



City of Cedar Rapids
Flood Control System Committee
City Hall – Council Chambers
Thursday July 21, 2016
11:00am – 12:00 p.m.

Purpose of Flood Control System Committee:

To enable the City Council to discuss and evaluate in greater detail these specific issues that directly impacts the flood control system for the City of Cedar Rapids.

City Council Committee Members:

Council member, Ralph Russell

Council member, Justin Shields

Council member, Kris Gulick

- Mayor Ron Corbett is an ex-officio member of all Council Committees per City Charter Section 2.06.

Agenda:

- Approval of Minutes – January 21, 2016 & May 2, 2016
- Informational Items:
 1. Financial Report update (5 mins) Rob Davis
Public Works
- Presentations:
 1. Reconstruction and Raising of 8th Avenue Bridge (10 mins) Rob Davis
Public Works
 2. Sinclair Pump Station – Aesthetics (5 mins) Bill Bogert
Anderson-Bogert
- Recommendation Items:
 1. Cedar River Flood Control System (FCS) Updates (15 mins) Teresa Stadelmann
HR Green
 - a. Czech Village - 21st Avenue SW / A Street SW Re-alignment
 - b. Updated Acquisition Maps
 - c. Aesthetics Policy
 - d. Pump Station Sizing
 - e. 8th Avenue Bridge Replacement

Any discussion, feedback, or recommendation by Committee member(s) should not be construed or understood to be an action or decision by or for the Cedar Rapids City Council. Further, any recommendation(s) the Committee may make to the City Council is based on information possessed by the Committee at that point in time.

Anyone who requires an auxiliary aid or service for effective communication, or a modification of policies or procedures to participate in a City program, service, or activity, should contact the City Manager's Office at (319) 286-5080 or email a.wing@cedar-rapids.org as soon as possible but no later than 48 hours before the event.



2. Removable FCS Implementation and Maintenance (15 mins)
Study / Contract with US Army Engineer and Research
Development Center (ERDC)
- Public Comment

Rob Davis
Public Works

Any discussion, feedback, or recommendation by Committee member(s) should not be construed or understood to be an action or decision by or for the Cedar Rapids City Council. Further, any recommendation(s) the Committee may make to the City Council is based on information possessed by the Committee at that point in time.

Anyone who requires an auxiliary aid or service for effective communication, or a modification of policies or procedures to participate in a City program, service, or activity, should contact the City Manager's Office at (319) 286-5080 or email a.wing@cedar-rapids.org as soon as possible but no later than 48 hours before the event.



City of Cedar Rapids
Flood Control System Committee Minutes
City Hall – Training Room
Thursday, January 21, 2016
11:00 a.m. – 12:00 p.m.

Present: Council members Ralph Russell (Chair), Justin Shields
Sandi Fowler, Assistant City Manager; Rob Davis, Flood Control Program Manager;
Teresa Stadelmann, HR Green; Jon Durst, Sewer Superintendent

Absent: Kris Gulick, Mayor Ron Corbett

Meeting called to order at 11:00 a.m. by Council member Russell.

Council member Shields moved to approve the meeting minutes from the December 17, 2015 Flood Control System Committee meeting. Motion seconded by Council member Russell. Motion passed.

Rob Davis presented two documents included in the packet that had been requested by the committee: the Finance Update and the Grant Submission Log. Rob Davis clarified that the column listed as 'Estimated Payments from the State' in the Finance Update is the maximum amount of funds that the City can receive from the Iowa Flood Mitigation Board. Councilman Shields indicated that the City is working closely with lobbyists to identify opportunities to pursue further legislative funding strategies. Councilman Russell requested that in the future the financial update format include summary information regarding the name and amount of money spent on projects. Rob Davis further explained the bidding strategies that staff are using to manage the grant reimbursements for the Iowa Flood Mitigation Board, the CDBG grant, and the funding for 8th Avenue Bridge work.

Rob Davis presented the Sinclair Drainage Report. Councilman Russell asked if the Army Corps of Engineers has reviewed the revised evaluation of the drainage calculations and cost benefit analysis with the land value information. Rob Davis stated that they have reviewed the results of the evaluation and have confirmed that the Army Corps will participate in the full cost of the increased pump sizes related to that evaluation. Rob Davis clarified that a recommendation is not needed at this time from the committee. Staff will review the evaluation with stakeholders and return to the committee at the April meeting. Councilman Russell and Shields provided guidance that with the given information a dry bottomed detention basin seems more reasonable for that area, but would like staff to consider aesthetic treatments to all three pump stations. Rob Davis stated that staff will bring back renderings when they become available. Councilman Shields asked what residents can expect to see happen at this site in 2016. Rob Davis responded that tree removals have already taken place. This summer a building on the site will be demolished and earthwork on the levee will begin. The project will be finished by October 2017.

Teresa Stadelmann presented the Interior Drainage Update. Councilman Shields asked if any work done on the east side flood protections would affect west side property and Ms. Stadelmann stated that recommendations from this update would not. She further stated that the issue under discussion is a result of storm runoff and ponding due to system capacity rather than issues from river flooding, but that the information could have an effect on floodplain mapping on the dry side of flood protection. Ms. Stadelmann indicated that the consultants are recommending a combination of options to address

west side interior drainage including storm water runoff reduction and increasing the planned pump station sizes handle a storm larger than a 3 month storm, and potentially isolating the Vinton Drainage Area from other drainage systems. Councilman Russell asked the consultants to consider in their evaluations what capacity storm can be conveyed in the system to the pumps. Councilman Shields asked if staff has a maintenance plan for the drainage system and Jon Durst responded that staff periodically moved through the drainage system to remove debris.

There was no public comment.

The meeting was adjourned at 12:00 p.m.

Respectfully submitted,
Melissa Kopf
Flood Recovery Coordinator
Development Services

DRAFT



**City of Cedar Rapids
Joint Flood Control System and
Finance & Administrative Services
Committee Minutes
City Hall – Council Chambers
Monday, May 2, 2016
4:00– 5:00 p.m.**

Present: Council members Ralph Russell (Chair of Flood Control System Committee), Justin Shields, Kris Gulick (Chair of Finance & Administrative Services Committee), Susie Weinacht Sandi Fowler, Assistant City Manager; Rob Davis, Flood Control Program Manager; Bill Bogert, Anderson Bogert; Teresa Stadelmann, HR Green

Absent: Mayor Ron Corbett

Meeting called to order at 4:04 a.m. by Councilmember Russell.

Rob Davis presented two documents included in the packet that had been requested by the committee: the Finance Update and the Grant Submission Log. Rob Davis clarified that the city secured an additional \$5 million in unused funds by other cities in 2015. He also reviewed the grants that have been received, denied, withdrawn and currently pending.

Bill Bogert reviewed design and bid activities for 2016 included in the packet. He informed the Committee the trail from 2nd to 3rd Avenue behind the new CRST building and Lot 44 at the 10th Avenue Pump Station have been bid this spring. The Sinclair Levee from the African American Museum to the Alliant Substation will be bid in August; the Czech Village utility relocation is projected to be bid in October along with the Sinclair Pump Station in November. He noted a total of \$19.6 million in projects will be bid this year. Councilmember Russell inquired about the material used to build the levees and how they ensure it will prevent water from seeping through. Bill Bogert explained they use a non-permeable clay material and insert a wall into a cut-off trench. In addition, they test each levee structure to make sure water does not leak through to the other side.

Rob Davis presented the Czech Village re-alignment map included in the packet. He pointed out the map on the right reflects a more reliable, less expensive solution for the new roadway alignment for 21st Avenue. This design will bring the road over the top of the levee eliminating the need for a gate saving \$2 million. Councilman Shields inquired about the prospect of raising the 8th Avenue Bridge. Rob Davis explained although it will be costly to raise, it would provide the city with a new, reliable bridge that would require less gates to maintain and install during a flood as well as provide another route for transportation during a flood.

Rob Davis presented the Flood Control System History and Recap report included in the packet. He pointed out that the schedule can be accelerated once the balance of the funding is secured; in the later years of the flood control system installation, however at this time, the City would not gain anything by accelerating with additional funds. Councilmember Russell asked how staff and contractors are going to manage the interim flood control plan during construction of the system. Rob Davis stated they have included protocols in their contracts. They are limiting the amount of the system that could be worked on at a time and requiring protection to be in place within 48 hours. He added that these contractors must use their own Hesco barriers and are required to conduct a set up demonstration that meets the requirements.

Teresa Stadelmann with HR Green presented the Interior Drainage Pump Station Sizing Policy located in the packet. This policy relates to both the volume and intensity of rainfall behind the Flood Control System. HR Green has conducted urban modeling and updated the Army Corps of Engineers previous work to reflect how urban centers address more robust storms' (i.e. thunderstorms/downpours) impact to properties and drainage systems. Existing system conditions show runoff exceeding the storm system causing interior ponding, independent of the flood control system or river flooding. It is recommended the City's Stormwater Master Plan policies address these issues. Increased ponding where the levee will block overland flow is recommended to be addressed with increased pipe capacity and dry-side detention. Finally, the cost and risk associated with pumping flows from a 1% coincident probability rainfall event is \$39-79 million, where all stations were budgeted at \$7.4 million due to sizing for a 3-month storm of average intensity and without a pump station building. The recommendations are to build pump stations for current flows at additional cost as well as pursuing watershed reduction strategies.

Councilmember Gulick moved and Councilmember Weinacht seconded to recommend to the City Council approval of the following Interior Drainage policy:

- Stormwater pump stations for interior drainage runoff are recommended to have a pumping capacity equal or greater than the peak runoff from the 5-year storm event, and
- The City will pursue upland stormwater runoff detention and infiltration in each watershed.

Councilmembers Gulick, Weinacht, and Russell voted aye. Councilmember Shields voted no. Following additional discussion clarifying the estimated one percent chance of a 5-year storm occurring during a high-river event, Councilmember Shields changed his vote to aye. Motion passed.

There was no public comment.

The meeting was adjourned at 5:30 p.m.

Respectfully submitted,
April Wing
Project Coordinator
Development Services

Flood Control System

Below is a summary of projected vs actual GRI revenue received thru June 2016. This is a preliminary report prior to performing yearend entries for FY 2016.

Increment from	Estimated Payments from State	Actual Payments Received from State				
		1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Total
2014	\$ 2,499,988	N/A	N/A	\$ 1,556,798	\$ 1,021,129	\$ 2,577,927
2015	\$ 10,700,000	\$ 1,662,283	\$ 3,041,641	\$ 2,481,328	\$ 959,639	\$ 8,144,890
2016	\$ 7,689,027	\$ 1,752,565	\$ 2,611,689			\$ 4,364,254
2017	\$ 10,381,241					\$ -
2018	\$ 13,140,760					\$ -
2019 - 2033 per year	\$ 15,000,000					\$ -
						\$ -
	\$ 269,411,016					\$ 15,087,072

Preliminary totals thru June 2016 show \$16M of flood control expenses have been incurred, of which \$15M is funded from growth reinvestment revenue. The majority of the expenses in June relate to design/engineering.

Project	Total	Project	Total
331001 Cedar River Flood Protection	47,992	3314300 GRI-R1-MGMT-Quaker Cedar Lake	68,476
331002 Amphitheater Demount Floodwall	255,557	3314400 GRI-R1-ENGR-Quaker Cedar Lake	1,994,798
331003 Time Check Area Prop Acq	5,232	3314500 GRI-R1-CONST-Quaker Cedar Lake	1,062,691
331005 Czech Village Area Prop Acq	5,906	3315200 GRI-R2-ACQ-Downtown	204
331006 Cottage Grove Property	1,800	3315300 GRI-R2-MGMT-Downtown	31,689
3311100 GRI-TC-EHP-Time Check	149,789	3315400 GRI-R2-ENGR-Downtown	791,399
3311200 GRI-TC-ACQ-Time Check	309,002	3315507 GRI-R2-CRST Floodwall	550
3311201 GRI-TC-DEMO-Time Check	34,930	3316200 GRI-R3-ACQ-NewBo Sinclair	887,783
3311300 GRI-TC-MGMT-Time Check	68,832	3316300 GRI-R3-MGMT-NewBo Sinclair	45,464
3311400 GRI-TC-ENGR-Time Check	1,266,483	3316309 FCS-R3-Sinclair Levee	651
3312100 GRI-KI-EHP-Kingston	109,649	3316310 FCS-R3-10th Ave & Lot 44 PumpS	1,462
3312200 GRI-KI-ACQ-Kingston	204	3316400 GRI-R3-ENGR-NewBo Sinclair	1,721,758
3312300 GRI-KI-MGMT-Kingston	27,255	3316509 GRI-R3-Sinclair Levee	453,945
3312400 GRI-KI-ENGR-Kingston	496,748	3316510 FCS-R3-10th Ave & Lot 44 PumpS	6,152
3313100 GRI-CV-EHP-Penford Czech Vil	149,883	3317200 GRI-R4-ACQ-Cargill South	204
3313200 GRI-CV-ACQ-Penford Czech Vil	334,705	3317300 GRI-R4-MGMT-Cargill South	23,995
3313201 GRI-CV-DEMO-Penford Czech Vil	2,326	3317400 GRI-R4-ENGR-Cargill South	595,453
3313300 GRI-CV-MGMT-Penford Czech Vil	54,795	331813-01 GRI-R1-Quaker Oats Perm Wall	3,147
3313400 GRI-CV-ENGR-Penford Czech Vil	1,276,727	SWB010 F-Sinclair 403-RACM Non-Hist	2,478,664
3313514 GRI-CV-N Levee along A St	99,568	SWB011 CS-Sinclair 403-RACM Historic	1,085,798
3314200 GRI-R1-ACQ-Quaker Cedar Lake	169,692	Total	16,121,359

Cedar River Flood Control System

Sinclair Pump Station



CEDAR RAPIDS

FLOOD | CONTROL
SYSTEM

STRENGTHENING OUR COMMUNITY

Sinclair Pump Station



CEDAR RAPIDS

FLOOD | CONTROL
SYSTEM

STRENGTHENING OUR COMMUNITY

Sinclair Pump Station



CEDAR RAPIDS

FLOOD | CONTROL
SYSTEM

STRENGTHENING OUR COMMUNITY

Control Building Example



CEDAR RAPIDS

FLOOD | CONTROL SYSTEM

STRENGTHENING OUR COMMUNITY

Lot 44 Pump Station



CEDAR RAPIDS

FLOOD | CONTROL
SYSTEM

STRENGTHENING OUR COMMUNITY

Flood Control System

8th Avenue Bridge



CEDAR RAPIDS

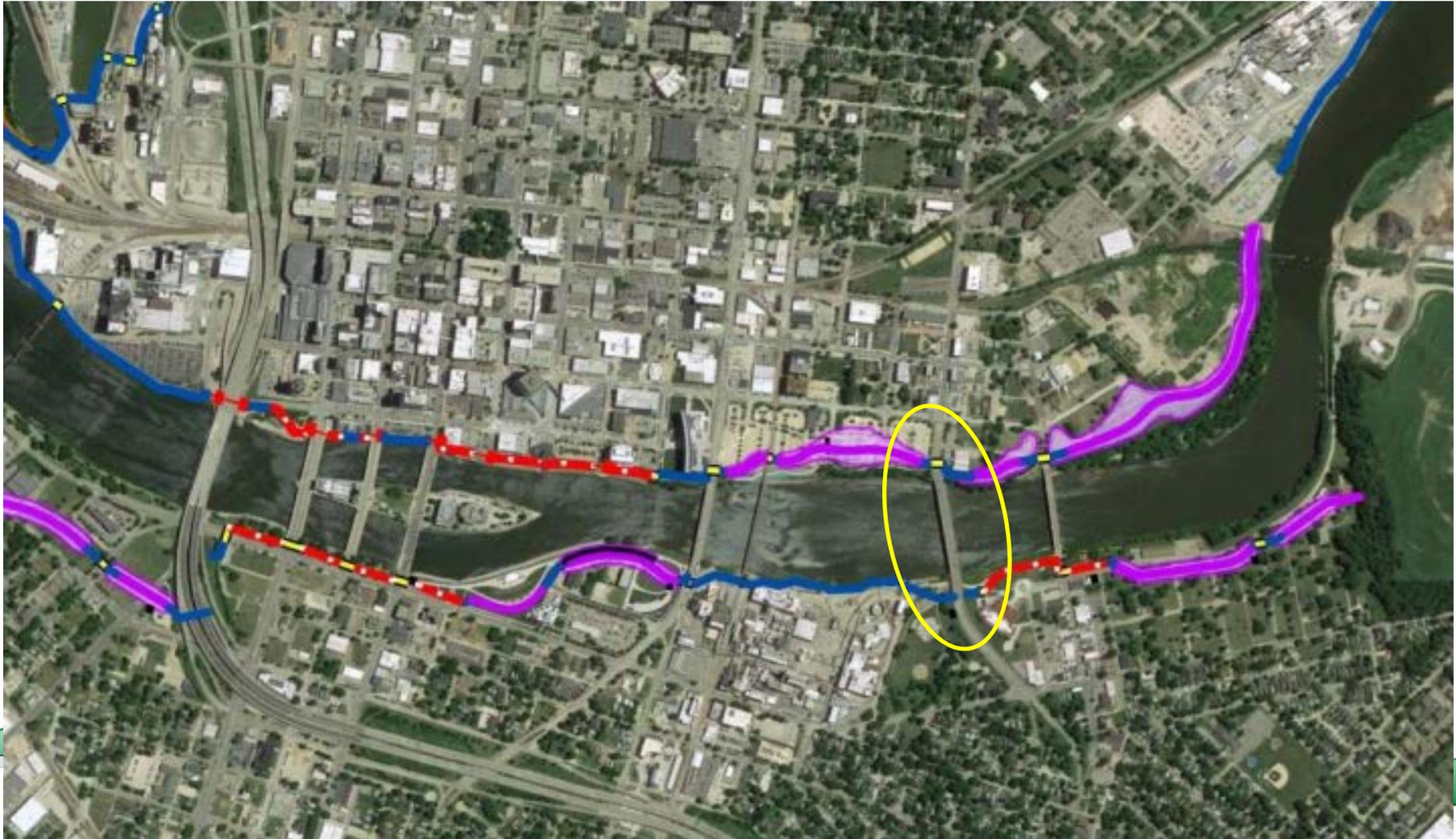
FLOOD | CONTROL
SYSTEM

STRENGTHENING OUR COMMUNITY

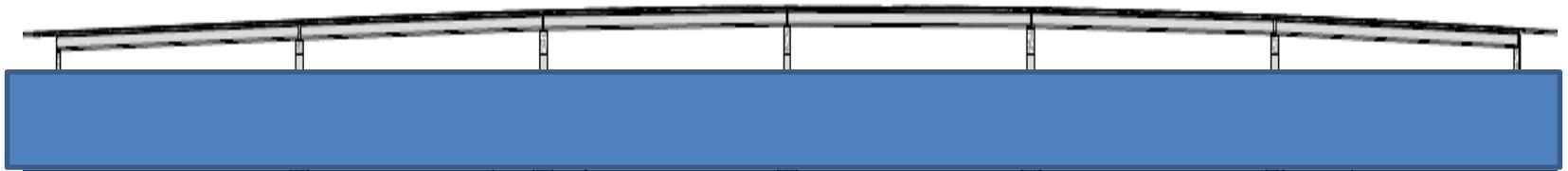


8th Avenue

Plan today: System of gates at 8th Ave Bridge



New Bridge During Flood Event



NEW BRIDGE

- Able to clear flood control fewer piers
- Improved river hydraulics
- Usable in flood events

EXISTING BRIDGE

- Bridge Structure submerged
- Poor hydraulics
- Useless in flood event



CEDAR RAPIDS

FLOOD | CONTROL SYSTEM

STRENGTHENING OUR COMMUNITY

Summary of Benefits

- Preserve connection to two dry sides of the river during flood emergency
- Preserve access to hospitals, police department, and interstate connection
- Life expectancy of bridge coincides with FCS timeline (Bridge will need to be replaced shortly after completion of FCS)
- Save money by eliminating flood gate at 8th Avenue
- Dual use: flood protection + new bridge



CEDAR RAPIDS

**FLOOD | CONTROL
SYSTEM**

STRENGTHENING OUR COMMUNITY

Design Details

Integral Flood Wall/Bridge Abutments

Downtown Cedar Rapids

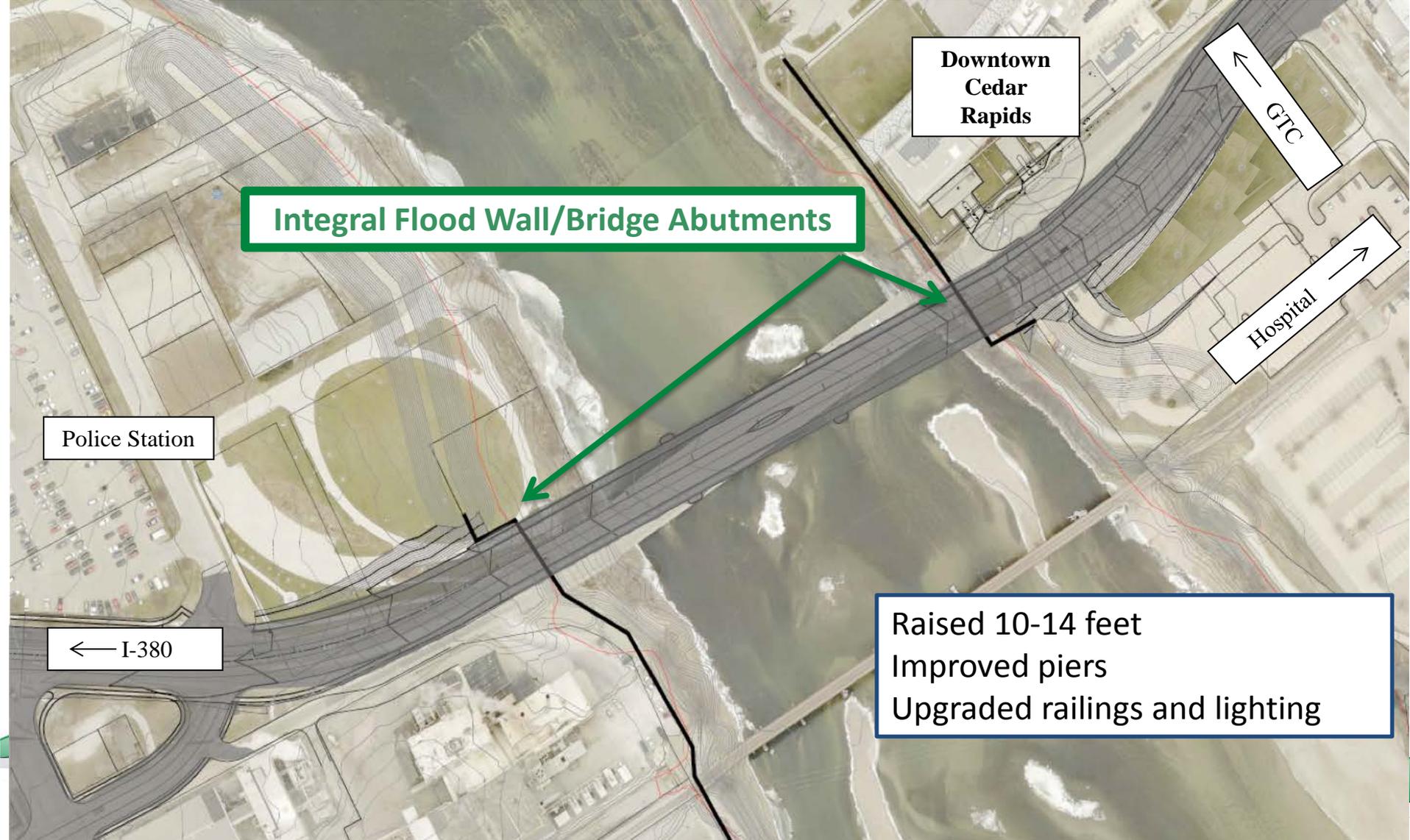
GTC

Hospital

Police Station

I-380

Raised 10-14 feet
Improved piers
Upgraded railings and lighting



Aesthetic Opportunities

GRI participation: moderate level of aesthetics
City funding: above and beyond aesthetics



Project Timeline

- Concurrence by Flood Mitigation Board.....June, 2016
- City Council Approval
 - Addition to Flood Control System Master Plan.....August 9, 2016
 - Approve contract for Preliminary Design 8th Ave.....August 9, 2016
- Utility Relocations.....2018-2019
- Bridge Construction.....2020-2022



2016 Flood Control System Master Plan Update



CEDAR RAPIDS

FLOOD | CONTROL
SYSTEM

STRENGTHENING OUR COMMUNITY

Updates to Master Plan:

- Acquisition map clarification
- Alignment refinement
- Aesthetics policy (wall façade)
- 8th Avenue Bridge
- Add Chapter VIII – Stormwater Pump Station Policy (previously approved by the FCS Committee)

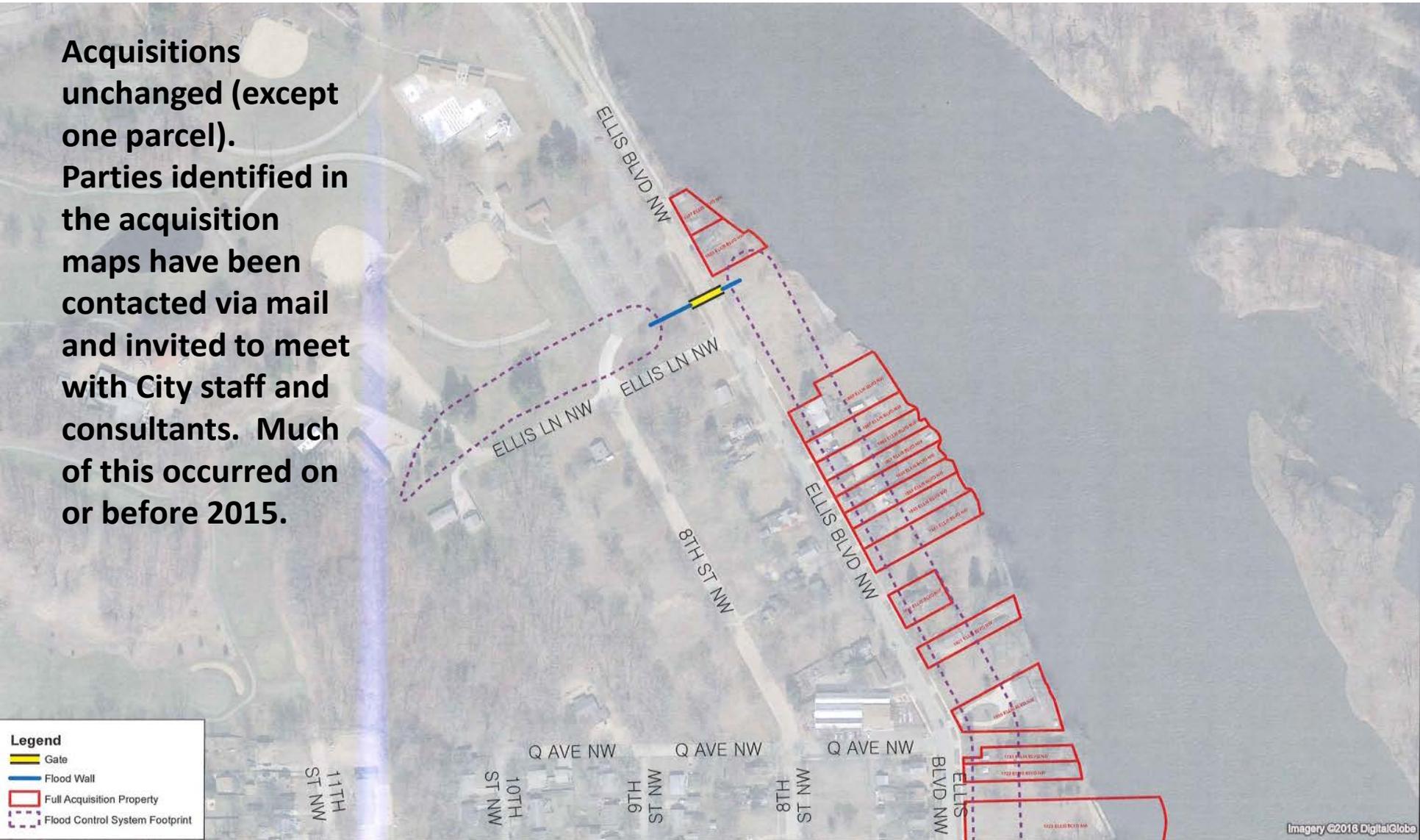


CEDAR RAPIDS

**FLOOD | CONTROL
SYSTEM**

STRENGTHENING OUR COMMUNITY

Acquisitions unchanged (except one parcel). Parties identified in the acquisition maps have been contacted via mail and invited to meet with City staff and consultants. Much of this occurred on or before 2015.



Legend

- Gate
- Flood Wall
- Full Acquisition Property
- Flood Control System Footprint

Drawn By: RMA	Job Date: 06-22-16
Approved: [Signature]	Job Number: 10140022
GIS Date: 7/1/2016 9:30:24 AM	06-22-16
GIS File: \\hrocmas\data\10140022\GIS	

NO.	DATE	BY	REVISION DESCRIPTION

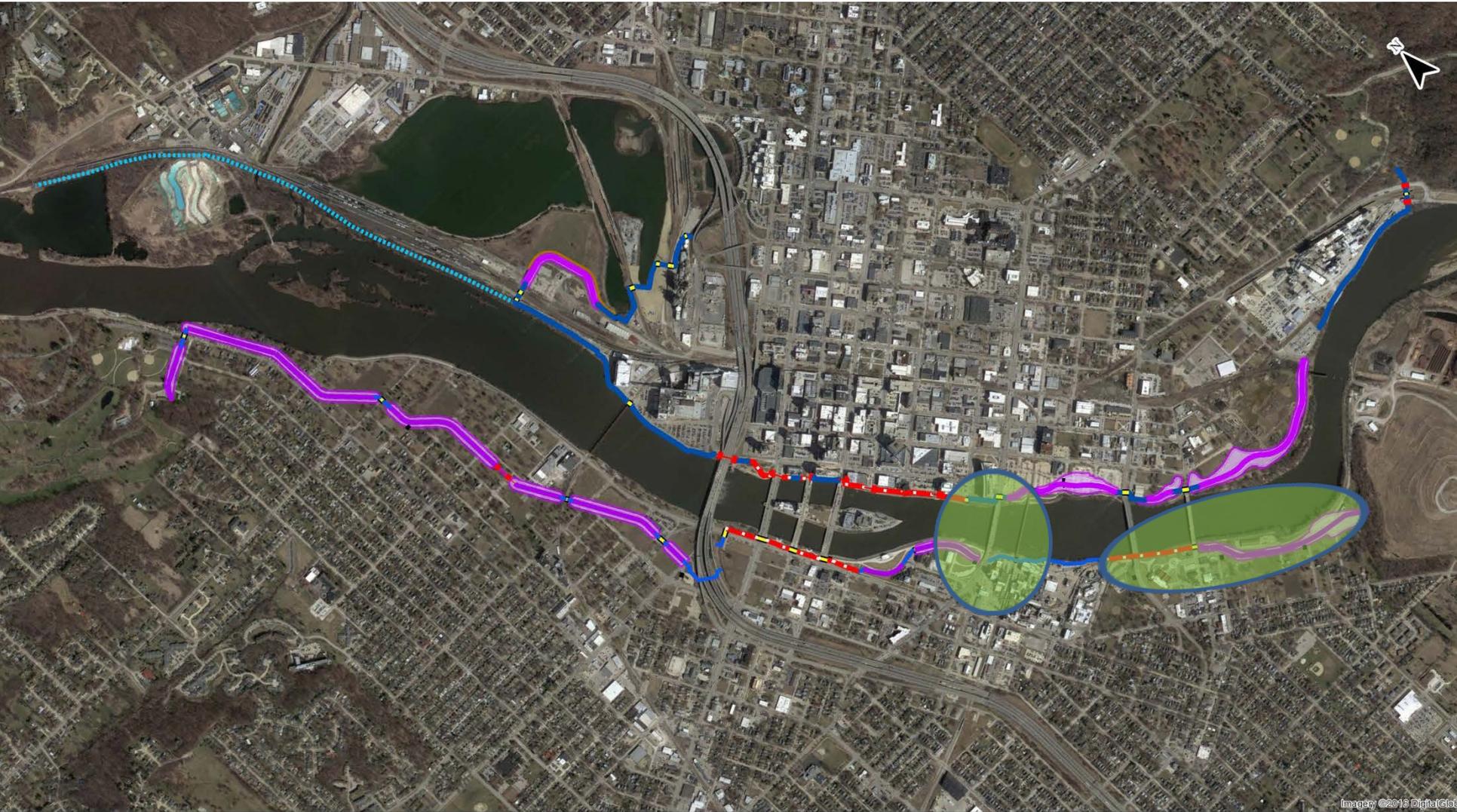
0 50 100

FLOOD CONTROL SYSTEM

PARCELS WITHIN PROJECT AREA MAP
Based on Proposed FCS Master Plan Amendment 1

Imagery ©2016 DigitalGlobe

Revised Alignments

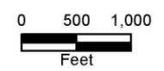


Imagery ©2013 DigitalGlobe

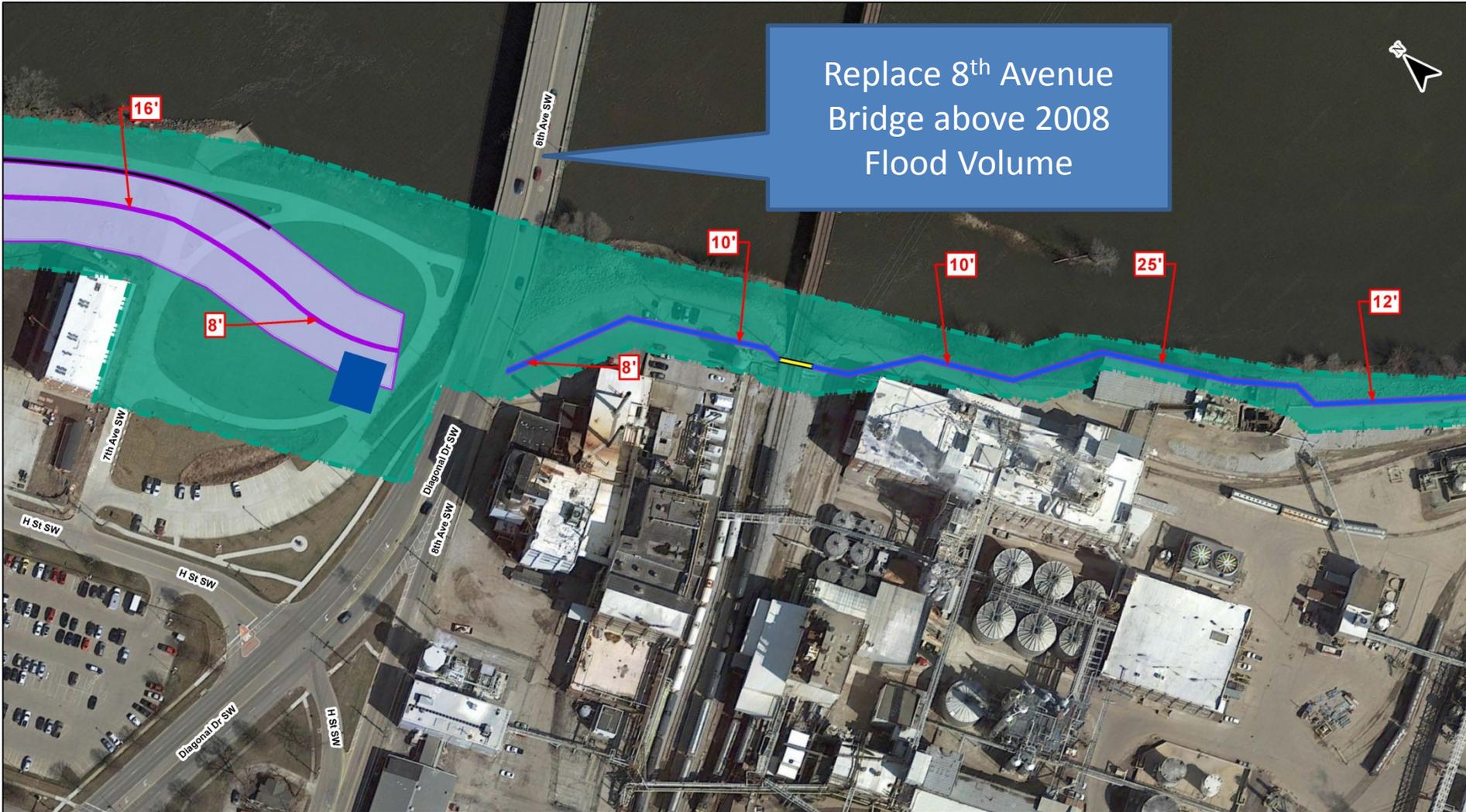
Cedar Rapids Flood Control System

Legend

- | | | | |
|------------------|----------------|--------------------------------|--------------|
| Gate | Removable Wall | Alternate Cedar Lake Alignment | Pump Station |
| Combination Wall | Retaining Wall | Gravel Road | |
| Permanent Wall | Levee | Levee Footprint | |



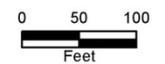
Alignment: Ingredion



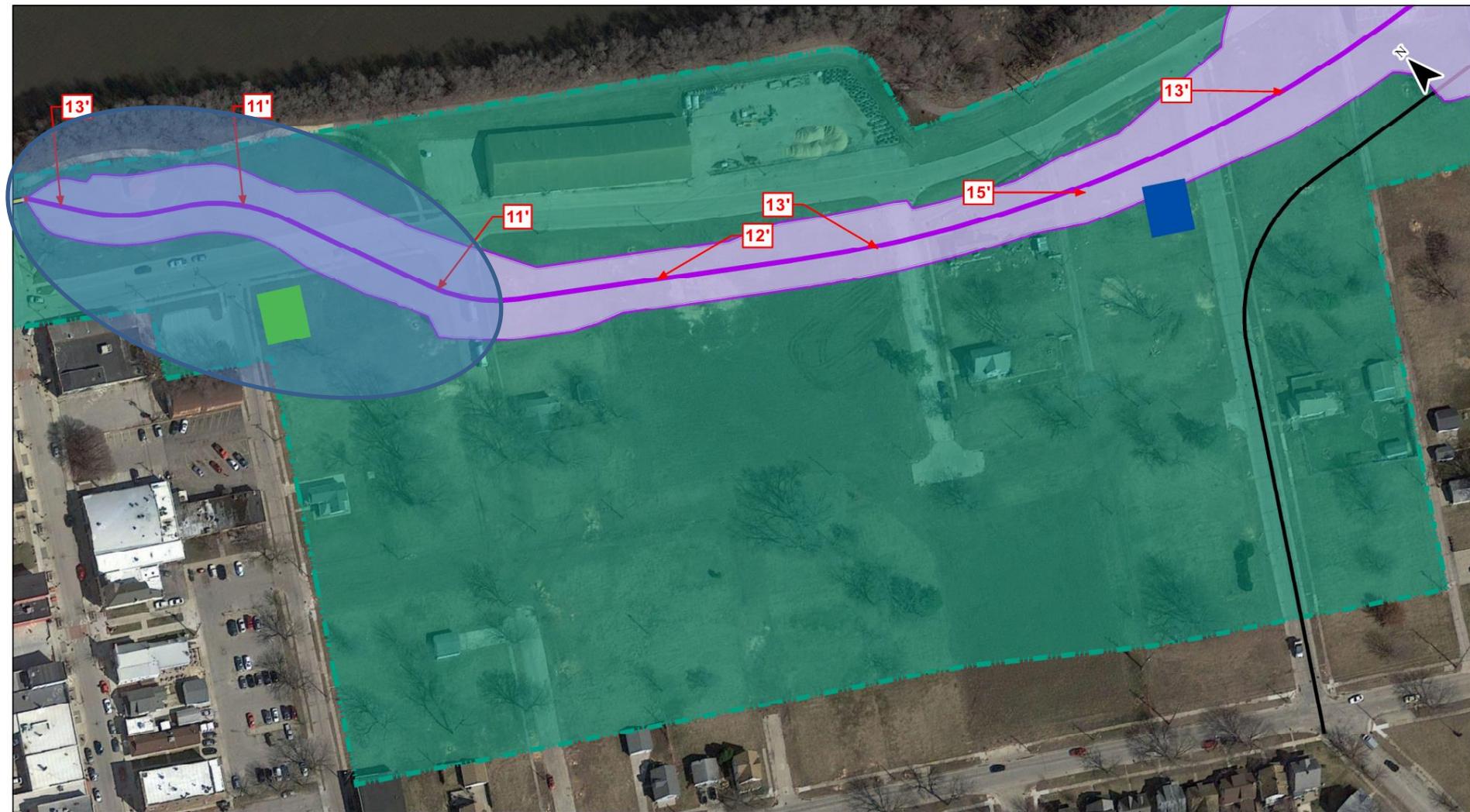
Replace 8th Avenue Bridge above 2008 Flood Volume

Cedar Rapids Flood Control System West Side Project Area

Legend			
	Gate		Sanitary Pump Station
	Removable Wall		Storm Pump Station
	Combination Wall		Levee
	Permanent Wall		Project Area
	Levee Footprint		Flood Wall Elevation
	Retaining Wall		



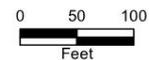
CV – 16th Ave to Site 1

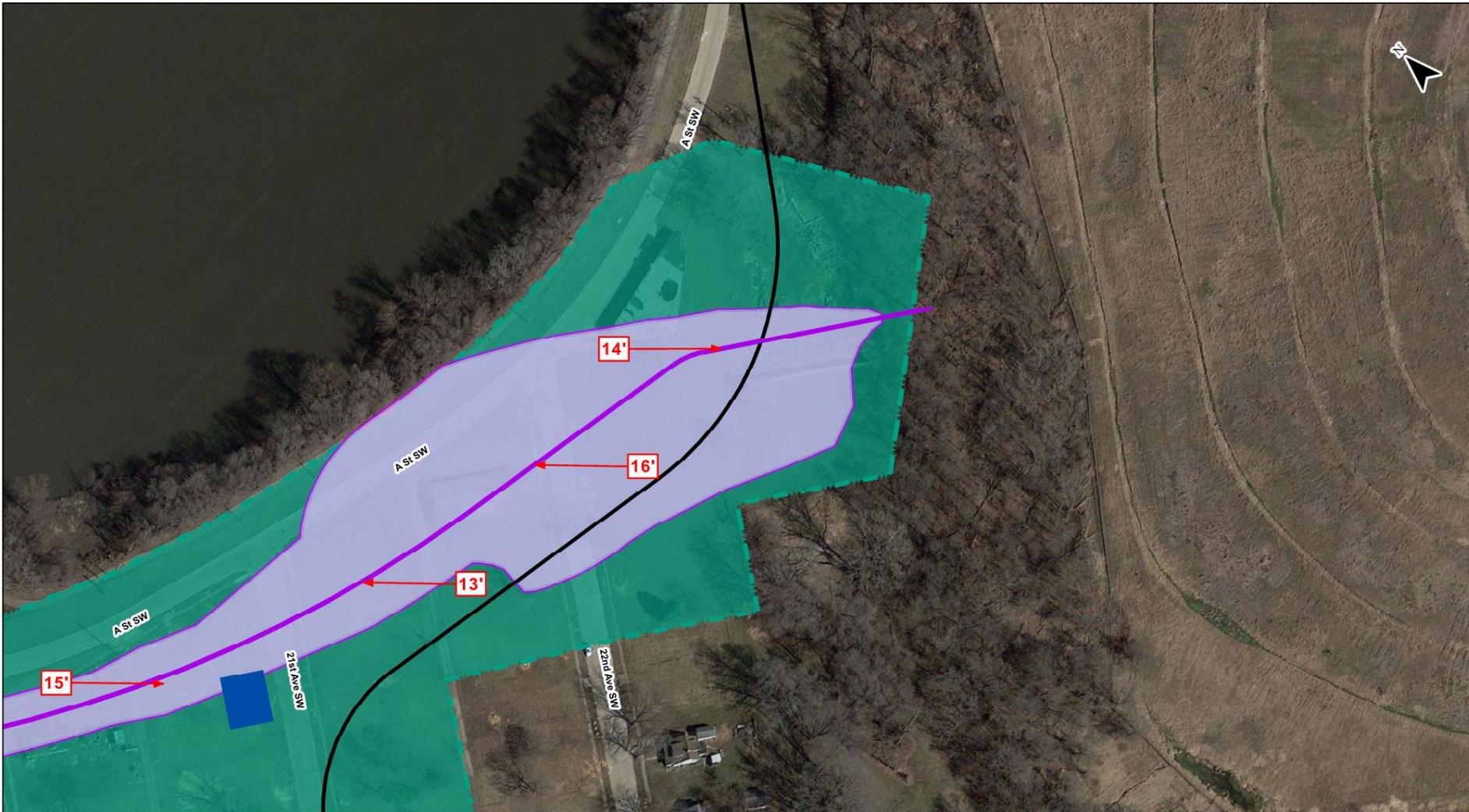


Cedar Rapids Flood Control System West Side Project Area

Legend

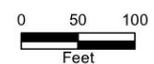
- | | | | |
|------------------|----------------|-----------------|-----------------------|
| Gate | Removable Wall | Road Access | Sanitary Pump Station |
| Combination Wall | Retaining Wall | Levee Footprint | Storm Pump Station |
| Permanent Wall | Levee | Project Area | Flood Wall Elevation |





Cedar Rapids Flood Control System West Side Project Area

- | | | | |
|------------------|----------------|-----------------|-----------------------|
| Gate | Removable Wall | Road Access | Sanitary Pump Station |
| Combination Wall | Retaining Wall | Project Area | Storm Pump Station |
| Permanent Wall | Levee | Levee Footprint | Flood Wall Elevation |



Aesthetics Guidelines

All aesthetic enhancements to the functional elements of the Flood Control System (FCS) as described in this chapter, must allow for strict adherence with local, state and federal design guidelines and standards. One such recommendation outlined by the US Army Corp of Engineers (USACE) is that structural elements (e.g. floodwall superstructure) of the Flood Control System (FCS) are to be easily viewable for regular inspection for crack detection, not obscured by surface treatments, on both the wet and dry sides.



CEDAR RAPIDS

FLOOD | **CONTROL
SYSTEM**

STRENGTHENING OUR COMMUNITY

Aesthetic Guidelines

- Design Review Committee would be amended to include:
 - FCS Steering Committee
 - FCS Program Manager
 - Consultant representative from east or west side.
Representation would be based on location of the proposed improvement



CEDAR RAPIDS

**FLOOD | CONTROL
SYSTEM**

STRENGTHENING OUR COMMUNITY

Cedar River Flood Control System – Removable Floodwall Risk Assessment of Operation and Deployment Time and Motion Study



CEDAR RAPIDS

FLOOD | **CONTROL
SYSTEM**

STRENGTHENING OUR COMMUNITY

Why Now?

- First Priority = Expiring Grants
 - CDBG
 - GRI
- Now = Time & Motion Study



**FLOOD | CONTROL
SYSTEM**

STRENGTHENING OUR COMMUNITY

Study Basis and Need

- This is an implementation and operations study
- The FCS Master Plan approved by the Cedar Rapids City Council in June of 2015 will be the basis for this study.
 - Cedar River Plan has a larger percentage of removable wall sections than other modern flood control projects (20% vs. <5%)
 - Validation needed of FCS adoption of the master plan's removable sections, before design begins
- This study will accommodate the integration of the flood structure project into the entire city organization



CEDAR RAPIDS

FLOOD | **CONTROL**
SYSTEM

STRENGTHENING OUR COMMUNITY

Study Basis and Need

- Need to determine:
 - Most efficient and effective types of removable walls and gates
 - Schedule of external on-call contracts needed
 - Annual O&M costs to implement
- Previous study only looked at east side
- Previous study concluded City did not have internal staff to implement east side FCS removable walls and gates



CEDAR RAPIDS

**FLOOD | CONTROL
SYSTEM**

STRENGTHENING OUR COMMUNITY

What the Study will Tell Us

- Identify new technologies
- Determine sequence of installation
- Analyze risks to implementation
- Provide cost to deploy system
- Provide annual cost to test
- Provide annual maintenance cost



CEDAR RAPIDS

FLOOD | **CONTROL**
SYSTEM

STRENGTHENING OUR COMMUNITY

USACE Selected to Perform Study

- USACE previously worked on this project; specifically the time and motion aspect.
 - Preeminent expert on flood structures
 - A continuation of the previous study
 - Previous study was before the Flood Control Structure (FCS) Master Plan
 - Independent 3rd party study
 - Background information available
 - Integrating a current study on new technology



US Army Corps
of Engineers®

Proposed Study Timeline and Cost

- US Army Corps of Engineers Study
 - September 2016 – March 2017
 - City of Cedar Rapids input throughout the process
 - Presentation of options
 - Cost of study \$156,400
 - Staff recommendation to proceed



CEDAR RAPIDS

**FLOOD | CONTROL
SYSTEM**

STRENGTHENING OUR COMMUNITY