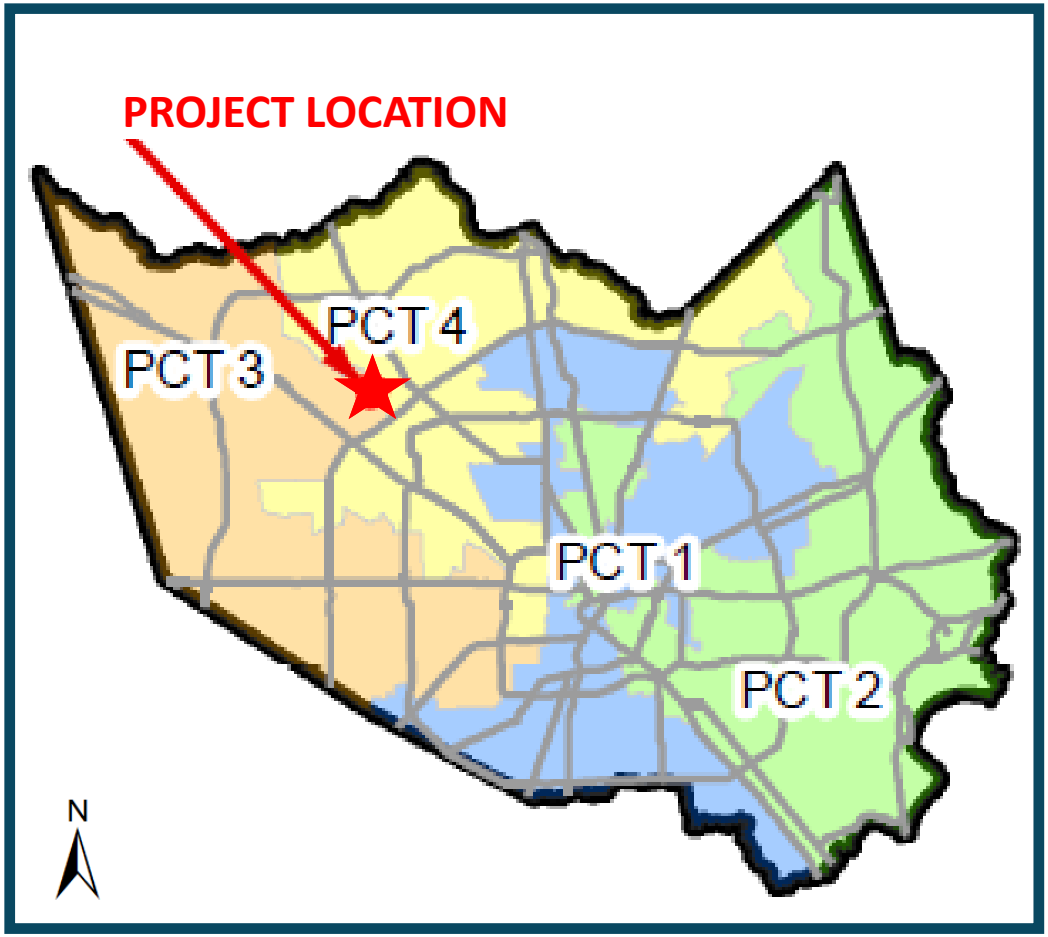
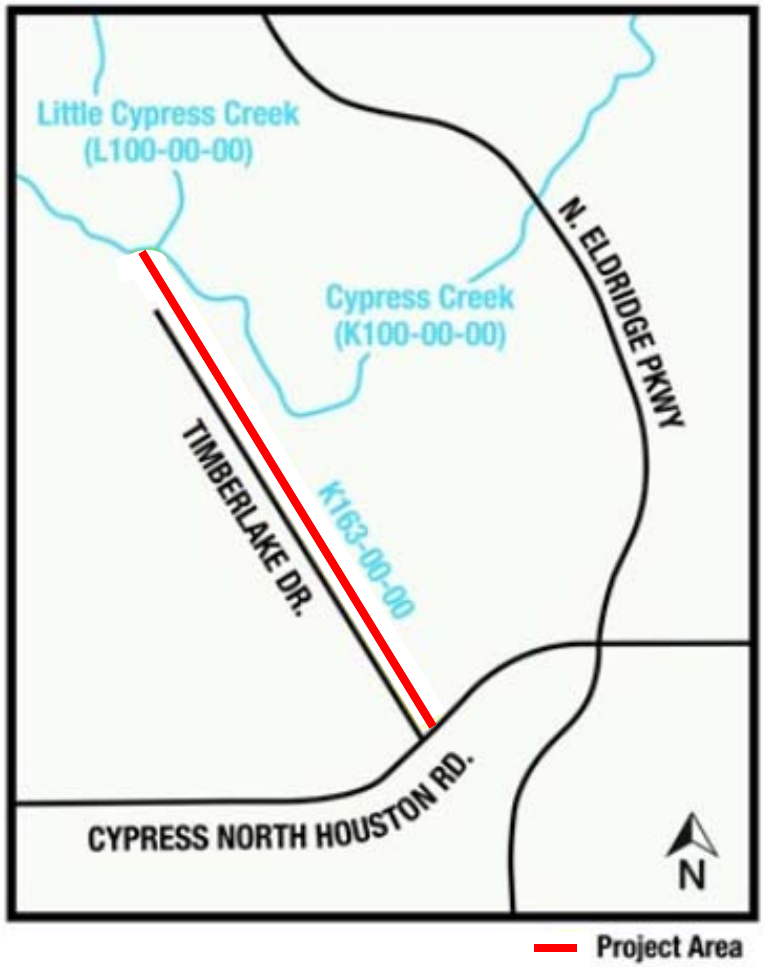
Cypress Creek Tributary K163-00-00-E001 Channel Improvements

Jessica Koutny, P.E., CFM, CPESC
Senior Project Manager
LJA Engineering, Inc.

PROJECT LOCATION





K163-00-00 Channel Improvements

PURPOSE:

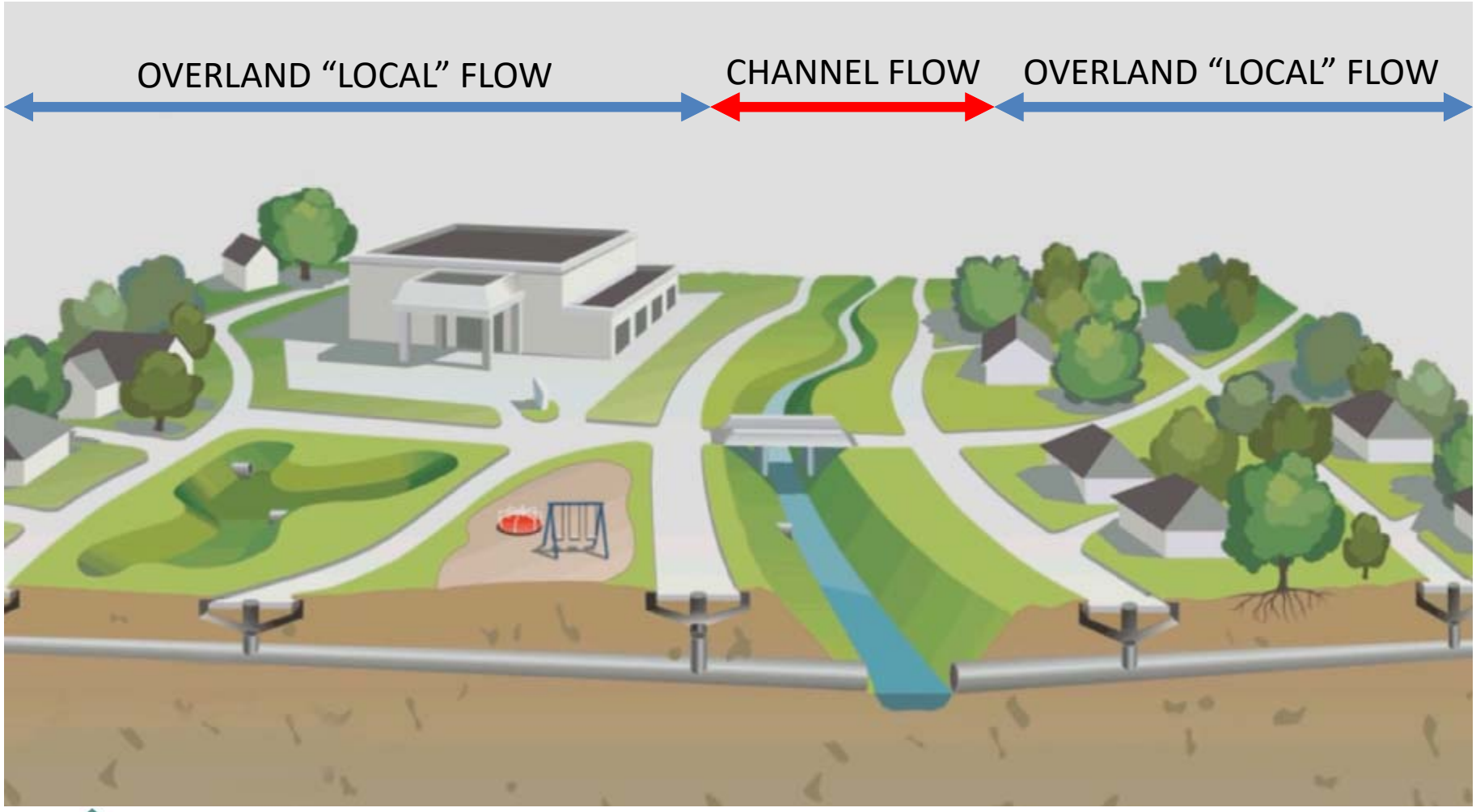
Improve stormwater conveyance and repair streambank erosion in the K163-00-00 channel, a tributary of Cypress Creek

THIS PROJECT FOCUS IS THE K163-00-00 CHANNEL.

Other projects will focus on:

- Cypress Creek
- Improving the neighborhood drainage systems

Project Work Zone



Project Work Zone

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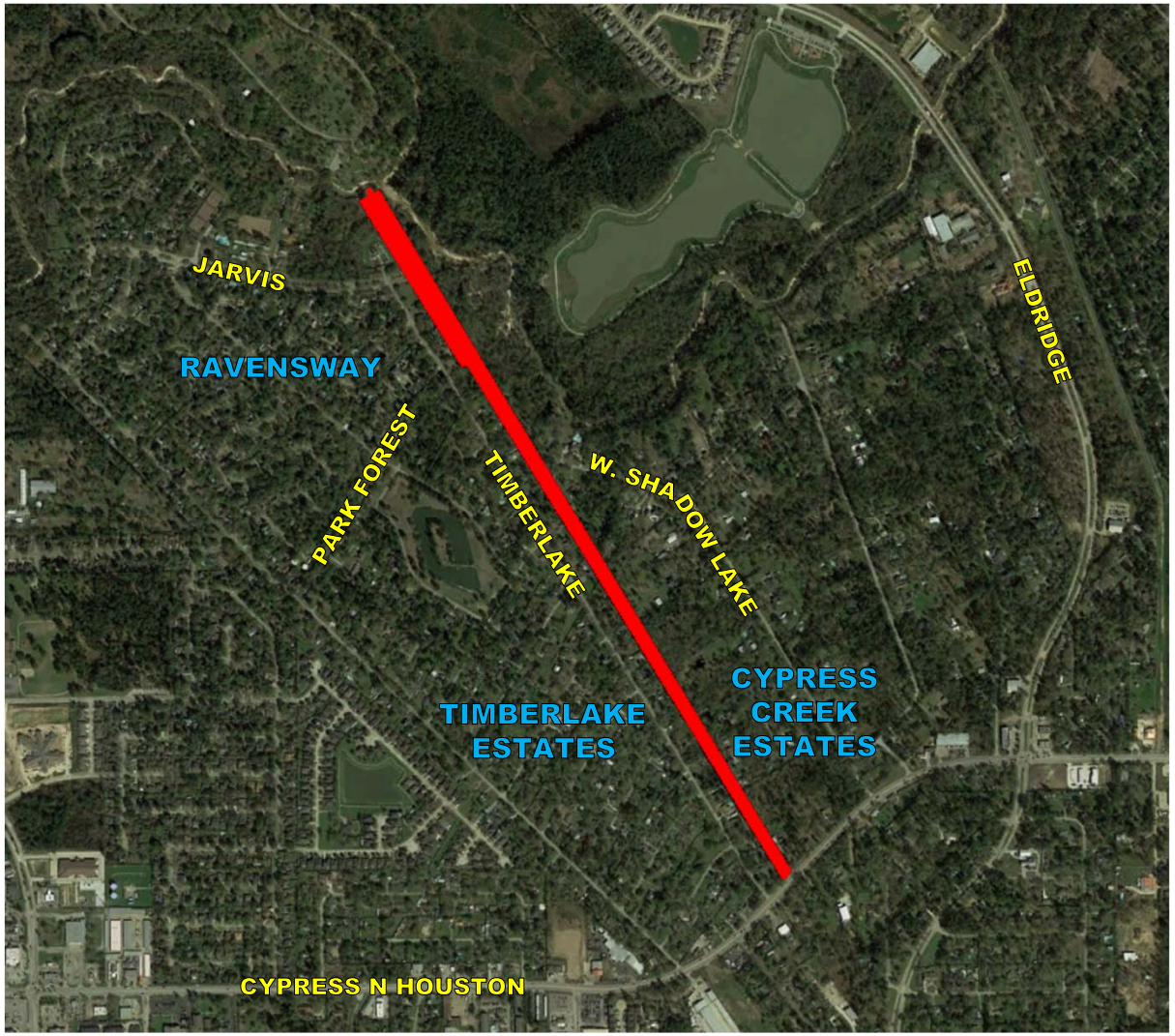
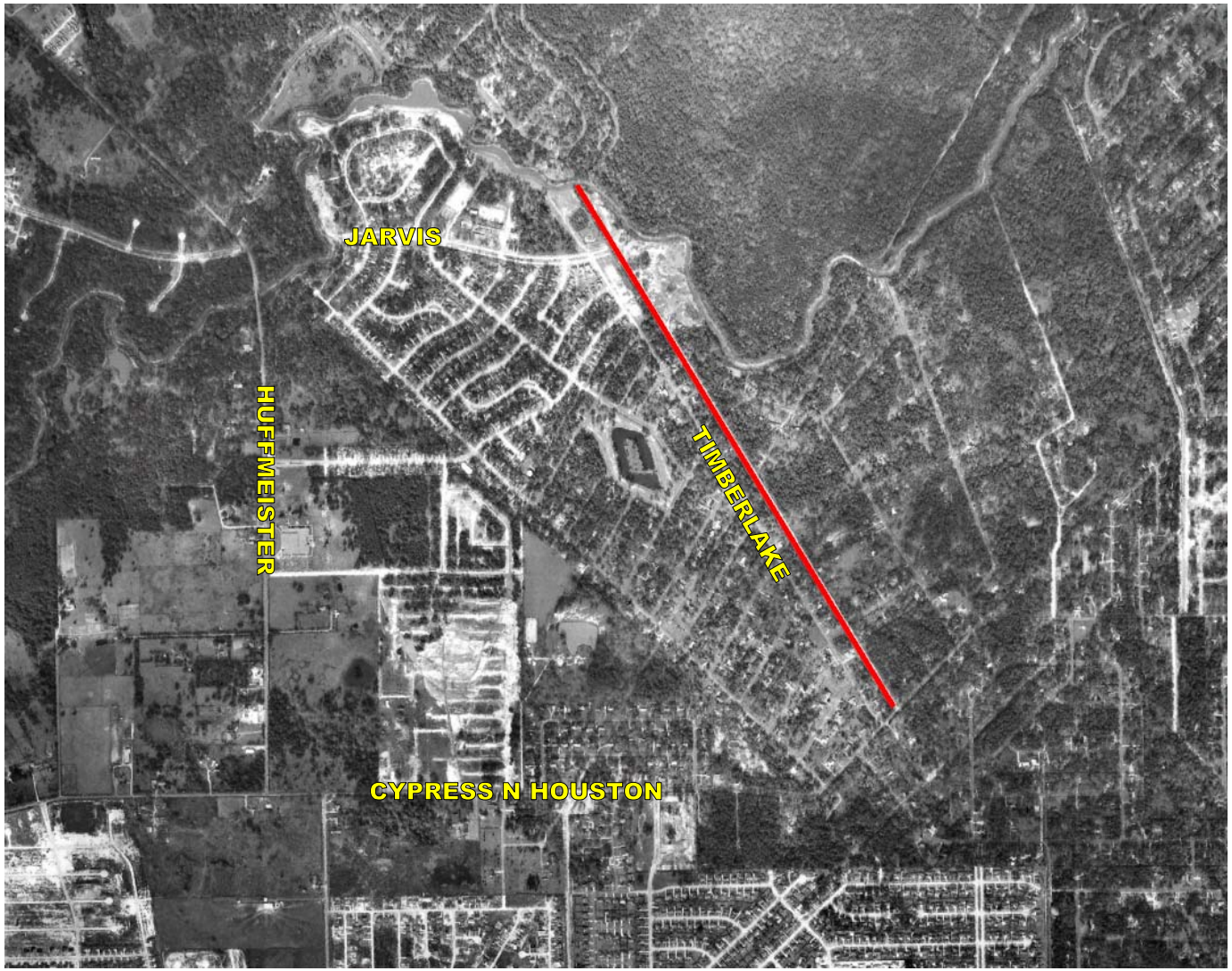
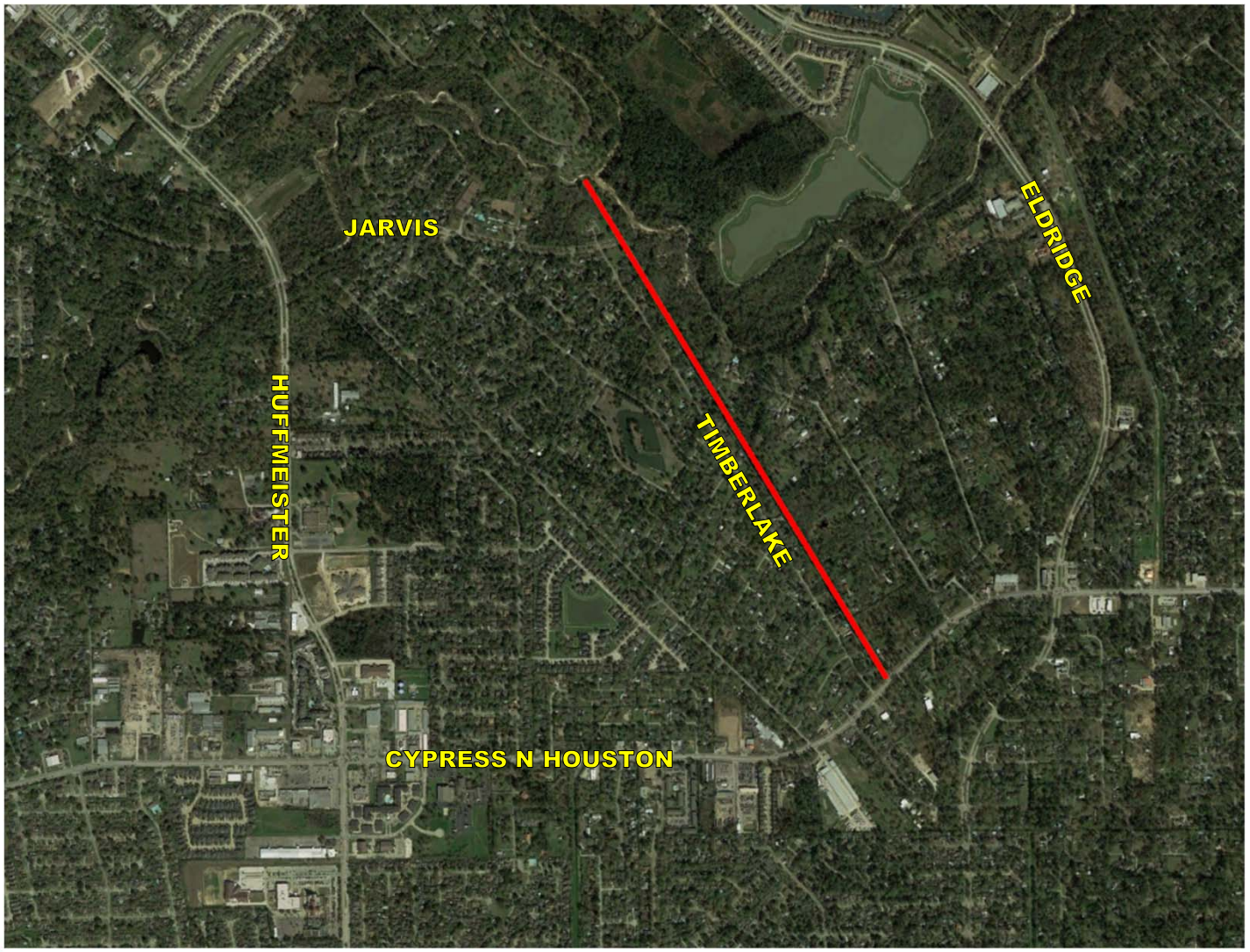


Pre-Development (1953)

Neighborhood Established (1978)



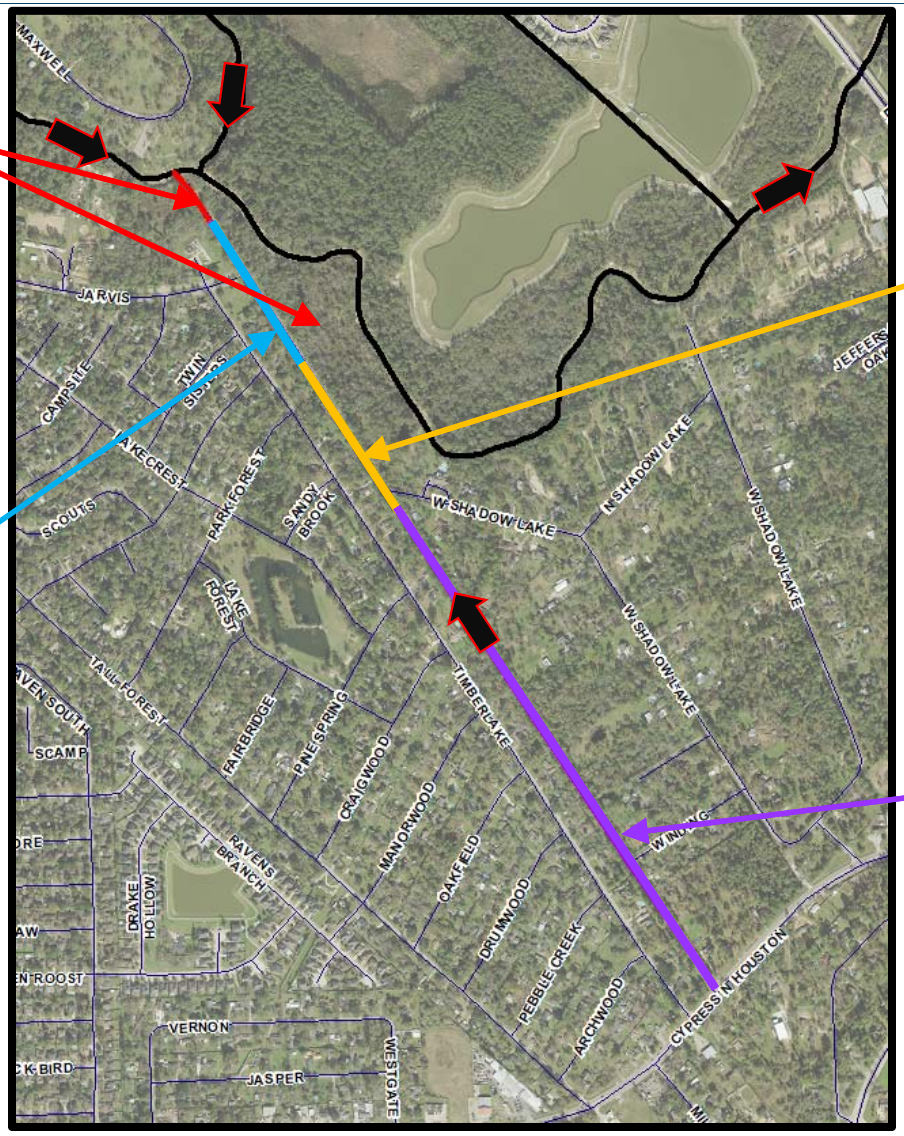
Pre-Project (No Development Change, 2019)



Existing Conditions

Wetland Areas

CHANNEL EROSION



2-YR Level of Service (LOS)
Rainfall event the stream is capable of containing within HCFCD right-of-way.

COLLAPSED DROP STRUCTURE

SMALL CHANNEL

Existing Site Constraints

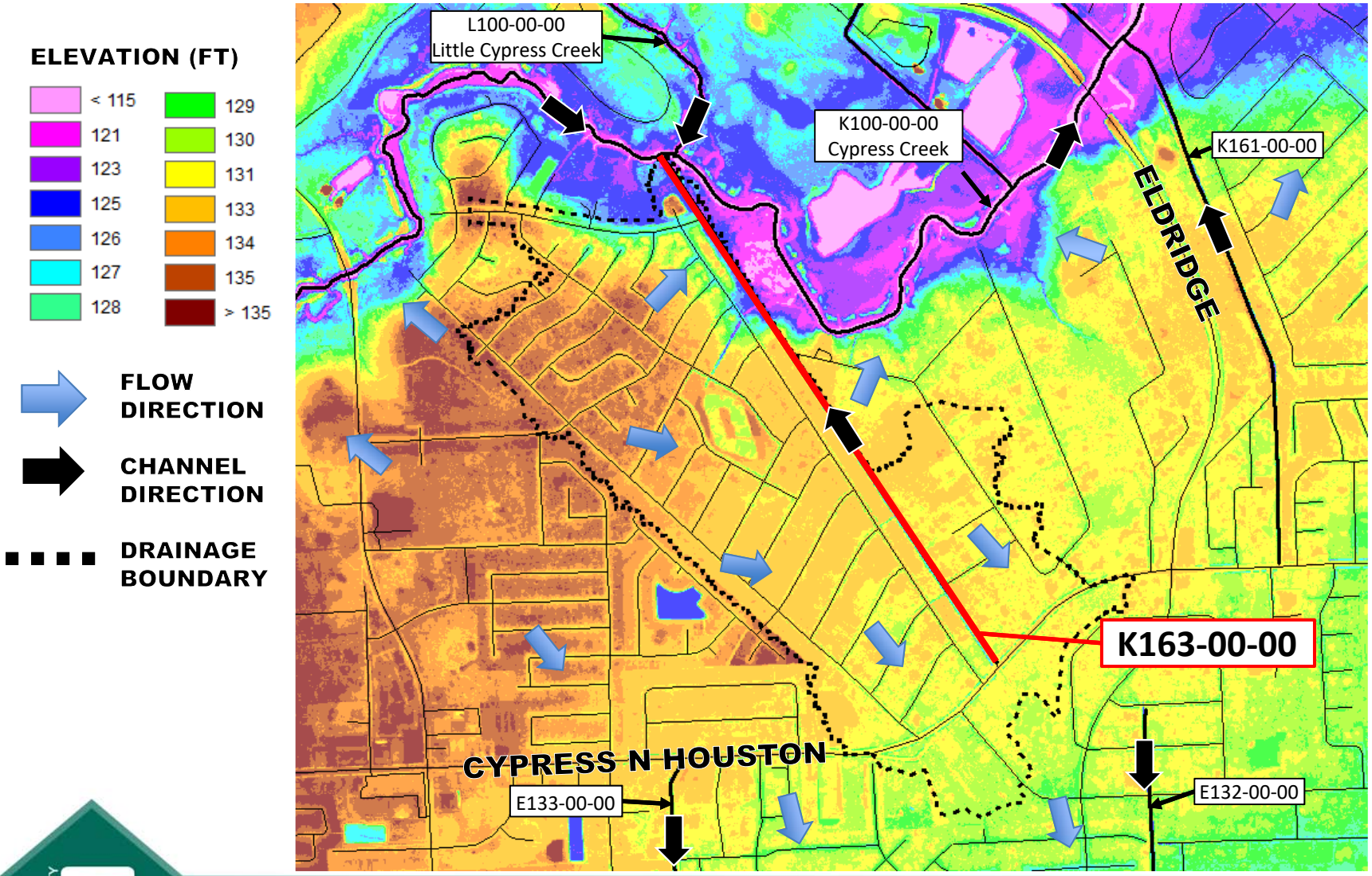
Project Targets

- Expand capacity
- Lower Flowline
- Stabilize Side Slope | Erosion Control
- No adverse impact

Design Limitations

- Limited ROW
- Existing ROW Encroachment
- Utility Conflicts: Gas / Power / Cable
- Dispersive (Erosive) Soils Locations
- Reverse Topography

Overland Topography



Statistical Rainfall & Runoff Depths

Rainfall Events (HCFCD 2009)

- 0.2% (500-year): 17.7 inches in 24-hours
- 1% (100-year): 12.4 inches in 24-hours
- 10% (10-year): 7.1 inches in 24-hours
- 50% (2-year): 4.1 inches in 24-hours

Cypress Creek Flood Stage Levels (FEMA 2013)

- 0.2% (500-year): 132.30 feet
- 1% (100-year): 129.90 feet
- 2% (50-year): 129.00 feet
- 10% (10-year): 126.90 feet

Reported Flooding Events

10% (10 YR)	2% (50-YR)	1% (100-YR)	0.2% (500-YR)
October 1949	October 1998	April 2016 (Tax Day)	August 2017 Harvey
January 1979	November 1998	-	-
October 1994	July 2012	-	-
June 2001 (Allison)	-	-	-
April 2009	-	-	-
May 2016	-	-	-

www.HarrisCountyFWS.org: Stream Gage 1159 (1983) 1170 (1988), 1165 (2014)

Proposed Layout

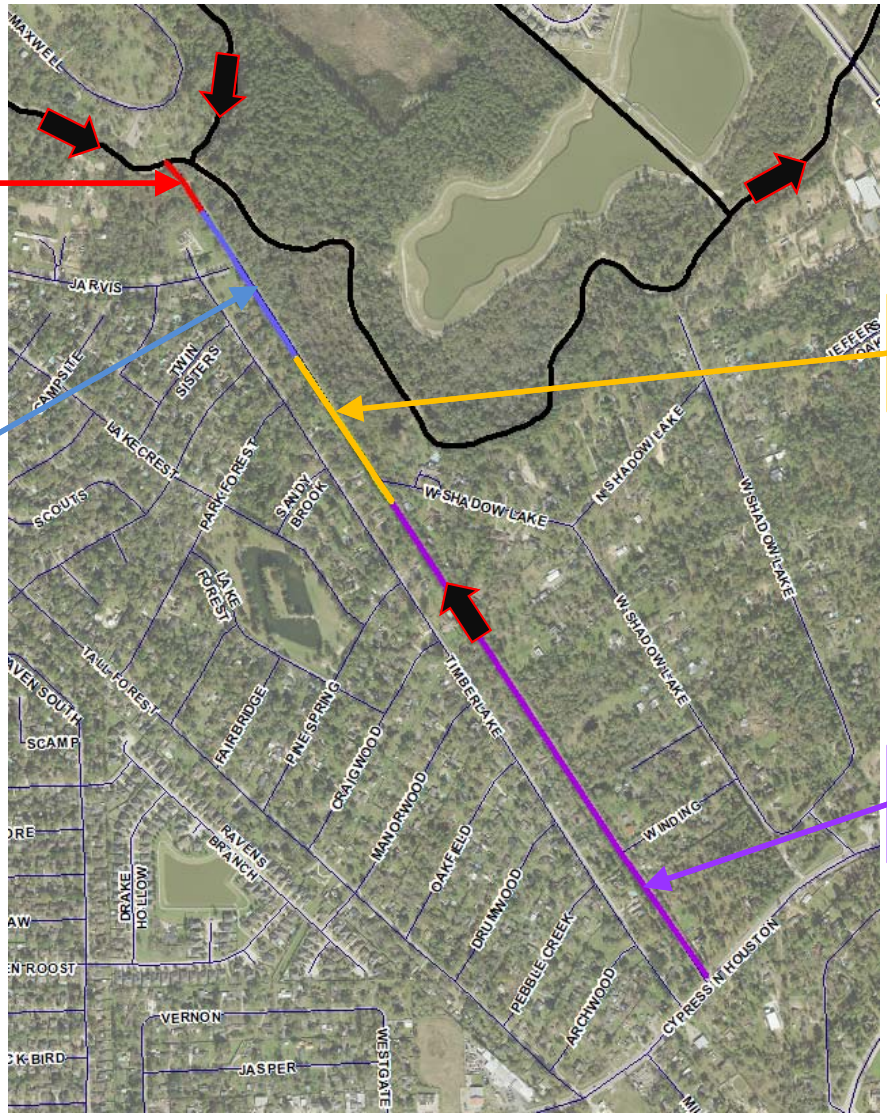
NO WORK

- USACE JURISDICTIONAL WETLAND

EROSION CONTROL

- CHANNEL REGRADING
- SLOPE PROTECTION
- REALIGN STORM SEWER OUTFALLS

SWALE
Small grass lined channel. Similar to a roadside ditch but not next to a road.



100-YR Level of Service (LOS)
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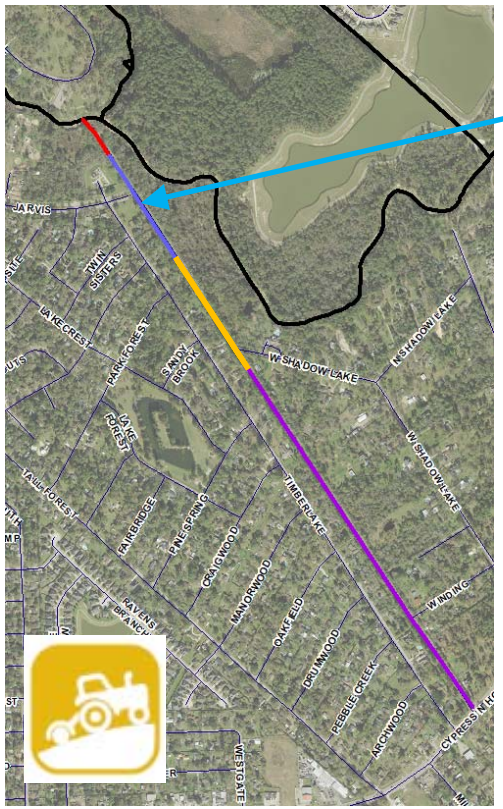
CHANNEL MODIFICATION

- BURIED 3 – 8’ X 6’ RCB
- SWALE OVER BOXES

CHANNEL MODIFICATION

- BURIED 2 – 8’ X 6’ RCB
- SWALE OVER BOXES

Examples of Slope Protection



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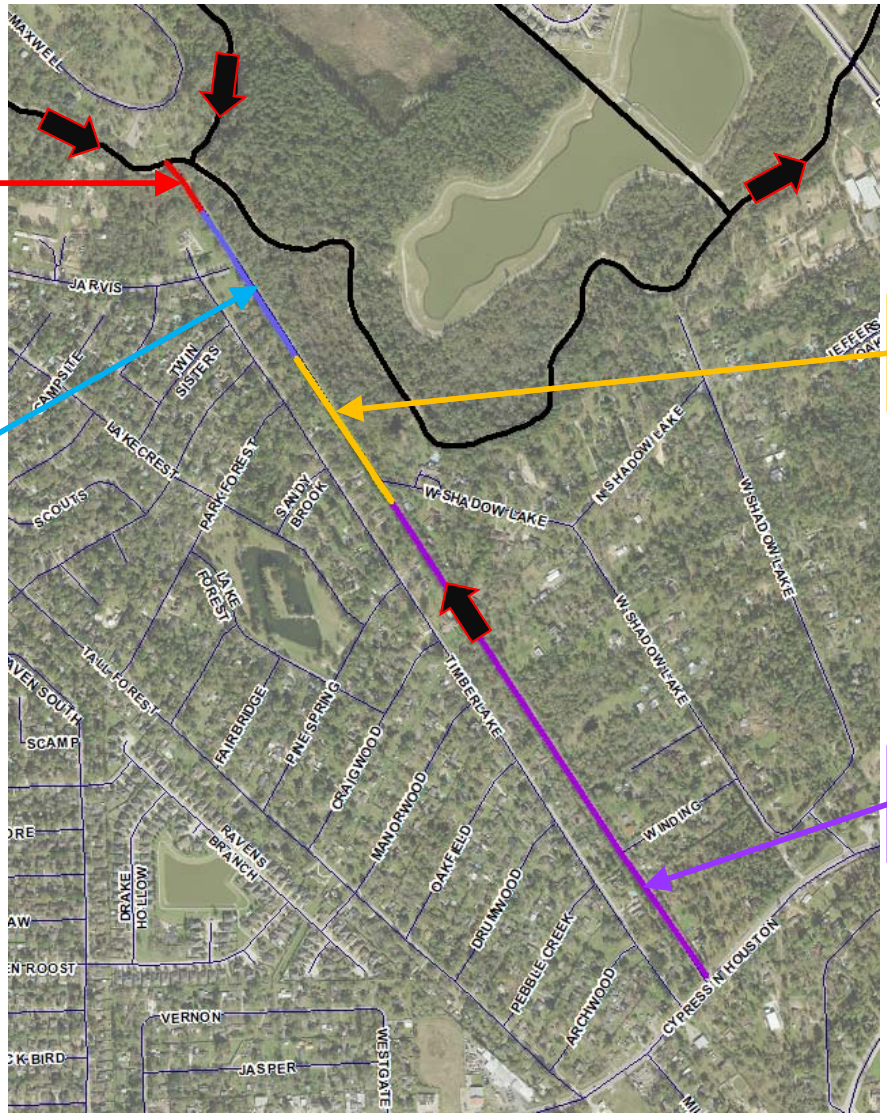

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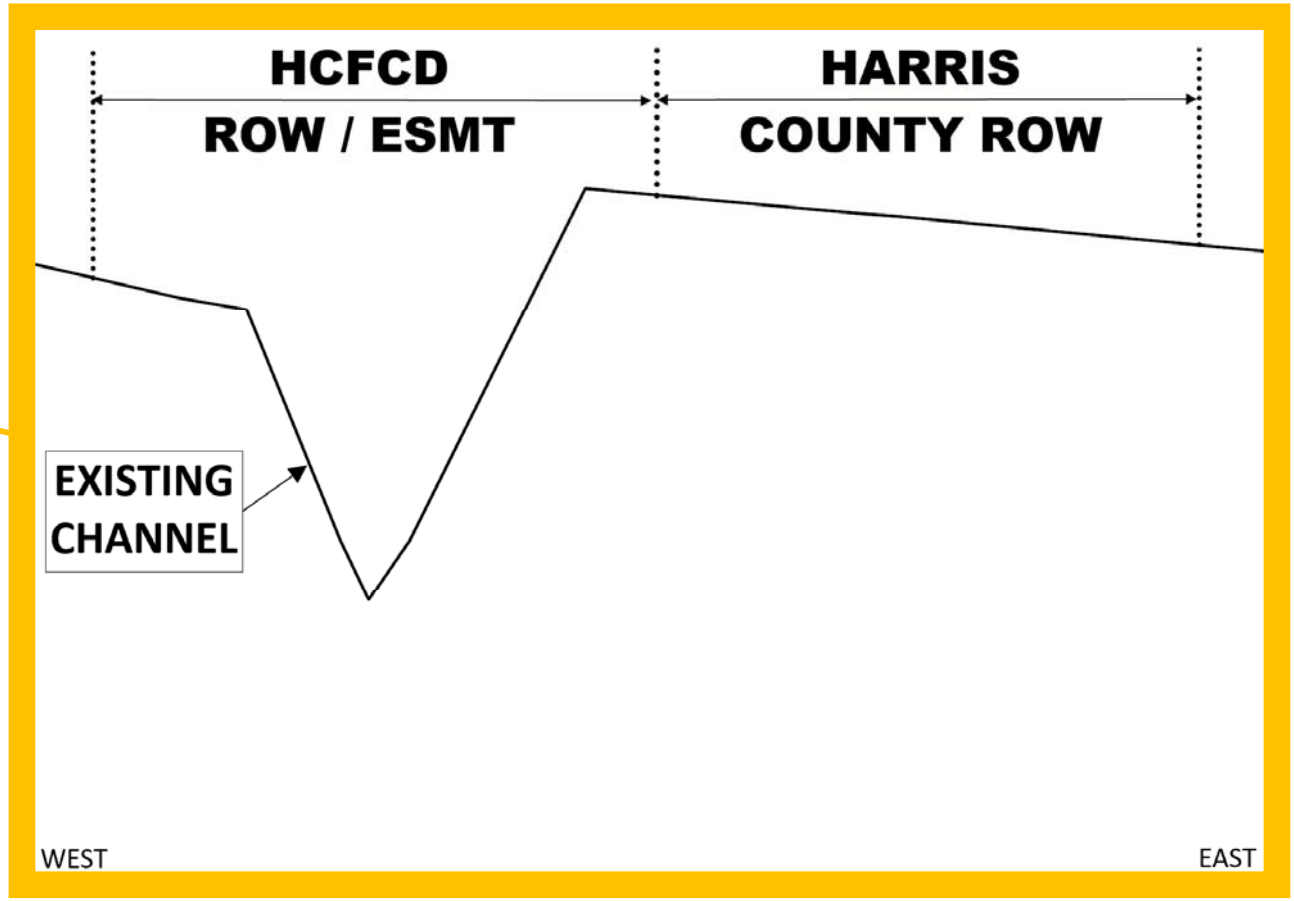

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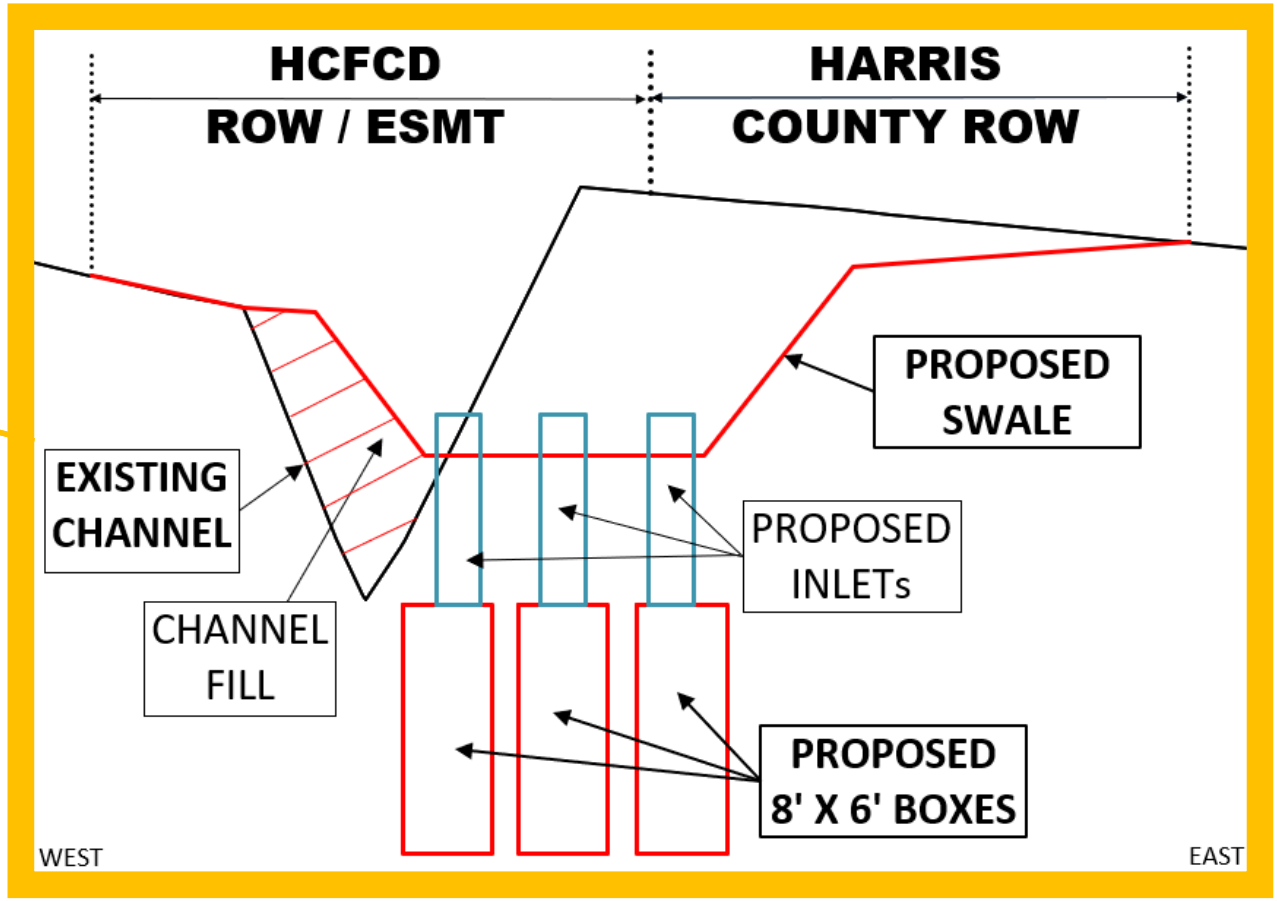

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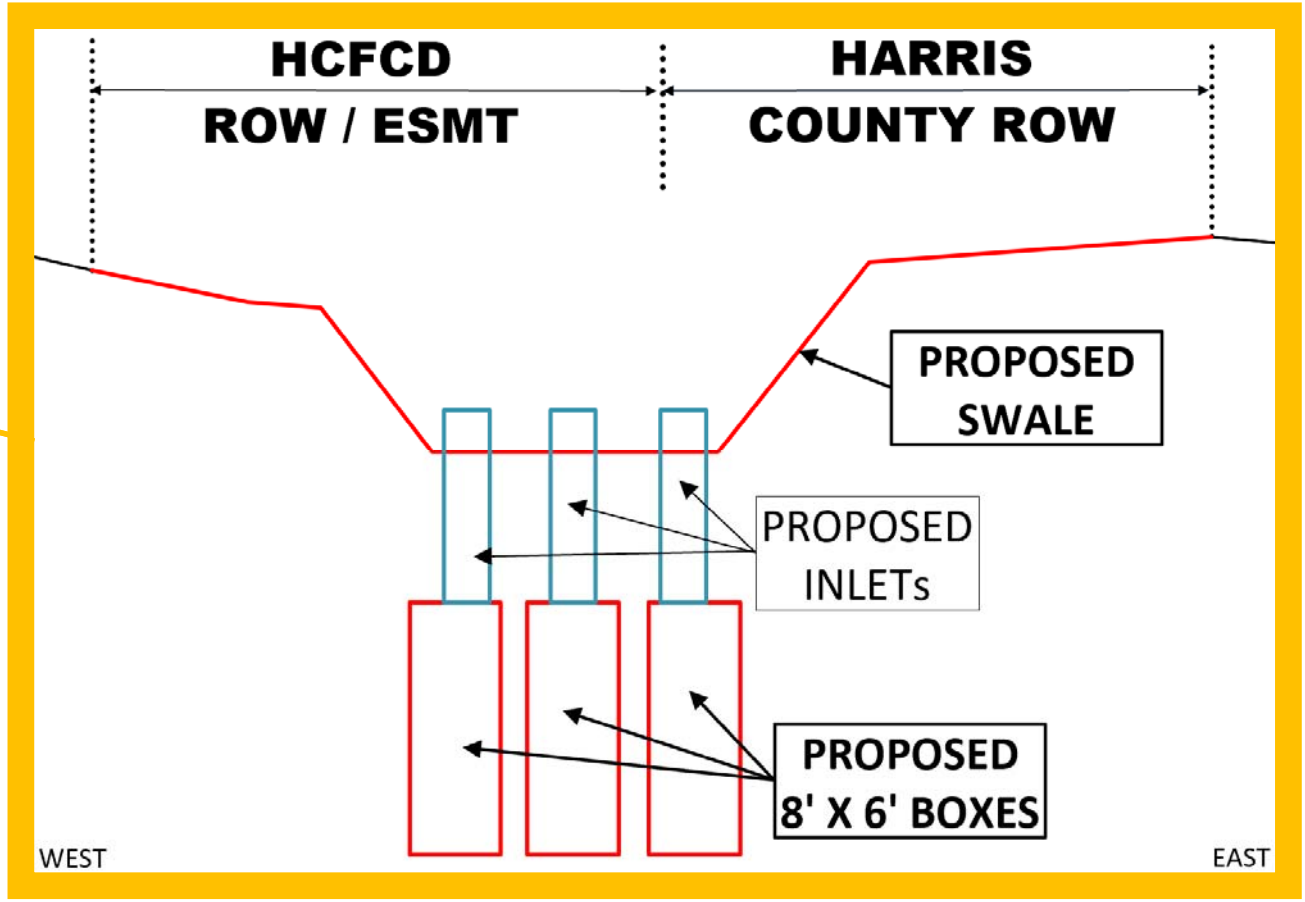

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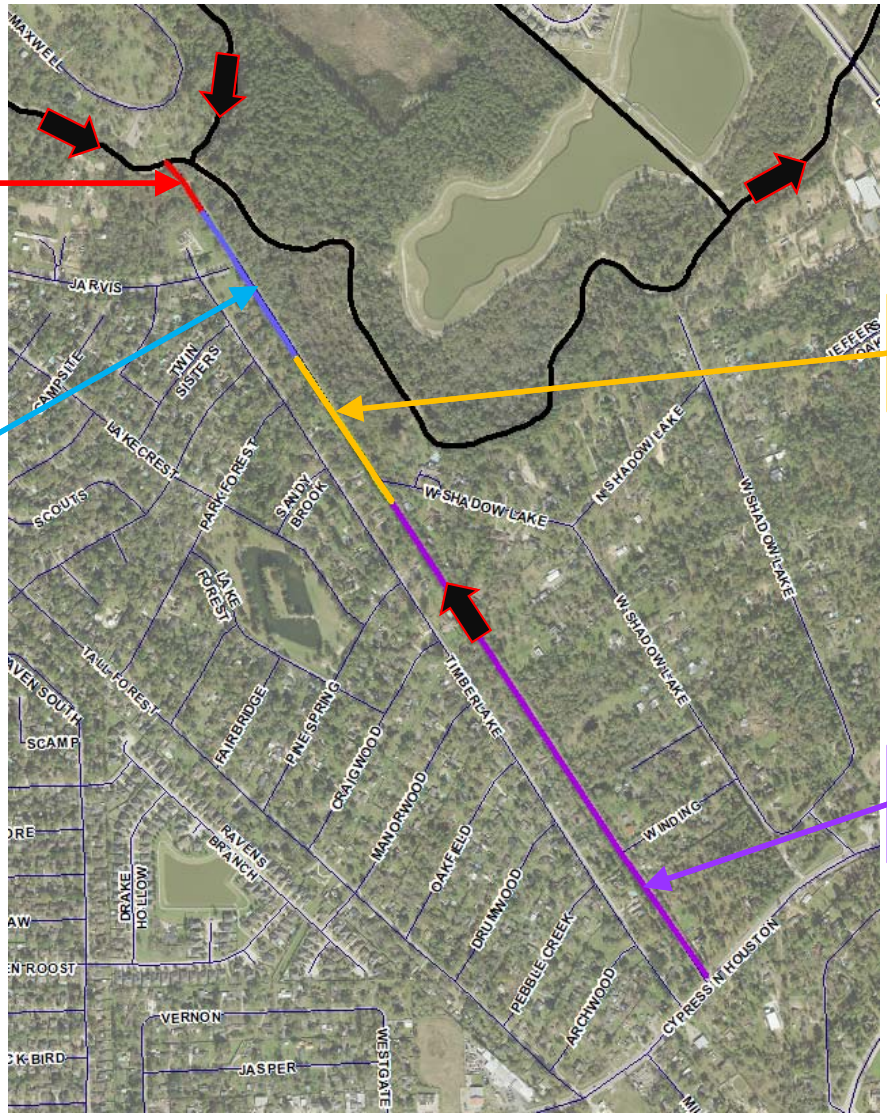

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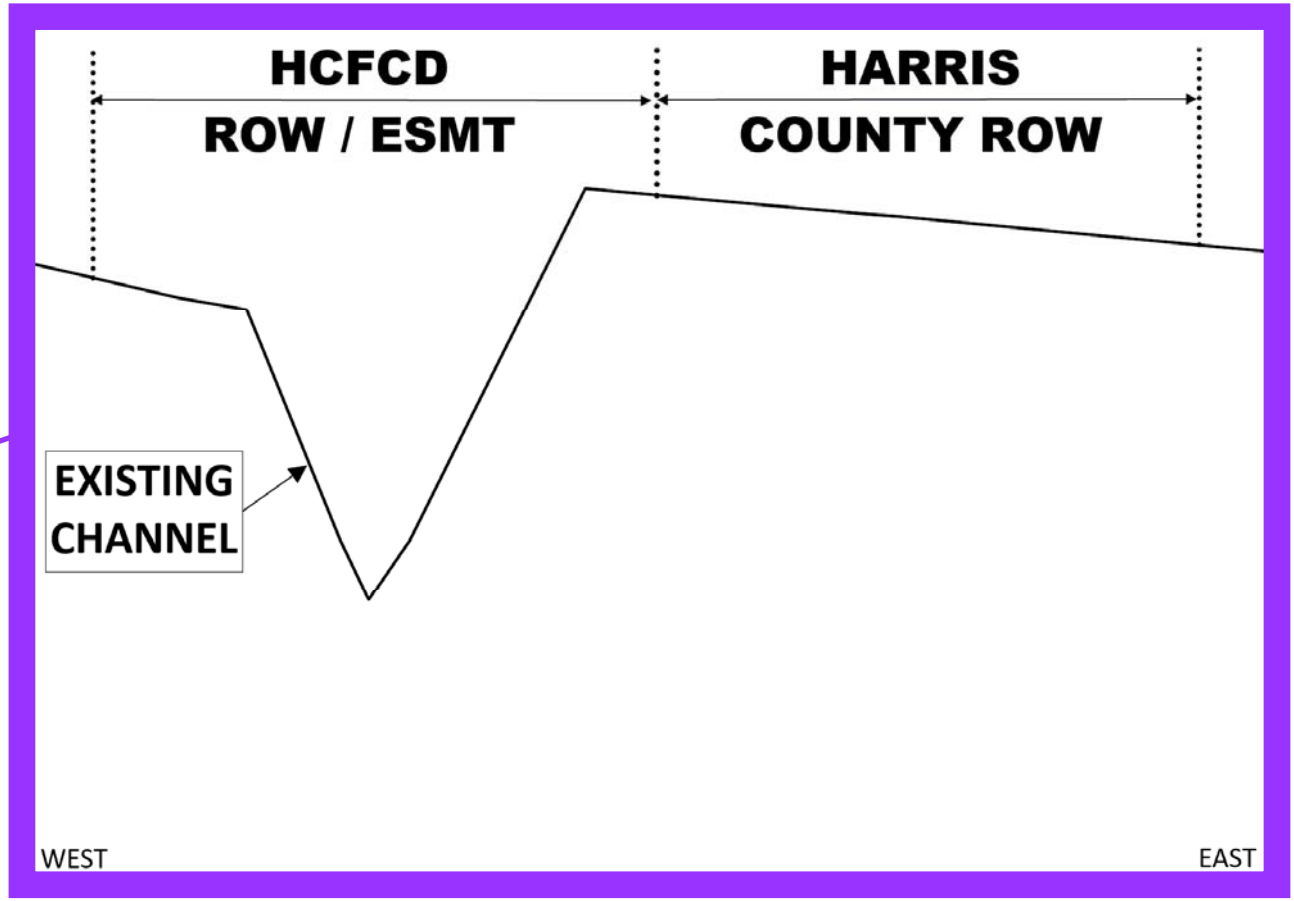

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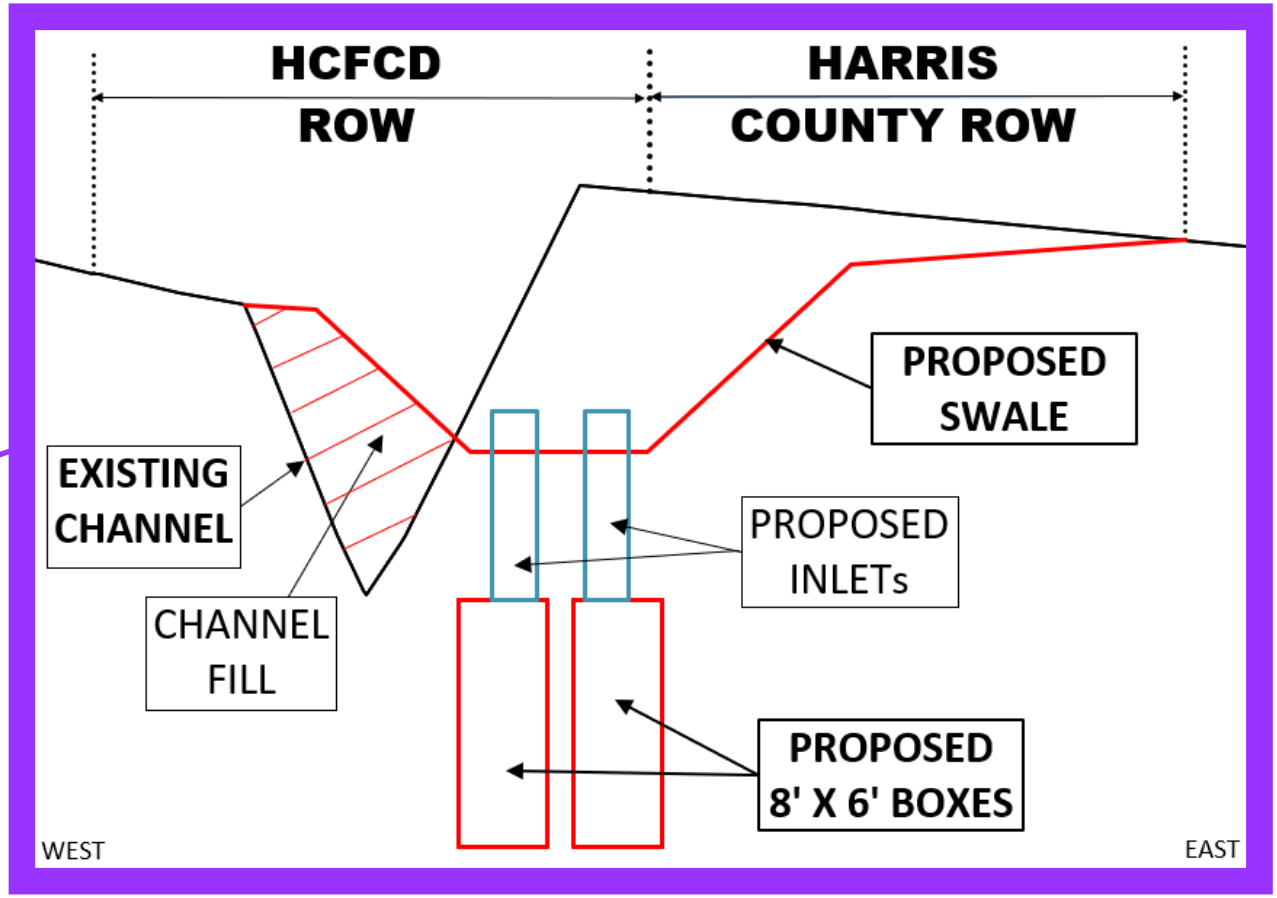

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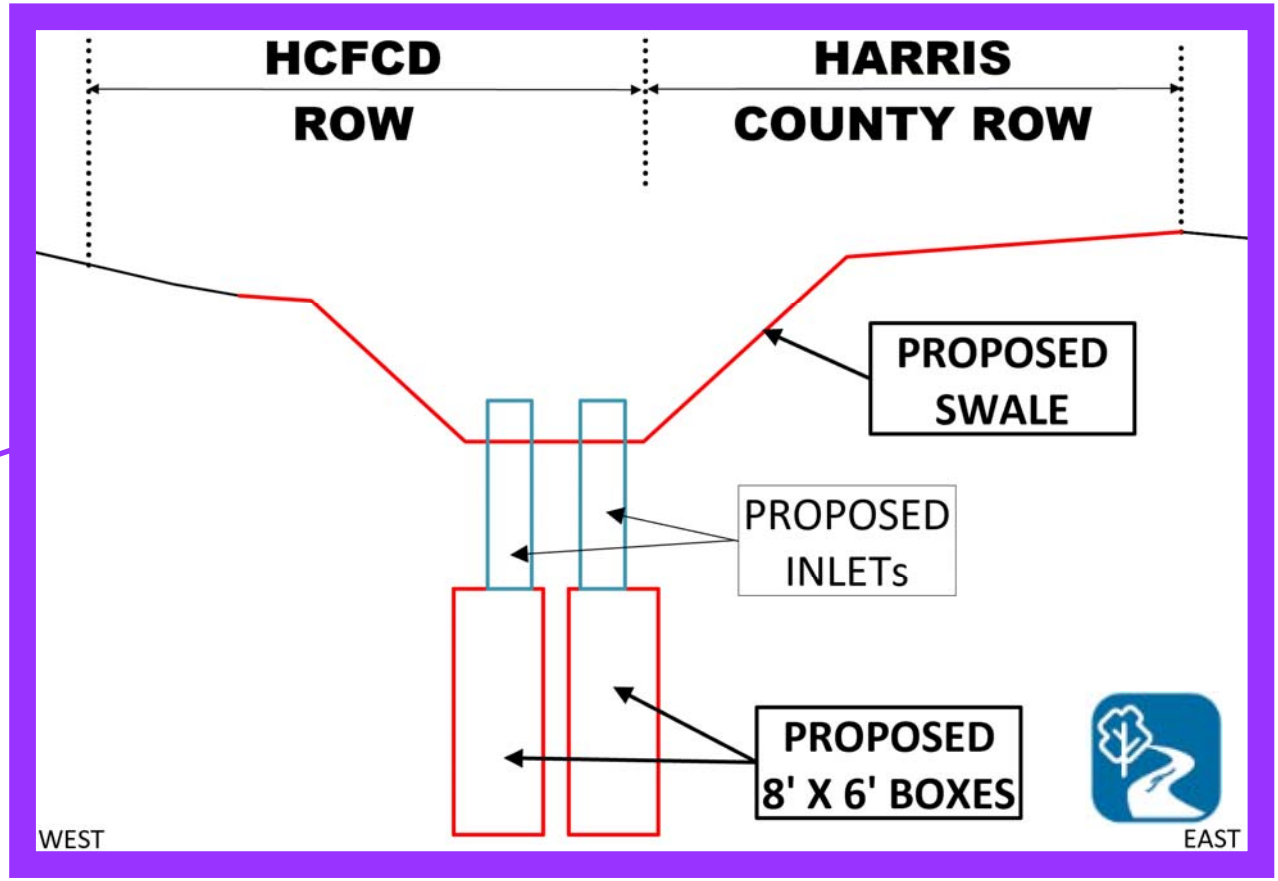

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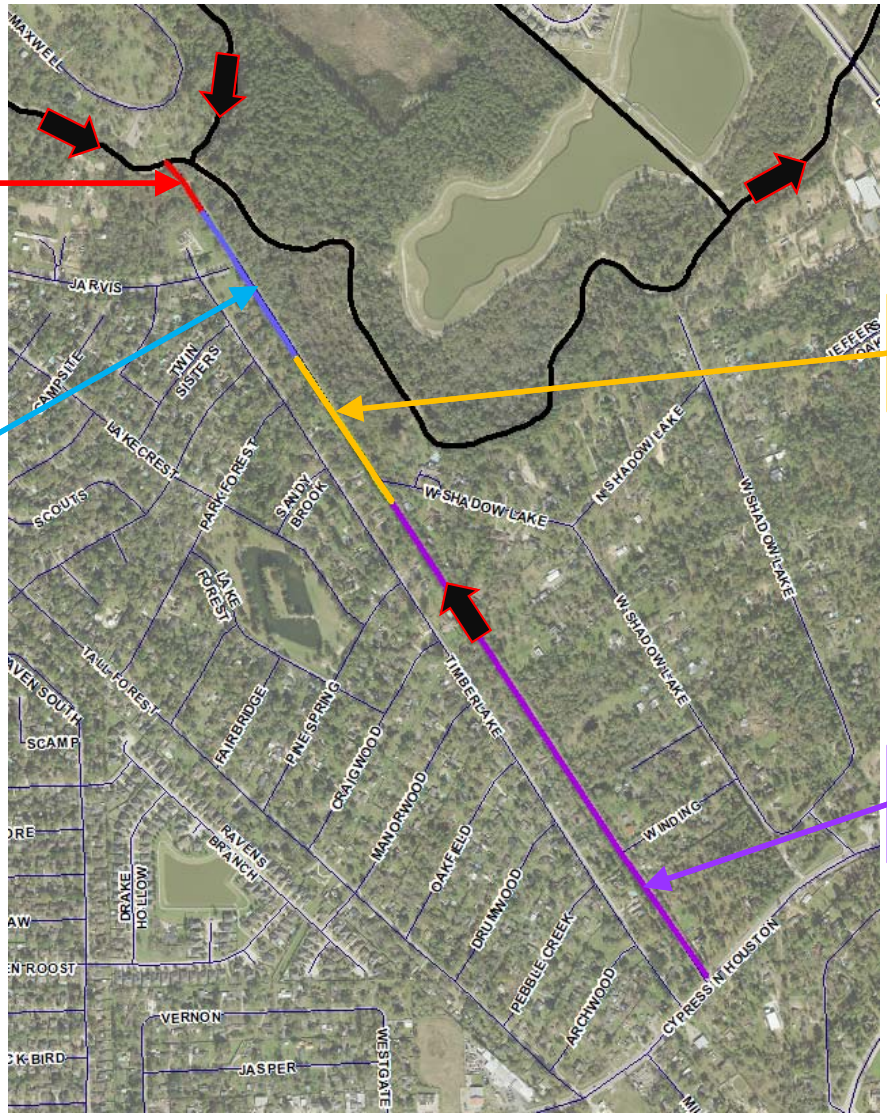

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How does this benefit your community?

- Provides more widespread flood risk reduction
- Avoids environmentally sensitive areas
- Avoids costly utility relocation
- Avoids ROW acquisition
- Avoids major schedule delays

Project Outlook

- Public Briefing: Today
- Design Phase: Winter 2019
- Construction Bidding: Winter 2019
  - Estimated Construction Cost - $10M
  - Funded through 2018 Bond Program
- Construction Completion: Spring 2021

We want to hear from you.

- See the tables & guides in back for more info
- Please visit us at:

www.HCFCD.org/F23

  - Learn more about the K163-00-00 Channel Improvements project.
  - Submit questions and sign up for our mailing list.