Appendix A

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Figure 17 - Alternative 4 - 25-yr Spring Rain

Figure 18 - Alternative 4 - 50-yr Spring Rain

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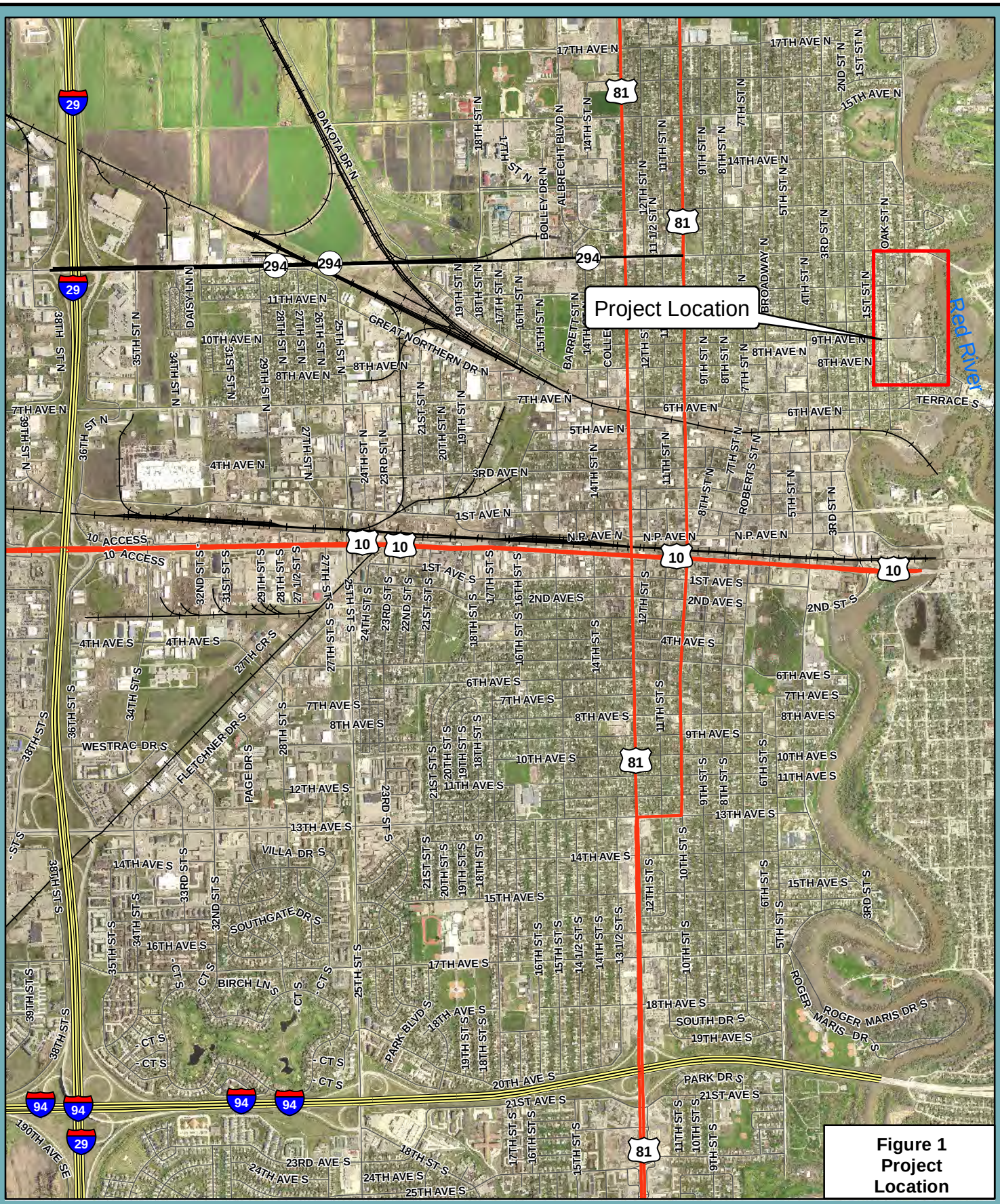
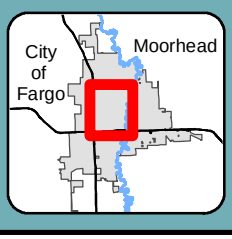


Figure 1
Project Location



1 inch = 2,442 feet

Mickelson Field Area Flood Risk Management Project

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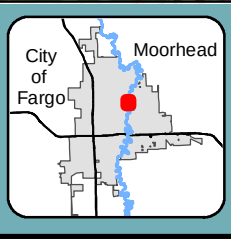
Figure 2
Existing Conditions

Storm Lift Stations
Contour 5ft Interval
Contour 1ft Interval
NWI
StormManholes
StormInlets
StormMains
NWI



1 inch = 300 feet

Mickelson Field Area Flood Risk Management Project

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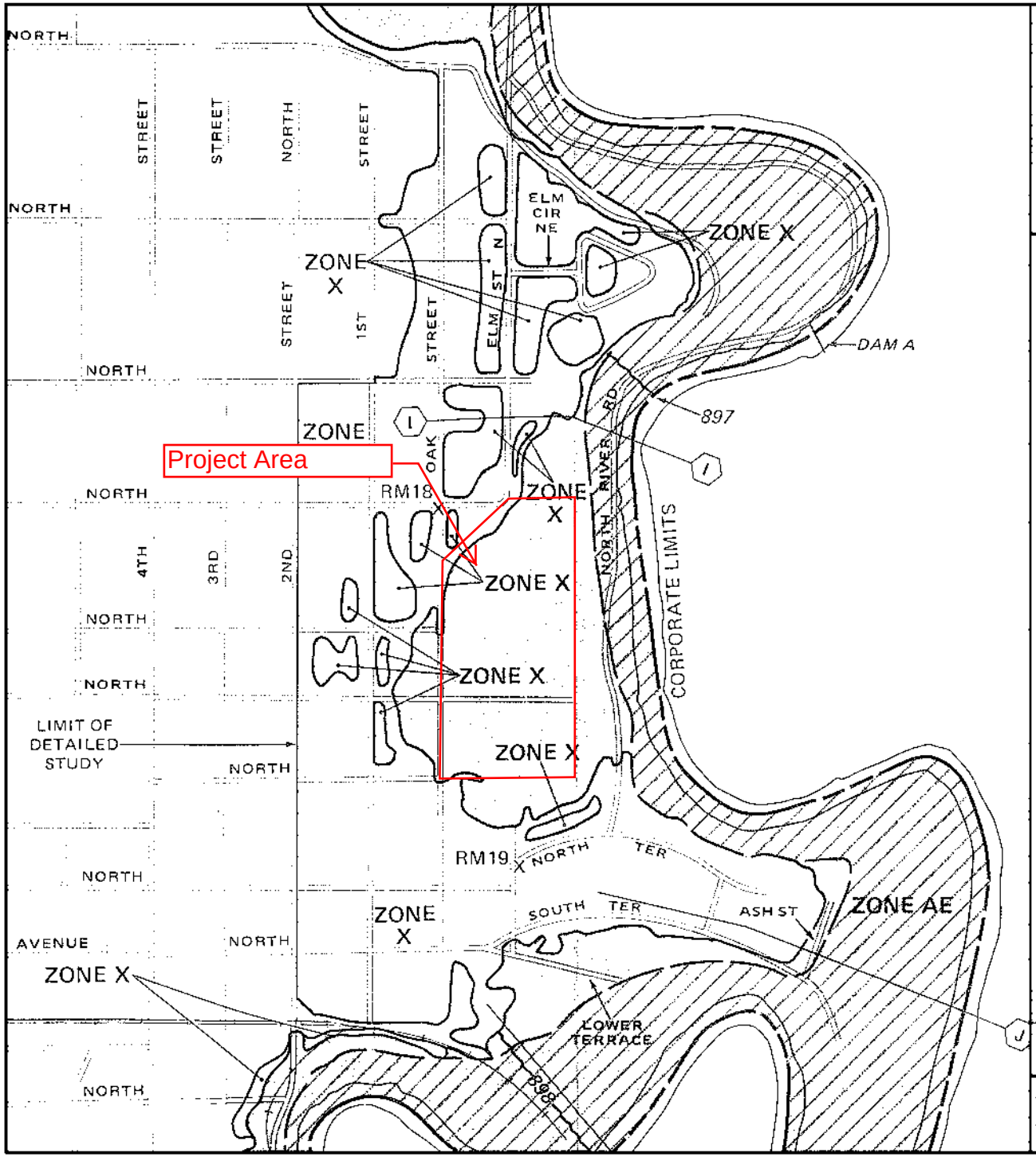


APPROXIMATE SCALE IN FEET

800 0 800

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
FARGO, NORTH DAKOTA
CASS COUNTY

PANEL 20 OF 35
(SEE MAP INDEX FOR PANELS NOT PRINTED)

PANEL LOCATION

COMMUNITY-PANEL NUMBER
385364 0020 E

MAP REVISED:
NOVEMBER 2, 1995

Figure 3
Floodplain Map

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

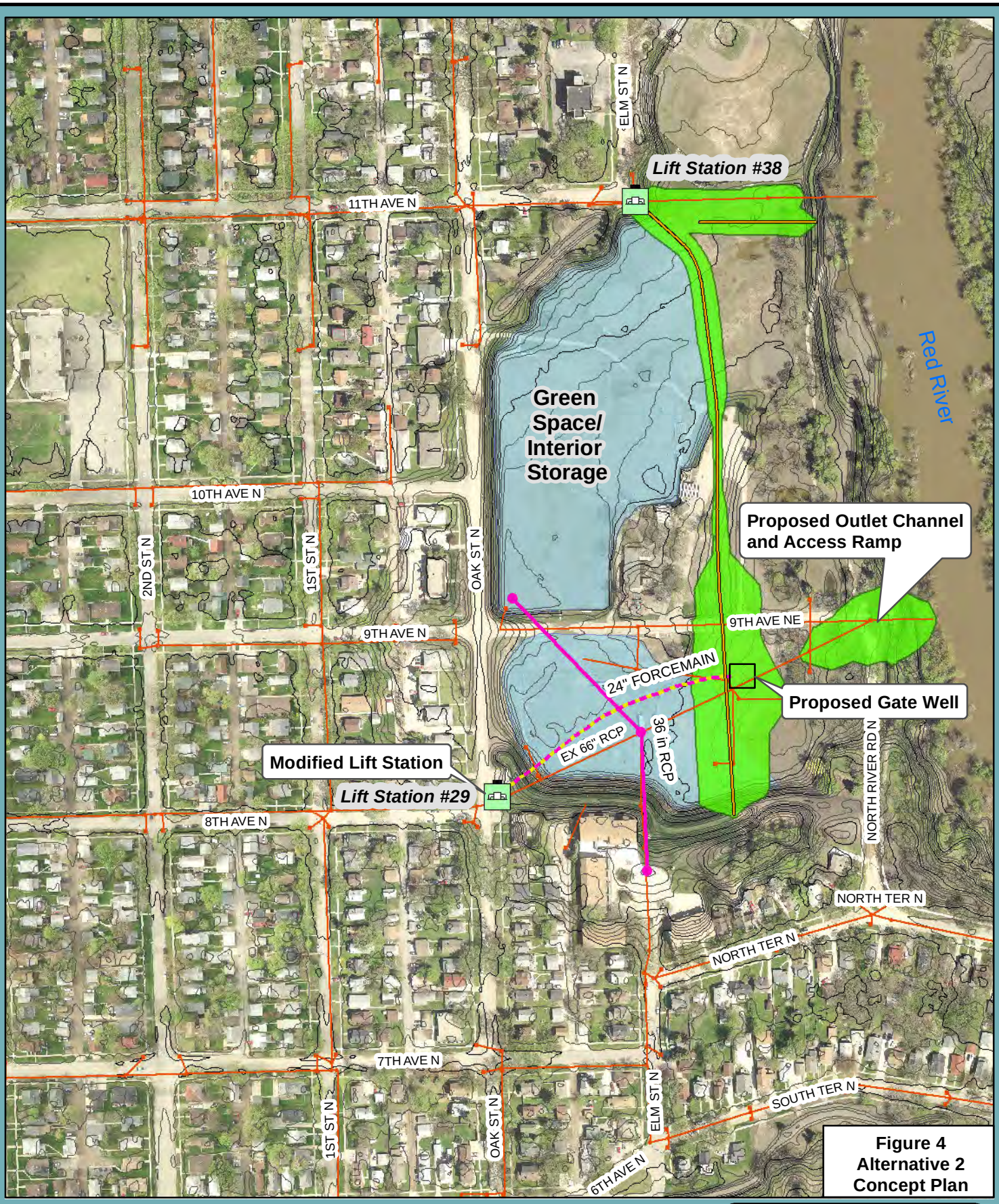
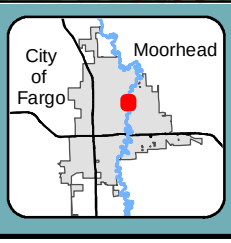


Figure 4
Alternative 2
Concept Plan

Storm Lift Stations
StormManholes
StormInlets
StormMains
Proposed Berm Footprint
Contour 5ft Interval
Contour 1ft Interval
Green Space/Interior Storage
24" FORCEMAIN
Proposed Storm Sewer



1 inch = 300 feet

Mickelson Field Area Flood Risk Management Project

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HoustonEngineering Inc.

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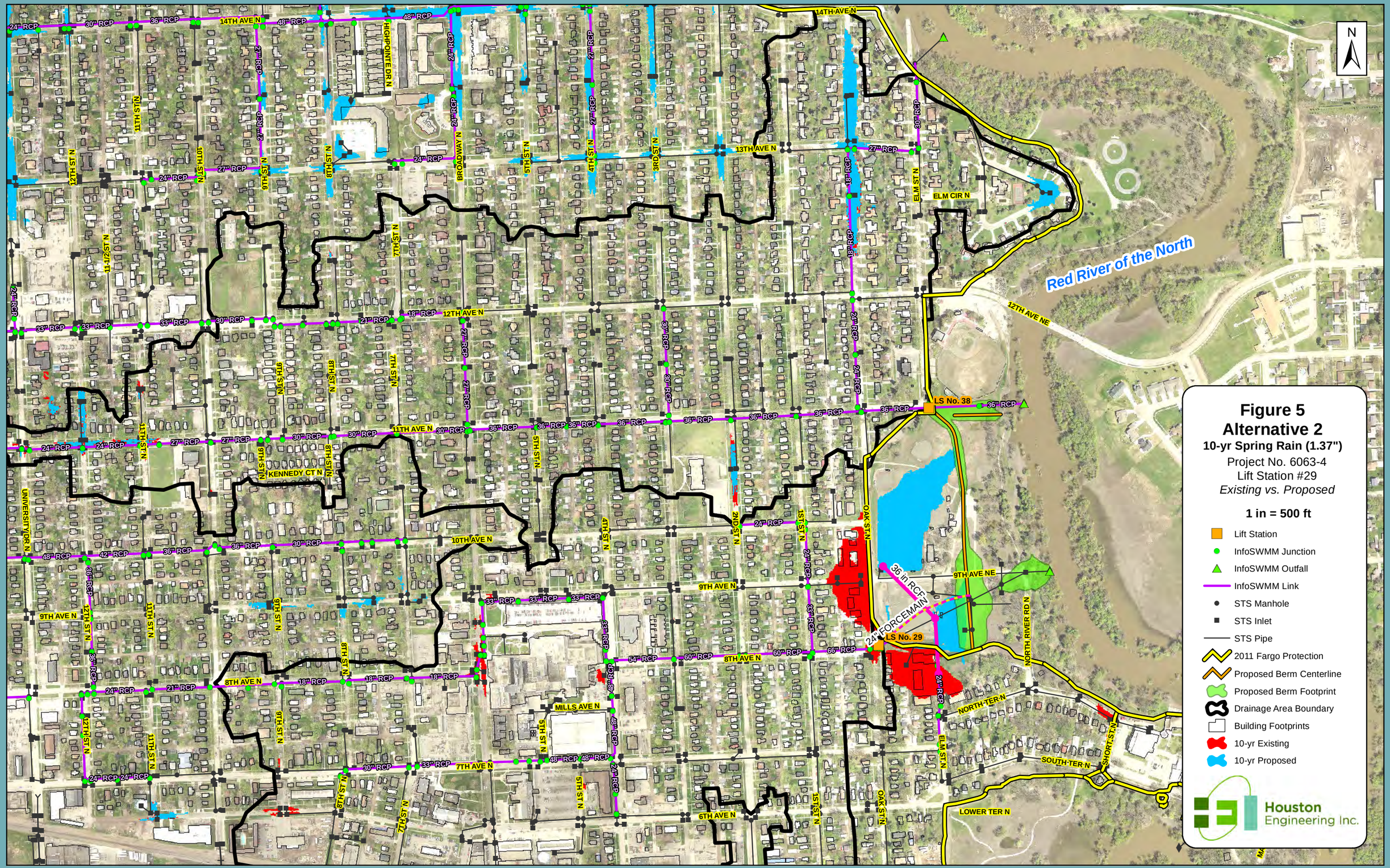
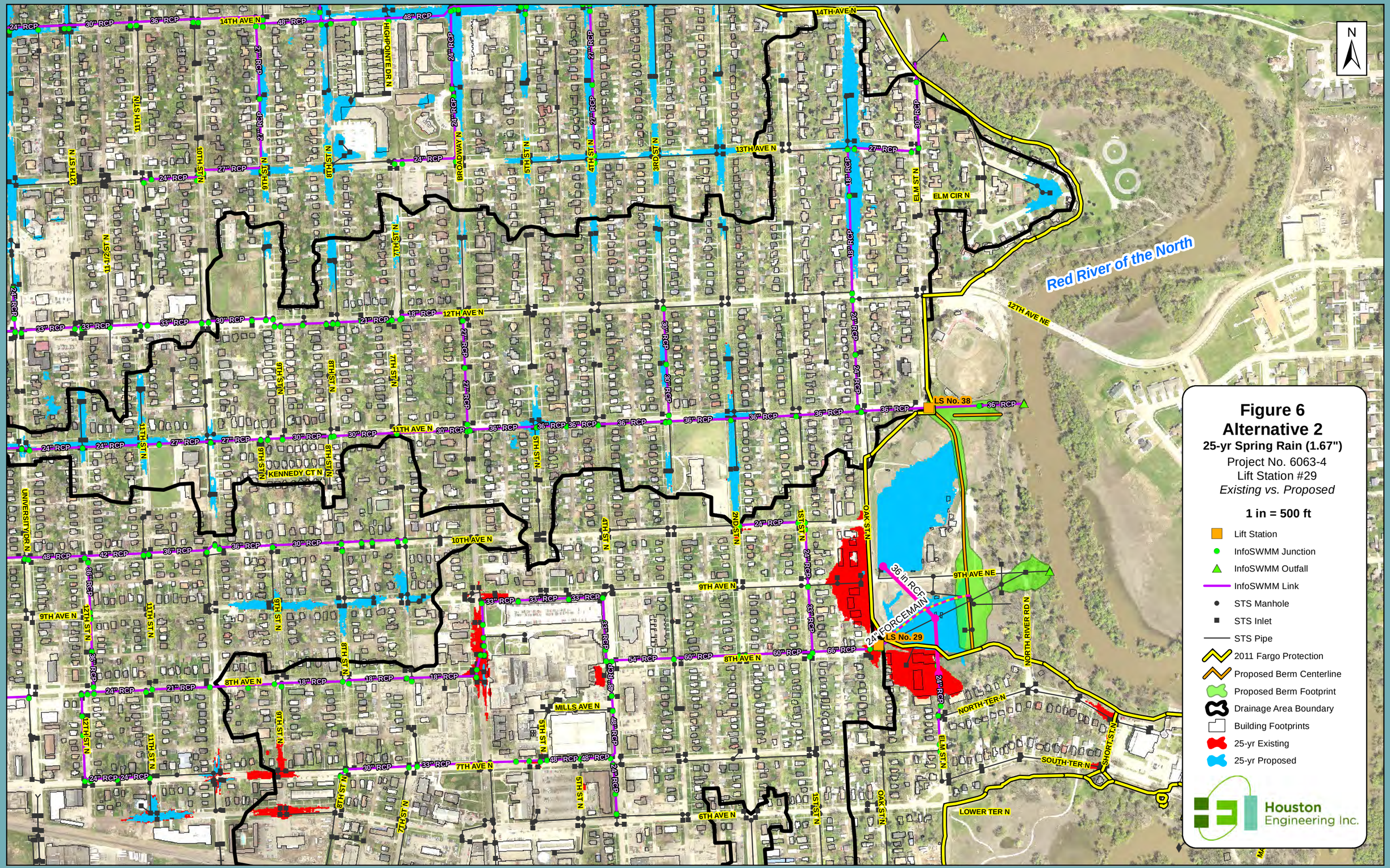
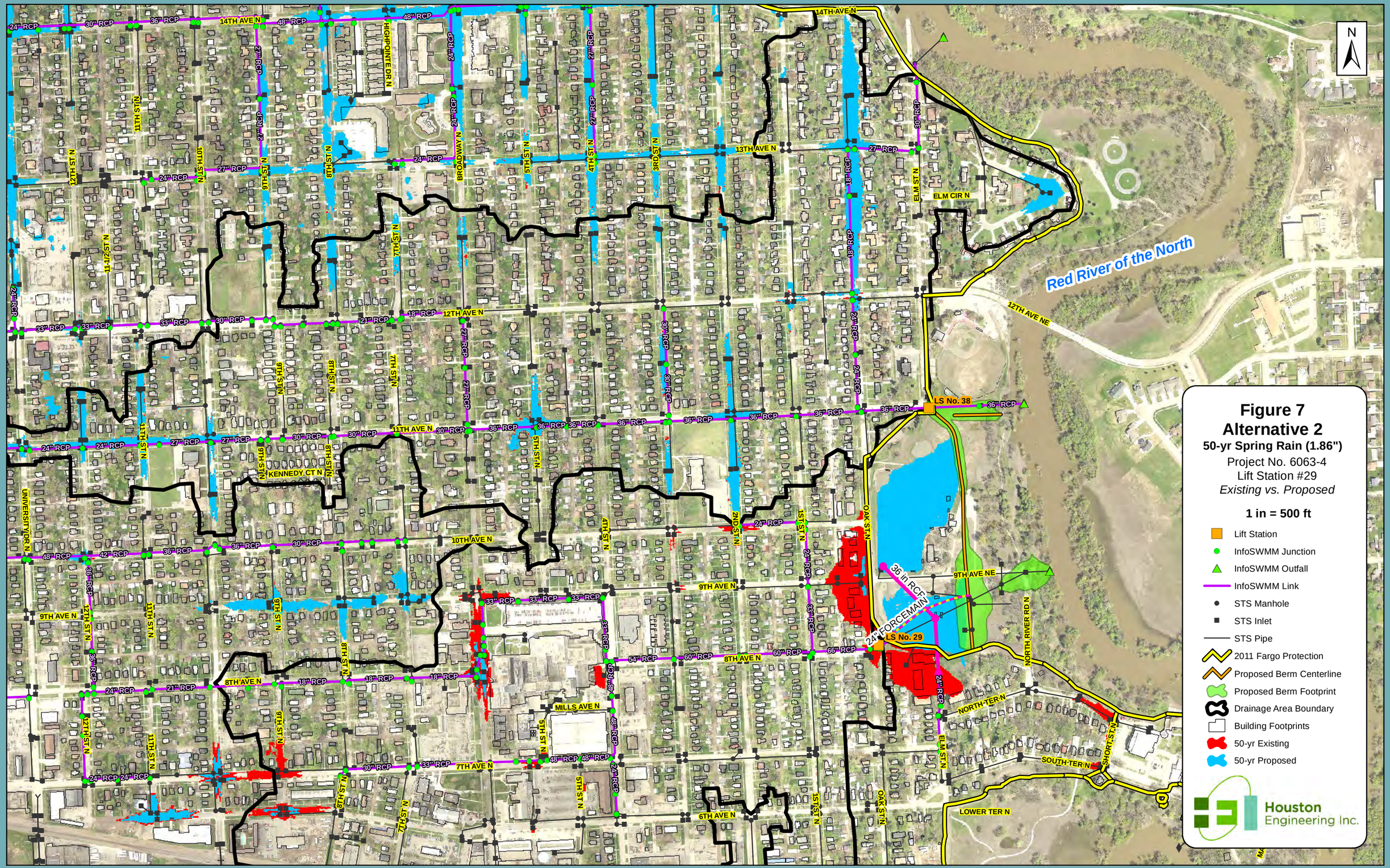
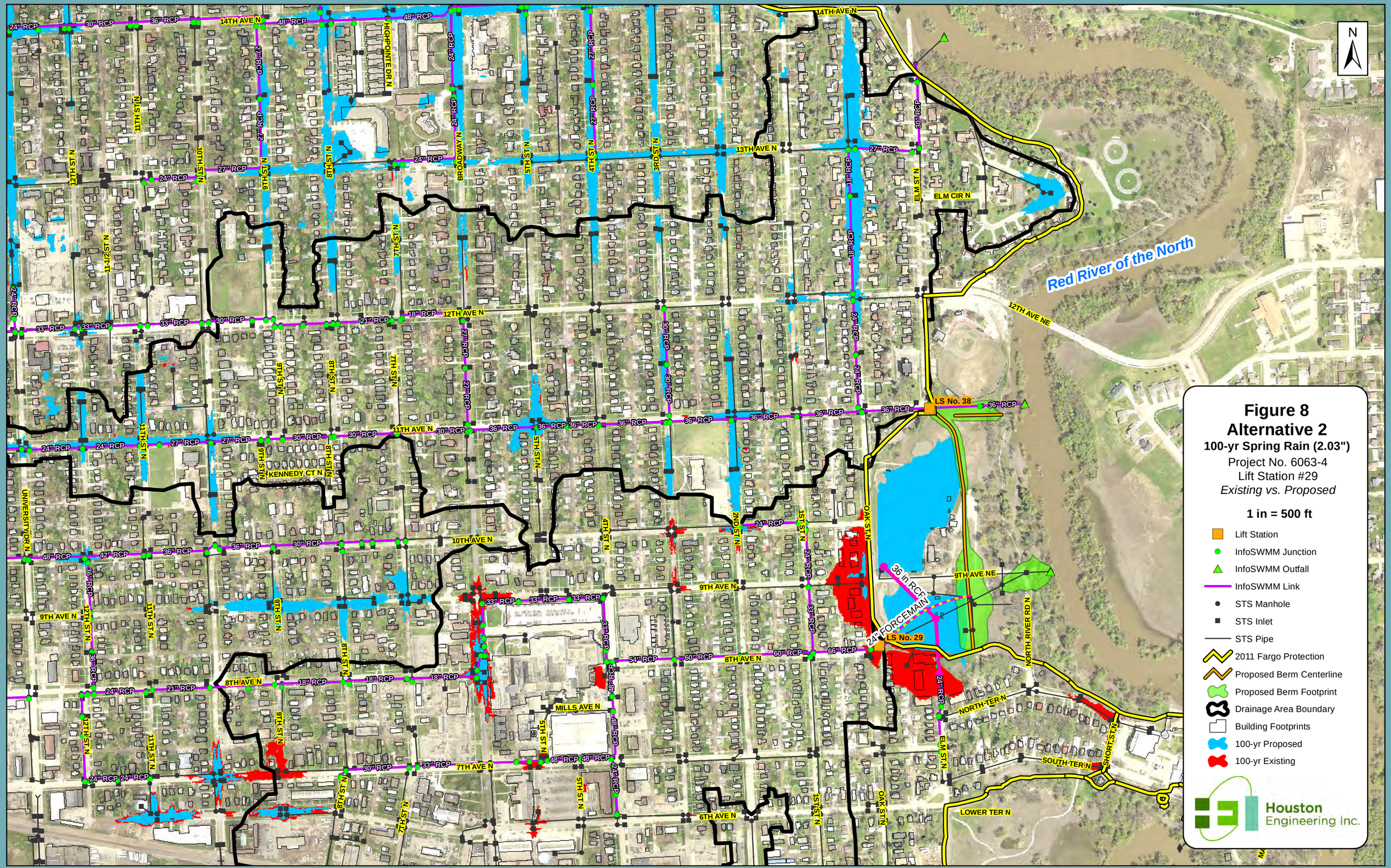

N
Red River of the North
LS No. 38
LS No. 29
36 in RCP
24" FORCEMAIN
14TH AVE N
13TH AVE N
12TH AVE N
11TH AVE N
10TH AVE N
9TH AVE N
8TH AVE N
7TH AVE N
6TH AVE N
9TH AVE NE
12TH AVE NE
HIGHPOINTE DR N
BROADWAY N
ELM CIR N
ELM ST N
OAK ST N
NORTH RIVER RD N
NORTH TER N
SOUTH TER N
SHORT ST N
LOWER TER N
KENNEDY CT N
MILLS AVE N
UNIVERSITY DR N
Figure 5
Alternative 2
10-yr Spring Rain (1.37")
Project No. 6063-4
Lift Station #29
Existing vs. Proposed
1 in = 500 ft
Lift Station
InfoSWMM Junction
InfoSWMM Outfall
InfoSWMM Link
STS Manhole
STS Inlet
STS Pipe
2011 Fargo Protection
Proposed Berm Centerline
Proposed Berm Footprint
Drainage Area Boundary
Building Footprints
10-yr Existing
10-yr Proposed
Houston Engineering Inc.


N
Red River of the North
LS No. 38
LS No. 29
36 in RCP
24" FORCEMAIN
14TH AVE N
13TH AVE N
12TH AVE N
11TH AVE N
10TH AVE N
9TH AVE N
8TH AVE N
7TH AVE N
6TH AVE N
9TH AVE NE
12TH AVE NE
HIGHPOINTE DR N
BROADWAY N
ELM CIR N
ELM ST N
KENNEDY CT N
MILLS AVE N
UNIVERSITY DR N
OAK ST N
NORTH RIVER RD N
NORTH TER N
SOUTH TER N
SHORT ST N
LOWER TER N
Figure 6
Alternative 2
25-yr Spring Rain (1.67")
Project No. 6063-4
Lift Station #29
Existing vs. Proposed
1 in = 500 ft
Lift Station
InfoSWMM Junction
InfoSWMM Outfall
InfoSWMM Link
STS Manhole
STS Inlet
STS Pipe
2011 Fargo Protection
Proposed Berm Centerline
Proposed Berm Footprint
Drainage Area Boundary
Building Footprints
25-yr Existing
25-yr Proposed
Houston Engineering Inc.


N
Red River of the North
LS No. 38
LS No. 29
36 in RCP
24" FORCEMAIN
14TH AVE N
13TH AVE N
12TH AVE N
11TH AVE N
10TH AVE N
9TH AVE N
8TH AVE N
7TH AVE N
6TH AVE N
12TH AVE NE
9TH AVE NE
HIGHPOINTE DR N
BROADWAY N
ELM CIR N
ELM ST N
KENNEDY CT N
MILLS AVE N
UNIVERSITY DR N
OAK ST N
NORTH RIVER RD N
NORTH TER N
SOUTH TER N
SHORT ST N
LOWER TER N
Figure 7
Alternative 2
50-yr Spring Rain (1.86")
Project No. 6063-4
Lift Station #29
Existing vs. Proposed
1 in = 500 ft
Lift Station
InfoSWMM Junction
InfoSWMM Outfall
InfoSWMM Link
STS Manhole
STS Inlet
STS Pipe
2011 Fargo Protection
Proposed Berm Centerline
Proposed Berm Footprint
Drainage Area Boundary
Building Footprints
50-yr Existing
50-yr Proposed
Houston Engineering Inc.


N
Red River of the North
LS No. 38
LS No. 29
36 in RCP
24" FORCEMAIN
14TH AVE N
13TH AVE N
12TH AVE N
11TH AVE N
10TH AVE N
9TH AVE N
8TH AVE N
7TH AVE N
6TH AVE N
12TH AVE NE
9TH AVE NE
HIGHPOINTE DR N
BROADWAY N
ELM CIR N
ELM ST N
KENNEDY CT N
MILLS AVE N
OAK ST N
NORTH RIVER RD N
NORTH TER N
SOUTH TER N
SHORT ST N
LOWER TER N
UNIVERSITY DR N
Figure 8
Alternative 2
100-yr Spring Rain (2.03")
Project No. 6063-4
Lift Station #29
Existing vs. Proposed
1 in = 500 ft
Lift Station
InfoSWMM Junction
InfoSWMM Outfall
InfoSWMM Link
STS Manhole
STS Inlet
STS Pipe
2011 Fargo Protection
Proposed Berm Centerline
Proposed Berm Footprint
Drainage Area Boundary
Building Footprints
100-yr Proposed
100-yr Existing
Houston Engineering Inc.

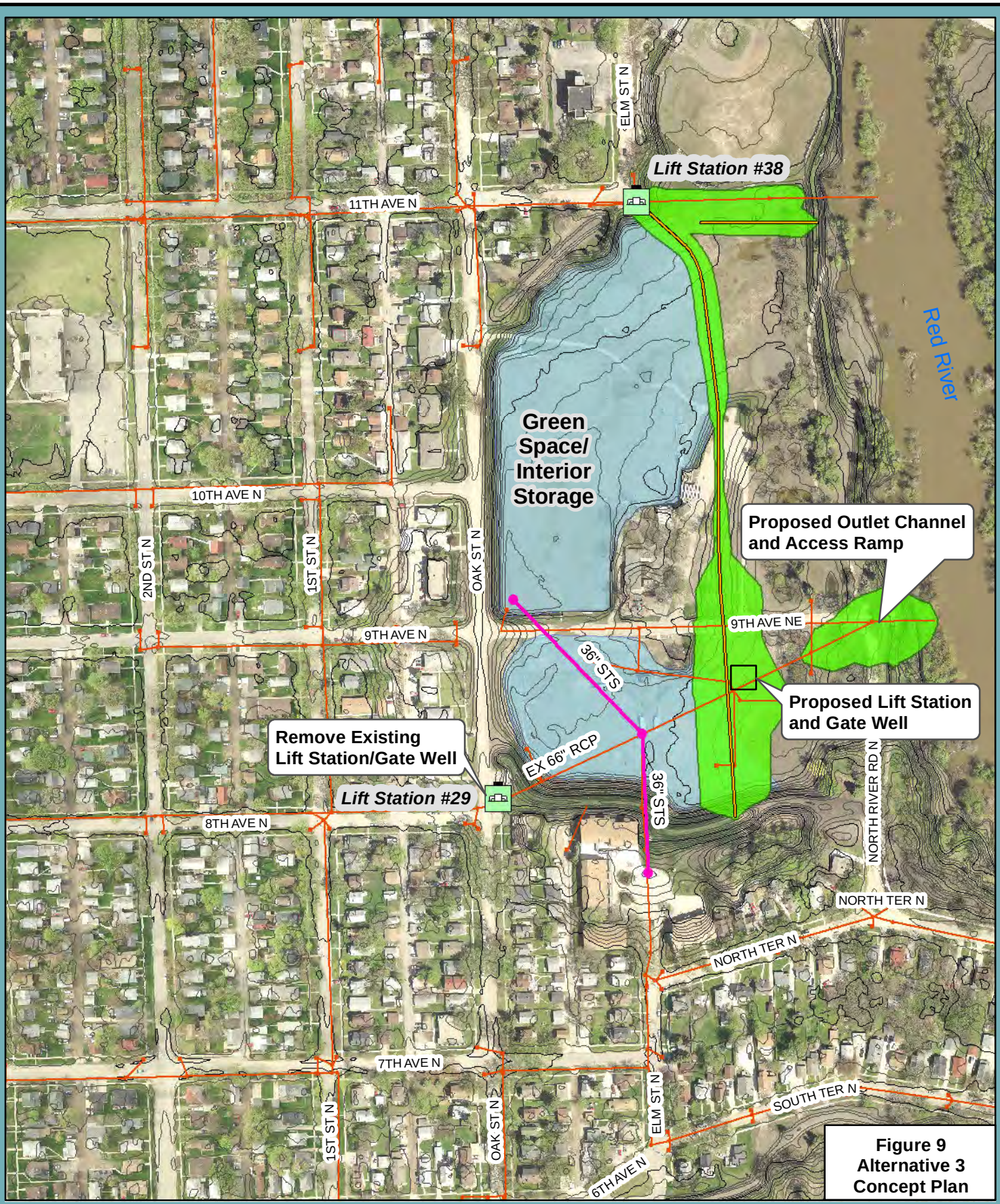


Figure 9
Alternative 3
Concept Plan

Storm Lift Stations
StormManholes
StormInlets
StormMains
Proposed Berm Footprint
Contour 5ft Interval
Contour 1ft Interval
Green Space/Interior Storage
Proposed Storm Sewer

City of Fargo
Moorhead

1 inch = 300 feet

Mickelson Field Area Flood Risk Management Project

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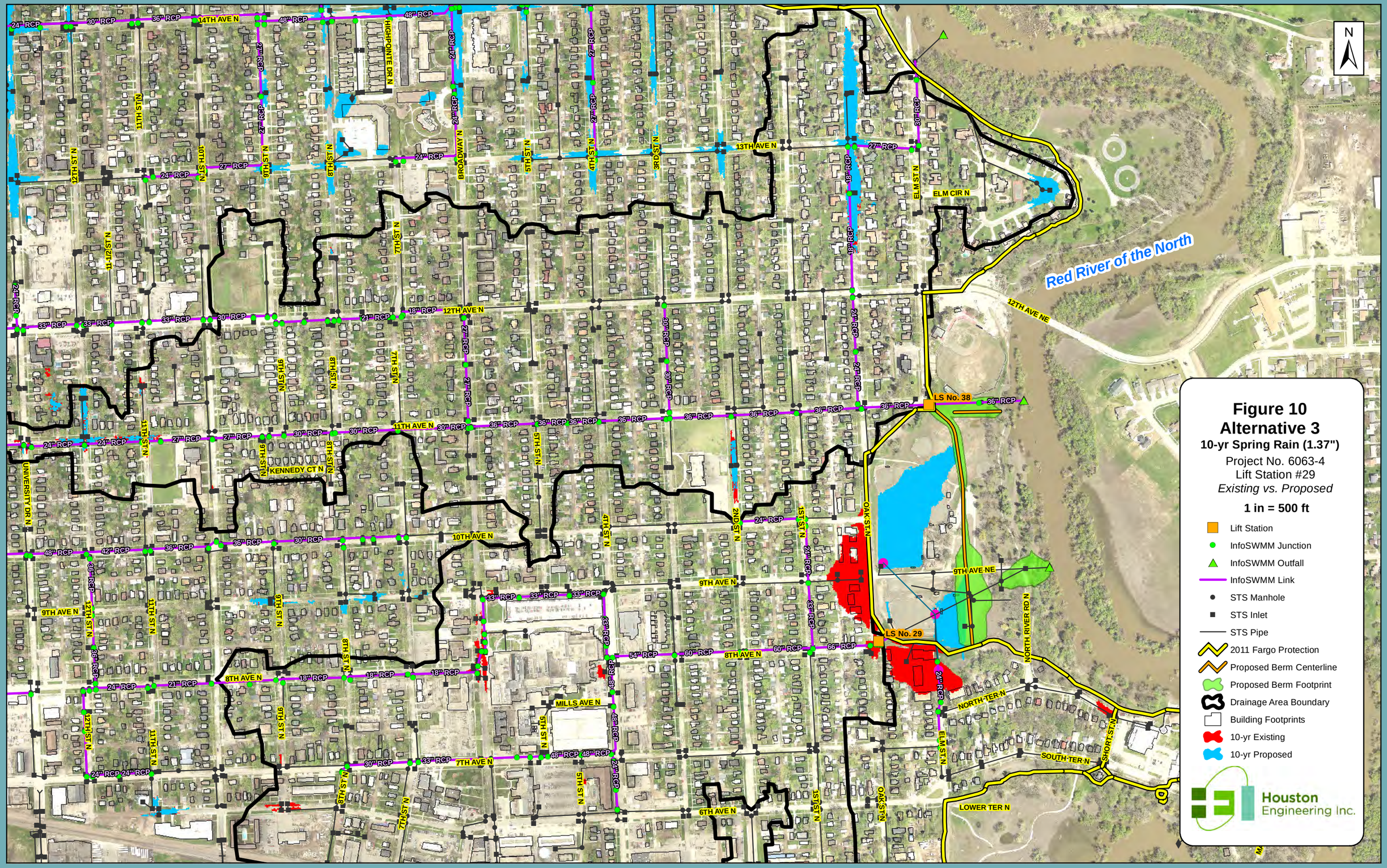

Figure 10
Alternative 3
10-yr Spring Rain (1.37")

Project No. 6063-4
Lift Station #29
Existing vs. Proposed

1 in = 500 ft

- Lift Station
- InfoSWMM Junction
- InfoSWMM Outfall
- InfoSWMM Link
- STS Manhole
- STS Inlet
- STS Pipe
- 2011 Fargo Protection
- Proposed Berm Centerline
- Proposed Berm Footprint
- Drainage Area Boundary
- Building Footprints
- 10-yr Existing
- 10-yr Proposed

Houston Engineering Inc.

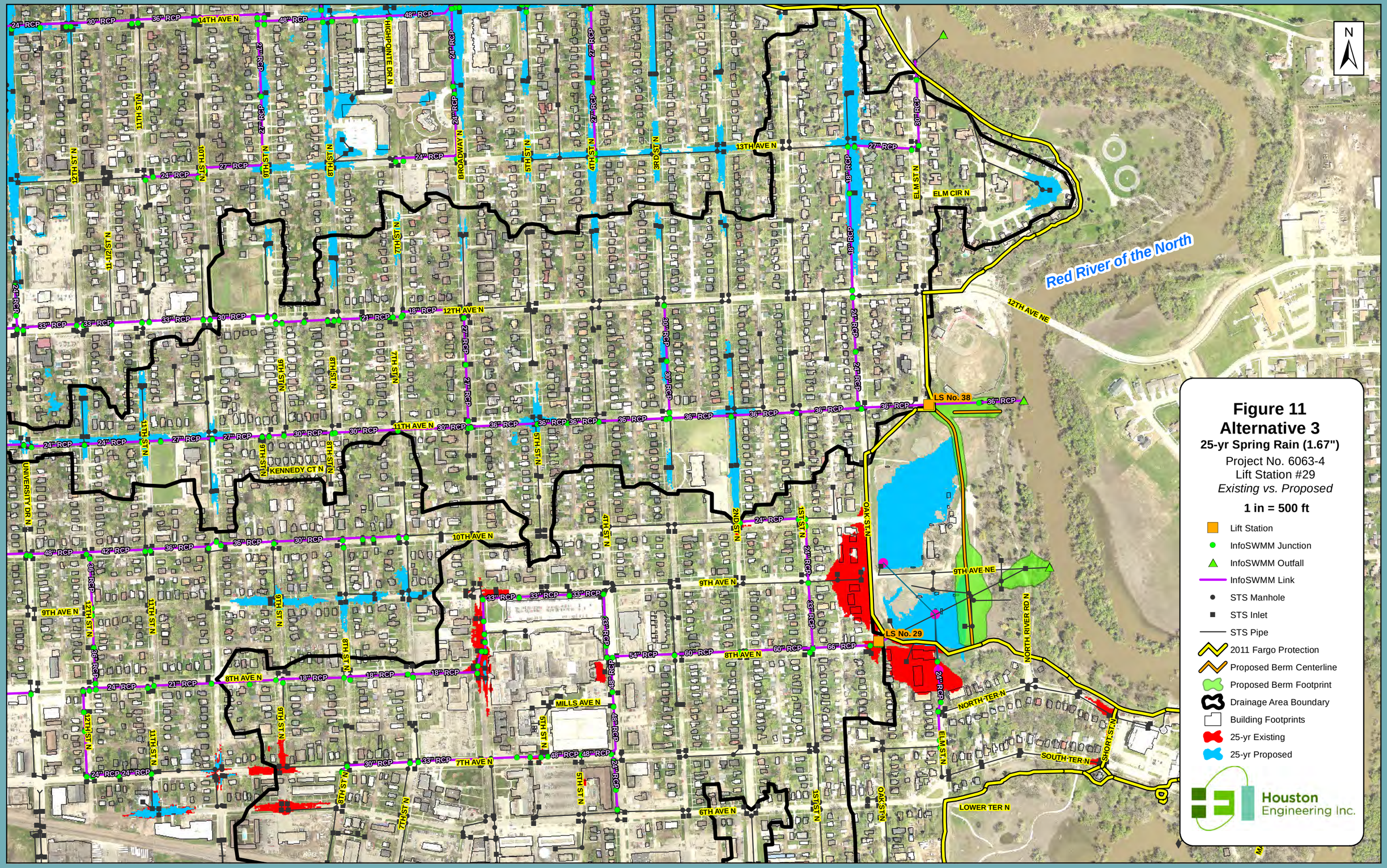

Figure 11
Alternative 3
25-yr Spring Rain (1.67")

Project No. 6063-4
Lift Station #29
Existing vs. Proposed

1 in = 500 ft

- Lift Station
- InfoSWMM Junction
- InfoSWMM Outfall
- InfoSWMM Link
- STS Manhole
- STS Inlet
- STS Pipe
- 2011 Fargo Protection
- Proposed Berm Centerline
- Proposed Berm Footprint
- Drainage Area Boundary
- Building Footprints
- 25-yr Existing
- 25-yr Proposed

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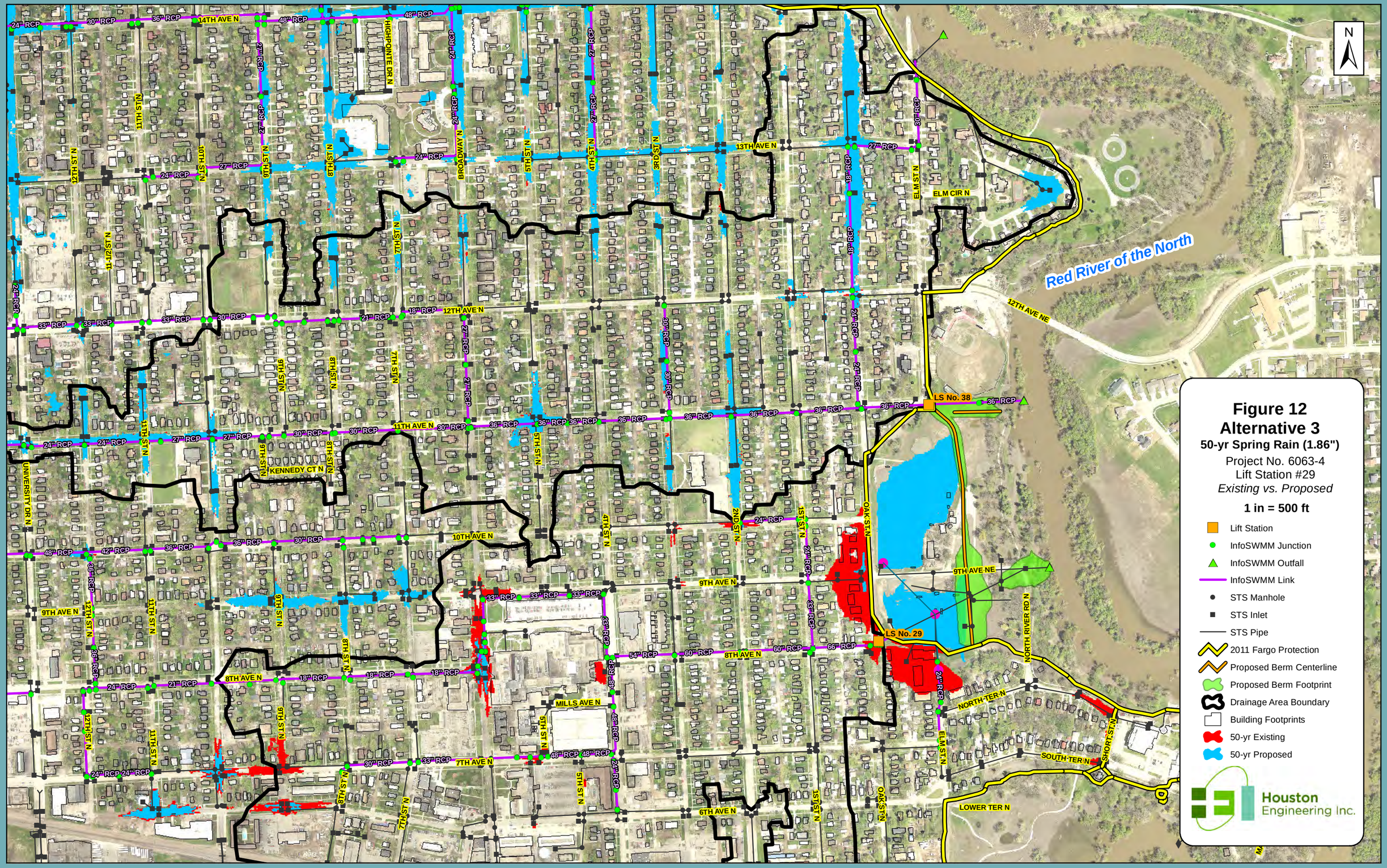


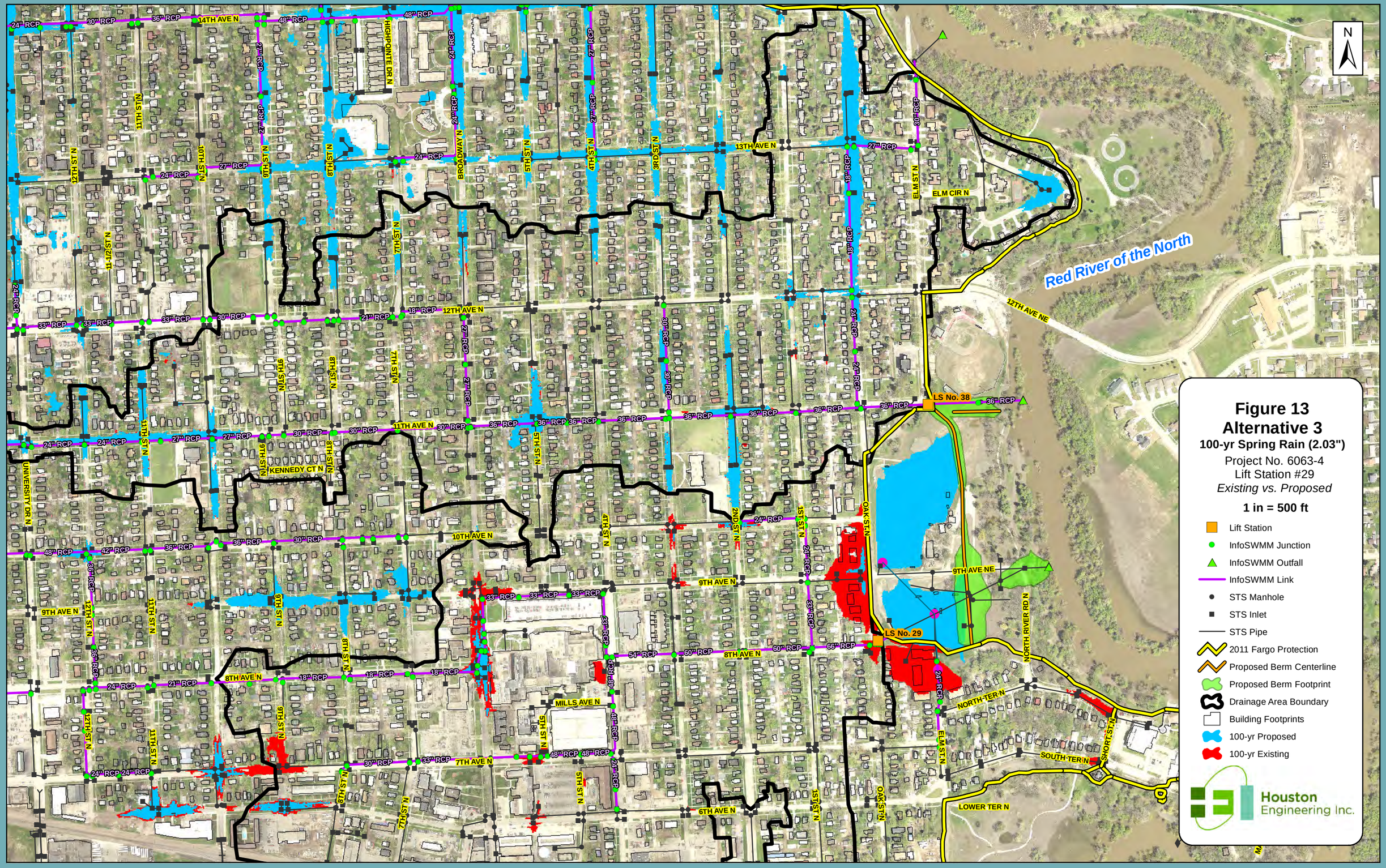
Figure 12
Alternative 3
50-yr Spring Rain (1.86")

Project No. 6063-4
Lift Station #29
Existing vs. Proposed

1 in = 500 ft

- Lift Station
- InfoSWMM Junction
- InfoSWMM Outfall
- InfoSWMM Link
- STS Manhole
- STS Inlet
- STS Pipe
- 2011 Fargo Protection
- Proposed Berm Centerline
- Proposed Berm Footprint
- Drainage Area Boundary
- Building Footprints
- 50-yr Existing
- 50-yr Proposed

Houston Engineering Inc.


N
Red River of the North
LS No. 38
LS No. 29
14TH AVE N
13TH AVE N
12TH AVE N
12TH AVE NE
11TH AVE N
10TH AVE N
9TH AVE N
9TH AVE NE
8TH AVE N
7TH AVE N
6TH AVE N
MILLS AVE N
HIGHPOINTE DR N
BROADWAY N
ELM ST N
ELM CIR N
OAK ST N
NORTH RIVER RD N
NORTH TER N
SOUTH TER N
SHORT ST N
LOWER TER N
KENNEDY CT N
UNIVERSITY DR N
Figure 13
Alternative 3
100-yr Spring Rain (2.03")
Project No. 6063-4
Lift Station #29
Existing vs. Proposed
1 in = 500 ft
Lift Station
InfoSWMM Junction
InfoSWMM Outfall
InfoSWMM Link
STS Manhole
STS Inlet
STS Pipe
2011 Fargo Protection
Proposed Berm Centerline
Proposed Berm Footprint
Drainage Area Boundary
Building Footprints
100-yr Proposed
100-yr Existing
Houston Engineering Inc.

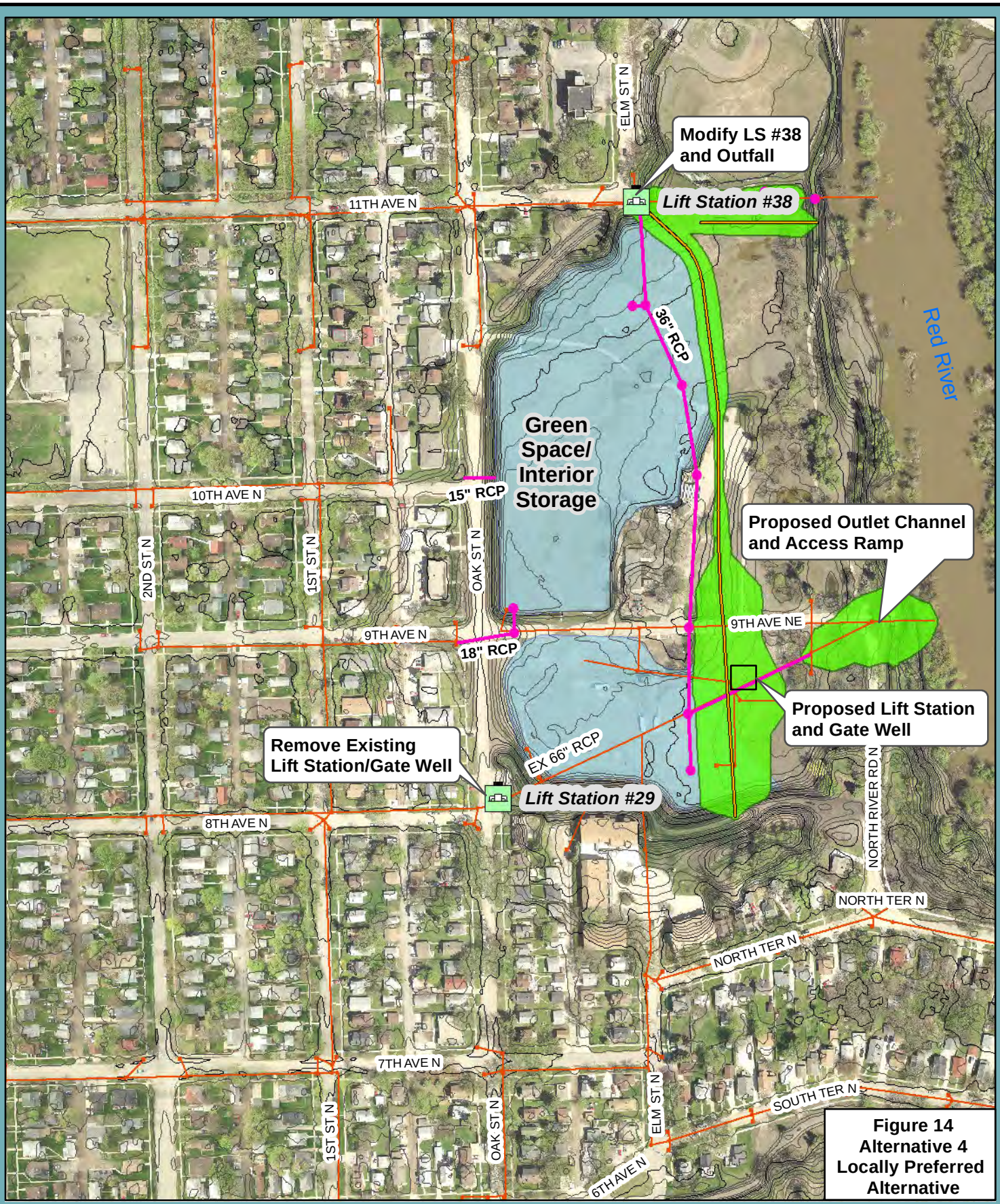
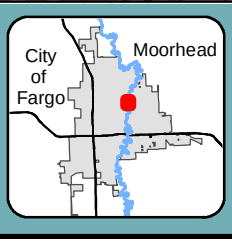


Figure 14
Alternative 4
Locally Preferred Alternative

Storm Lift Stations
StormManholes
StormInlets
StormMains
Proposed Berm Footprint
Contour 5ft Interval
Contour 1ft Interval
Green Space/Interior Storage
Proposed Storm Sewer



1 inch = 300 feet

Mickelson Field Area Flood Risk Management Project

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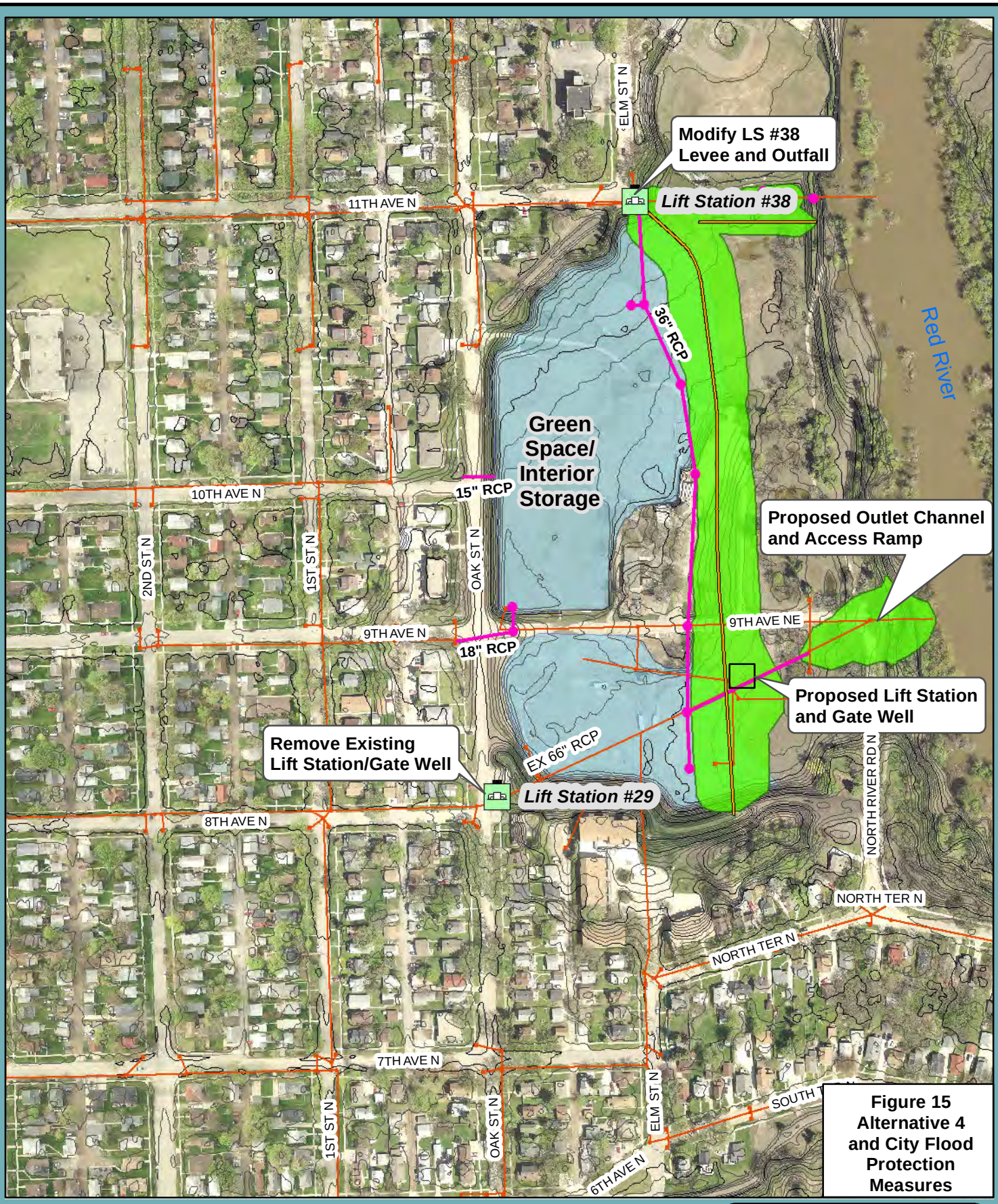
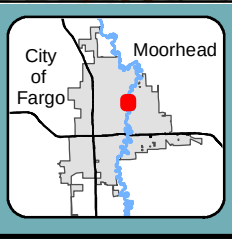


Figure 15
Alternative 4 and City Flood Protection Measures

Storm Lift Stations
StormManholes
StormInlets
StormMains
Proposed Berm Footprint
Contour 5ft Interval
Contour 1ft Interval
Green Space/Interior Storage
Proposed Storm Sewer



1 inch = 300 feet

Mickelson Field Area Flood Risk Management Project

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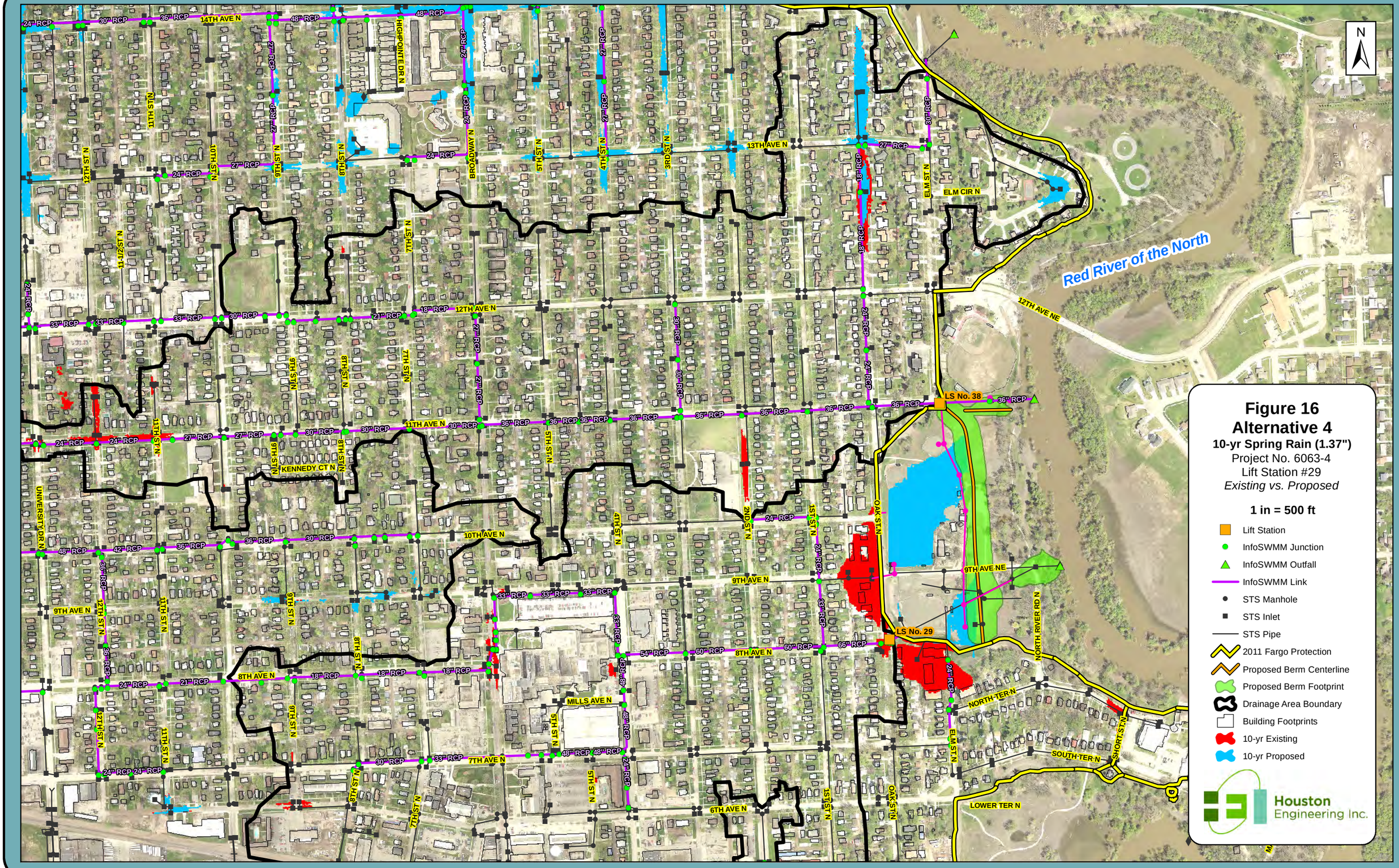
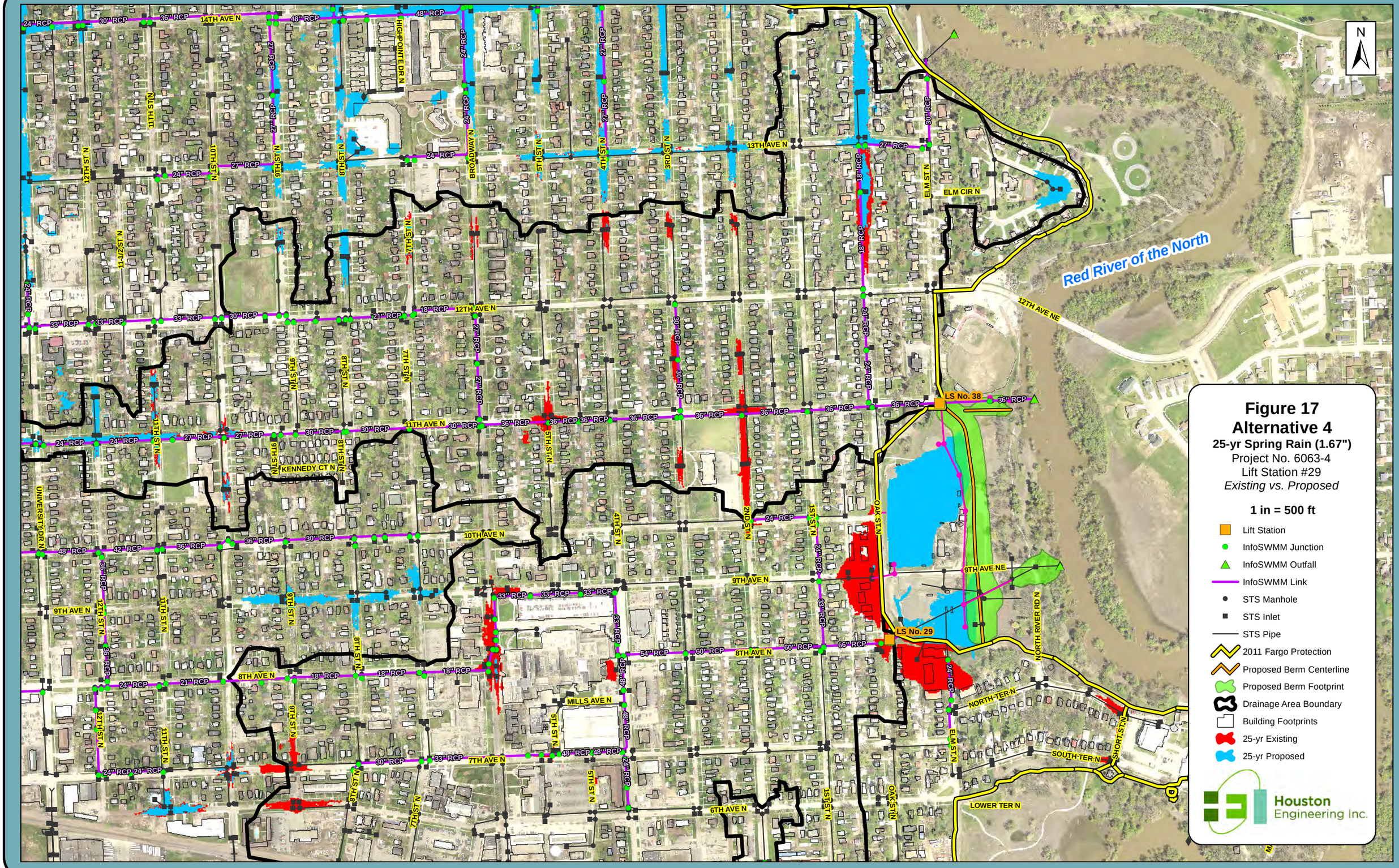
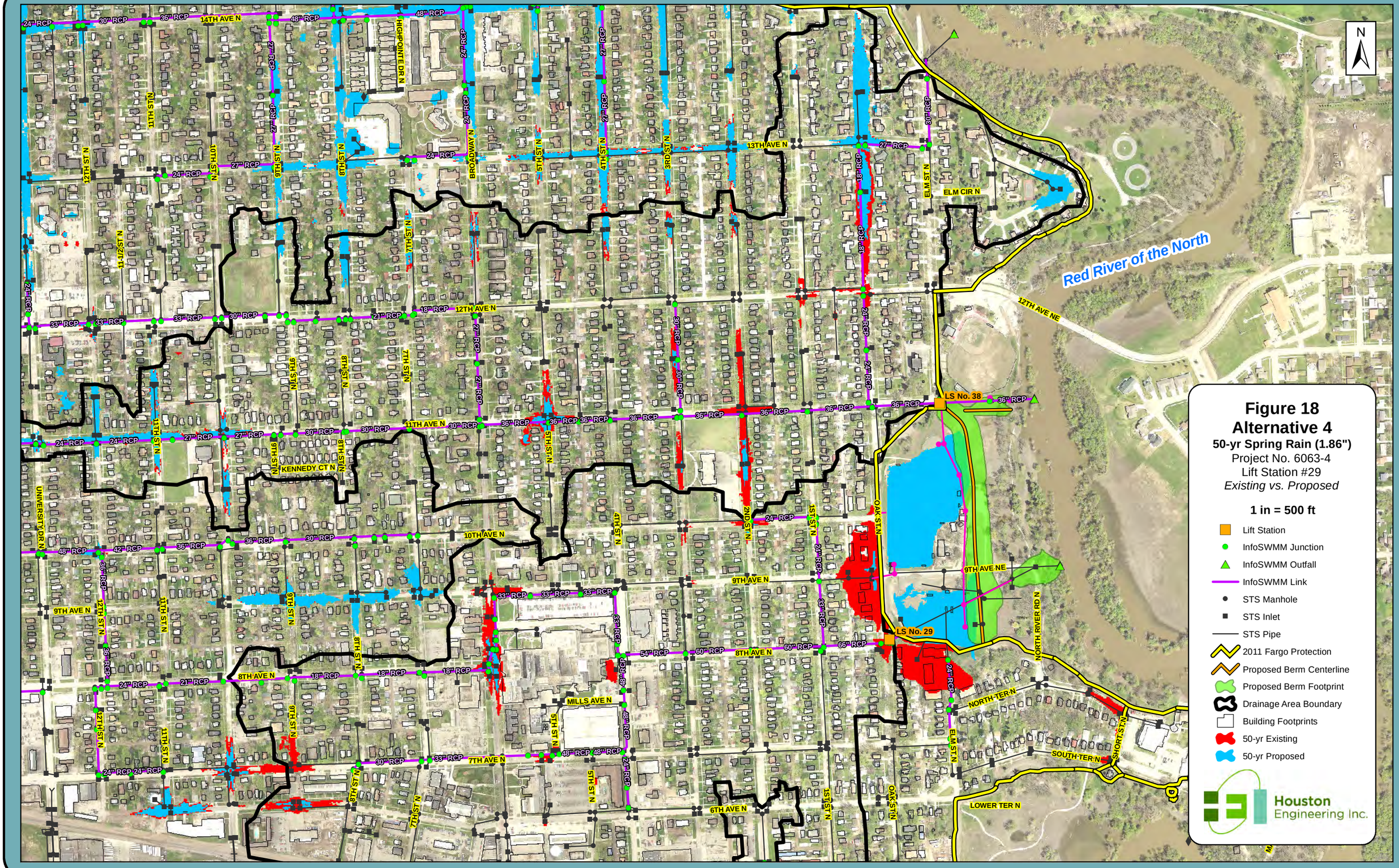

N
Red River of the North
LS No. 38
LS No. 29
14TH AVE N
13TH AVE N
12TH AVE N
12TH AVE NE
11TH AVE N
10TH AVE N
9TH AVE N
9TH AVE NE
8TH AVE N
7TH AVE N
6TH AVE N
MILLS AVE N
KENNEDY CT N
ELM CIR N
NORTH TER N
SOUTH TER N
LOWER TER N
HIGHPOINTE DR N
BROADWAY N
UNIVERSITY DR N
NORTH RIVER RD N
OAK ST N
ELM ST N
SHORT ST N
1ST ST N
2ND ST N
3RD ST N
4TH ST N
5TH ST N
6TH ST N
7TH ST N
8TH ST N
9TH ST N
10TH ST N
11TH ST N
11-1/2 ST N
12TH ST N
Figure 16
Alternative 4
10-yr Spring Rain (1.37")
Project No. 6063-4
Lift Station #29
Existing vs. Proposed
1 in = 500 ft
Lift Station
InfoSWMM Junction
InfoSWMM Outfall
InfoSWMM Link
STS Manhole
STS Inlet
STS Pipe
2011 Fargo Protection
Proposed Berm Centerline
Proposed Berm Footprint
Drainage Area Boundary
Building Footprints
10-yr Existing
10-yr Proposed
Houston Engineering Inc.


N
Red River of the North
14TH AVE N
13TH AVE N
12TH AVE N
12TH AVE NE
11TH AVE N
10TH AVE N
9TH AVE N
9TH AVE NE
8TH AVE N
7TH AVE N
6TH AVE N
MILLS AVE N
KENNEDY CT N
HIGHPOINTE DR N
BROADWAY N
ELM CIR N
ELM ST N
OAK ST N
NORTH RIVER RD N
NORTH TER N
SOUTH TER N
SHORT ST N
LOWER TER N
UNIVERSITY DR N
LS No. 38
LS No. 29
Figure 17
Alternative 4
25-yr Spring Rain (1.67")
Project No. 6063-4
Lift Station #29
Existing vs. Proposed
1 in = 500 ft
Lift Station
InfoSWMM Junction
InfoSWMM Outfall
InfoSWMM Link
STS Manhole
STS Inlet
STS Pipe
2011 Fargo Protection
Proposed Berm Centerline
Proposed Berm Footprint
Drainage Area Boundary
Building Footprints
25-yr Existing
25-yr Proposed
Houston Engineering Inc.


N
Red River of the North
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13TH AVE N
12TH AVE N
11TH AVE N
10TH AVE N
9TH AVE N
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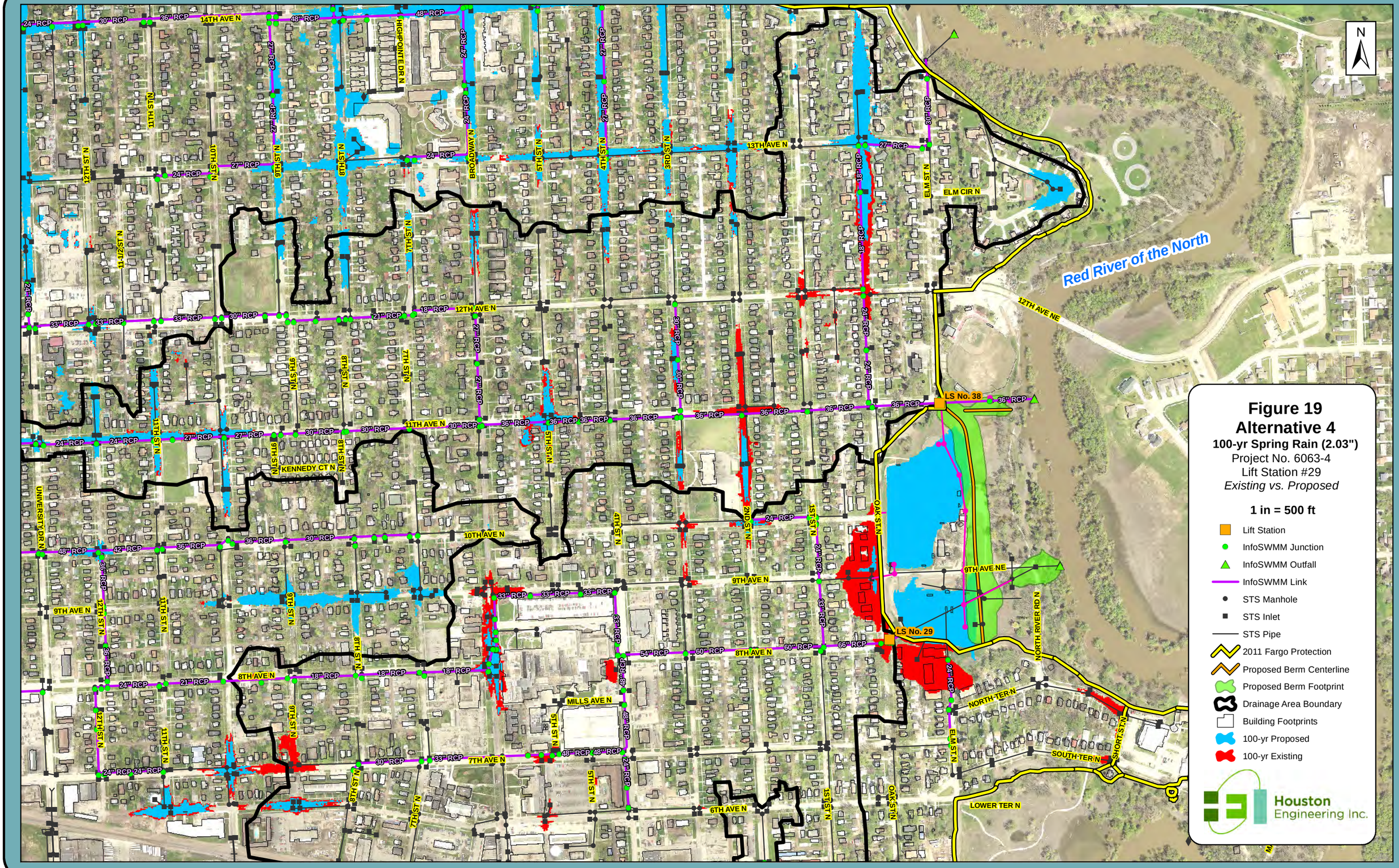
7TH AVE N
6TH AVE N
12TH AVE NE
9TH AVE NE
HIGHPOINTE DR N
BROADWAY N
ELM CIR N
ELM ST N
KENNEDY CT N
UNIVERSITY DR N
OAK ST N
NORTH RIVER RD N
NORTH TER N
SOUTH TER N
SHORT ST N
LOWER TER N
MILLS AVE N
LS No. 38
LS No. 29
Figure 18
Alternative 4
50-yr Spring Rain (1.86")
Project No. 6063-4
Lift Station #29
Existing vs. Proposed
1 in = 500 ft
Lift Station
InfoSWMM Junction
InfoSWMM Outfall
InfoSWMM Link
STS Manhole
STS Inlet
STS Pipe
2011 Fargo Protection
Proposed Berm Centerline
Proposed Berm Footprint
Drainage Area Boundary
Building Footprints
50-yr Existing
50-yr Proposed
Houston Engineering Inc.


N
Red River of the North
LS No. 38
LS No. 29
14TH AVE N
13TH AVE N
12TH AVE N
12TH AVE NE
11TH AVE N
10TH AVE N
9TH AVE N
9TH AVE NE
8TH AVE N
7TH AVE N
6TH AVE N
MILLS AVE N
KENNEDY CT N
HIGHPOINTE DR N
BROADWAY N
ELM CIR N
ELM ST N
OAK ST N
NORTH RIVER RD N
NORTH TER N
SOUTH TER N
SHORT ST N
LOWER TER N
UNIVERSITY DR N
Figure 19
Alternative 4
100-yr Spring Rain (2.03")
Project No. 6063-4
Lift Station #29
Existing vs. Proposed
1 in = 500 ft
Lift Station
InfoSWMM Junction
InfoSWMM Outfall
InfoSWMM Link
STS Manhole
STS Inlet
STS Pipe
2011 Fargo Protection
Proposed Berm Centerline
Proposed Berm Footprint
Drainage Area Boundary
Building Footprints
100-yr Proposed
100-yr Existing
Houston Engineering Inc.