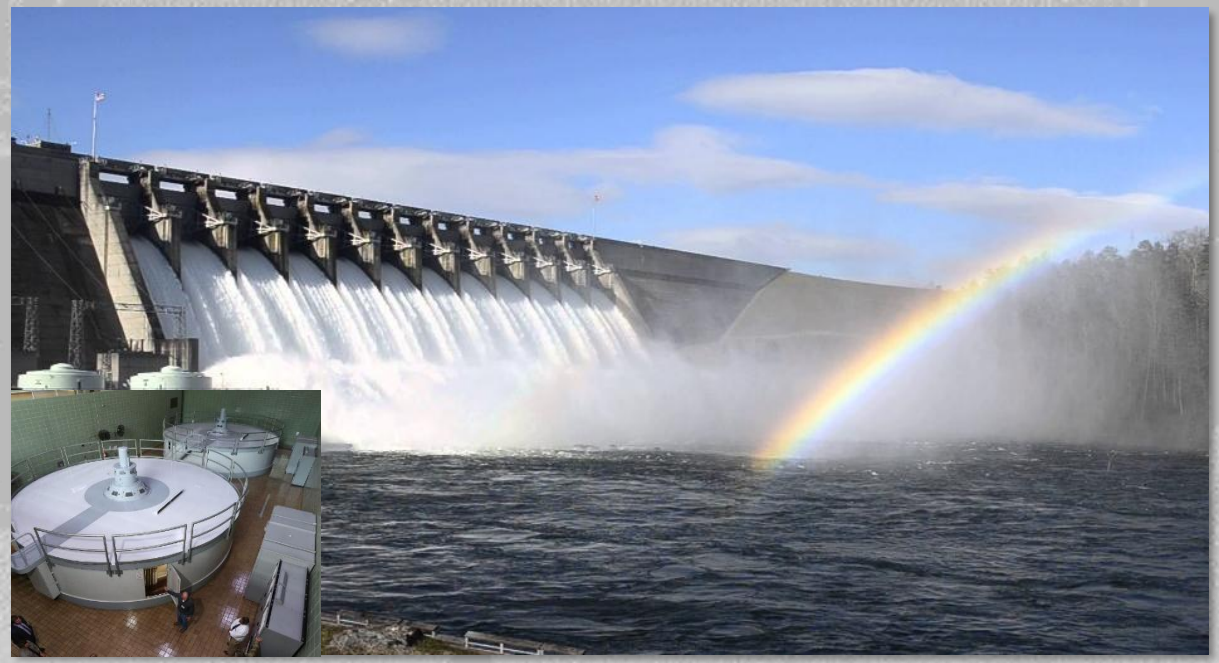
SUPPORTING COMMUNITY RESILIENCE: LEVERAGING USACE FPMS TECHNICAL SERVICES FOR FLOODPLAIN MANAGEMENT

By: Travis Wilsey, E.I., C.F.M.
Floodplain Management Services
Tulsa District

Date: September 22, 2025

Audience: CFMs, FPAs, EMs, FPAs, Business Owners, Property Owners, and Political Officials



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AGENDA

- USACE Mission, Vision, and Organization
- USACE Capabilities
- Floodplain Management Services
- Authority, and Objective
- Types of Services
  - General Technical Services
  - General Planning Guidance
  - Planning Assistance to States (PAS)
- Contact Information

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MISSION, VISION AND ORGANIZATION

USACE Mission

Deliver vital public and military engineering services; partnering in peace and war to strengthen our Nation's security, energize the economy and reduce risks from disasters

USACE Vision

Engineering solutions for our Nation's toughest challenges

- Divisions commanded by a General
- Districts commanded by a Colonel
- Generals and Colonels spend 3 years at each post
- Decentralized because of varying missions

Headquarters

9 Divisions

43 Districts

38 Water management offices

9 Centers and Labs

Countries: 130 of 196

~35k DA Civilians; ~700 Military; ~$40 Billion Budget, ~$5 Billion Civil Works

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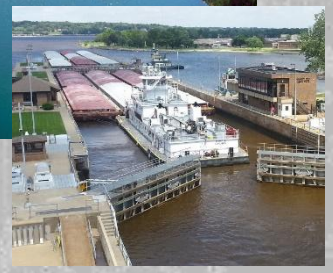
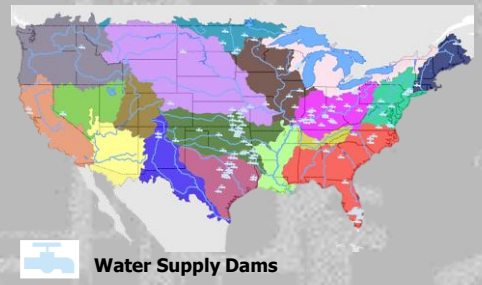
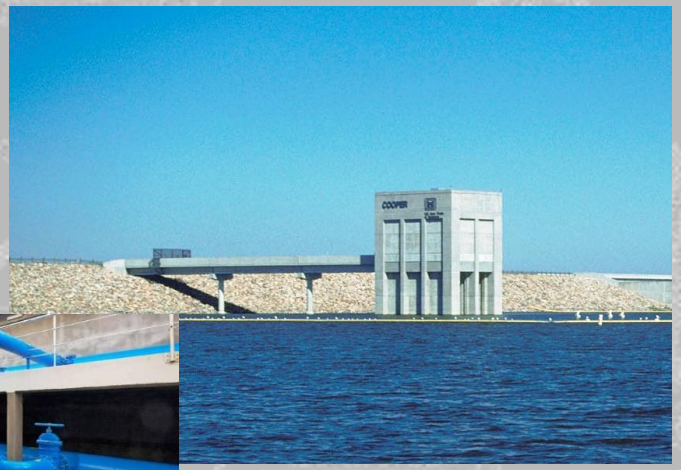
NAVIGATION MISSION



- USACE navigation operations support commerce in 41 waterways totaling ≈ 25,000 miles
- USACE operate 236 lock chambers at 191 sites
- Dredging for rivers and harbors
- Navigation in USACE provides $16 billion benefits annually

WATER SUPPLY MISSION





- USACE maintains 10 million acre-feet of water supply storage
- USACE provides water supply for 85 million people in 115 cities
- Water stored in USACE reservoirs irrigate over 2.5 million acres
- Water supply business line provides $9 billion in annual benefits
- Provides $60 million in revenue annually

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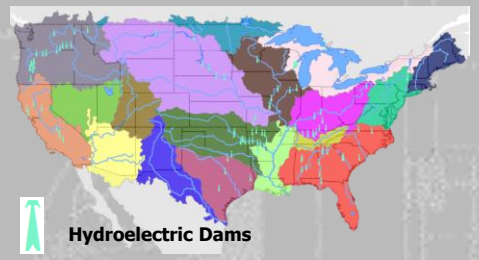
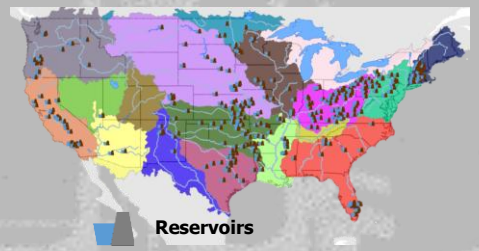
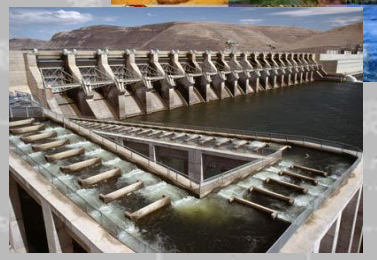
HYDROELECTRIC POWER GENERATION



- USACE operates 375 hydropower generating units at 75 projects
- USACE hydropower units produce 100 billion kilowatt-hours annually
- USACE provides 24% of U.S. hydropower generating capacity
- Provides annual benefits of $2.15 billion

ENVIRONMENTAL, THREATENED AND ENDANGERED SPECIES





- Environmental operations are legal requirements at USACE dams
- Biological Opinions (BiOp) and other threatened and endangered species operations are legal requirements
- USACE must comply with NEPA in project development and when considering operational changes (IMPACTS!)

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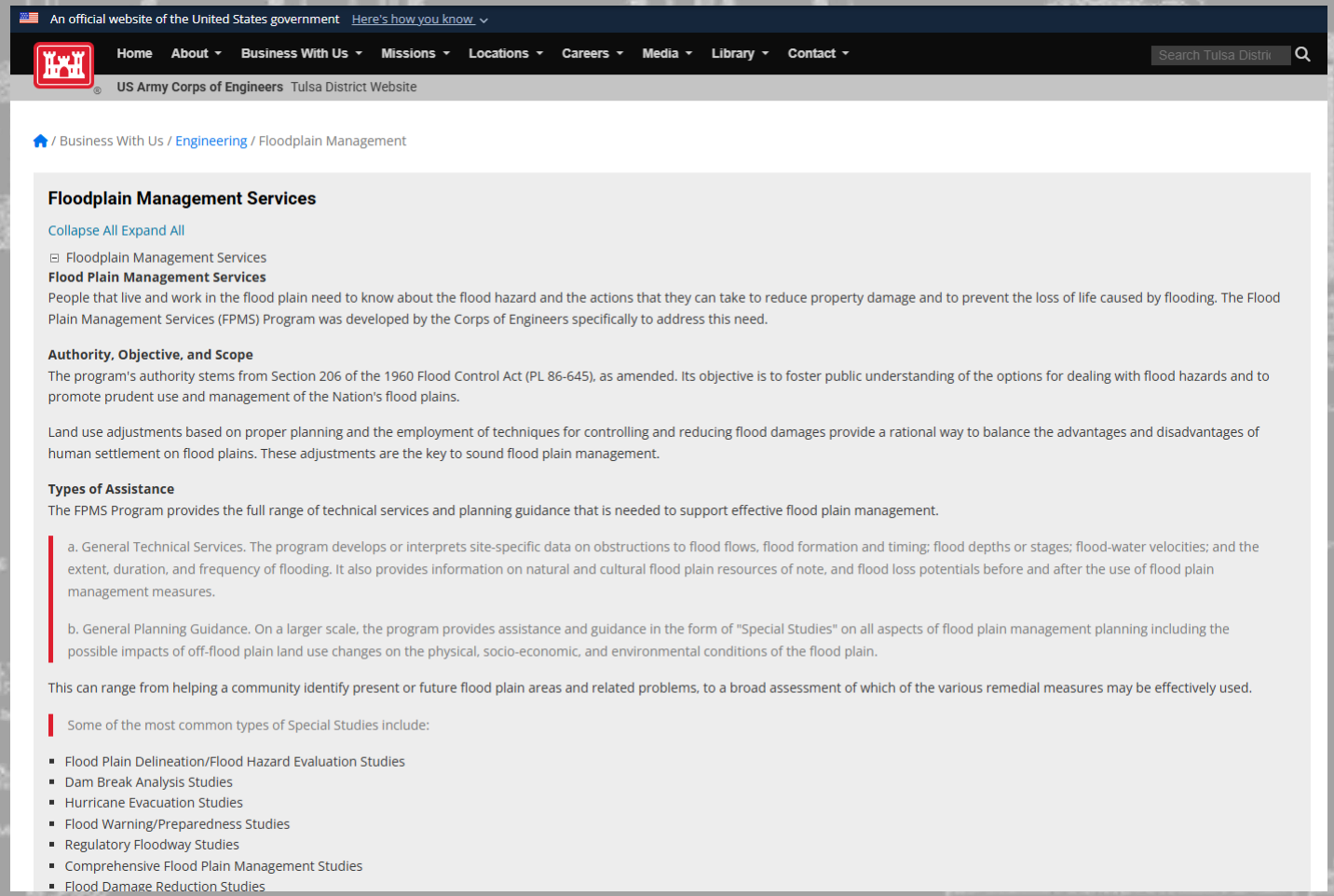
FLOOD PLAIN MANAGEMENT SERVICES

HTTPS://WWW.SWT.USACE.ARMY.MIL/BUSINESS-WITH-US/ENGINEERING/FLOODPLAIN-MANAGEMENT/



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AUTHORITY

HOW MANY FLOOD CONTROL ACTS HAVE BEEN PASSED IN THE US?

A. 1

B. 3

C. 7

D. 10

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AUTHORITY

Flood Control Act of 1927: This was a landmark act authorizing the construction of numerous flood control projects, particularly in the Mississippi River Basin, in response to the Great Mississippi Flood of 1927. It established the basic framework for federal involvement in flood control.

Flood Control Act of 1936: This act further expanded the federal role in flood control and authorized additional projects.

Flood Control Act of 1938: Continued the expansion of flood control efforts.

Flood Control Act of 1944: Focused on watershed protection and small flood control projects.

Flood Control Act of 1948: Authorized a comprehensive review of nationwide flood control needs.

Flood Control Act of 1960: Authorized the construction of numerous flood control, navigation, and hydroelectric projects. (Start of FPMS, mainly focused on Non-Federal)

Flood Control Act of 1970 (Public Law 91-158): *This* is the one most often referred to when discussing USACE authorities related to aiding private citizens and local governments. Section 216 of this act is particularly important regarding cost recovery for technical services.

Water Resources Development Act of 1986 (WRDA 86): This act significantly amended previous flood control acts and addressed a wide range of water resources issues.

Water Resources Development Act of 1999 (WRDA 99): Further amended previous acts and focused on ecosystem restoration.

Water Resources Development Act of 2007 (WRDA 07): Continued the trend of addressing a broad range of water resources issues.

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OBJECTIVE

- Flood Plain Delineation/Flood Hazard Evaluation Studies
- Base Flood Elevation Determinations
- Dam Break Analysis Studies
- Hurricane Evacuation Studies
- Flood Warning/Preparedness Studies
- Regulatory Floodway Studies
- Comprehensive Flood Plain Management Studies
- Flood Damage Reduction Studies
- Urbanization Impact Studies
- Stormwater Management Studies
- Flood Proofing Studies
- Inventory of Flood Prone Structures.

USACE has the authority to perform certification support work under FPMS but **may not** actually certify plans or designs.

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TYPES OF ASSISTANCE

a. **General Technical Services.** The program develops or interprets site-specific data on obstructions to flood flows, flood formation and timing; flood depths or stages; flood-water velocities; and the extent, duration, and frequency of flooding. It also provides information on natural and cultural flood plain resources of note, and flood loss potentials before and after the use of flood plain management measures.
b. **General Planning Guidance.** On a larger scale, the program provides assistance and guidance in the form of "Special Studies" on all aspects of flood plain management planning including the possible impacts of off-flood plain land use changes on the physical, socio-economic, and environmental conditions of the flood plain.
c. **Planning Assistance to States (PAS) Program.** Authorized by Section 22 of the 1974 Water Resources Development Act. Provide technical assistance to non-Department of Defense federal agencies, state and local governments, tribal nations, private U.S. firms, international organizations, and foreign governments. Assistance is given within the limits of available appropriations, but $2,000,000 is the maximum Federal funding available annually to any state or tribe. A **50-percent cost share** is required by the non-Federal sponsor.
d. **Silver Jackets.** State-, Territory-, or Tribe-led Silver Jackets teams exist in all states and several territories, bringing together multiple state, federal, and sometimes local agencies and Tribes to learn from one another and work together to reduce risk from floods and sometimes other natural hazards. Silver Jackets teams conduct diverse collaborative efforts. Team focal areas vary as state priorities vary. By applying their shared knowledge, the teams enhance preparedness, mitigation, and response and recovery efforts when such events do occur. Resources for team activities are provided through the individual programs of each participating agency, within the constraints of available budgets and authorities.

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GENERAL TECHNICAL ASSISTANCE

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BFE DETERMINATIONS
ZONE A

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, TULSA DISTRICT
2488 EAST 81ST STREET
TULSA, OKLAHOMA 74137-4290

Engineering and Construction Division
Hydraulics and Hydrology Branch (12th Floor)
Floodplain Management Services (12-32)

15 August 2025

[redacted]

Minimum Information

RE: 34.714936° N, -95.844500° W
NW ¼, SW ¼, Sec. 21 T3N R14E Indian Meridian
Pittsburg County, Oklahoma

[redacted]

This is in response to your request to develop a Base Flood Elevation (BFE) for property located in the Northwest Quarter of the Southwest Quarter of Section 21 Township-3-North Range-14-East of the Indian Meridian, in Pittsburg County, Oklahoma.

The current Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) 40121C0725E (community-panel 400171) effective July 22, 2010, indicates the property is in Zone A (the 100-year floodplain of Chun Creek).

We have determined that the Base Flood Elevation for this property to be **751.1** feet NAVD 88 (North American Vertical Datum). This base flood elevation was determined using acceptable guidelines by the Oklahoma Department of Transportation, outlined in FEMA 265, but should not be considered a detailed hydraulic analysis. To officially remove structures from flood insurance requirements, a Letter of Map Change (LOMC) can be obtained from FEMA if the lowest floor elevation is above the BFE either by mail or online. Any development on this property must be constructed too local floodplain regulations.

Please retain this letter and a copy of the payment confirmation from Pay.gov - United States Army Corps of Engineers Finance Center for your records. The payment is valid for the life of property. If another BFE is needed or if you have any questions, please call Floodplain Management Services at 918-669-4360 or email Travis.s.wilsey@usace.army.mil.

Sincerely,

Travis Wilsey

TRAVIS WILSEY E.I., C.F.M.
USACE SWT Floodplain Management Services

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BFE DETERMINATIONS
ZONE AE

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, TULSA DISTRICT
2488 EAST 81ST STREET
TULSA, OKLAHOMA 74137-4290

Engineering and Construction Division
Hydraulics and Hydrology Branch (12th Floor)
Floodplain Management Services (12-32)

15 August 2025

[redacted]

RE: 36.272083° N, -95.844889° W
SW ¼, NW ¼, Sec. 29 T21N R14E Indian Meridian
Tulsa County, Oklahoma

[redacted]

This is in response to your request to develop a Base Flood Elevation (BFE) for property located in the Southwest Quarter of the Northwest Quarter of Section 29 Township-21-North Range-14-East of the Indian Meridian, in Tulsa County, Oklahoma.

The current Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) 40143C0138L (community-panel 400210) effective October 16, 2012, indicates the property is in Zone AE (the 100-year floodplain of Bird Creek Tributary 5A).

We have determined that the Base Flood Elevation for this property to be **604.7** feet NAVD 88 (North American Vertical Datum). This base flood elevation was determined using the Flood Insurance Study, FIS, Number 40143CV004F, revised September 12, 2024, referencing Flood Profile 037P – Bird Creek Tributary 5A. To officially remove structures from flood insurance requirements, a Letter of Map Change (LOMC) can be obtained from FEMA if the lowest floor elevation is above the BFE either by mail or online. Any development on this property must be constructed too local floodplain regulations.

Please retain this letter and a copy of the payment confirmation from Pay.gov - United States Army Corps of Engineers Finance Center for your records. The payment is valid for the life of property. If another BFE is needed or if you have any questions, please call Floodplain Management Services at 918-669-4360 or email Travis.s.wilsey@usace.army.mil.

Sincerely,

Travis Wilsey

TRAVIS WILSEY E.I., C.F.M.
USACE SWT Floodplain Management Services

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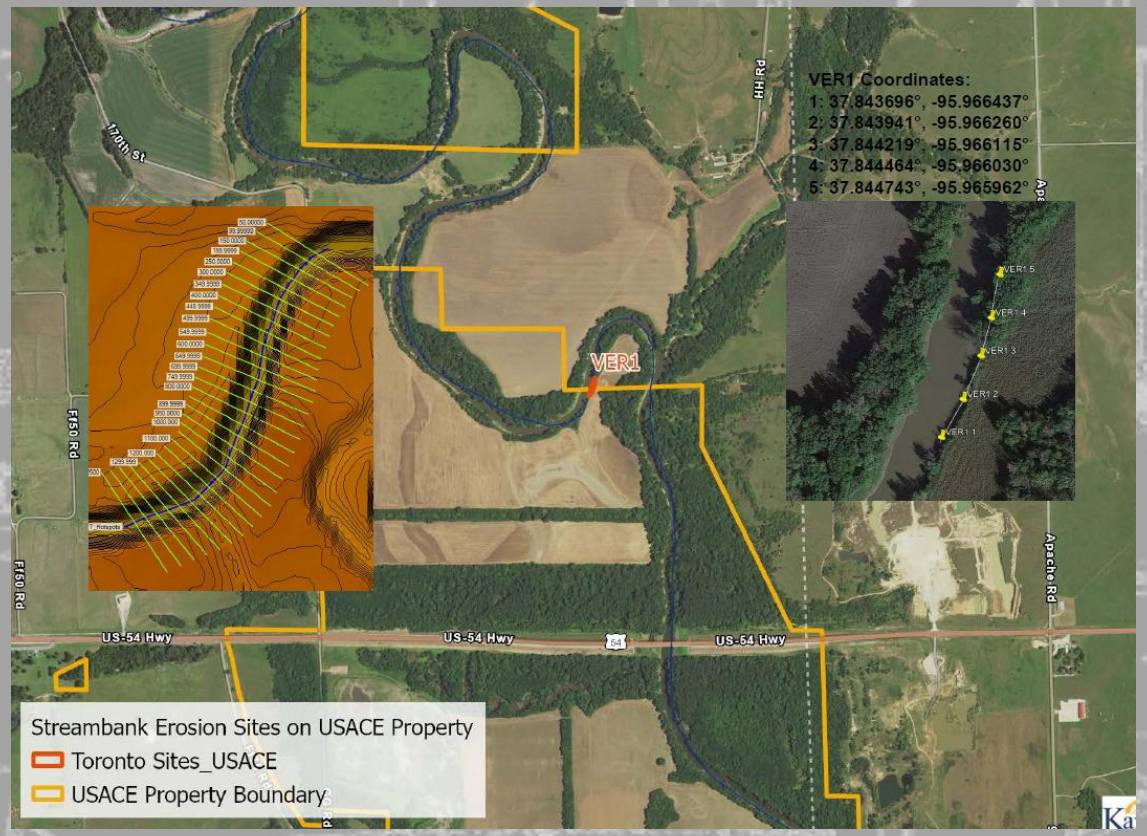
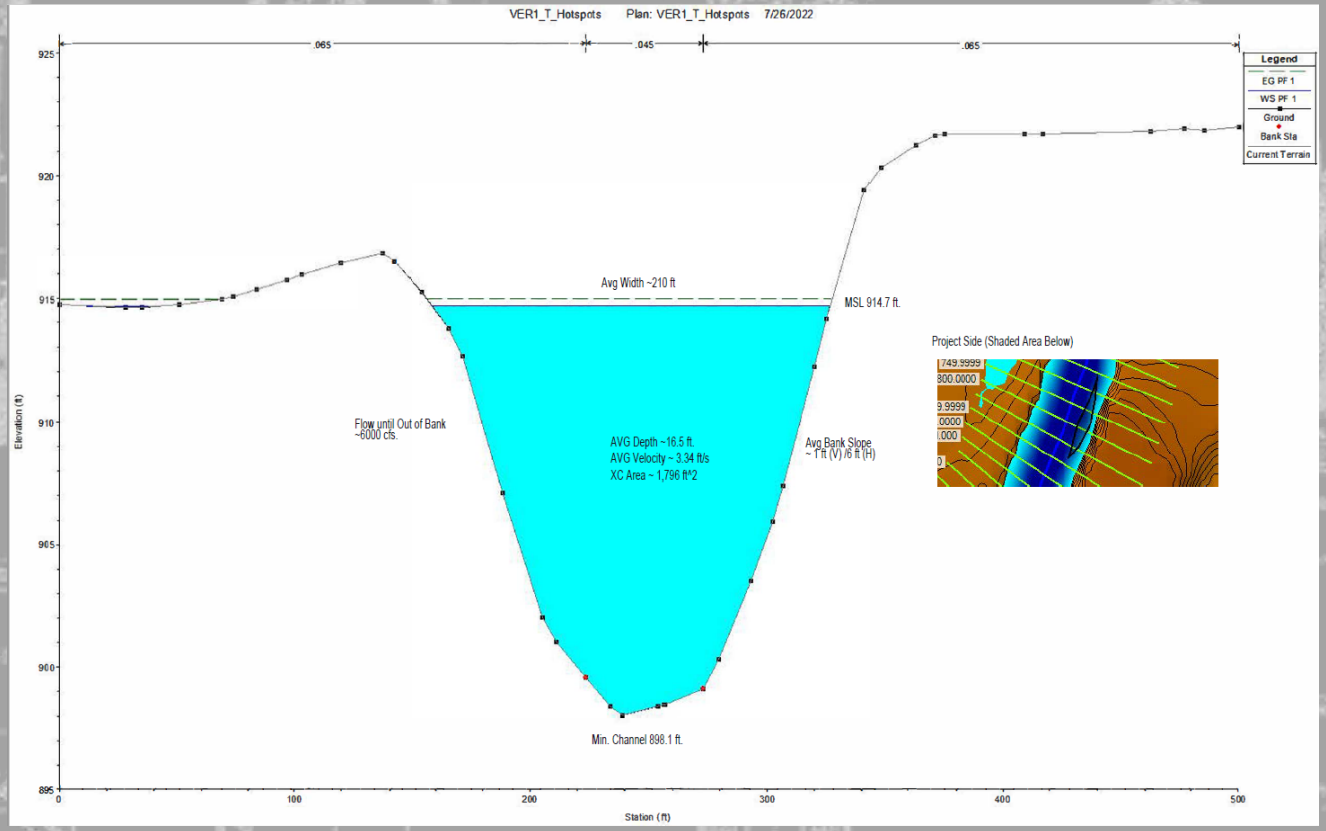
EROSION CONTROL





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GENERAL PLANNING GUIDANCE

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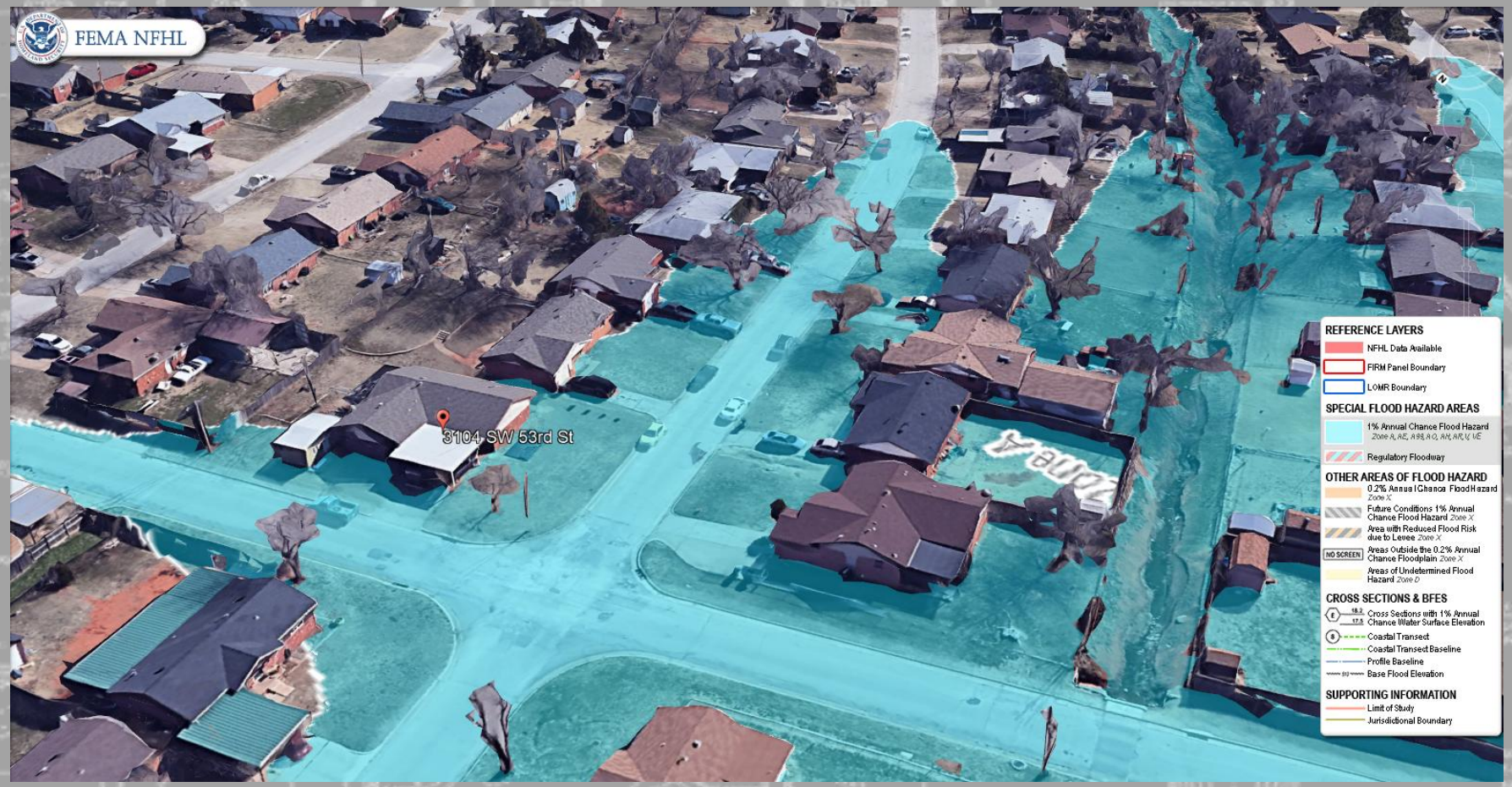
FLOODPLAIN DELINEATION

STAKE HOLDER AWARENESS



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FLOODPLAIN DELINEATION/ IDENTIFICATION

CLOSING STORY

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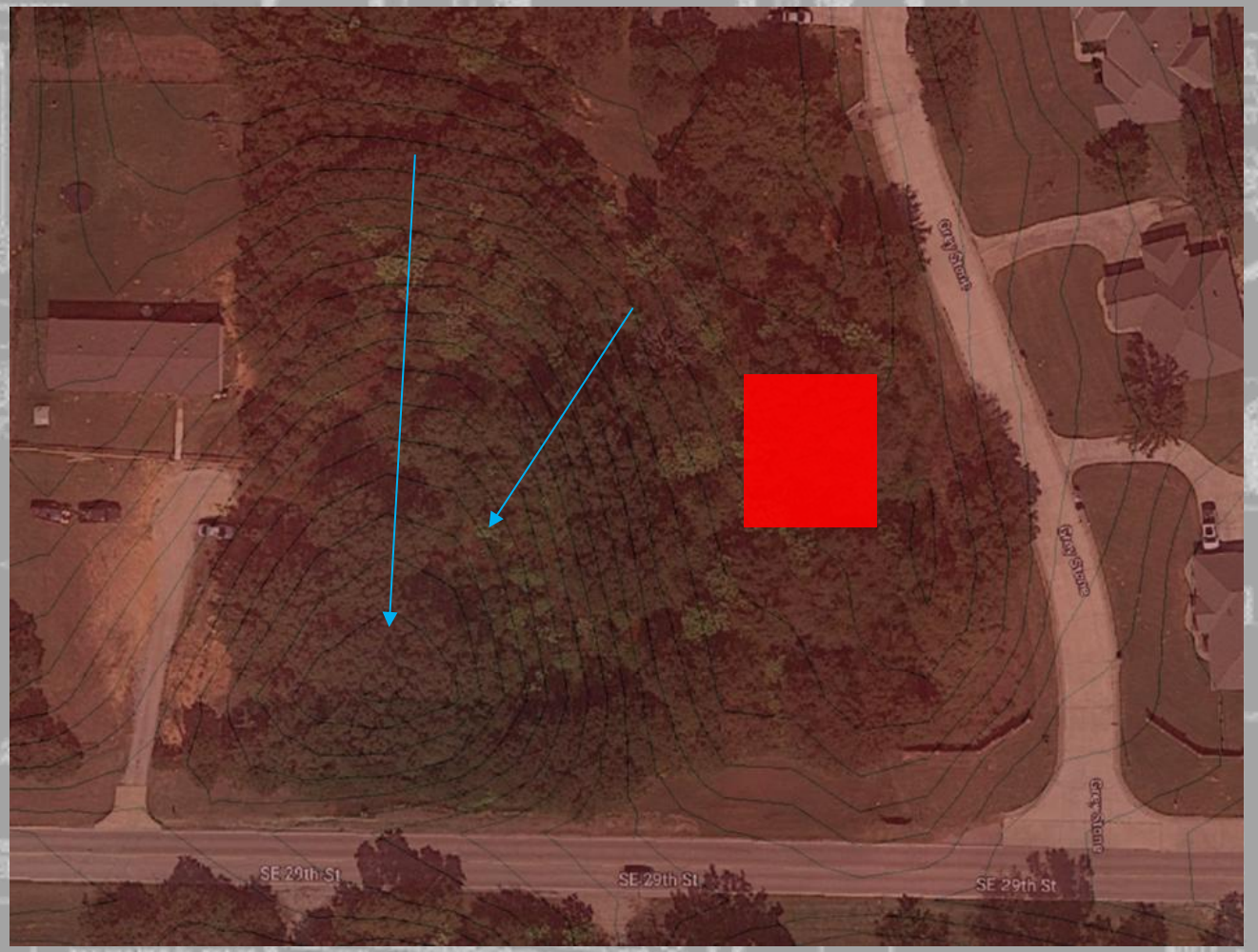
FLOOD HAZARD EVALUATION

SHOULD I BUILD HERE?



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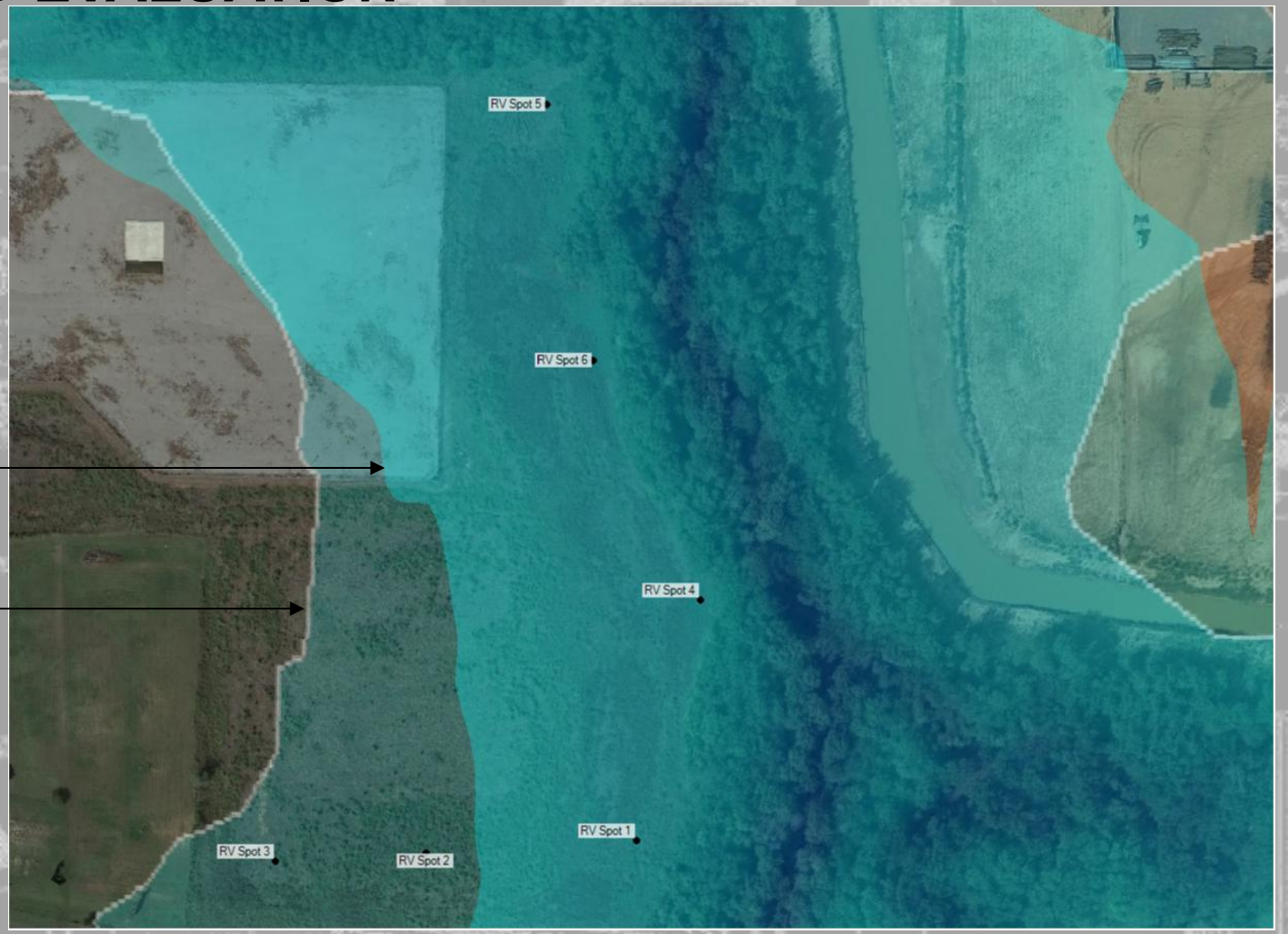
FLOOD HAZARD EVALUATION

ZONE A COMPARISON

USACE Zone A

FEMA Zone A



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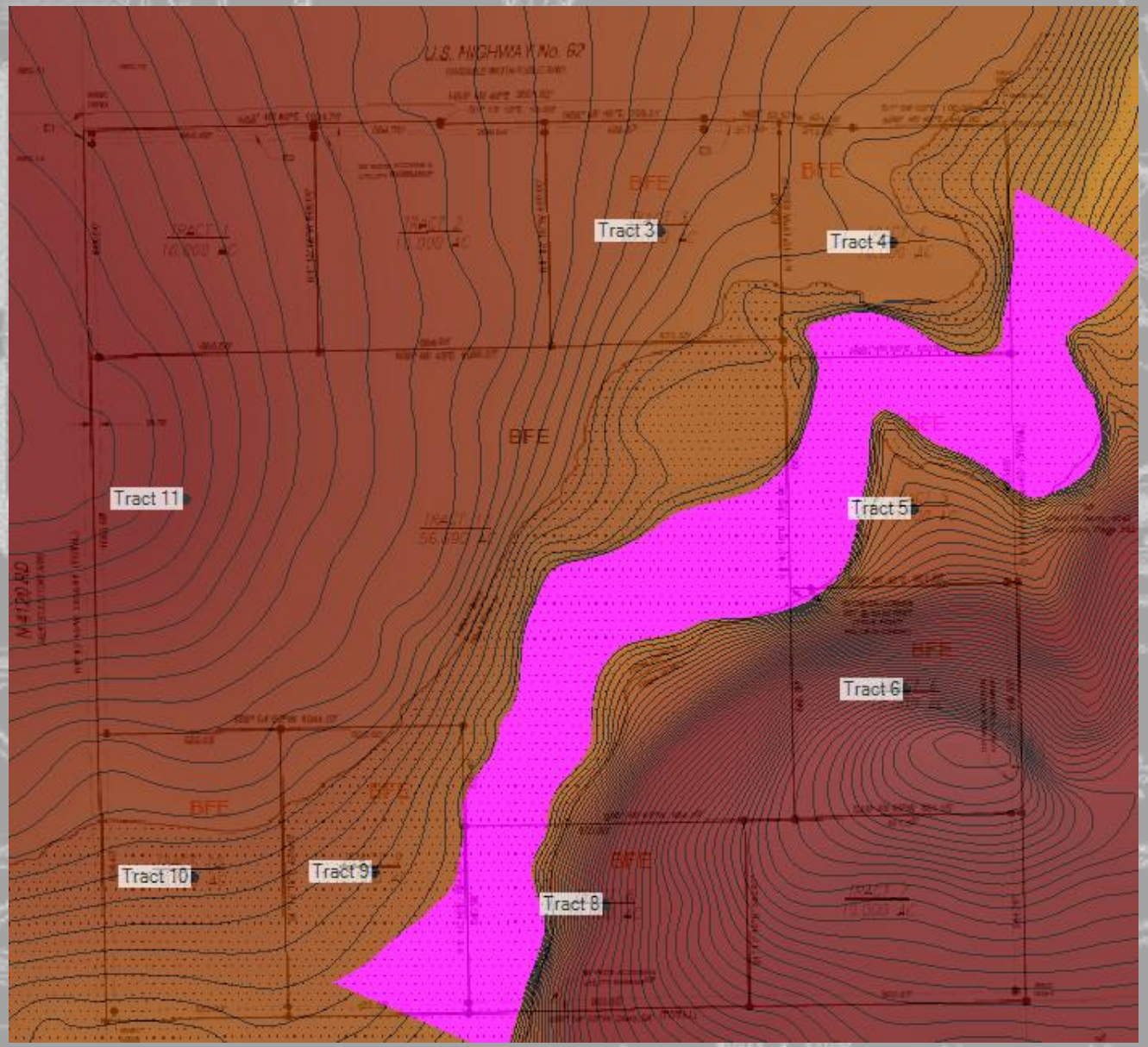
FLOOD HAZARD EVALUATION

ZONE A IN RESIDENTIAL DESIGN
BFE FOR EACH TRACT IN FLOODPLAIN



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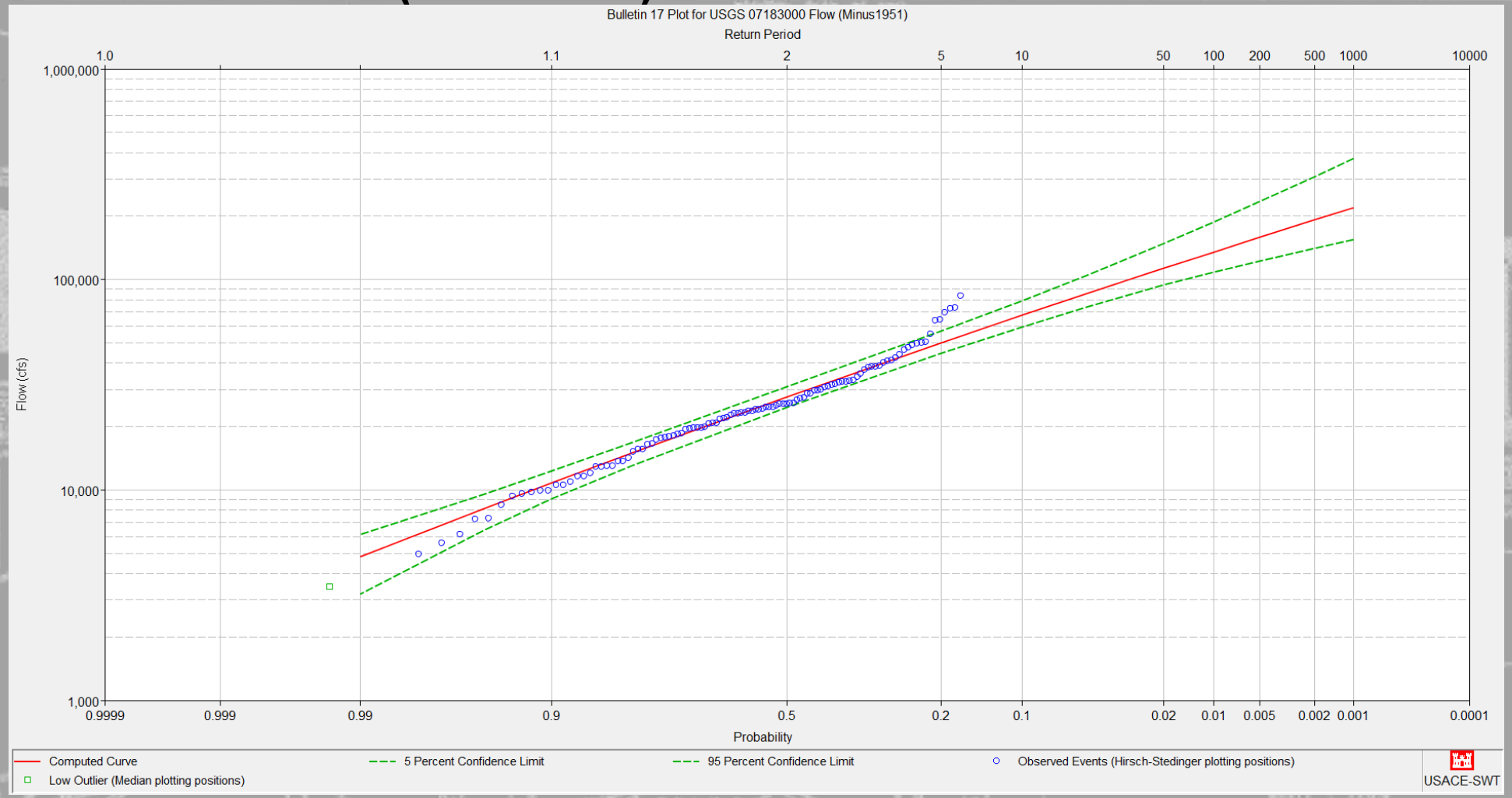
EVENT PROBABILITIES (MAYBE…)



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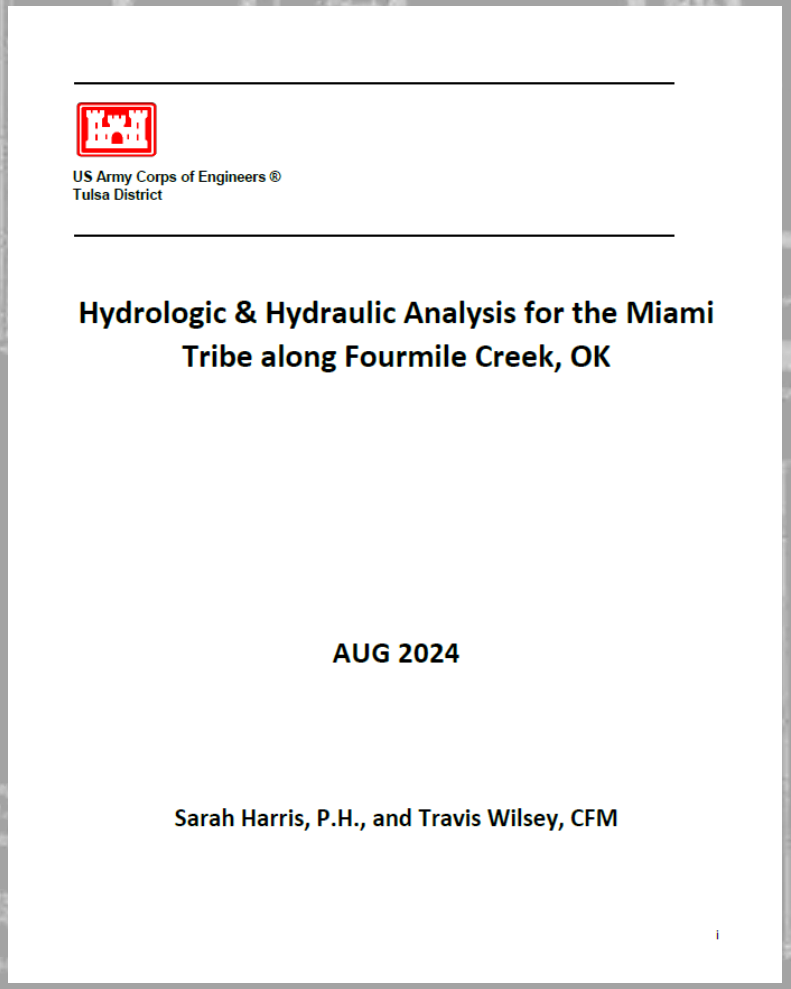
PLANNING ASSISTANCE TO STATES (PAS)



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Hydrologic & Hydraulic Analysis for the Miami Tribe along Fourmile Creek, OK

AUG 2024

Sarah Harris, P.H., and Travis Wilsey, CFM

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EGRESS ROUTE (2% ROUTE IS CLOSED)

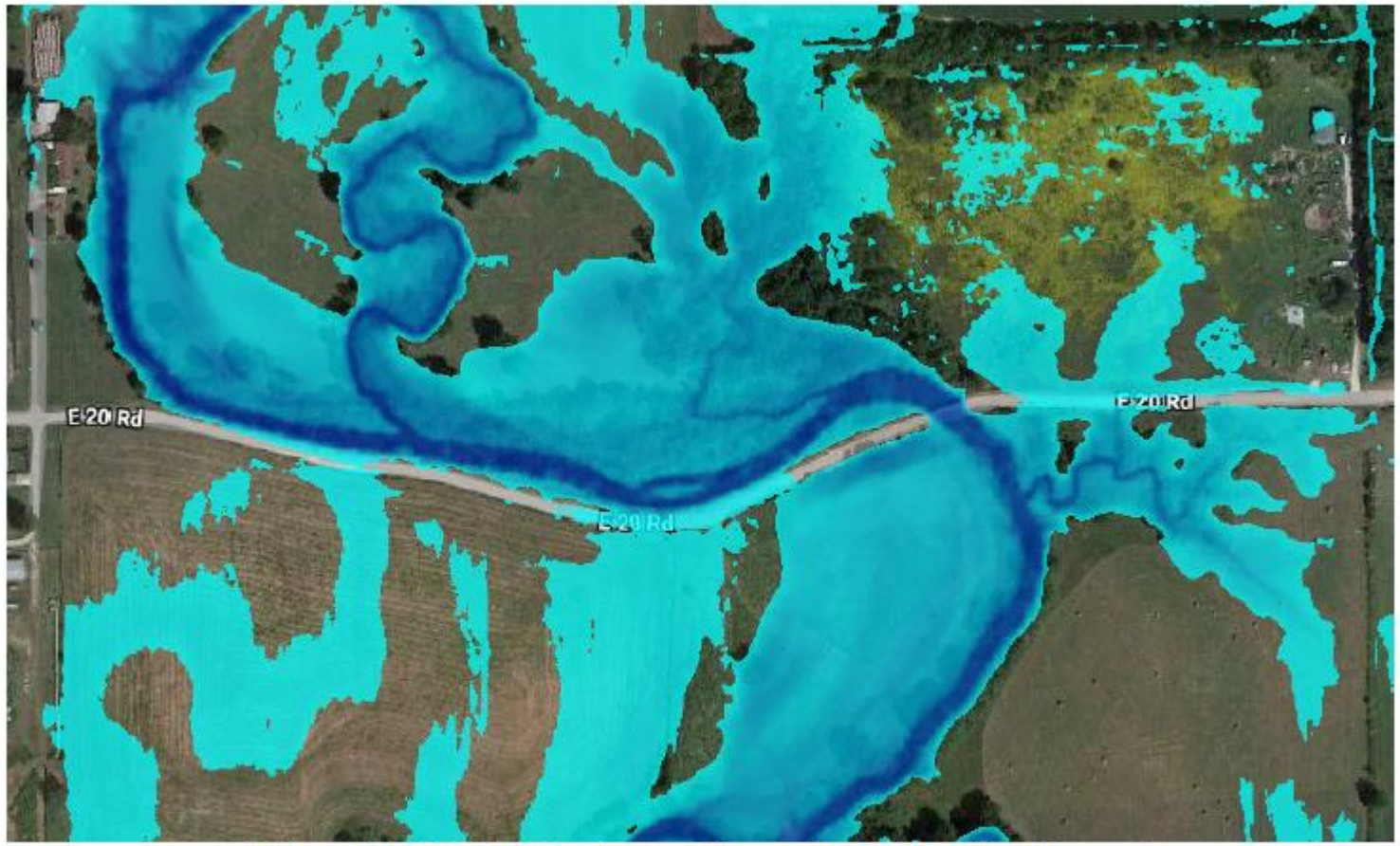

Figure 5-4. HEC-RAS rain-on-grid results for the 2% AEP event

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EGRESS ROUTE (2019 HIGHWATER ~100YR EVENT)

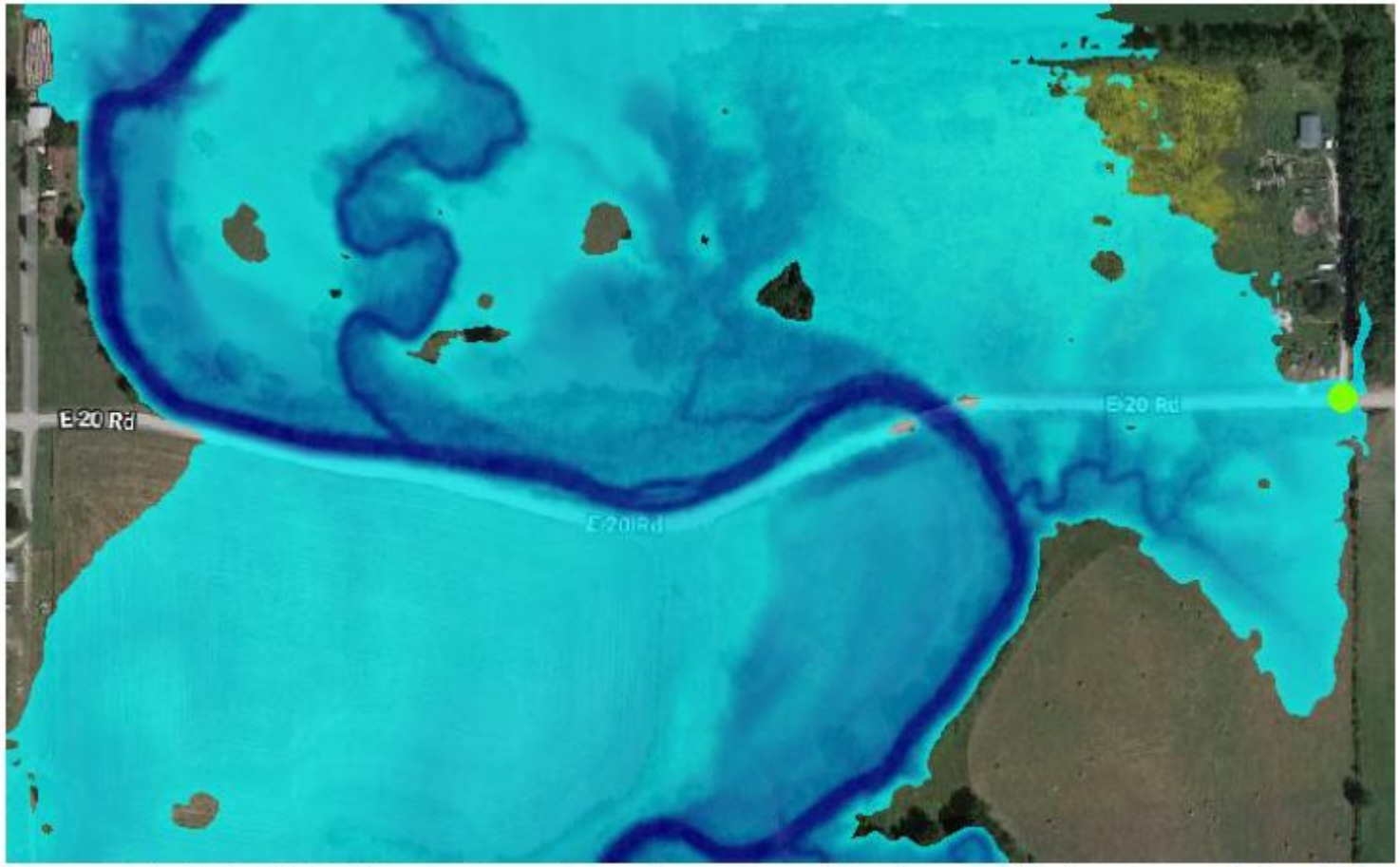

Figure 4-1. HEC-RAS inflow hydrograph results compared to observed high-water mark from May 2019

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EGRESS ROUTE

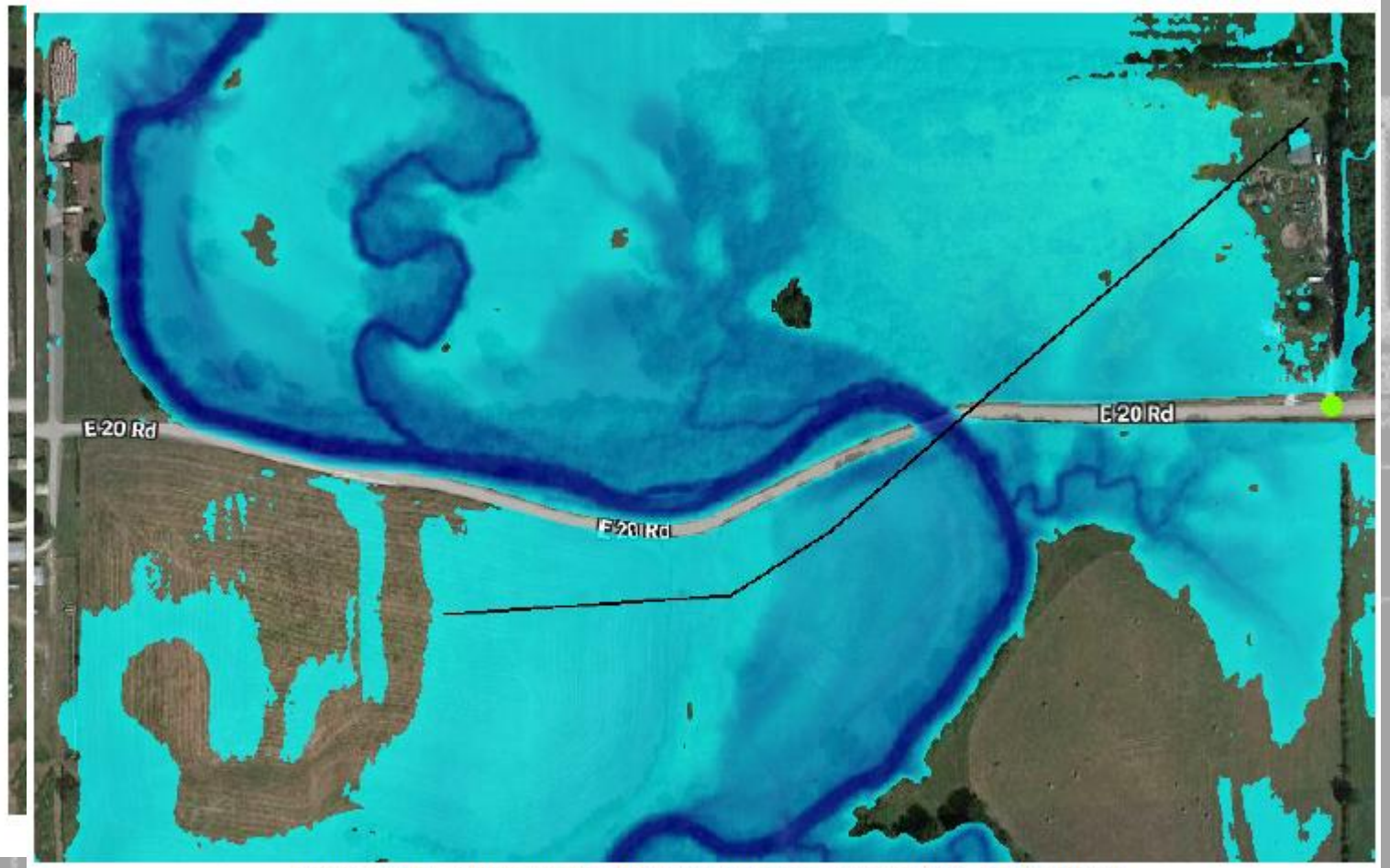

Figure 5-6. Inundation with raised road during 1% AEP event

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FEMA MAP UPDATE (PAS)

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Hydrologic & Hydraulic Analysis for the City of Elgin, OK

MAR 2025

Taft Price, P.H., and Travis Wilsey, E.I., C.F.M.

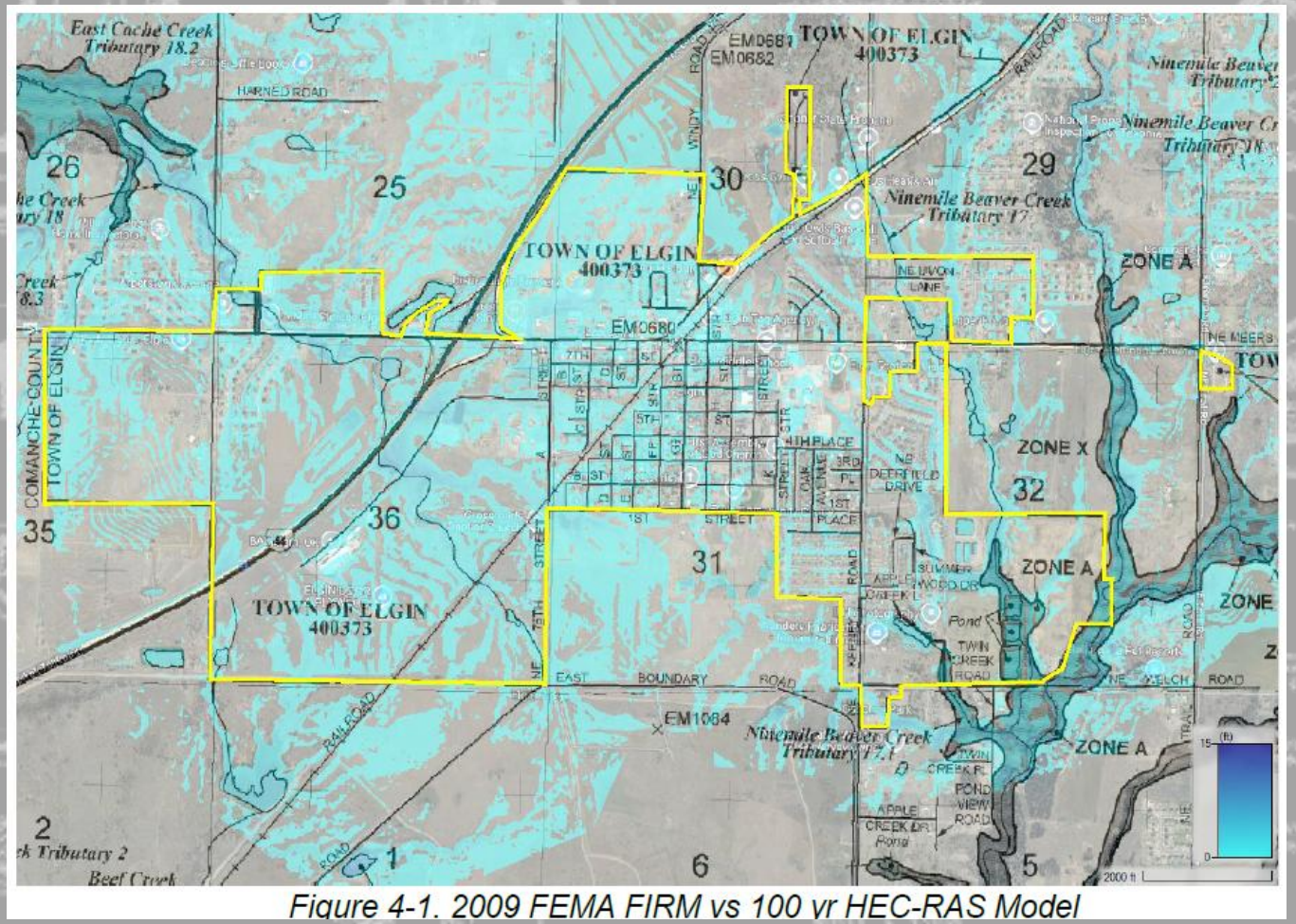

Figure 4-1. 2009 FEMA FIRM vs 100 yr HEC-RAS Model

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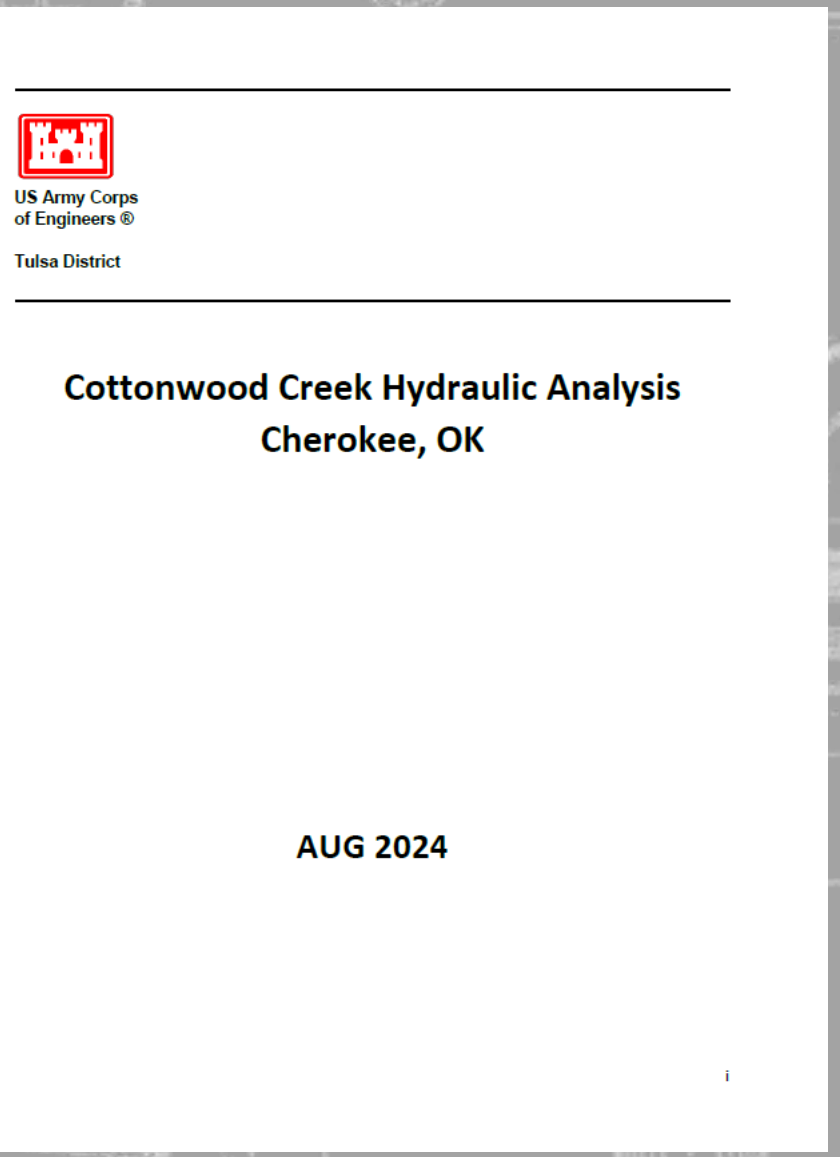
FEMA MAP UPDATE (PAS)



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Cottonwood Creek Hydraulic Analysis
Cherokee, OK

AUG 2024

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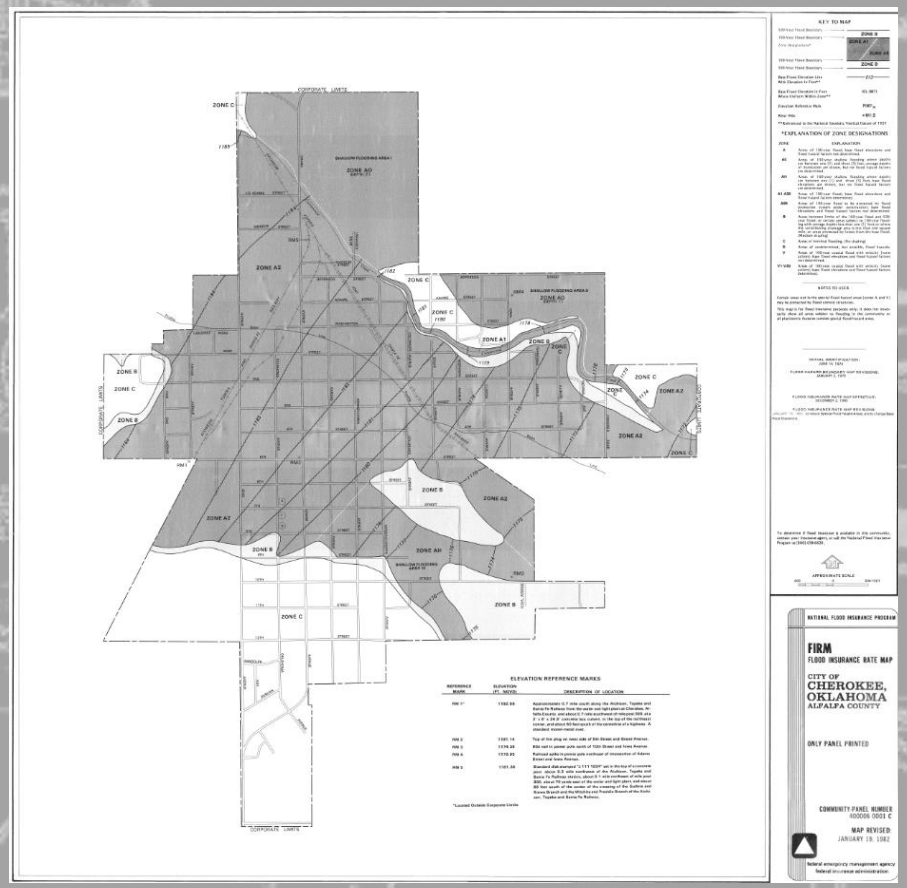

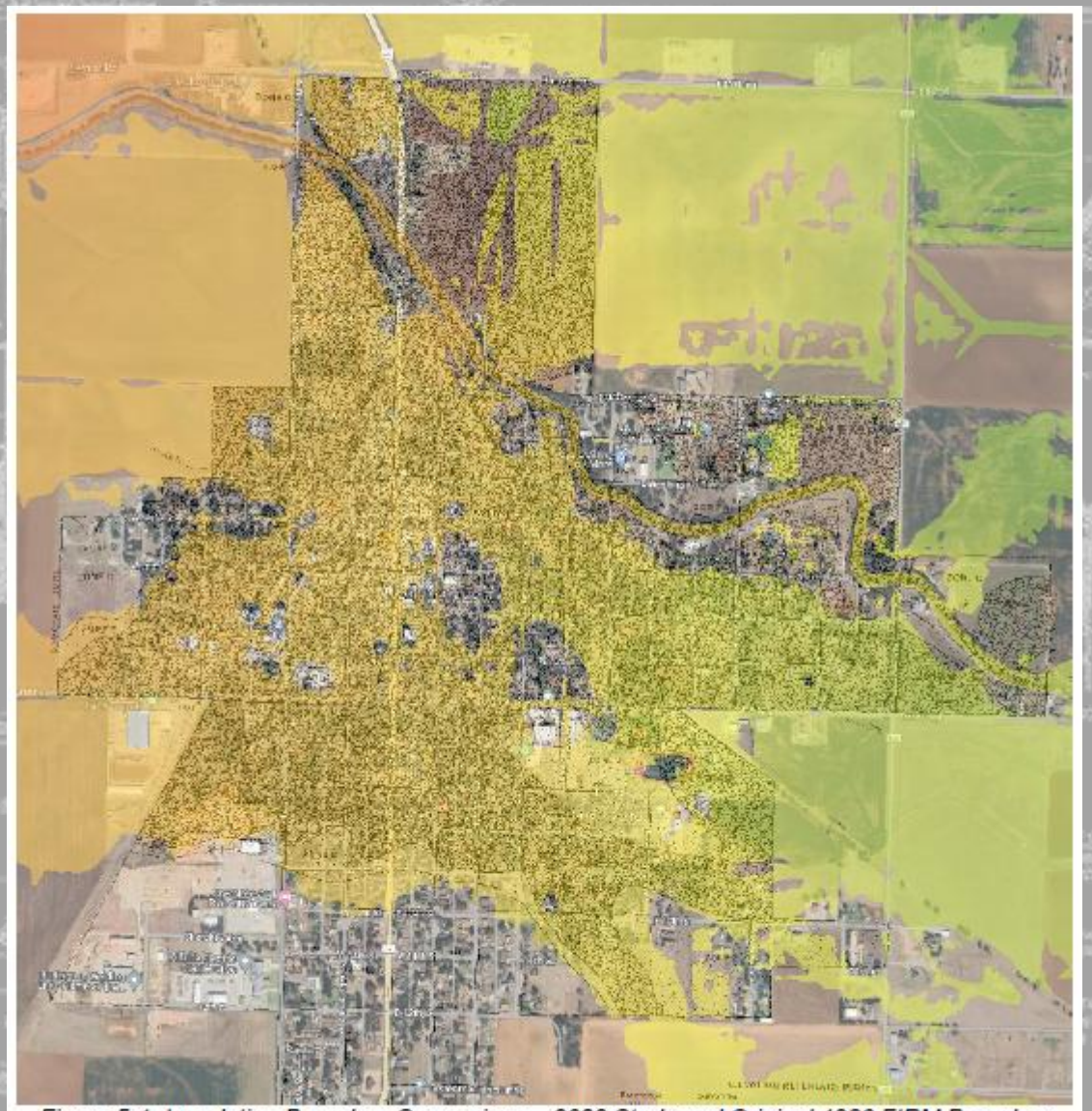

Figure 5-1. Inundation Boundary Comparison – 2022 Study and Original 1980 FIRM Boundary

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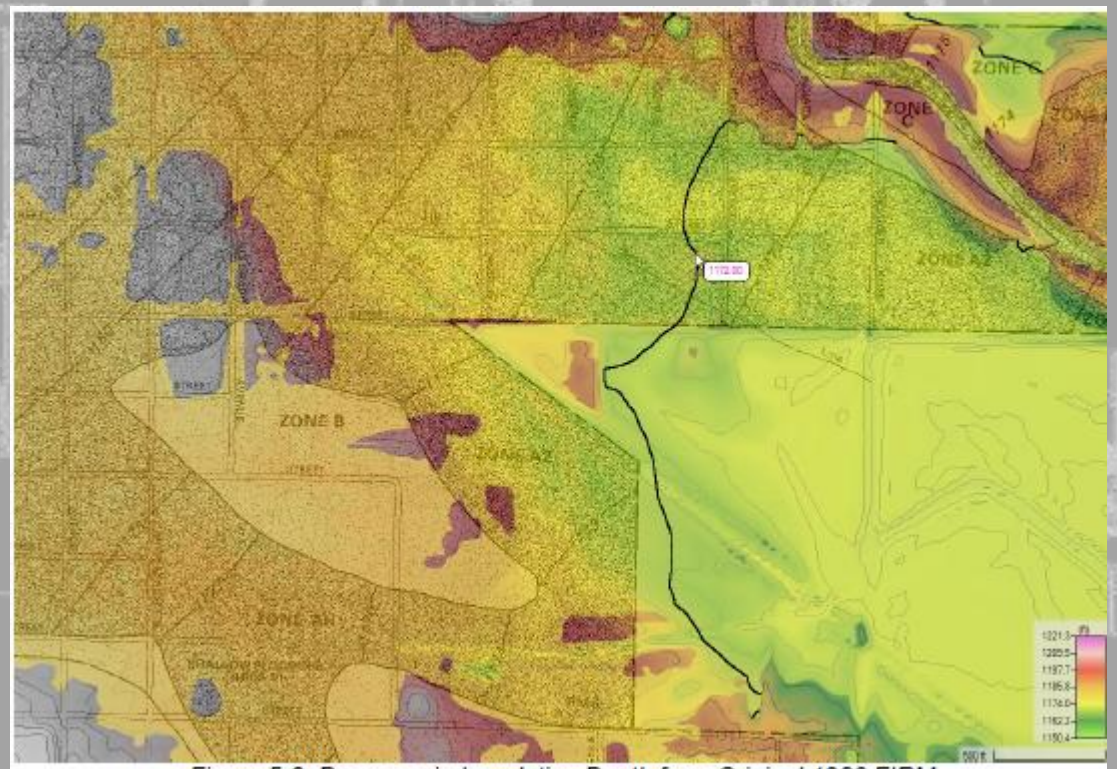

Figure 5-2. Decrease in Inundation Depth from Original 1980 FIRM

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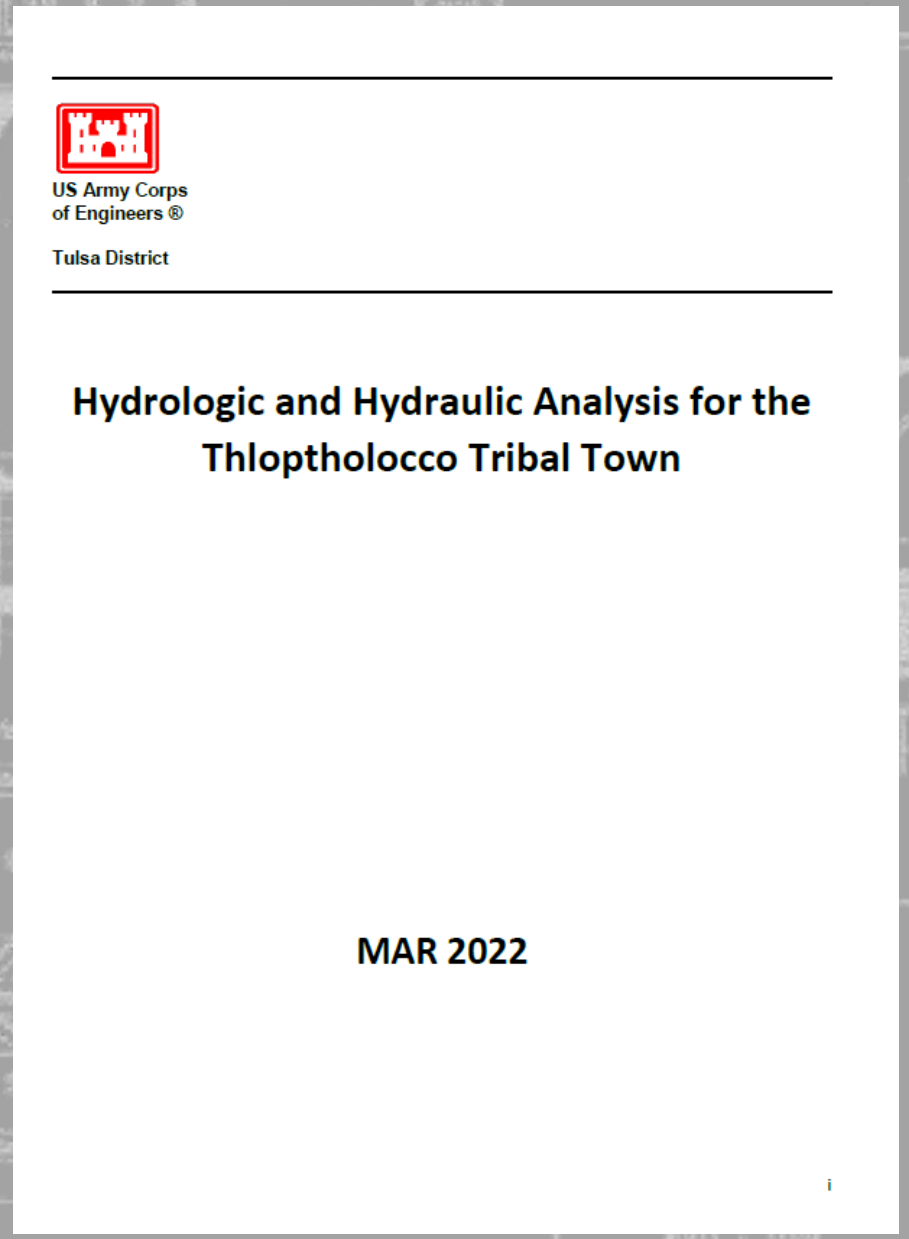
RUNOFF ANALYSIS (PAS)



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Hydrologic and Hydraulic Analysis for the Thloptholocco Tribal Town

MAR 2022

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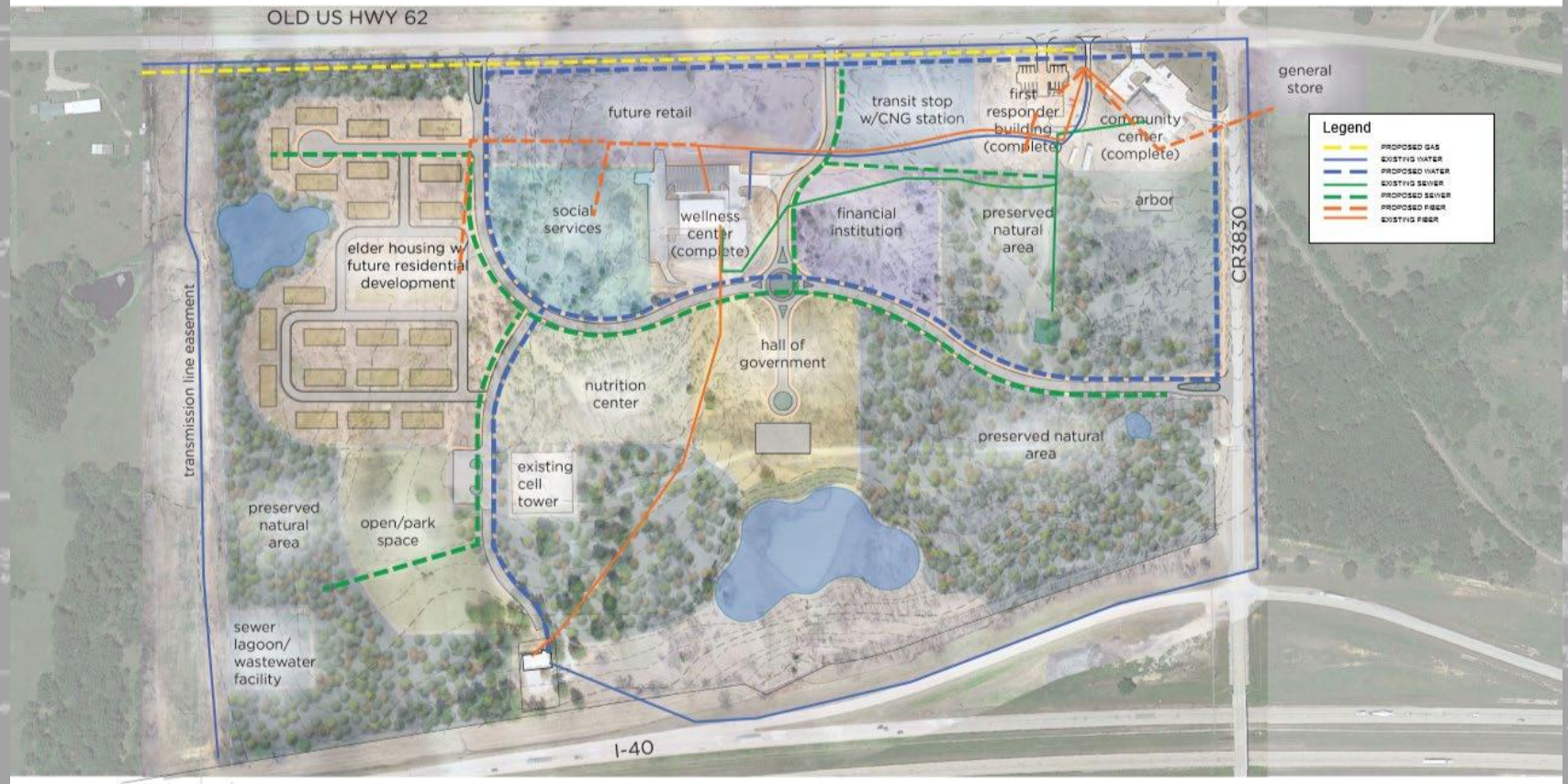

guernsey ENGINEERS ARCHITECTS CONSULTANTS

THLOPTHLOCCO TRIBAL TOWN
UNDERGROUND UTILITY MASTER PLAN

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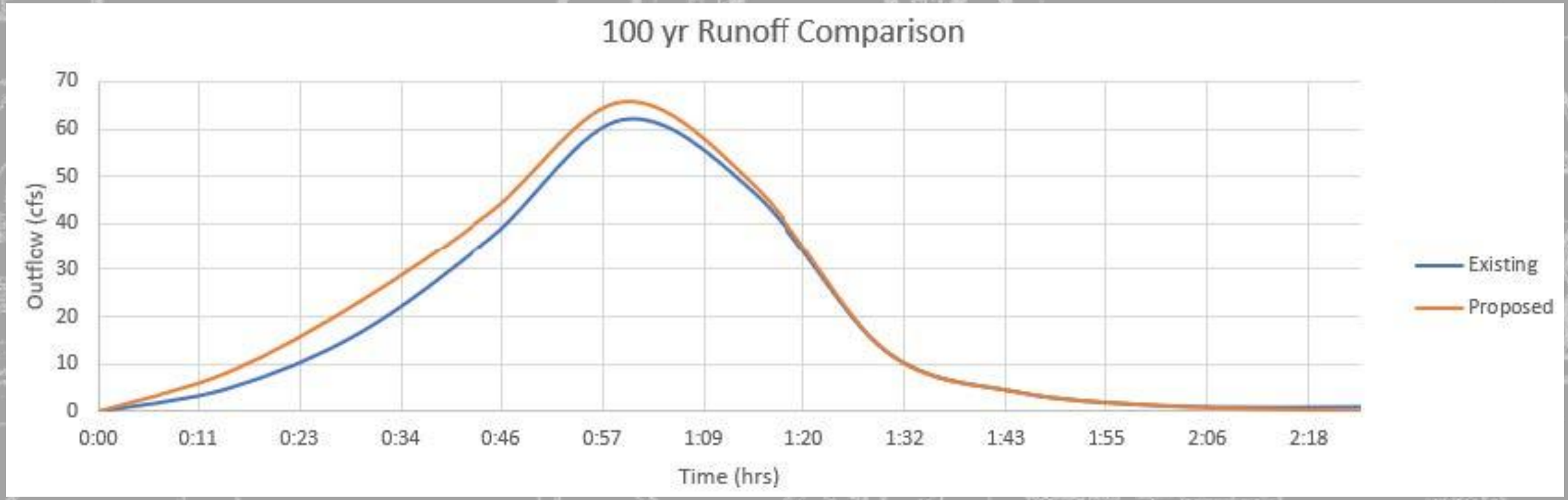

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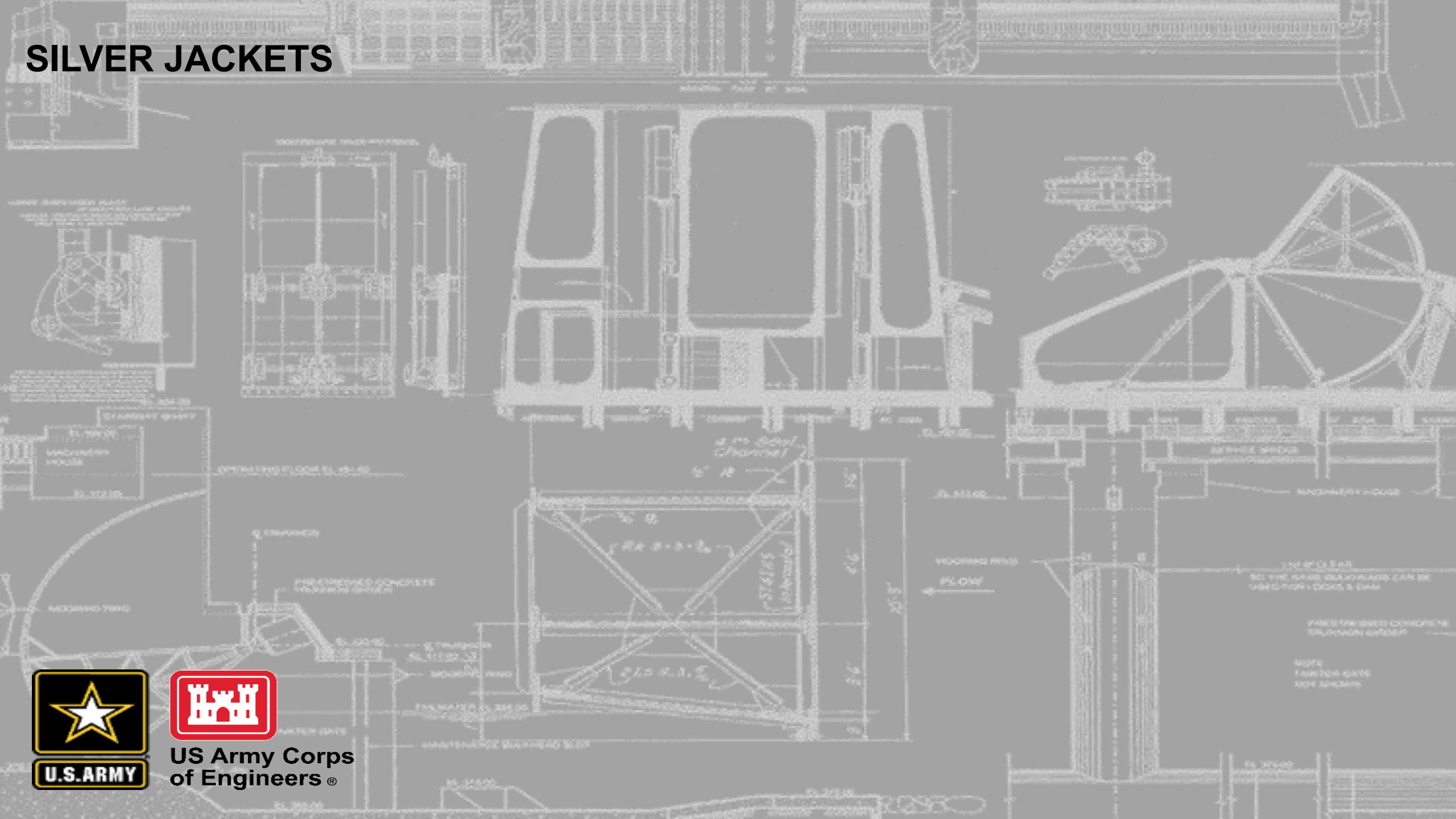
SILVER JACKETS



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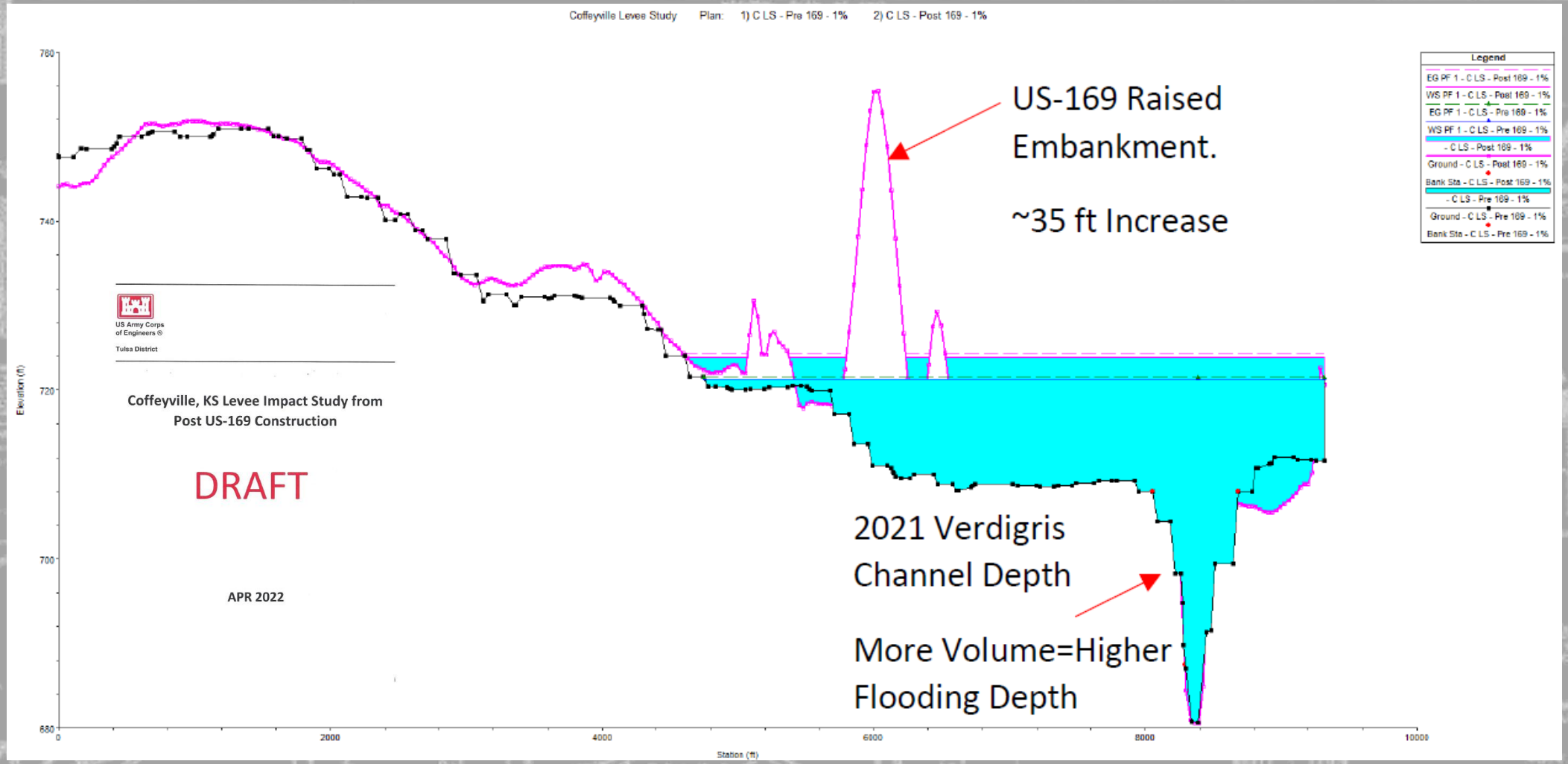
FLOOD INUNDATION MAPPING (SILVER JACKETS)



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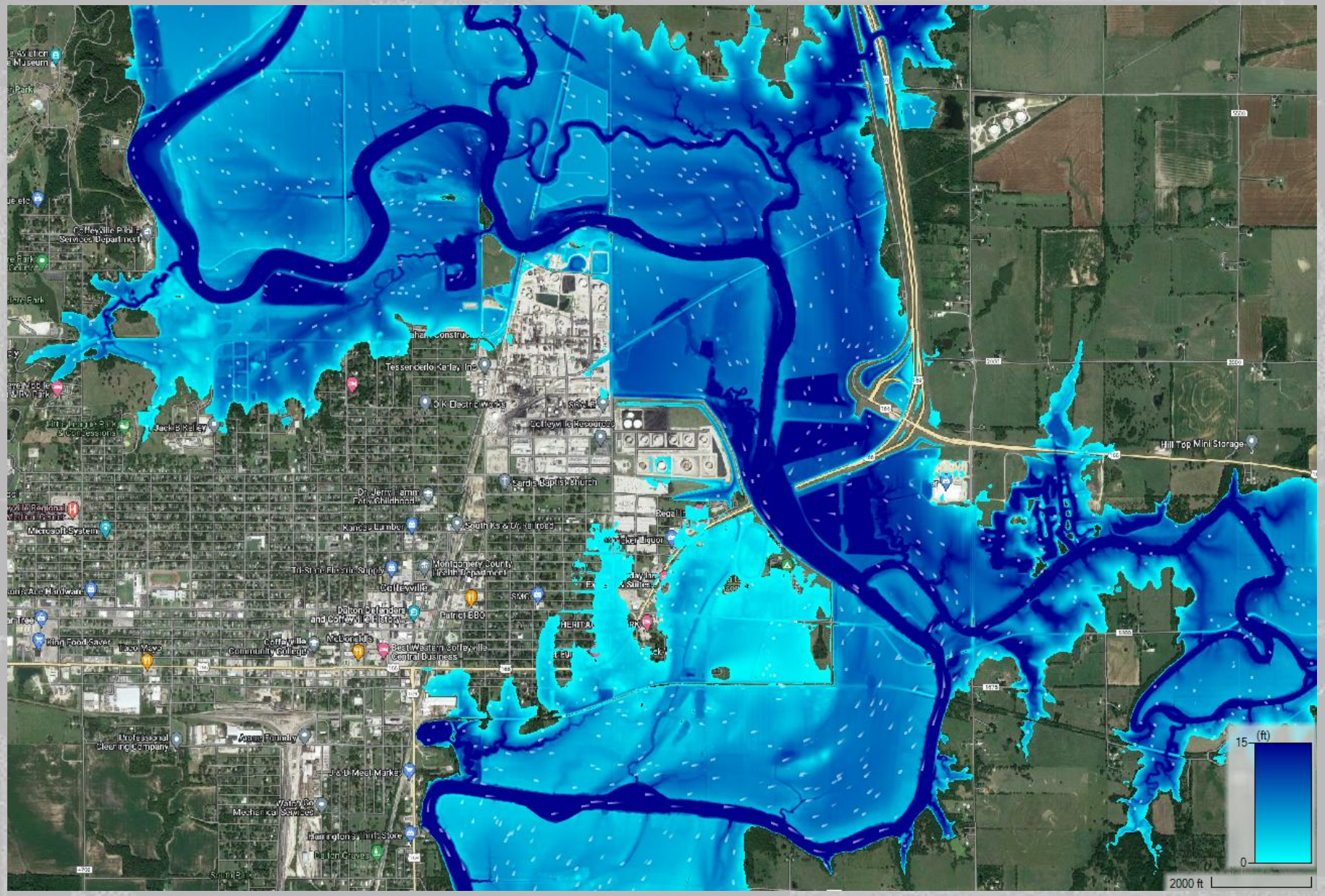
100 YR. (1%) AS IS CONDITION (PT)



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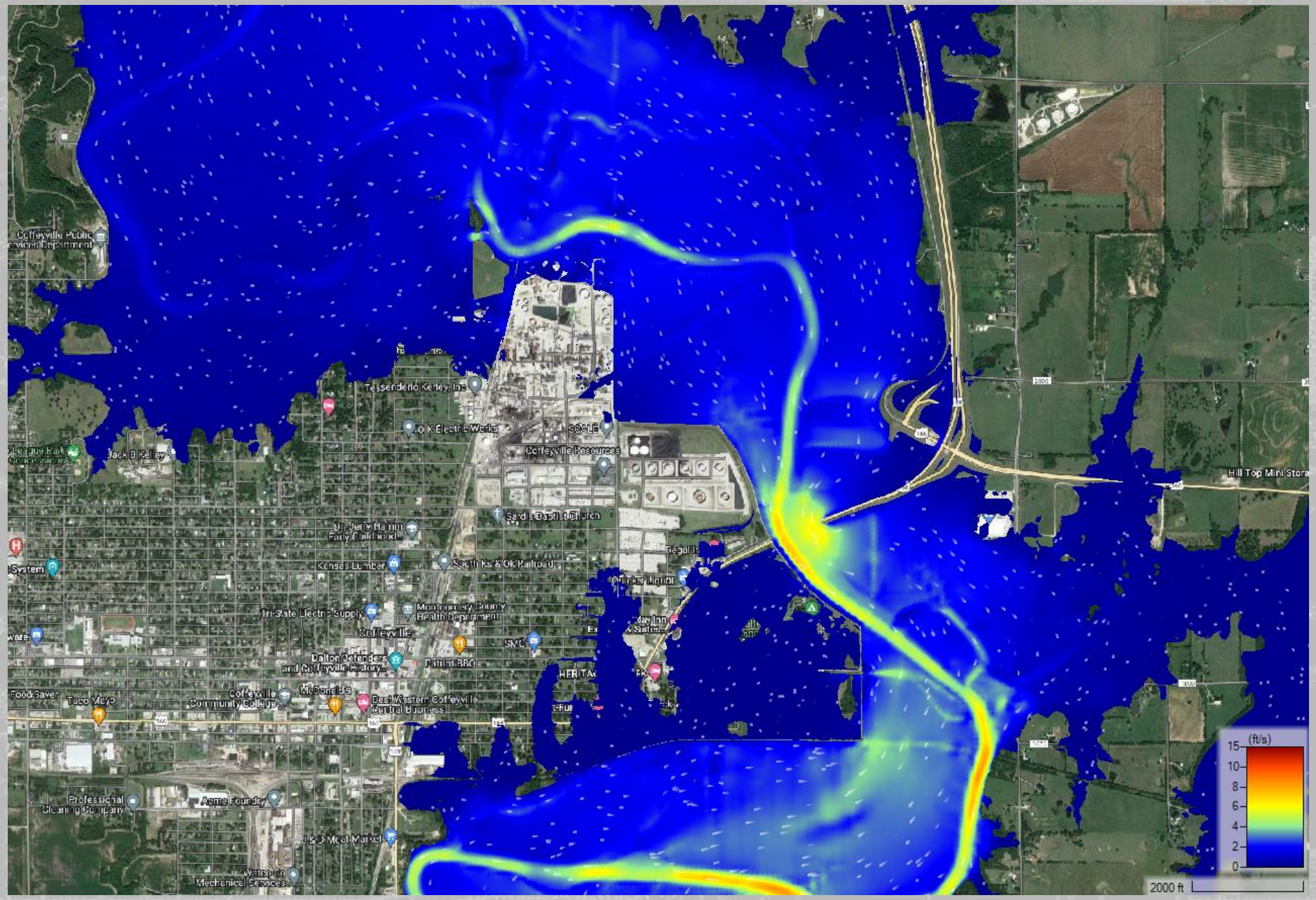
100 YR. (1%) AS IS CONDITION VELOCITY (PT)



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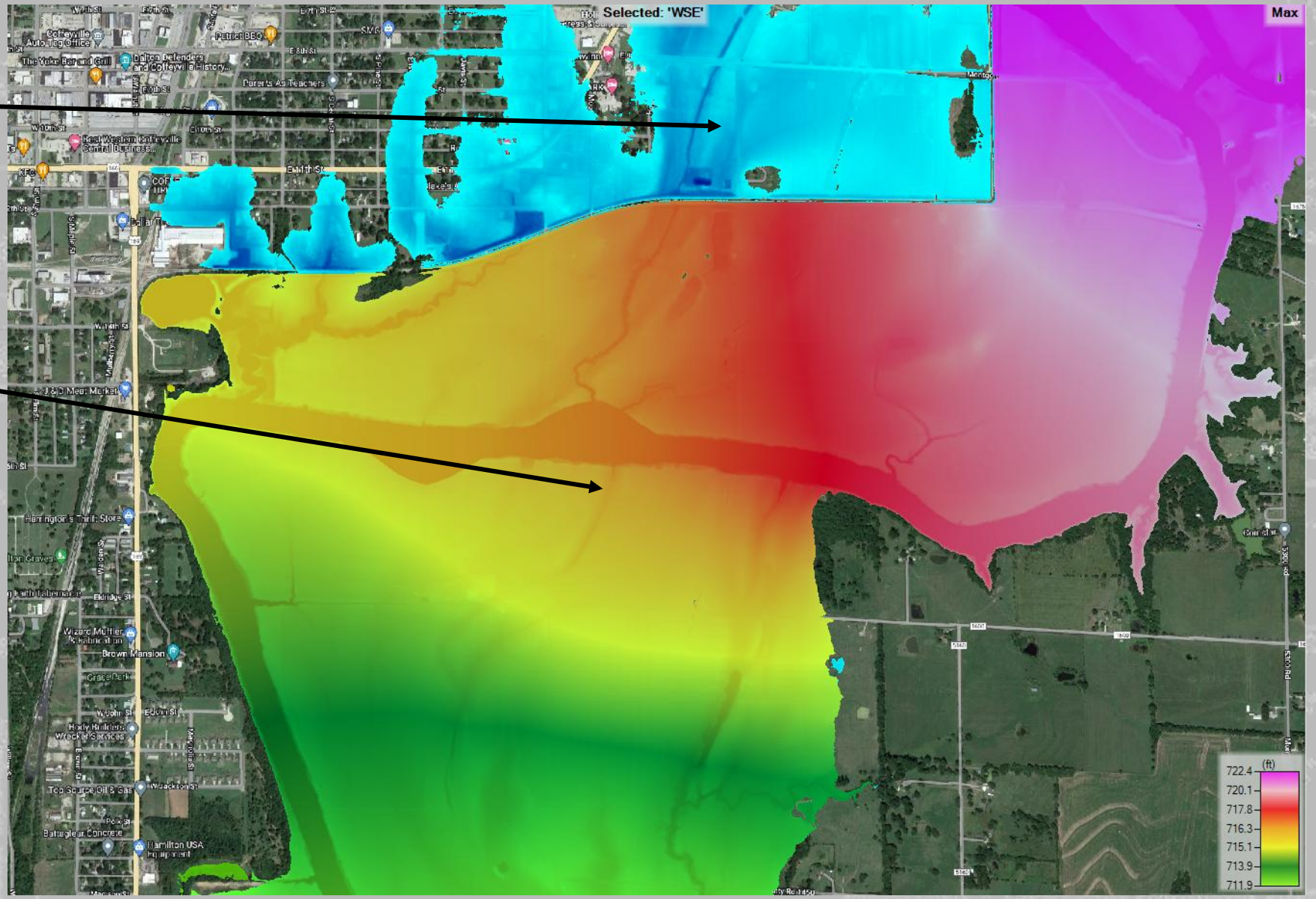
NO RISE CALCULATED (AS-IS VS MITIGATION 1)

100 Yr. As-Is

Mitigation 1



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EAP (SILVER JACKETS)

General Trigger Guidelines

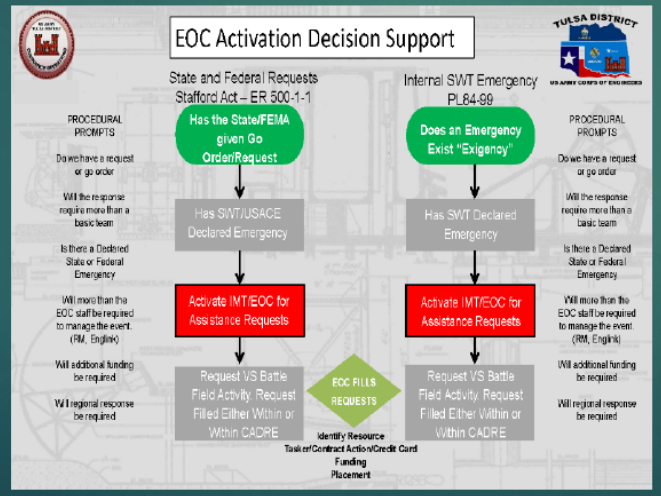
Upstream project with 50% of flood pool or channel capacity. Water on Levee Toe. Levee under repair. Rainfall Forecast at 6 to 8 inches over 24hrs.

Levee Projects Record Water Levels Impacted River Flows Capacity Impacts

Project	Top of Project	High/Record Level (Date)	Channel Capacity T-Trigger	Downstream Impact Descriptions
Coffeyville Levee	726.5	730.7	16ft . 27,700CFS	Refinery. Homes and Businesses. Start closing gates.
Toronto	931	934.44 (Surcharge) (2019)	6500CFS	AG, Livestock Independence, WTP
Elk City	825	830.38 (1986)	8800CFS	Conduit Spillway. Minimal. Highway 75North
Fall River	987.5	989.40 (Surcharge) (2019)	6500 CFS	City. Minimal. Housing. Water Treatment Plant 23 Fredonia and Neodesha

Coffeyville Regional Staging Area
West Side of City. Out of flood impact area

Equipment
Levee Repair Contractors and Equipment (Muller Construction)
On site field EOC
USACE Liaison Officer
USACE Levee Safety Representative
1 Million Sandbags
HESCO Barriers 3000ft/day
USACE ULA person
Helicopter Operations capability
Dump Trucks (5)
Back Hoe (2)
Refinery Pumps Contractor/Yards
Fuel Maintenance
USACE Levee Contractors
RSI in Independence
USACE Levee Inspection Contractors



USACE Projects Pool of Record, Downstream Discharge/Channel Capacity Impacts

Project	Top of FCP	High/Record Discharge (Date)	Channel Capacity T-Trigger	Levee Attached to the Project	Impact Description
John Redmond	1068	12,700(98)	16,000 T-10K	Hartford	Big Hill, Toronto, Elk City (Levee), El Dorado (Chelsea Levee) Coffeyville Refinery. Wolf Creek Nuclear Plant
Pensacola	755	175,000 (15)	100,000 T-80K	Wyandot and OK Ordinance Works	Google, Day Care Center. Toxic Industrial Materials (TIM). Oklahoma Ordinance Works
Ft Gibson Pensacola	582	152,000 (15)	100,000 T-80K	Wagoner Dike 10 Wyandotte	Residential 50 Homes. Wagoner OK City of Ft Gibson WTP/Muskogee. City of Wyandotte/School
Tenkiller	667	31,000 (15)	13,300 T-10K	None	WTP. Highway 82/10. Float Camps/Marval Camp. Gore
Keystone	754	310,000 (86)	100,000 T-75K	Tulsa West Tulsa and Cleveland	Toxic Industrial Materials Plant(s), 15K People. Evacuation. Holly Refinery. 2B Economic Impact. Town and Country/Sand Springs.
Canton	1638	1,200 (14)	1,000 T-700	OKC Floodway	OKC Downtown 15Ft of water.
Eufaula	597	240,000 (93)	40,000 T-15K	None	WTP on Lake (25K People). 173KCFS
Broken Bow	627	24,000 (15)	8,000 T-5K	None	Fishery, Tyson Food, Water Treatment Plant (50K People)
Hugo	437	(15)	20,000 T-15K	None	Idabel Roads, Red River Impacts
Texoma	640	80,000	50,000 T-25K	Cumberland	Spillway. Dennison, Choctaw OTSA, Red River, LA
Red River	24ft	36Ft (38)	35ft (15) T-30ft	Y-None Fed (Bowie)	MVD and Louisiana MVN.
Tulsa Levee	637	310,000(86)	100,000 T-75K	Y-Fed	50,000CFS Alert Trigger for LD12 IMT (SWIF) – **See Separate Battle Sheet**
MKARNS	30ft	628,000(19) 343,200 (86) 289,100 (15)	300,000 T-100K (150K Reg Stage at Van Buren AR)	Y-None Fed SWL Numerous Levee's	Muskogee County. Mays County. Moffett OK, Webbers Falls, Ft Smith, Van Buren, ARK Nuclear ONE, Muskogee Water Treatment Plant, Meadows Housing, OGE Plant.

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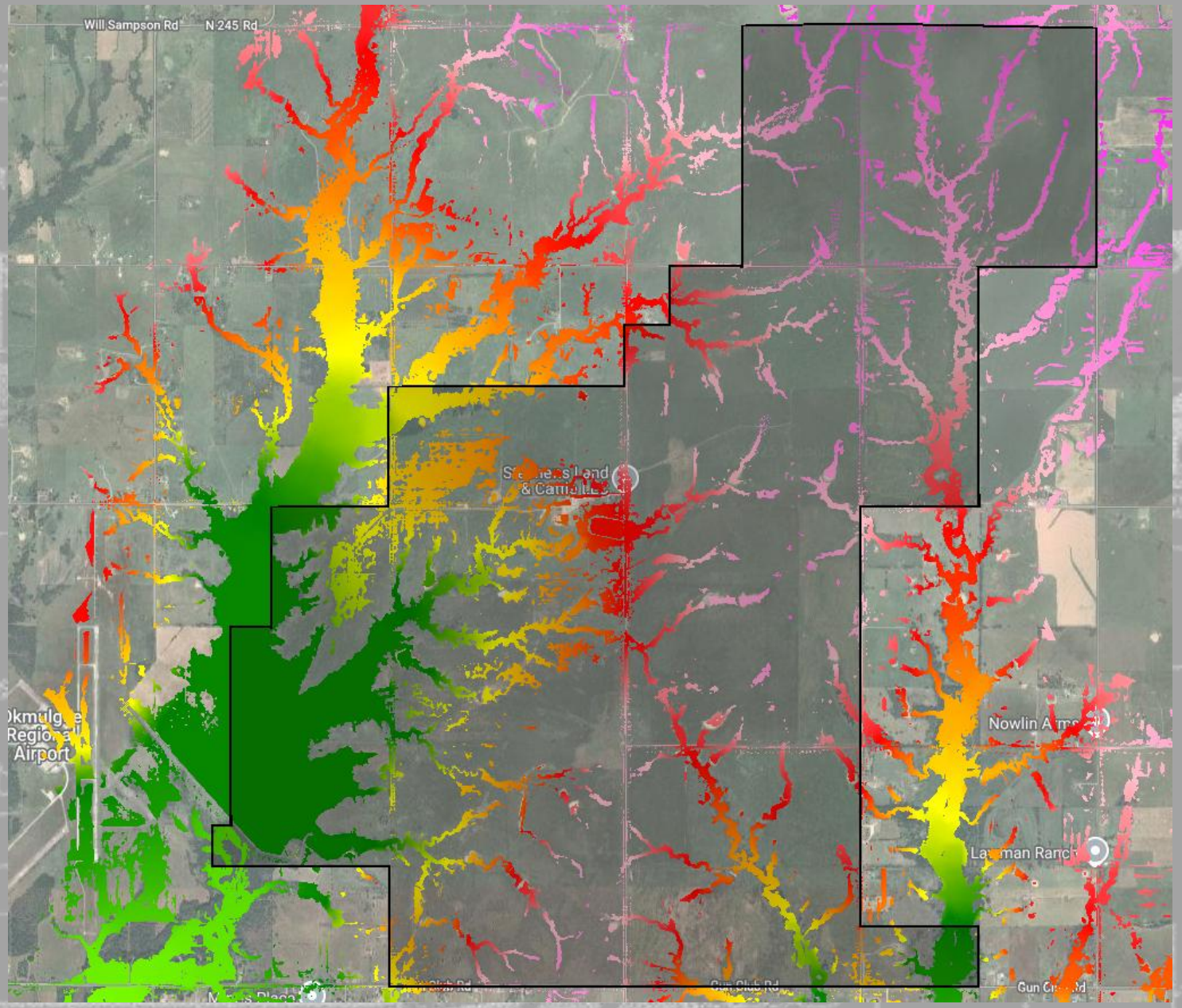
LOOPED SQUARE RANCH MCN



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CHARGES FOR ASSISTANCE/ TIMELINES

General Technical Services: $325 for Zone A, $150 for Zone AE

~1 day

General Planning Guidance: $0 for any service.

~1 day to 1 month (Depending on Services)

Planning Assistance to States (PAS): 50% Cost share, 100% Native Projects

3 month to 6 months after Approval

Silver Jackets: Cost share Varies

3 month to 6 months after Approval

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QUESTIONS?

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Travis S. Wilsey, EI, CFM

Floodplain Project Services

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