



# **LEFTHAND CREEK FLOOD CONTROL PROJECT**

**CASFM CONFERENCE 2013**



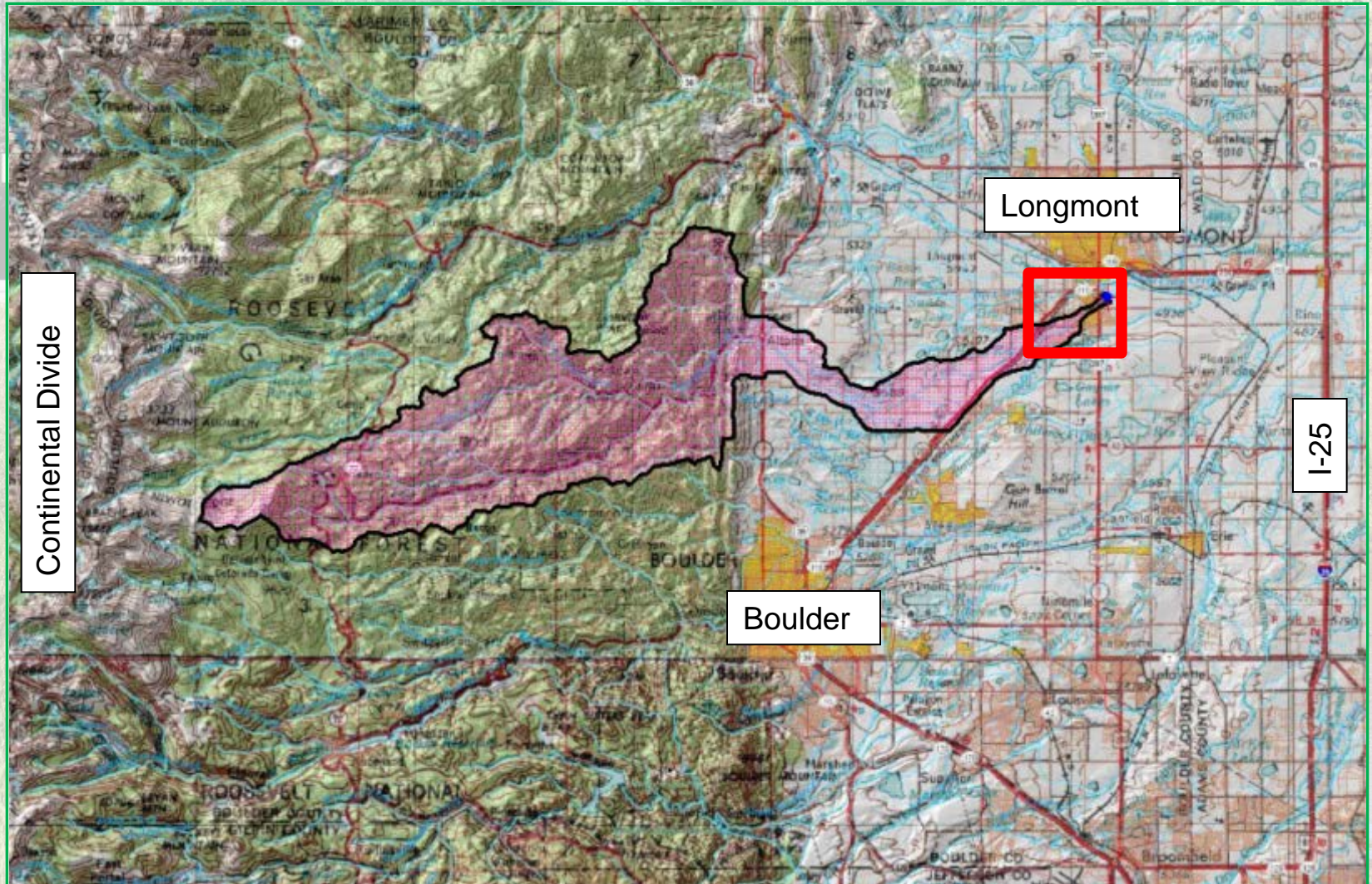
# Project Team

w e n k





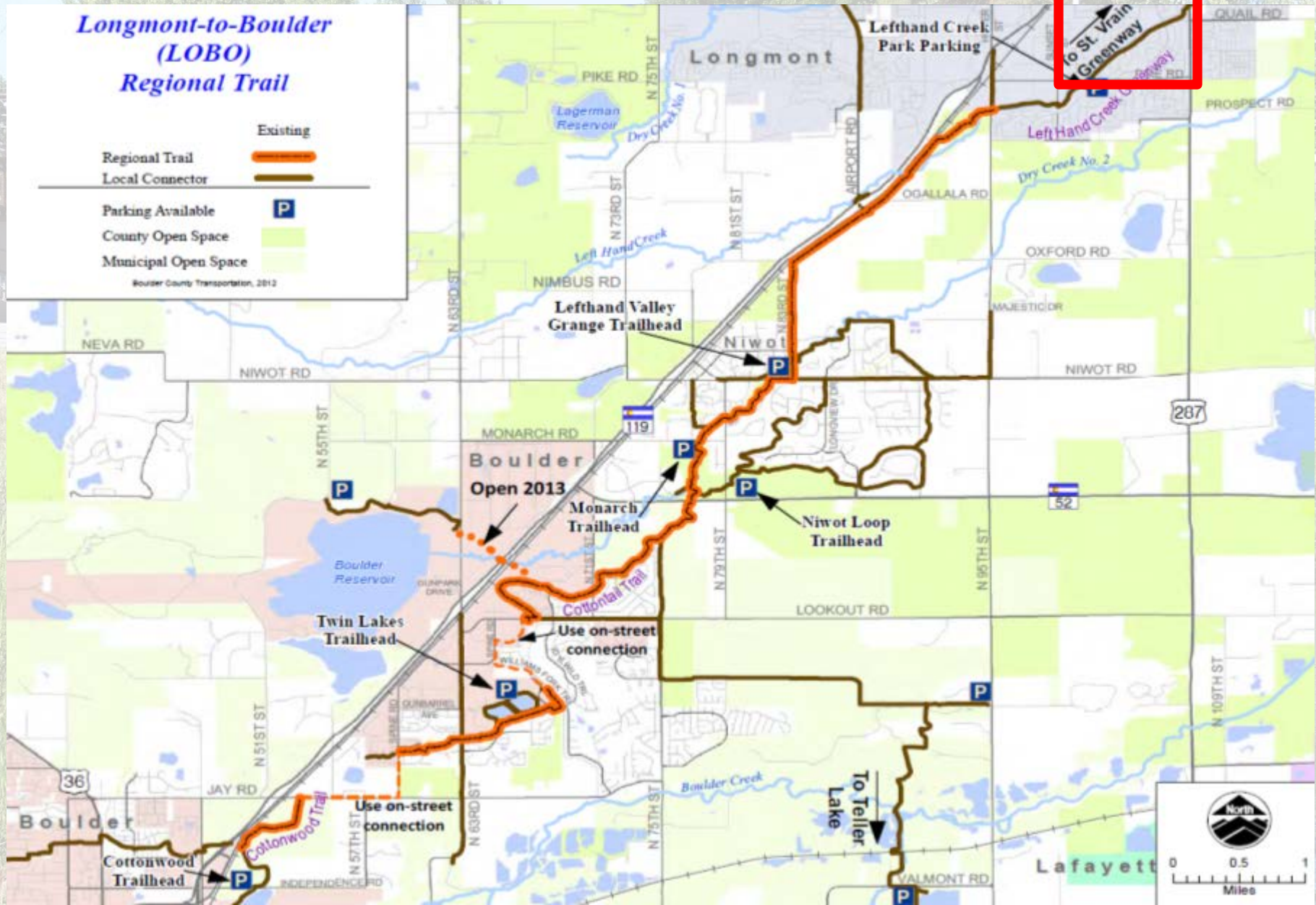
# Project Location



**Drainage basin area = 72 sq mi - 100-year flow rate = 5,000 cfs**



# LOBO Trail





# Vicinity Map





# Development

1963



2013

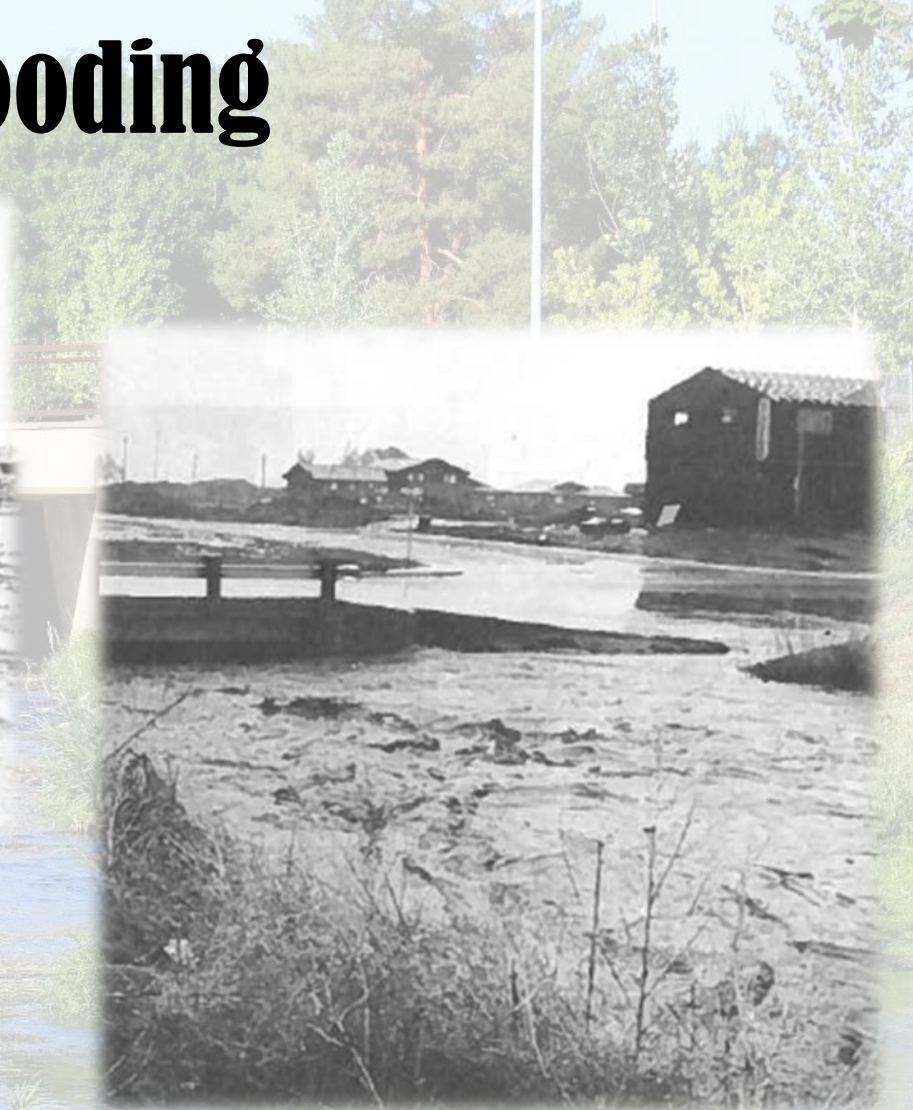


Longmont Museum





# 1969 Flooding



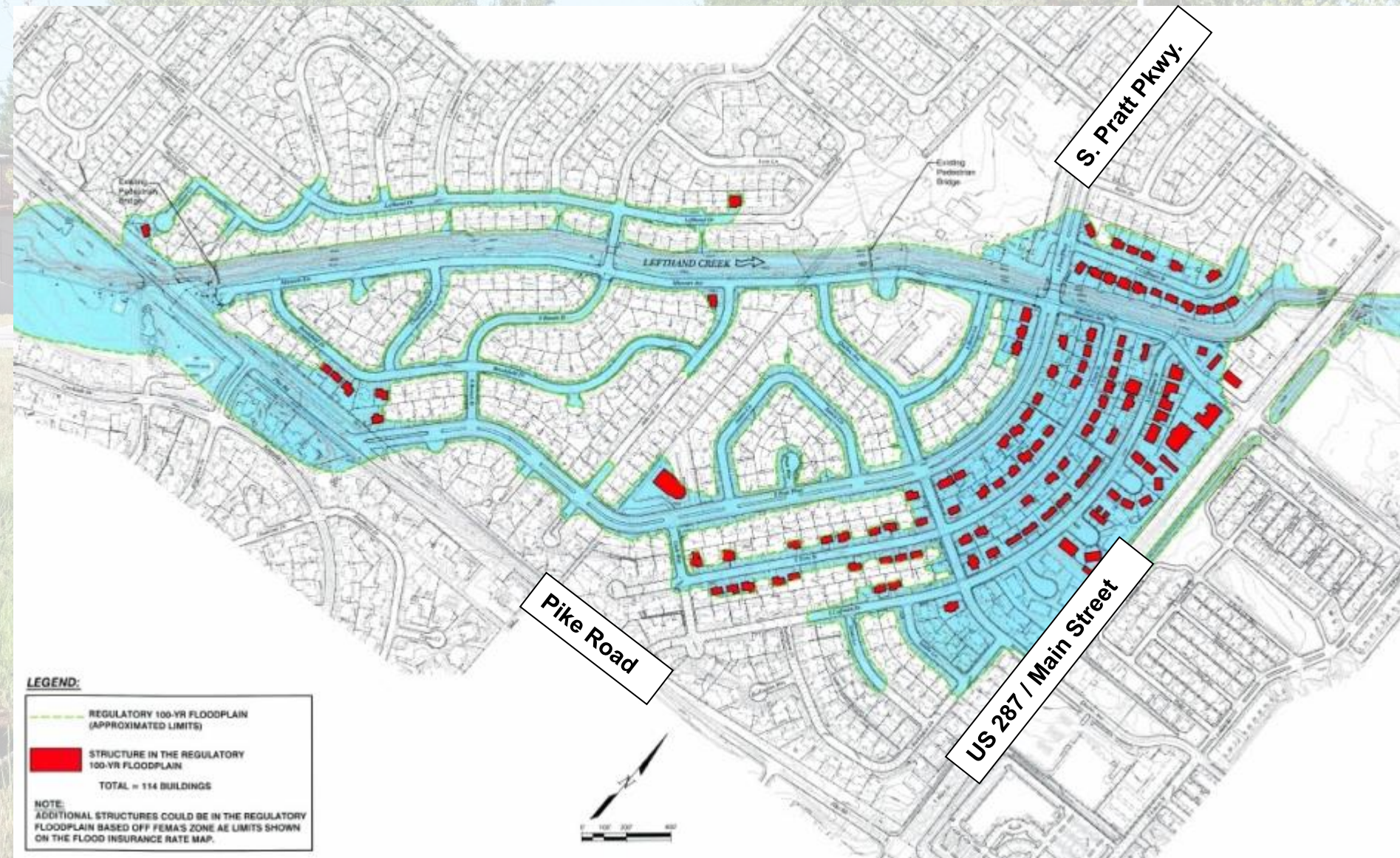


# 1995 Flooding





# Regulatory Floodplain





# 2007 Storm Drainage Bond

## ➤ Ballot Issue 2B

- Improve City Storm Drainage System
- Reduce risk of serious flooding
- Lefthand Creek identified as a priority project

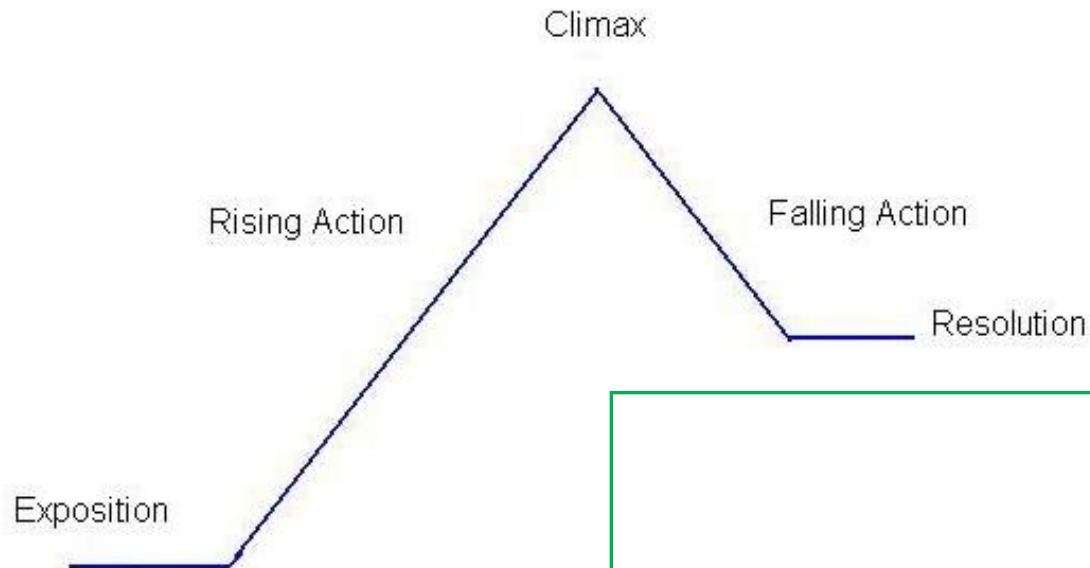


# Process vs. Product

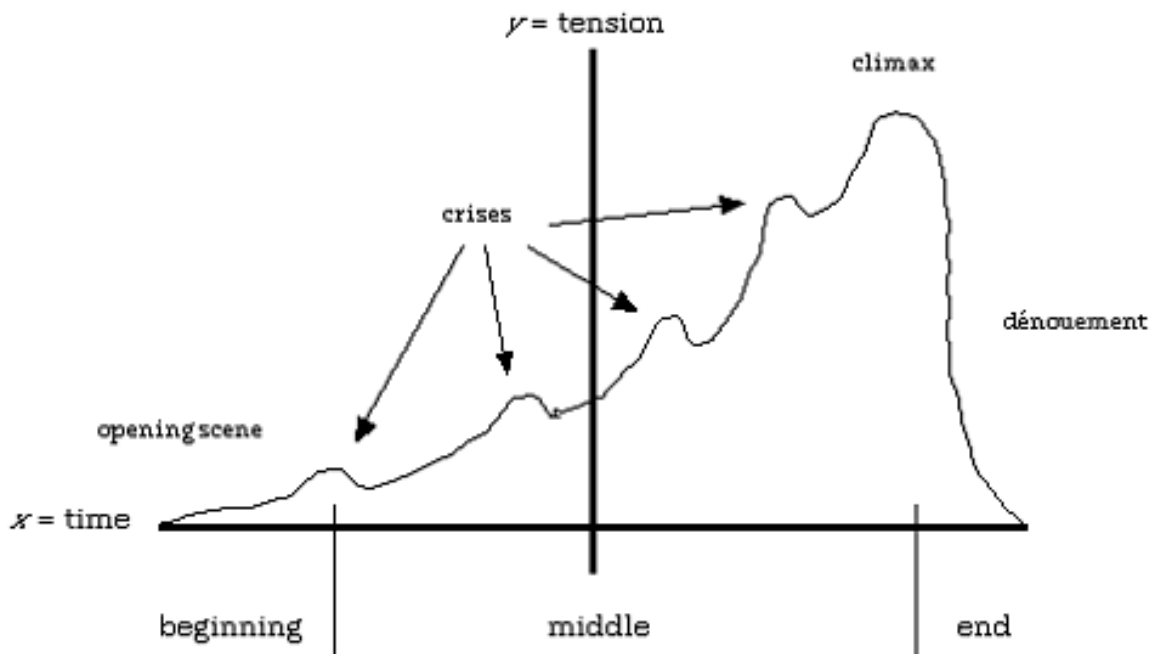




# Great Story

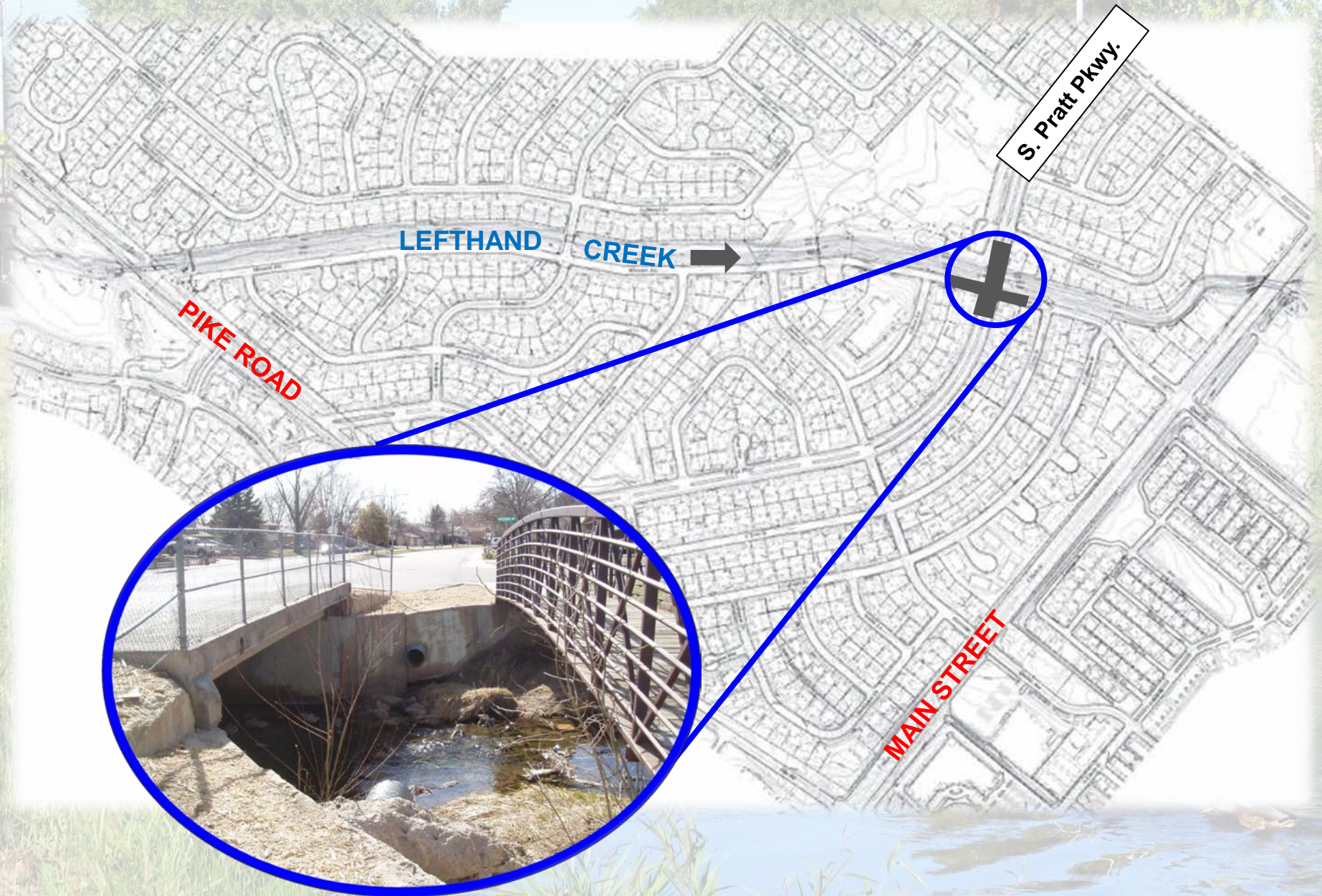


## Story Structure



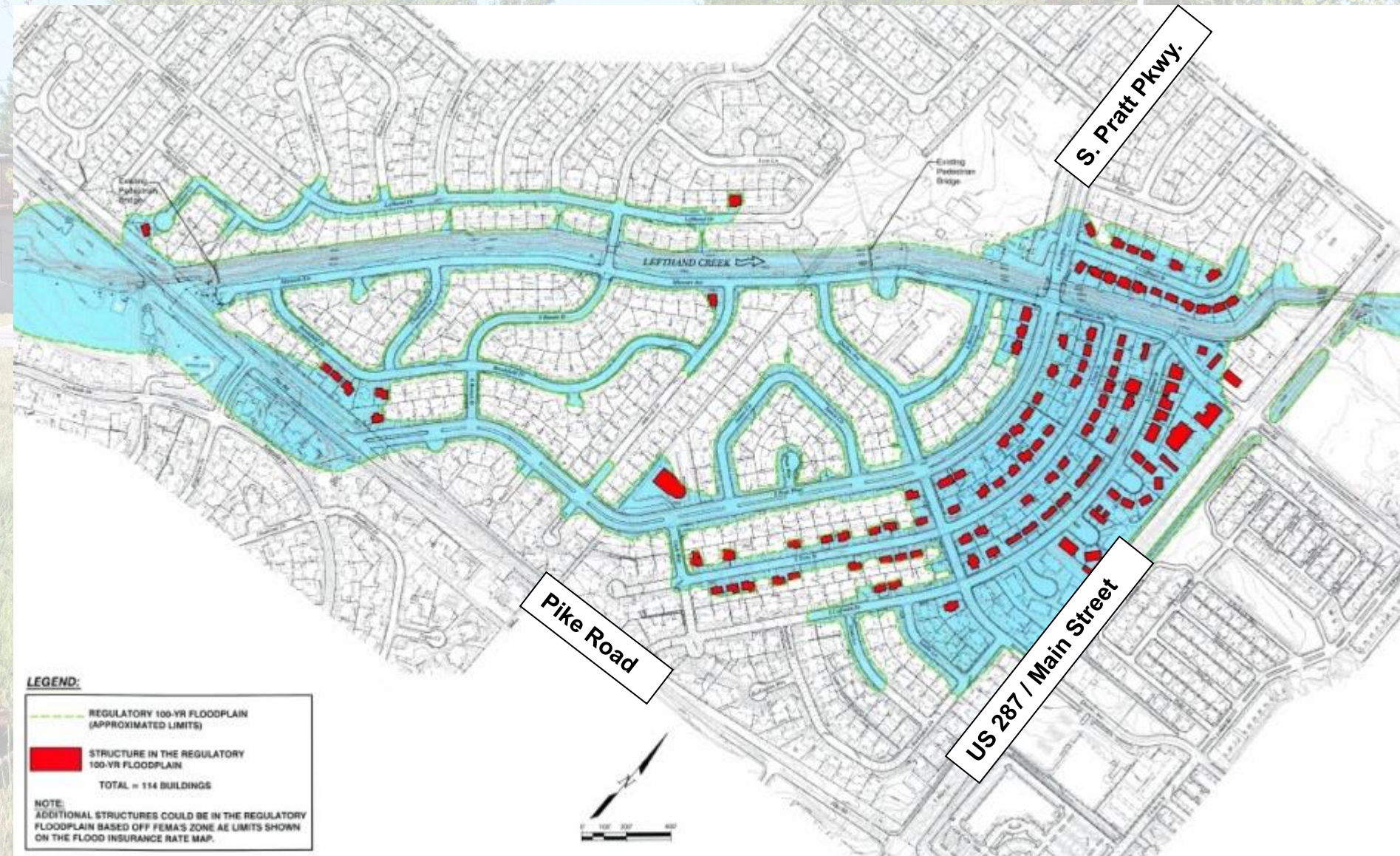


# Rising Action





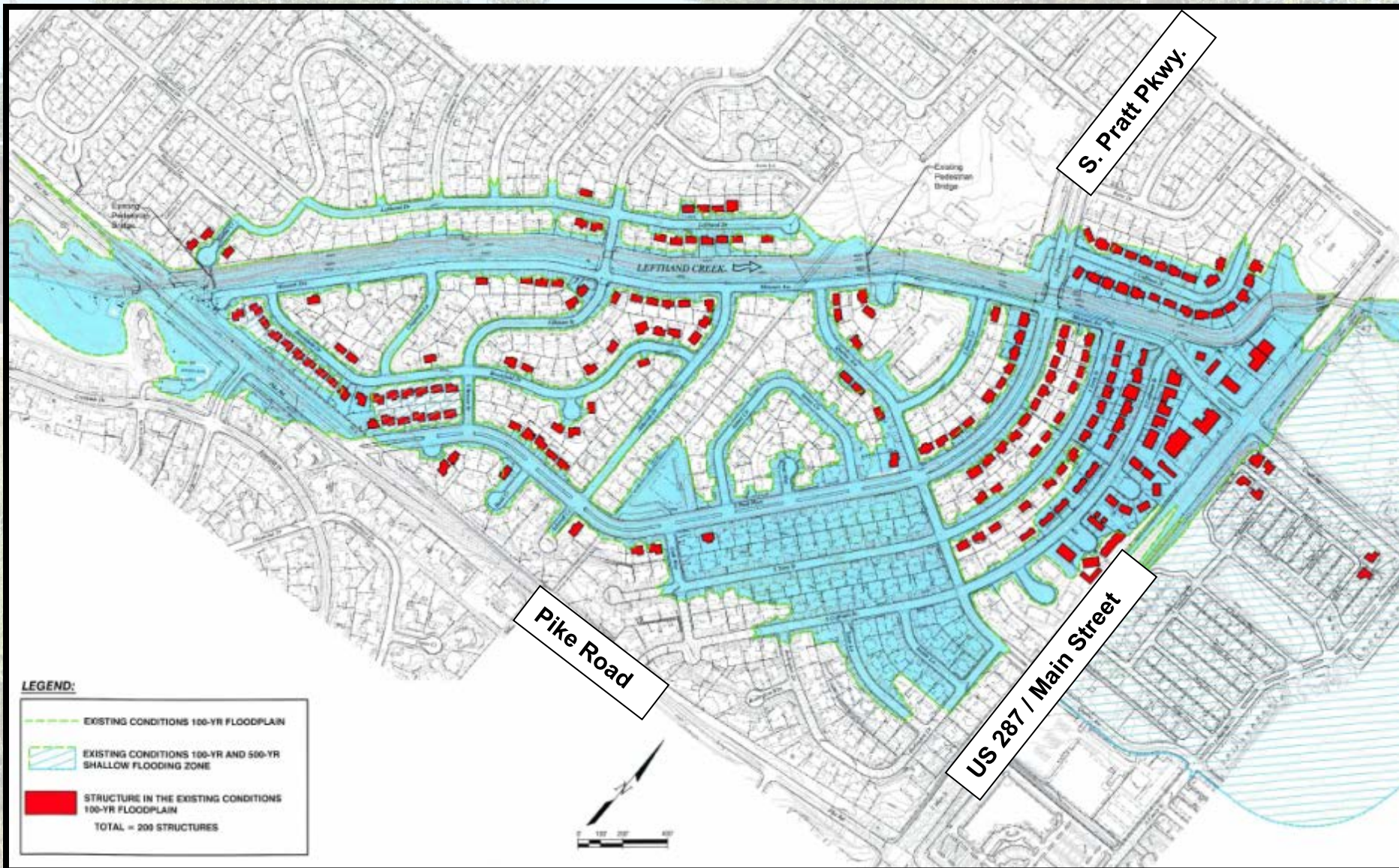
# Rising Action



Regulatory floodplain



# Rising Action



Existing floodplain analysis brings about more concerns



# Rising Action

- **Good news**: developed a plan to get all houses out and eliminate overtopping at US 287...



# Rising Action

- **Good news**: developed a plan to get all houses out and eliminate US 287 overtopping...
- **Bad news**: plan costs over \$11 million  
(well above original \$2 million project budget)



# Rising Action

- Reorganize City Funds
- Apply for FEMA Hazard Mitigation Grant

## Hazard Mitigation Assistance Unified Guidance

Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program



FEMA

Federal Emergency Management Agency  
Department of Homeland Security  
500 C Street, S.W.  
Washington, DC 20472



# Rising Action

## New Budget:

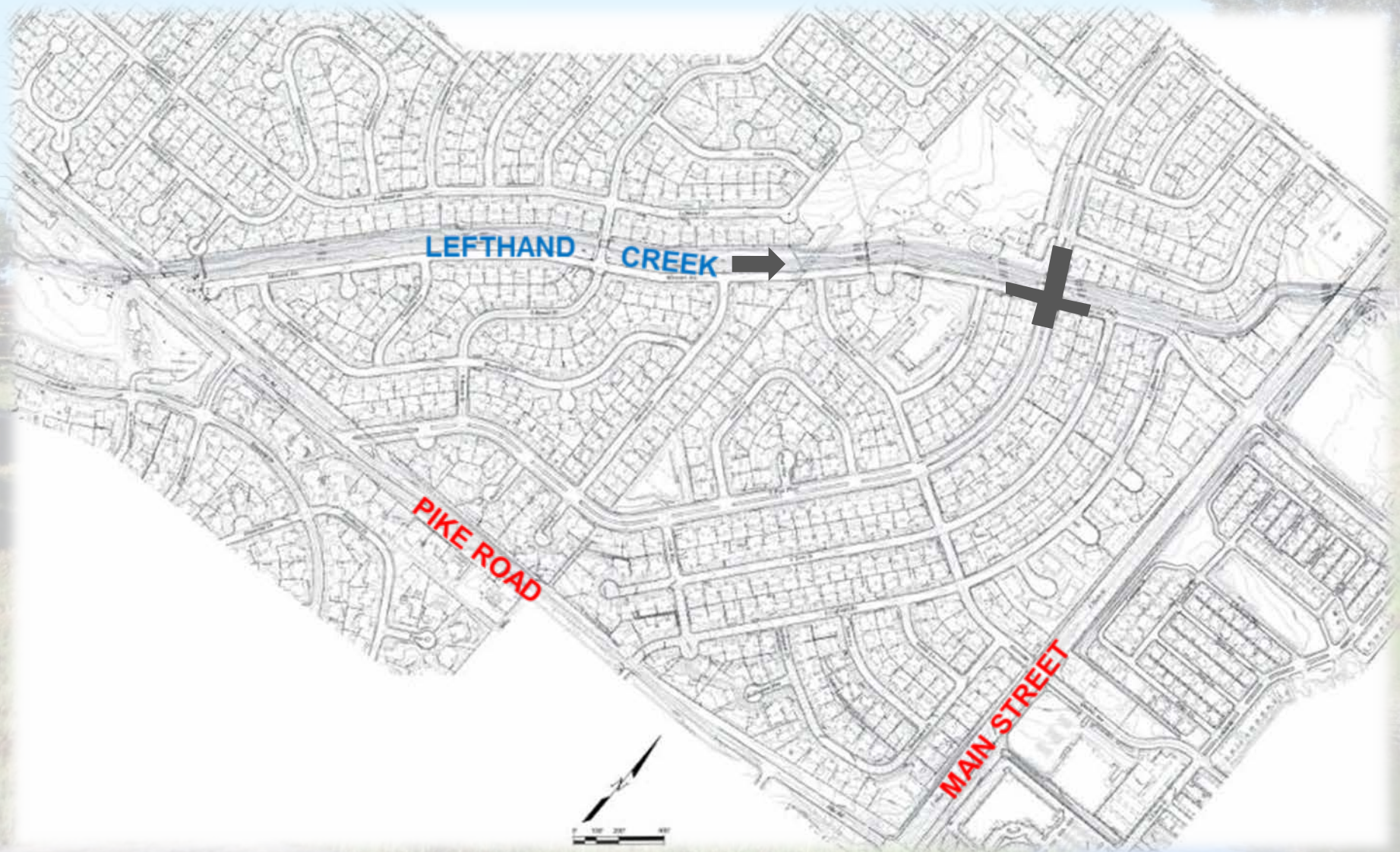
- Original Budget = \$2 million
- Additional Funding from City = \$2 million
- FEMA Grant = \$3 million
- Total Budget = \$7 million

## New Plan:

- Eliminate Overtopping of US 287
- Maximize flood mitigation for houses



# Proposed Improvements



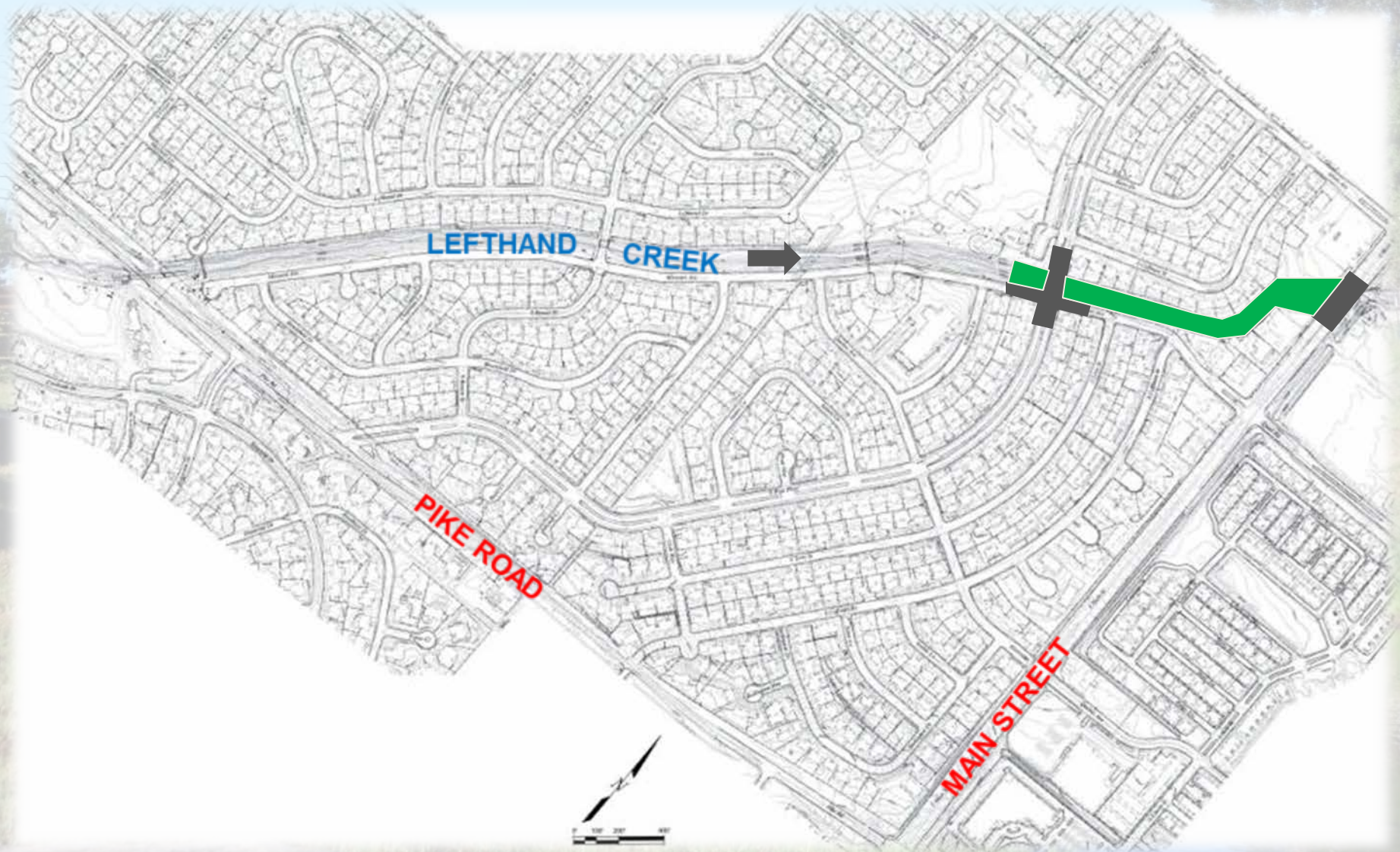


# Proposed Improvements



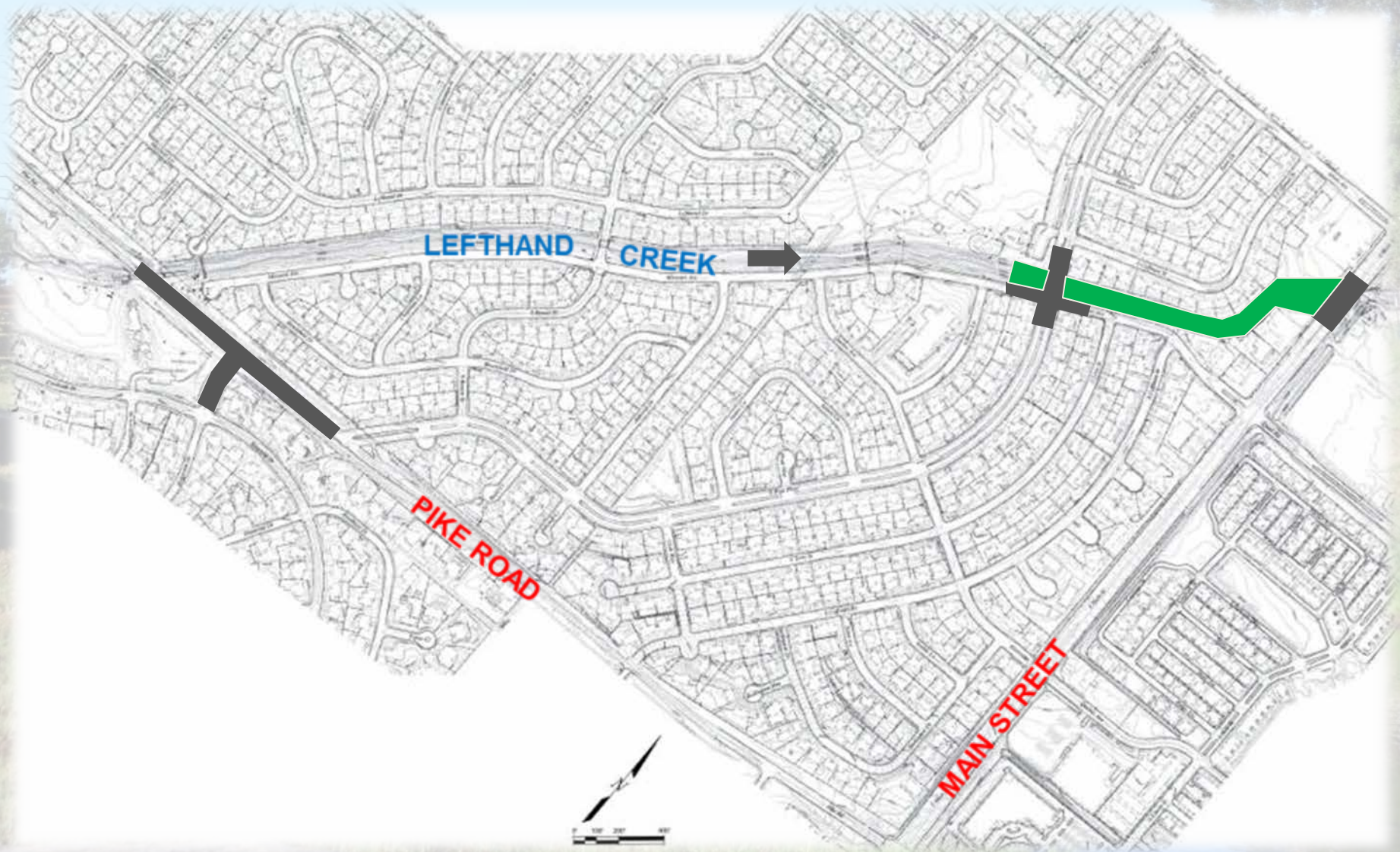


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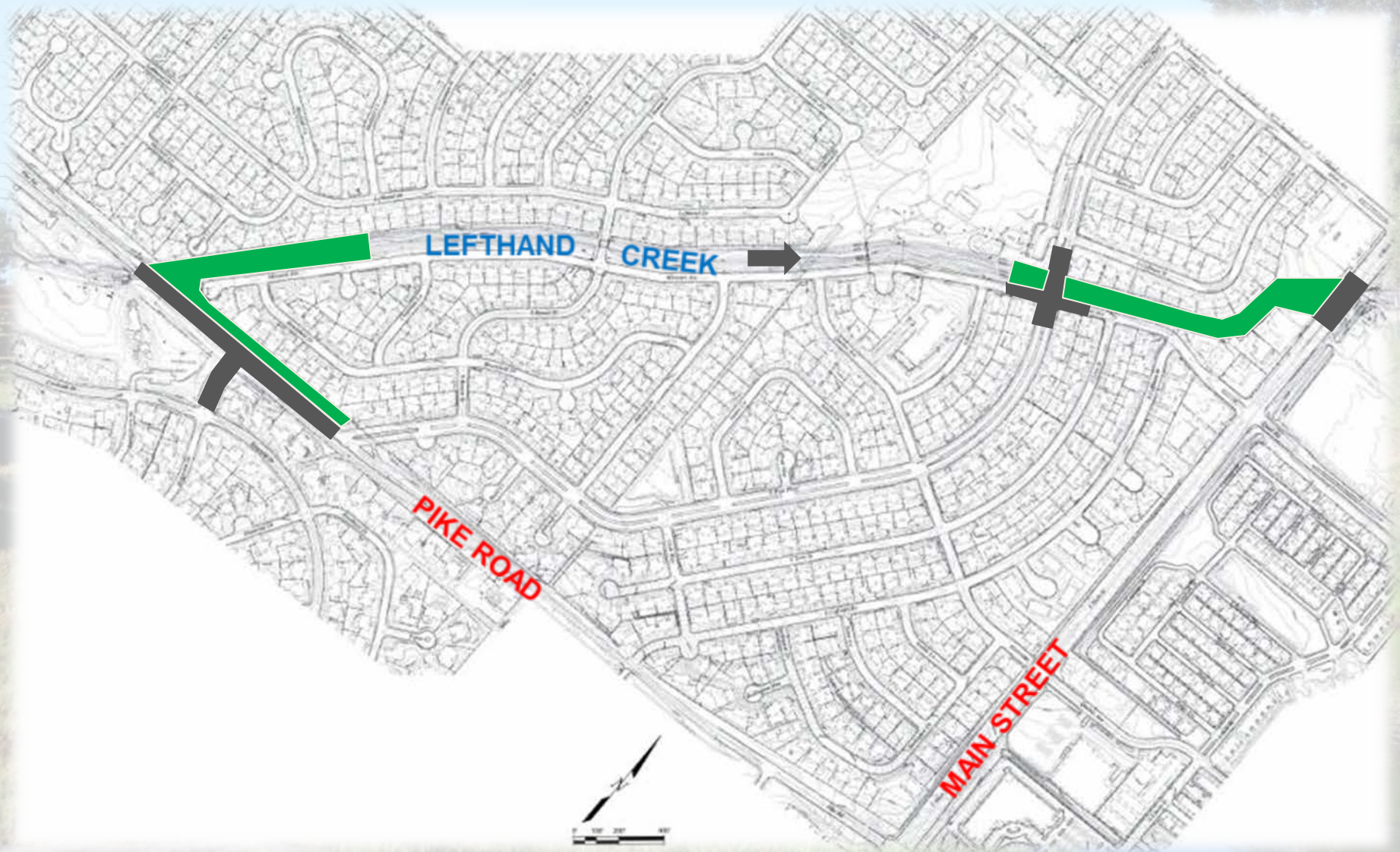


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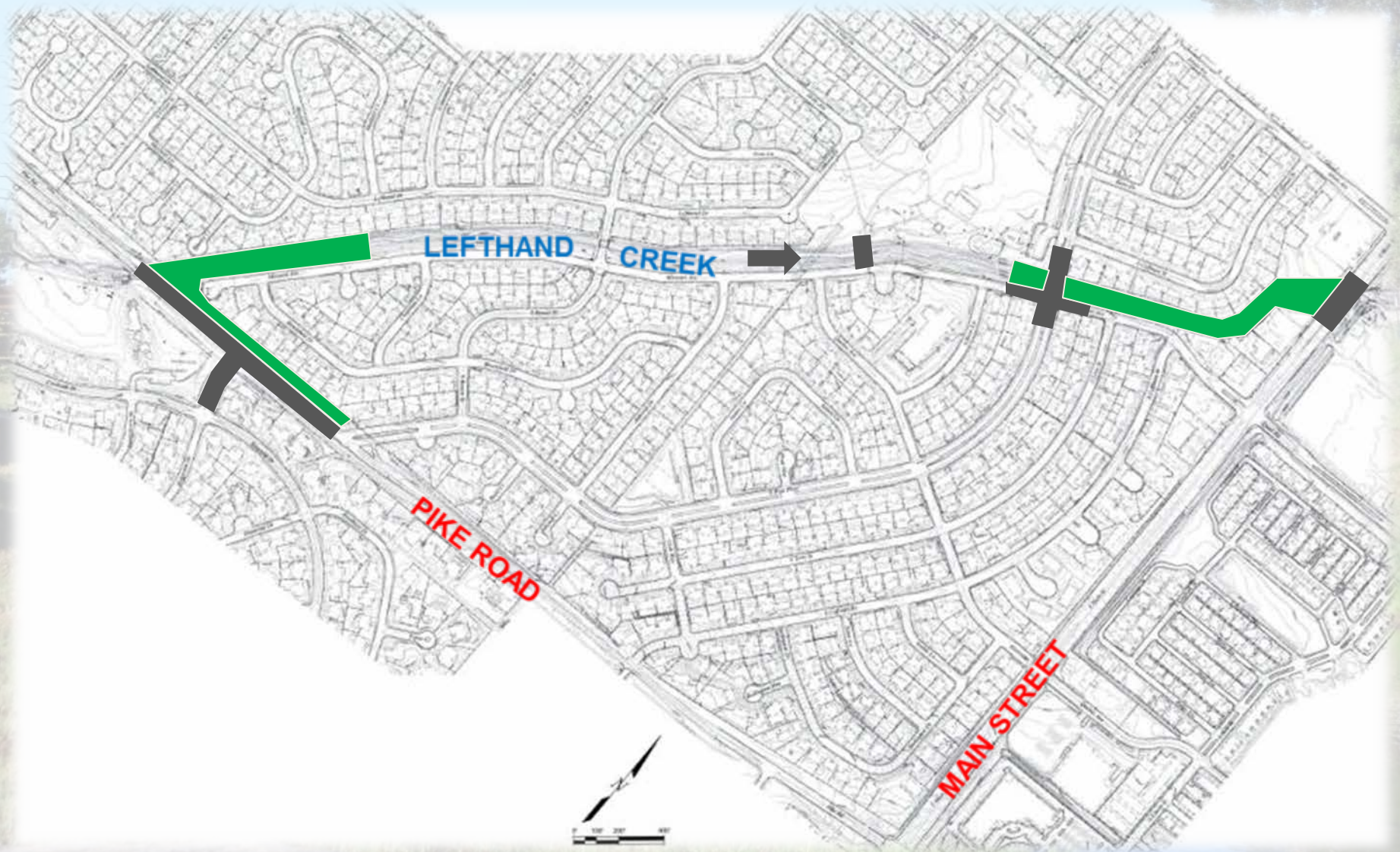


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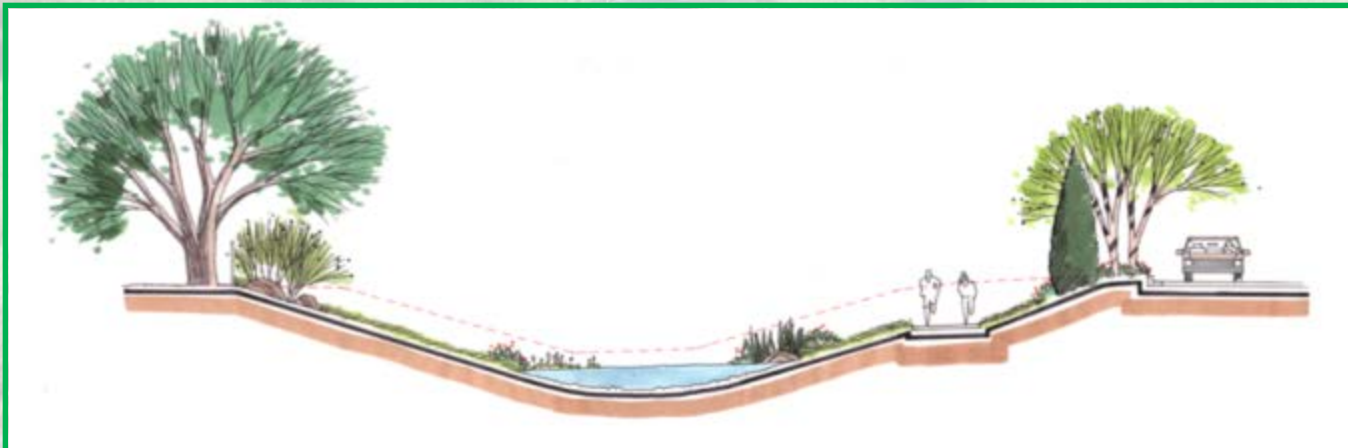
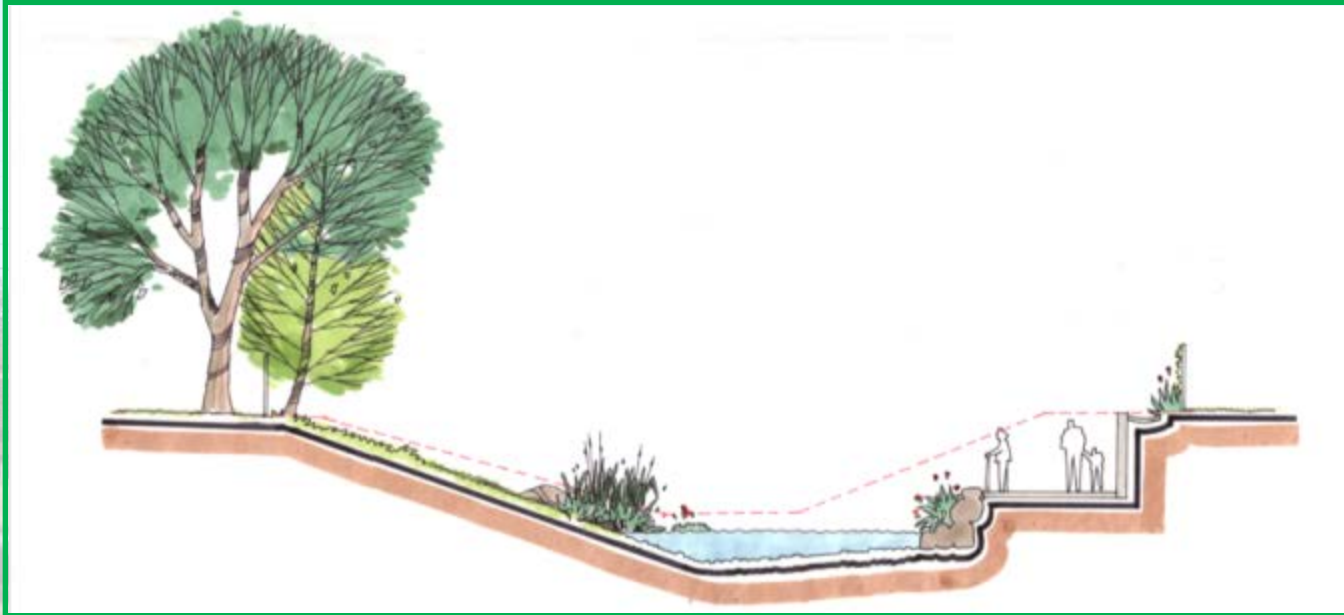


# Proposed Improvements





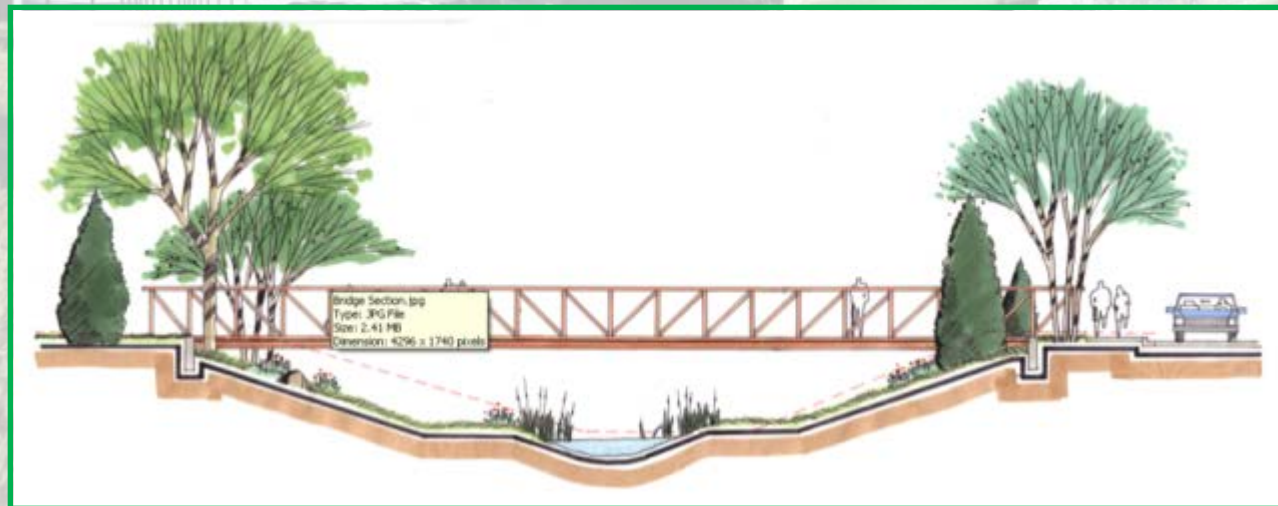
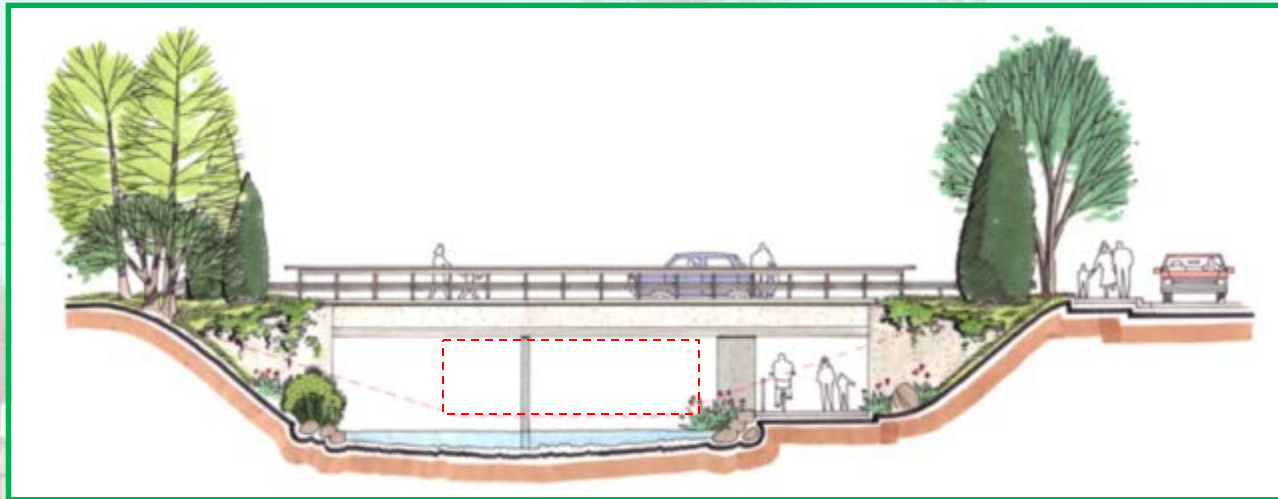
# Proposed Improvements



Typical Sections



# Proposed Improvements



Typical Sections



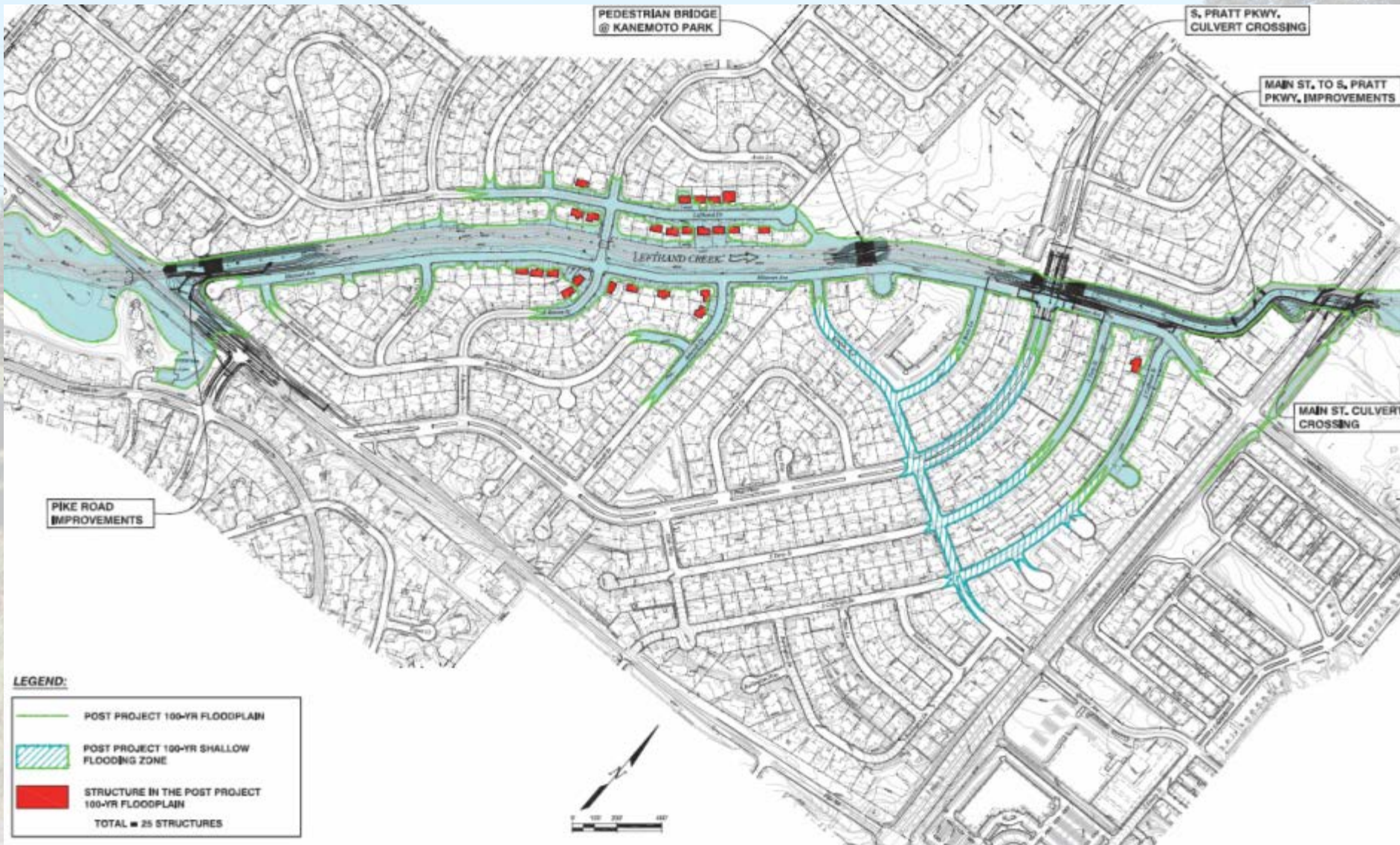
# Rising Action



**Existing Floodplain**



# Rising Action



**Proposed Floodplain**



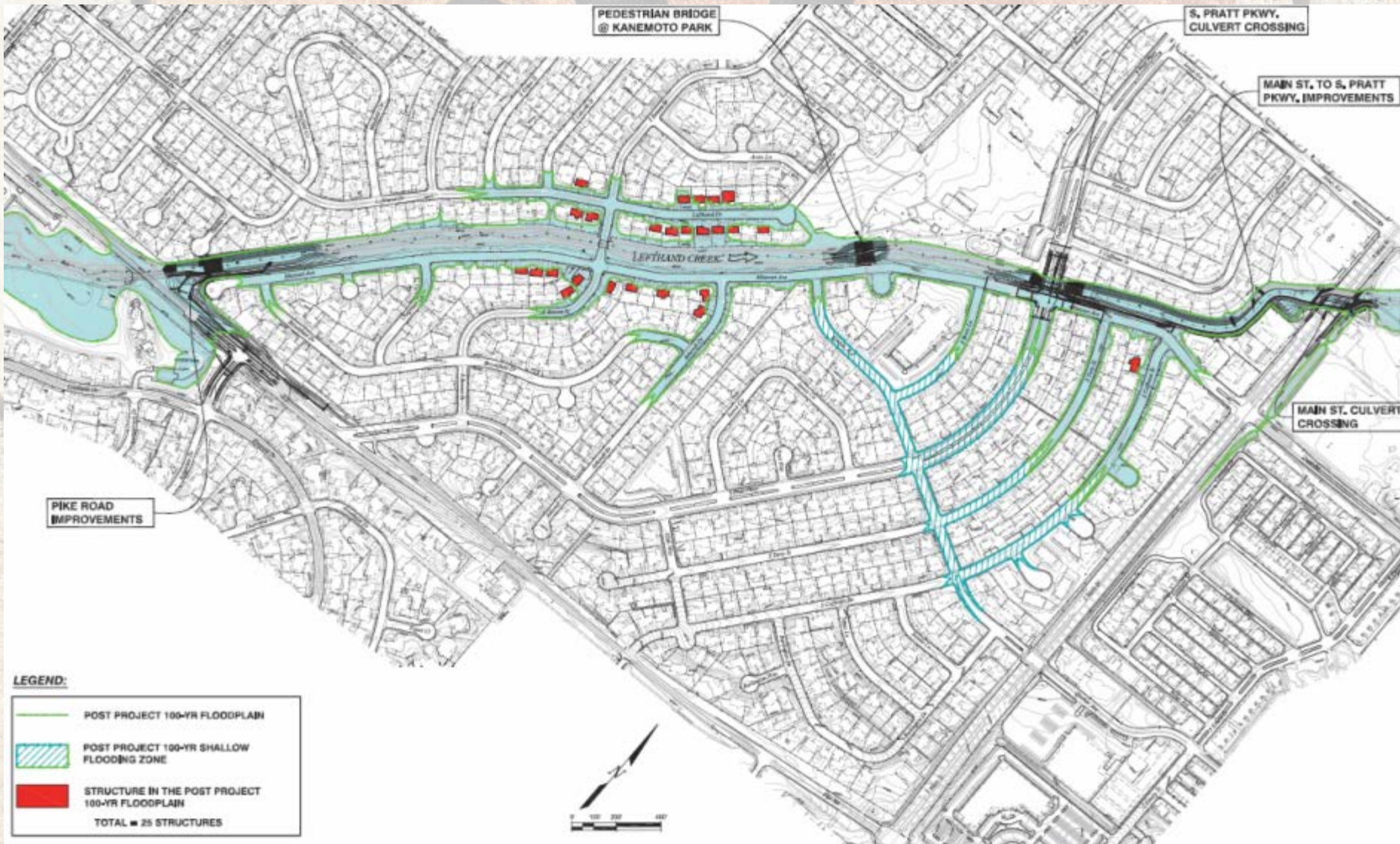
# Rising Action



Existing Floodplain



# Rising Action



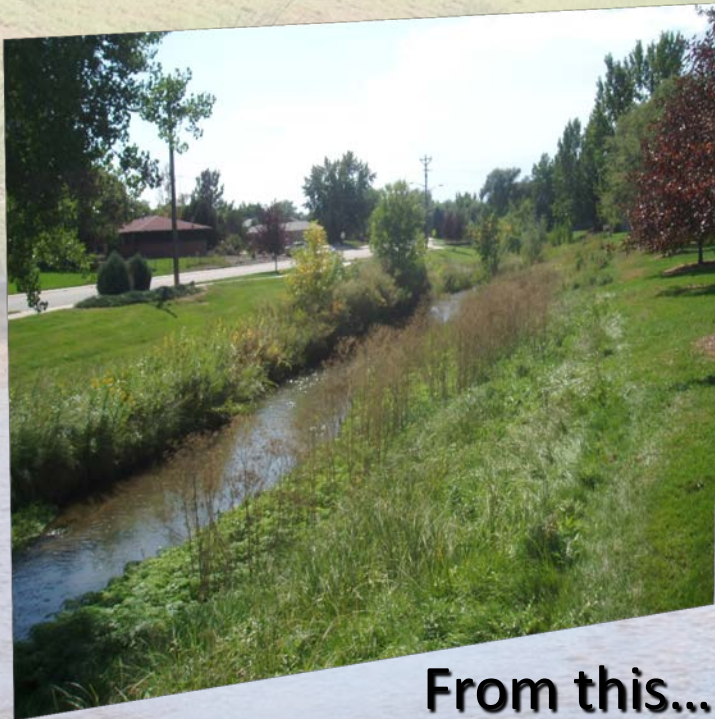
Proposed Floodplain



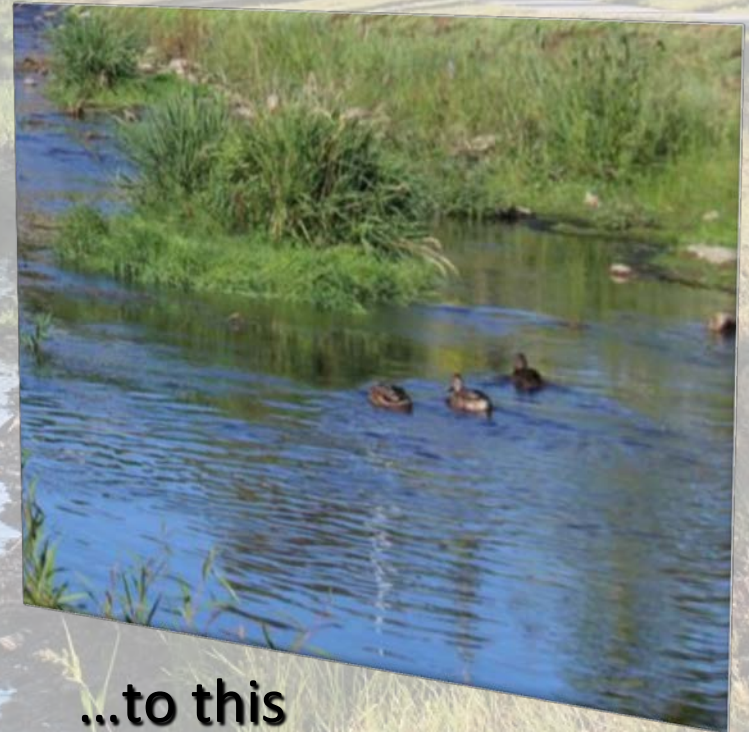
# Rising Action

## Environmental challenges

- Get project team and regulatory agencies on same page
- Mitigate major tree removal
- Minimize capacity obstructing vegetation
- Maintain characteristics/functions below OHWM



From this...



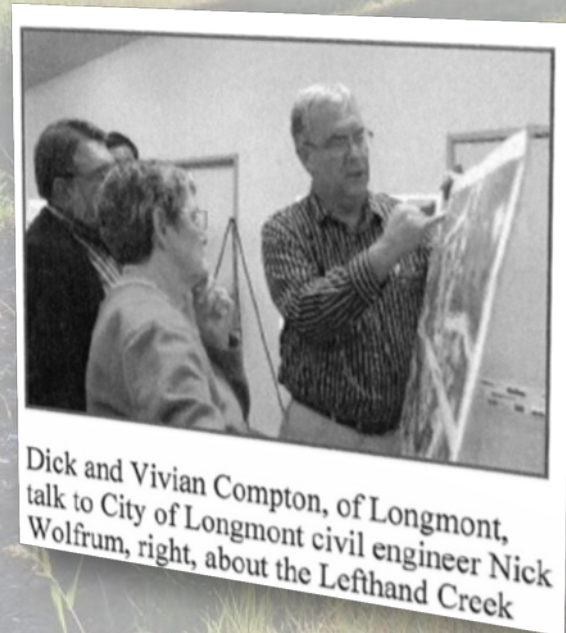
...to this



# Rising Action

## Public Outreach Challenges

- Make residents part of the team
- Educate residents on floodplain process/benefits
- Incorporate desired design features (new ped. bridge)
- Address concerns related to construction disruption

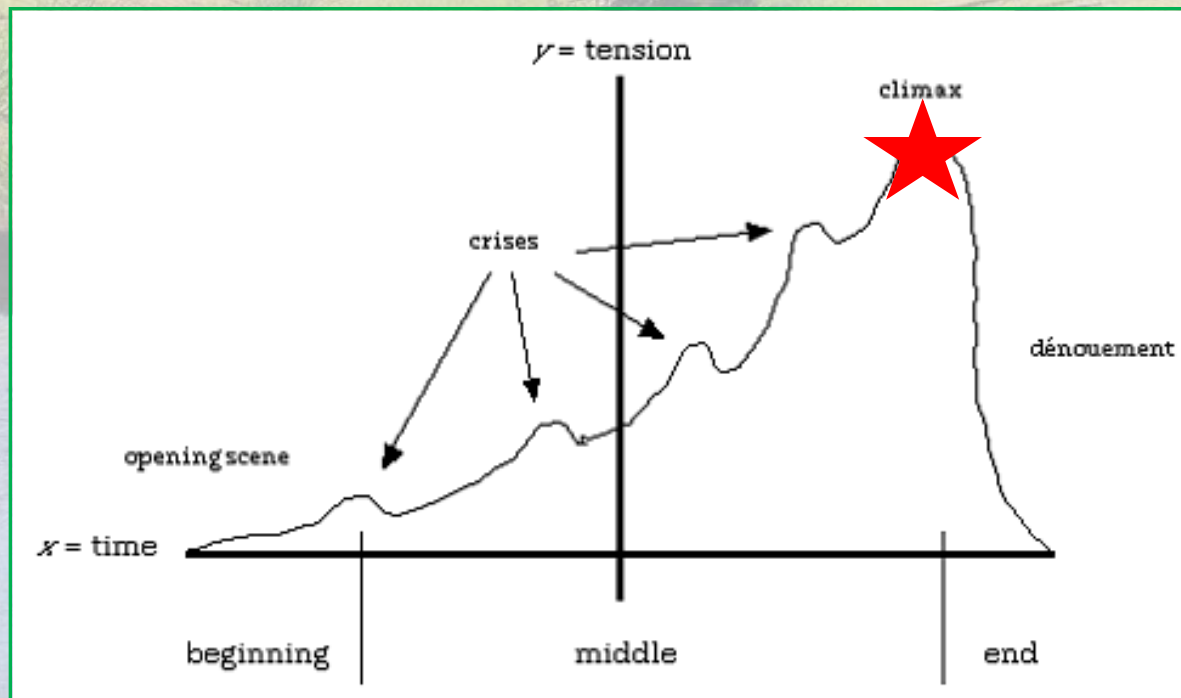


Dick and Vivian Compton, of Longmont, talk to City of Longmont civil engineer Nick Wolfrum, right, about the Lefthand Creek



# Climax

- FEMA Grant awarded!
- CLOMR application approved!
- Environmental clearances/permits issued!
- Public outreach concerns addressed!





# Resolution

## Time to deliver the project...

- Added 20'x10' box culvert and 12'x8' ped cell to US 287 crossing
- Replaced 28'x8' S. Pratt Pkwy bridge with double 20'x10' box and 12'x8' ped cell
- 550 LF of 10' concrete retaining wall
- 190 LF of 8' concrete retaining wall
- 500 LF of 2.5' boulder retaining wall
- 1,100 LF of 3.5' boulder retaining wall
- 3,100 LF of bioengineered bank protection
- 2 grouted boulder drop structures (1.5' and 2.5' high)
- Raised 500 LF of Pike Road and 200 LF of Ridgeview Street
- Reconfigured 300 LF of South Pratt Parkway and 200 LF of Missouri Avenue
- Exported 30,000 CY of soil
- Replaced 2 pedestrian bridges (90' and 100' long)
- 4,000 LF of recreational trail
- 9 storm sewer renovations
- Relocated 450 LF of waterline and 100 LF of sanitary sewer
- Relocated 470 LF of irrigation ditch
- Planting of 170 trees, 1,700 shrubs, 8,900 wetland plugs, and 6.5 acres of seed



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**BEFORE**



**Resolution**

**AFTER**





# Resolution



**BEFORE**



**AFTER**



# Resolution

**BEFORE**



**AFTER**



# Resolution

**BEFORE**



**AFTER**





# Resolution

**BEFORE**



**AFTER**





# Resolution

**BEFORE**



**AFTER**





# Resolution



**BEFORE**



**AFTER**





# Resolution



**BEFORE**



**AFTER**



# Resolution



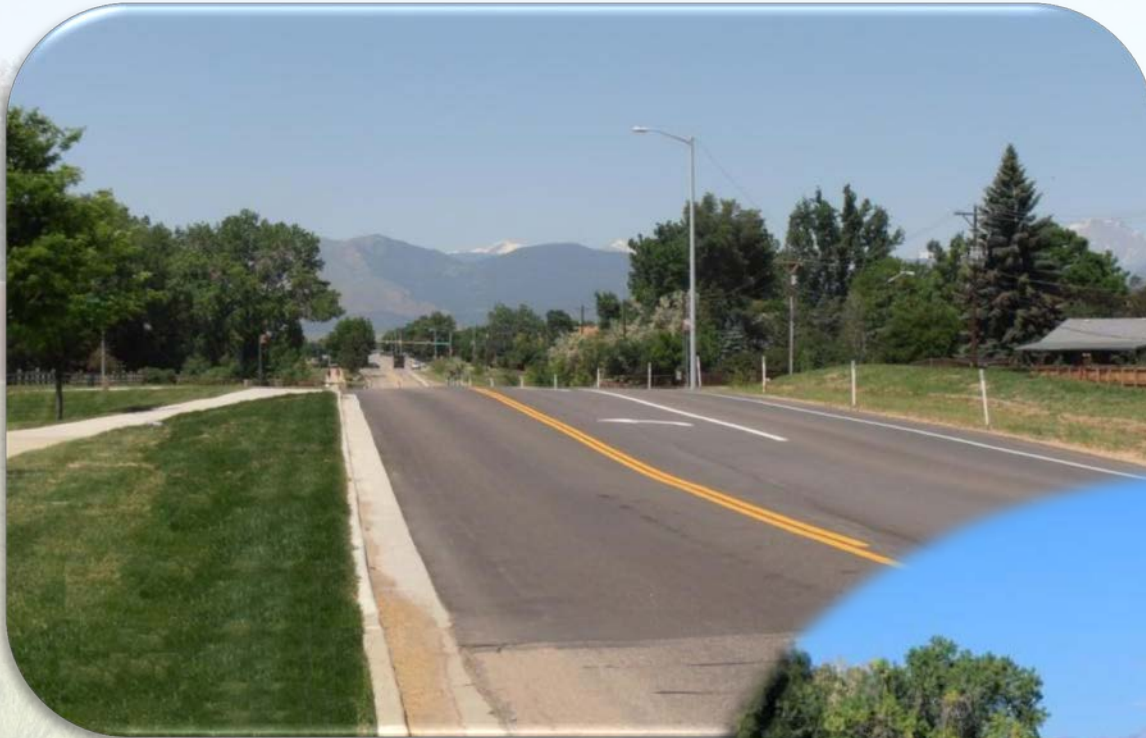
**BEFORE**



**AFTER**



# Resolution



**New Road**



**New Swale**



# Best Seller... ...or not?

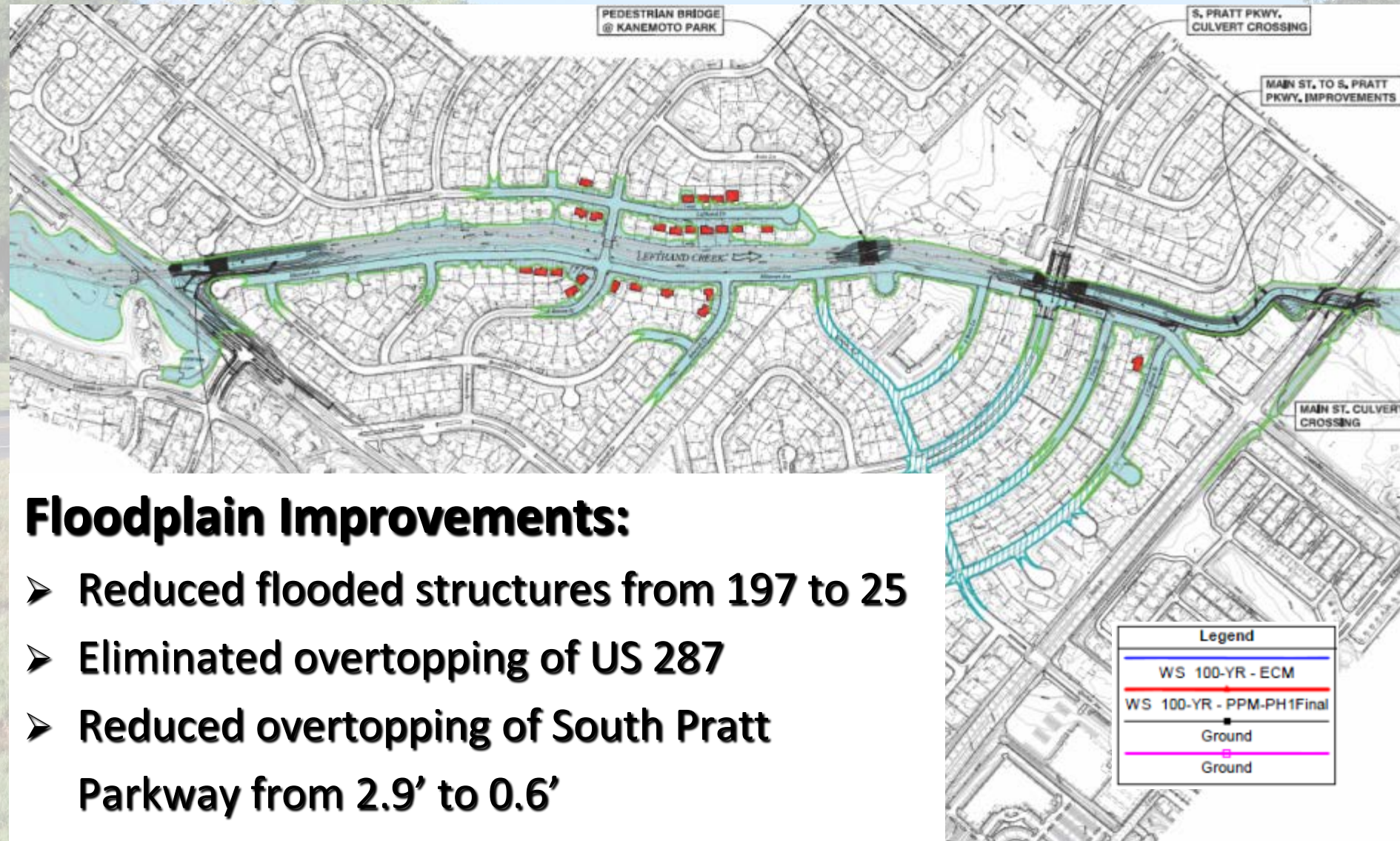
## ➤ Judging Criteria





# Best Seller... ...or not?

Enhancement of Public Health, Safety and Welfare





# Best Seller... ...or not?

Enhancement of Public Health, Safety and Welfare

## Trail Improvements:

- Eliminated at-grade trail crossing at South Pratt Parkway
- Increased capacity prior to trail overtopping at US 287
- Replaced 2 dilapidated pedestrian bridges





# Best Seller... ...or not?

## Enhancement of Surrounding Environment

- Maintained natural characteristics below the OHWM
- Incorporated step-pool sequences into drop structures
- Planted 170 trees, 1,700 shrubs, and 8,900 wetland plugs
- Water quality features incorporated to treat runoff





# Best Seller... ...or not?

## Creative, Unique, Innovative Solutions

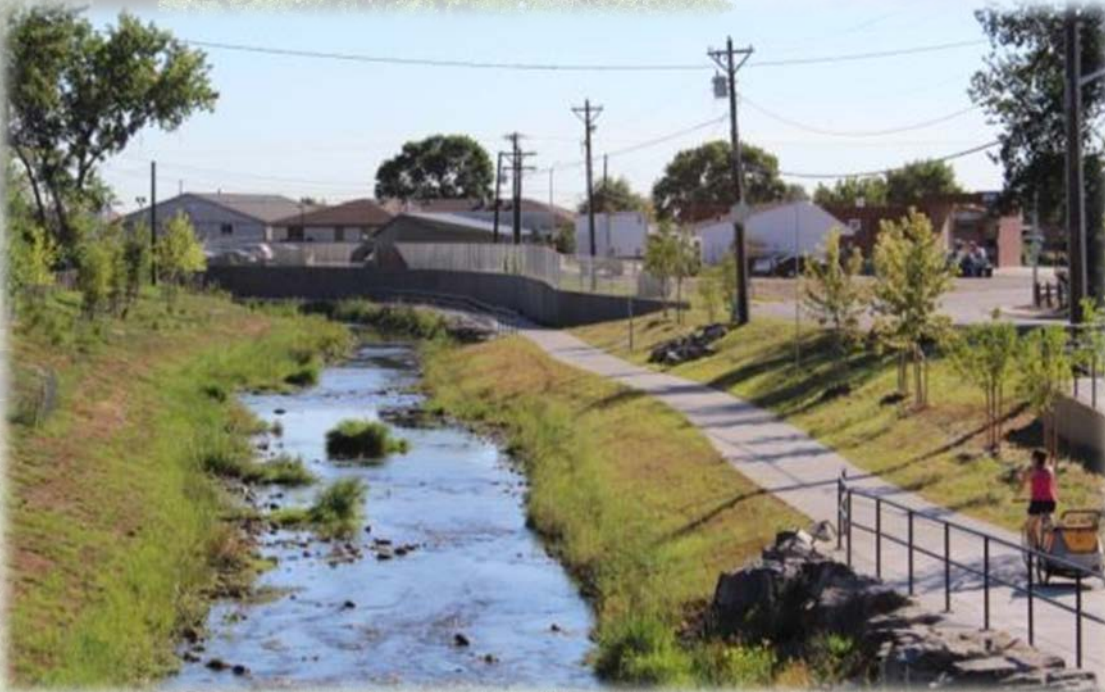


- Complex hydraulic modeling
- Increased flood capacity without increased space
- Strategic selection and placement of plant materials
  - wetland grasses, not willows
  - trees with narrow trunks placed higher up on banks
- Alternate funding source through FEMA grant



# Best Seller... ...or not?

## Multiple Objective Management



- Provide a safe drainage corridor
- Protect existing infrastructure
- Provide facilities to enhance recreational value
- Establish a wildlife friendly environment
- Improve water quality
- Improve roadway/traffic facilities
- Make efficient use of dollars



# Best Seller... ...or not?

## Problem Solutions, Budget Goals, and Time Schedule

### **Construction Costs:**

- City of Longmont = \$4,000,000
- FEMA = \$3,000,000

### **Schedule:**

- Floodplain Study: 5/2008 – 5/2009
- Final Design/CLOMR: 5/2009 – 11/2010
- FEMA Grant Process: 11/2010 – 8/2011
- Construction: 9/2011 – 12/2012
- LOMR: 12/2012 - Present



# Best Seller... ...or not?

## A Model for Other Communities and Projects

- Proactive in identifying and funding flood mitigation projects
- Working through Pre-NFIP constraints:
  - high flooding potential with little room for expansion-
- Balancing public safety, environment, and recreation
- Persistence in working through obstacles to achieve project goals





# Sequel...



- **2<sup>nd</sup> Phase** defined to eliminate flooding of remaining houses.
- **On City's Future Projects List for \$4 million**





**Questions?**

