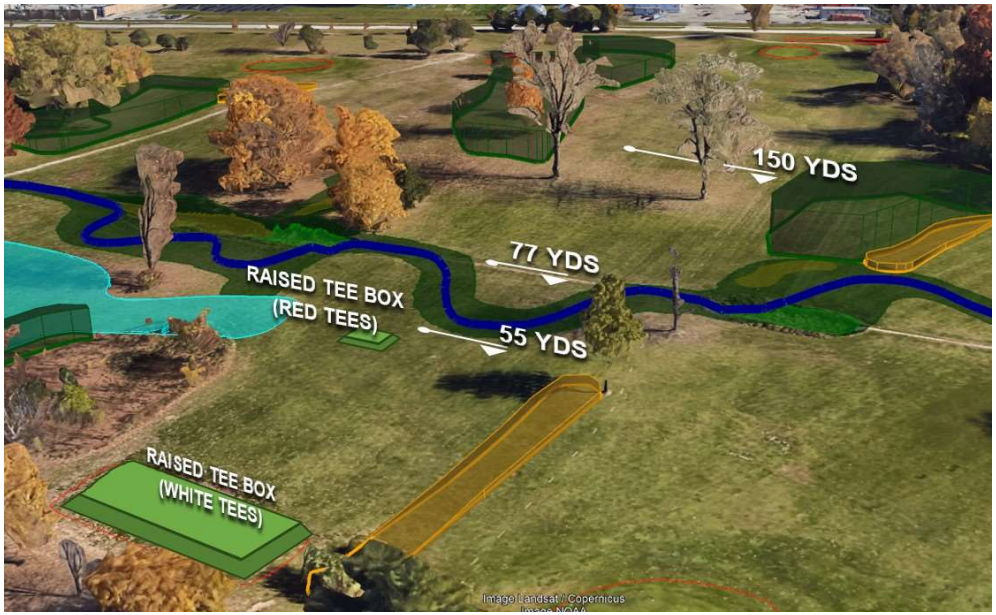

264 YDS (WHITE TEES)

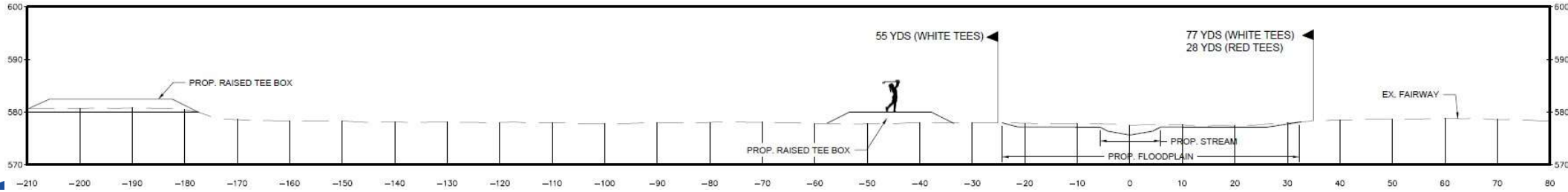

RAISED TEE BOX
105 YDS
150YDS
200 YDS


600
590
580
570
84 YDS (WHITE TEES)
20 YDS (RED TEES)
105 YDS (WHITE TEES)
41 YDS (RED TEES)
EX. FAIRWAY
EX. FAIRWAY
PROP. RAISED TEE BOX
PROP. STREAM
PROP. FLOODPLAIN
−120
−110
−100
−90
−80
−70
−60
−50
−40
−30
−20
−10
0
10
20
30
40
50
60
70

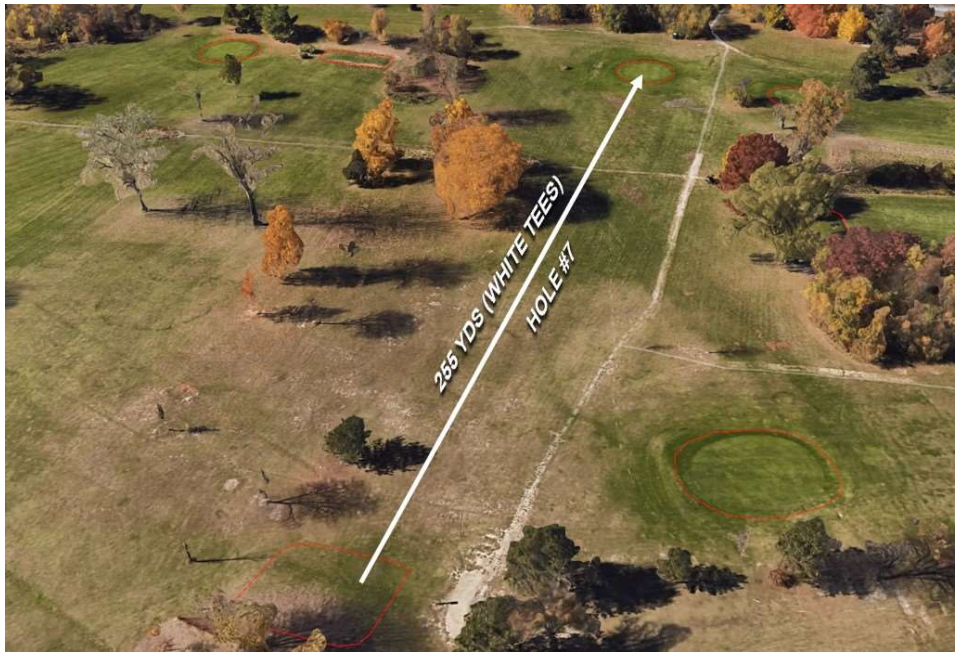
Hole #4


300 YDS (WHITE TEES)
HOLE #4
Image Landsat / Copernicus
Image NOAA

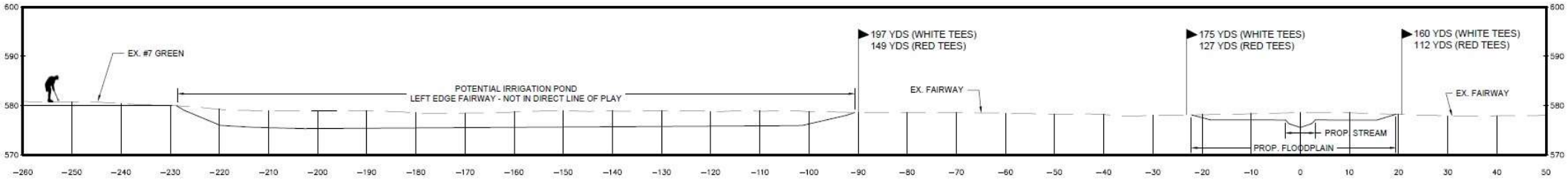

150 YDS
77 YDS
RAISED TEE BOX
(RED TEES)
55 YDS
RAISED TEE BOX
(WHITE TEES)
Image Landsat / Copernicus


600
590
580
570
PROP. RAISED TEE BOX
55 YDS (WHITE TEES)
77 YDS (WHITE TEES)
28 YDS (RED TEES)
EX. FAIRWAY
PROP. RAISED TEE BOX
PROP. STREAM
PROP. FLOODPLAIN
−210 −200 −190 −180 −170 −160 −150 −140 −130 −120 −110 −100 −90 −80 −70 −60 −50 −40 −30 −20 −10 0 10 20 30 40 50 60 70 80

Hole #7


265 YDS (WHITE TEES)
HOLE #7


197 YDS
175 YDS
160 YDS


600
590
580
570
EX. #7 GREEN
POTENTIAL IRRIGATION POND
LEFT EDGE FAIRWAY - NOT IN DIRECT LINE OF PLAY
197 YDS (WHITE TEES)
149 YDS (RED TEES)
EX. FAIRWAY
175 YDS (WHITE TEES)
127 YDS (RED TEES)
160 YDS (WHITE TEES)
112 YDS (RED TEES)
EX. FAIRWAY
PROP. STREAM
PROP. FLOODPLAIN
-260 -250 -240 -230 -220 -210 -200 -190 -180 -170 -160 -150 -140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50

Questions?

Thank you to The City of Toledo, Great Lakes Commission, Great Lakes Restoration Initiative, NOAA, Ohio EPA, Ohio DNR, and Partners for Clean Streams