Hagan-Lafitte Drainage Upgrades and Green Infrastructure Project

Design Review Committee
June 30th, 2016

Presentation Agenda

- Project Overview
- Grey Infrastructure
- Green Infrastructure (GI)
- Easton Park Underground Detention
- Results
- Questions

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Project Overview

Project Background

- Purpose – reduce flooding in Hagan-Lafitte neighborhood during 10-year 24-hour rainfall event
- HMGP funded $5.355 Million for construction

Project Status

- 10% submitted October 5, 2015
- 30% design documents submitted Jan 15, 2016
- BCA – 1.67
- Survey field work completed

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Project Location

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Project Area

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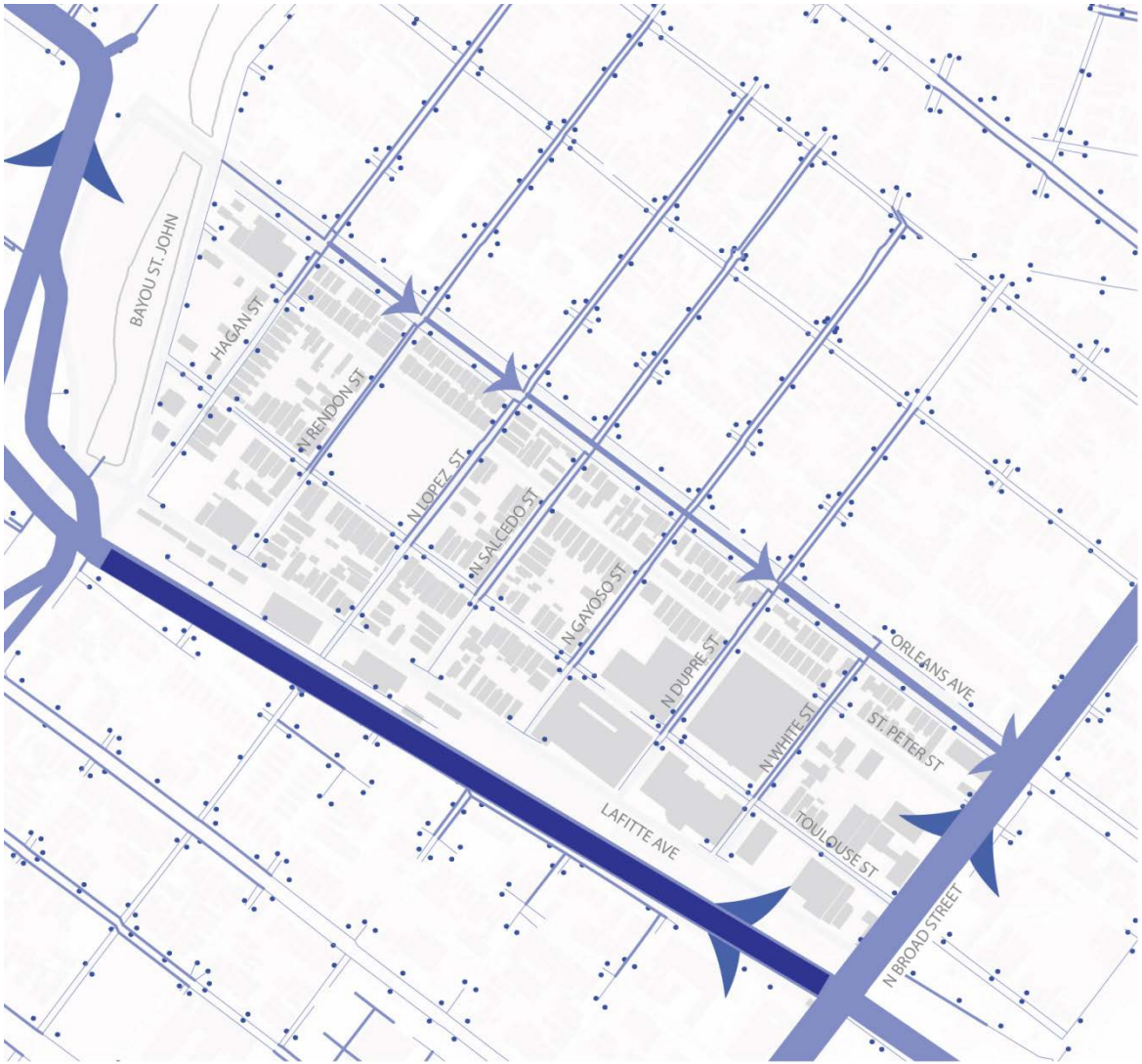
Existing Drainage Conditions

- **Site currently drains through underground pipe network to box culvert in Orleans Avenue and then to box culvert in N. Broad Street.**



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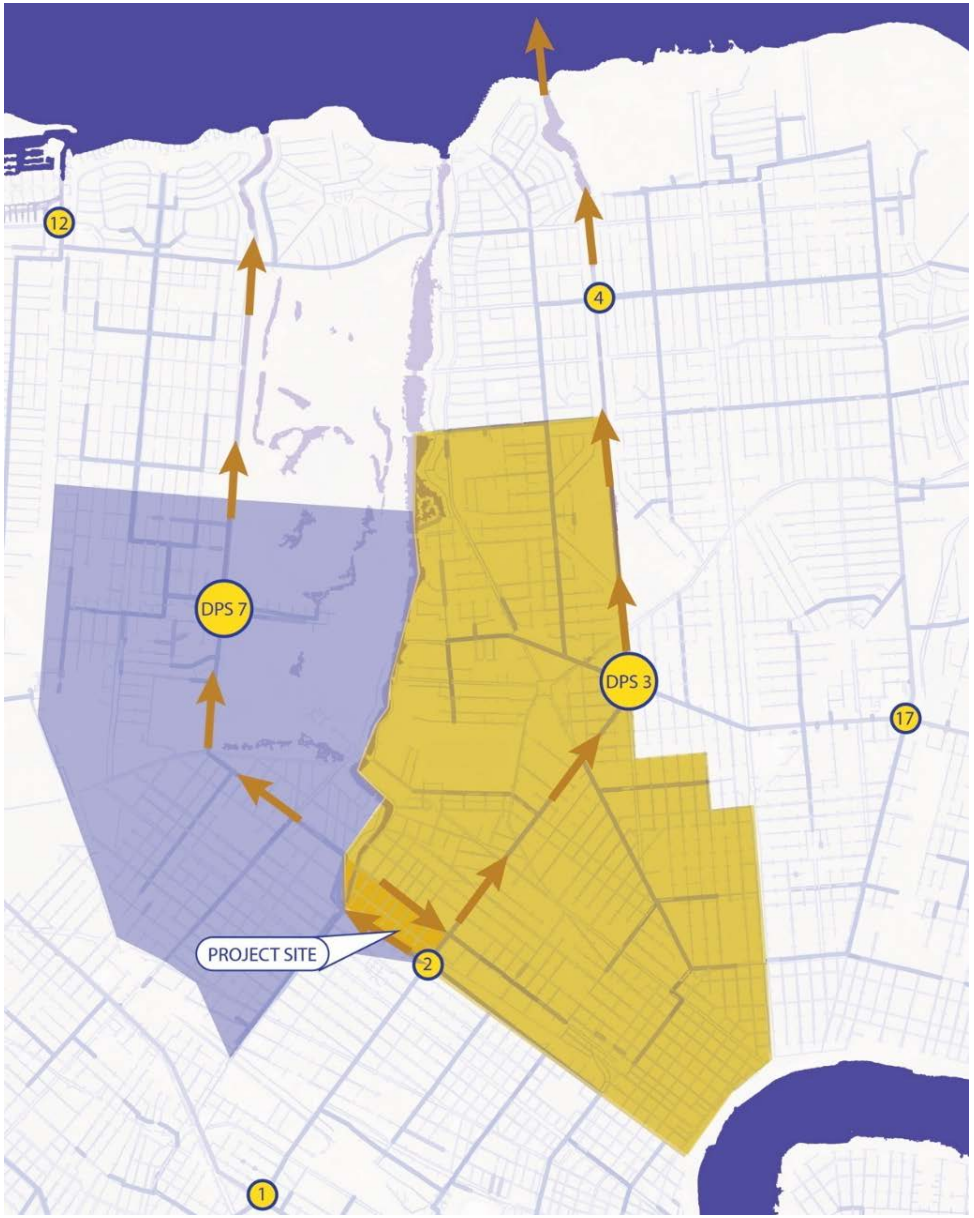
Existing Pump Station Routing

- Site is currently at the upstream end of DPS 3 drainage basin



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Project Goals – Increase Neighborhood Resiliency

- Increase capacity of collection system
- Redirect storm flow away from Orleans Ave. and toward St. Louis Canal
- Increase capacity of final outfalls into Canal
- Utilize GI to slow, retain, and absorb storm water
- Increase pervious area and connection with groundwater with grid system to address subsidence / roadway settlement
- Introduce strategic on-site storage to reduce peak discharge and add storage volume.

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Proposed Conditions

- Mix of green and gray infrastructure
- Reduce flooding during the 10-year, 24-hour storm event
- Reduce flow to DPS 3 by redirecting flow to DPS 7
- Supply flow to bioswales already included in Lafitte Greenway
- Benefits areas outside project area

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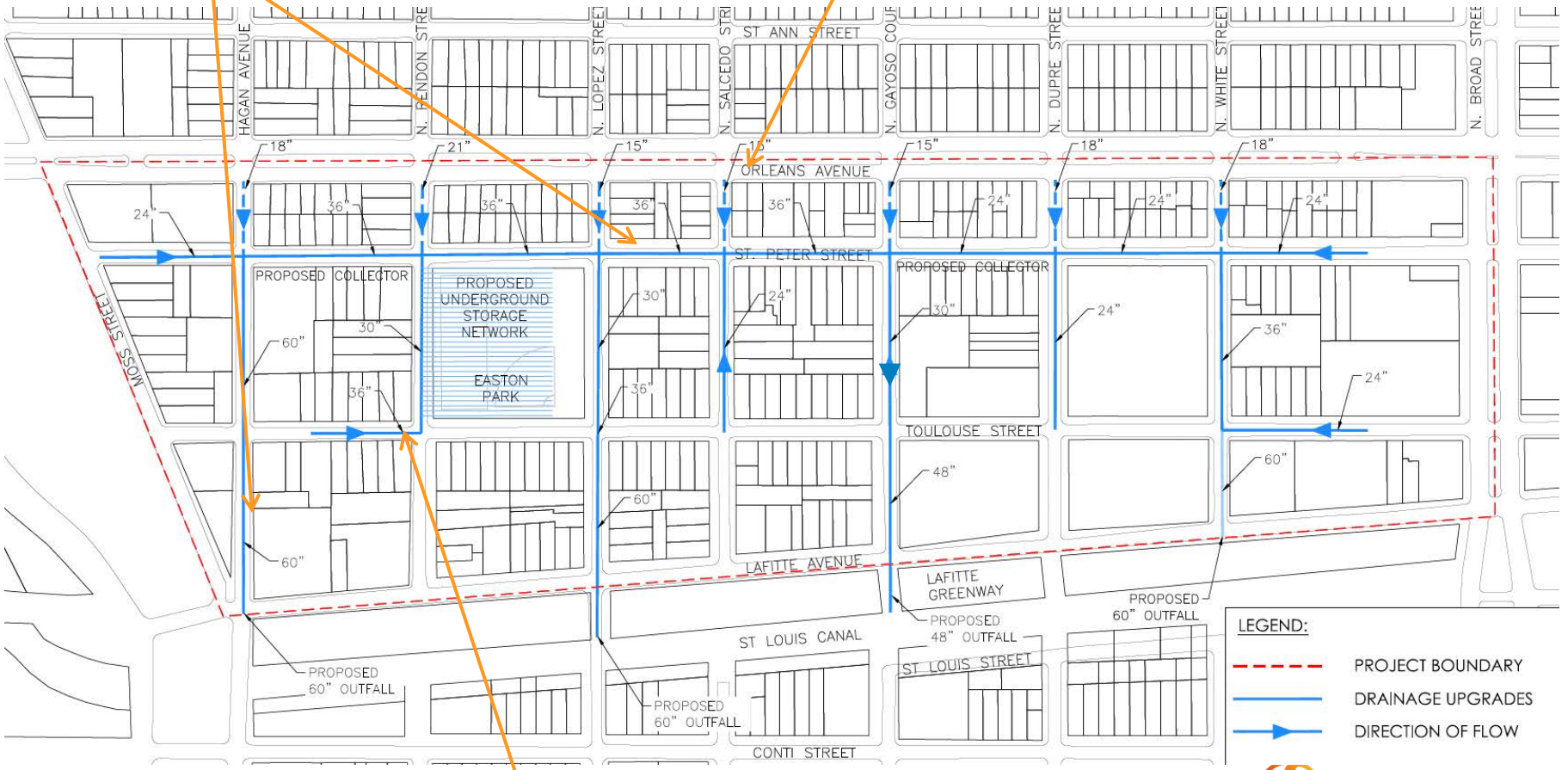
Grey Infrastructure

Redirect flows to St. Peter Street Collector and then to multiple lateral outfalls into St. Louis Canal/DPS 7

Disconnect neighborhood from Orleans Ave box culvert/DPS 3



Increase subsurface pipe sizes for increased capacity in system

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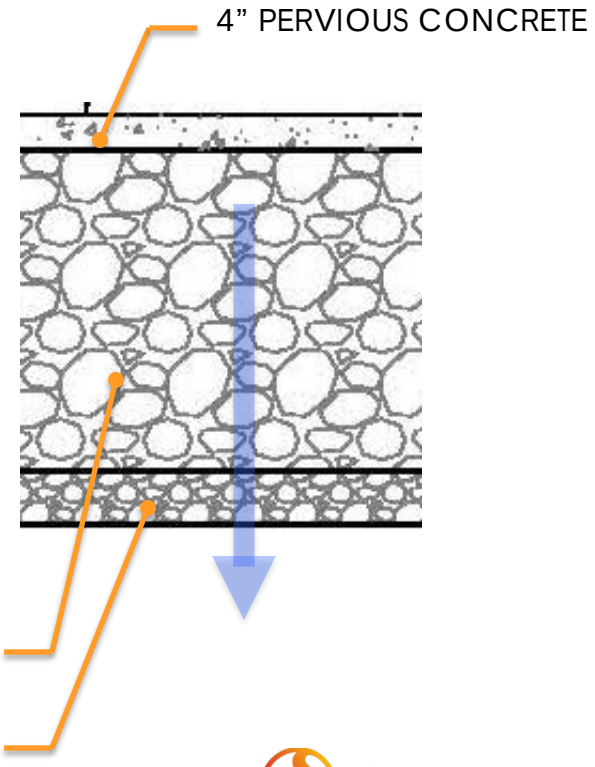
Green Infrastructure Pervious Sidewalks

Replace sidewalks in project area with pervious concrete

- Already in use in Greenway Project
- Potential to retain/return flow to ground instead of converting it to runoff
- Intercept flows from roof leaders, driveways, and yards
- Create a recharge grid to address subsidence



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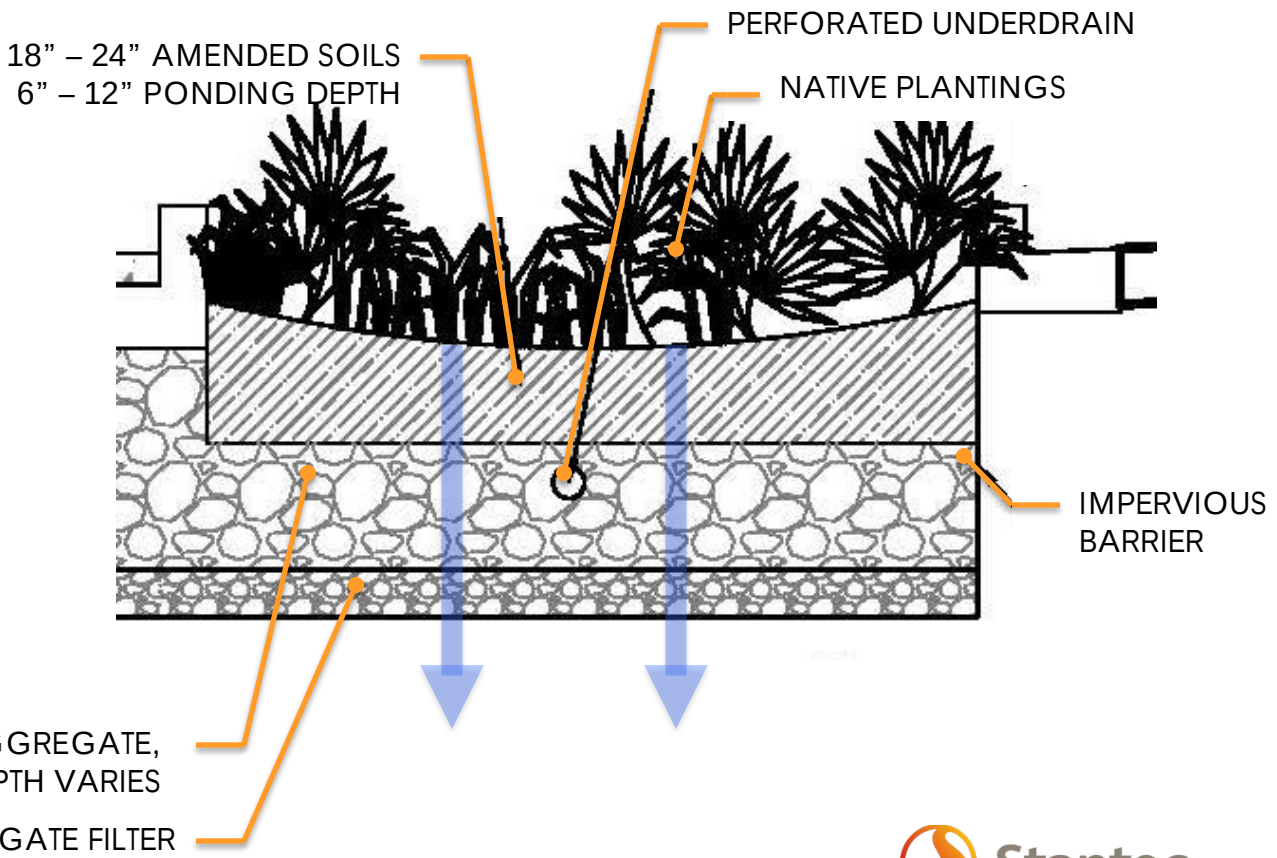
Green Infrastructure
Rain Gardens

Rain gardens at key locations within the project area

- Around existing catch basins
- As a street corner landscape improvement / parking deterrent
- Connected to pervious sidewalk grid to form an integrated system
- Add trees in available spaces



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GI – Plant List

- **Performance**
  - Evapotranspiration
  - Complex root systems to aid infiltration
- **Maintenance**
  - Tolerant of standing water & drought
  - Shade out weeds
- **Public Acceptance**
  - Not messy or reedy
  - Ideally flowering

Stokes' aster

Lantana

Boxwood

Butterfly Iris

Agapanthus

Dwarf Palmetto

Bald Cypress

Sweet Bay Magnolia

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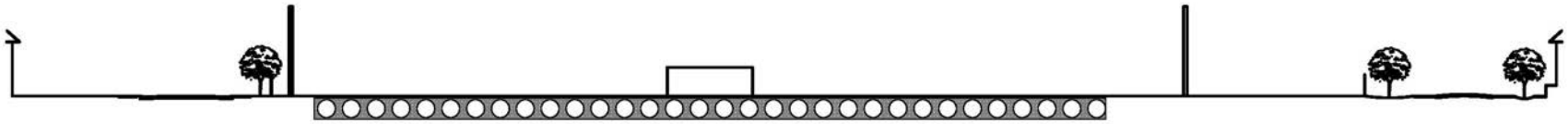
Underground Storage

- **Use existing park space for underground storage**
  - Retain functionality of park – ball fields and play equipment
  - Explore stackable storage concepts
  - Potential to retain/return flow to ground instead of converting it to runoff
  - Potential to re-purpose flows to irrigate the ball fields or to feed into the head works of the Greenway rain garden



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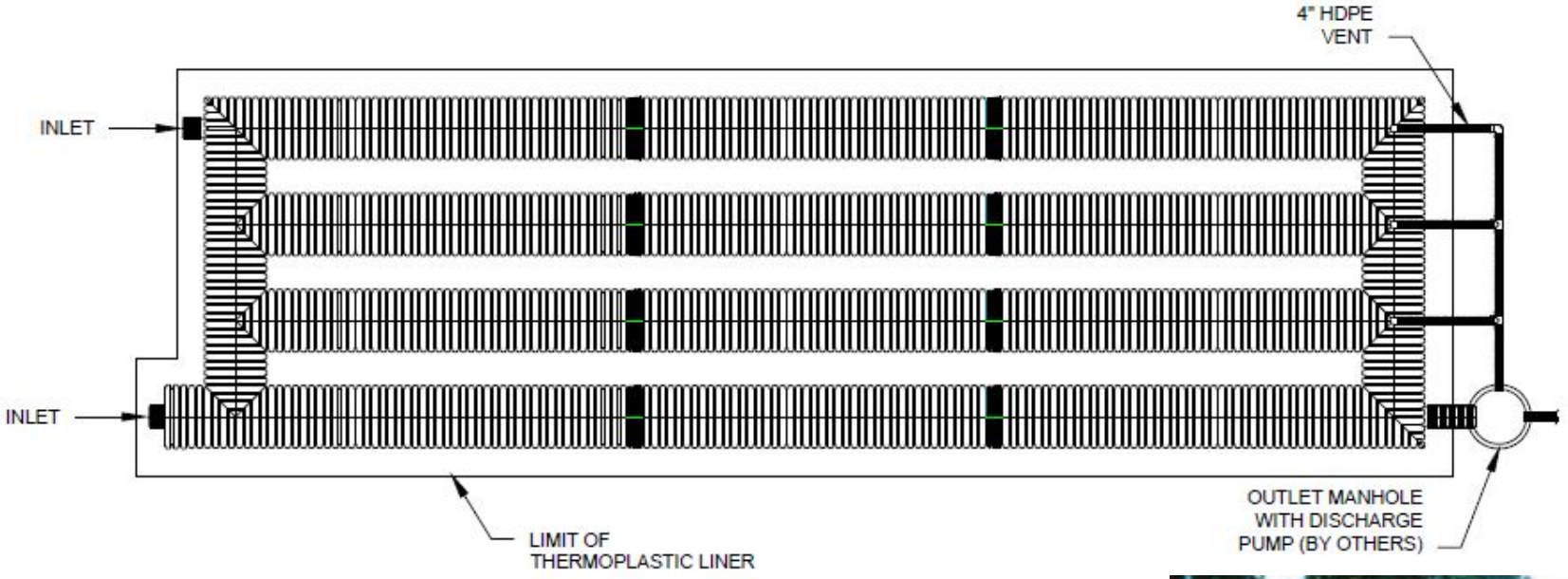
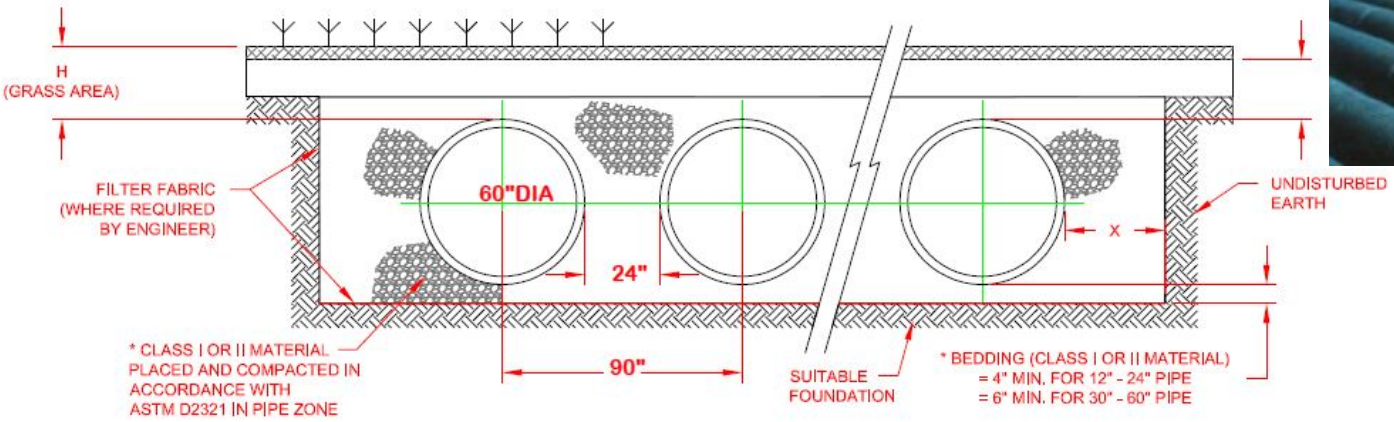

4" HDPE
VENT
INLET
INLET
OUTLET MANHOLE
WITH DISCHARGE
PUMP (BY OTHERS)
LIMIT OF
THERMOPLASTIC LINER


H
(GRASS AREA)
FILTER FABRIC
(WHERE REQUIRED
BY ENGINEER)
60"DIA
24"
X
UNDISTURBED
EARTH
90"
* CLASS I OR II MATERIAL
PLACED AND COMPACTED IN
ACCORDANCE WITH
ASTM D2321 IN PIPE ZONE
SUITABLE
FOUNDATION
* BEDDING (CLASS I OR II MATERIAL)
= 4" MIN. FOR 12" - 24" PIPE
= 6" MIN. FOR 30" - 60" PIPE

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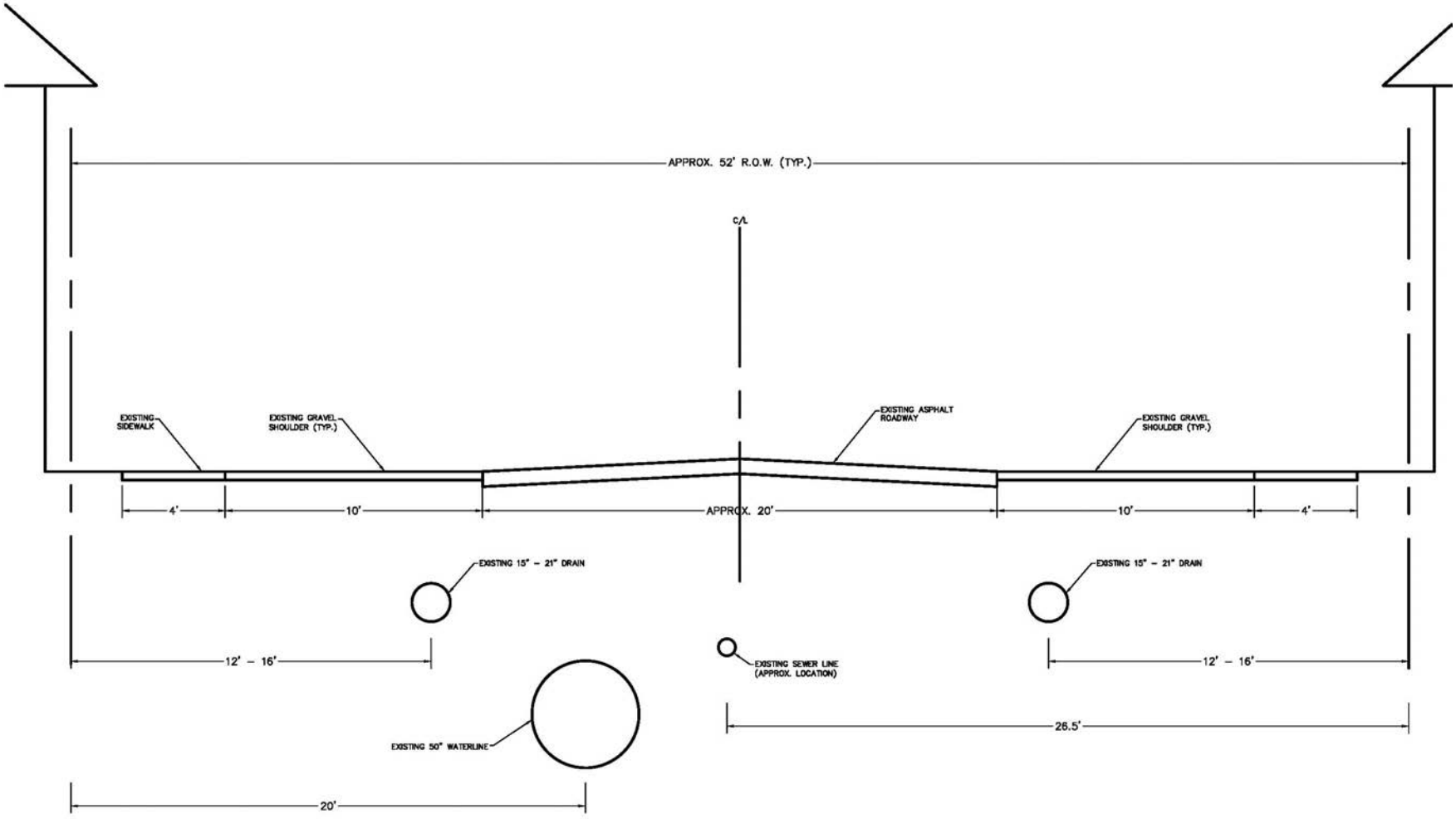
Existing Cross Section



LOPEZ STREET EXISTING

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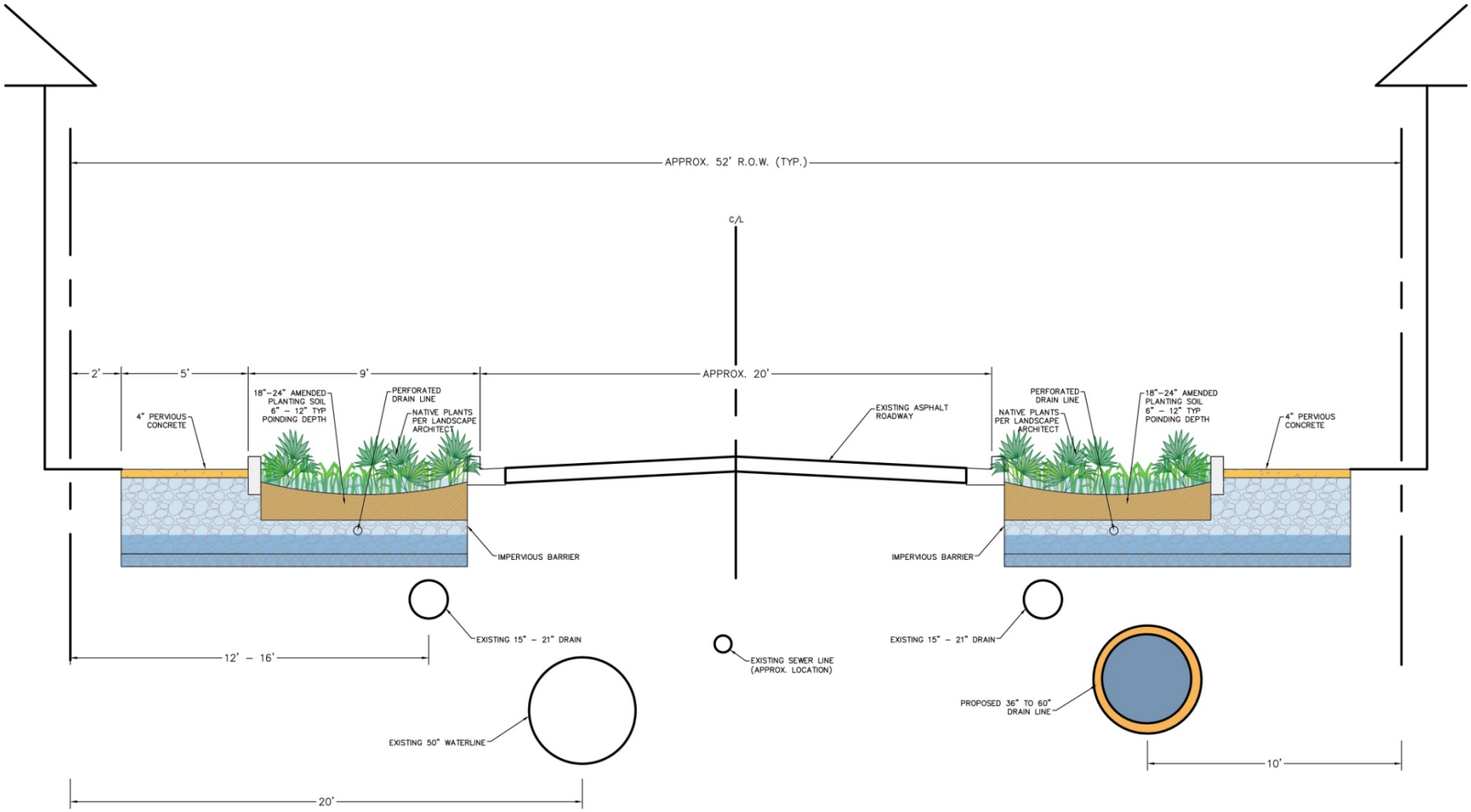
Proposed Cross Section



LOPEZ STREET PROPOSED

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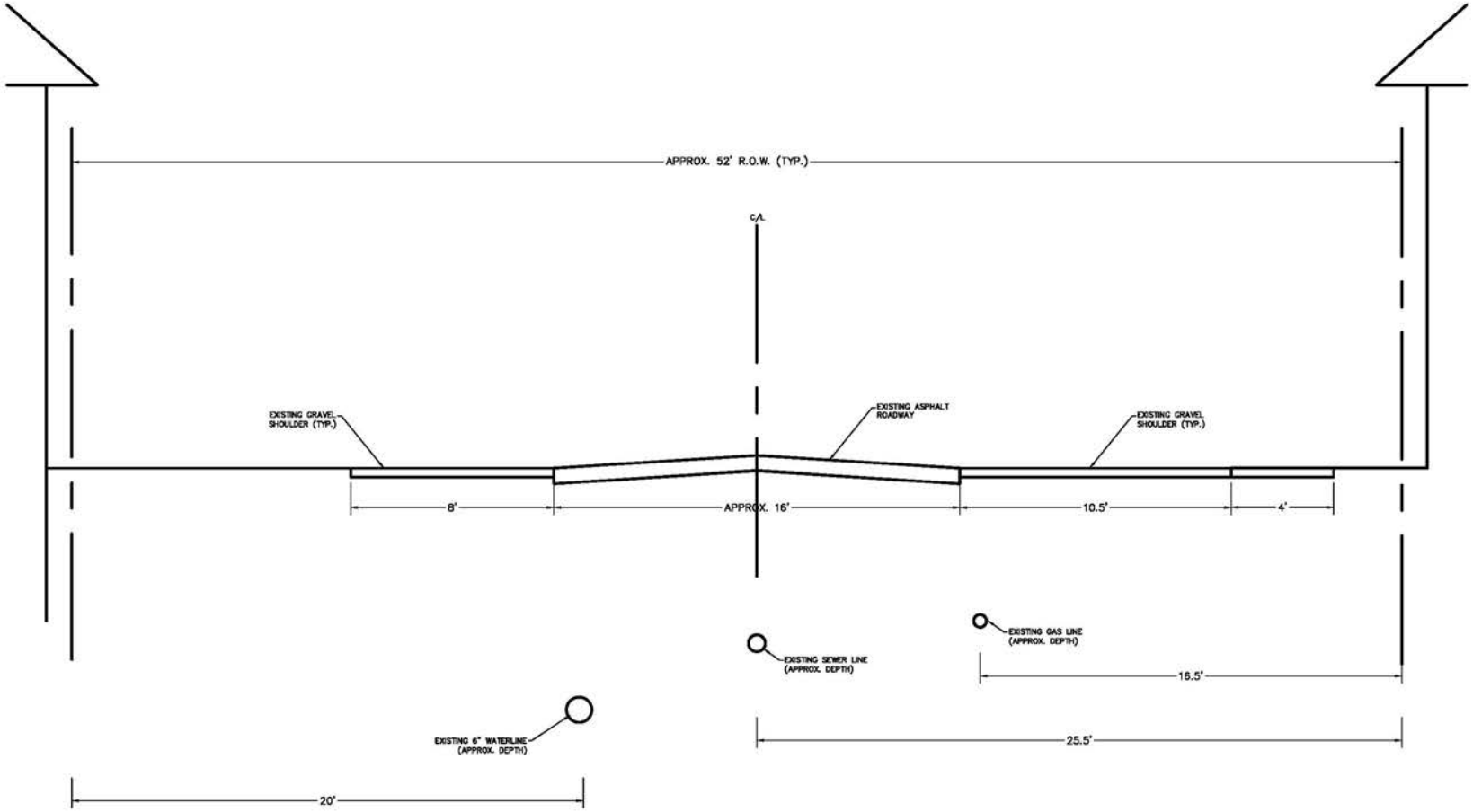
Existing Cross Section



ST. PETER STREET EXISTING
COMMERCIAL PORTION

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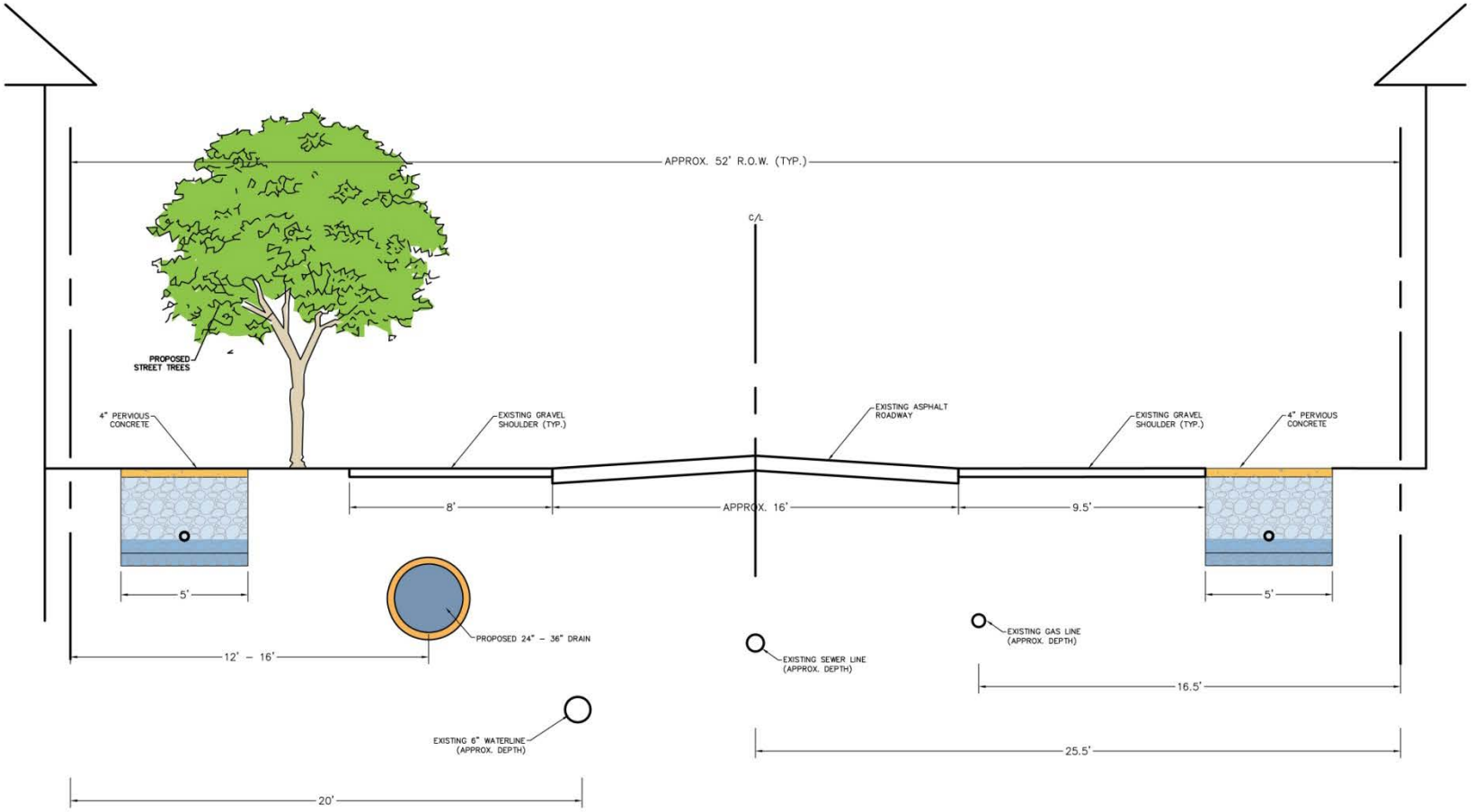
Proposed Cross Section



ST. PETER STREET PROPOSED
COMMERCIAL PORTION

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Hydraulic Results

Project Site Area – 32.9 Acres

2 Year / 24 Hour Storm Event – 6.0”

- **Volume 5.35 MG**

10 Year / 24 Hour Storm Event -9.2”

- **Volume 8.21 MG**

Proposed solution provides 1.0 MG Additional Storage

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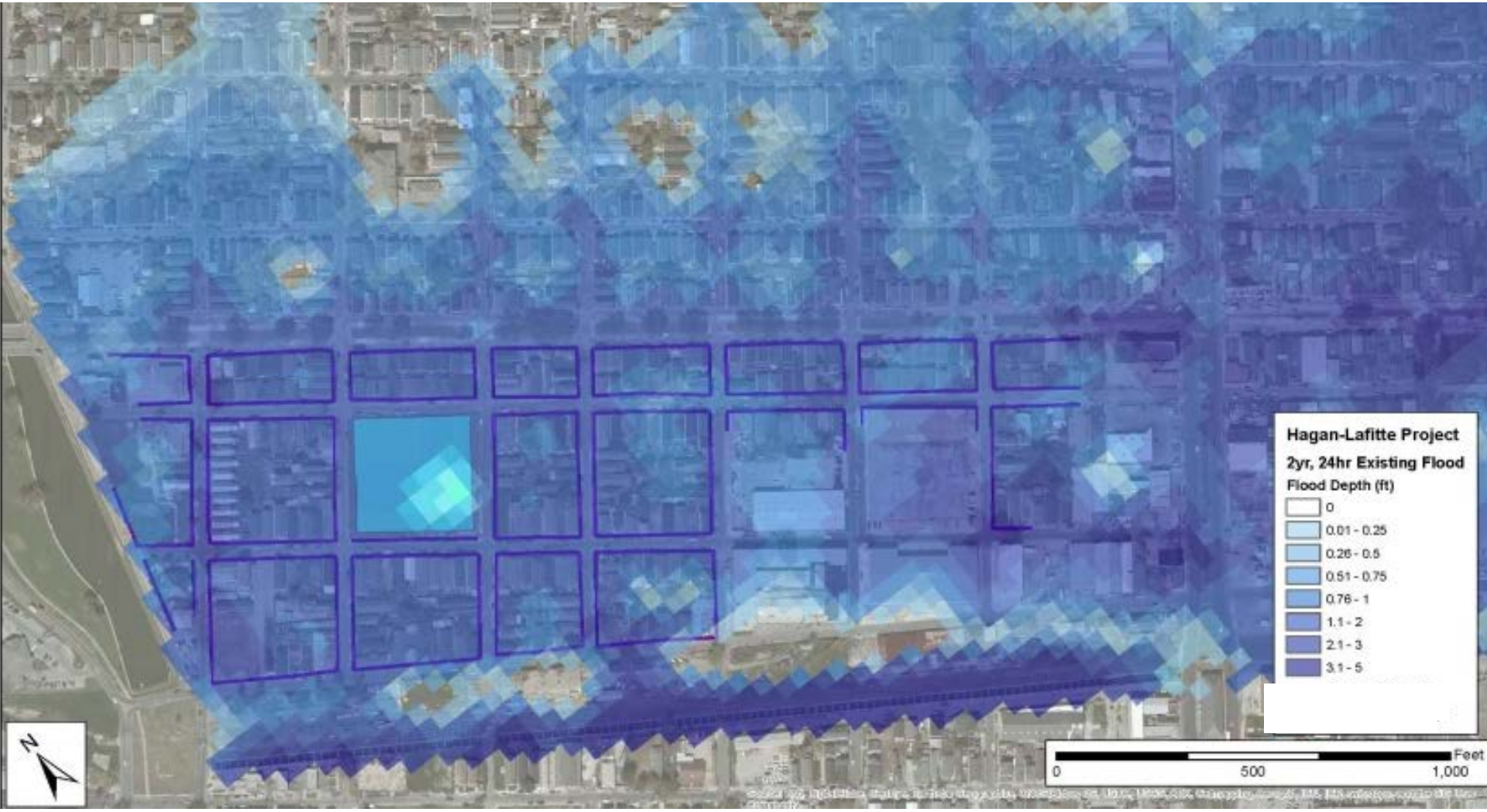
Existing Flood Map – 2 year



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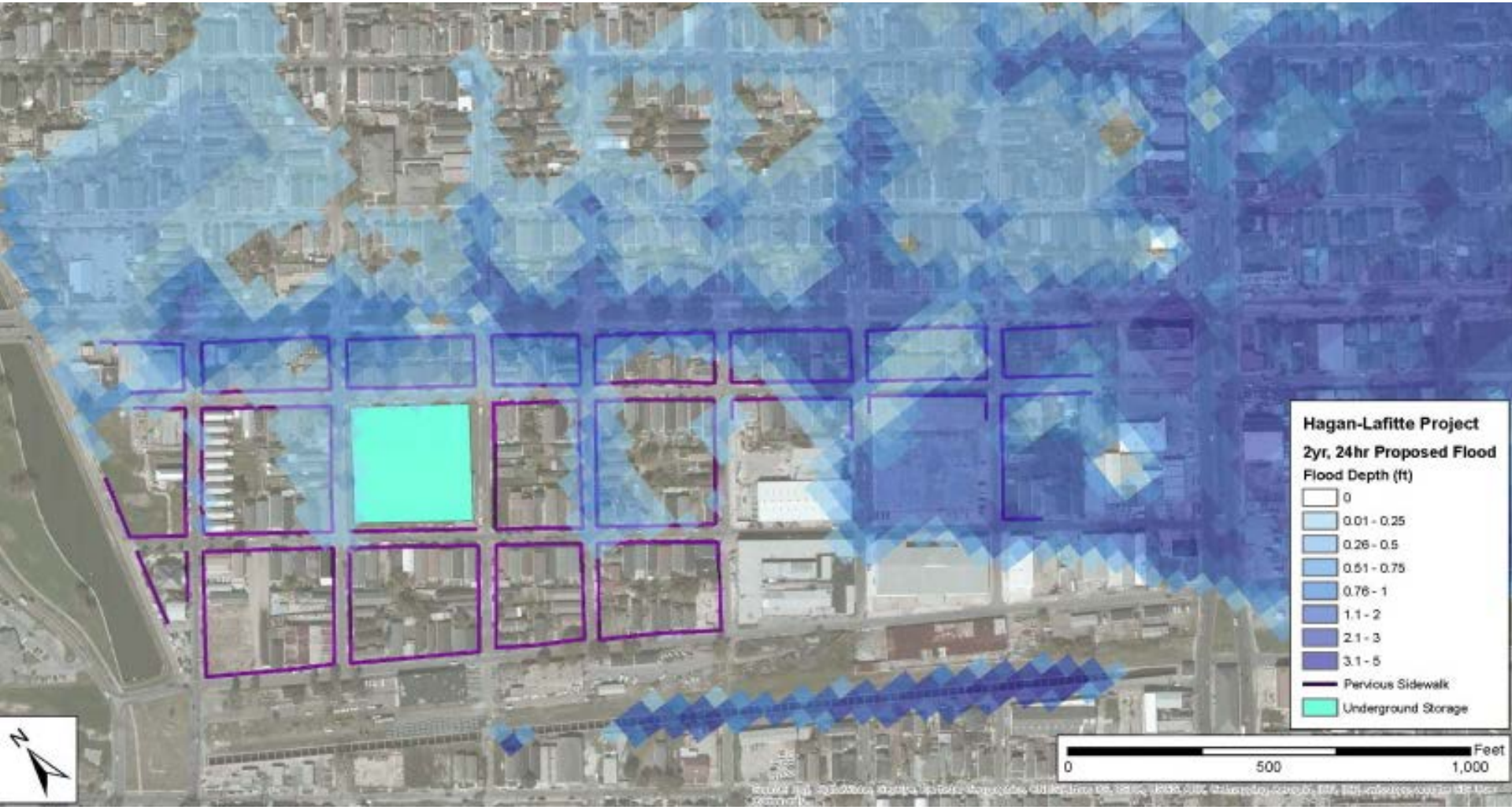
Proposed Flood Map – 2 year



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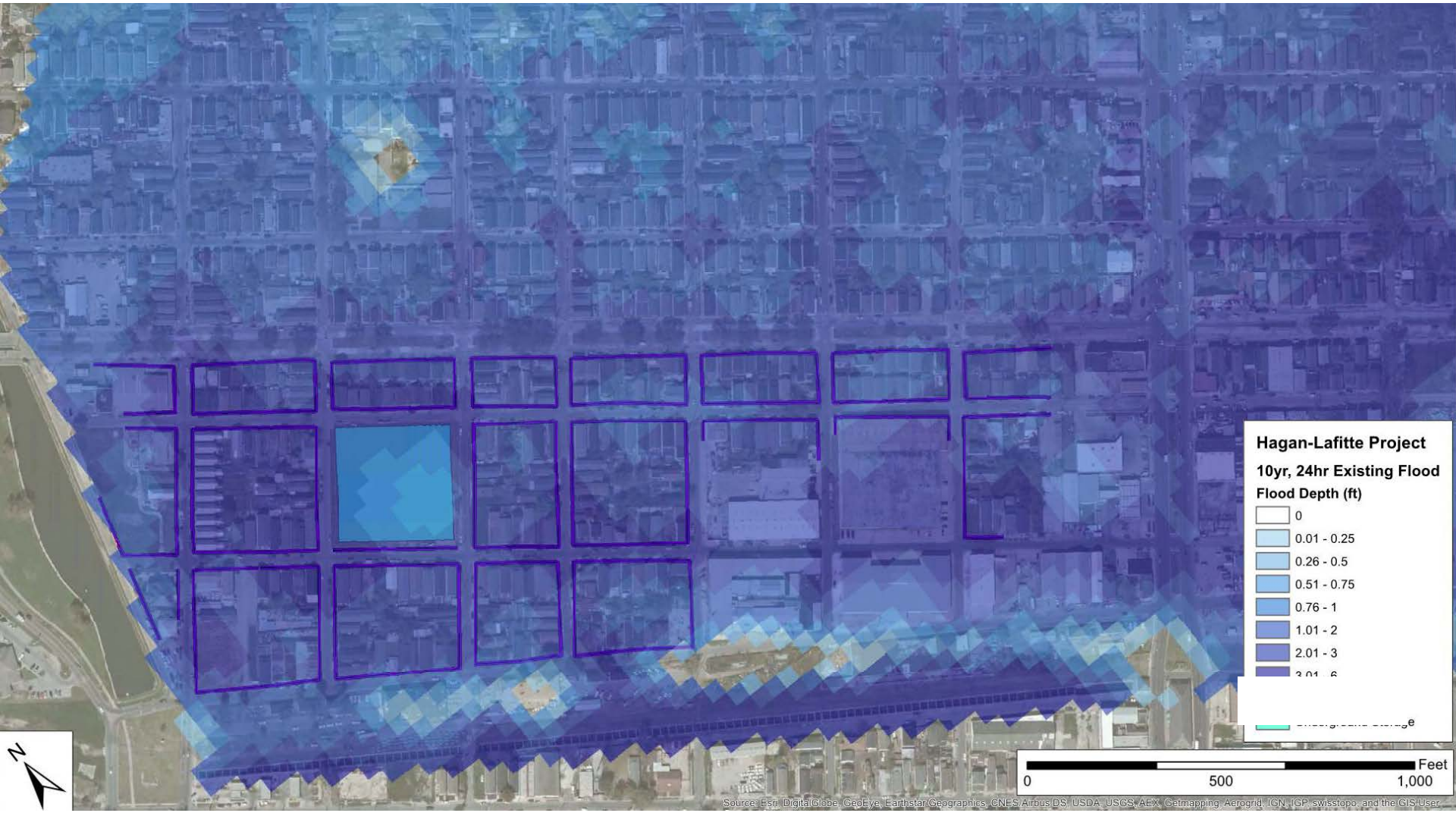
Existing Flood Map – 10 year



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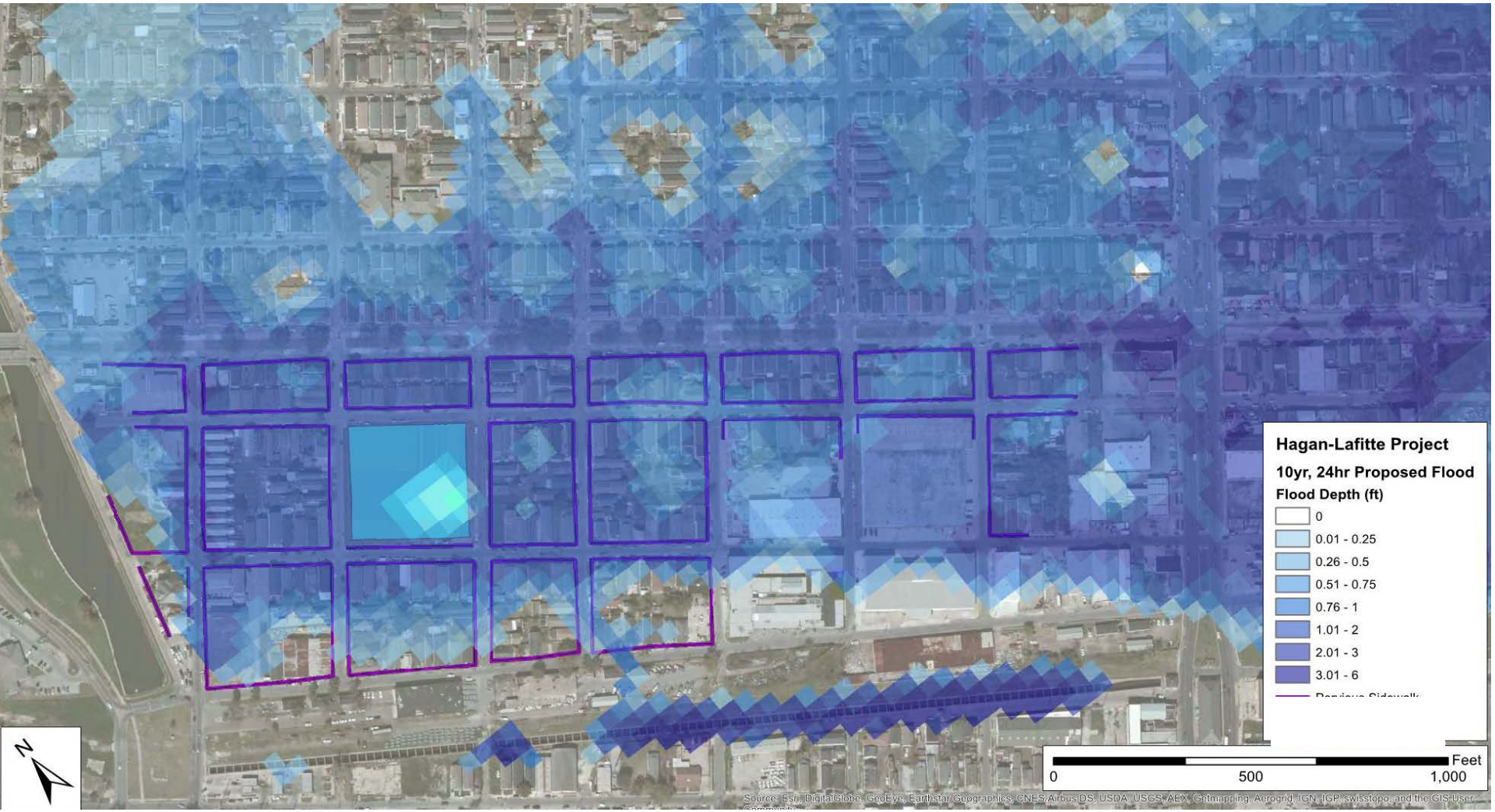
Proposed Flood Map – 10 year



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Extent of Benefit – 10 year

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Community Benefits

- **Neighborhood beautification**
- **Opportunities for education and outreach**
- **Reduced heat-island effect**
- **Improved infrastructure**
- **Reduced flooding, both elevation and duration**
- **Improved quality of life**
- **Model for GI improvements that can be replicated as funds become available**

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Additional Project Features Not Funded

- **Park Improvements**
  - **Irrigation**
  - **Field Facilities**
- **Commercial Zone Green Improvements**
- **Connectivity – Lopez Bridge/Green Corridor**
- **Pavement Reconstruction**

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Additional Project Features Not Funded – Public Education

- **Install a working scale model of rain gardens for demonstrations at the park**
- **Build an informational kiosk**
  - **Map of canal system, historical and present events**
  - **Signage of project / Connection to Laffite Greenway**
  - **Installation of public art**
- **Splash Park**

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Project Challenges

Budget

- **Street patching/overlay requirements**

Pipe location in cross-section

Condition of existing utilities

Residential encroachments in ROW

Public buy-in

Maintain Existing Parking

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Next Steps

Finalize Survey

Geotechnical investigation

Coordination with S&WB

Modeling and concept refinement

Public involvement

60% Submittal

Cost Estimating

Constructability Reviews

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Questions?

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