

7th Avenue Creek Master Plan Development Project

City of St. Charles, IL



ASFPM - MAY 22, 2019



7TH AVENUE CREEK PROJECT AREA

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2008 RAIN EVENT

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- **2008 Significant Flooding Throughout the Community**
- **7TH Avenue Creek Impacts to Both Residential and Commercial**
- **Flood Event Estimated to be a 25-50 Year Event.**
- **Flood Limits Far Exceeded Mapped FEMA 100-year floodplain**



2008 RAIN EVENT

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Tyler Road North of UPRR
Looking South
3:25 p.m. 9-13-2008

- COMMERCIAL CORRIDOR FLOODING
- STRUCTURE FLOODING
- STREET AND YARD FLOODING
- ROADWAY OVERTOPPING
- ROADWAY CLOSURES



Seventh Avenue Creek at Illinois Avenue
Looking East
2:20 p.m. 9-13-2008



RAINFALL SUMMARY

- Other Significant Rainfall Events Occurred Since 2008

Flood Event	Overall Rainfall Precipitation	Overall Duration	Storm Frequency
September 2008	8.74 Inches	51 Hours	>25 Yr < 50 Yr
July 2010	5.45 Inches	15 Hours	>25 Yr < 50 Yr
April 2013	3.40 Inches	20 Hours	>2 Yr < 5 Yr
June 2015	3.16 Inches	15 Hours	>2 Yr < 5 Yr

- Resulted in Significant Impact to 7th Ave Creek Properties
- All Events Less than 100 Year Event

FLOOD INSURANCE STUDY

- Revised Flood Insurance Study –Completed 2009
- Calibrated to the 2008 Flood Event
- Revised Hydrology – Increased Flows 200%-250%
- Revised Hydraulic Model – Flood Elevations 3' Higher

TWO CONCURRENT & PARALLEL PATHS

7

FEMA



City of St. Charles



MASTER PLAN DEVELOPMENT PROCESS

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- Development of Project Goals and Objectives
- Review of City's Comprehensive Plan and Other Relevant Studies
- Property Owner Questionnaire
- Stream Assessments
- Elevation Certificates
- Hydraulic Modeling
- Workshop Meetings with City Department Heads
- Public Meetings
- Regulatory Coordination Meetings
- Alternative Analysis
- Project Costs and Benefit/Cost Analysis
- Phasing and Implementation Plan
- Funding grant applications

STAKEHOLDERS & COMMUNICATION

KEY STAKEHOLDERS

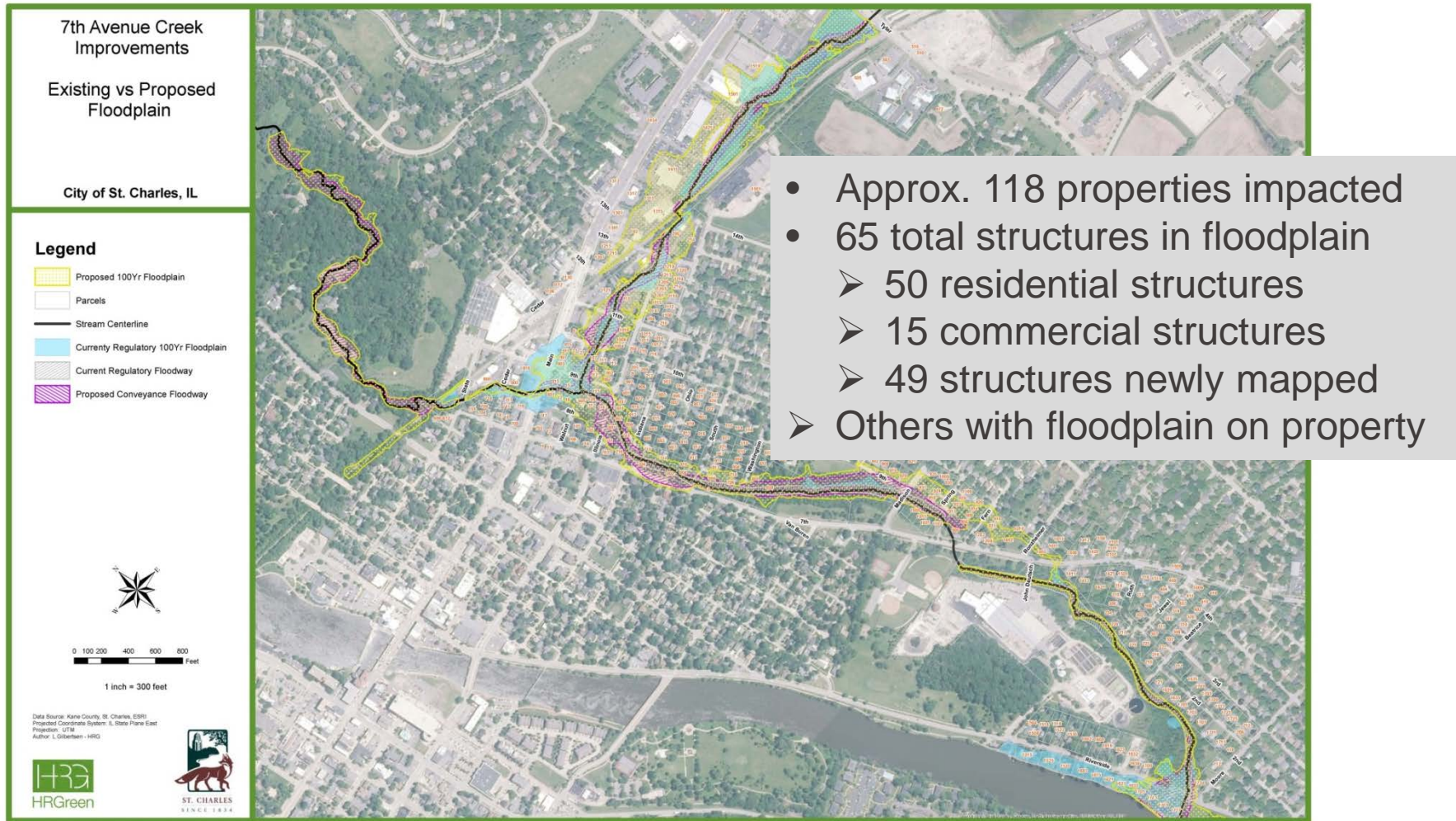
- Community Members & Property Owners
- City Administration & Elected Officials
- Community Development
- Fire & Police Department
- Public Works Department
- Special Interest Groups

COMMUNICATIONS

- Letters, Public Meetings, Questionnaires & Project Website

EXISTING VS. FEMA PROPOSED FLOODPLAIN

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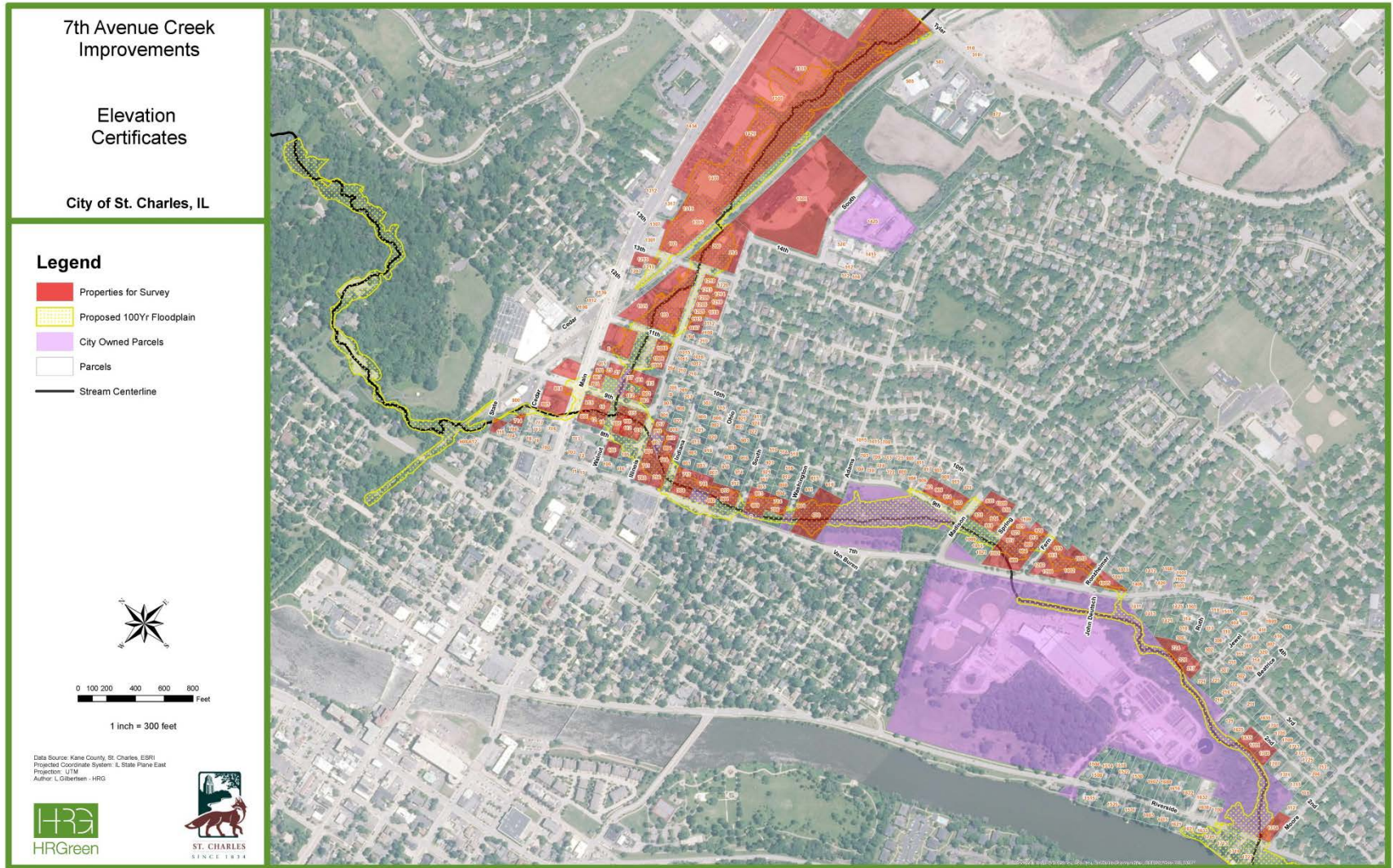
STREAM ASSESSMENT

11



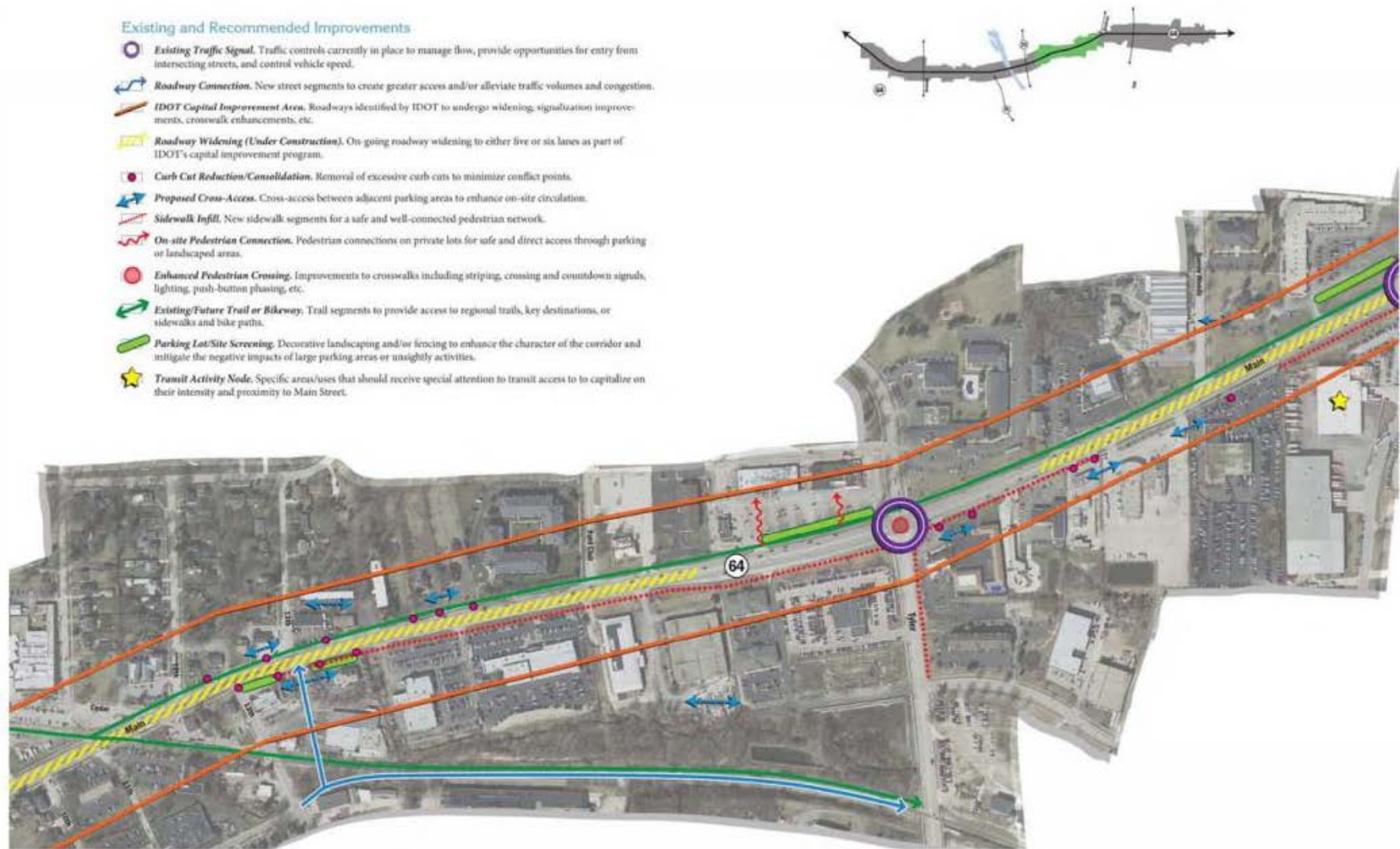
SURVEYS & ELEVATION CERTIFICATES

12



CITY COMPREHENSIVE PLAN GOALS

13



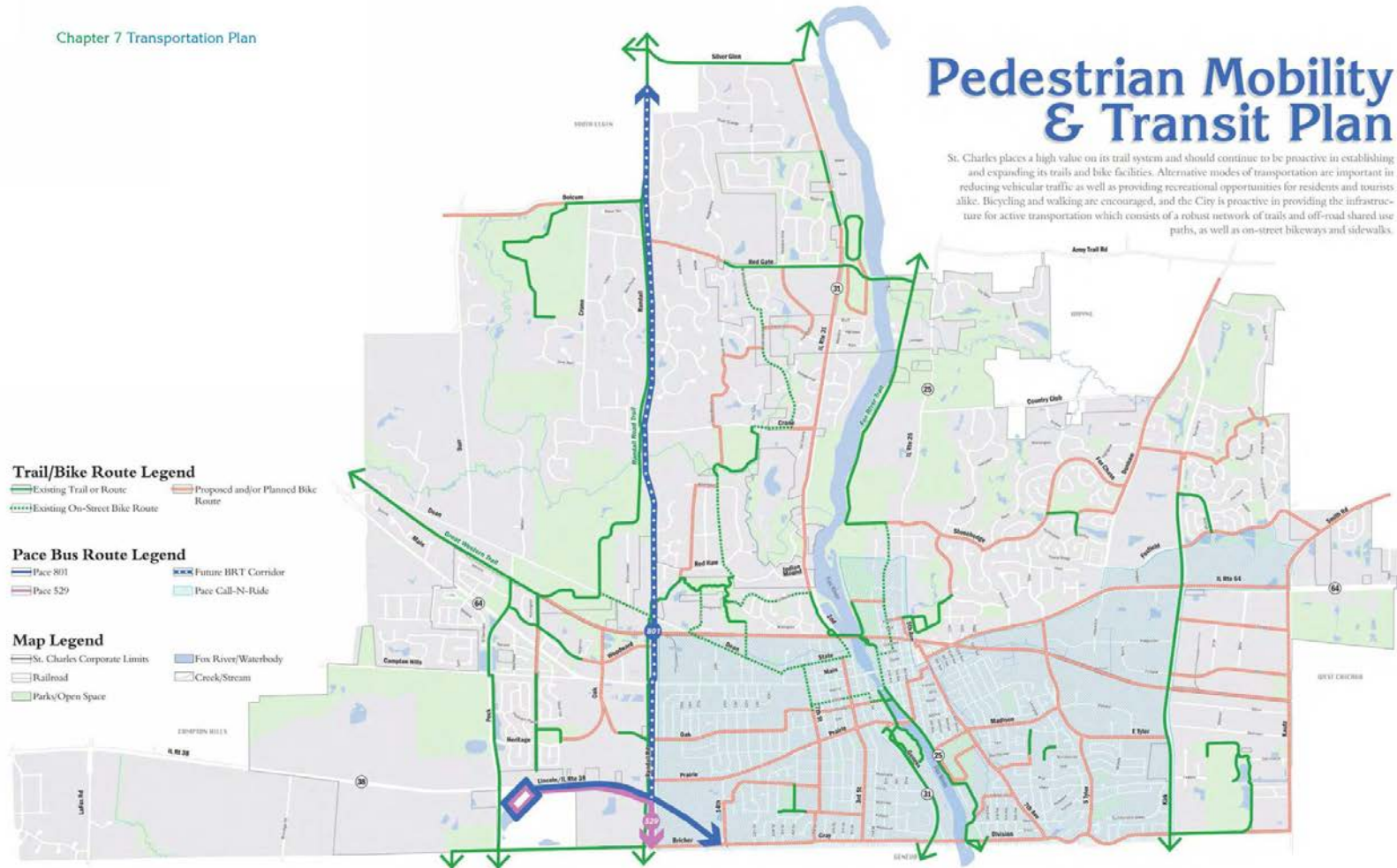
REGIONAL BIKE PATH PLAN

14

Chapter 7 Transportation Plan

Pedestrian Mobility & Transit Plan

St. Charles places a high value on its trail system and should continue to be proactive in establishing and expanding its trails and bike facilities. Alternative modes of transportation are important in reducing vehicular traffic as well as providing recreational opportunities for residents and tourists alike. Bicycling and walking are encouraged, and the City is proactive in providing the infrastructure for active transportation which consists of a robust network of trails and off-road shared use paths, as well as on-street bikeways and sidewalks.



80 | City of St Charles Comprehensive Plan • Adopted September 2013

CONCEPT PLAN OPTIONS

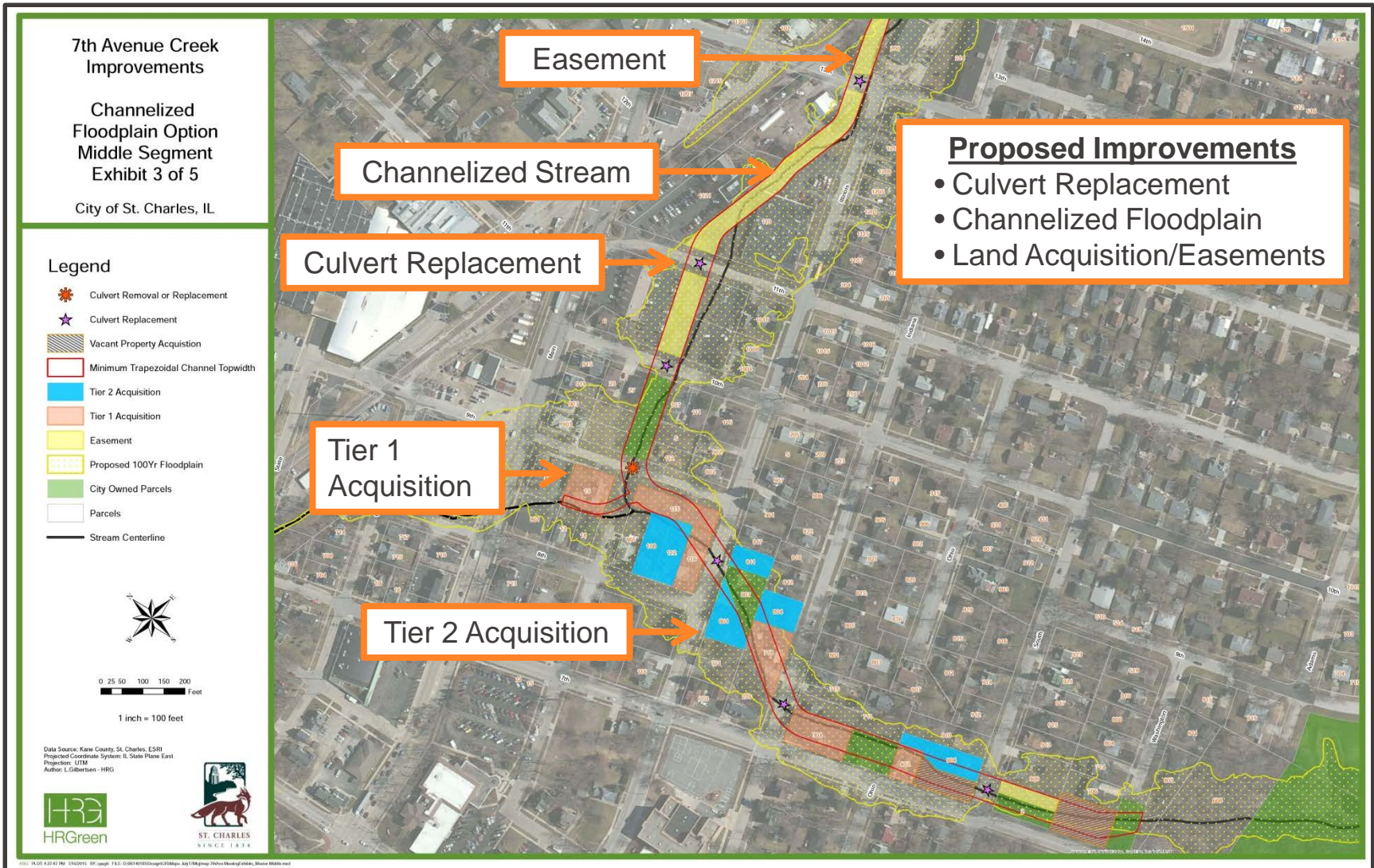
15

▶ 4 OPTIONS WERE EVALUATED

- Do Nothing
- No-Build – Buy all impacted structures
- Engineered Solution (Address the issue at minimal cost)
- Greenway Section (Holistic approach)

CONCEPT PLAN – ENGINEERED OPTION

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CONCEPT PLAN – GREENWAY OPTION

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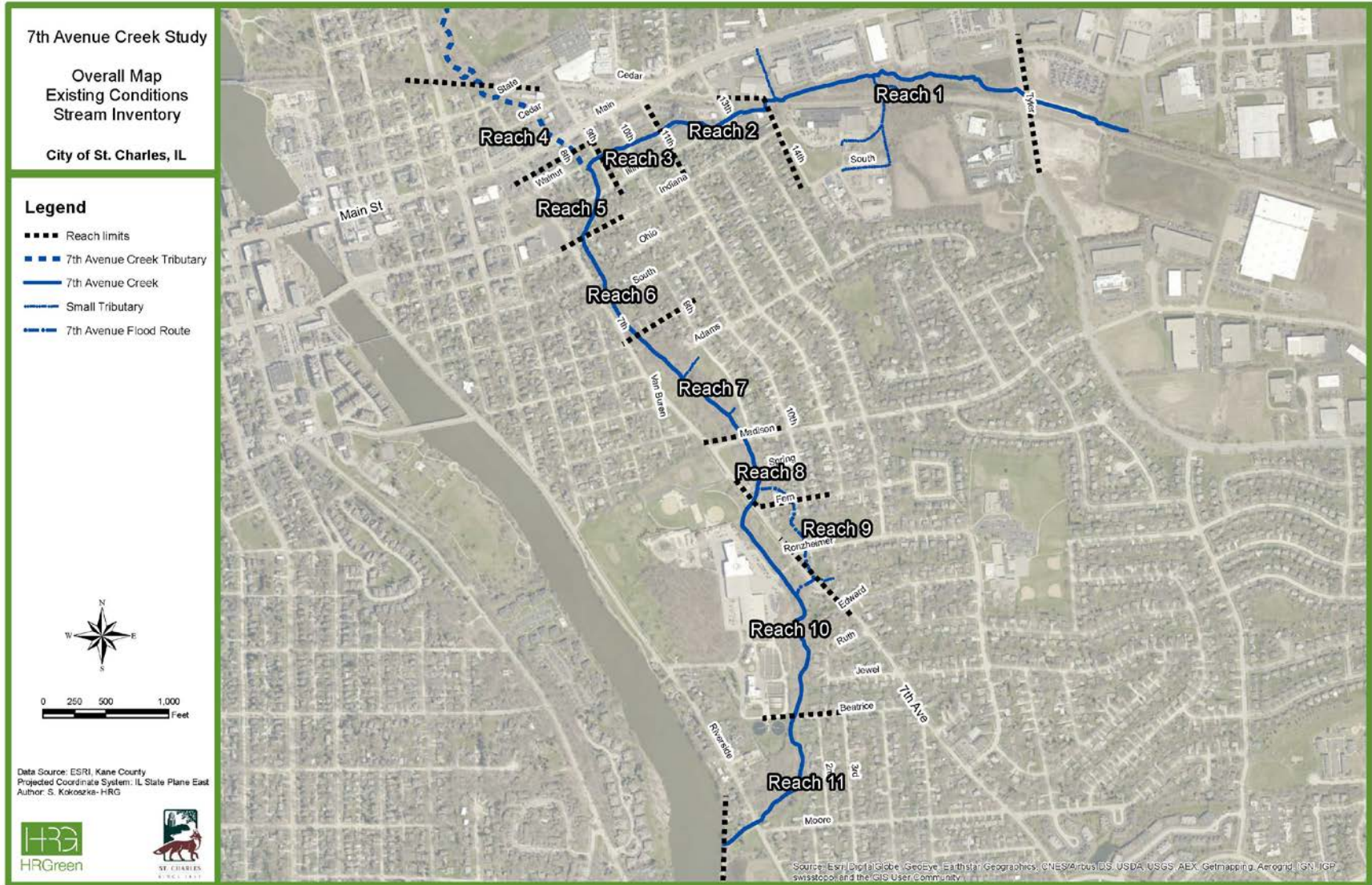
PREFERRED OPTION WAS IN-BETWEEN THE ENGINEERED AND GREENWAY

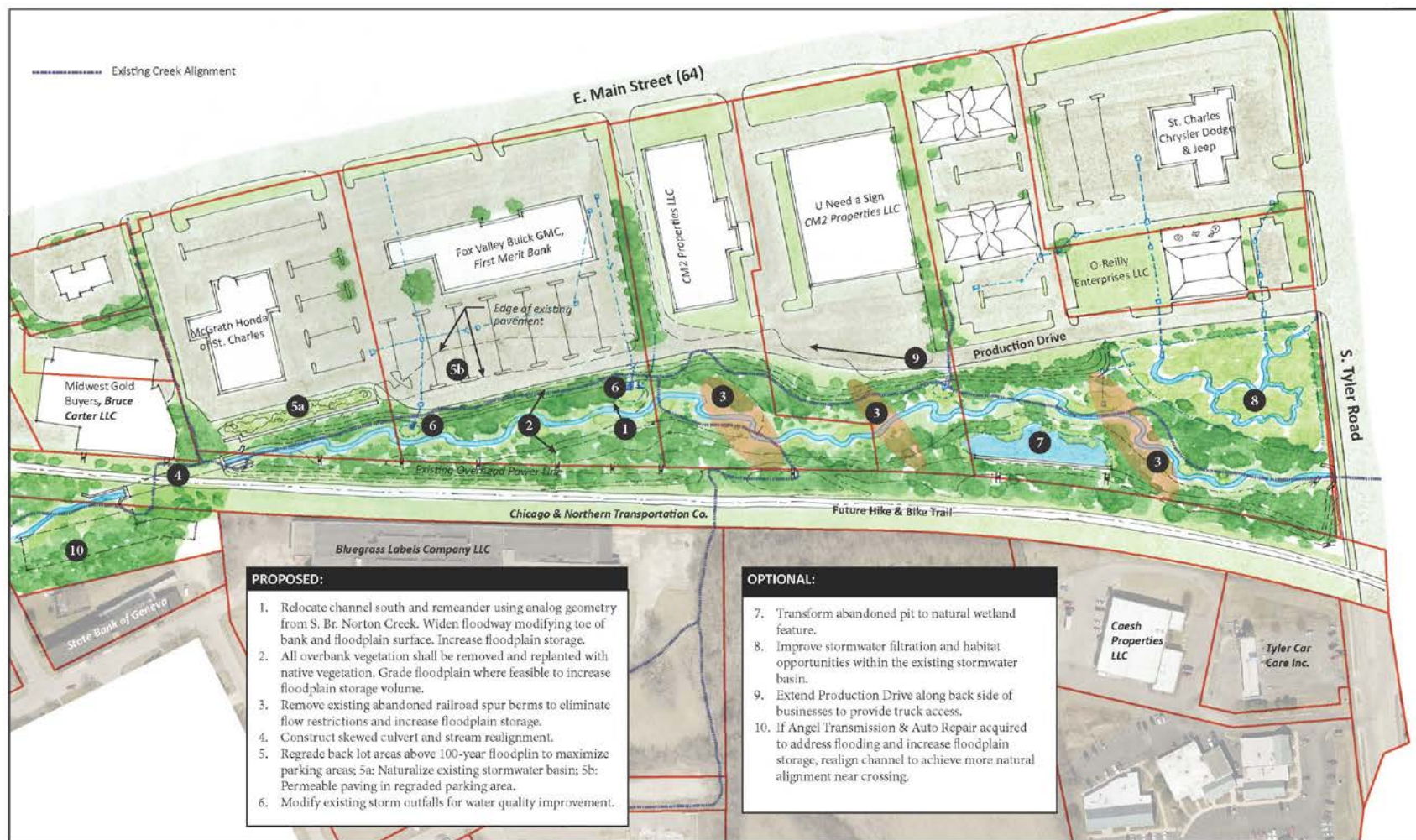
18

- Developed a Project Development Plan
 - Single Plan - Hybrid of Engineered and Greenway Option
 - Review for Feasibility and Constructability
 - Review for Utility Impacts
 - Opinion of Probable Costs
 - Phasing Plan

DEVELOPED A HYBRID PLAN (REACH BY REACH)

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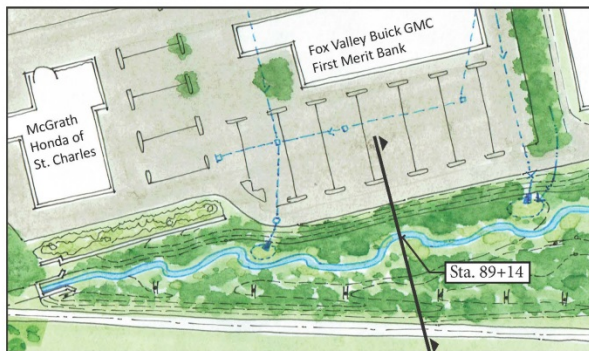
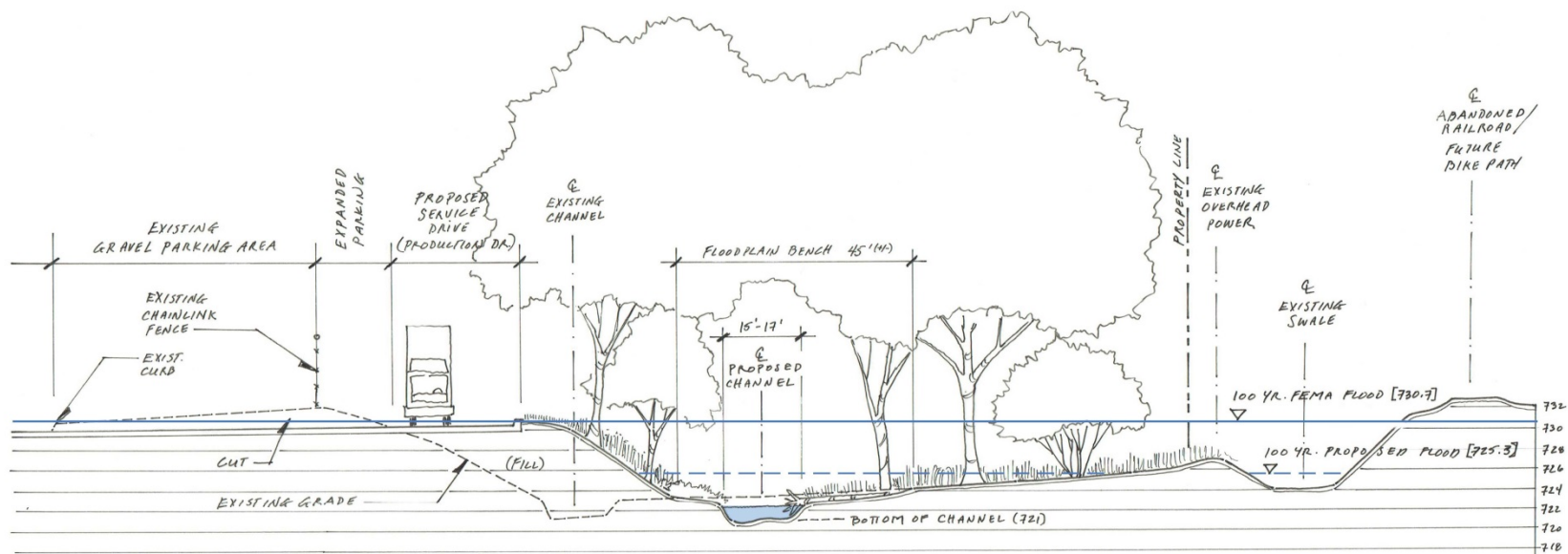




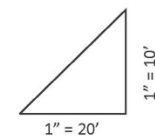
October 19, 2016

Reach 1 - 7th Avenue Creek Floodplain Improvement, Option B

0 75 150 300 450
Feet

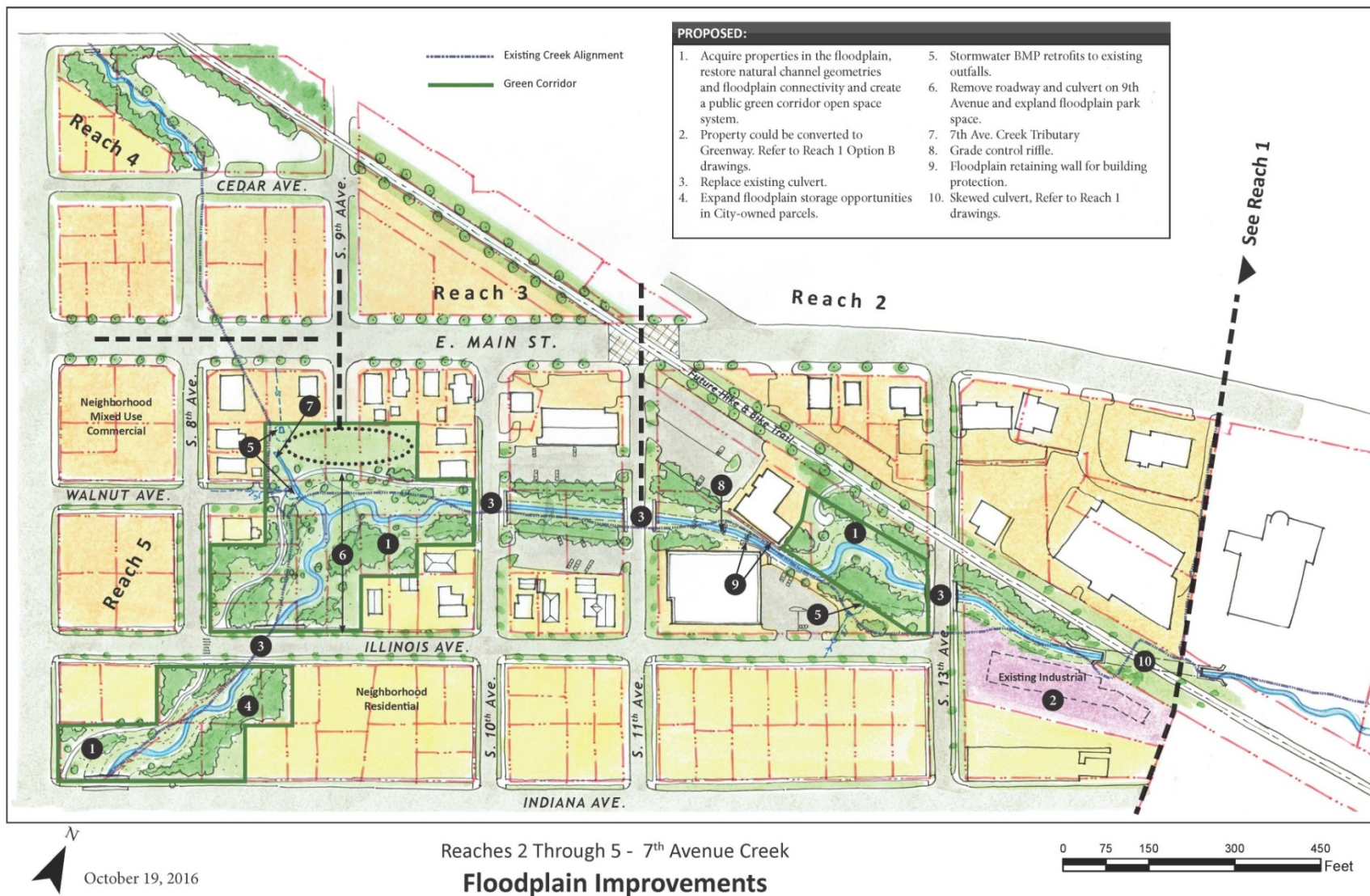


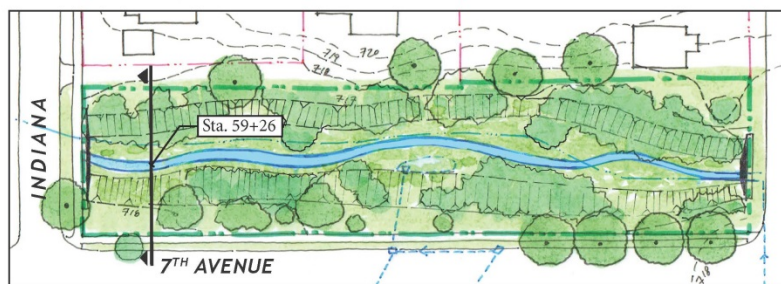
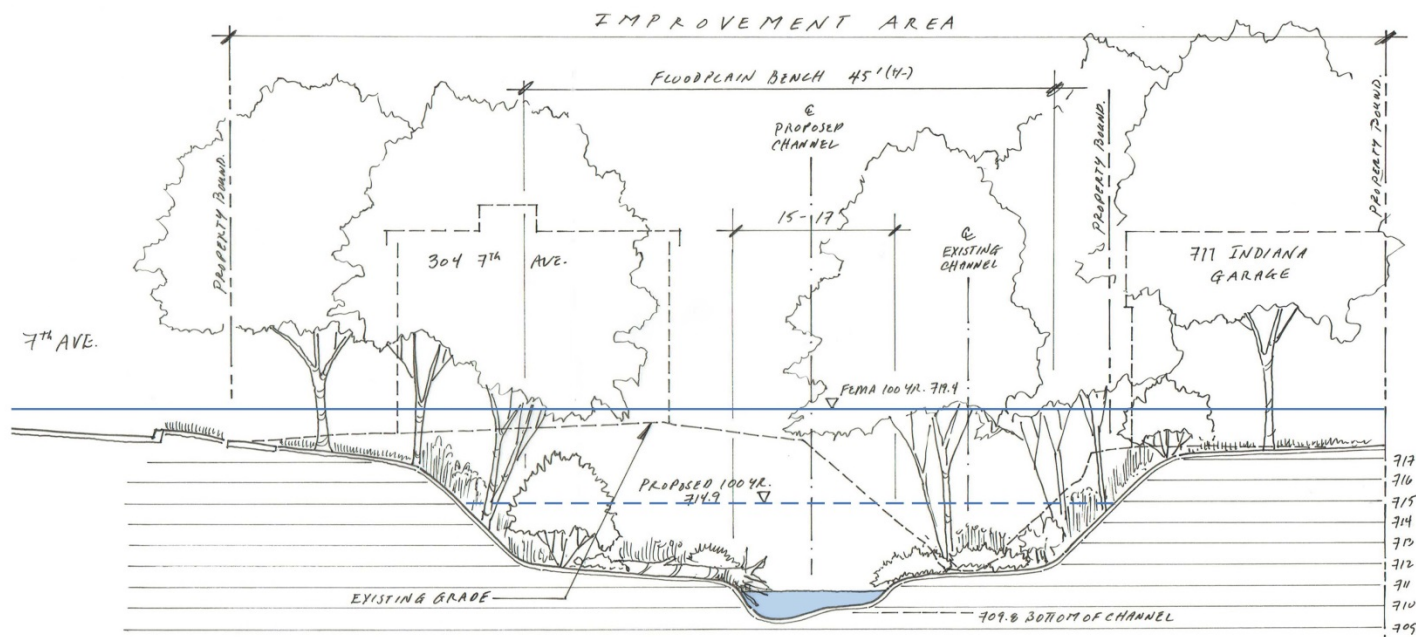
Existing Photo

7th Avenue Creek

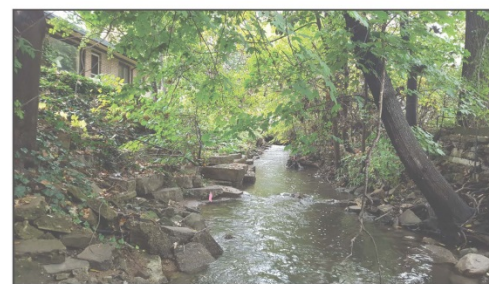
Draft: November 6, 2016

Reach 1 – Sta. 89+14 Proposed Section, Option B, Looking Upstream

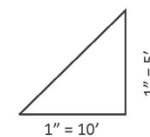




Key Plan: Reach 6



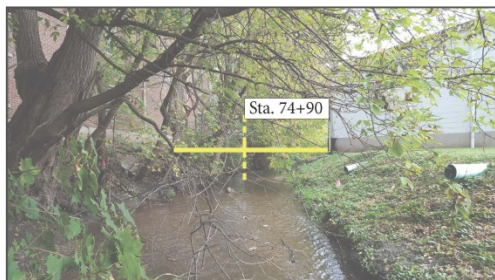
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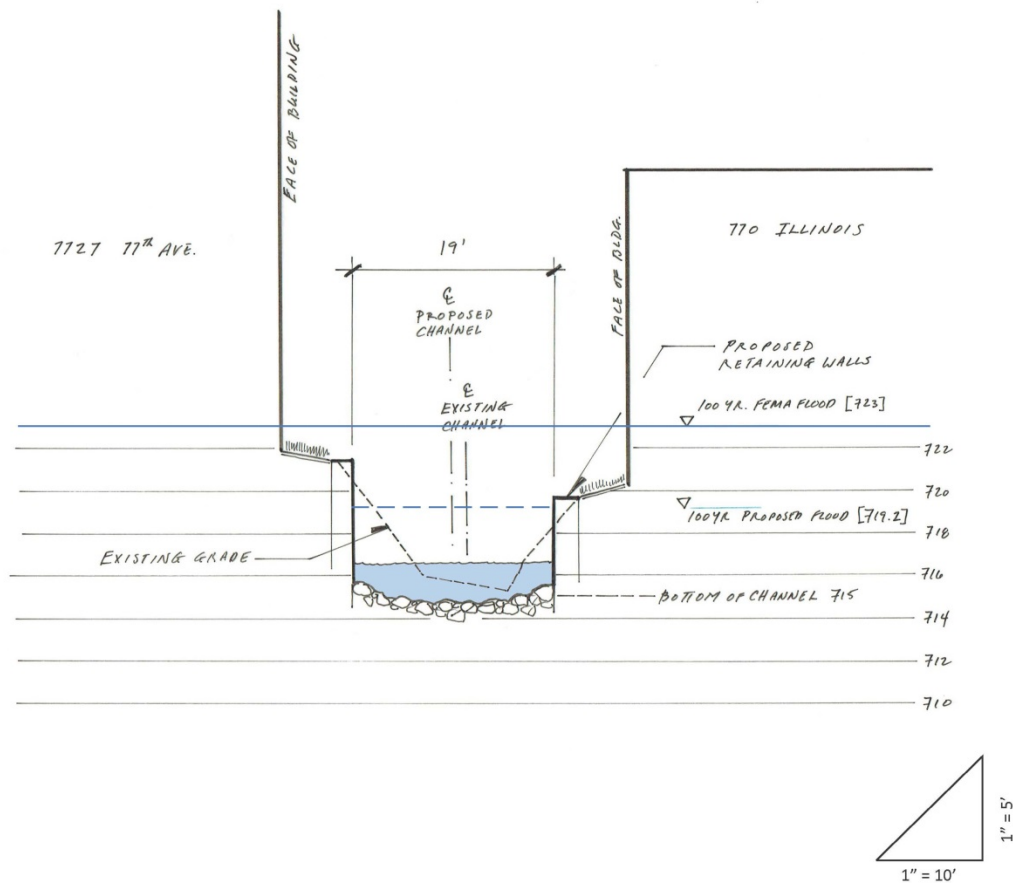
Draft: November 6, 2016

7th Avenue Creek
Reach 6 – Sta. 59+26, Proposed Section Looking Upstream

Key Plan: Reach 2

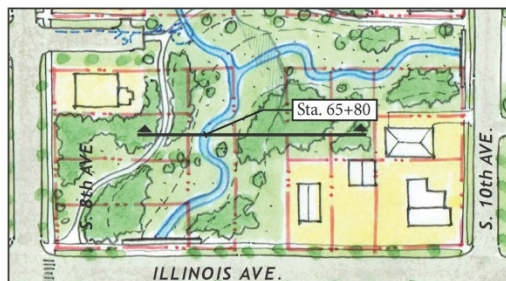
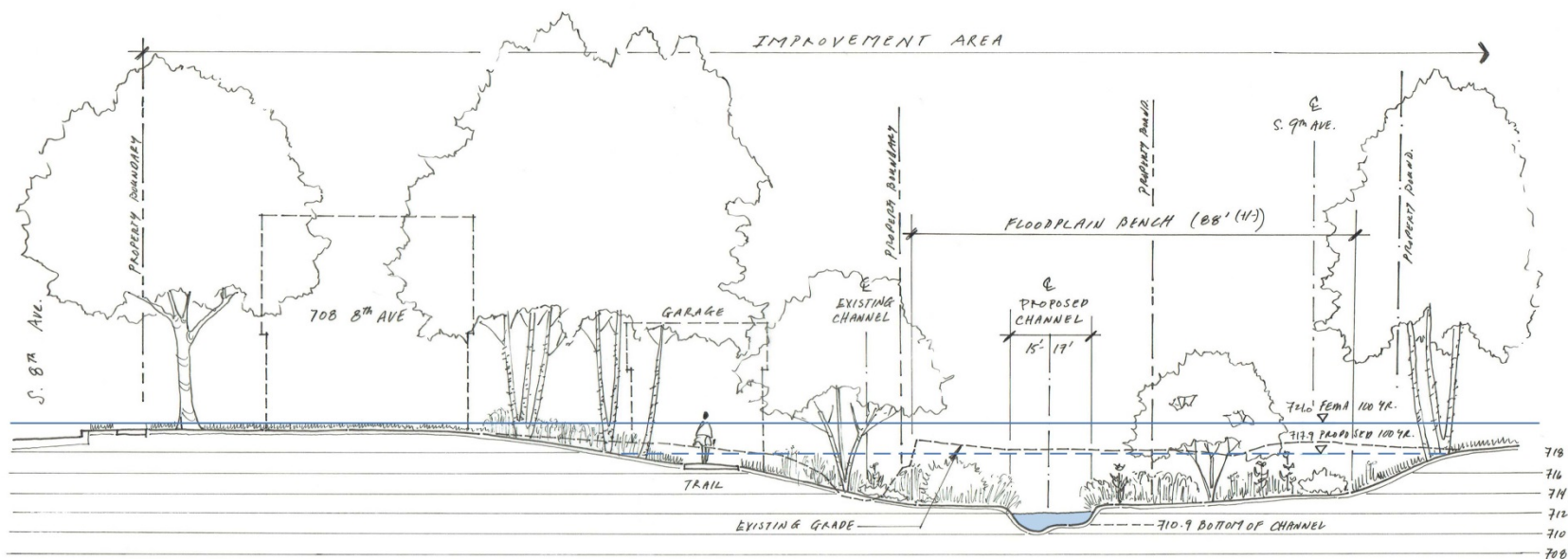


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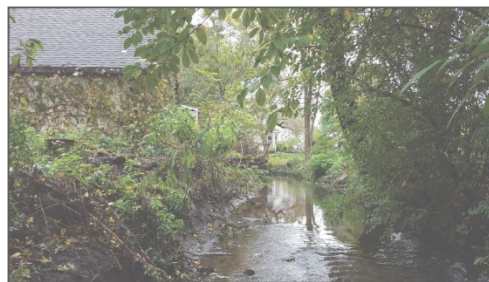
7th Avenue Creek

Reach 2 – Sta. 74+90 Proposed Section Looking Upstream

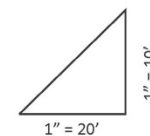
Draft: November 6, 2016



Key Plan: Reach 5



Existing Photo



7th Avenue Creek

Draft: November 6, 2016

Reach 5 – Sta. 65+80, Proposed Section Looking Upstream

CONCEPT AND MASTER PLAN

PROJECT COST/PROPERTY ACQUISITION SUMMARY

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	Concept Plan			Master Plan
	No Build	Engineered	Greenway	
EOPC	\$26.5M	\$12.6M	\$21.7M	\$17M-\$18M
Commercial Acquisition	13	0	2	1
Residential Acquisition	50	12	23	15
Vacant Parcel Acquisition	0	2	8	5

MASTER PLAN

PROJECT BENEFITS SUMMARY

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BENEFITS SUMMARY	Located in FEMA Preliminary Floodplain	
	(Pre-Construction)	(Post-Construction)
Total Number of Properties	118	36
Total Number of Commercial Structures	15	0
Total Number of Residential Structures	55	6*

**Six structures remaining in floodplain due to Fox River, not 7th Avenue Creek*

- FEMA funded and is completing mapping revisions
- Obtained Riverboat Casino Grant to prepare Watershed Plan
- Obtained Section 319 Grant from Illinois EPA for eligible channel restoration work for Phase I
- Applied for IDNR Mitigation Funding (not successful)
- Applied for PDM grant from FEMA for property acquisition
- Will apply for Section 319 Grant for future phases
- Will continue to look for future funding opportunities
- Currently doing Phase I design (2021 construction)

QUESTIONS FROM THE AUDIENCE



Ajay Jain, P.E., CFM

Vice President, Water Resources Practice Leader

H.R. Green, Inc.

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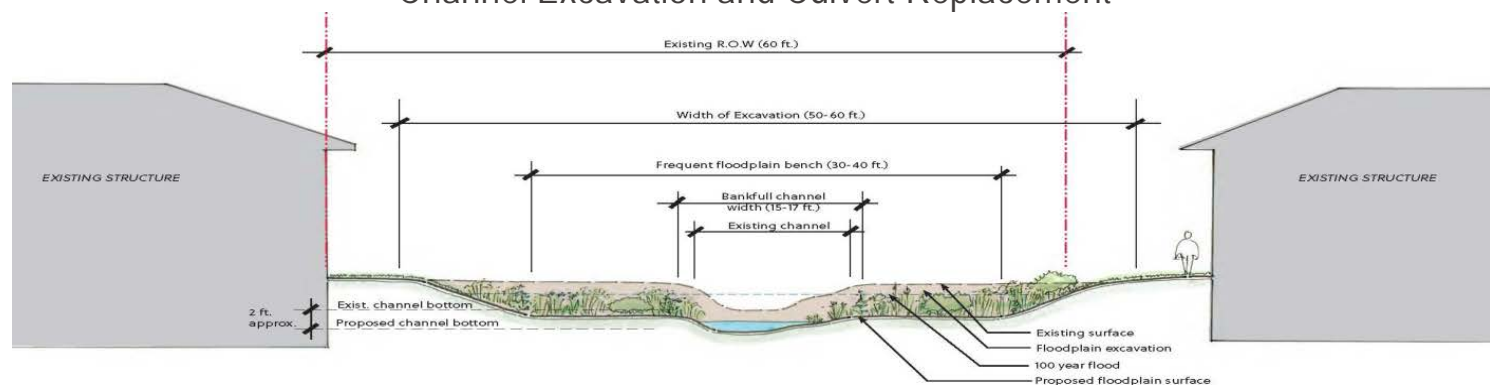
FEDERAL EMERGENCY MANAGEMENT AGENCY

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- Flood Risk Mapping (FEMA) – Updated Maps
- FEMA Process Underway & Appeal Process Complete
- 118 Properties Impacted by Proposed Maps
- Residential and Commercial Properties Impacted

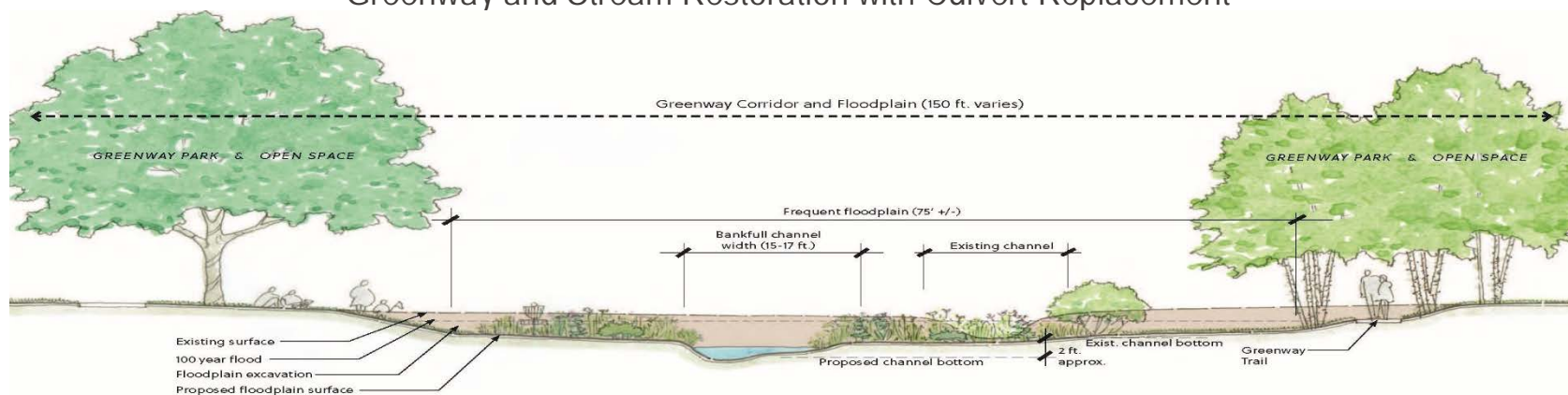
Option #1 – Engineered

Channel Excavation and Culvert Replacement



Option #2 – Greenway

Greenway and Stream Restoration with Culvert Replacement



Reach: _____ Date: _____ Name: _____ Department: _____

7th AVENUE PROJECT RATING CRITERIA ENGINEERED VERSUS GREENWAY OPTION BY REACH

ASSESSMENT FACTORS	ASSESSMENT FACTOR SCORING SCALE											SCORE	COMMENTS
	0	1	2	3	4	5	6	7	8	9	10		
1. Reach is severely eroded and provides minimal buffer to adjacent properties.	Negligible to low erosion				Moderate erosion of channel but no immediate impact to existing residents.			Severely eroded channel, minimal to no buffer to existing property, potential structures at risk					
2. Reach contributes significantly to water quality impairment?	N/A to minimal water quality impact.				Moderate water quality impact.			High water quality impact.					
3. Bank stabilization, creek meandering and floodplain enhancement in this reach would rank well for water quality grant.	N/A or would be considered a low priority project by EPA.				Moderate or would be considered a medium priority project by EPA.			High or would be considered a high priority project by EPA.					
4. Reach improvements are located in an area that would provide a visible and enjoyable asset to adjacent residents?	N/A. Reach has minimal adjacent residents.				N/A. Reach is a high asset but has minimal view/accessibility to the channel. Only few residents impacted.			Reach would be a high asset as it will provide enhanced view/accessibility to the channel.					
5. Reach has historically required significant maintenance.	N/A. Reach has not required significant maintenance.				Moderate. Reach requires periodic maintenance similar to other reaches.			Reach has required extensive maintenance. Is a bottleneck and accumulates sediments.					
6. Reach has difficult access for maintenance?	Easy access.				Access is available for maintenance but requires access through private property/easement.			Difficult to access without use of private property and/or easement. Low maintenance would be beneficial for long term cost effectiveness.					
7. Reach connectivity to u/s or d/s improvement.	N/A. Reach is independent of what is done in u/s or d/s reaches.				Reach would require minimal to moderate transitions from u/s to d/s			Great connectivity. U/s improvements need to be carried through this reach for benefit to u/s reaches.					

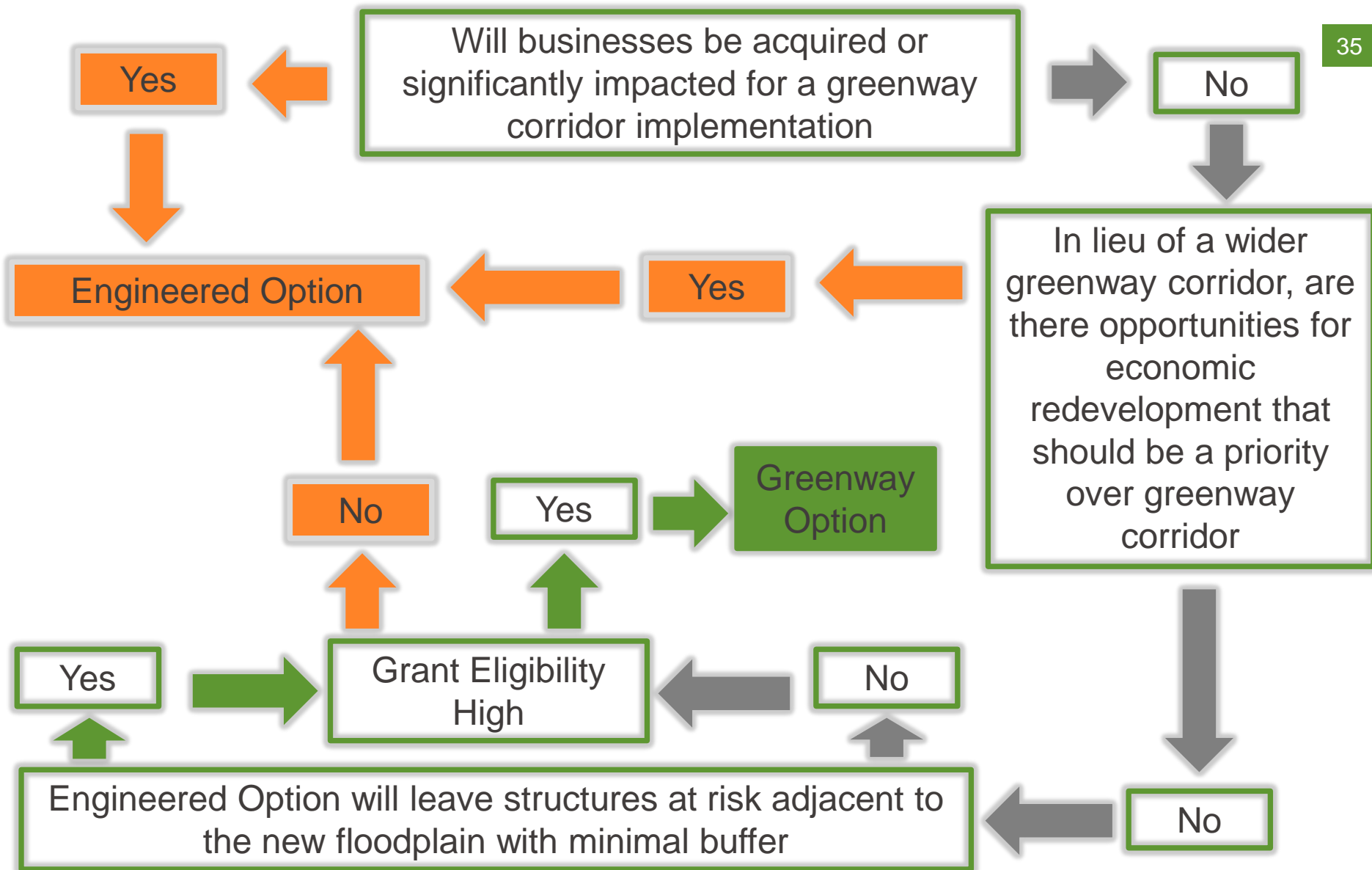
Reach Condition, Water Quality, Grants Opportunity

ASSESSMENT FACTORS	ASSESSMENT FACTOR SCORING SCALE												SCORE	COMMENTS
	0	1	2	3	4	5	6	7	8	9	10			
8. Reach is in an area that level of improvements selected between an engineered option and greenway option would have an impact on future development opportunity.	High impacts to economic development.				Moderate impacts to economic development.			N/A. Low impact to economic development.						
9. Reach improvements needs to be aligned with City Comprehensive plan	N/A. Minimal to insignificant synergy between the reach versus the City Comp. Plan.				Moderate synergy between the reach versus the City Comp. Plan.			High synergy between the reach versus the City Comp. Plan.						
10. Reach improvements needs to be aligned with City Strategic Plan?	N/A. Minimal to insignificant synergy between the reach versus the City Strategic Plan.				Moderate synergy between the reach versus the City Strategic Plan.			High synergy between the reach versus the City Strategic Plan.						
11. Reach is located in area where desired ROW is currently available or can be acquired.	ROW acquisition is questionable as property owners have not been contacted.				ROW acquisition is generally feasible.			ROW is either available or property owners are willing to sell their property. Many have approached the City for acquisition.						
12. Reach is generally unsafe with close proximity of the channel to homes and/or high velocities in the channel. Improvements shall consider safety in design.	N/A. Improvements will have minimal impacts to safety.				Improvements will have moderate impact to safety.			Greenway Improvements will have significant impact to safety due to increased buffer, gently sloping section and reduced velocity.						
13. Engineered versus Greenway option Benefit Costs are significant higher.	Engineered option has a significantly high BCR than a greenway option (2:1)				Engineered option has a moderately high BCR than a greenway option (1.5:1)			Engineered option has similar BCR than a greenway option (1:1)						
14. Reach improvements have minimal impacts to utilities and will not require relocation of utilities.	High impacts to utility. Will require significant relocation or lowering of utilities.				Moderate impacts to utilities. Some conflicts but will not require major relocation.			No impacts to utilities.						
TOTALS CORE												0		

ROW, Safety

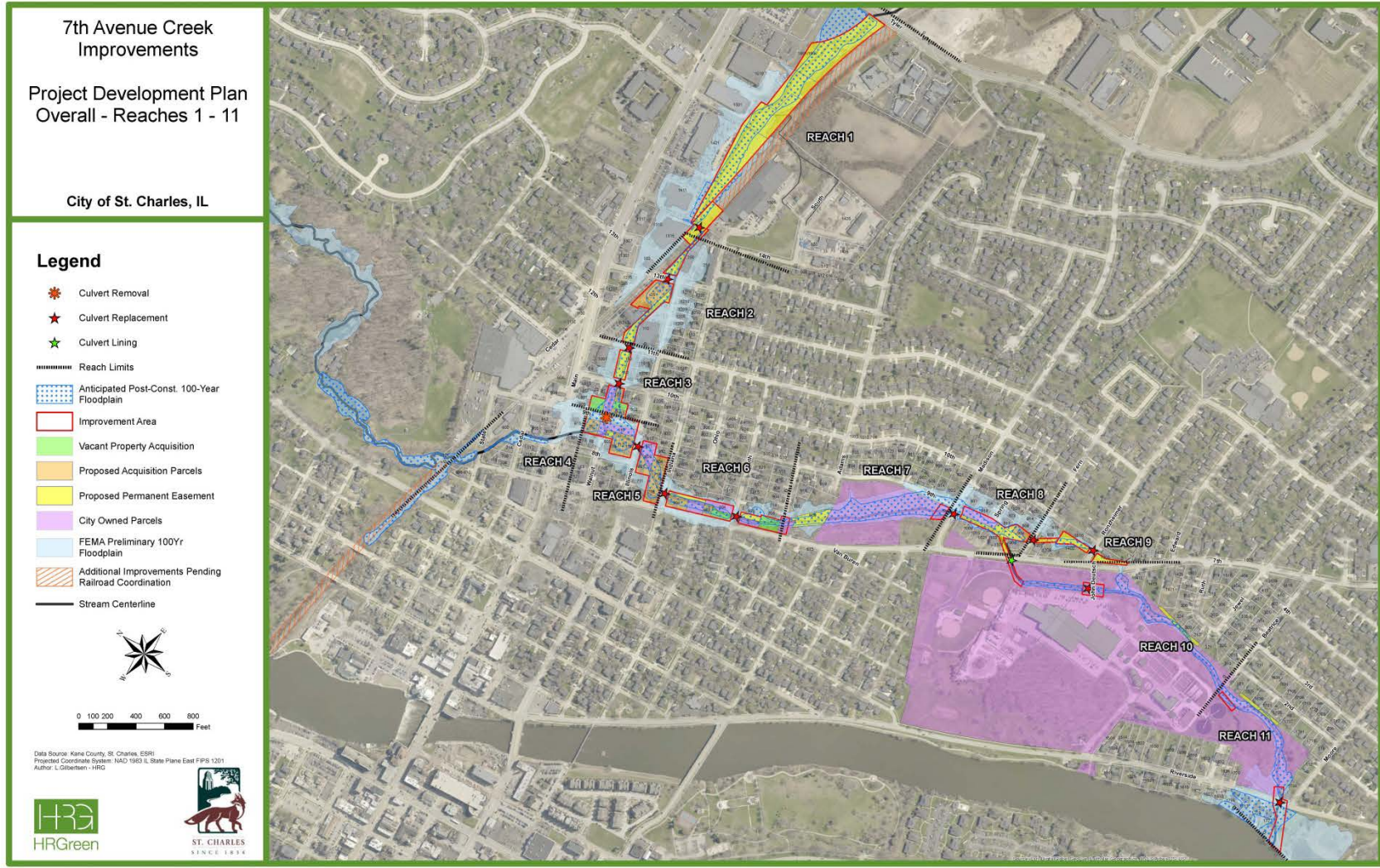
PROJECT DEVELOPMENT PLAN: APPLICATION OF OBJECTIVE AND SUBJECTIVE CRITERIA

PROJECT DEVELOPMENT PLAN								
FROM OBJECTIVE CRITERIA			FROM SUBJECTIVE CRITERIA					RESULTS
Column A	Column B	Column C	Column D	Column E	Column F	Column G	Column H	Column G
Reach No.	Reach Scores	Reach Percentile	Will businesses be acquired or significantly impacted for a greenway corridor implementation	In lieu of a wider greenway corridor, are there opportunities for economic redevelopment that should be a priority over greenway corridor	Reach can now be considered for either a greenway and/or a engineered option	Engineered Option, while removing properties from the floodplain, will leave structures at risk adjacent to the new floodplain with minimal buffer	Grant Opportunity	Recommended Proposed Action For Consideration
5	455	76%	No	No	Yes	Yes	High	Greenway
6	370	62%	No	No	Yes	Yes	High	Greenway
3	354	59%	Yes	N/A	N/A	N/A	N/A	Engineered
1	309	52%	No	No	Yes	No	High	Greenway
10	306	51%	No	No	Yes	No	High	Greenway
2	285	48%	Yes	N/A	N/A	N/A	N/A	Engineered
8	276	46%	No	No	Yes	No	Low	Engineered
7	272	45%	No	No	Yes	No	Low	Engineered
4	266	44%	Yes	N/A	N/A	N/A	N/A	Engineered
11	265	44%	No	No	Yes	No	Low	Engineered
9	173	29%	No	No	Yes	No	Low	Engineered



PROJECT DEVELOPMENT PLAN – OVERALL

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7th Avenue Creek Master Plan Development | ST. CHARLES, IL



PHASING PLAN AND COST

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7th Avenue Creek Improvements

Phasing Plan and Cost Summary

City of St. Charles, IL

Legend

- Reach Limits
- Improvement Area
- Priority 1
- Priority 2
- Priority 3
- Priority 4
- Priority 5
- Priority 6
- Priority 7
- Priority 8
- Stream Centerline



0 100 200 400 600 800 Feet

Data Source: Kane County, St. Charles, ESRI
Projected Coordinate System: NAD 1983 IL State Plane East FIPS 1201
Author: L. Gierbergh - HRG

