



1 MAY 2024
NEW ORLEANS

Moss Point Low Impact Development (LID) Draft Feasibility Report

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moffatt & nichol

WAGGONNER
& BALL

A MOFFATT & NICHOL STUDIO



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| Getting to Know the River City



Study Overview

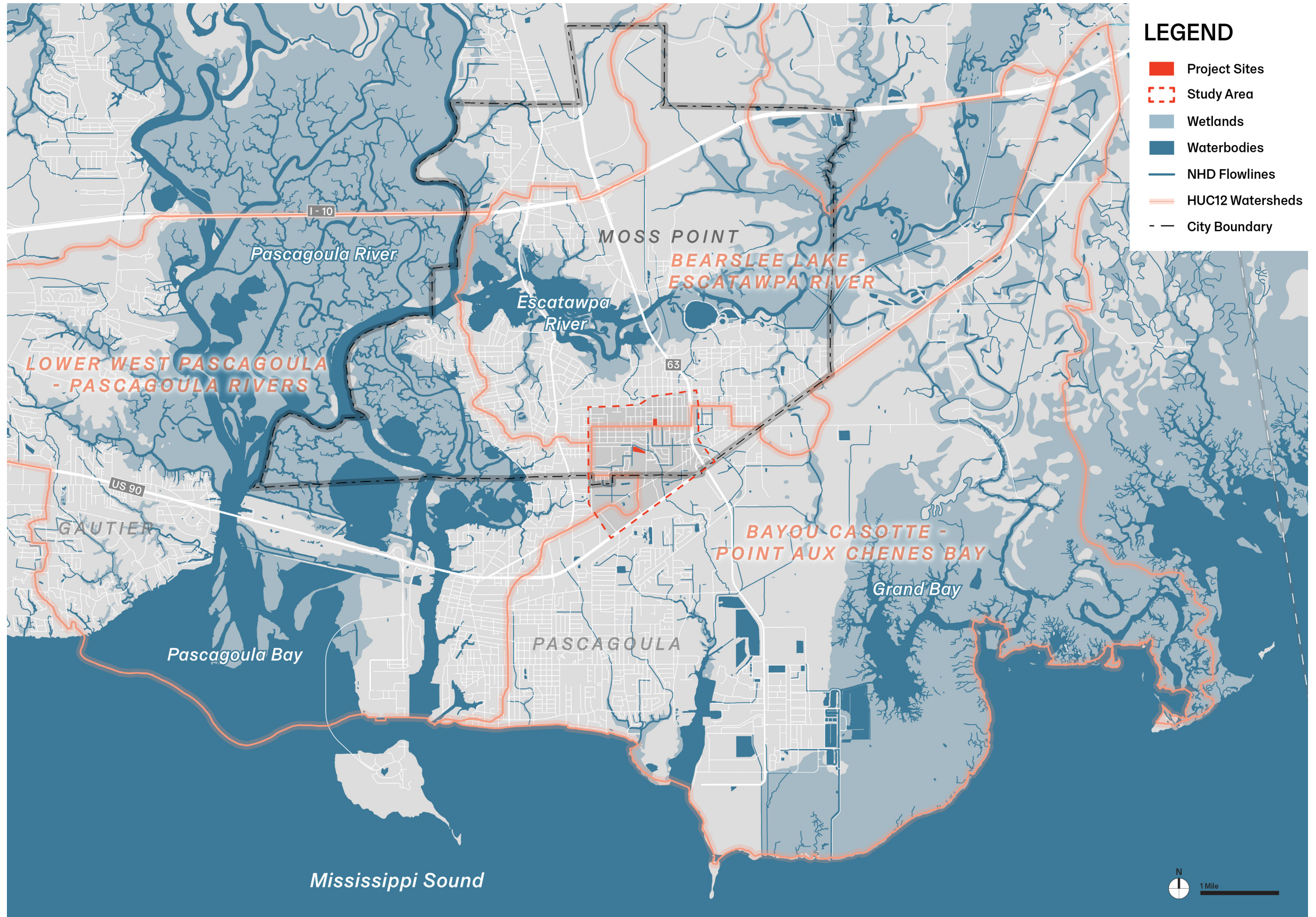
Map of Moss Point HUC12 Watersheds

Purpose of Feasibility Study

To study the flood reduction impacts for a range of possible Low Impact Developments (LID) within the Study Area.

Study Area vs Project Sites

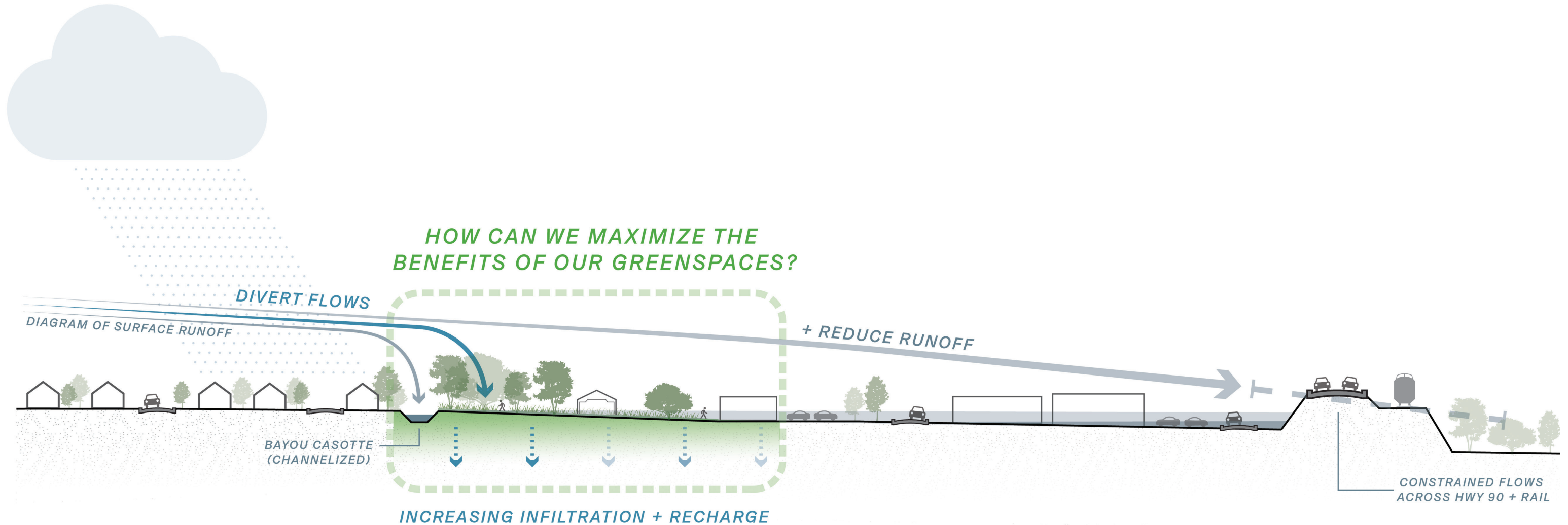
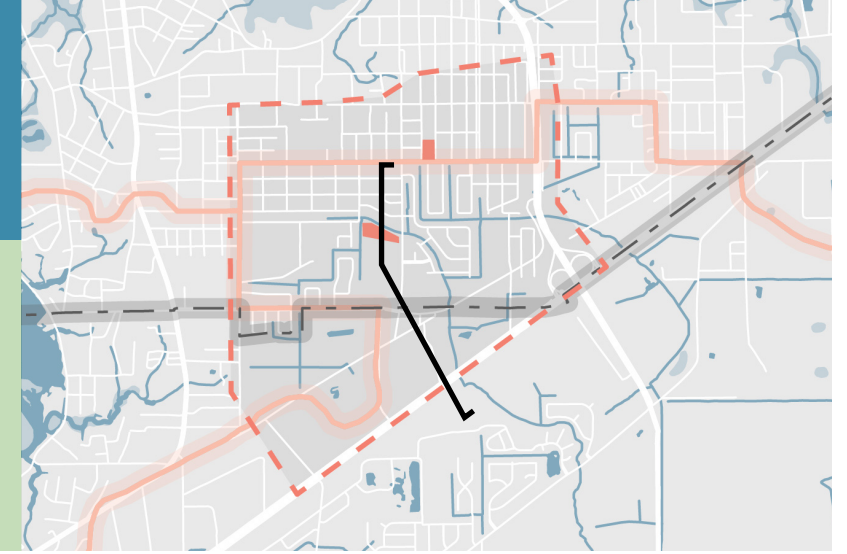
The Moss Point Low Impact Development (LID) Feasibility Report originally focused on two potential sites the Grand Bay National Estuarine Research Reserve (NERR) had identified - the northern portion of Khayat Park and the southern portion of the lot owned by St. Joseph's Catholic Church on 1st Street. After initial analysis, the team advocated to incorporate additional areas nearby, through study of reconnecting Rose Drive to Bayou Casotte, called the "Rose Drive Connection." The expanded geographic focus of the Feasibility Report can be better described as an expanded "Study Area," encompassing the two original sites, the area included in the "Rose Drive Connection" and any additional improvements to existing drainage infrastructure in the immediate area.



Watershed Goals

North - South Diagrammatic Section

- Reduce Flooding + Reduce Non-Point Source Pollution
 - Convey Stormwater to Project Sites
 - Increase Stormwater Storage on Project Sites
- Additional Goals:
 - Provide Recreational & Educational Opportunities
 - Enhance Habitat and Ecosystem Services
 - Create Access to Wildlife Viewing



Reduce Non-Point Source Pollution



Vault / Underground Storage



Ecologically Beneficial Retention Pond



Demonstration Rain Gardens with Undulating Swales



Reforestation



COST INTENSIVE
HIGH FLOOD REDUCTION
POTENTIAL SCENARIOS

TIME INTENSIVE
LOW FLOOD REDUCTION
POTENTIAL SCENARIOS

Moss Point - Ecology

Ecoregions of Mississippi

Southern Coastal Plain

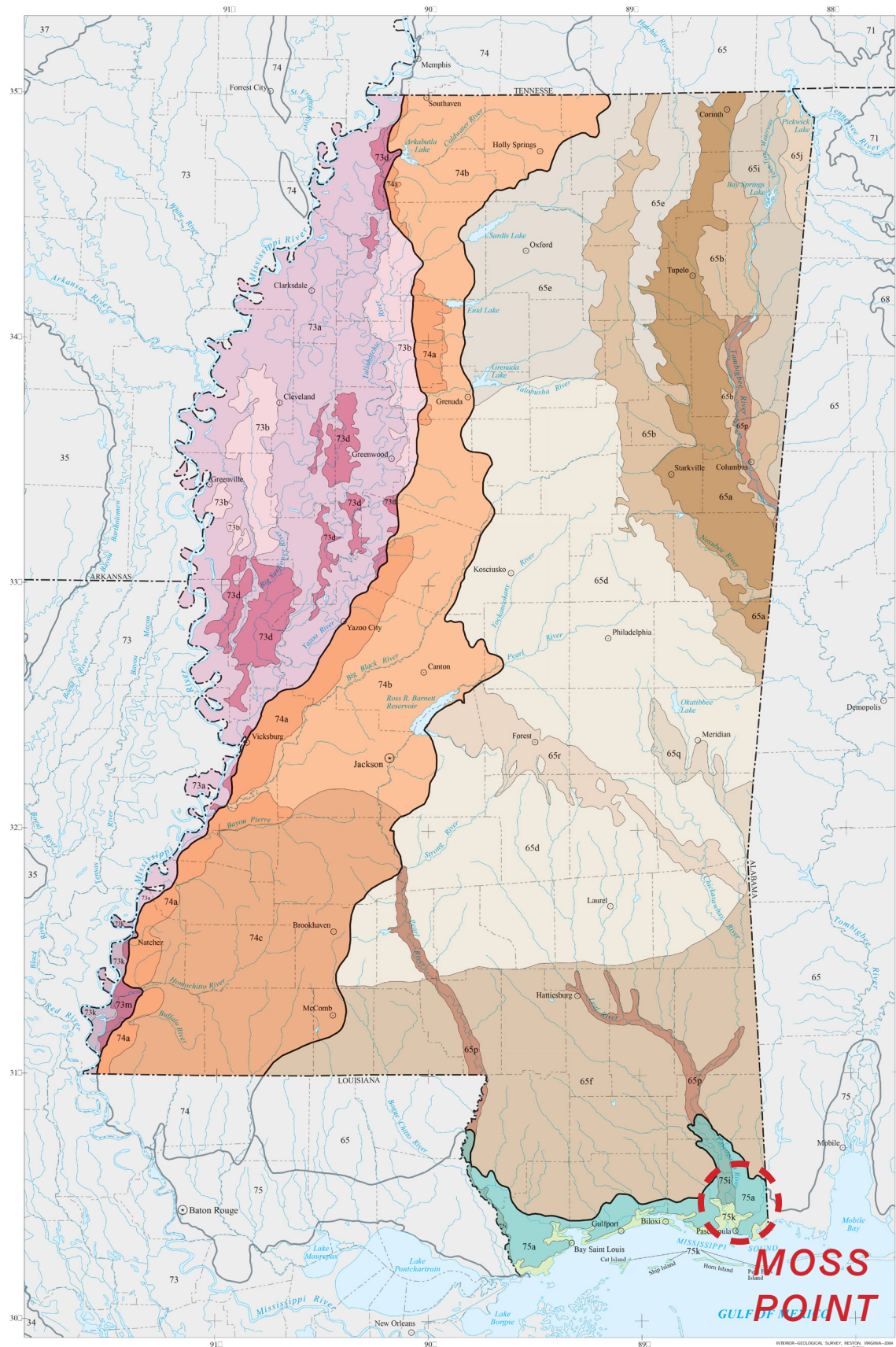
Moss Point is located within The Southern Coastal Plain - a large heterogeneous region containing barrier islands, coastal lagoons, marshes and swampy lowlands along the Gulf and Atlantic Coasts.

Gulf Coast Flatwoods

The project sites sit more specifically within the Gulf Coast Flatwoods ecoregion of Mississippi. This region includes nearly level terraces and delta deposits - wet, sandy and broad depressions with localized swamps. Historically, pine savannahs with slash and longleaf pine (*Pinus elliotii*, *P. palustris*) and a variety of grasses, sedges, rushes, and pitcher plants were common.

Almost all the pine savanna habitat was eliminated by agriculture and industrial development, fire suppression, or conversion to pine plantations.

The wet prairies contained a high diversity of plant species, including many wildflowers, orchids and carnivorous plants.



Pine savanna with slash pine (*Pinus elliotii*), longleaf pine (*P. palustris*) and wiregrass (*Aristida beyrichiana*) were once more common in southern Mississippi.



Mississippi sandhill crane (*Grus canadensis pulla*) in remaining pine savanna habitat of wildlife refuges of Jackson County.



Data Source: Chapman, S.S, Griffith, G.E., Omernik, J.M., Comstock, J.A., Beiser, M.C., and Johnson, D., 2004, Ecoregions of Mississippi, (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,000,000)

“Mossey Point” - Sawmills + Lumber Exports

1900s Industrial Development

“Mossey Point” to logging men and raft riders, the area’s pine forests and waterways have shaped the city for centuries. Forests near Moss Point supplied, in turn, the French, Spanish, and British navies with spars for their sailing war ships and armadas. Early settlers from North Carolina, Virginia, and Georgia came by way of Greene County to establish thriving sawmill businesses. Shallow-draft schooners loaded lumber for foreign ports in Europe, Mexico, South America, and Cuba.

By the close of the century, Moss Point was a lumber empire. In the late 1890’s and early 1900’s there were twelve sawmills on the river, and all but three are in Moss Point within a radius of less than one mile. Moss Point, better known in foreign countries for many years than in the United States, was recognized as the largest pine lumber export center until around 1910.

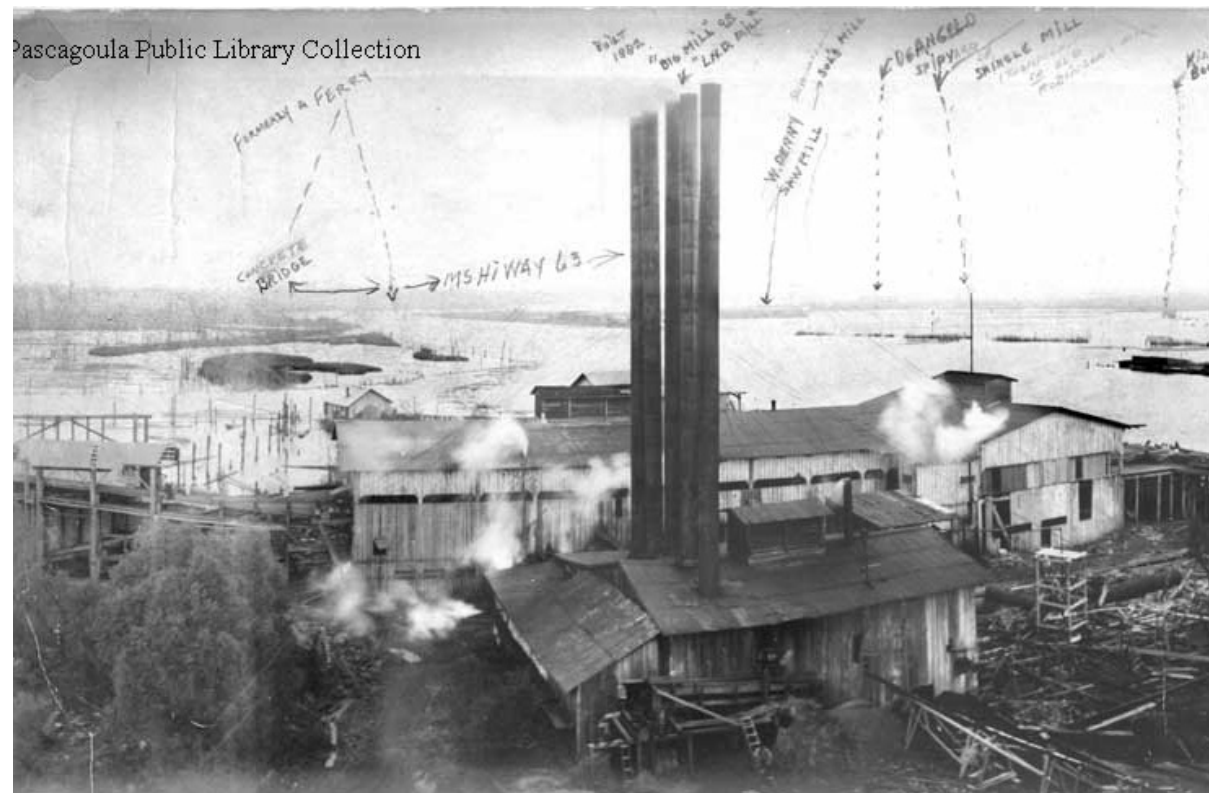
Data Sources:

About Moss Point, <https://cityofmosspoint.org/174/About-Moss-Point>

Image 1 Source: <https://www.msrailroads.com/Dantzler.htm>

Image 2 Source: <http://www.msmohp.com/pascagoula.html>

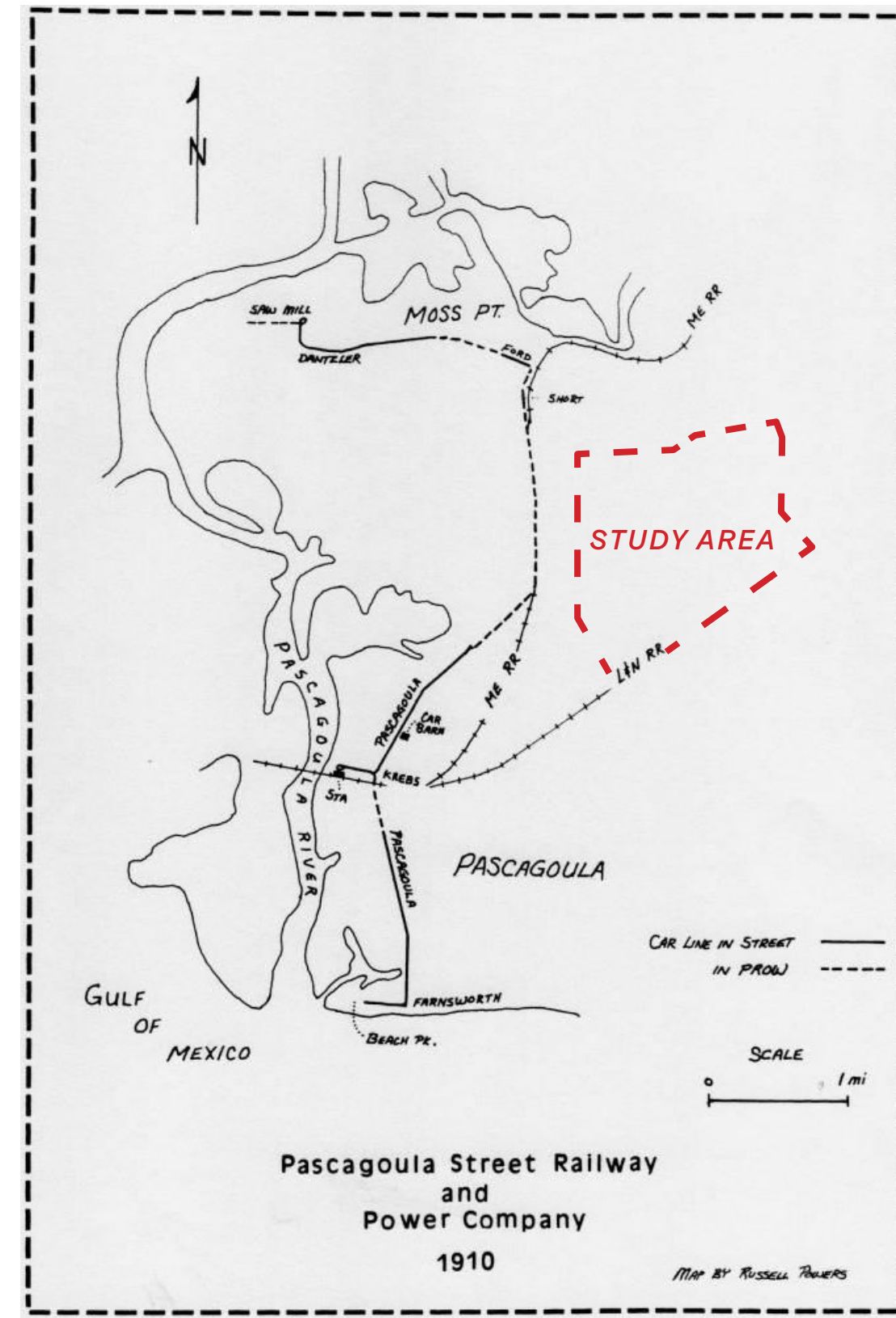
Map Source: <https://pascagoula.audubon.org/visit/site-history>



1) L. N. Dantzler Lbr. Co.'s Mill on the North Bank of the Escatawpa River was Built in 1884 and Known as the “L N D Mill.”



2) Sawmill, Log Boom and Steamer Loading Lumber, Moss Point, Miss.



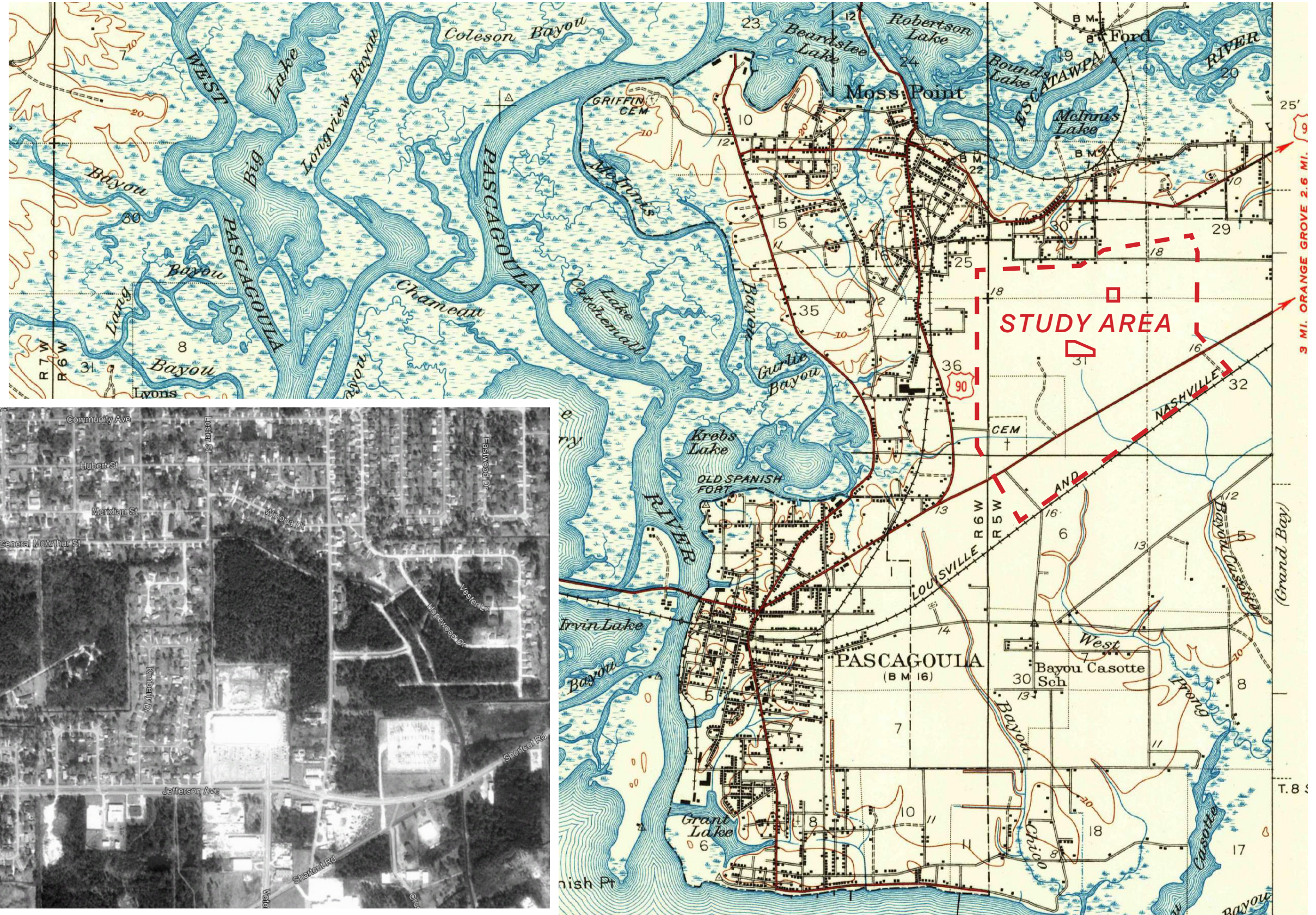
Beginning in 1903, a System of Electric-Driven Passenger Cars, Trailers and Freight Cars Transported Passengers, Mail, and Freight from the L N D Mill

Moss Point - Developing the Floodplain Over Time

Sites Largely Undeveloped in 1943

The 1943 USGS Map (at right) shows undeveloped floodplain within the Study Area. Between 1943 and 1992, most of the floodplain was urbanized - decreasing natural absorption and filtration of rainwater falling within Moss Point.

The 1992 Aerial shows remaining forested floodplain prior to construction of Khayat Park.



Data Sources:
USGS Library Reston, VA,
"Pascagoula, Miss., Edition of 1943"

Google Earth - 1992 Map

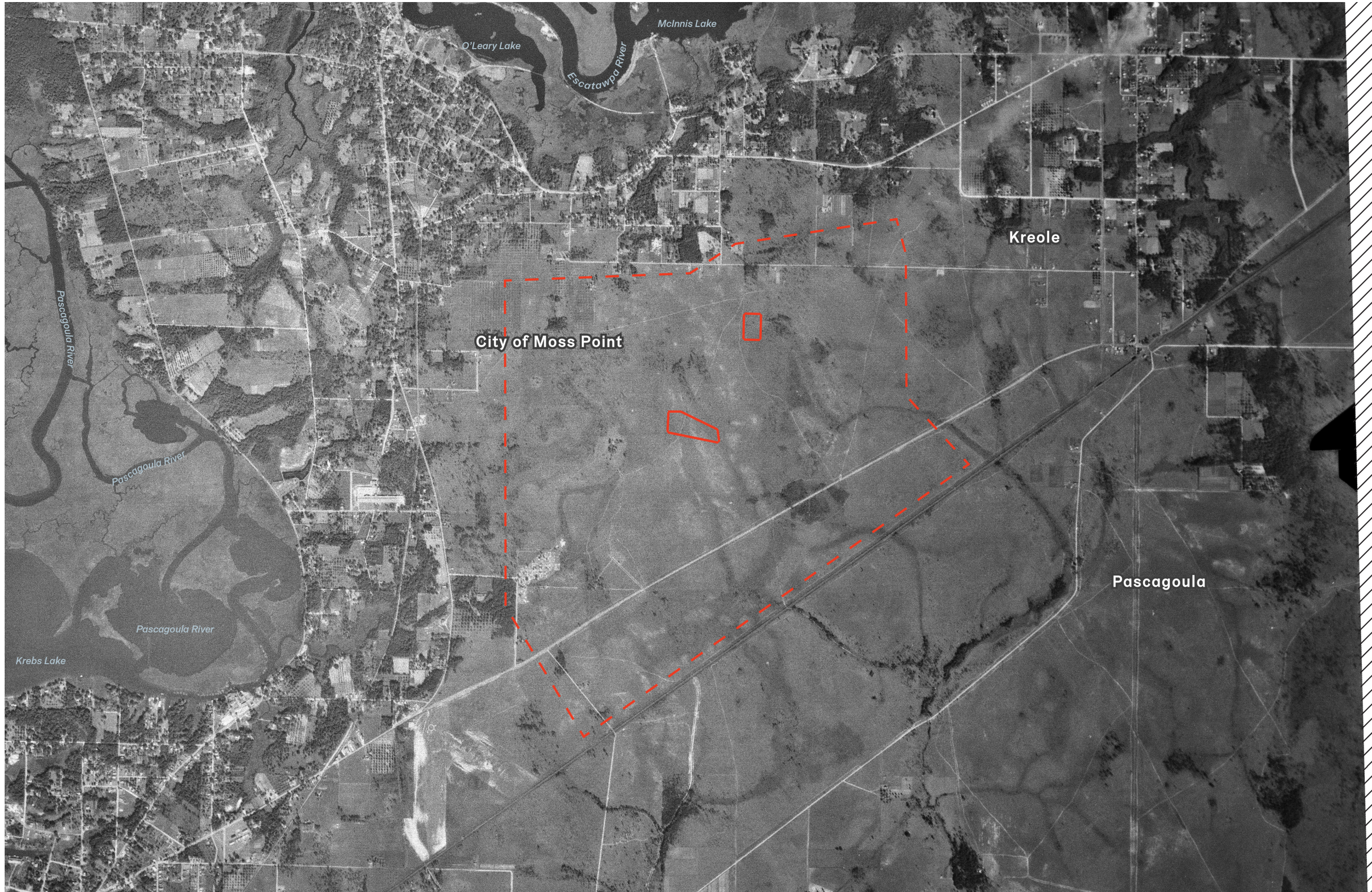
1992 Aerial Image Shows Forested Area Prior to Construction of Khayat Park

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Moss Point - 1940 Aerial

Project Site (1"=1500')

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LEGEND

-  Project Sites
-  Study Area

Data Source:
Aerial Photo Single Frame,
"AR1Q00000010040",
1940-10-27, Scale: 48000,
Courtesy of the U.S.
Geological Survey

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Moss Point - 1970 Aerial

Project Site (1"=1500')

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LEGEND

-  Project Sites
-  Study Area

Data Source:
Aerial Photo Single Frame,
"AR6150000901453",
1970-08-18, Scale: 53378
Courtesy of the U.S.
Geological Survey

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Moss Point - 1979 Aerial

Project Site (1"=1500')

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LEGEND

-  Project Sites
-  Study Area



Data Source:
Aerial Photo Single Frame,
"AR6150000901453",
1970-08-18, Scale: 53378
Courtesy of the U.S.
Geological Survey

Moss Point - Today

2024 Aerial of Project Site (1"=1500')

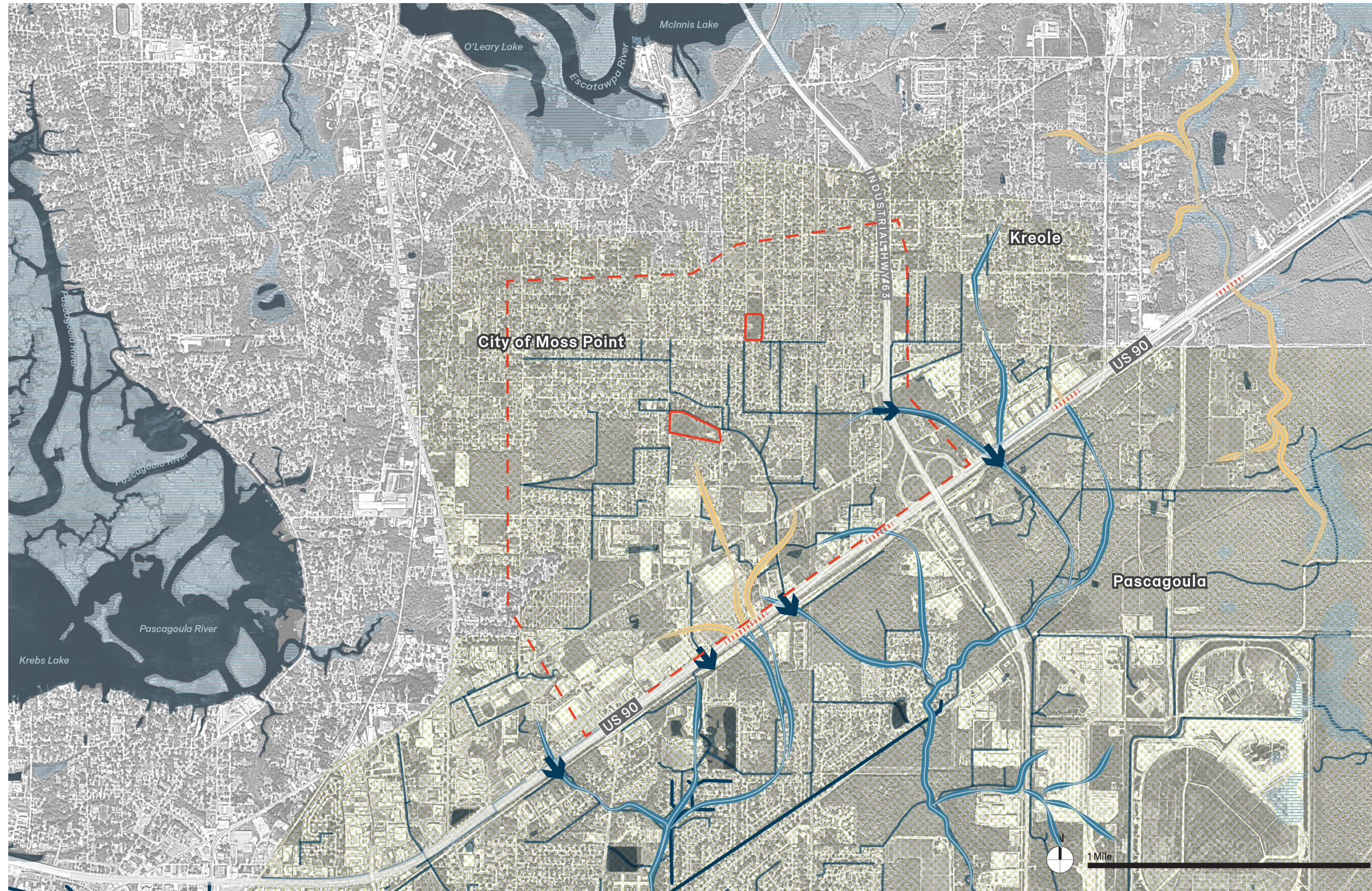


LEGEND

-  Project Sites
-  Study Area

Moss Point - Constricted Flows and Urbanized Floodplain

Hydrologic Modifications - 1940 to 2024 (1"=1500')



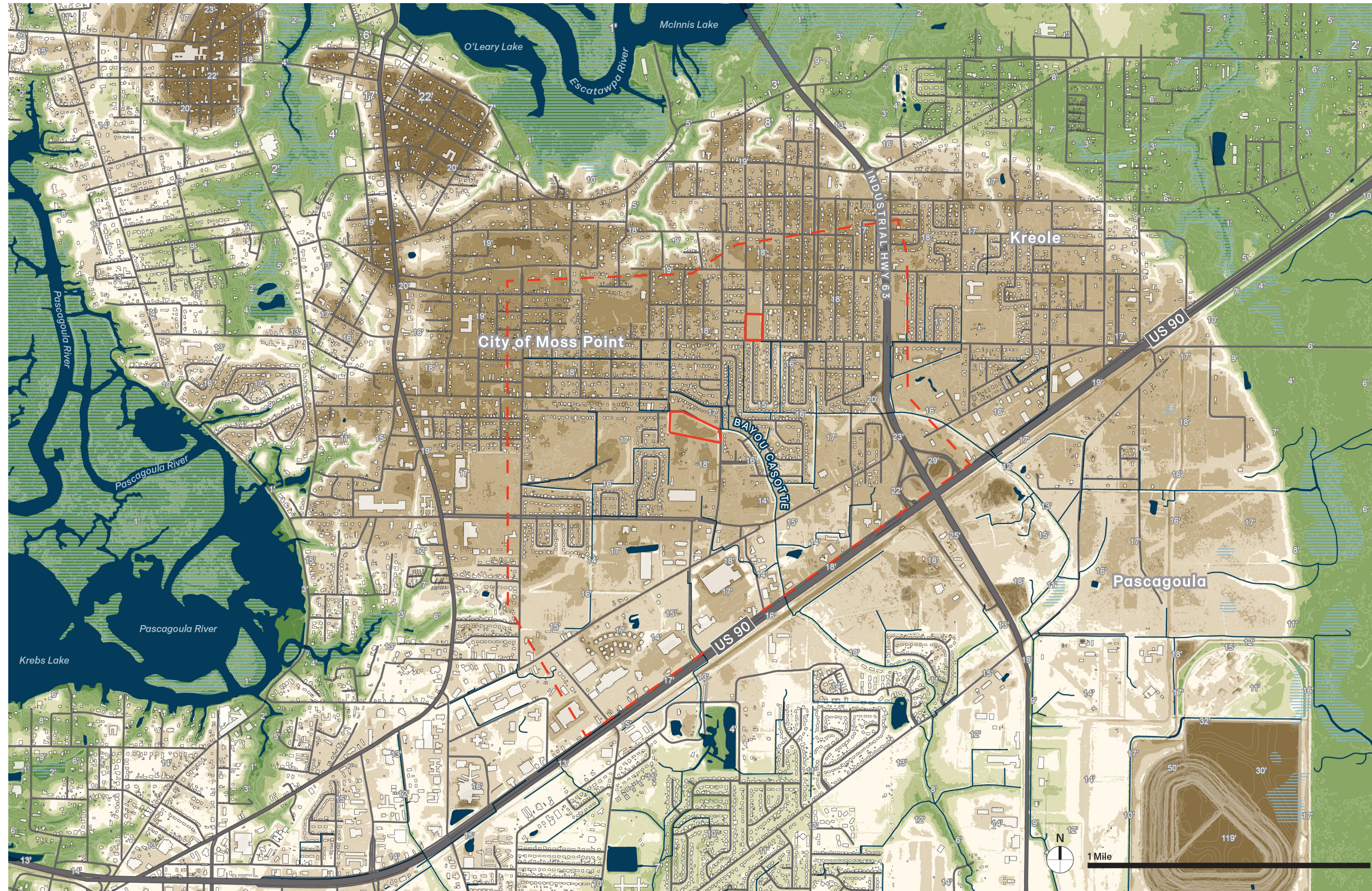
LEGEND

1940 - 2024
Waterways Overlay

- 1940 Flows
- Limited Flows Across US 90
- Culverts
- 1940 Floodplain
- NHD Flowlines
- Wetlands
- Waterbodies
- Project Sites
- Study Area

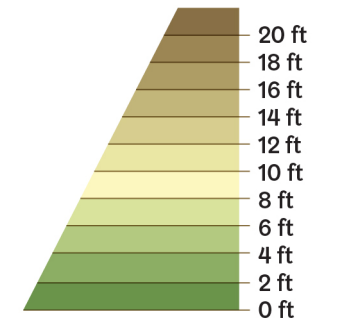
Moss Point - Topography

Project Site (1"=1500')



LEGEND

Elevation (NAVD 88)

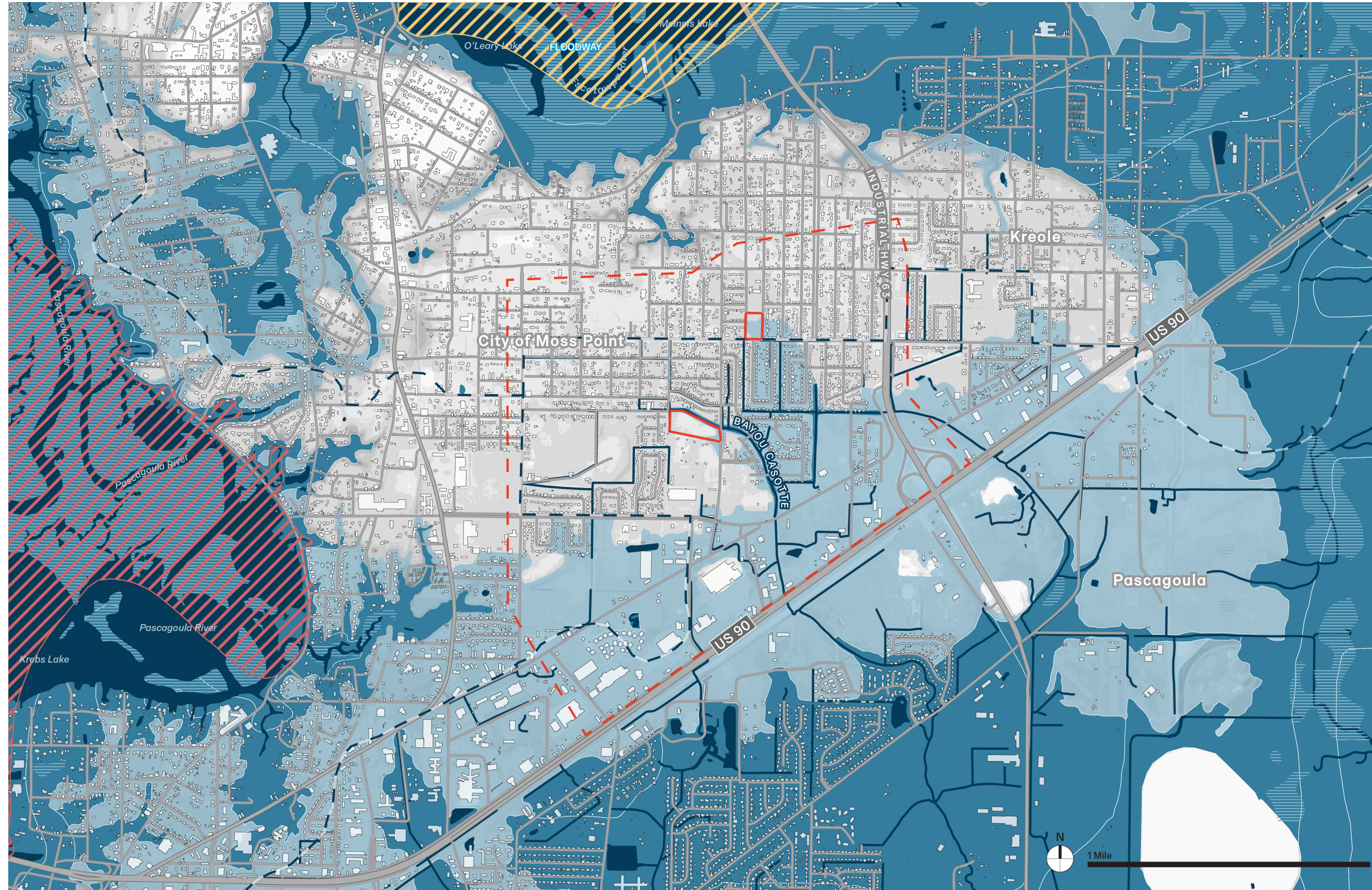


- Project Sites
- Study Area
- Wetlands
- Waterbodies
- NHD Flowlines
- 1' Contours

Data Source: 2012 Digital Elevation Map, USGS National Map

Moss Point - FEMA Zones + Hydrology

Project Site (1"=1500')



LEGEND

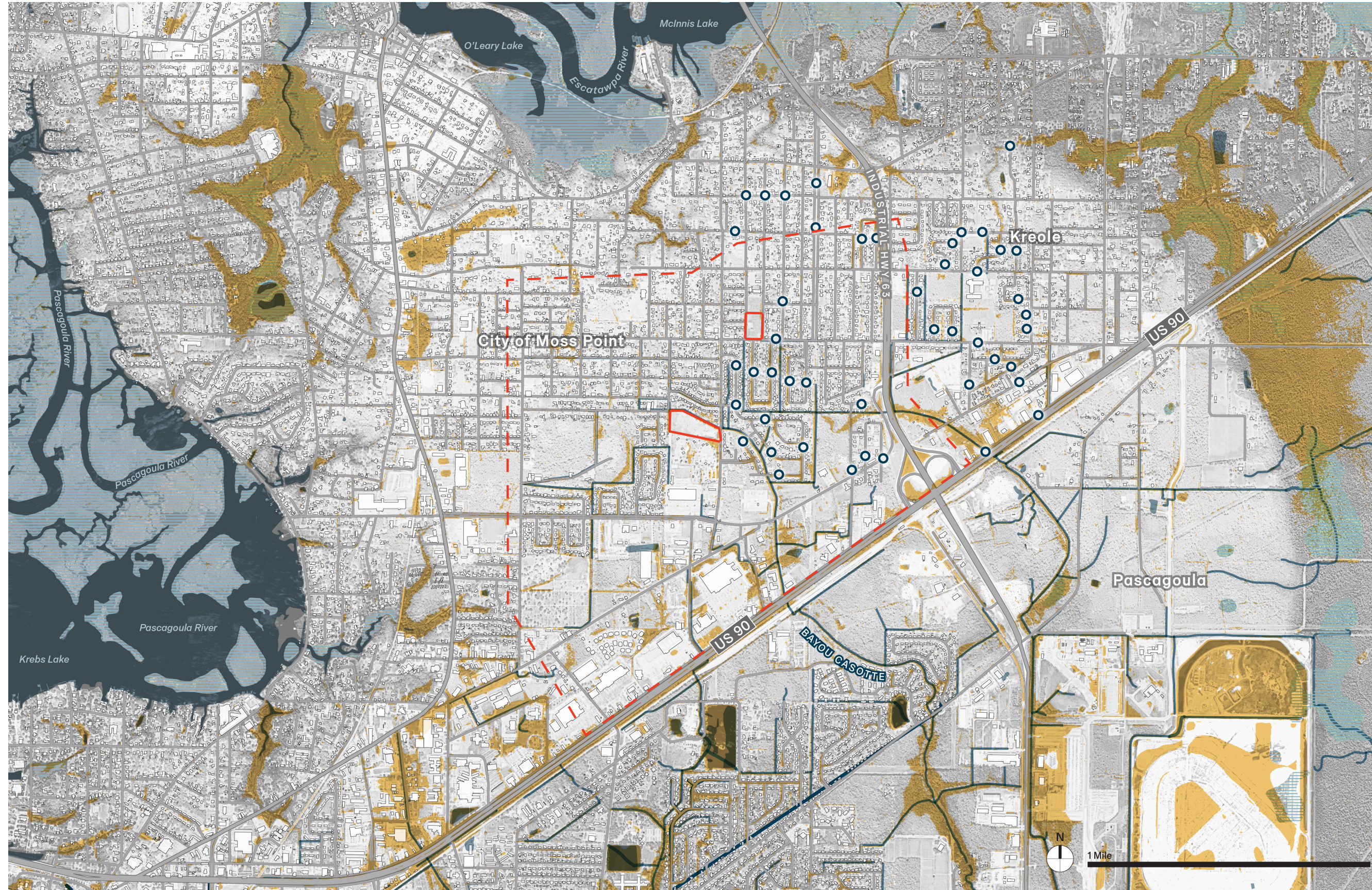
FEMA Flood Zones

-  100 Year Floodway
-  100 Year Coastal VE
-  100 Year Floodplain
-  500 Year Floodplain
-  Waterbodies
-  Project Sites
-  Study Area
-  HUC12 Watershed Boundary
-  NHD Flowlines

Data Source + Disclaimer:
 This product uses the Federal Emergency Management Agency's API, but is not endorsed by FEMA.
 Source: "28059C_STUDY1"
 FIRM Panels:
 28059C0341G - 4G

Moss Point - Drainage

Project Site (1"=1500')



LEGEND

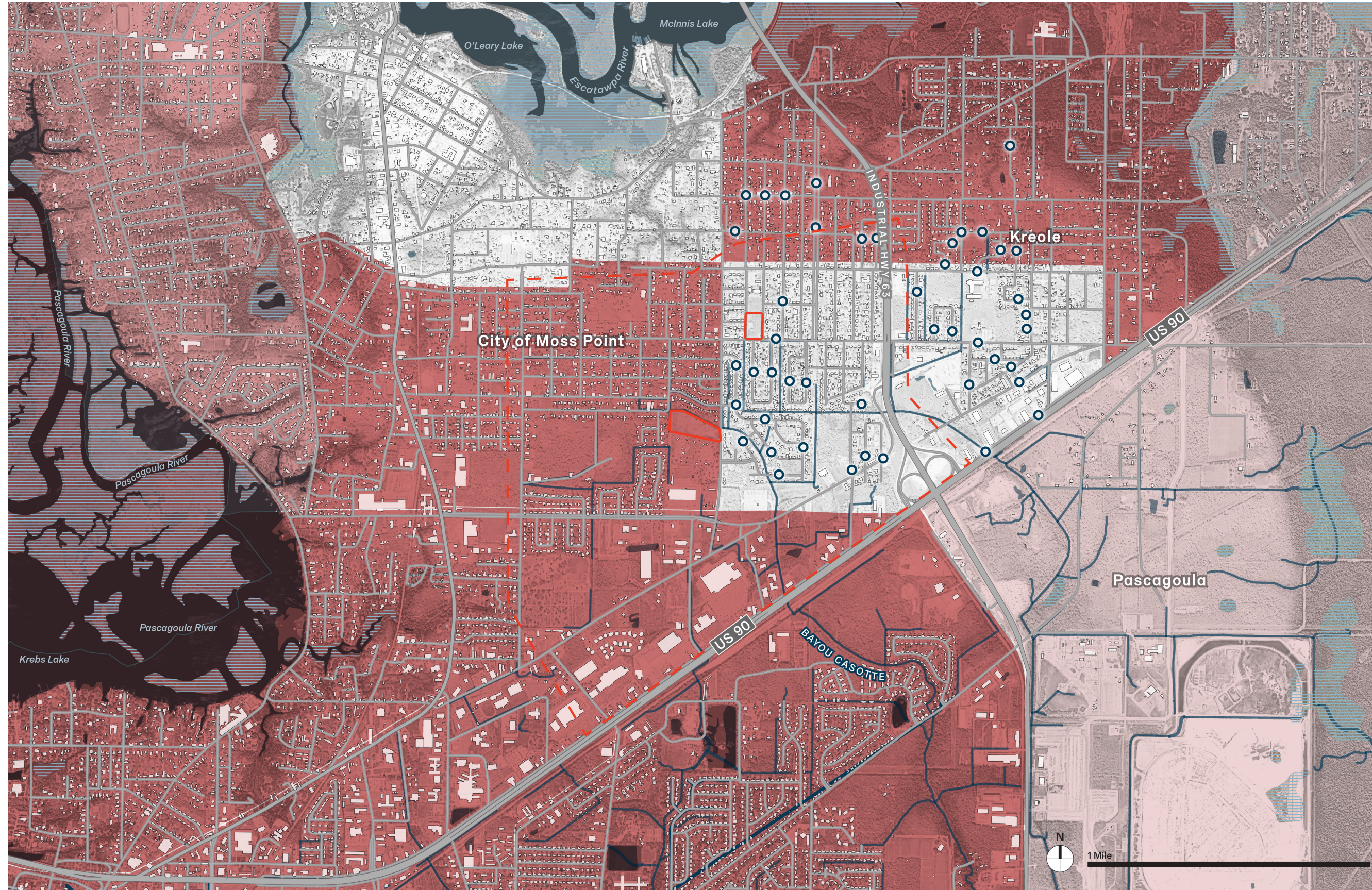
Local Depressions

-  Project Sites
-  Study Area
-  Depressions
-  Poor Drainage Reported
-  Wetlands
-  Waterbodies
-  NHD Flowlines

Data Source: GIS Spatial Analysis of 2012 Digital Elevation Map, USGS National Map

Moss Point - Environmental Justice

Justice 40 Indices (1"=1500')



LEGEND

Environmental Justice Index:
Number of Vulnerability Thresholds Surpassed

- 1
- 2 - 5
- 6 - 10
- Poor Drainage Reported
- Wetlands
- Waterbodies
- NHD Flowlines
- Project Sites
- Study Area

Data Source: Climate and Economic Justice Screening Tool (CEJST) - <https://screeningtool.geoplatform.gov/en/methodology#3/33.47/-97.5>

II Site Observations



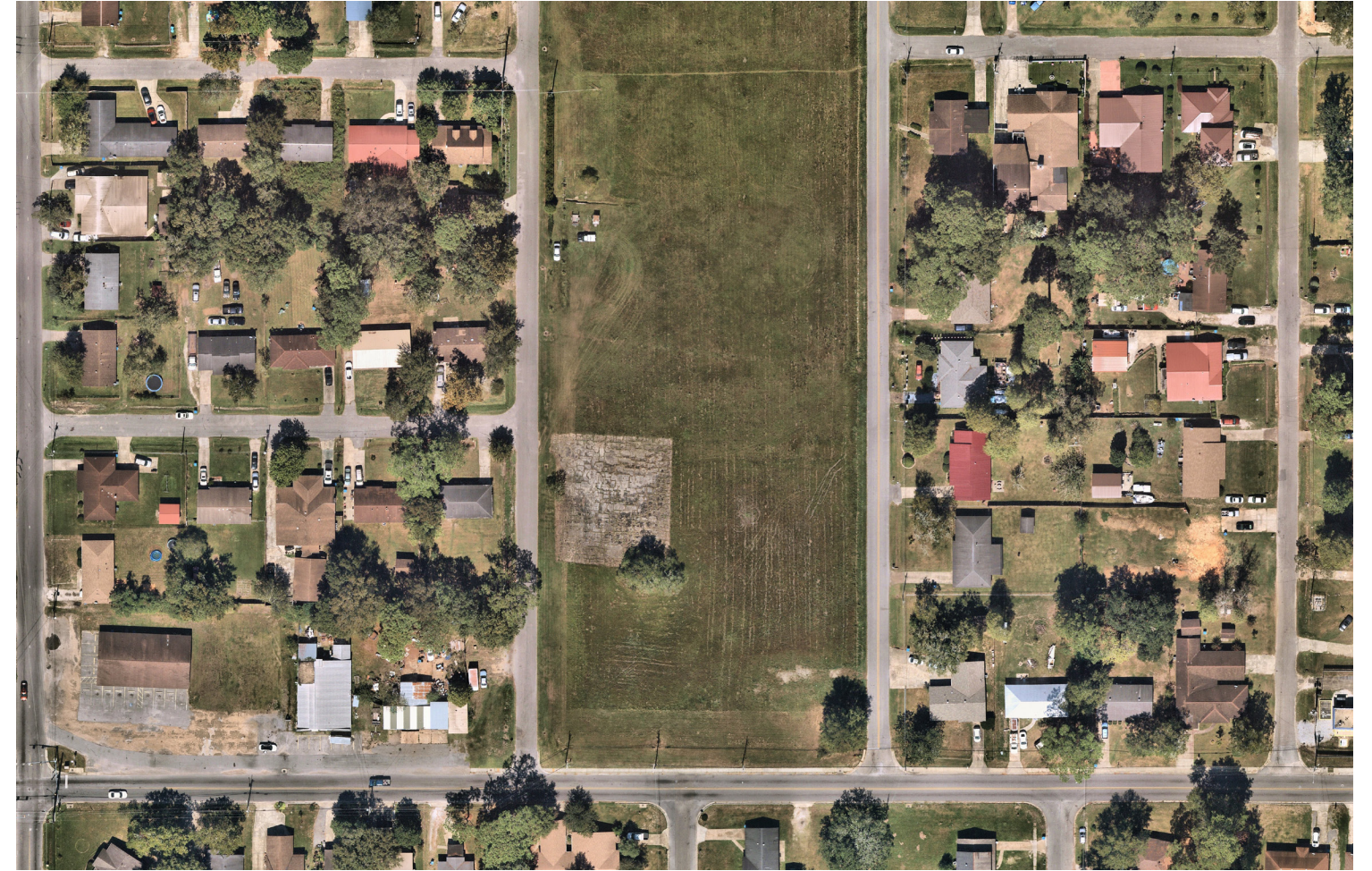
Constraints

Comparing the Two Sites



Constraints on Site #1 - Khayat Park

- Higher elevation ~19.5ft
- Surrounded by large ditches, will not naturally collect stormwater from neighborhood



Constraints on Site #2 - 1st Street Lot

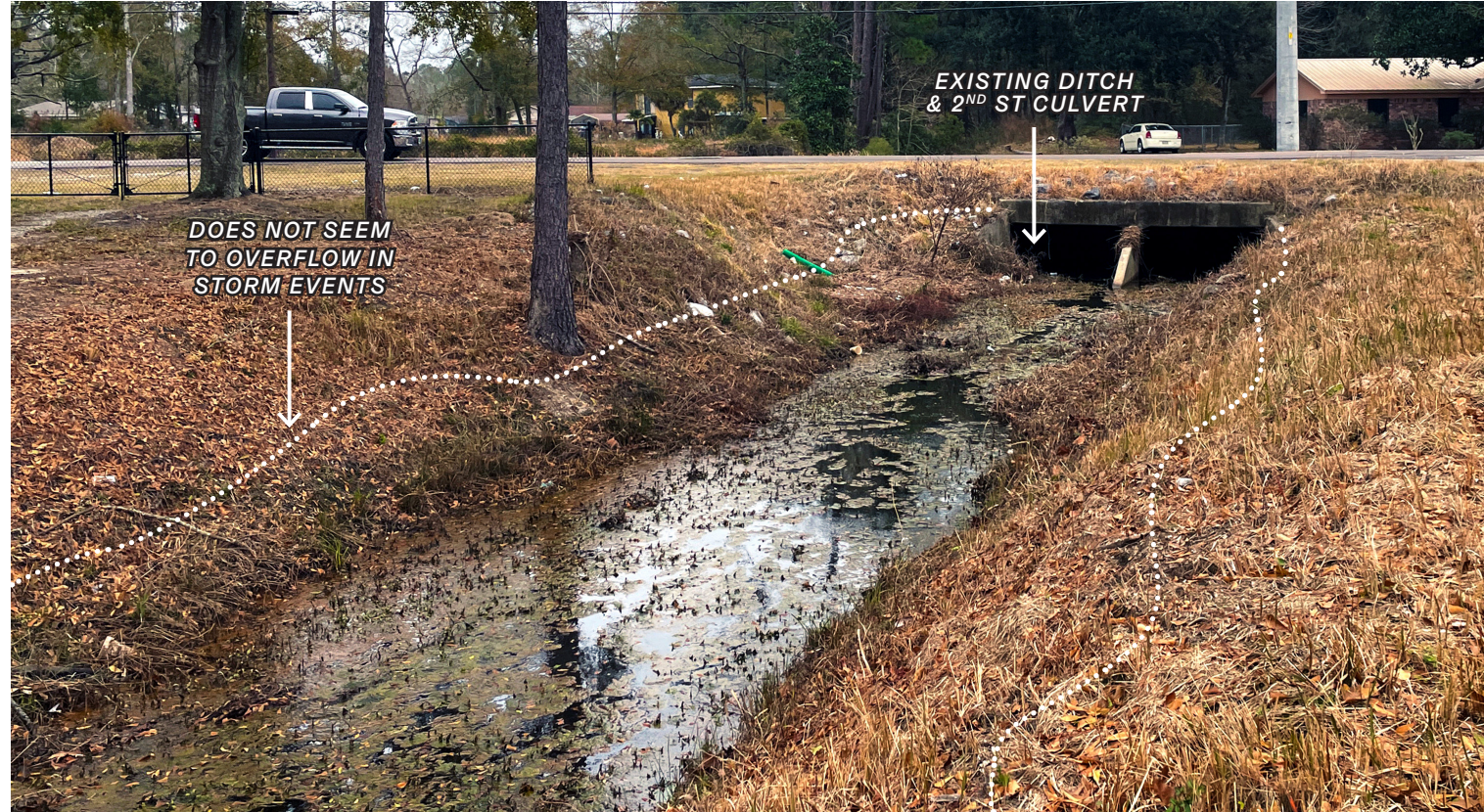
- Higher elevation (~16-17ft) than Rose Dr (~14ft)
- Front yard ditches of nearby homes catch stormwater before it can reach park
- Technically part of different watershed (Escatawpa)
- Potentially high water table
- Unknown subsurface drainage system configuration

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Site Visit in January 2024 - Khayat Park

Photos + Notes

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Additional Photos from Khayat Park

12.5 Hour Duration, Total 1.26" inches Recorded Rainfall

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After 1.26" Recorded Rainfall, March 6, 2024



As of April 10, 2024 the eastern portion of the site was under construction for additional parking in Khayat Park, see IV Appendix - iv.

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Site Visit in January 2024 - 1st Street Lot

Photos + Notes

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Observed Neighborhood Flooding - April 10, 2024

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6 Hour Duration, Total 3.56 inches Recorded Rainfall



1 | Eddie Street Between 1st and 2nd Street



2 | Overflowing storm sewer on Rose Drive (and Winona Drive)



3 | 2nd Street between Billy St and Eddie St



4 | Intersection of Vester Lane and Morningview Drive

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Project Sites Flooding - April 10, 2024

6 Hour Duration, Total 3.56 inches Recorded Rainfall

MOFFATT & NICHOL / WAGGONER & BALL



1 | Bayou Casotte Looking East from 2nd Street



2 | 1st Street, Between Eddie and Frederick St, Looking East Across Lot



3 | Construction of New Parking Lot at Khayat Park, Looking West from 2nd Street



4 | Northwest Corner of Ditches Surrounding Khayat Park

III

Feasibility Study



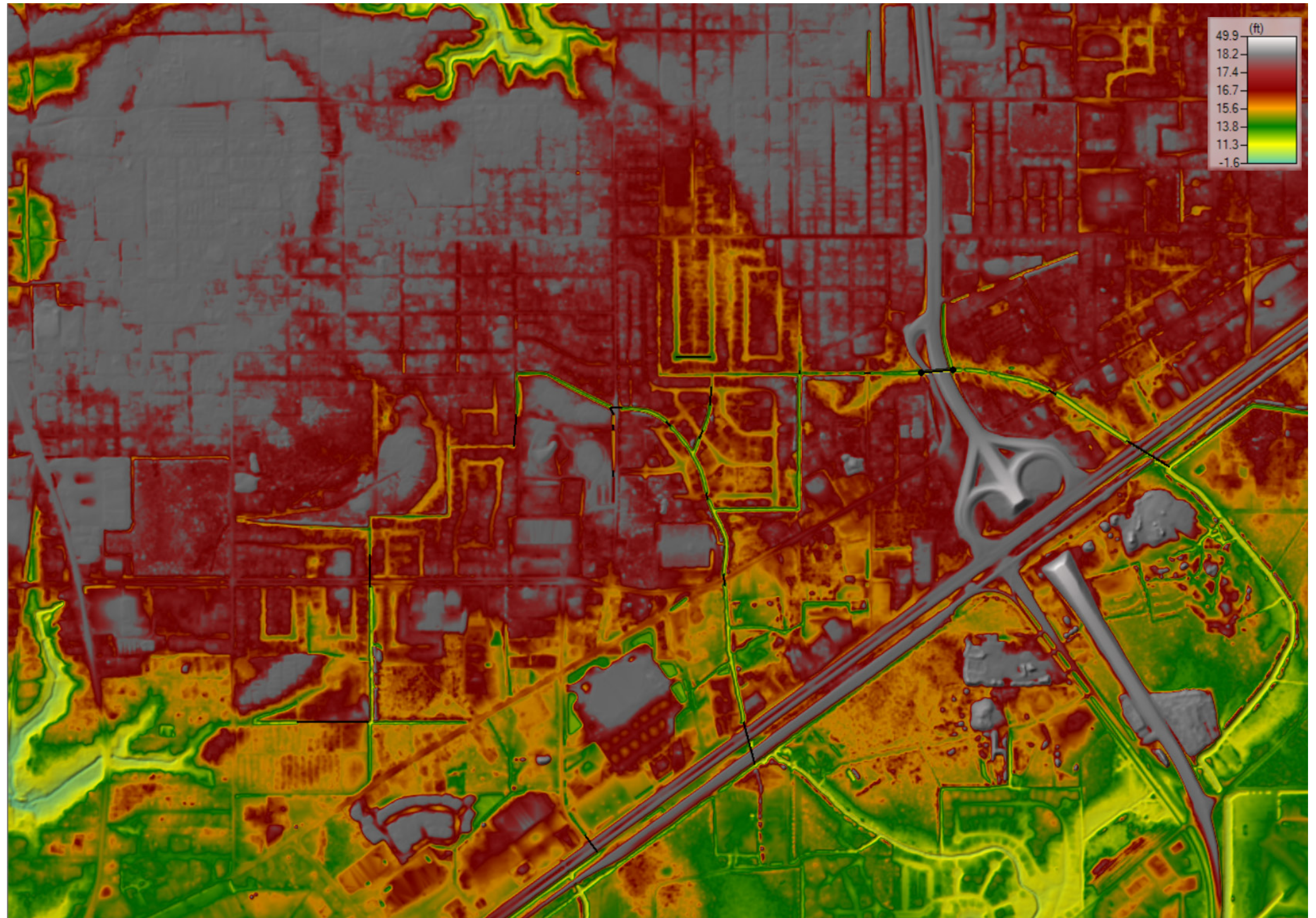
Overview - Base Terrain

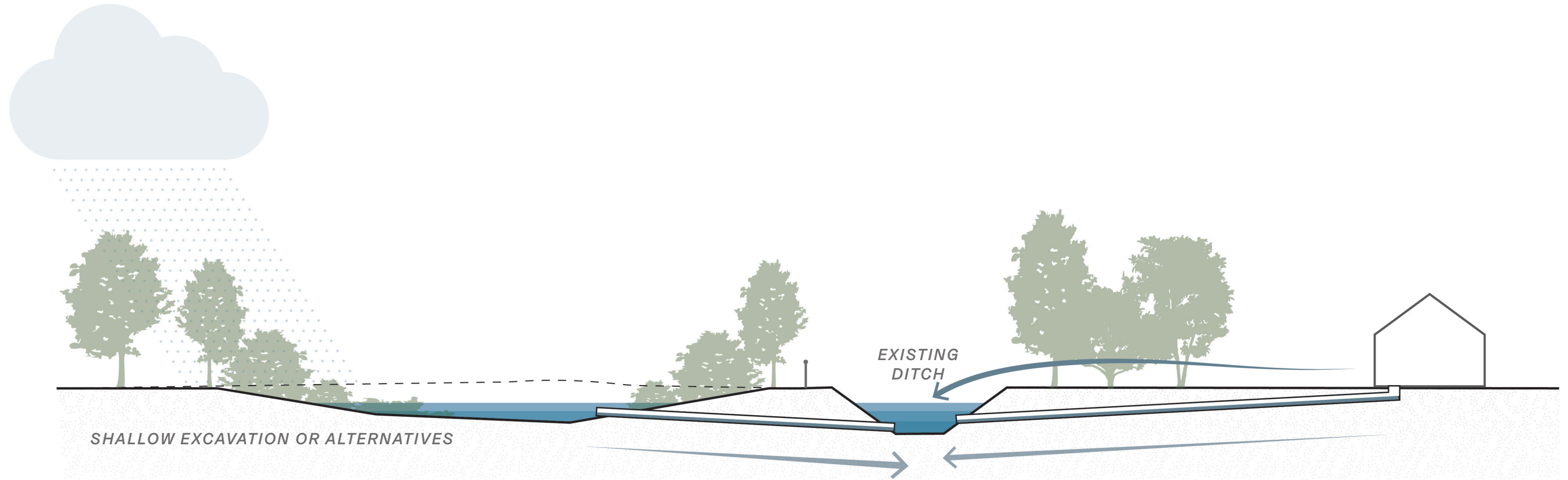
SWMM vs HEC-RAS

- SWMM: better for more detailed design & subsurface drainage features
- HEC-RAS: unstructured mesh ideal for 2D modeling
- The HEC-RAS model does not account for improvements to subsurface features, including underground stormwater utilities but these should be considered in the future.

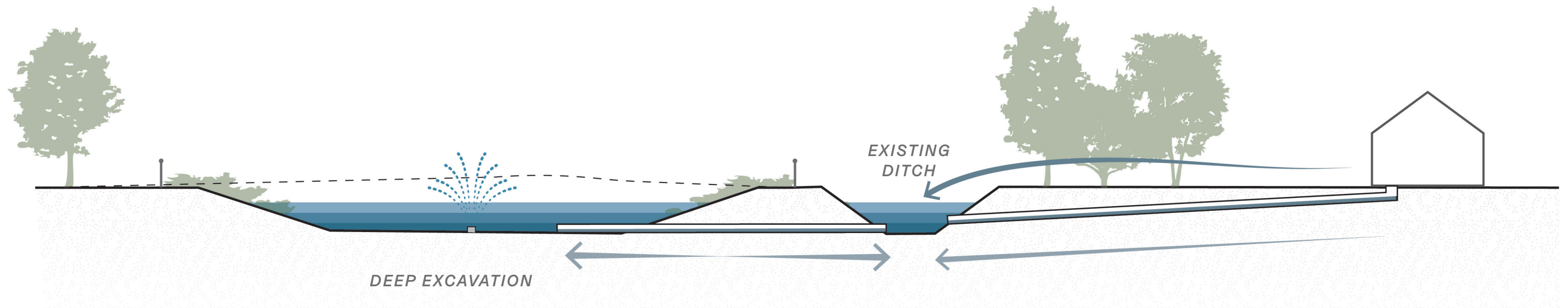
Assumptions

- 1 Year, 24-Hour storm: 5.02in
- 10 Year, 24-Hour storm: 9.16in
- Culverts added to connect ditches, 1-2ft wide, unconfined
- 3 main culverts exiting project area, unconfined





Low Scenario: Take what stormwater falls on the site, and slow it down before it enters existing drainage network, reducing peak water levels



High Scenario: Route water into park through existing ditches from the flooding neighborhoods

Low + High Scenarios

Low Scenario Modifications

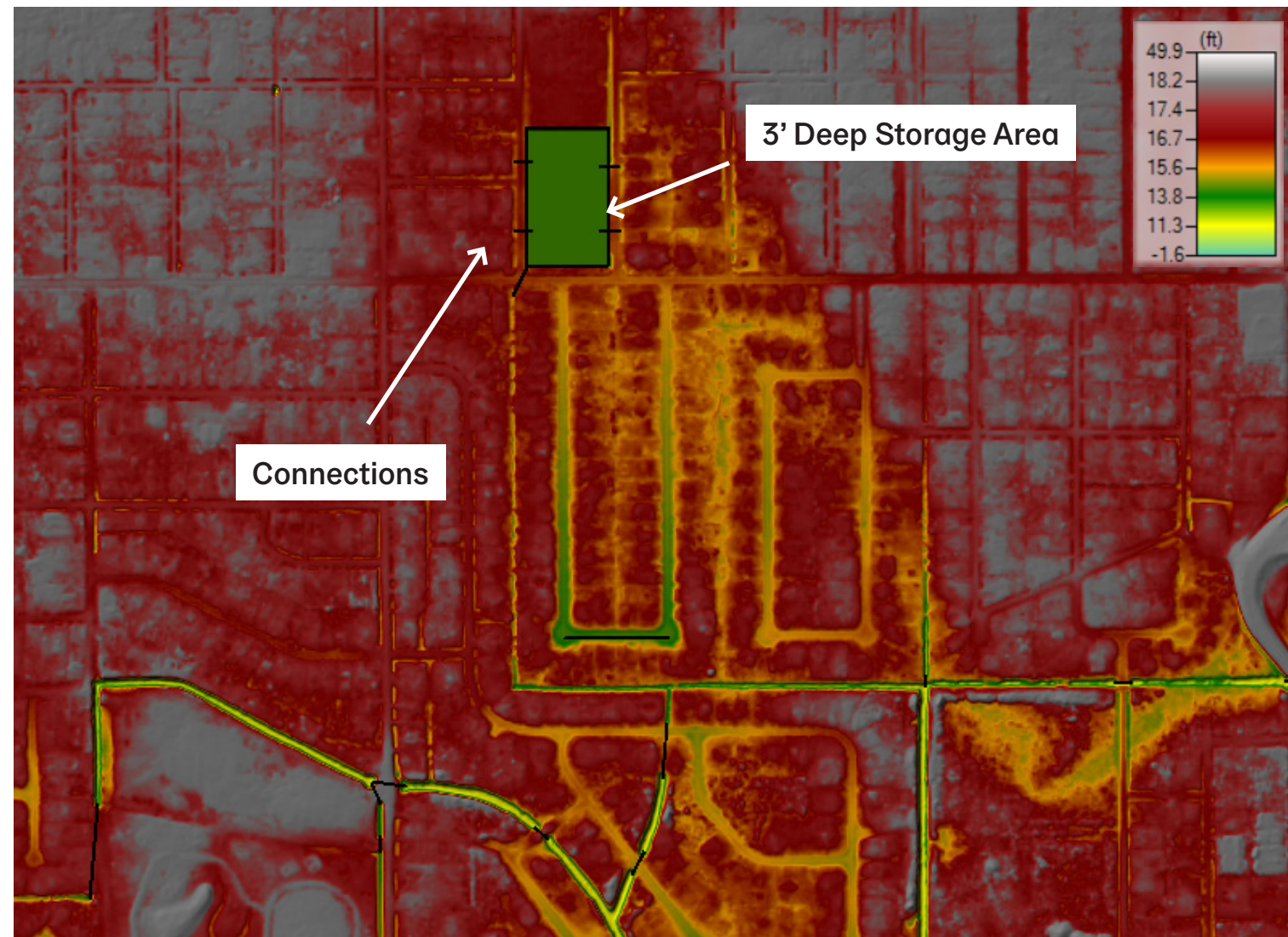
- 4.26 acre, ~4ft deep stormwater storage area
- Three 2ft wide “connections” draining from park to storage area
- 2ft “connection” leading into existing ditch (Bayou Casotte) to north, draining overflows from storage

Note: Deep excavations could pose a health & safety risk. Fencing and appropriate signage should be considered.

High Scenario Modifications

- 4.26 acre, ~8ft deep stormwater storage area
- Three 2ft wide “connections” draining from park to storage area
- Two 2ft wide “connections” at same bottom elevation of existing ditch (Bayou Casotte) to north, allowing for equal exchange of water between storage and ditch

Low + High Scenarios

Low Scenario Modifications

- 2.79 acre, ~3ft deep stormwater storage area
- Four 1ft wide "connections" from neighborhood ditches into storage area
- 2ft wide "connection" from storage into existing ditch to west of Rose Dr, draining overflows from storage

High Scenario Modifications

- 2.79 acre, ~6ft deep stormwater storage area
- Four 1ft wide "connections" from neighborhood ditches into storage area
- 2ft wide "connection" from storage into existing ditch to west of Rose Drive, draining overflows from storage

Note: Deep excavations could pose a health & safety risk. Fencing and appropriate signage should be considered.

Low + High Scenarios

Existing drainage ditches were smoothed, channelized, and/or widened to improve stormwater conveyance.

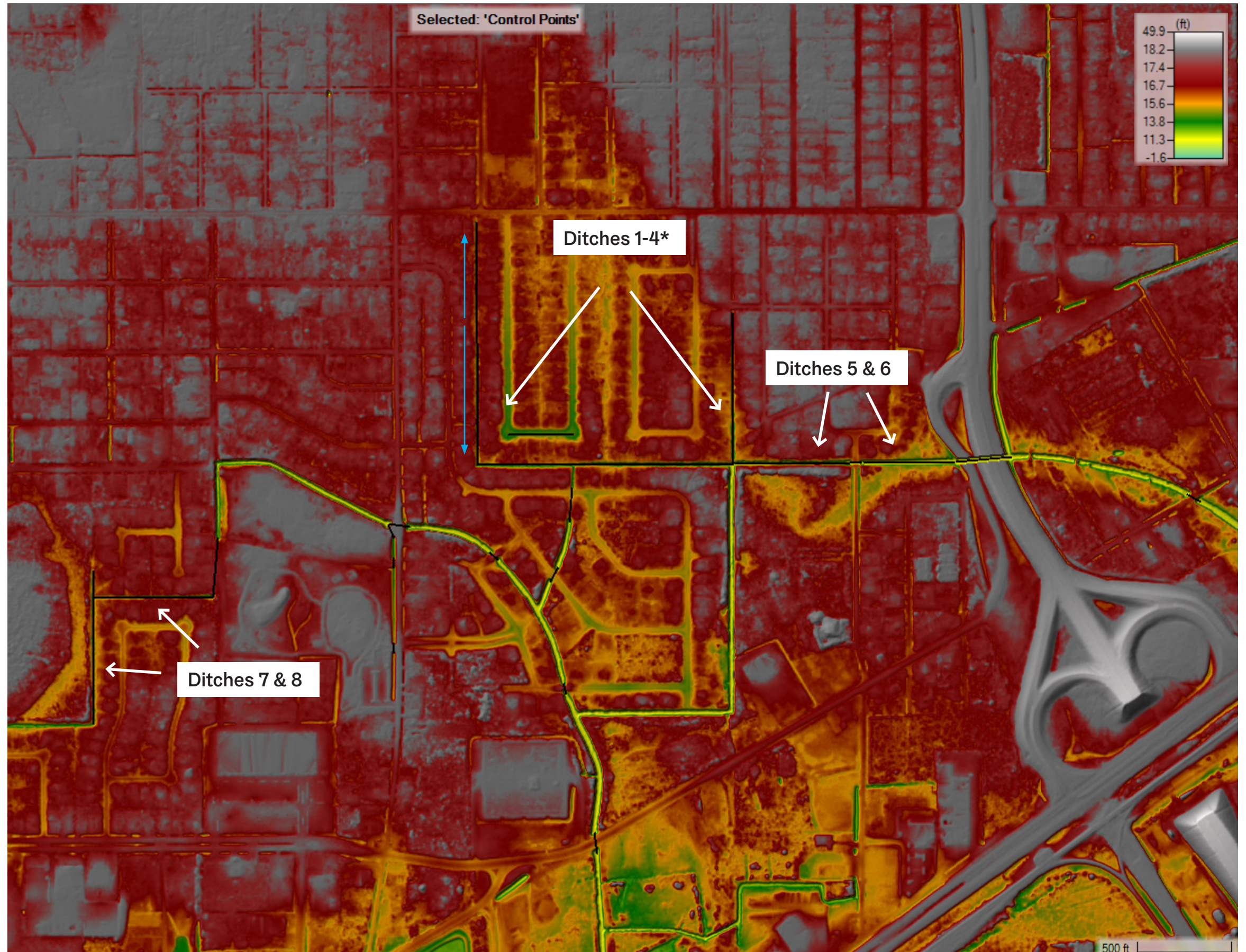
Low Scenario Modifications

- Ditch 1-4: 6ft bottom width, 8ft top width*
- Ditch 5: 8ft bottom width, 10ft top width
- Ditch 6: 20 ft bottom width, 30ft top width
- Ditch 7 & 8: 4ft bottom width, 8ft top width

High Scenario Modifications

- Ditch 1-5: 10ft bottom width, 12ft top width
- Ditch 6: 20ft bottom width, 30ft top width
- Ditch 7 & 8: 10ft bottom width, 12ft top width

Notes: *existing Ditch 1 flows north and south as indicated with blue arrows, yet modeled to flow south



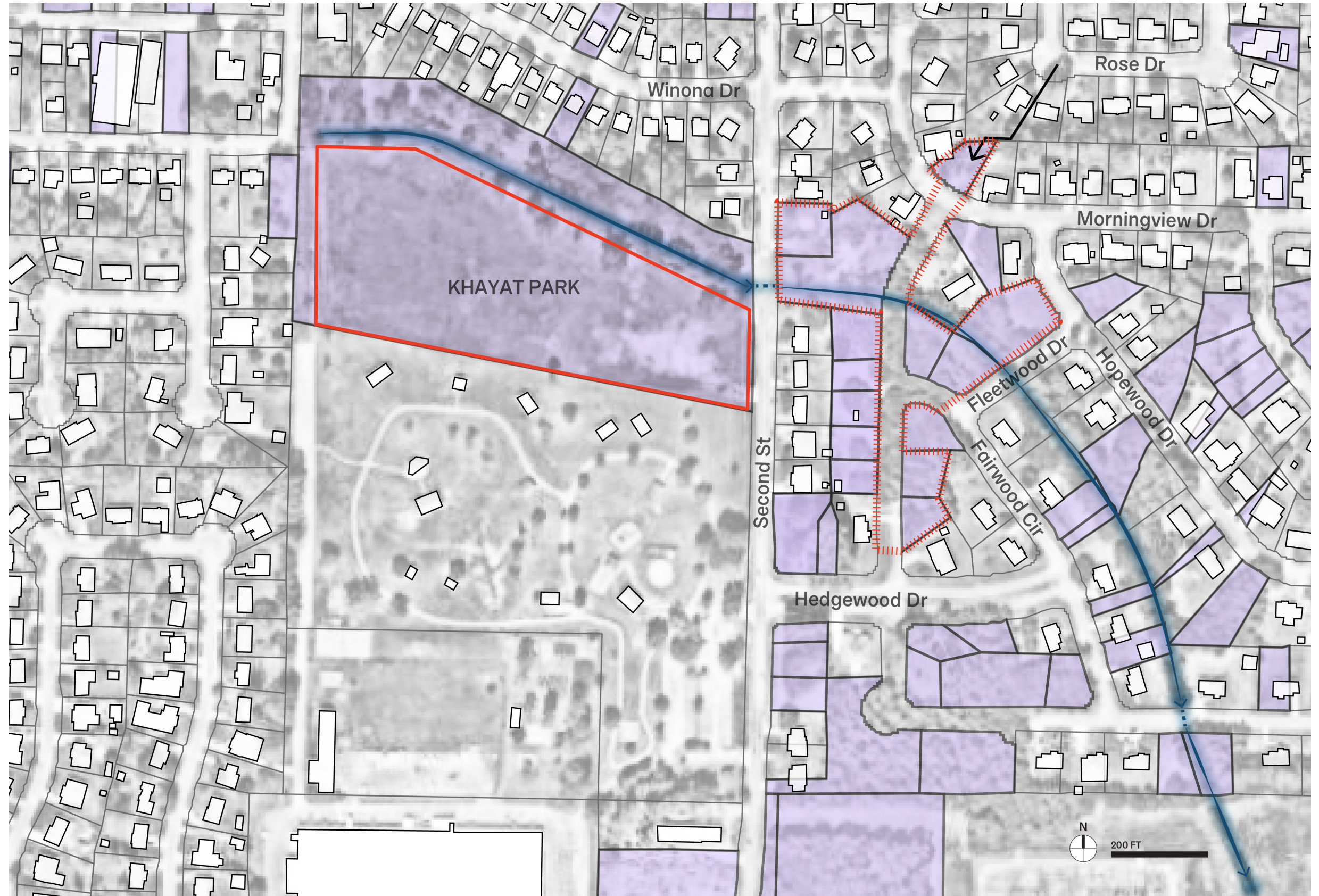
Rose Drive Connection

Increasing Storage and Conveyance

Stormwater tends to pool at the low points along Rose Drive. Connecting Rose Drive to Bayou Casotte could increase storage area and conveyance, reducing flooding in the adjacent neighborhoods.

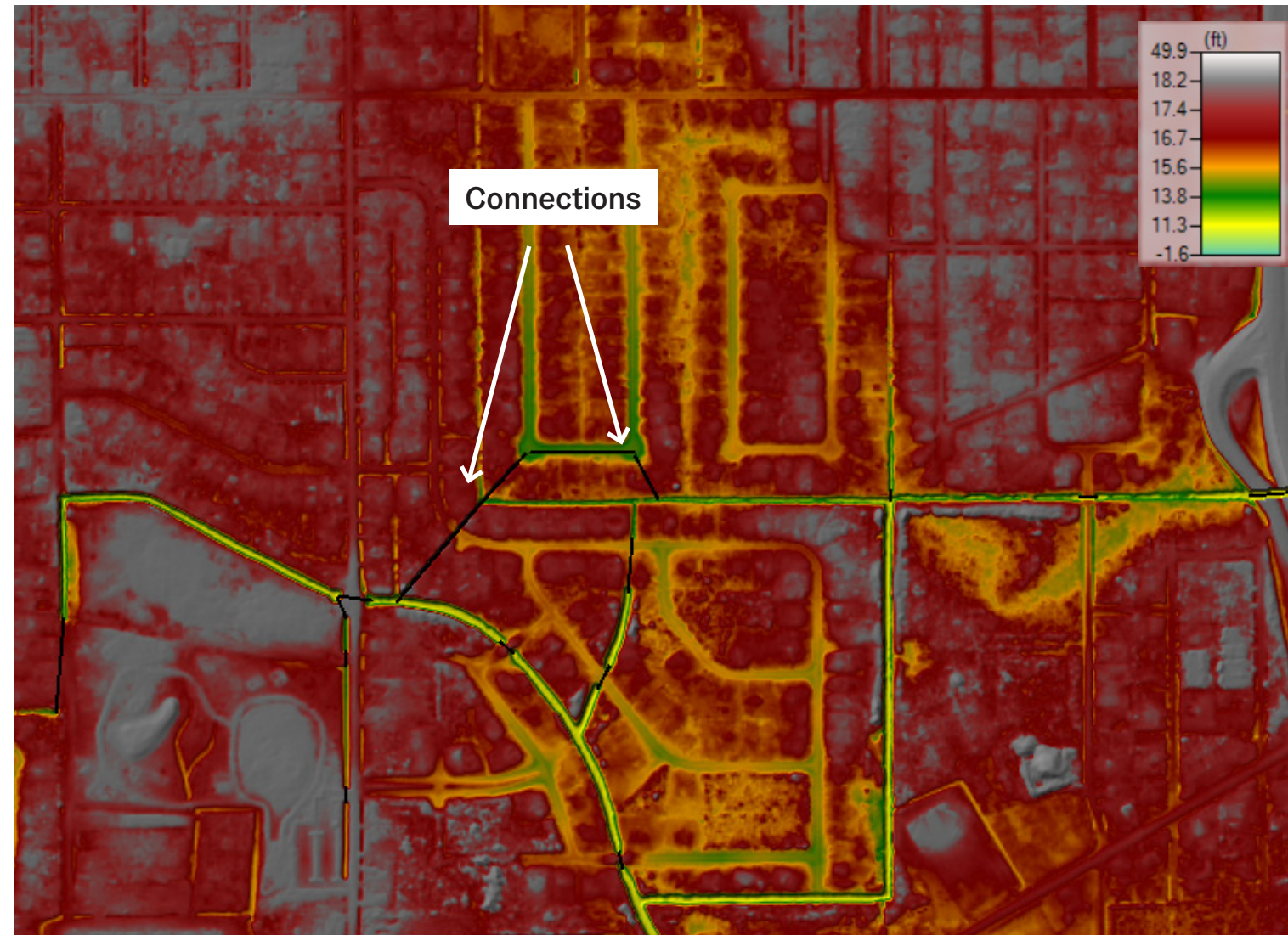
Please note, this potential option would require working with private property owners or acquiring these vacant parcels to introduce these storage areas.

See Appendix IV-iv for more information on current ownership.



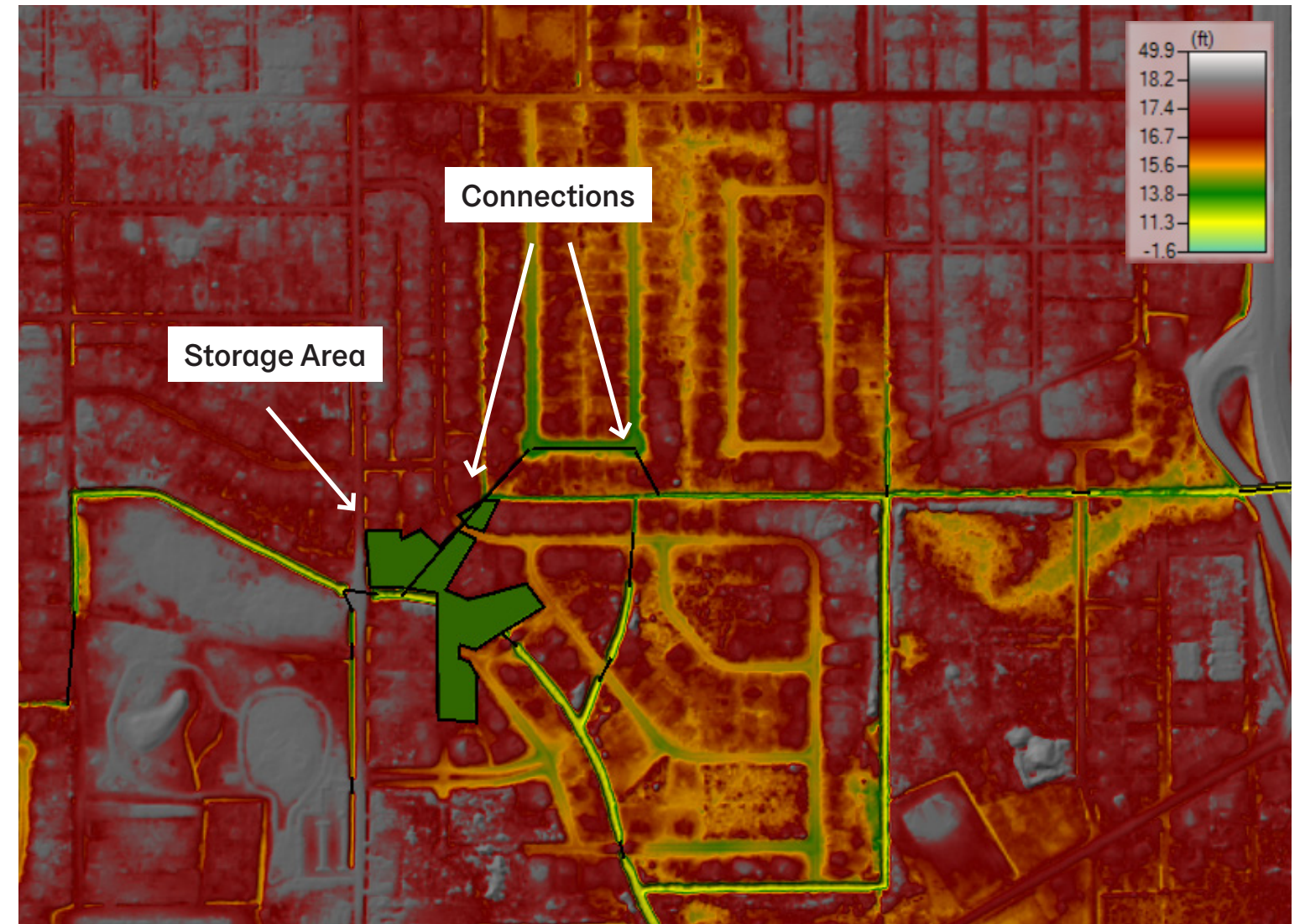
LEGEND

- Project Sites
- Rose Drive Connection
- Vacant Parcels
- ← Bayou Casotte



Low Scenario Modifications

- Ditches connecting south end of Rose Dr to existing ditch to south
- Ditch connecting to Bayou Casotte
- Ditches 6ft bottom width, 8ft top width, ~3-4ft deep



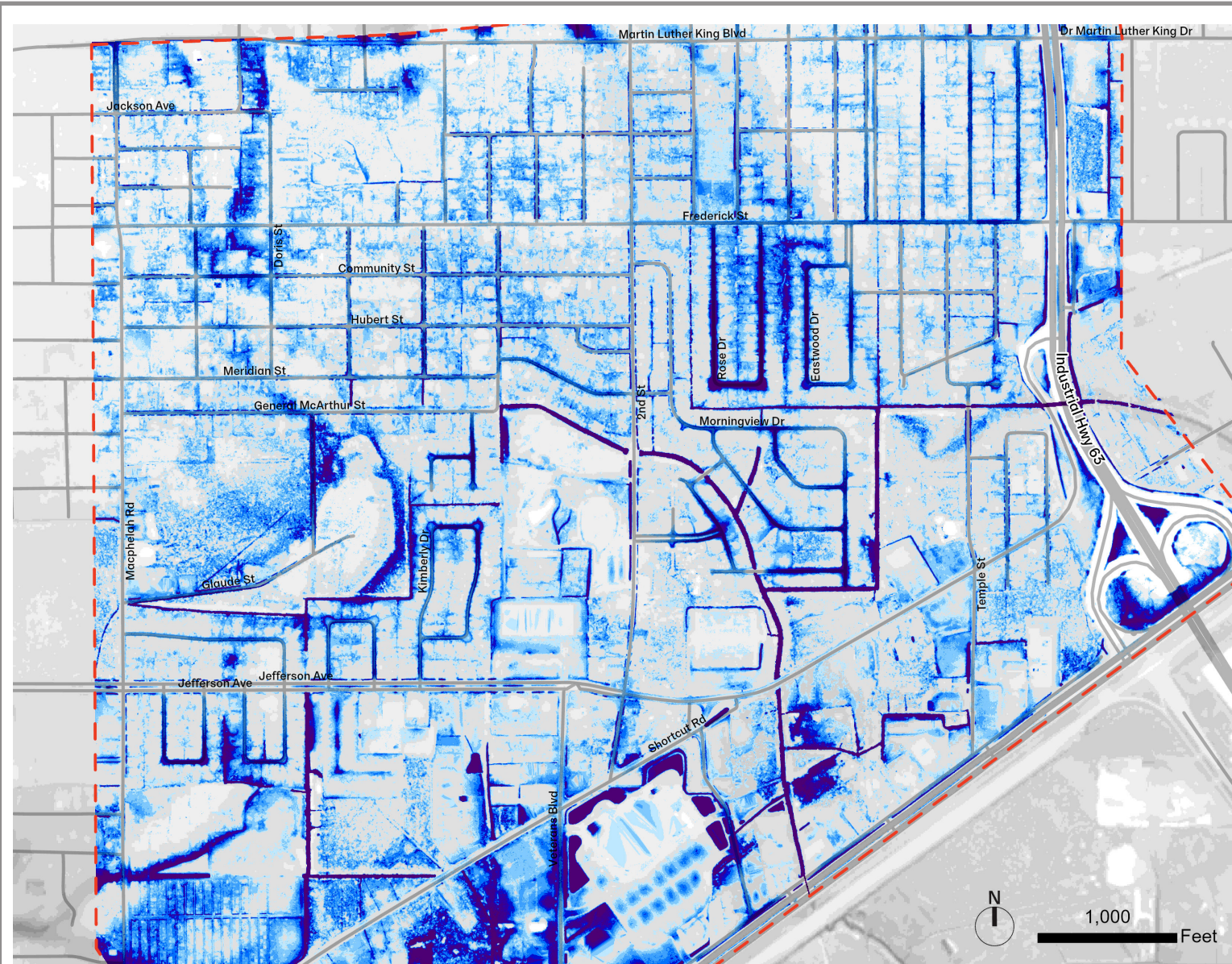
High Scenario Modifications

- Vacant Parcels (totaling ~3 acres) modeled as ~4ft deep stormwater storage
- Ditches connecting south end of Rose Dr to existing ditch to south
- Ditch connecting to Bayou Casotte
- Ditches 6ft bottom width, 8ft top width, ~3-4ft deep

HEC-RAS Model - 2 Baselines

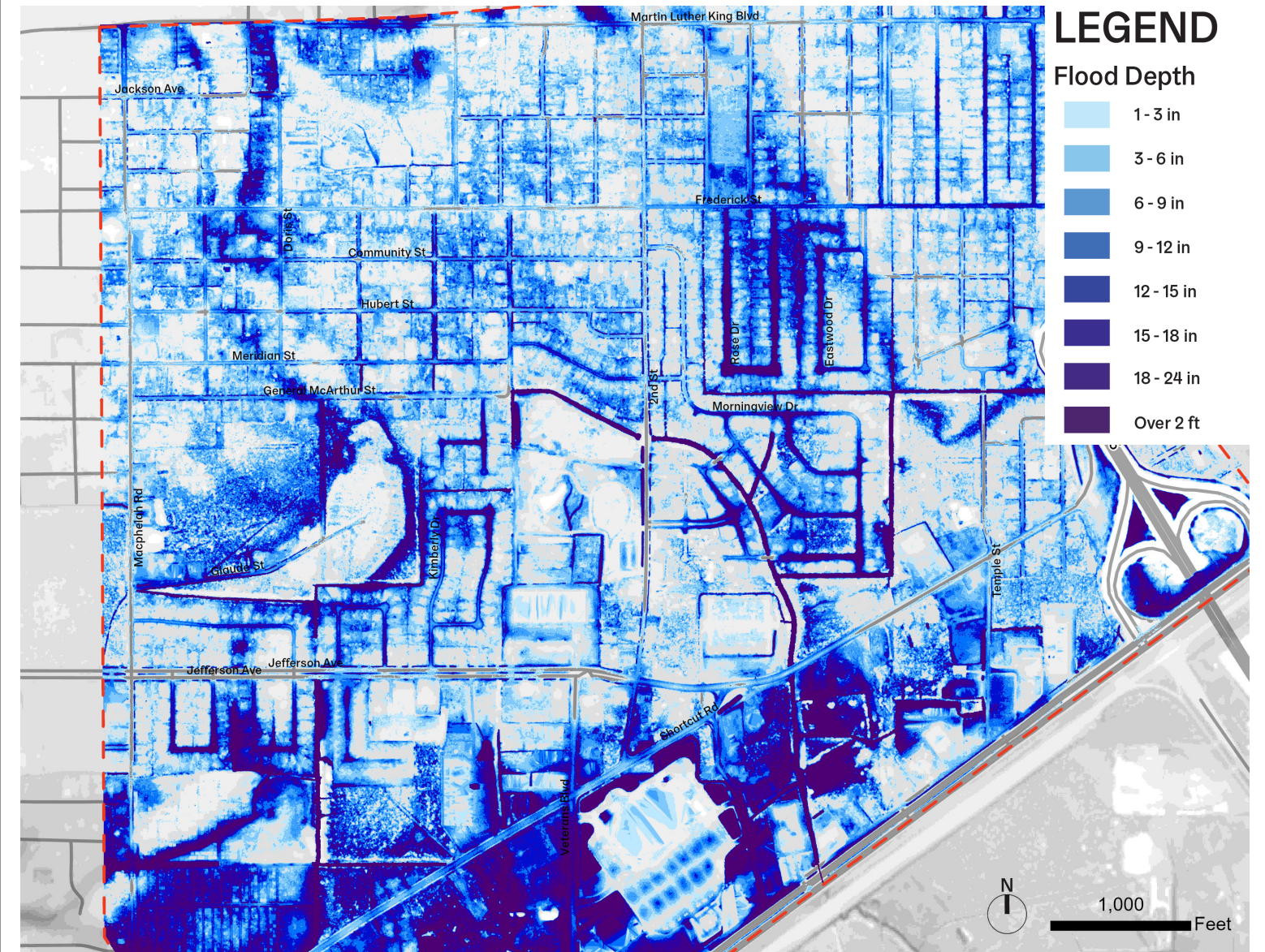
Overview - Showing Baseline Conditions

- All of the following 1 year, 24 hour, flood reduction maps are created by comparing the flood depths from the respective interventions against the Baseline A flood depths.



Baseline A

- 1 Year, 24 Hour Storm
- 5.02 inches Rainfall



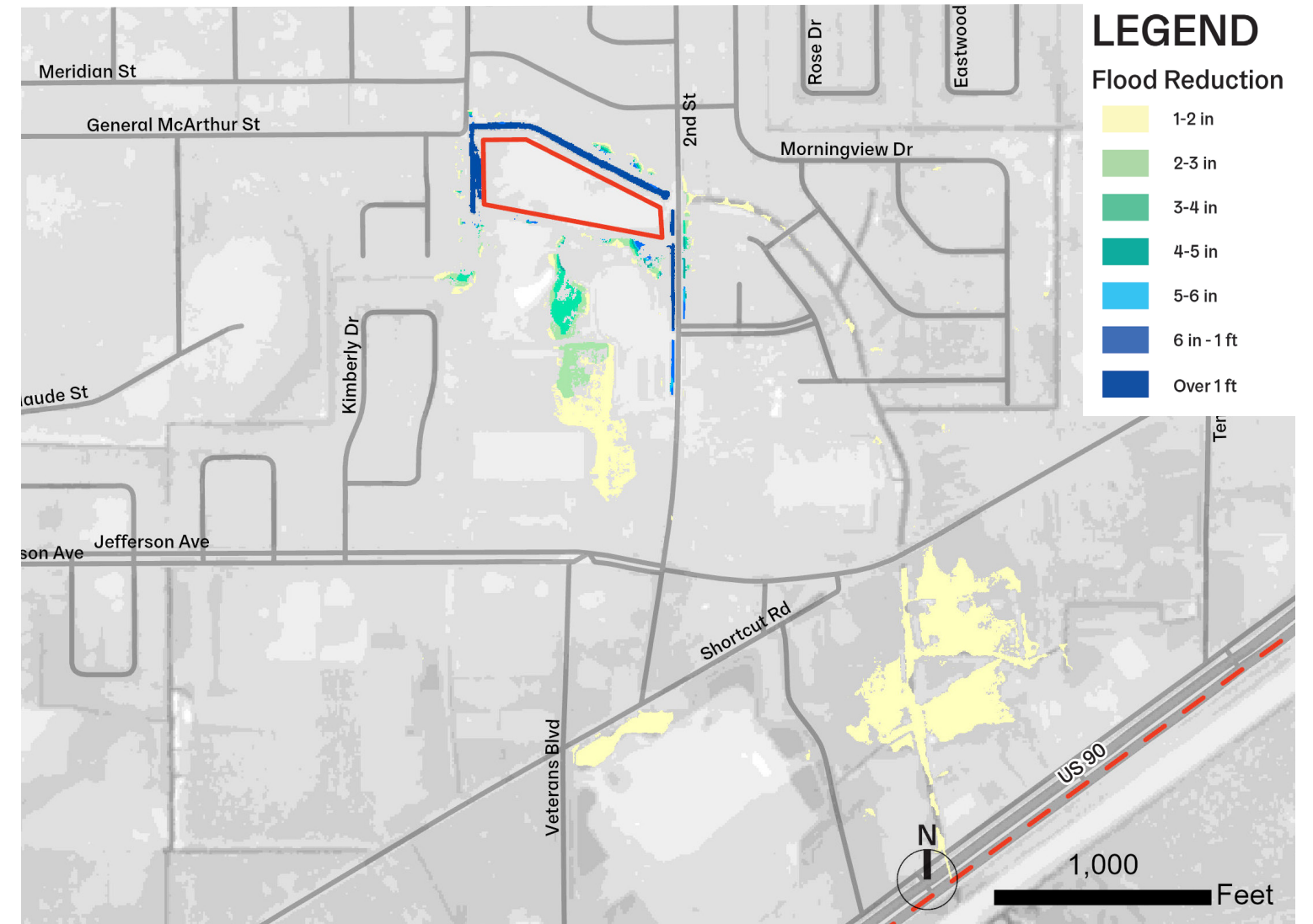
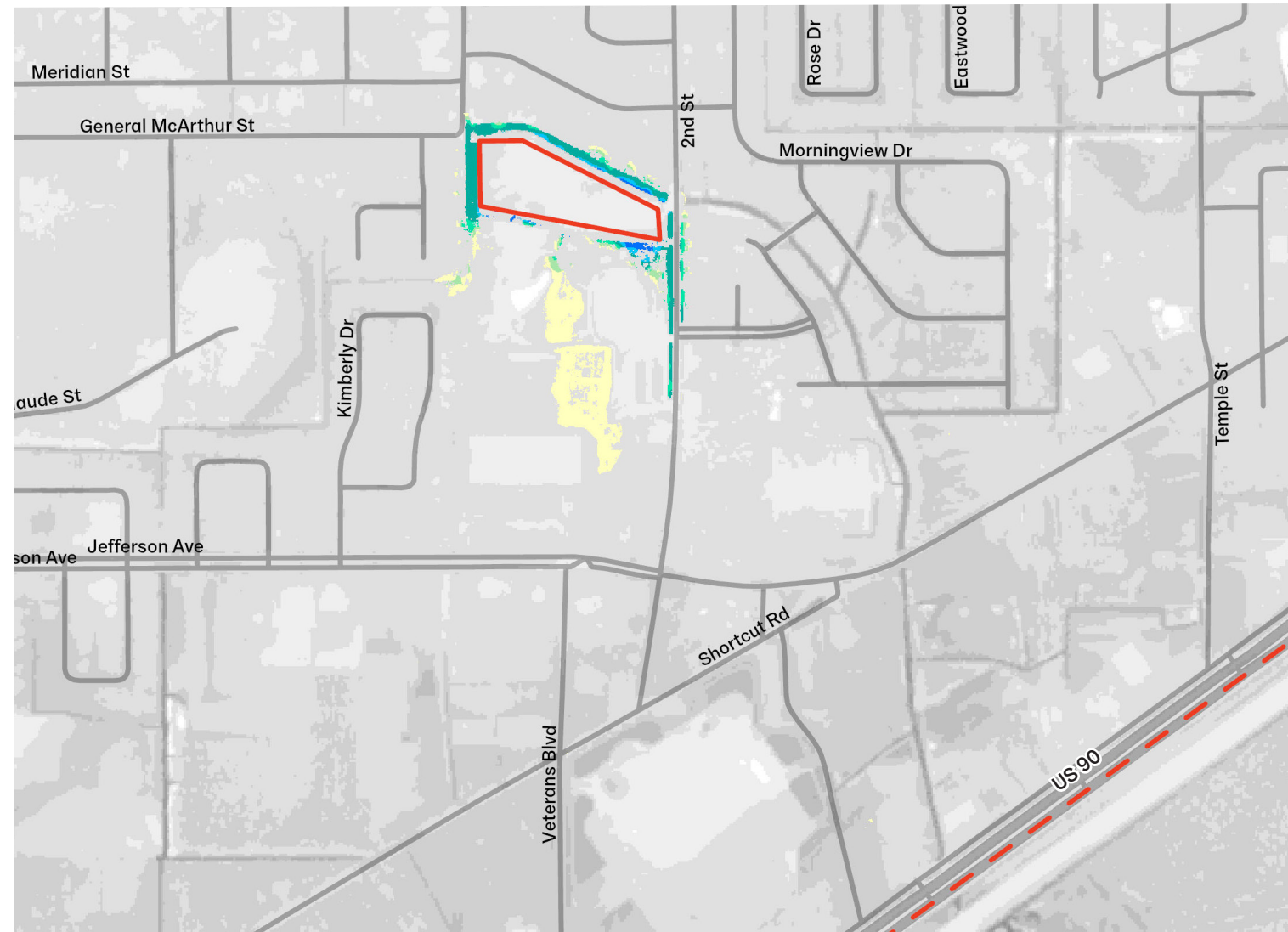
Baseline B*

- 10 Year, 24 Hour Storm
- 9.16 inches Rainfall

LEGEND

Flood Depth	
Light Blue	1 - 3 in
Medium Blue	3 - 6 in
Dark Blue	6 - 9 in
Very Dark Blue	9 - 12 in
Dark Purple	12 - 15 in
Medium Purple	15 - 18 in
Dark Purple	18 - 24 in
Very Dark Purple	Over 2 ft

**see appendix for 10 year storm model results*

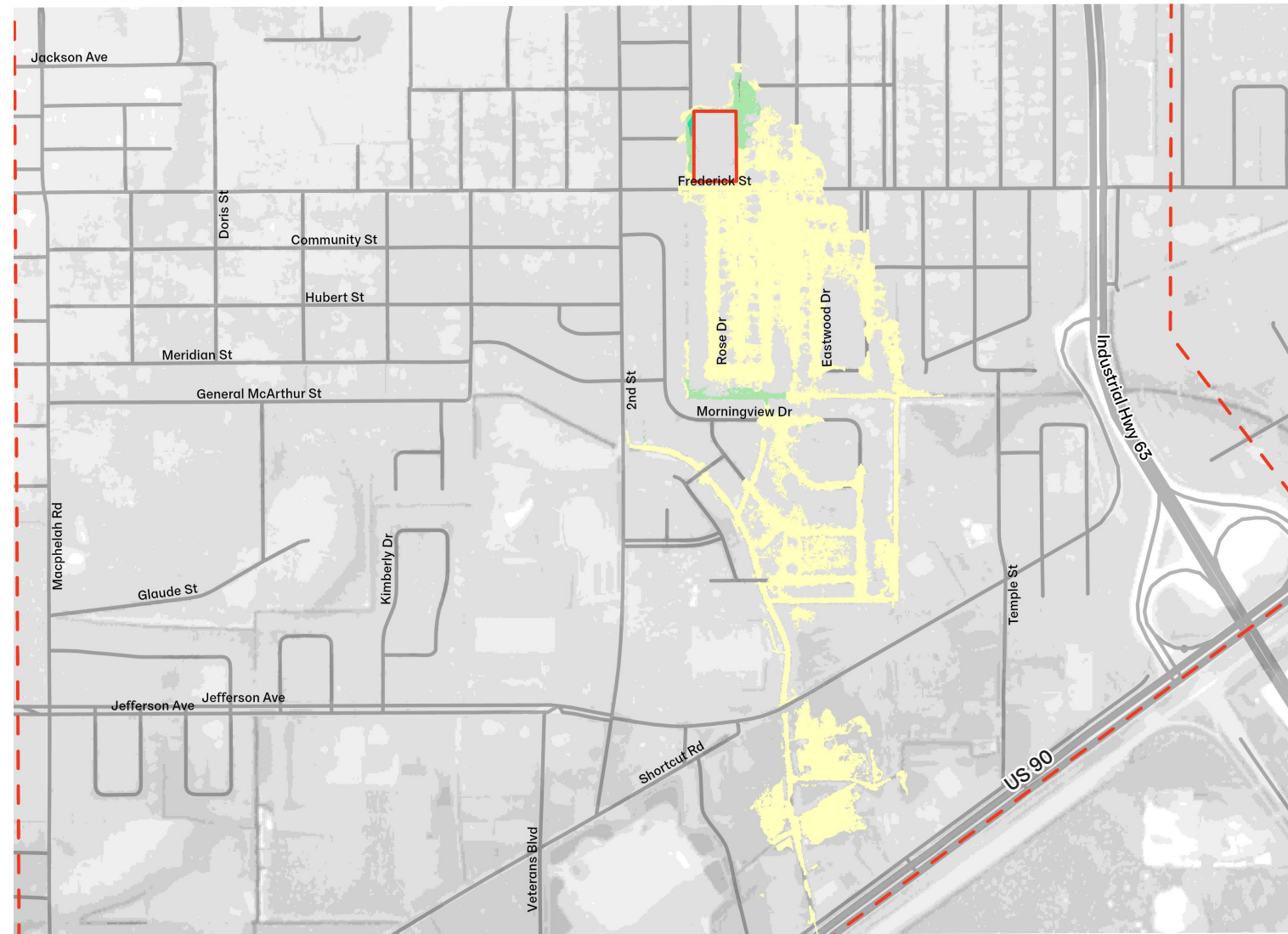


Low Scenario Results

- Flood reduction mainly south of project site in Khayat Park
- 4-5in reduction in surrounding ditches, potentially freeing up more space for flows from nearby neighborhoods
- Small areas with just over 6in of reductions in ditches and around project site edges
- Storage not filling up to max potential (~1.8ft)

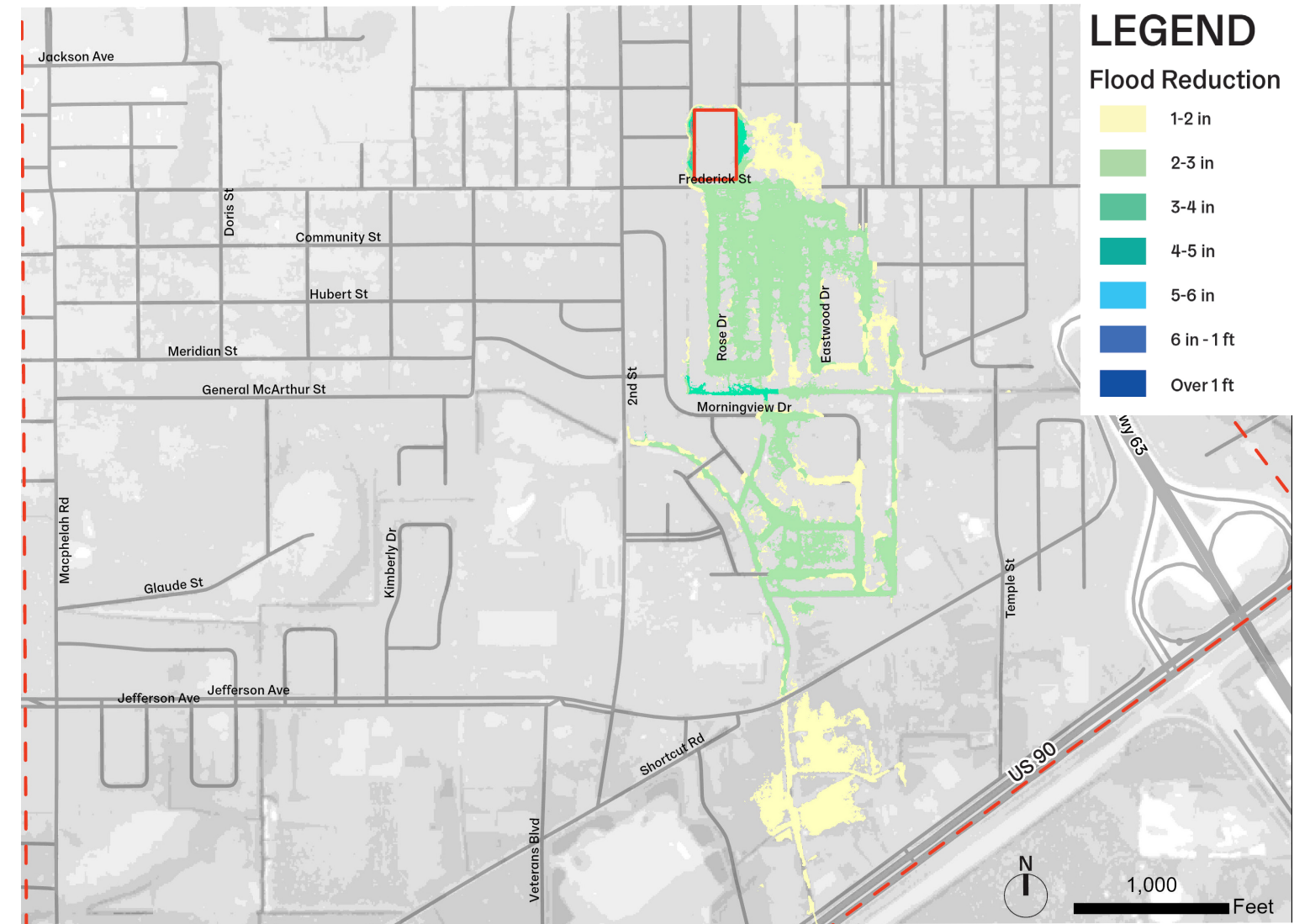
High Scenario Results

- Flood reduction mainly south of project site in Khayat Park (3-4in)
- Small areas with 6-12in of reductions around project site edges
- 1-2in reduction in neighborhood just to north of US 90
- Storage not filling up to max potential (~4.7ft)



Low Scenario Results

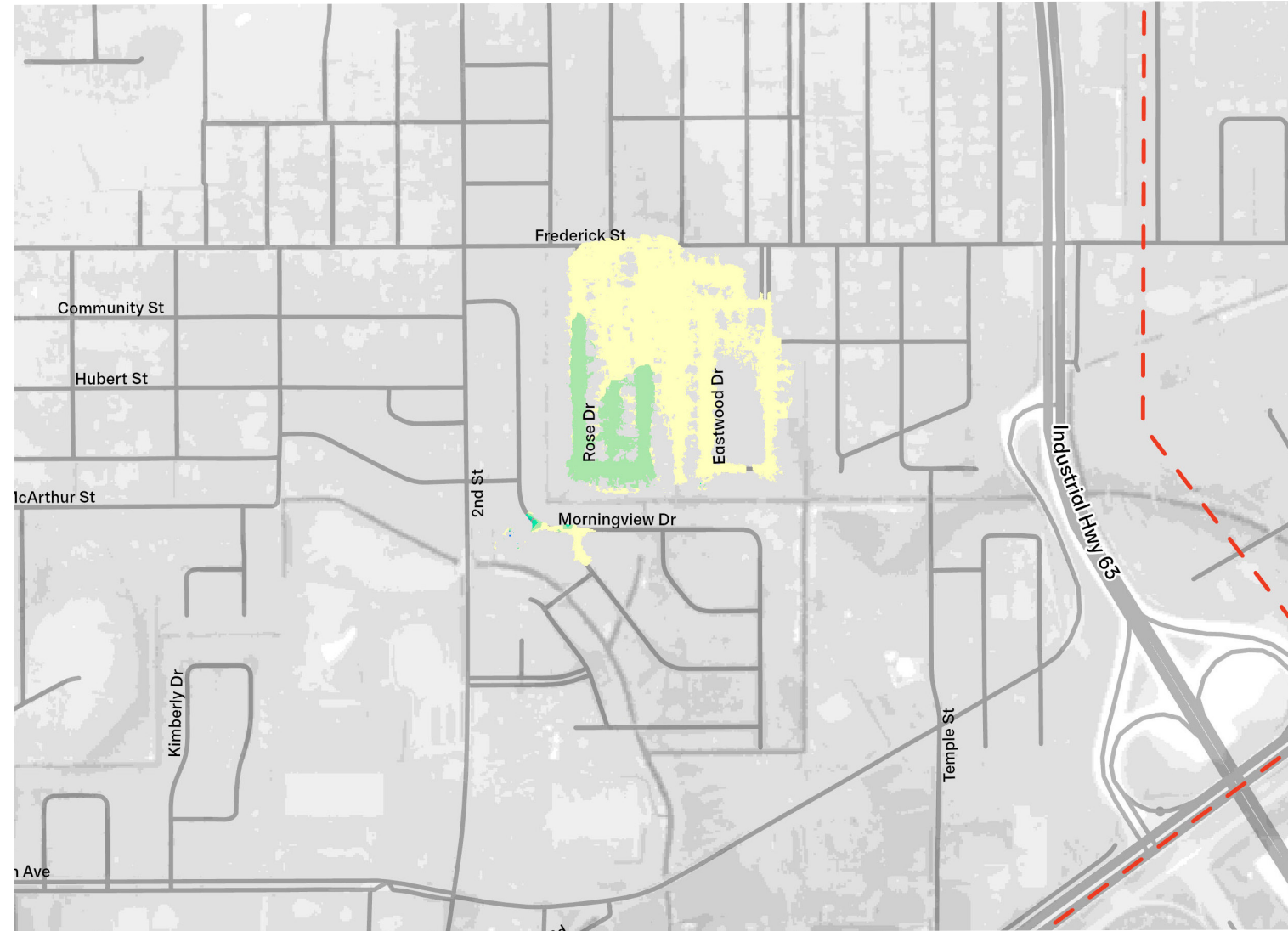
- 1-2in reduction between Rose Dr and Eastwood Dr, south to US 90
- Up to 3-4in reduction around storage area
- 2-3in reduction in ditch south of Rose Dr
- Storage full (~3.6ft)



High Scenario Results

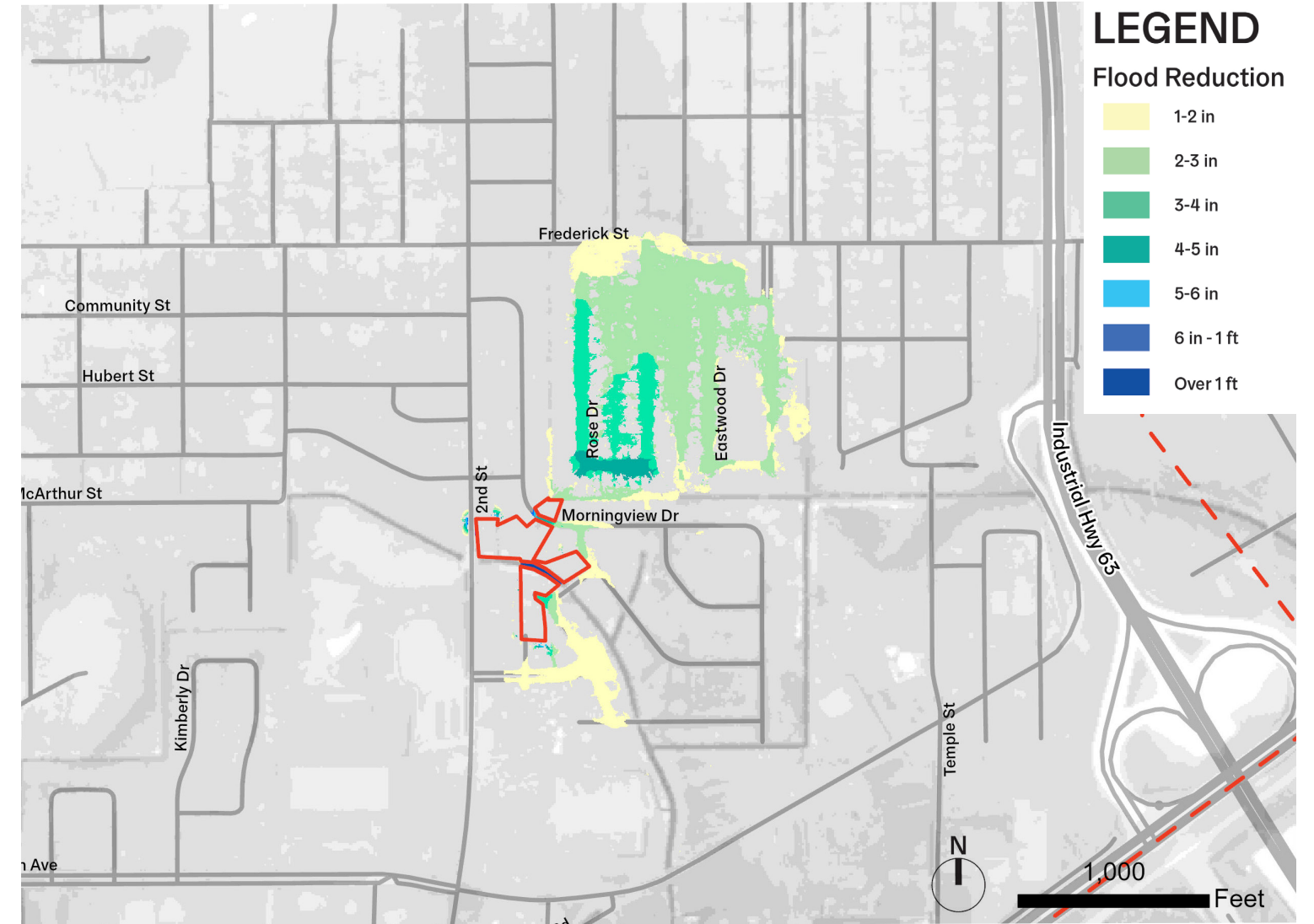
- 2-3in reduction between Rose Dr and Eastwood Dr, south to Shortcut Rd
- 1-2in along Bayou Casotte in neighborhood between Shortcut Rd and US 90
- Up to 5in reduction around storage area
- Up to 3-4in reduction in ditch south of Rose Dr
- Storage full (~6.5ft)

Flood Reduction after 1 Year, 24-Hour Storm



Low Scenario Results

- 2-3in flood reduction throughout majority of Rose Dr
- 1-2in flood reduction in northeast portions of Rose Dr and Eastwood Dr



High Scenario Results

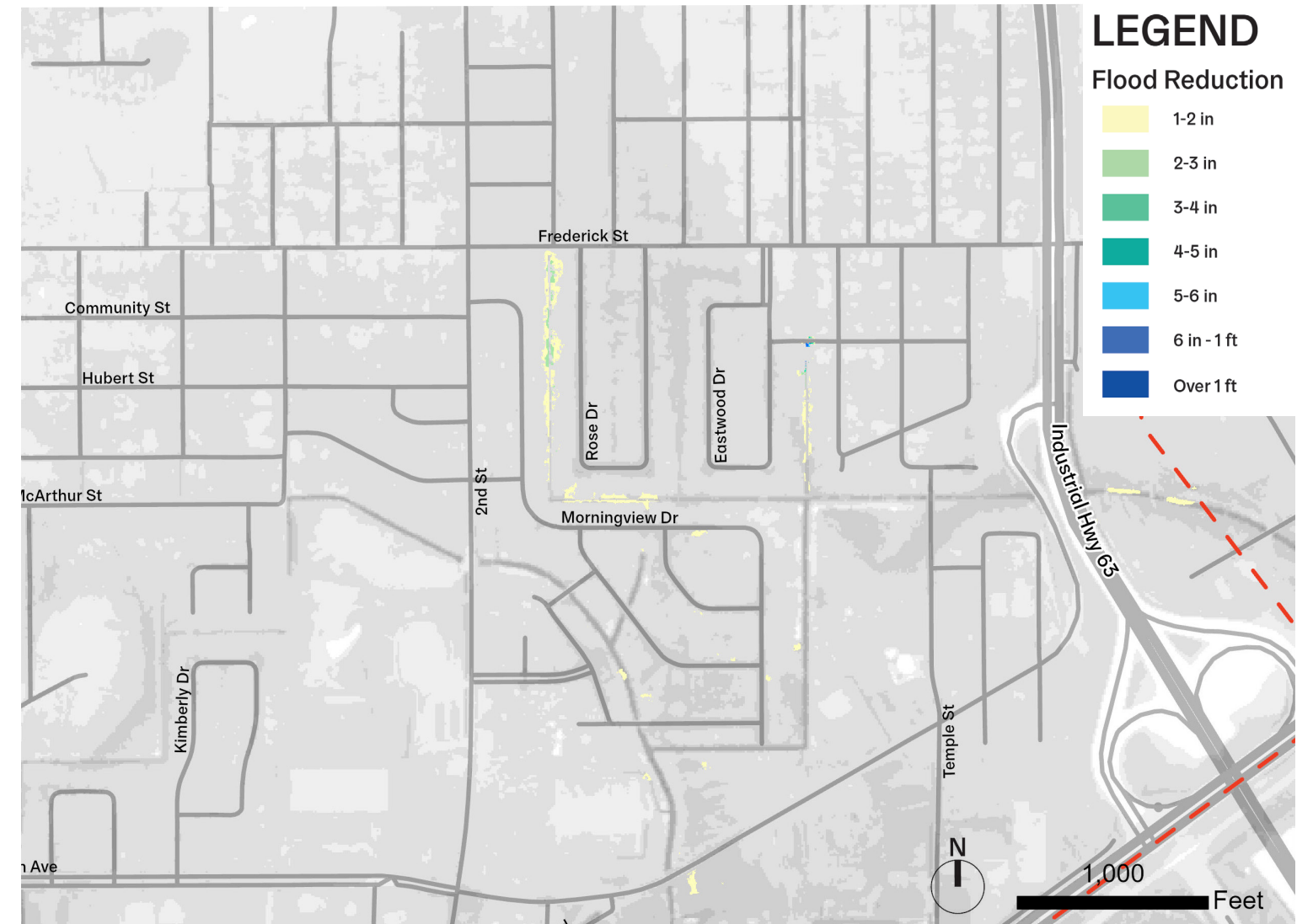
- 4-5in flood reduction at southern end of Rose Dr, with 2-4in reduction in remainder of Rose Dr
- 2-3in reduction in Eastwood Dr
- up to 2ft reduction in section of Bayou Casotte within storage area
- small areas of up to 9in reduction on streets by edges of storage area
- Storage not filling up to max potential (~3.3ft)

Flood Reduction after 1 Year, 24-Hour Storm



Low Scenario Modifications

- 1-2in flood reduction in immediate vicinity of ditch to west of Rose Dr
- Small area of up to 6in reduction near easternmost ditch



High Scenario Modifications

- Up to 2-3in flood reduction in immediate vicinity of ditch to west and south of Rose Dr
- Small area of up to 6in reduction near easternmost ditch
- Scattered areas with slight flood reduction of 1-2in

HEC-RAS Model - Combined Approach

1st St Lot (Low Scenario) and Rose Drive Connection (High Scenario)

Flood Reduction after 1 Year, 24-Hour Storm

1st Street Lot - Low Scenario

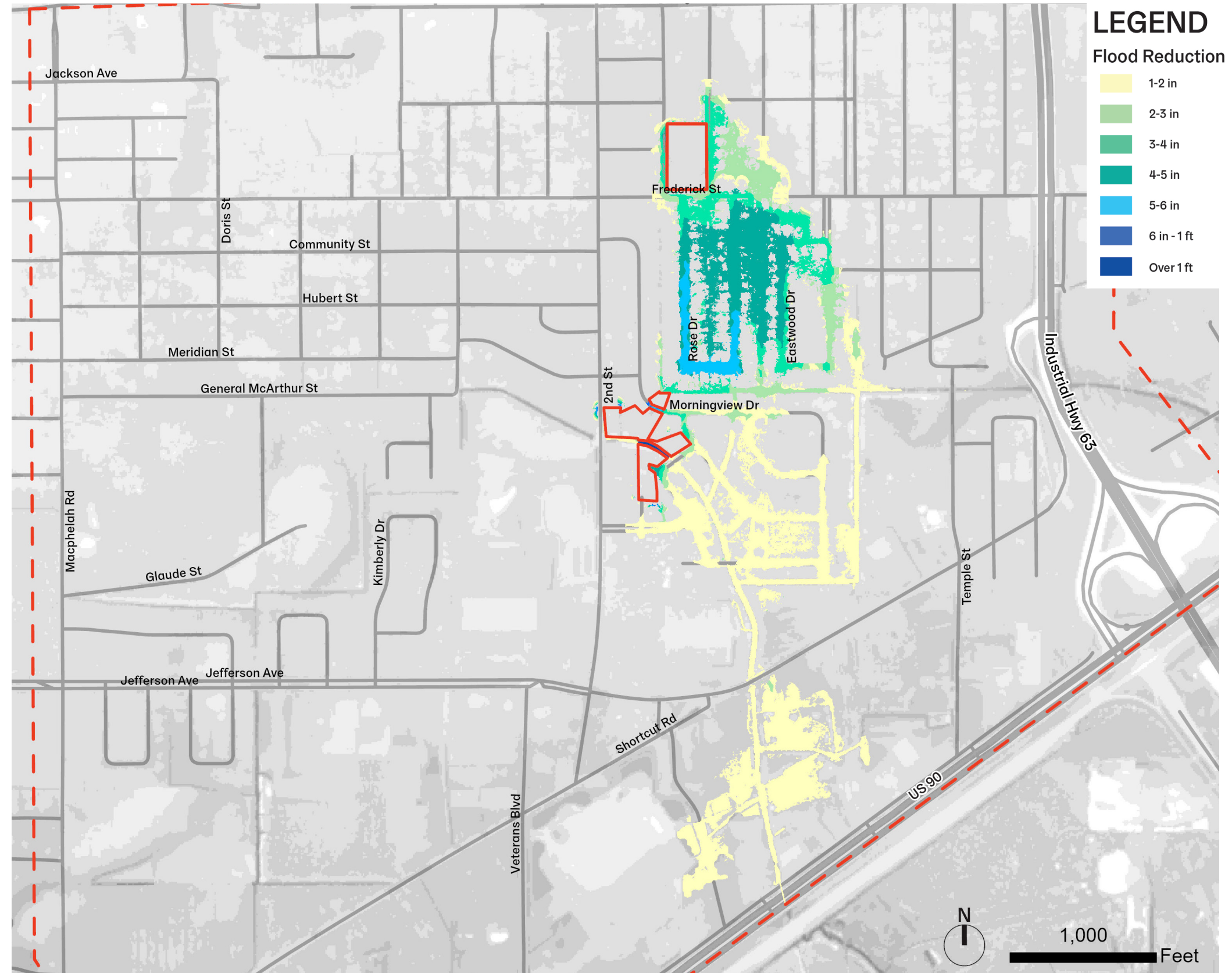
- 2.79acre, ~3ft deep stormwater storage area
- Four 1ft wide “connections” from neighborhood ditches into storage area
- 2ft wide “connection” from storage into existing ditch to west of Rose Dr

Rose Drive Connection - High Scenario

- Vacant Parcels (totaling ~3 acres) modeled as ~4ft deep stormwater storage
- Ditches connecting south end of Rose Dr to existing ditch to south
- Ditch connecting to Bayou Casotte
- Ditches 6ft bottom width, 8ft top width, ~3-4ft deep

Flood Reduction Model Results

- Up to 6in reduction through southern half of Rose Dr
- 4-5in reduction through north of Rose Dr to eastern side of Eastwood Dr
- Up to 4in reduction in remainder of Eastwood Dr
- Up to 5in reduction adjacent to 1st St storage
- Up to 2ft reduction in section of Bayou Casotte within storage
- Small areas of up to 11in reduction by edges of Bayou Casotte storage
- 1-2in reduction in neighborhoods along Bayou Casotte south to US 90



Limitations

Only surface stormwater conveyance is depicted; these models do not include any underground stormwater utilities due to lack of data, so they cannot fully depict actual stormwater conveyance or storage.

Significant flood reduction for any scenario does not occur in the 10 Year, 24-Hour storm, and benefits will likely continue to decrease in larger storms.

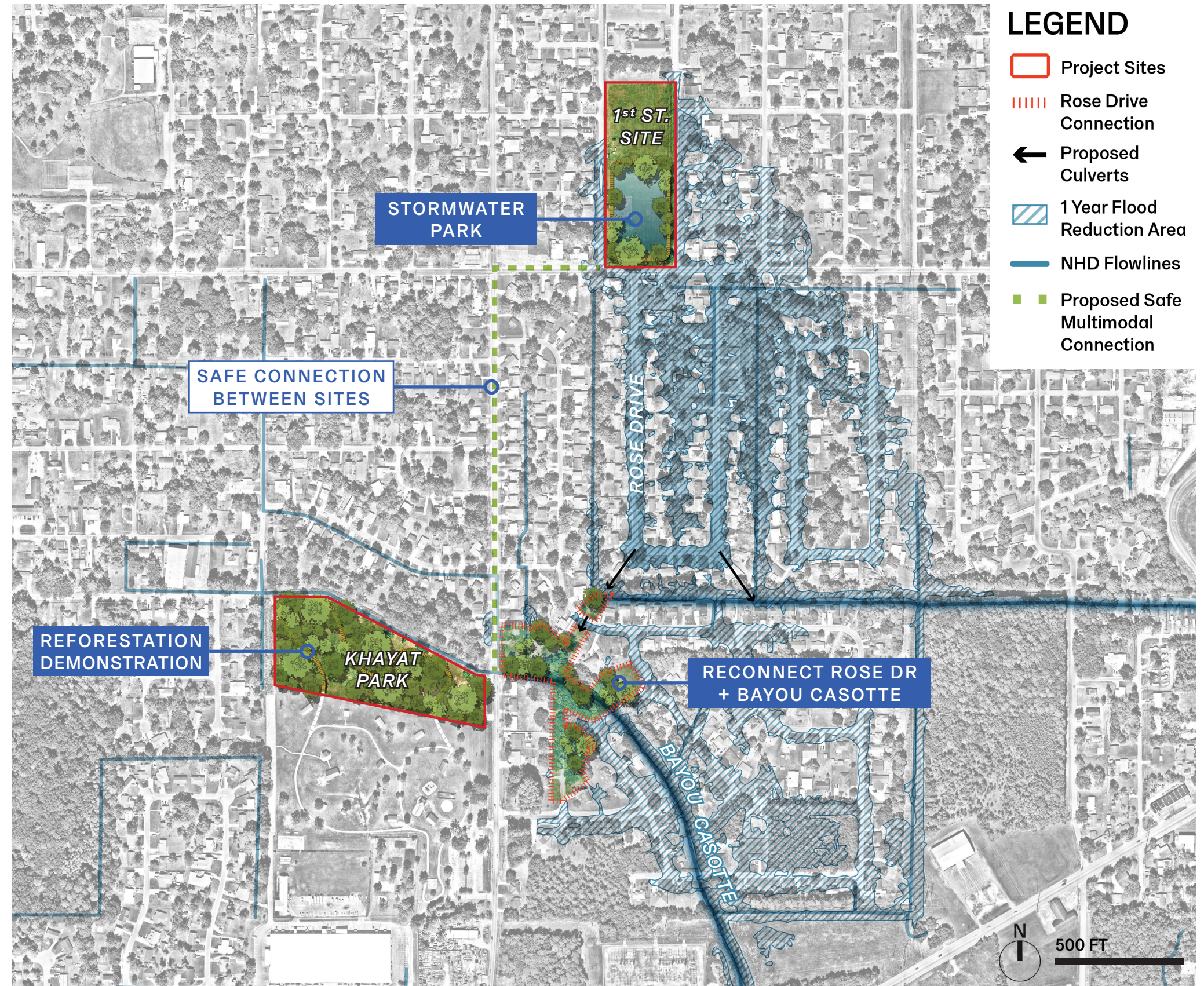
Recommended Approach

The most widespread, impactful flood reduction for the 1 Year, 24-Hour storm occurred with the combined implementation of the 1st Street Lot ~3ft deep stormwater storage and the Rose Drive connections with ~4ft deep stormwater storage. Positive impacts are concentrated in the areas of Rose Drive and Eastwood Drive.

For smaller, more frequent storms, this approach could help reduce flooding. For larger storms, these projects will have very little impacts on flood reduction. However, other benefits provided in the form of recreation, access to wildlife, education, and non-point source pollution reduction might increase the value of these projects. For example, reforestation of Khayat Park has not been analyzed for flood reduction benefits, but could provide recreational and educational benefits and reduce non-point source pollution.

Next Steps

Further hydraulic and hydrologic analyses of these recommended stormwater features is needed before project implementation. Future analyses should involve a SWMM model with detailed, proposed storage and conveyance features, as well as detailed, existing underground stormwater utilities survey data.



Project Components-Recommended Approach and Drainage Improvements

	Khayat Park (Reforestation Demonstration)	Stormwater Park (1 st Street Lot)	Rose Drive Connection	Ditch Maintenance
Project Area	6.8 acres	5.5 acres	3.0 acres	4.0 acres
Acquisition	n/a	Acquire 3 to 5 acres from St. Joseph Catholic Church	Acquisition of up to 15 parcels from private owners	Ditch maintenance work in drainage easement
Site Grading/Excavation	Site grading to tie into adjacent Khayat Park	3-4 feet of excavation for stormwater feature (2.79 acres) in the southern portion of the site; Finish grading	3-4 Feet of excavation for stormwater feature/drainage infrastructure	2-4 feet of excavation; 5,950 feet X 30 feet
Reforestation / Native Plantings	4.26 acres of reforestation	1-3 acres	Acreage TBD	Reseeding/replanting
Drainage Infrastructure	TBD	Overflow Structure and Tie-in(s) to existing stormwater infrastructure	Culvert(s)/Drainage improvements; over	Maintenance of Drainage Ditches
Potential Recreational Amenities	Boardwalk/Trails, educational signage, accent planting	Neighborhood Amenity (e.g. playground, volleyball, frisbee golf, basketball); accent plantings-stormwater feature	Connector Trail/Signage	N/A
Other Amenities/facilities	Fence replacement, benches, lighting, trash receptacles	Fencing, benches, lighting, trash receptacles	Fencing	N/A
Maintenance	Vegetation management, amenity and facilities repair and replacement; litter removal	Vegetation management-stormwater feature; Mowing-Neighborhood Amenity, Amenities and facilities repair and replacement; litter removal	Vegetation management/mowing; amenities repair and replacement; litter removal	On-going debris and sediment removal/gabion replacement; litter removal

IV Appendix i HEC-RAS 10 Year Model Results



Flood Reduction after 10 Year, 24-Hour Storm

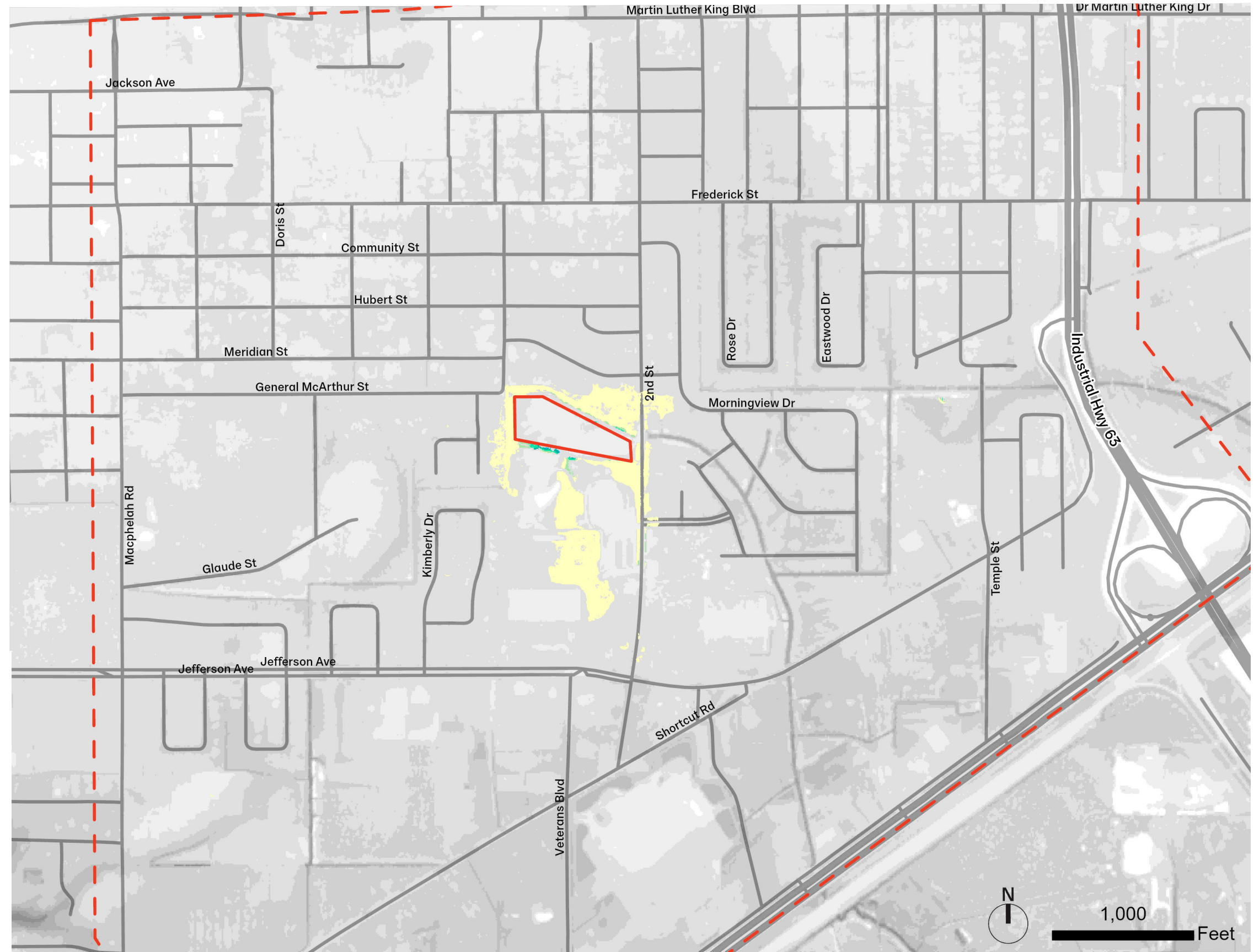
Results

- Flood reduction mainly 1-2in immediately adjacent to project site
- Small portions with up to 6in of reductions around project site edge
- Storage not filling up to max potential (~ 2.4ft)

LEGEND

Flood Reduction

- 1-2 in
- 2-3 in
- 3-4 in
- 4-5 in
- 5-6 in
- 6 in - 1 ft
- Over 1 ft



HEC-RAS Model - Khayat Park (High Scenario)

Flood Reduction after 10 Year, 24-Hour Storm

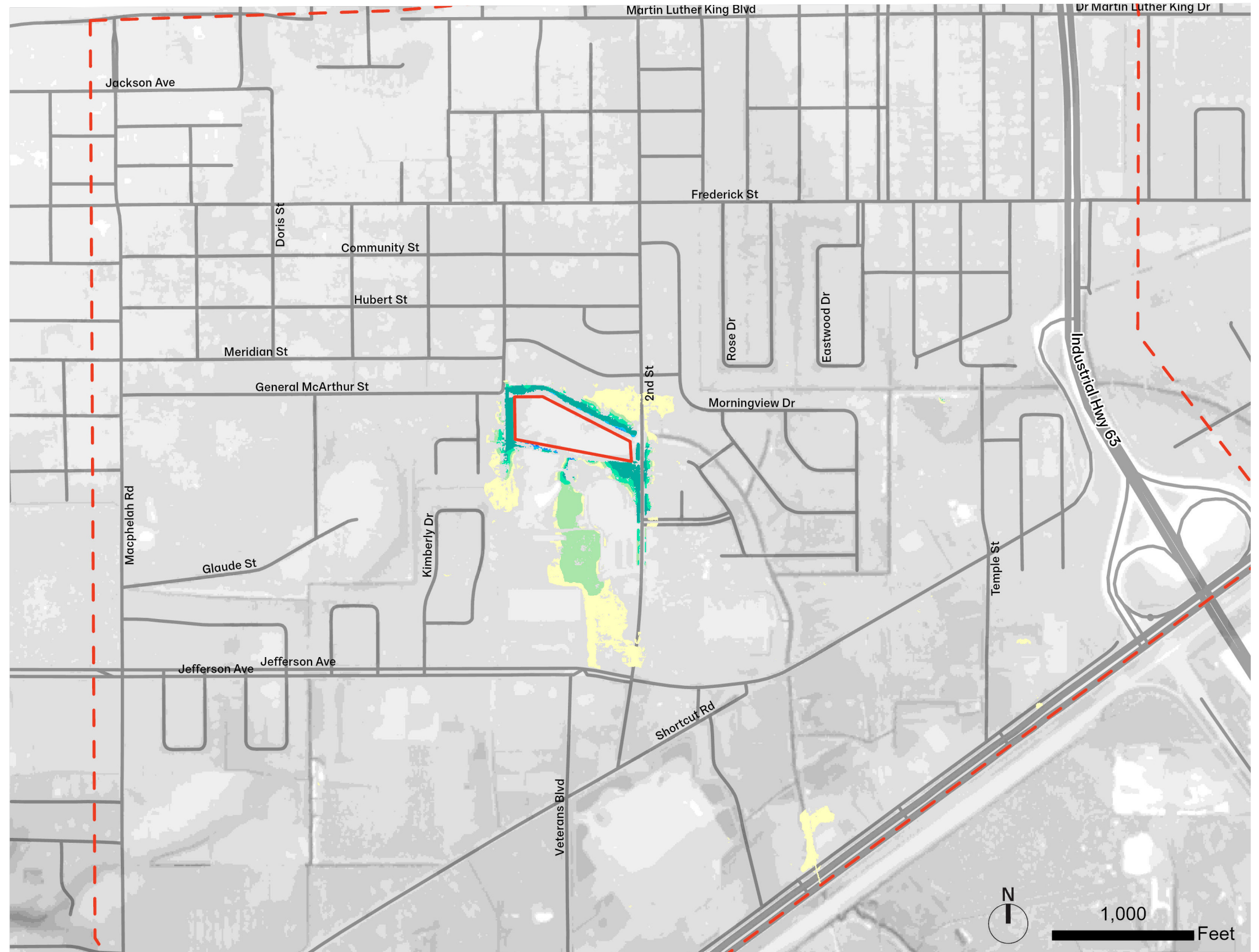
Results

- Flood reduction mainly in Khayat Park (1-5in) and neighborhood directly to north (1-3in).
- Small portions with up to ~6 in of reductions around project site edge
- Storage not filling up to max potential (~ 6.1 ft)

LEGEND

Flood Reduction

- 1-2 in
- 2-3 in
- 3-4 in
- 4-5 in
- 5-6 in
- 6 in - 1 ft
- Over 1 ft



HEC-RAS Model - 1st Street Lot (Low Scenario)

Flood Reduction after 10 Year, 24-Hour Storm

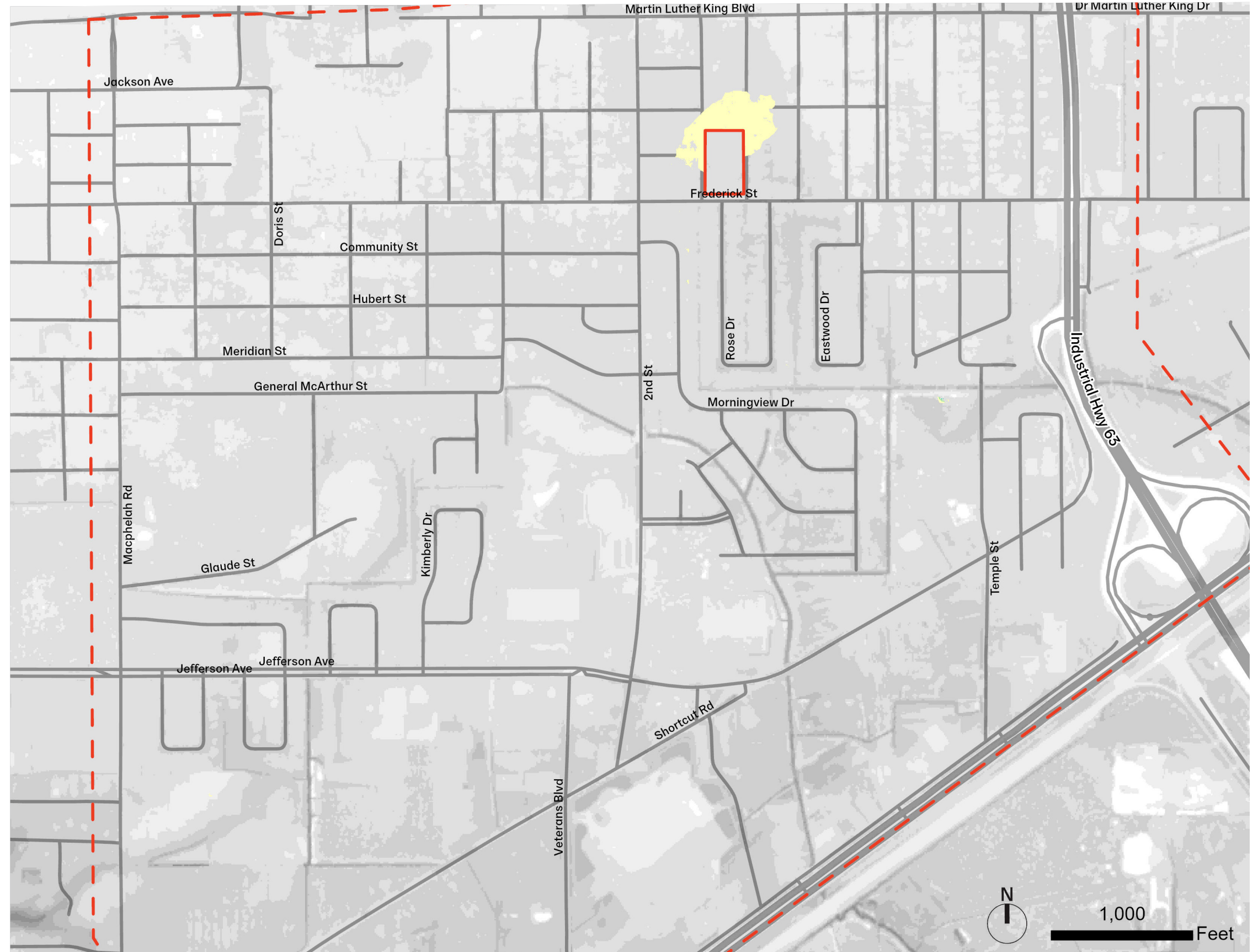
Results

- 1-2in reduction in immediate northern vicinity of storage
- Storage full

LEGEND

Flood Reduction

- 1-2 in
- 2-3 in
- 3-4 in
- 4-5 in
- 5-6 in
- 6 in - 1 ft
- Over 1 ft



HEC-RAS Model - 1st Street Lot (High Scenario)

Flood Reduction after 10 Year, 24-Hour Storm

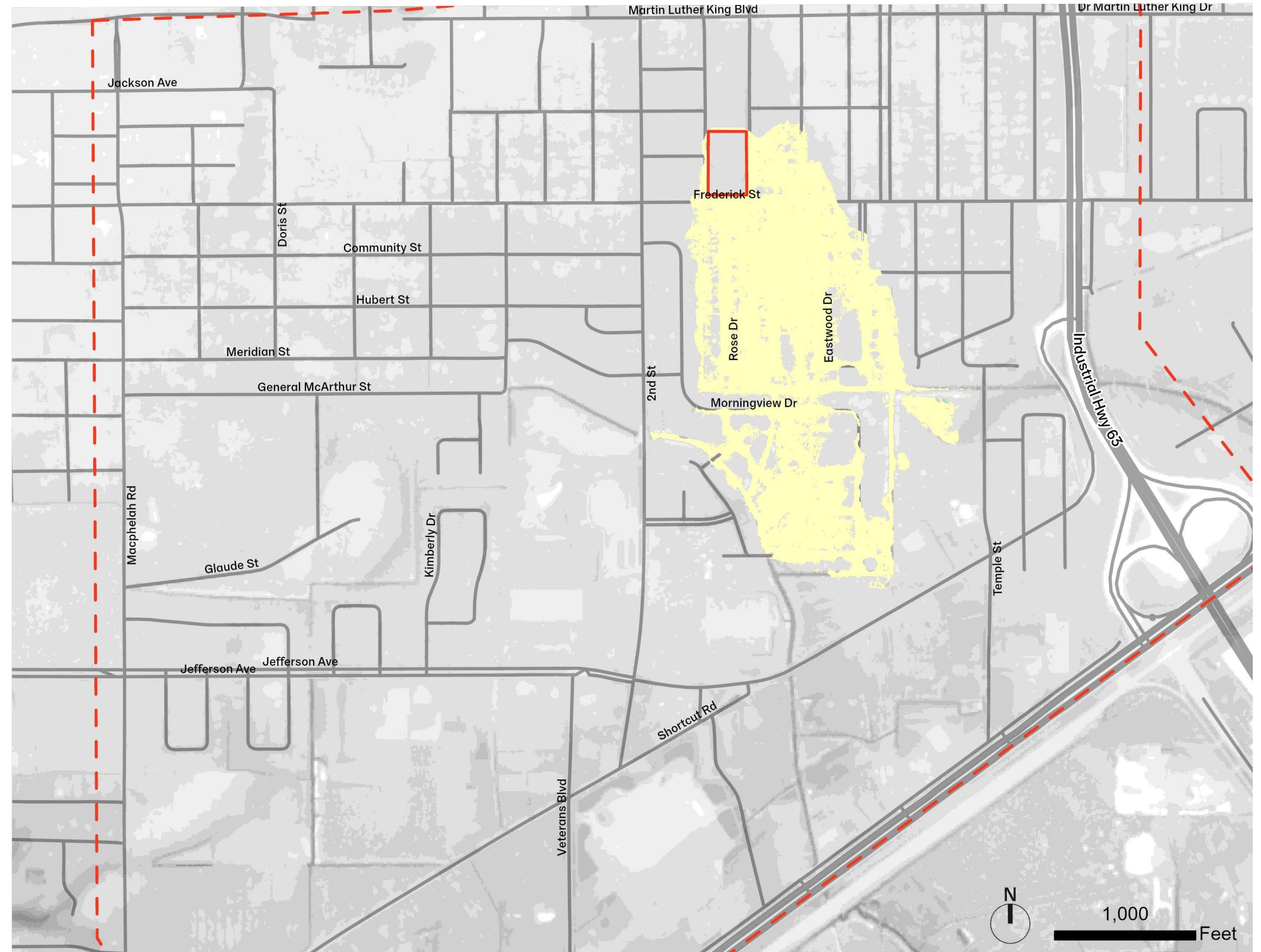
Results

- 1-2in reduction between Rose Drive and Eastwood Drive, south to Fairwood Drive
- Up to 3in reduction on edge of storage
- Storage full

LEGEND

Flood Reduction

- 1-2 in
- 2-3 in
- 3-4 in
- 4-5 in
- 5-6 in
- 6 in - 1 ft
- Over 1 ft



HEC-RAS Model - Ditch Maintenance (Low Scenario)

Flood Reduction after 10 Year, 24-Hour Storm

Results

- 1-3in flood reduction in small area by northeastern most ditch and in two small areas along the straight West to East ditch

LEGEND

Flood Reduction

- 1-2 in
- 2-3 in
- 3-4 in
- 4-5 in
- 5-6 in
- 6 in - 1 ft
- Over 1 ft



HEC-RAS Model - Ditch Maintenance (High Scenario)

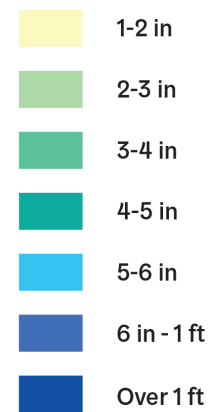
Flood Reduction after 10 Year, 24-Hour Storm

Results

- 1-3in flood reduction in small area by northeastern most ditch and in two small areas along the straight West to East ditch

LEGEND

Flood Reduction



HEC-RAS Model - Rose Drive Connection (Low Scenario)

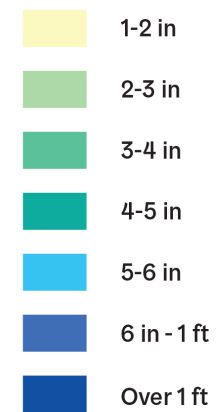
Flood Reduction after 10 Year, 24-Hour Storm

Results

- Small area of up to 4in reduction around connecting ditch south of Morningview Drive

LEGEND

Flood Reduction



HEC-RAS Model - Rose Drive Connection (High Scenario)

Flood Reduction after 10 Year, 24-Hour Storm

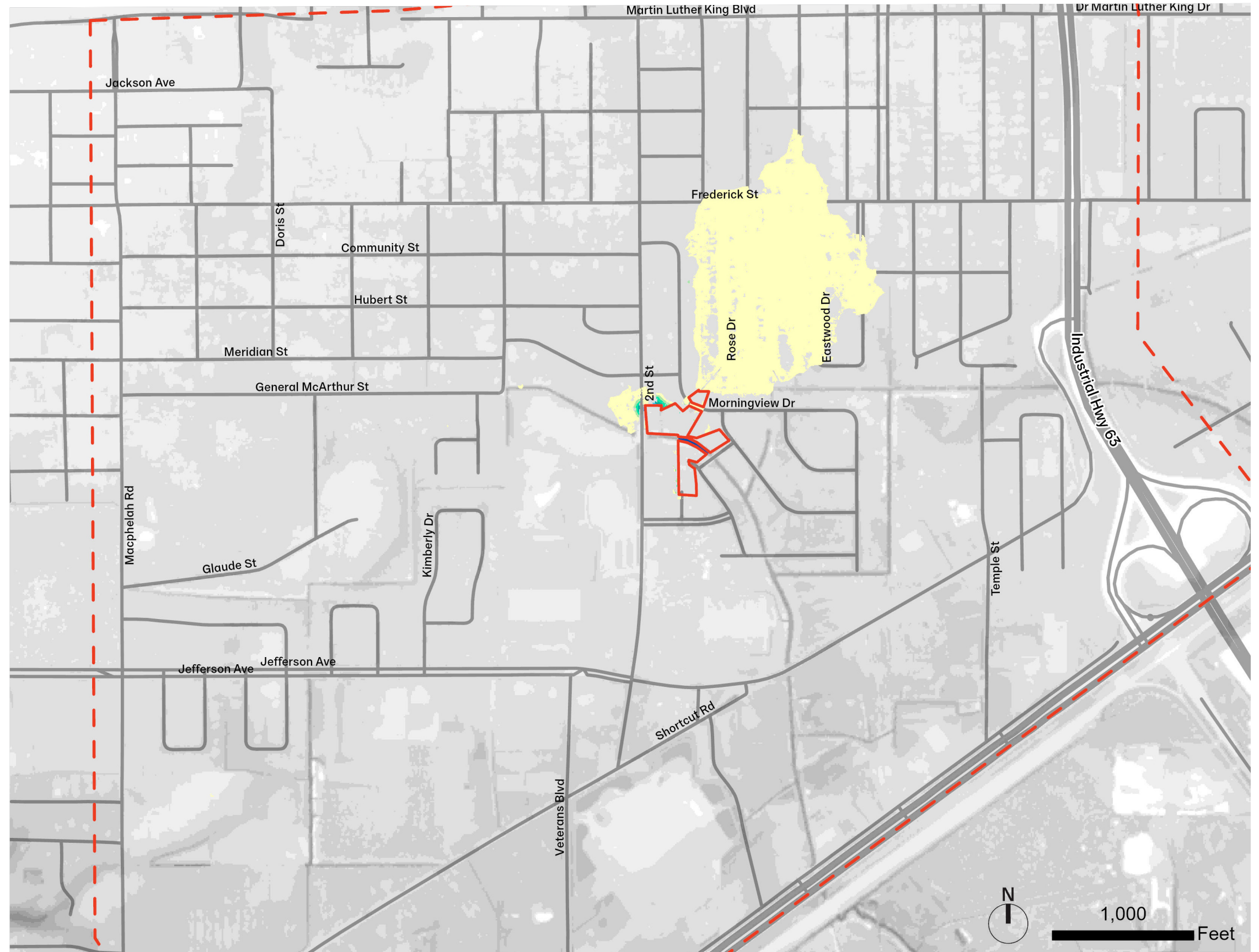
Results

- 1-2in reduction throughout Rose Drive and Eastwood Drive
- Up to 2.2ft reduction in section of Bayou Casotte within storage
- Small areas of up to 6in reduction by edges of storage
- Storage almost full (~3.9ft)

LEGEND

Flood Reduction

- 1-2 in
- 2-3 in
- 3-4 in
- 4-5 in
- 5-6 in
- 6 in - 1 ft
- Over 1 ft



HEC-RAS Model - Combined Approach

1st St Lot (Low Scenario) and Rose Drive Connection (High Scenario)

Flood Reduction after 10 Year, 24-Hour Storm

1st Street Lot - Low Scenario

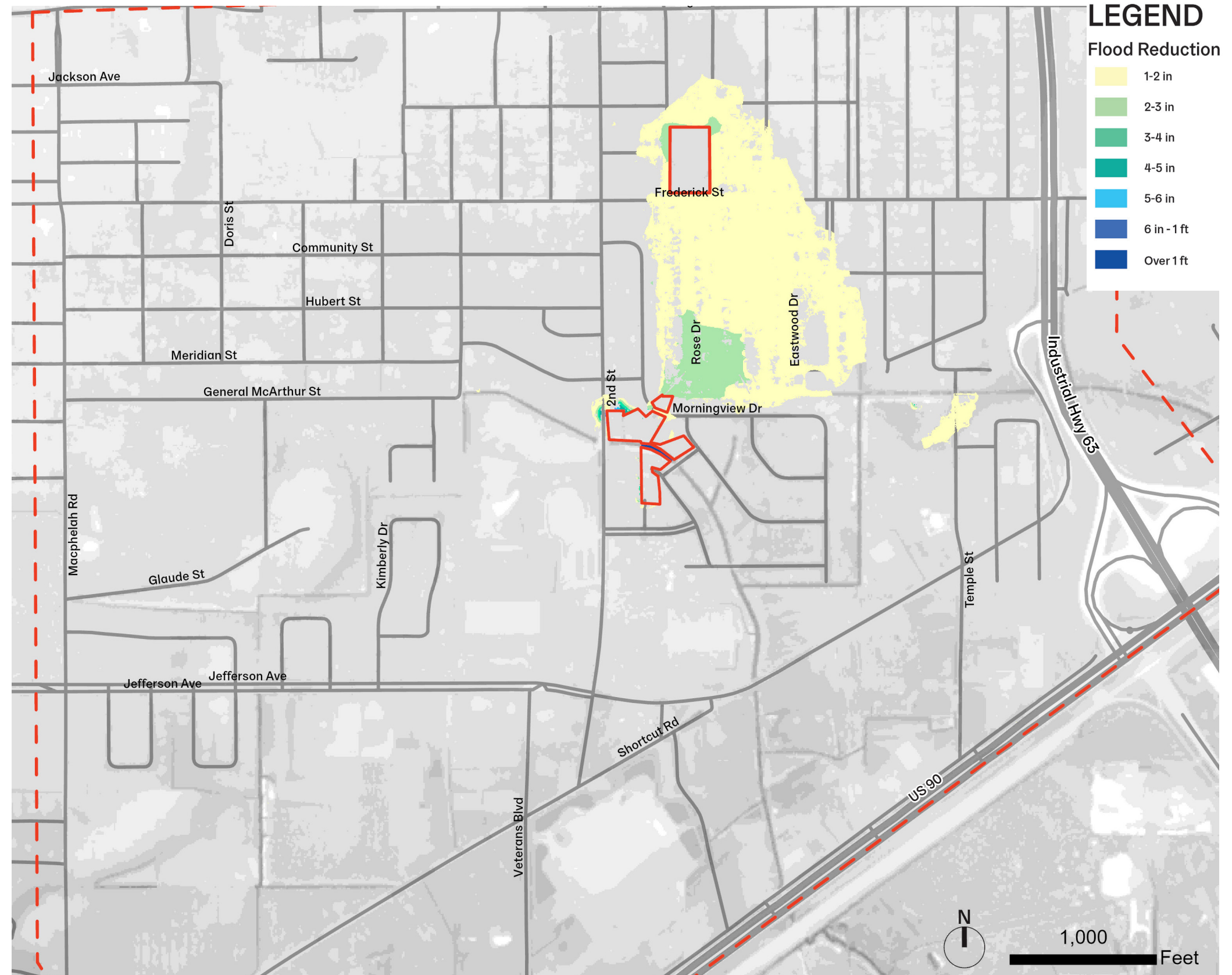
- 2.79acre, ~3ft deep stormwater storage area
- Four 1ft wide “connections” from neighborhood ditches into storage area
- 2ft wide “connection” from storage into existing ditch to west of Rose Dr

Rose Drive Connection - High Scenario

- Vacant Parcels (totaling ~3 acres) modeled as ~4ft deep stormwater storage
- Ditches connecting south end of Rose Dr to existing ditch to south
- Ditch connecting to Bayou Casotte
- Ditches 6ft bottom width, 8ft top width, ~3-4ft deep

Flood Reduction Model Results

- 2-3in reduction through southern half of Rose Dr
- 1-2in reduction through north of Rose Dr to Eastwood Dr
- Up to 2-3in reduction adjacent to 1st St storage
- Up to 2ft reduction in section of Bayou Casotte within storage
- Small areas of up to 6in reduction by edges of Bayou Casotte storage



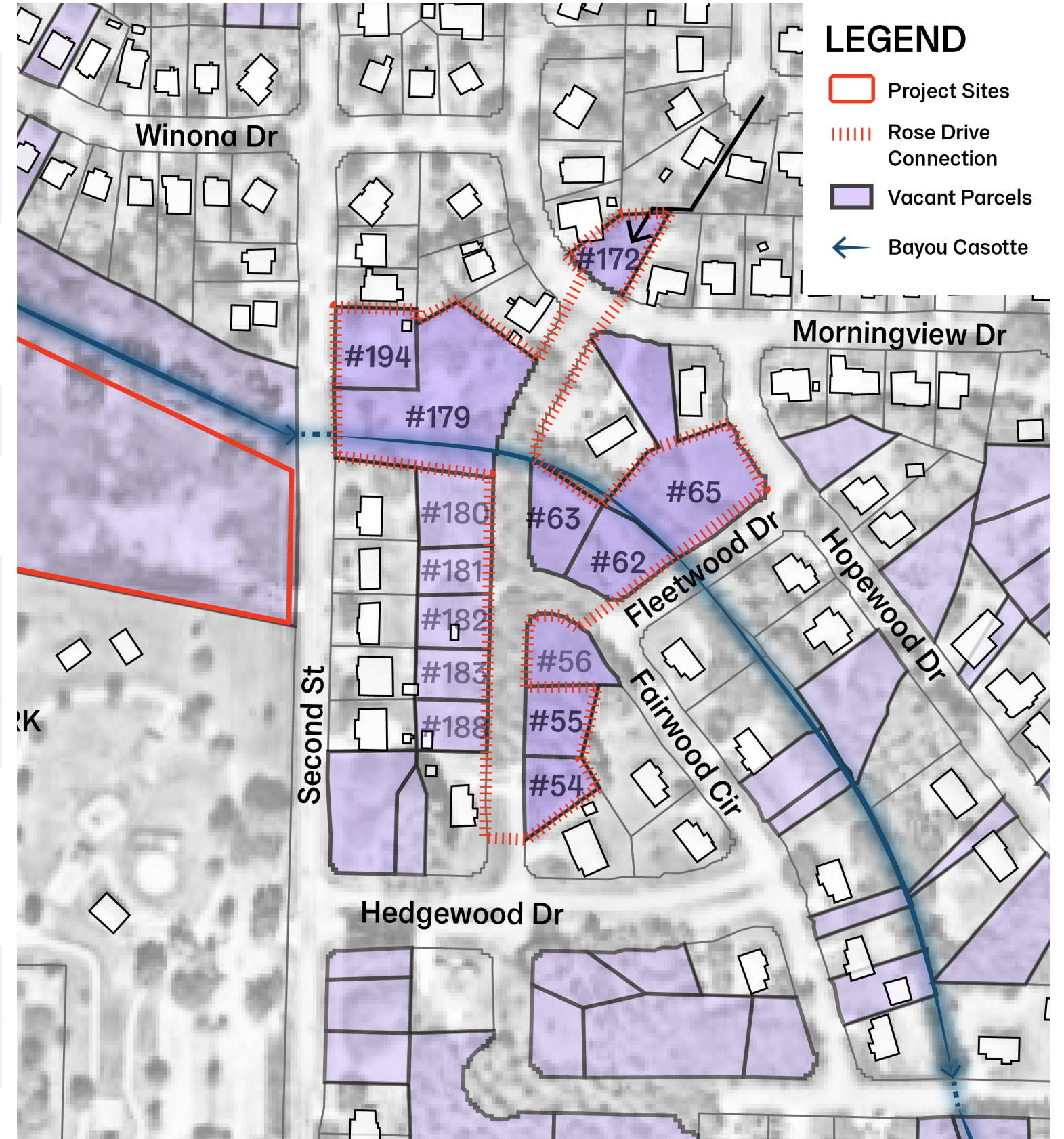
IV Appendix ii Parcel Map



Rose Drive Connection - Property Ownership

Parcel Information

Lot #	Street Name	Name	Owner's Address
179	Second Street	DAVISON LESLIE EST OF	6932 WATTS ST
194	Second Street	OWENS MYRDLE	1329 W 94TH ST
180	Fairwood Drive	CAUSEY TERRY SR	4537 THIRD ST
181	Fairwood Drive	ALFORD ARACHIE H	P O BOX 8898
63	Fairwood Circle	STANTON ROY SR	5319 WYNONA DR
56	Fairwood Drive	STANTON ROY SR	5319 WYNONA DR
172	Morningview Drive	GREATHOUSE CORP	1699 SUNSET BLVD
65	Morningview Drive	ROSTCHILD LARRY	3779 MORNINGVIEW DR
62	Fairwood Circle	THE STATE OF MISSISSIPPI, C/O MS DEPT OF MARINE RES.	1141 BAYVIEW AVE
182	Fairwood Drive	WASH CORA BELL	3612 SECOND ST
183	Fairwood Drive	MIDDLETON LOUISE J	3606 SECOND ST
55	Fairwood Drive	HABITAT FOR HUMANITY OF JACKSON COUNTY INC	2214 34TH ST
54	Fairwood Drive	TAITE CARL, C/O RUBEN TAITE	4417 SECOND AVE
188	Second Street	MCCORVEY MAGGIE	3600 SECOND ST



IV Appendix iii Data Needs



Data Compilation and Needs

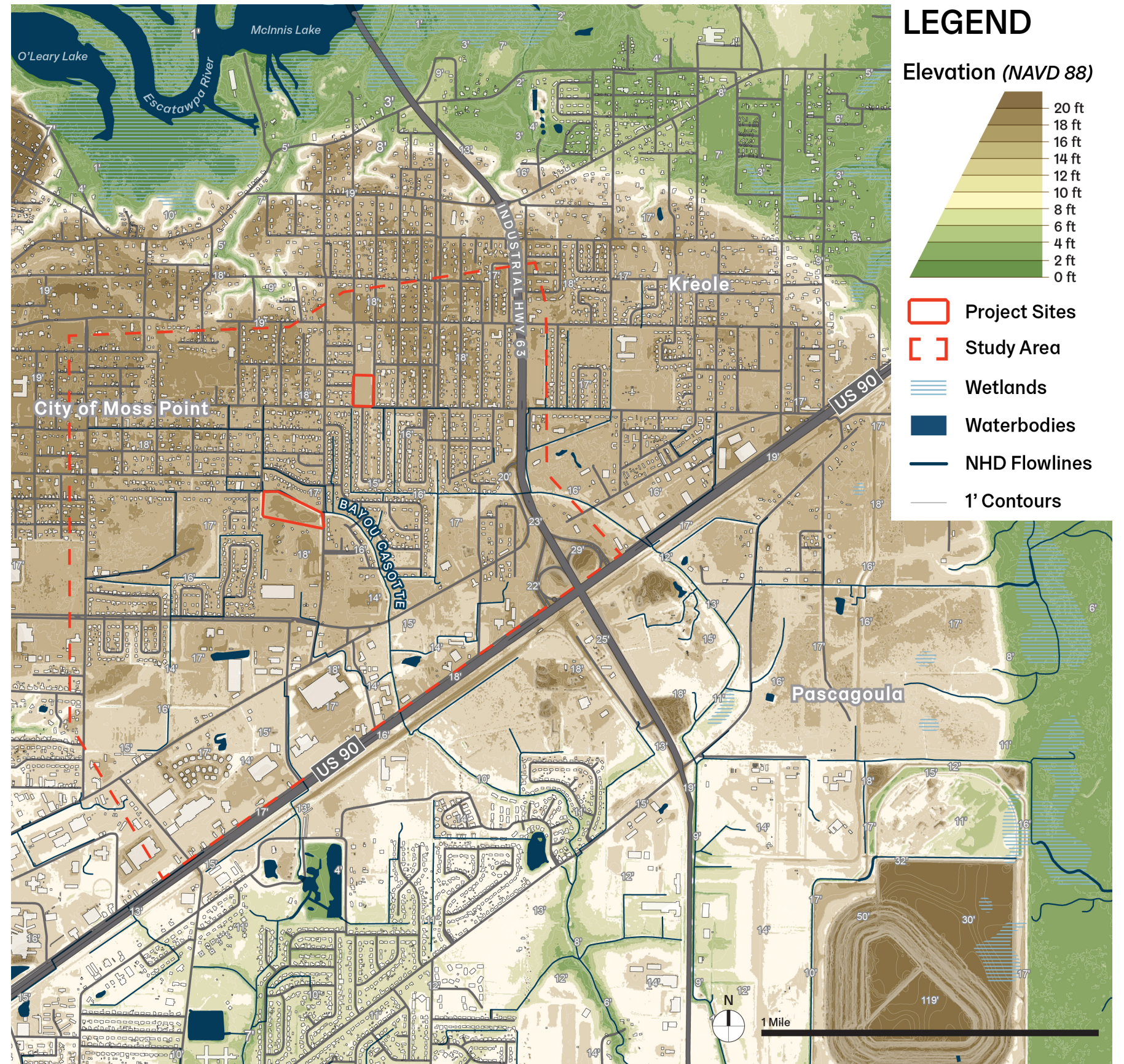
Compiled Data

- General topography of study area up to ~10ft resolution
- Soils data from Web Soil Survey
- Photo evidence and reports of specific locations within study area that flood
- Parcel and building footprint data
- National Hydrography Dataset data for existing water bodies and flow lines
- FEMA Floodplain Data
- Environmental Justice data

Data Needs

- Water Table elevations throughout proposed project sites
- Underground stormwater pipe diameters, lengths, invert elevations
- Stormwater junction (catch basins, drop inlets, manholes, etc) rim elevations and invert elevations
- Other underground utilities (sewer, gas, electric, etc)
- Topographical survey within proposed project sites

Data Source: 2012 Digital Elevation Map, USGS National Map



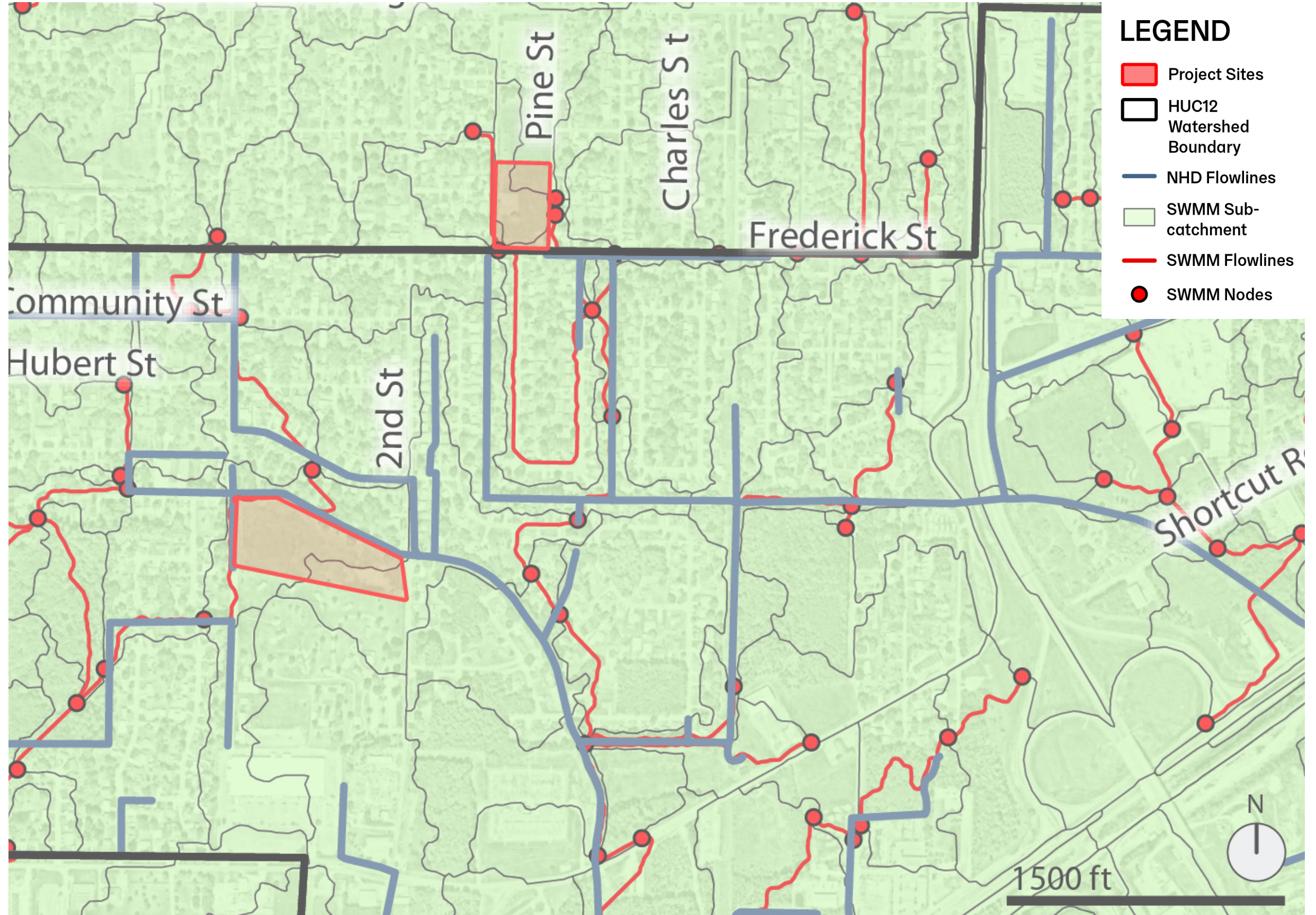
Map and Data Needs

Overview

- A SWMM model will provide a better understanding of the flood reduction impacts of improved stormwater conveyance and storage features
- Underground stormwater infrastructure and routing is key to modeling the full stormwater system in any study area
- Understanding Surface Flows
 - Divided into Sub-Watersheds
 - Finding Outlet / Low Points
 - Potential Flow Paths

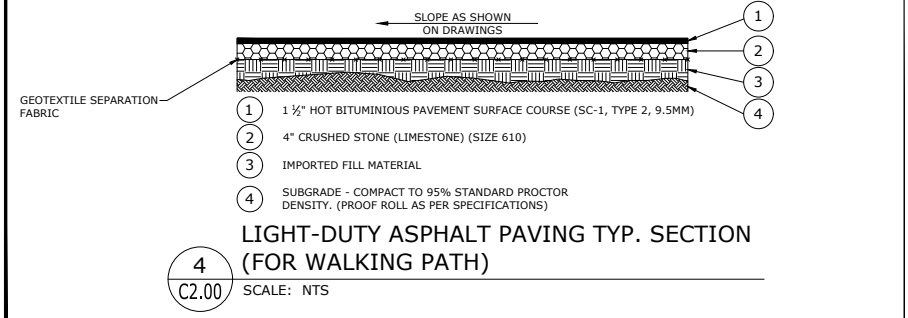
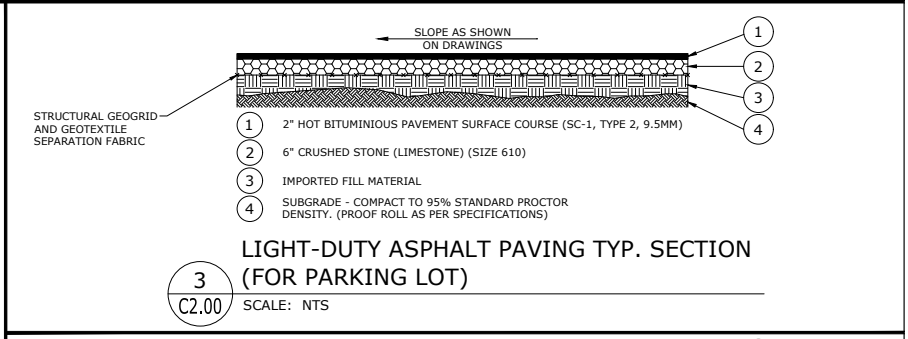
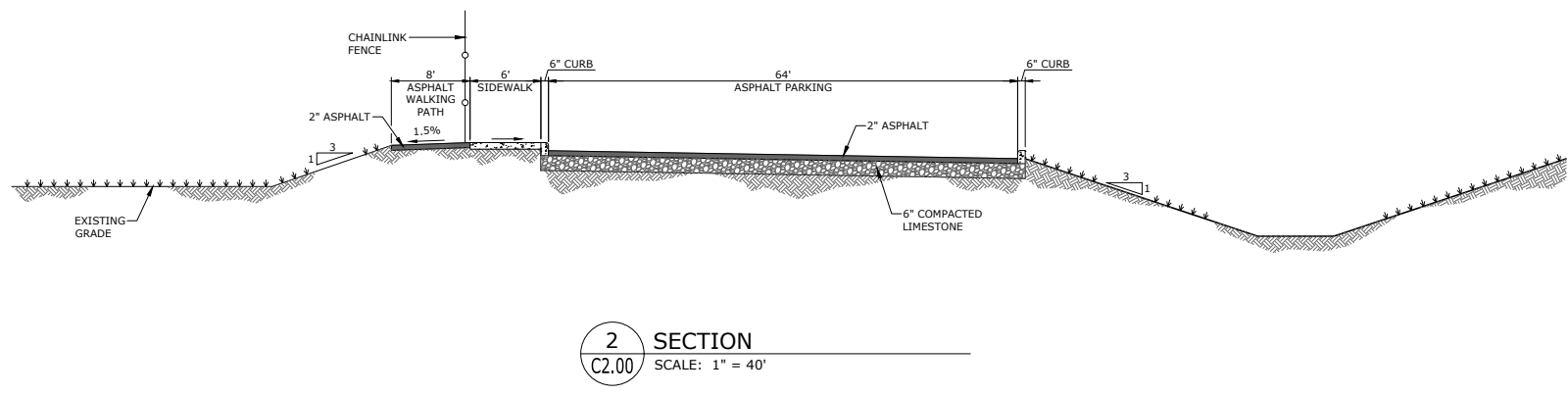
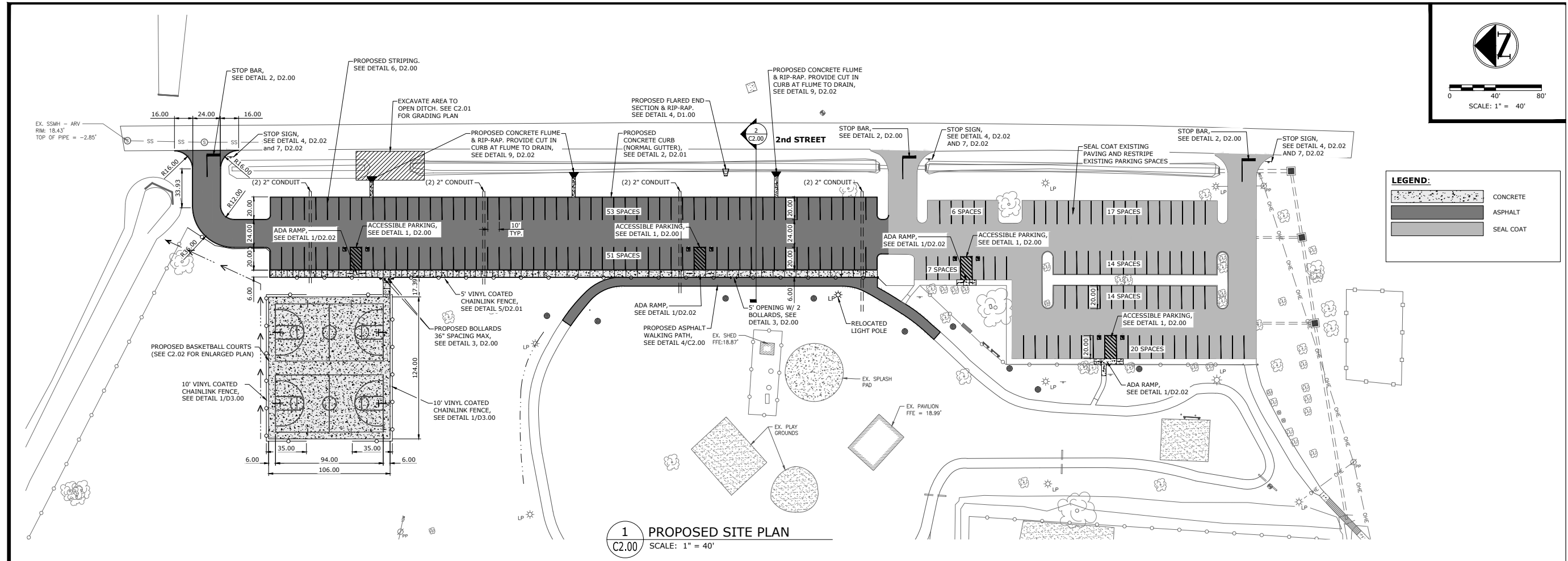
Data Needs

- Regional Underground Utilities and Stormwater Infrastructure
 - Survey Data
- Water table elevations at proposed sites



IV Appendix iv Khayat Park Construction





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NO.	DATE	BY	DESCRIPTION	PROJECT NO.	FILENAME
A	3/07/23	NMB	ISSUED FOR REVIEW	N-S PROJECT NO.: NS.17821.000	FILENAME: C2.00 C2.01 C2.02 C2.03 REV F.dwg
B	4/10/23	NMB	ISSUED FOR REVIEW	SCALE: = AS NOTED	
C	5/08/23	NMB	INCORPORATED OWNER COMMENTS	SURVEYED BY:	
D	5/17/23	NMB	ISSUED FOR REVIEW	DSGN: WAD	DATE:
E	11/06/23	KAS	ISSUED FOR REVIEW	DRWN: NMB	DATE:
F	11/12/23	NMB	ISSUED FOR BID	CHKD: WAD	DATE:
				QA/QC:	DATE:

PARKING IMPROVEMENTS AND NEW BASKETBALL COURTS AT KHAYAT PARK
JACKSON COUNTY BOARD OF SUPERVISORS



OVERALL PROPOSED SITE PLAN	
WORKING NUMBER: C2.00	DRAWING NUMBER: 5