The Tiered Water Quality Tower of Atlanta's Rodney Cook Sr. Park

SESWA Conference

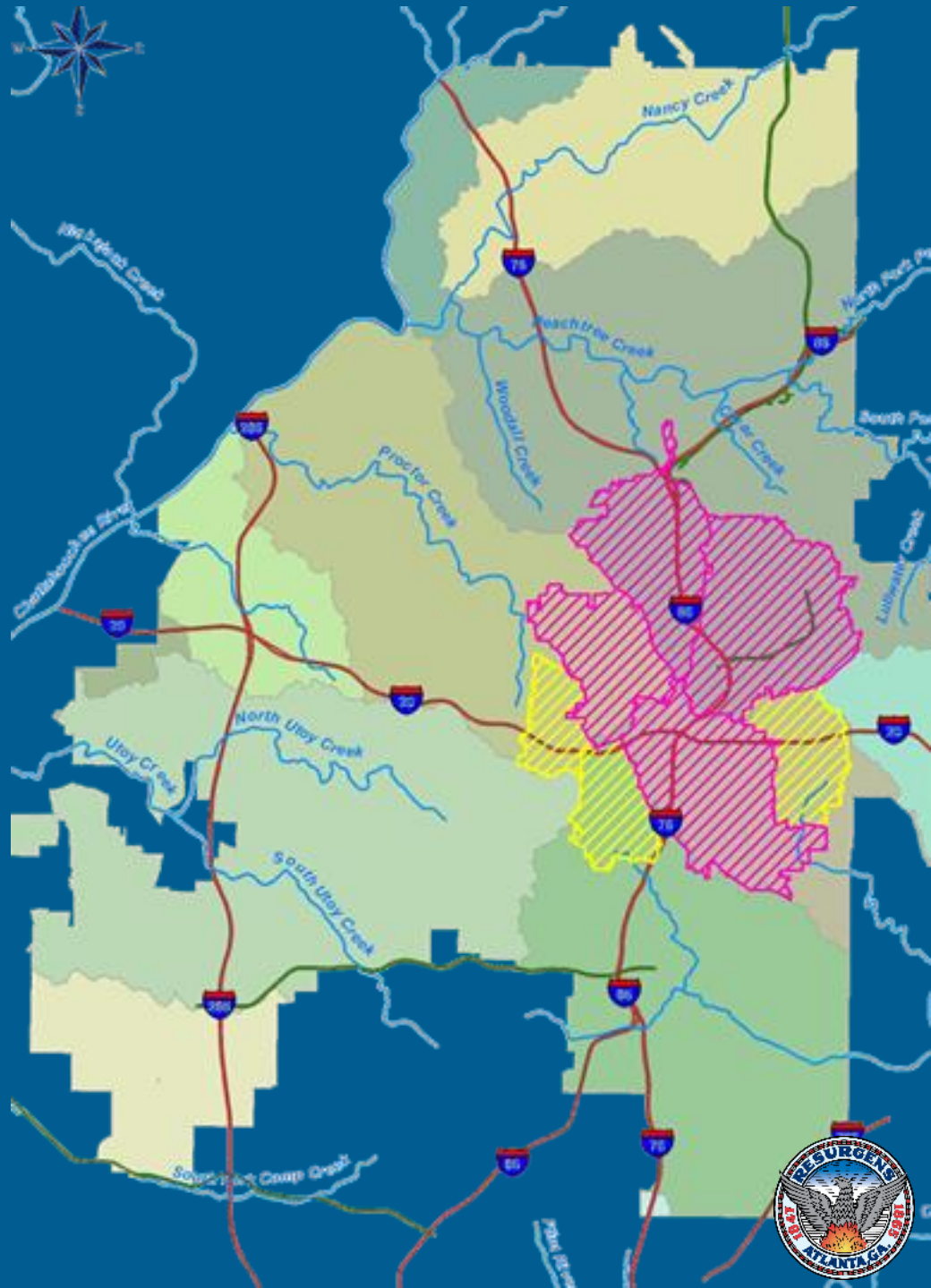
October 5, 2023

FREESE AND NICHOLS

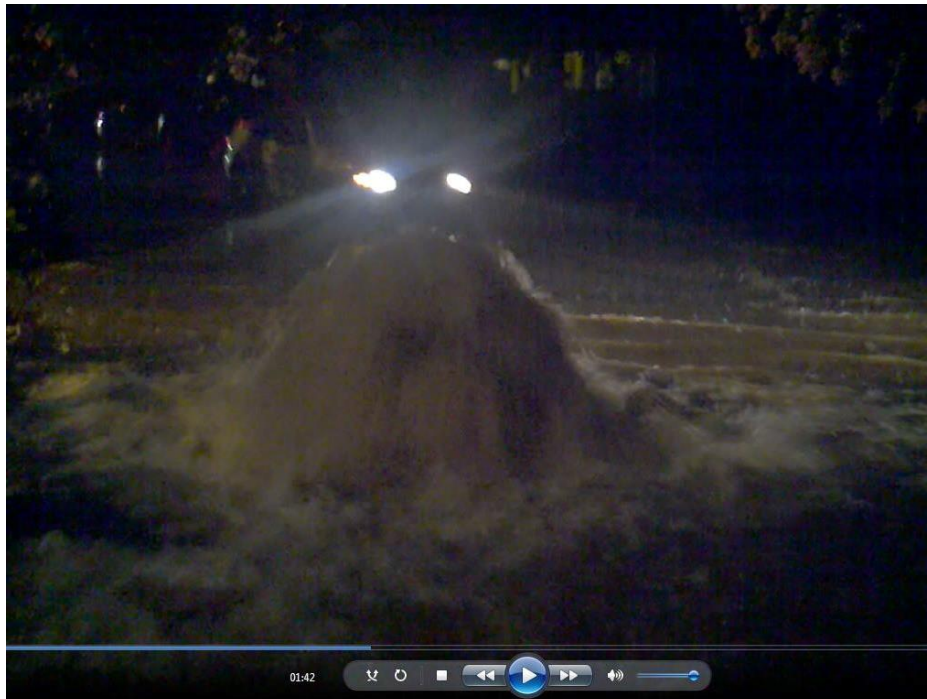

Atlanta’s Rodney Cook
Sr. Park

Background

- City of Atlanta's Department of Watershed Management
  - Serves 1.2 million (450,000 night)
- Consent Decree
  - CSO – completed 2014/15
  - SSO – extension granted in 2012
- Stormwater Utility Fee
  - Adopted in 1999
  - Overturned – $7 million refunded
- Green Infrastructure projects diverted ~1.3 billion gallons of stormwater in FY 2020



2002 Flood Event



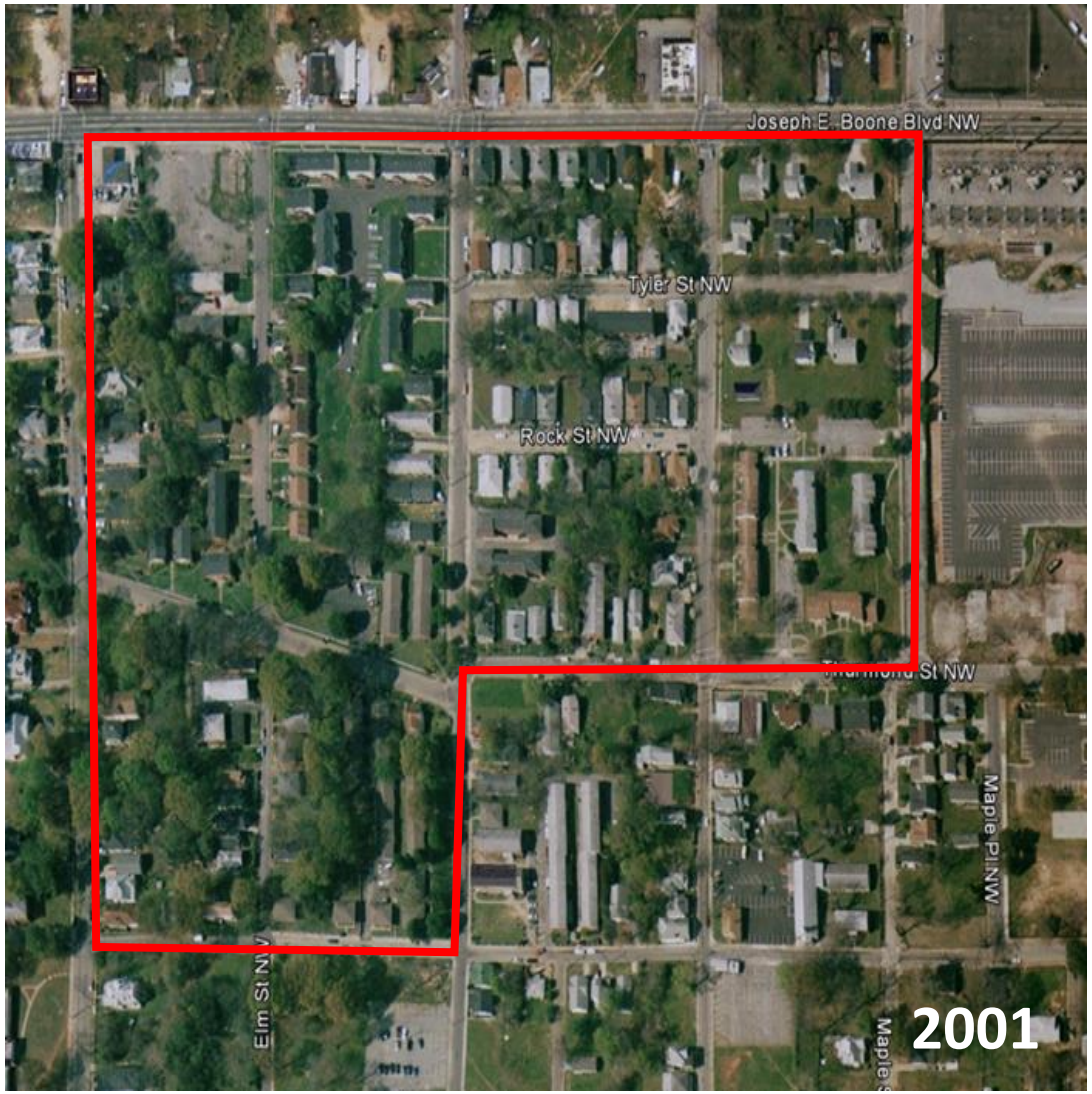
Rodney Cook Sr. Park | City of Atlanta

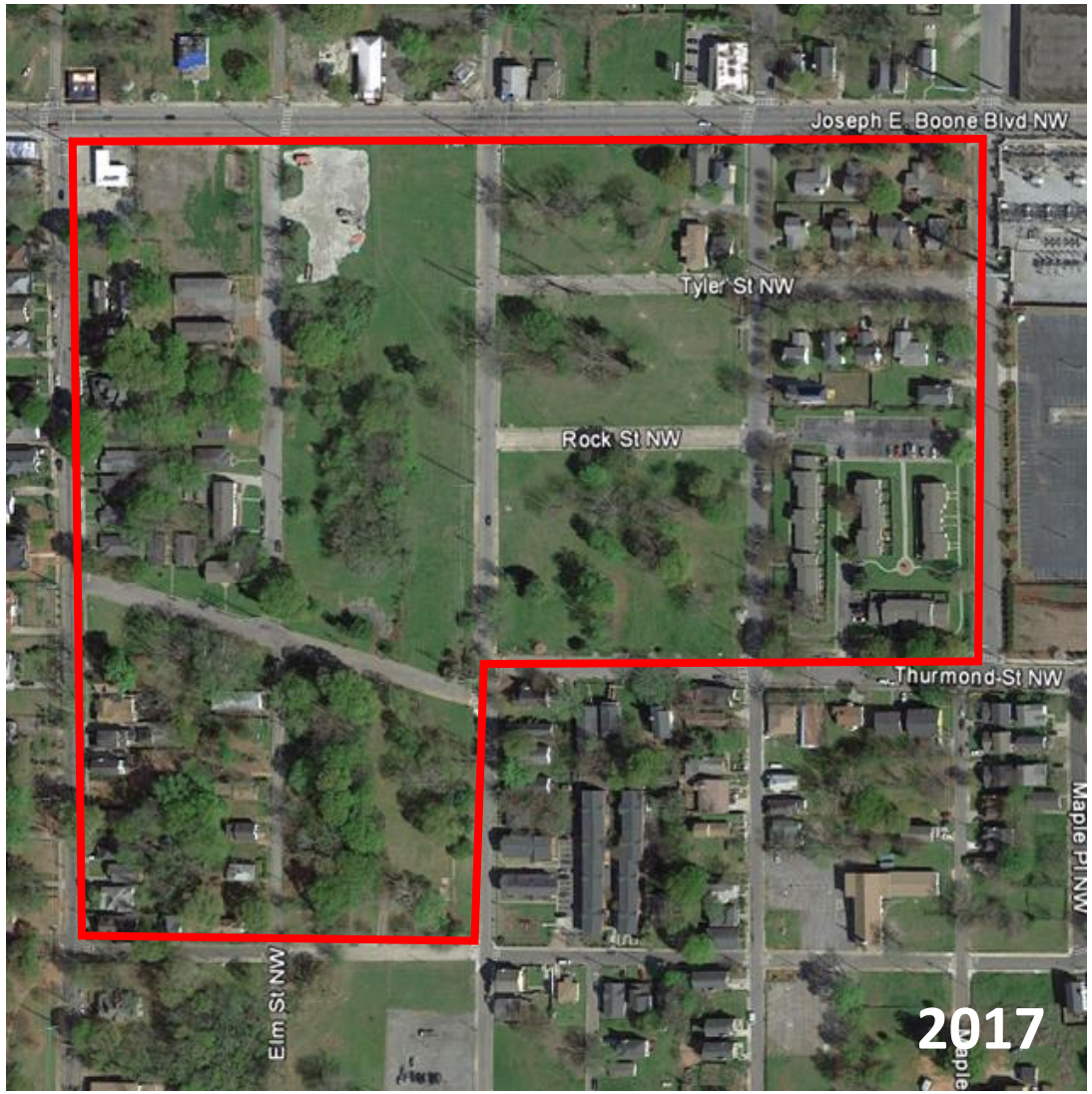
Upper Proctor Creek Capacity Relief

History

- **2002 storm event** caused catastrophic flooding in the Vine City neighborhood
- Result – City purchased **60+** homes
- Combined sewer basin
- Opportunity for multiple partnerships to resolve flooding concerns and restore community health

Pre- and Post-2002 Flood Event





Partnerships

Pond design and construction, limited combined sewer separation, green infrastructure, soil remediation

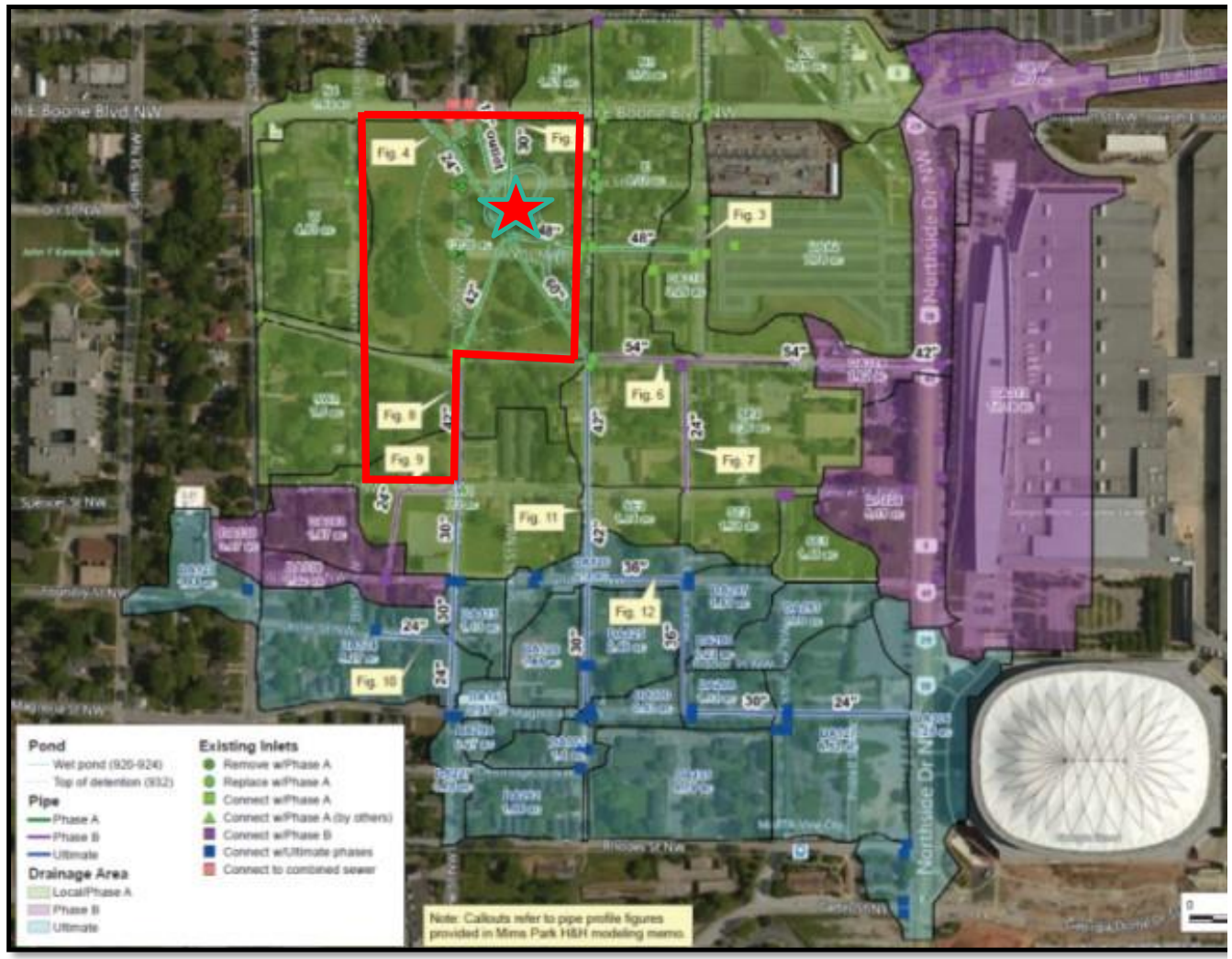
Park design and construction in coordination with Department of Parks and Recreation and DWM

Design and construction of 16 statues of historical and civil rights leaders throughout the park

Adjacent Projects

Boone Blvd Green Street (DWM), PATH, Boone Park West

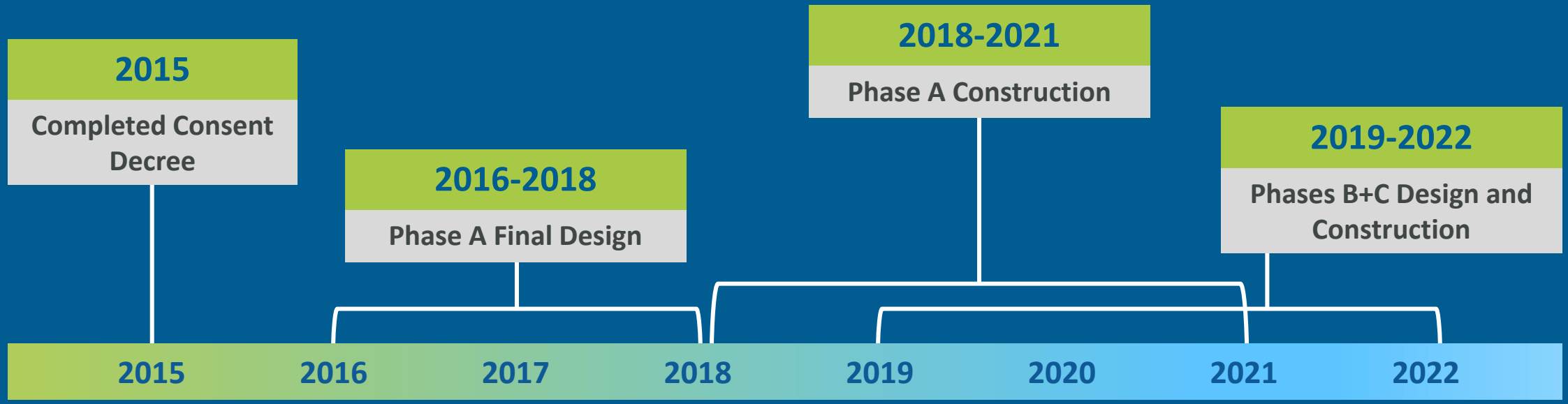
Phased Combined Sewer Separation



- Phase A: 73 acres
- Phase B: 36 acres
- Phase C: 41 acres
- Ultimate: 150 acres

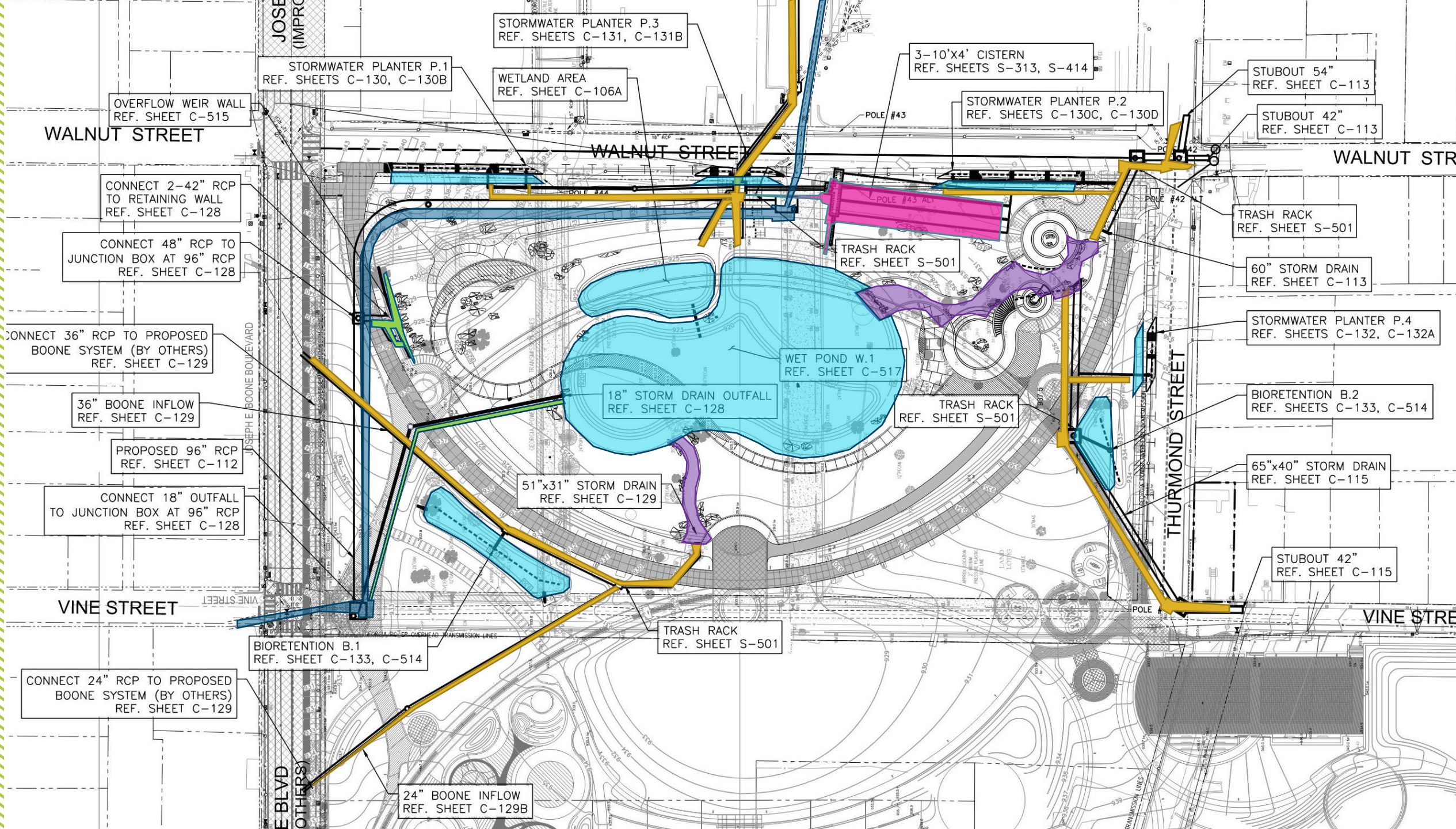
- Designed using InfoWorks ICM
- Eliminates combined sewer overflows up to the 100-year storm event

Timeline


2015
Completed Consent Decree
2016-2018
Phase A Final Design
2018-2021
Phase A Construction
2019-2022
Phases B+C Design and Construction
2015
2016
2017
2018
2019
2020
2021
2022

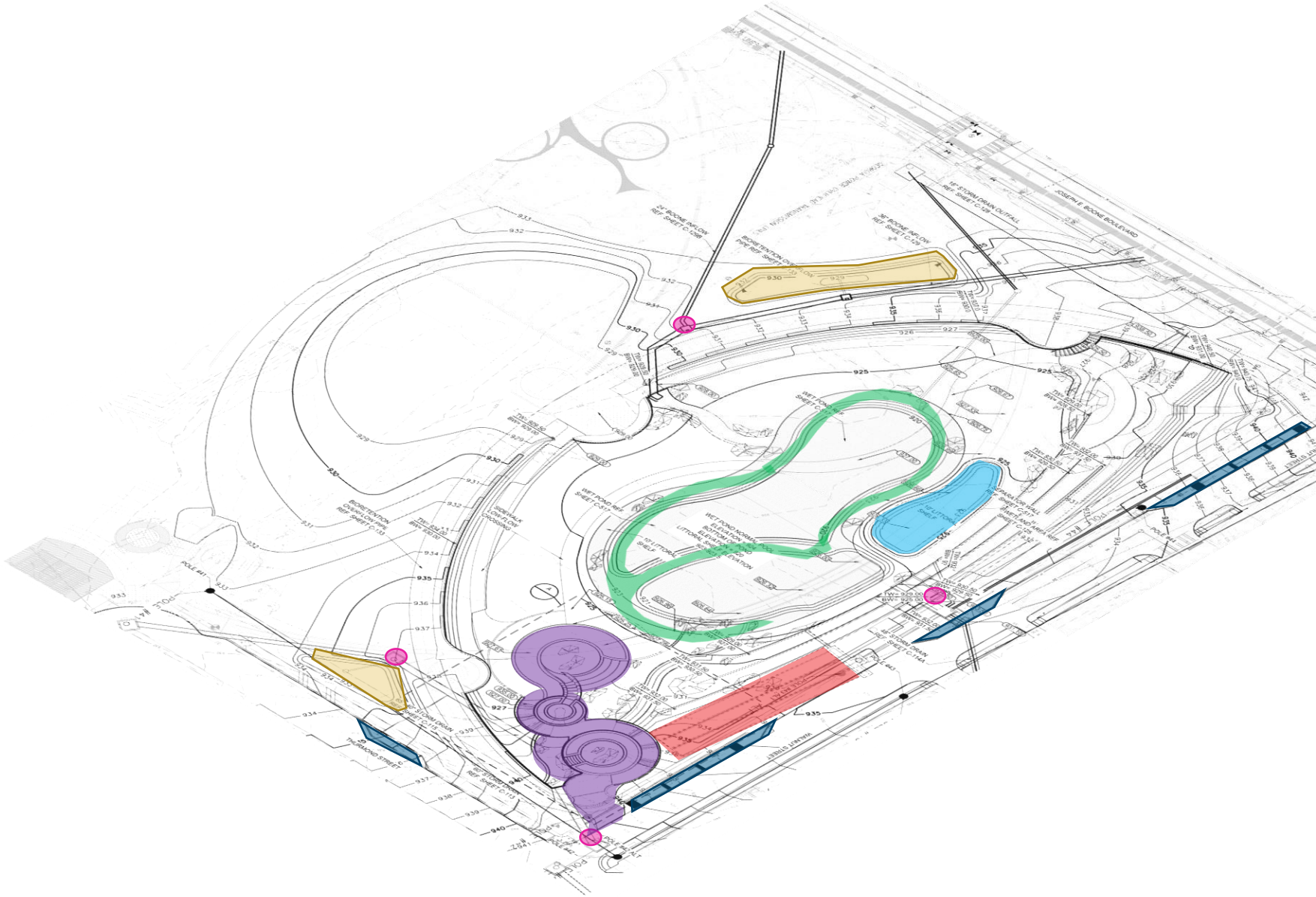
DWM Phase A Project Elements

- Soil Remediation
- Wet pond (1 acre)
- 100-year flood storage pool (30 acre-feet)
- Aerating water features
- Stormwater planters and trash racks
- Bioretention areas
- Underground storage for makeup water
- Rerouted combined sewer trunkline (96-inch)
- Separated storm drain pipelines
- New sidewalks/roadway improvements

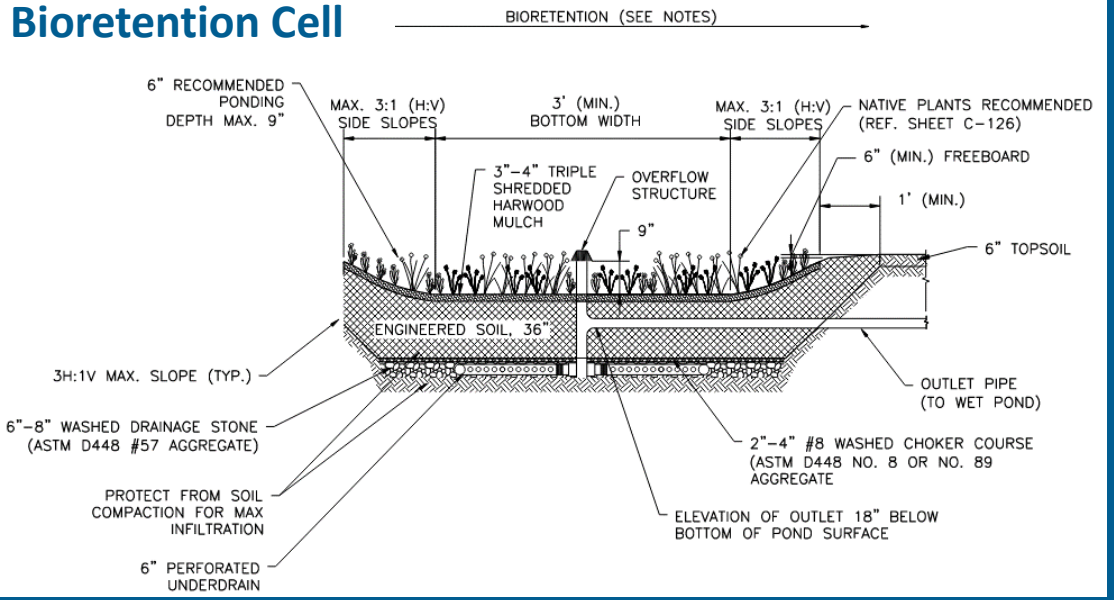

STORMWATER PLANTER P.3
REF. SHEETS C-131, C-131B
STORMWATER PLANTER P.1
REF. SHEETS C-130, C-130B
WETLAND AREA
REF. SHEET C-106A
3-10'X4' CISTERN
REF. SHEETS S-313, S-414
STORMWATER PLANTER P.2
REF. SHEETS C-130C, C-130D
STUBOUT 54"
REF. SHEET C-113
STUBOUT 42"
REF. SHEET C-113
OVERFLOW WEIR WALL
REF. SHEET C-515
WALNUT STREET
WALNUT STREET
WALNUT STR
CONNECT 2-42" RCP
TO RETAINING WALL
REF. SHEET C-128
CONNECT 48" RCP TO
JUNCTION BOX AT 96" RCP
REF. SHEET C-128
POLE #43
POLE #43 ALT
POLE #42 ALT
TRASH RACK
REF. SHEET S-501
TRASH RACK
REF. SHEET S-501
60" STORM DRAIN
REF. SHEET C-113
CONNECT 36" RCP TO PROPOSED
BOONE SYSTEM (BY OTHERS)
REF. SHEET C-129
STORMWATER PLANTER P.4
REF. SHEETS C-132, C-132A
WET POND W.1
REF. SHEET C-517
18" STORM DRAIN OUTFALL
REF. SHEET C-128
TRASH RACK
REF. SHEET S-501
36" BOONE INFLOW
REF. SHEET C-129
BIORETENTION B.2
REF. SHEETS C-133, C-514
PROPOSED 96" RCP
REF. SHEET C-112
JOSEPH E. BOONE BOULEVARD
THURMOND STREET
CONNECT 18" OUTFALL
TO JUNCTION BOX AT 96" RCP
REF. SHEET C-128
51"x31" STORM DRAIN
REF. SHEET C-129
65"x40" STORM DRAIN
REF. SHEET C-115
STUBOUT 42"
REF. SHEET C-115
VINE STREET
VINE STRE
POLE
TRASH RACK
REF. SHEET S-501
BIORETENTION B.1
REF. SHEET C-133, C-514
CONNECT 24" RCP TO PROPOSED
BOONE SYSTEM (BY OTHERS)
REF. SHEET C-129
24" BOONE INFLOW
REF. SHEET C-129B

Sustainable Measures

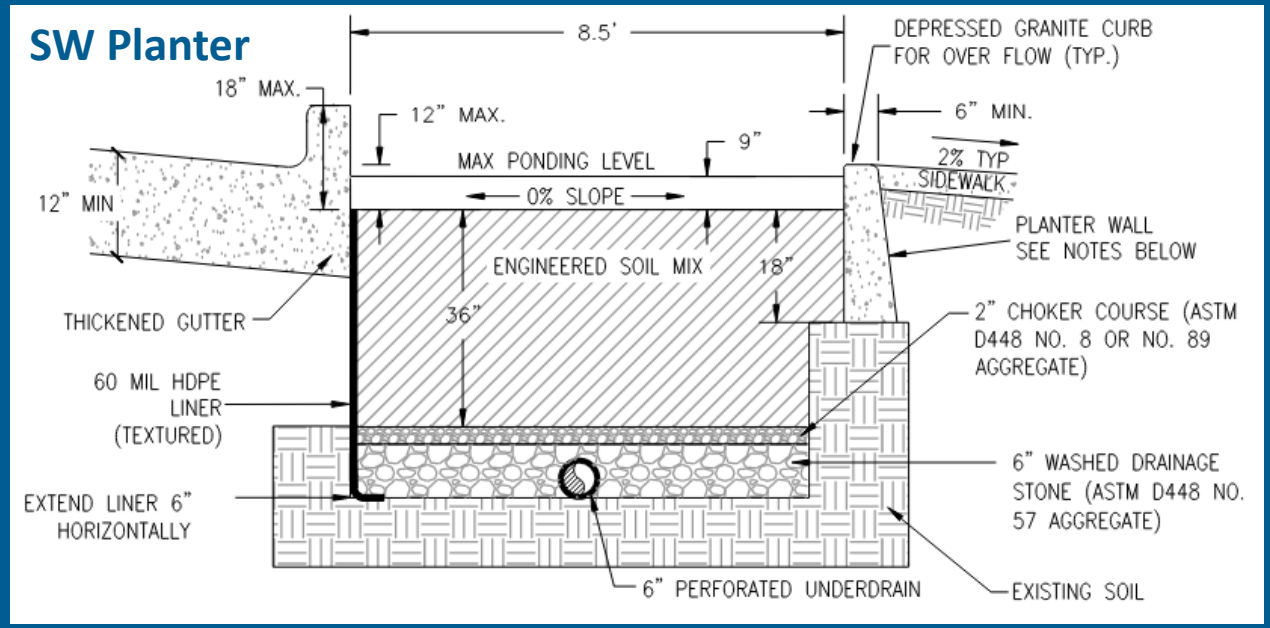
- Wet Pond
  - Littoral Shelf
  - Aeration Channel
  - Community Amenity
- Wetlands
- Cistern
- Stormwater Planters
- Bioretention Areas
- Trash Racks

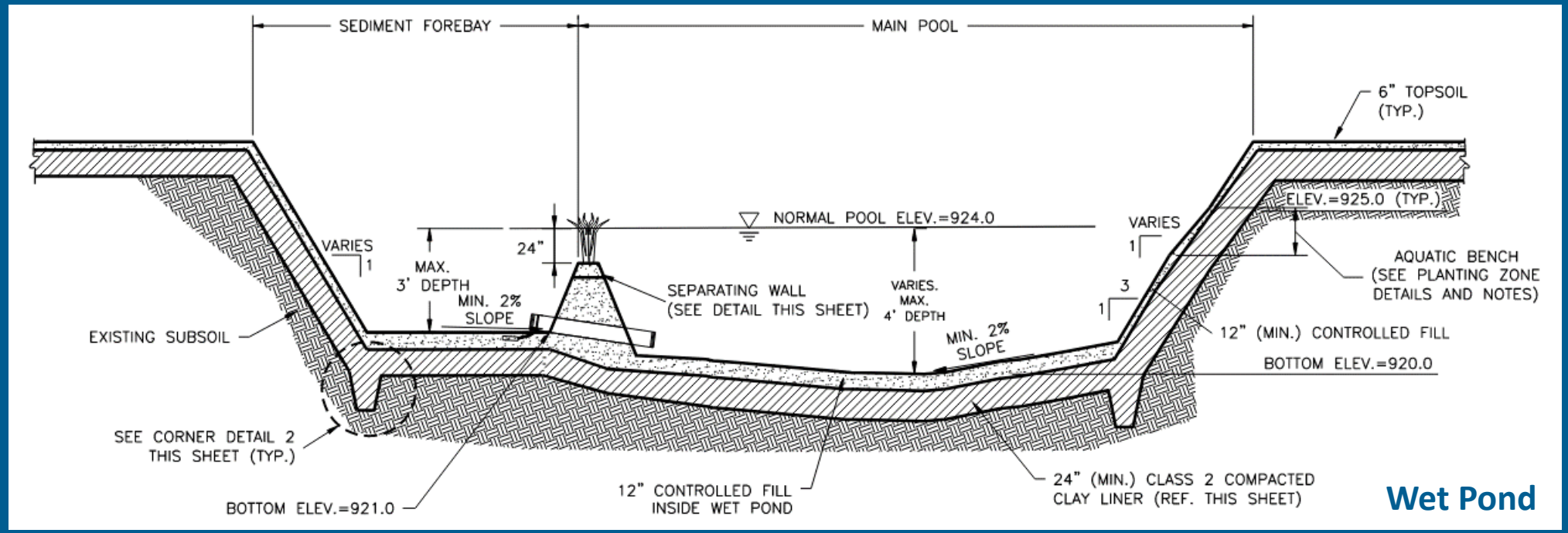


Bioretention Cell



SW Planter





Wet Pond

Water Quality Benefits

Phase A Treatment Volume: 135,700 cf

- Wet pond: 126,000 cf
- Bioretention cells: 5,330 cf
- Stormwater planters: 4,370 cf

Pollutant Removal

- 80% TSS, 50% TP, 30% TN
- 70% fecal coliform and 50% metals

Water Quality Benefits

Rainfall Treated

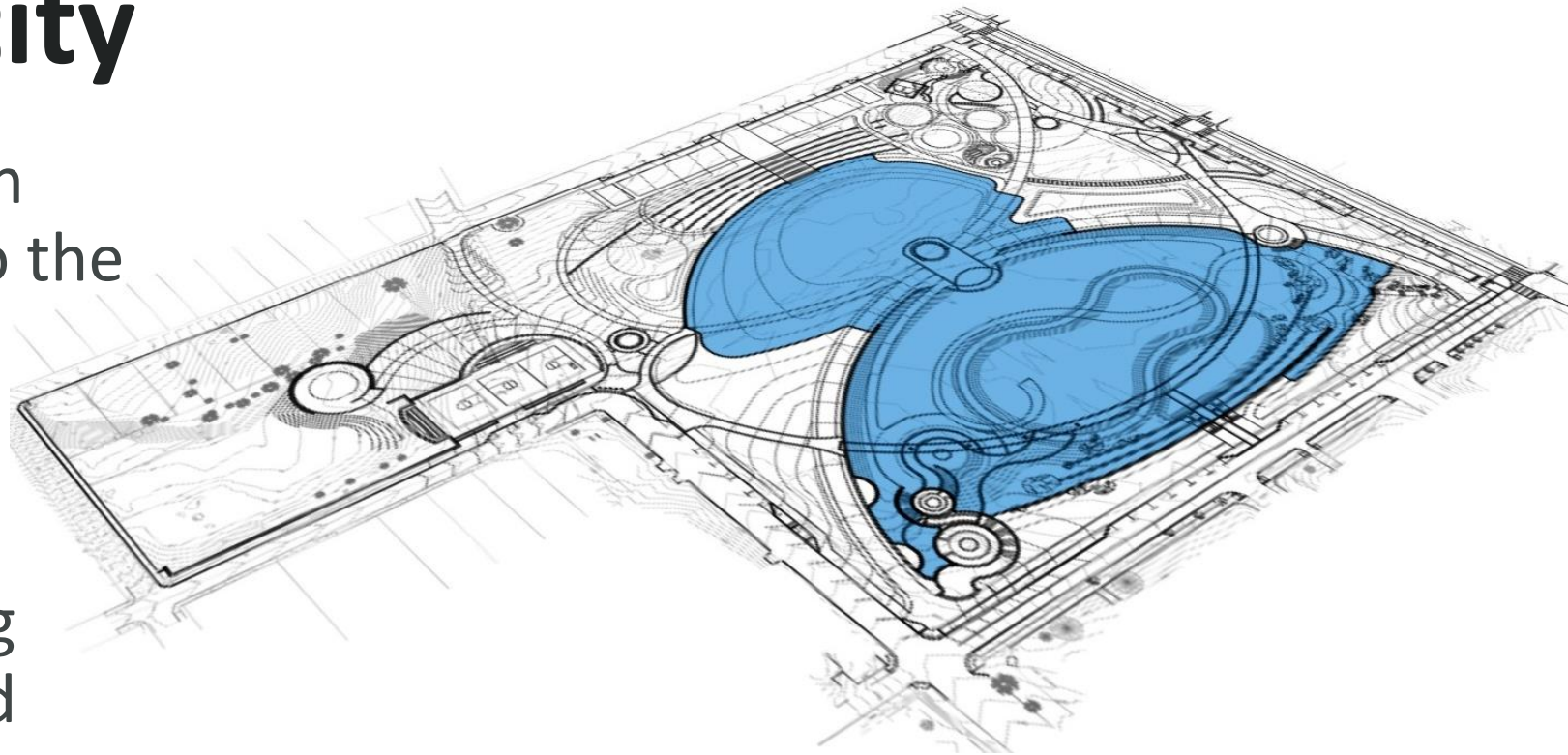
- GSMM Target: 1.20 inches
- Phase A: 1.52 inches
- Ultimate: 0.66 inches *(from Phase A SCMs alone)*


watershed management
Green Infrastructure in Cook Park: Stormwater Pond
This stormwater pond reduces flooding by capturing and storing stormwater runoff during major rainfall events.
When it rains, runoff is directed to the pond from the surrounding neighborhood, where it is stored and released over an extended period of time. This reduces flooding and takes pressure off the combined sewer system. During a 100-year storm, the pond limits will expand onto the Great Lawn, temporarily storing over 9 million gallons of runoff.
The littoral shelf is the area between the pond and the surrounding land that is planted with native aquatic vegetation. This wetlands strip helps to filter out excess nutrients and minerals in stormwater runoff.
The recirculating fountains located in the pond help to increase oxygen in the surrounding aquatic ecosystem.

Stormwater Storage Capacity

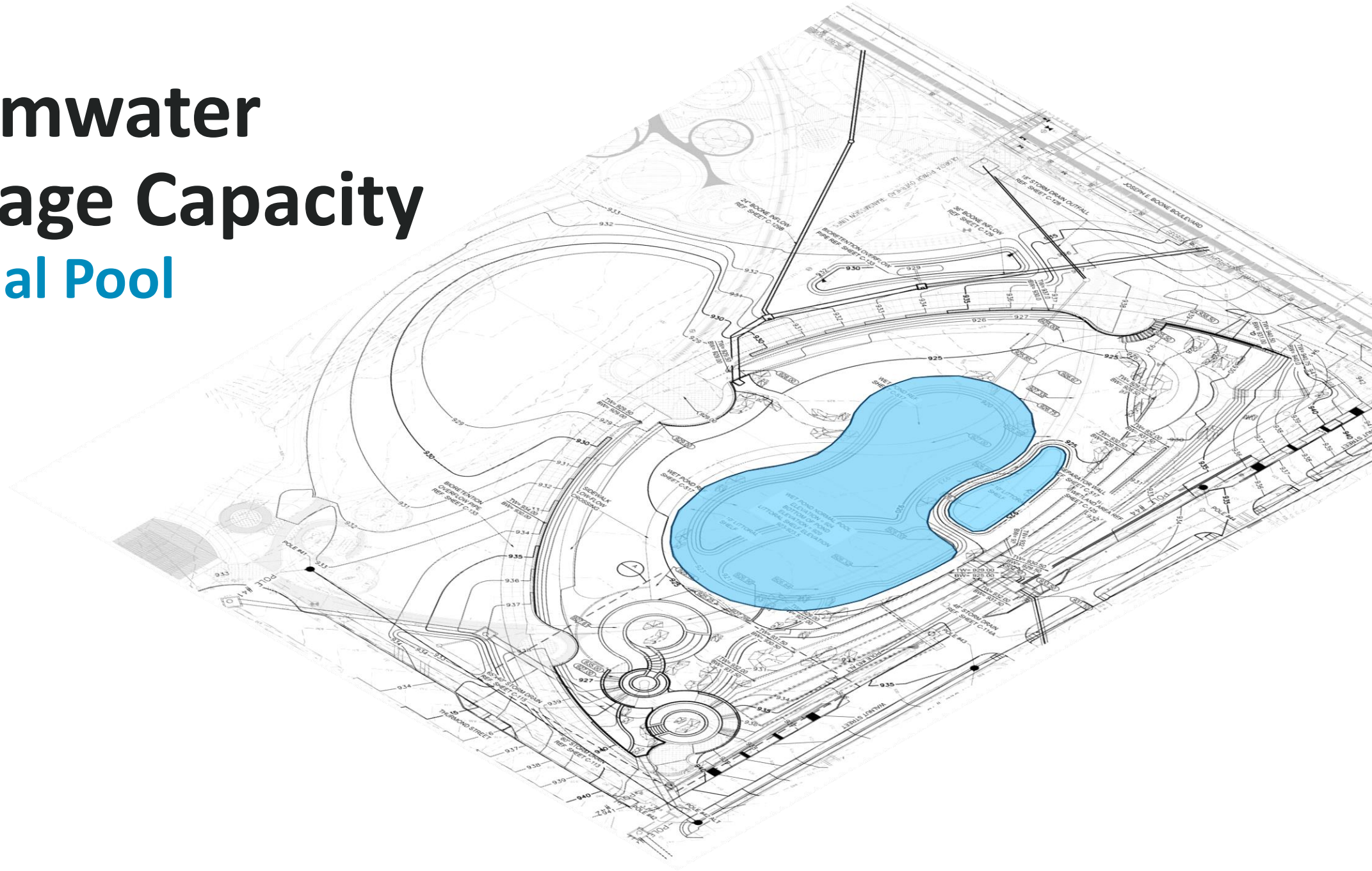
- Stormwater (9+ million gallons) is conveyed to the park's pond and rain gardens and stored.

- This alleviates flooding and reduces combined sewer overflows into Proctor Creek.



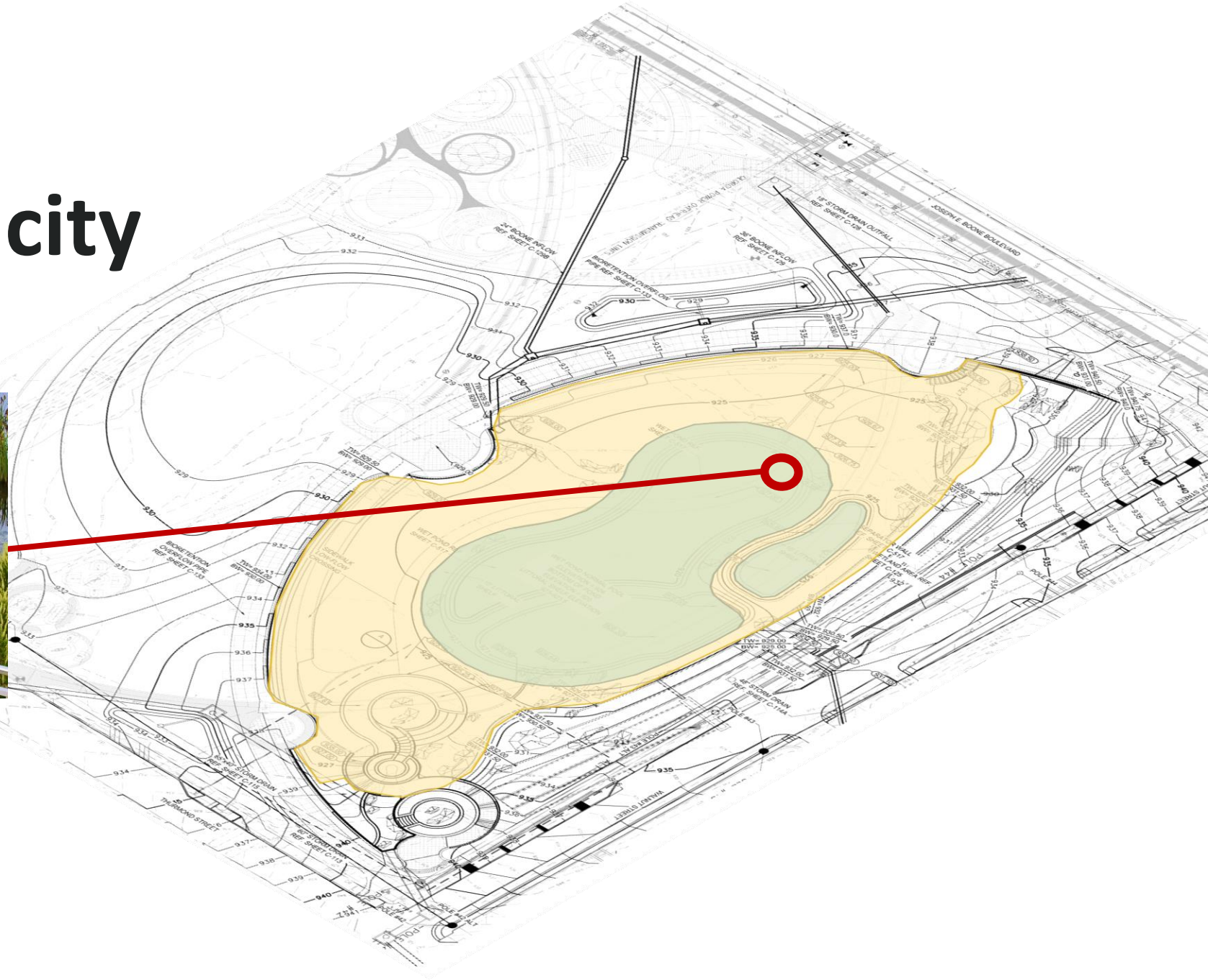
Stormwater Storage Capacity

Normal Pool



Stormwater Storage Capacity

2-year Storm

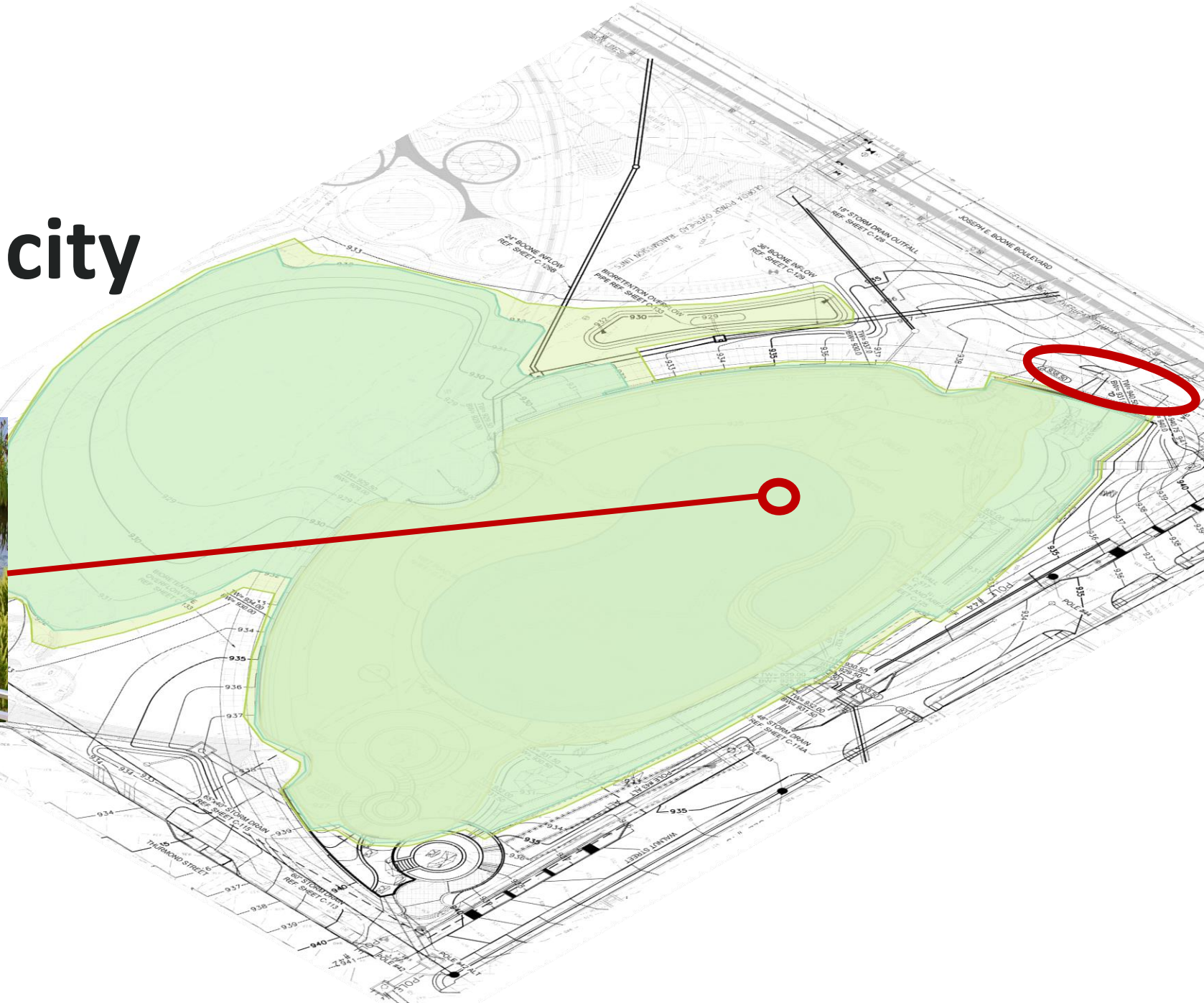


Stormwater Storage Capacity

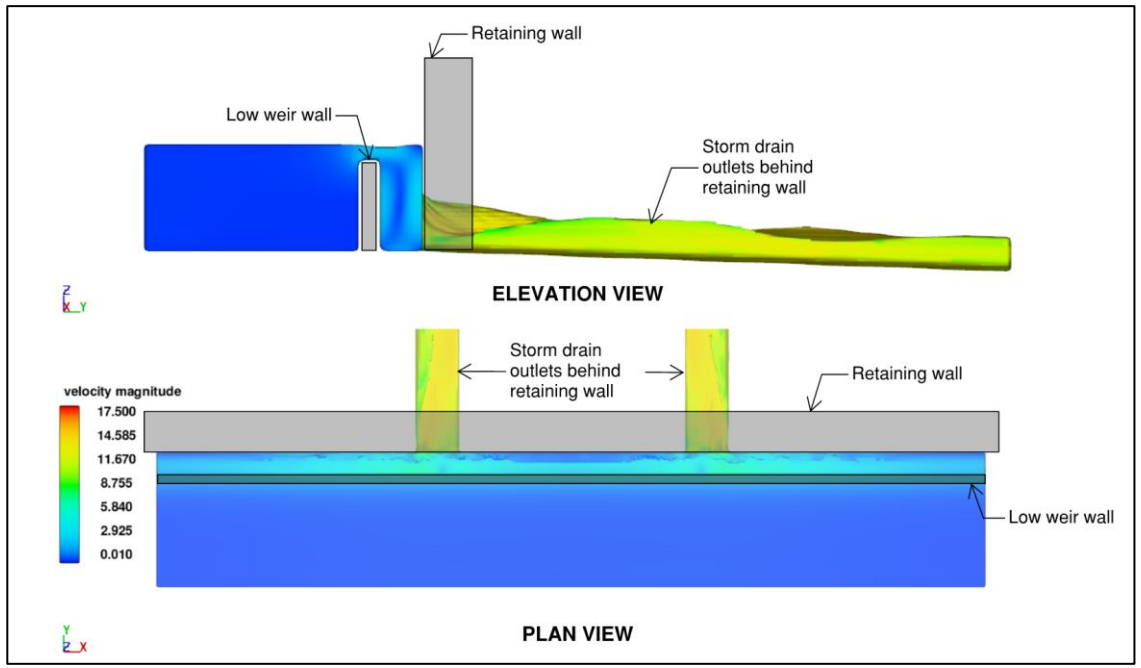
25-year Storm

Stormwater Storage Capacity

100-year Storm

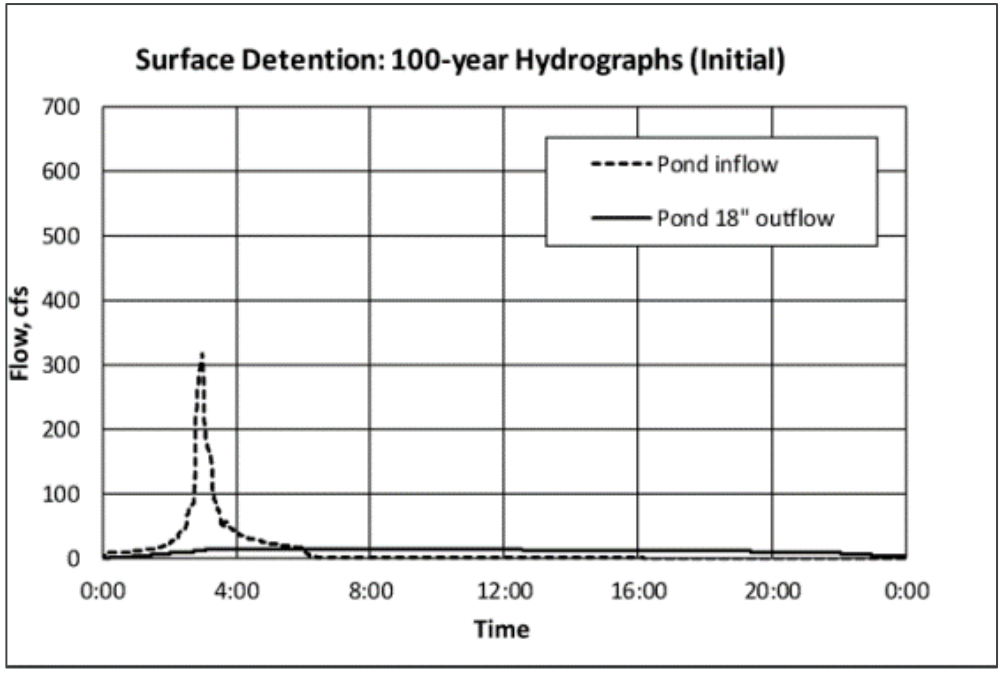


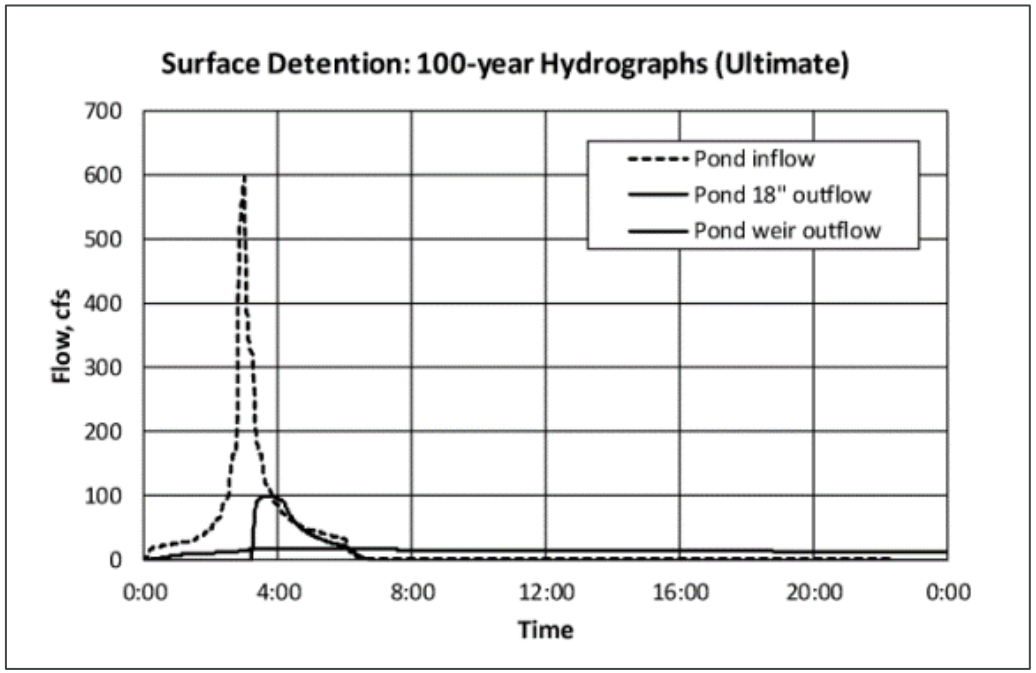
Overflow Weir



Flood Reduction

	2y3h	5y3h	10y4h	25y4h	100y6h	100y24h
Combined Pond Inflow (cfs)	226	330	394	479	623	415
Combined Pond Outflow (cfs)	15	16	17	22	119	18
% Reduction	93%	95%	96%	96%	81%	96%





Awards

First Place for Innovative Water Projects for Large Population
National Association of Flood & Stormwater Management Agencies

2022 Projects Awards Shortlist
International Federation of Consulting Engineers

2022 ACEC National Engineering Excellence Grand Award
American Council of Engineering Companies

2022 Engineering Excellence Awards Grand Prize
ACEC Georgia

2022 Engineering Excellence Awards Water Resource Category Winner
ACEC Georgia

2022 Engineering Excellence Awards People's Choice Winner
ACEC Georgia

2022 Innovation in Sustainable Civil Engineering Award
American Society of Civil Engineers

2021 Award of Merit
ENR Southeast Best Projects

Q&A

Tricia H. Hatley, PE | tricia.hatley@freese.com

Kimberly Patak, PE, CFM, ENV SP | kkp@freese.com