

June 8 2026 10:00am

Natural Awe Restoration: Revitalizing Eudora, AR Through Community-Led Design

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⁵Sullivan and Associates, United States

Eudora

AR



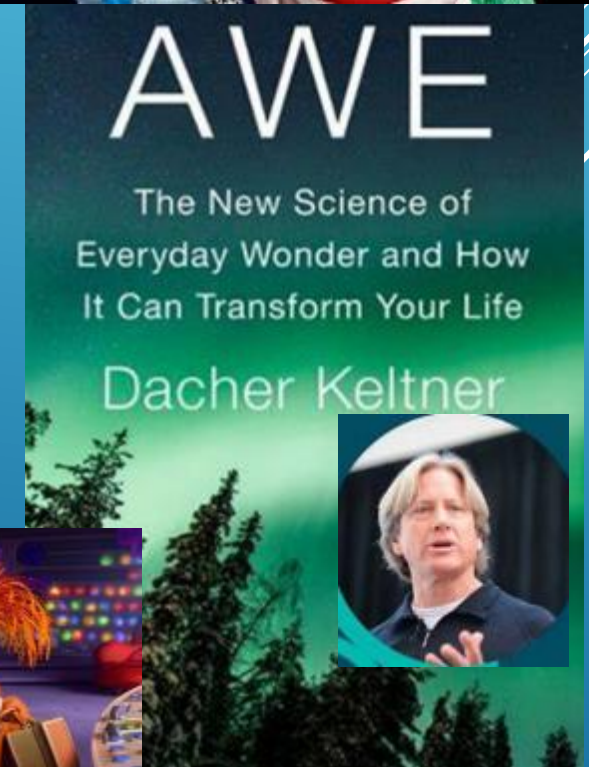
5 | SMOOTH STONES
RESTORATION

riverSHARED.org

Outline 30 mins – Please comment

- Awe, Stream Restoration Tools and Humility 2 mins
- Intro to Eudora 5 mins
- NRCS and ABMA 5 mins
- Walton Family and NGOs 3 mins
- Community-Led Vision and Dreams 3 mins

- ▶ Does the things that divide us matter?
 - ▶ (Liberal vs. Conservative)(Republican vs. Democrat) (Process vs. Form)
 - ▶ The Chronicles of Narnia, Mere Christianity C.S. Lewis
- ▶ Western Culture is only 31% (1940s) of the world's population
- ▶ Any given tribe, group/club/religious affiliation is much less
 - ▶ The in-group you may live in is much less than 31% (You are not a part of the silent majority but instead a part of diversity)
- ▶ We are degraded by power, greed, and the need for control above it... **Hubris**
- ▶ We need restoration of Awe in our communities



SO MUCH DIVISION, THE WORLD DOES NOT NEED
 TO UNDERSTAND OTHERS AND NATURE BUT ...
 TO BE IN AWE AND LOOK FOR GOOD



https://greatergood.berkeley.edu/podcasts/series/the_science_of_awe

Mental Health – Hope and Humility



Eudora

AR

1. Dream big, stay in wonderment and awe of natural ecosystems.
2. Ecosystem restoration is a privilege to be thankful for.
3. Humans are a species of concern for ecological restoration.
4. Ecological Restoration is generally a luxury.
5. Teach the children early in ecological restoration.
6. Restoration should provide social and economic benefits to communities/nations.
7. Share with others while we have time and a voice.

Wonderment and Awe

“Dreams are our internal calling to go back to Wonderment and Awe
 “Work Matters but does not make us Matter”



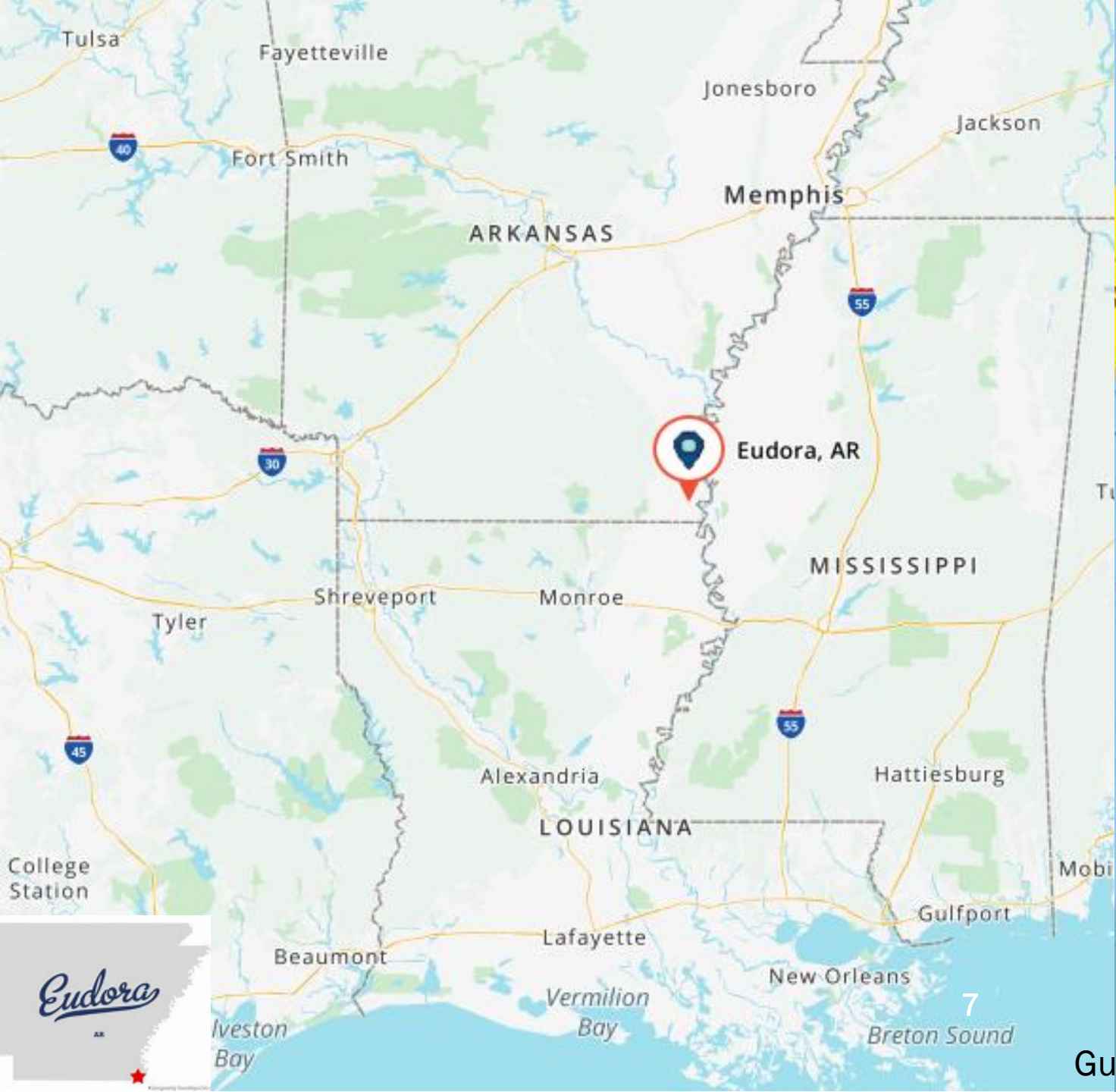
awE³

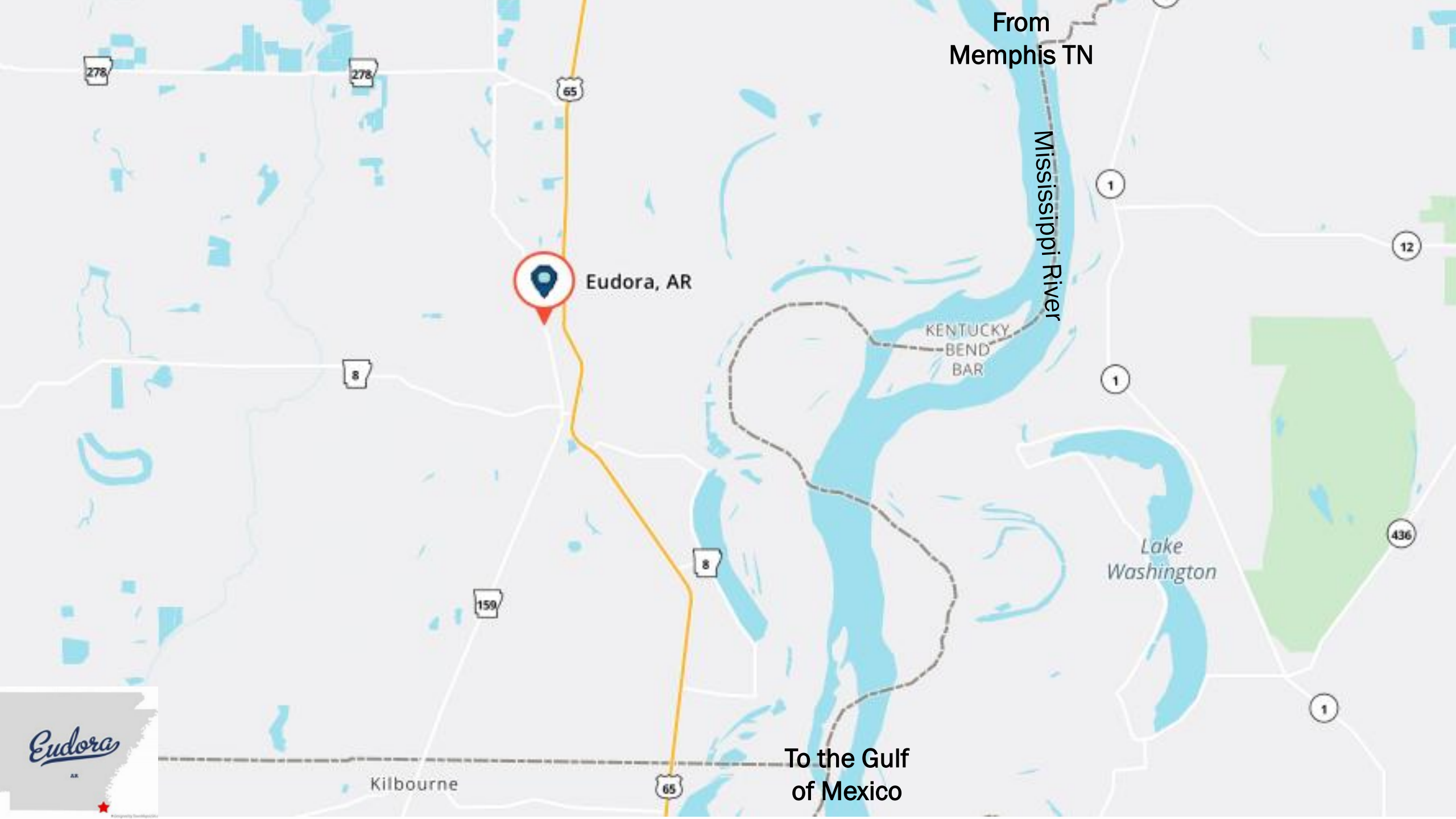
- Ecosystem Restoration (Awe of Diversity)
- Economic Restoration (Awe of Sharing)
- Ekklesia Restoration (Awe of Gathering)

Eudora

AR







From
Memphis TN

Mississippi River

Eudora, AR

KENTUCKY
BEND
BAR

Lake
Washington

To the Gulf
of Mexico

Eudora
AR

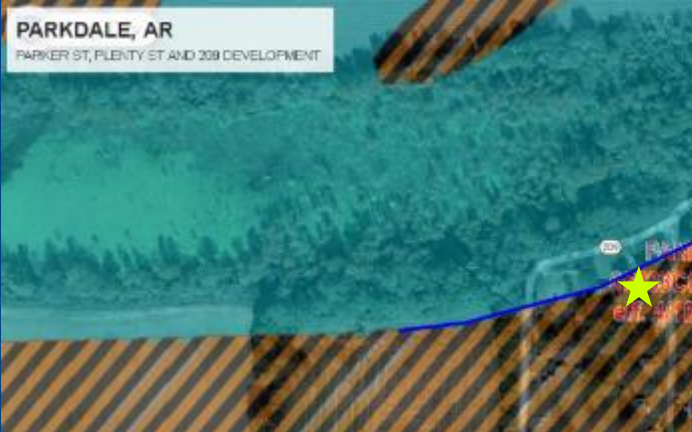
Kilbourne

Underserved Regions – Due to Drainage and Flooding

A loss of Hope



Hopelessness With Increased Flood Magnitude



Great Hope

Hopelessness

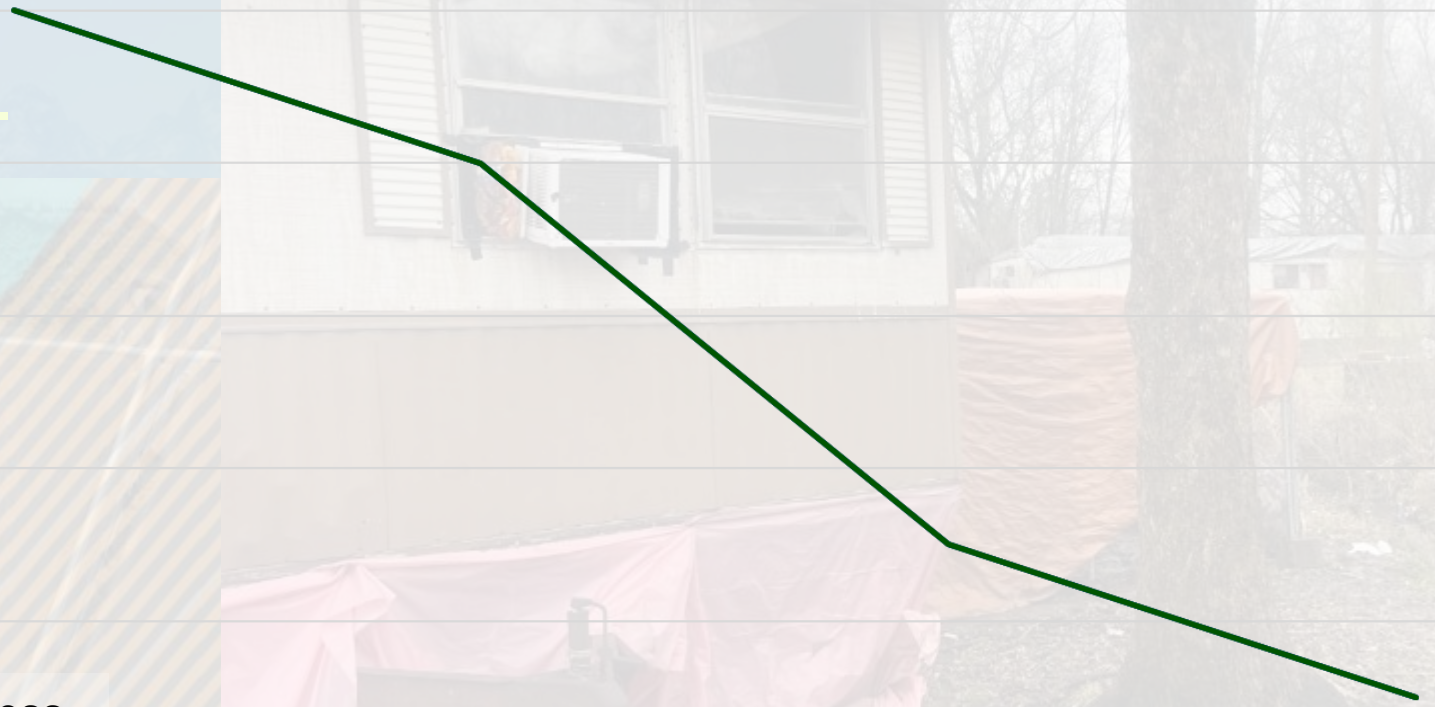
No Flooding

Minor Flooding

Major Flooding

Biblical Flooding

Hope vs. Flooding



Early American History Eudora Arkansas

- Kaw Nation People or Kanza Lived in the Region before 1800
- Louisiana Purchase 1803
- What was happening - Late 1700s Early 1800s
 - Steam Engine/Steamboat – Robert Fulton - 1807
 - Cotton Gin - Eli Whitney – 1793
- Indian Removals of the 1800's
 - 1830 Indian Removal Act Jackson
- Tribal forced removal 1820's of Kaw and other Tribes on the Rivers
- Second Tribal forced removal 1830s-1850s Osage, Shawnee and other Tribes
- 1830 Eudora Plantation - 1857 Eudora Settlement (3 generations of slavery?)

NRCS-AMBA

How did we get here

Cotton Gin 1793

<https://mlpp.pressbooks.pub/ushistory1/chapter/slavery-king-cotton/>

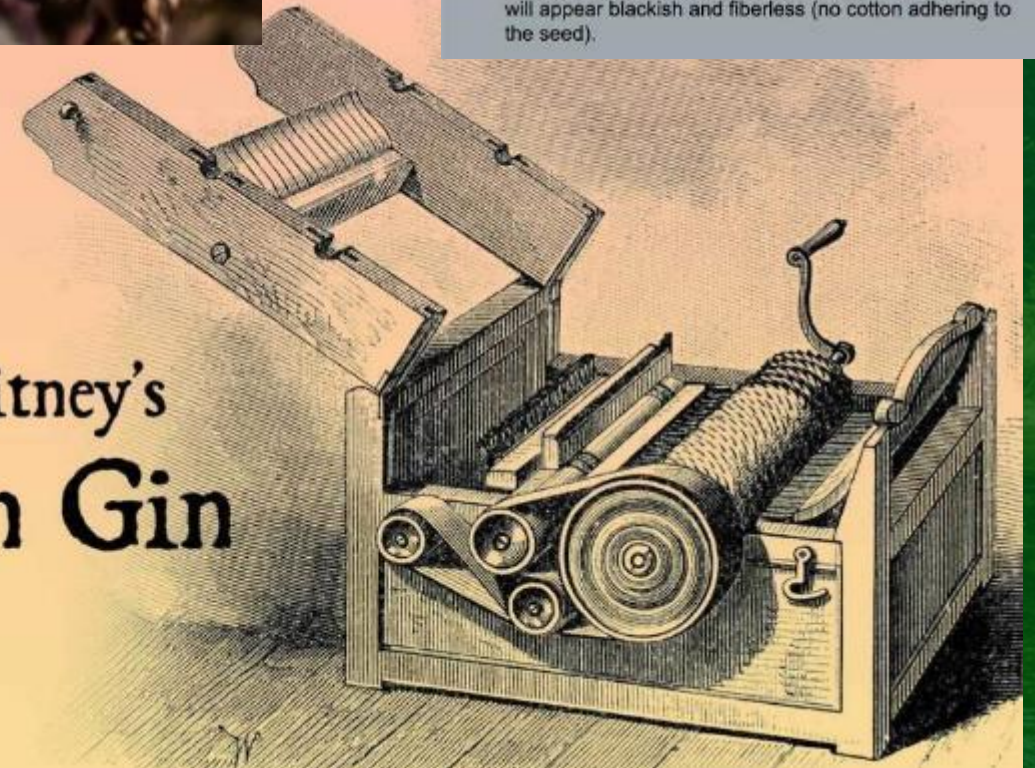


COTTON SEED



The seed from the cotton plant. The seed is approximately 3/8 inch long and 3/16 inch wide. It is covered by a soft fibrous white substance. Sometimes the seed will appear blackish and fiberless (no cotton adhering to the seed).

Eli Whitney's Cotton Gin

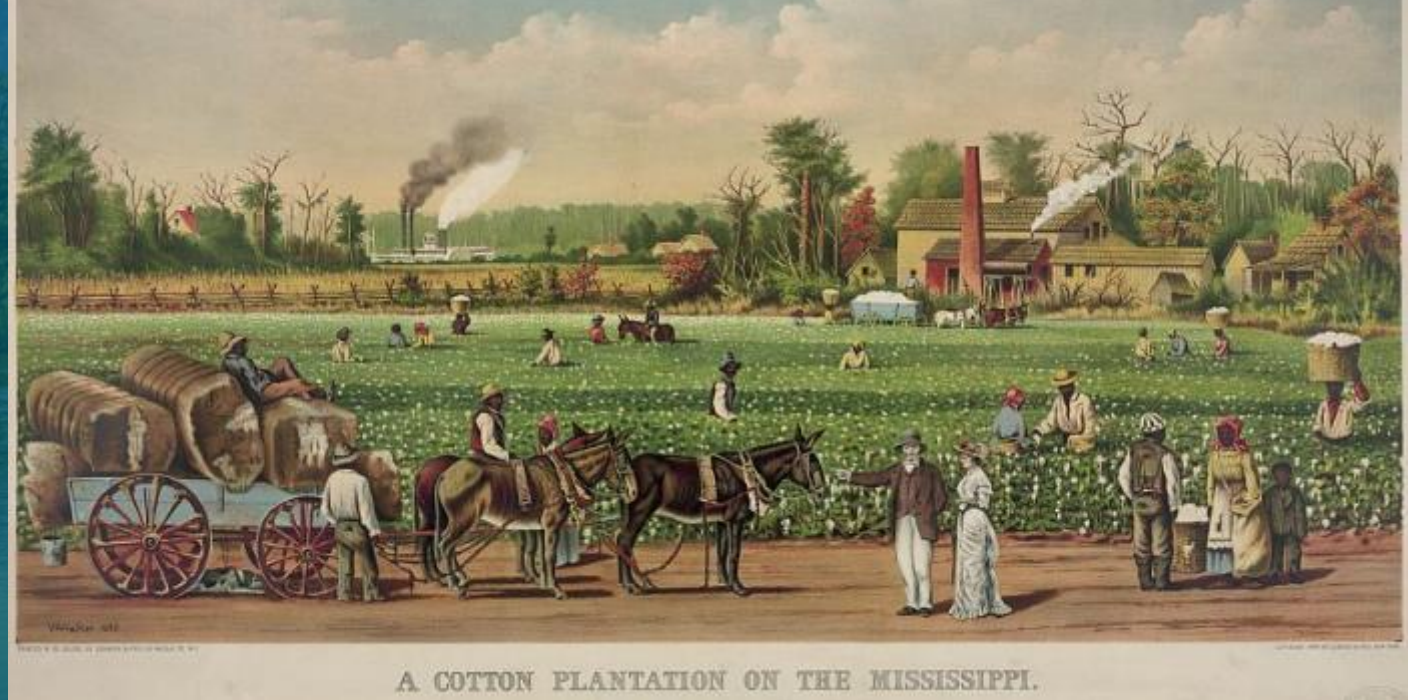
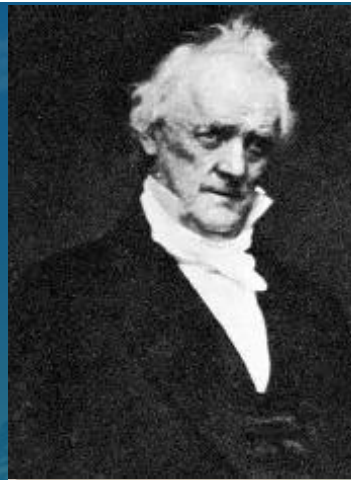


NRCS-AMBA

How did we get here

Cotton 1793 - 1860

<https://mlpp.pressbooks.pub/ushistory1/chapter/slavery-king-cotton/>



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- 1830 Eudora Plantation - 1857 Eudora Settlement (3 generations of “slavery” in Eudora)
- 1860 Population Chicot County (81% Slave Population Highest% in Arkansas 1860)
 - T – 9,234 (~2% Arkansas Total)
 - S – 7,512 (~7% Arkansas Slave)
 - W(F) – 1,722 (~0.5% Arkansas Free)
 - FC – 0
 - I - 0

Arkansas was late into slavery and missed much of the antebellum (Pre-War) period



STATES:	CENSUS OF 1850.			CENSUS OF 1860			38TH CONGRESS		
	Free.	Slave.	Total.	Free.	Slave.	Total.	Reps.	Loss.	Gain.
Alabama*	428,771	342,844	771,623	529,164	435,132	964,296	6	1	..
Arkansas	162,797	47,100	209,897	324,323	111,104	435,427	3	..	1
California	92,597	....	92,597	380,015	....	380,015	3	..	1
Connecticut	370,792	....	370,792	460,151	....	460,151	4	..	..

MAP
SHOWING THE DISTRIBUTION
OF THE
SLAVE POPULATION
OF THE
SOUTHERN STATES
OF THE
UNITED STATES

Compiled from the
CENSUS OF
1860.

Washington, September 1862.

Sick and Wounded
of the
Soldiers

U. S. ARMY.

>80%

NOTE.

It should be observed that several counties appear comparatively white. This arises from the preponderance of whites and the density of the negro slaves in these counties, such as—
Barren Co. Va., Franklin Co. Va., Shelby Co. Tenn., Davidson Co. Va.,
Fayette Co. N. Carolina, etc., etc., etc., etc.
The figures in each county represent the percentage of slaves in the total population of the county in 1860. The figures in every 100 individuals are shown in every 100 individuals.

Eudora

AK

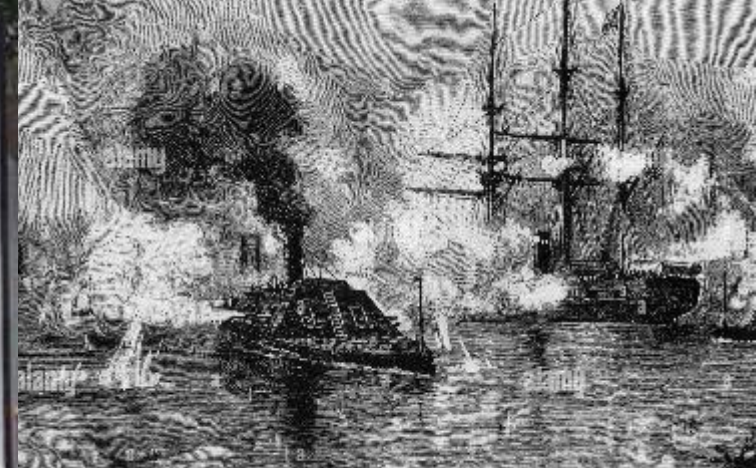


Gulf of Mexico

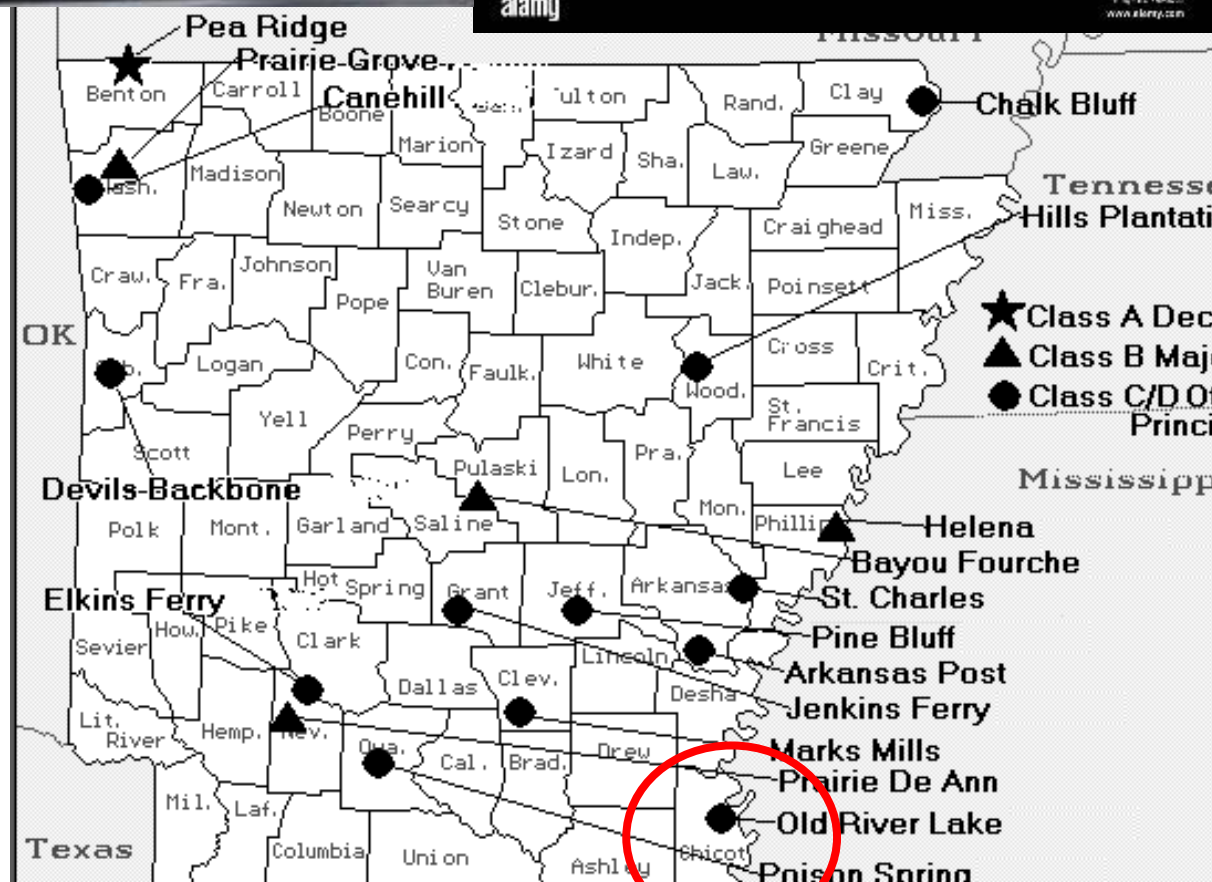
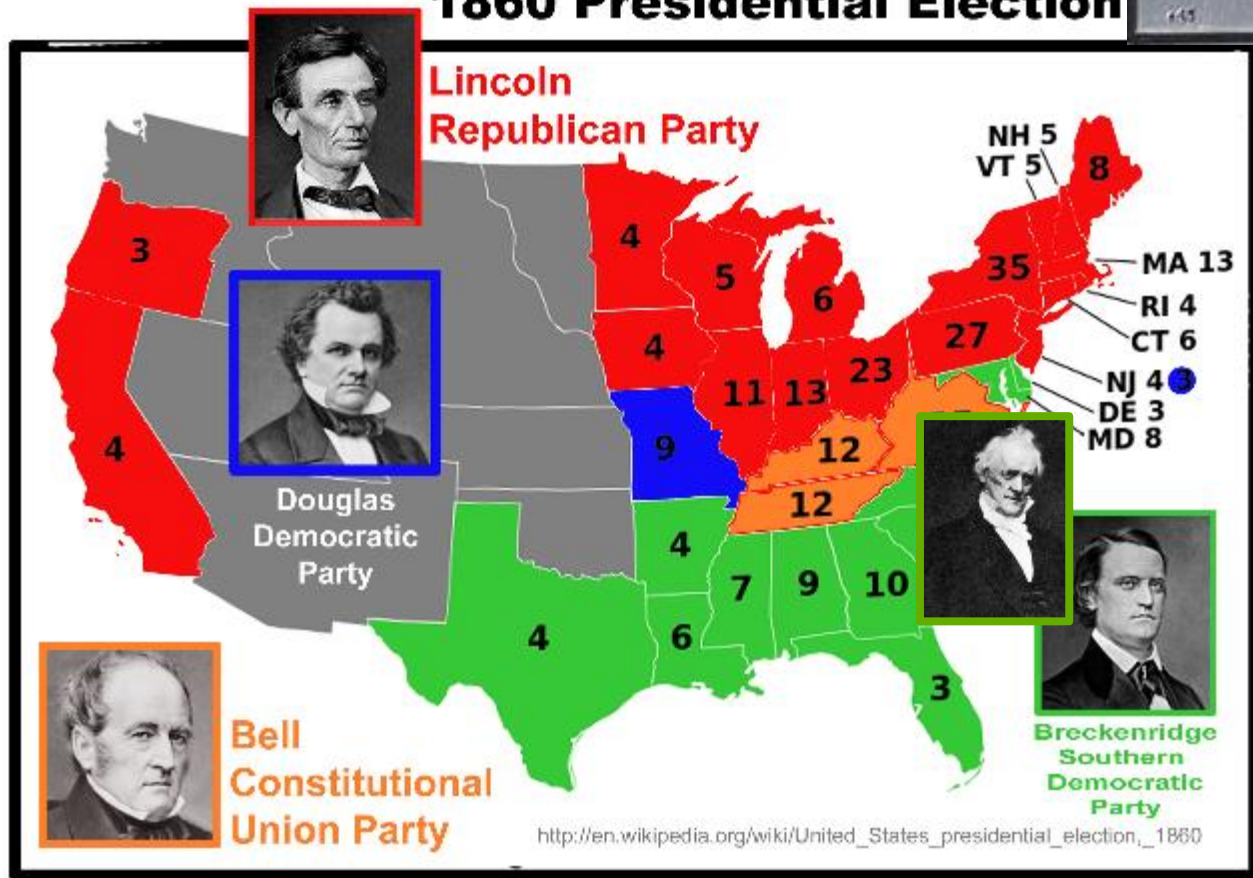
What is so Civil about War?

U.S. COLORED TROOPS IN ARKANSAS IN THE CIVIL WAR

The U.S. Army began recruiting Black soldiers in 1863, and 5,526 men served in eight infantry regiments and two artillery batteries raised in the state. These were the 1st, 2nd, 3rd, 4th, 5th, and 6th Arkansas Infantry Regiments (African Descent) that in 1864 were designated the 46th, 54th, 56th, 57th, 112th and 113th U.S. Colored Troops. The 11th and 69th USCT were raised in Arkansas, as were the 1st Arkansas Battery (African Descent) and 3rd Louisiana Light Artillery (African Descent), later Batteries E and H, 2nd U.S. Colored Light Artillery. Other Black troops also served in the state, and Black soldiers fought in 28 battles and skirmishes in Arkansas.



1860 Presidential Election



NRCS-AMBA

How did we get here

Share Cropping and Tenant Farming

The “workers”

Share Cropping and Tenant Farming 1865 -
1970 (9 generations plus of “workers”)

<https://mlpp.pressbooks.pub/ushistory1/c/hapter/slavery-king-cotton/>



NRCS-AMBA

How did we get here

Railroad and Large Gins

Share Cropping 1865 -1970

Still controlled and managed by Gin Masters

<https://mlpp.pressbooks.pub/ushistory1/chapter/slavery-king-cotton/>

Wilmot
Arkansas



Eudora
Arkansas



NRCS-AMBA

Natural Resource Conservation Service

Arkansas Black Mayors Association

Ag Mechanization

Civil Rights

Share Cropping 1865 -1950/1970

Still people are seen as “workers” with very little work

<https://mlpp.pressbooks.pub/ushistory1/chapter/slavery-king-cotton/>



Flood Regions, Health and Hope



Great Hope

Hopelessness

Hope vs. Flooding

No Flooding

Minor Flooding

Major Flooding

Biblical Flooding

Cherry Street Flooding

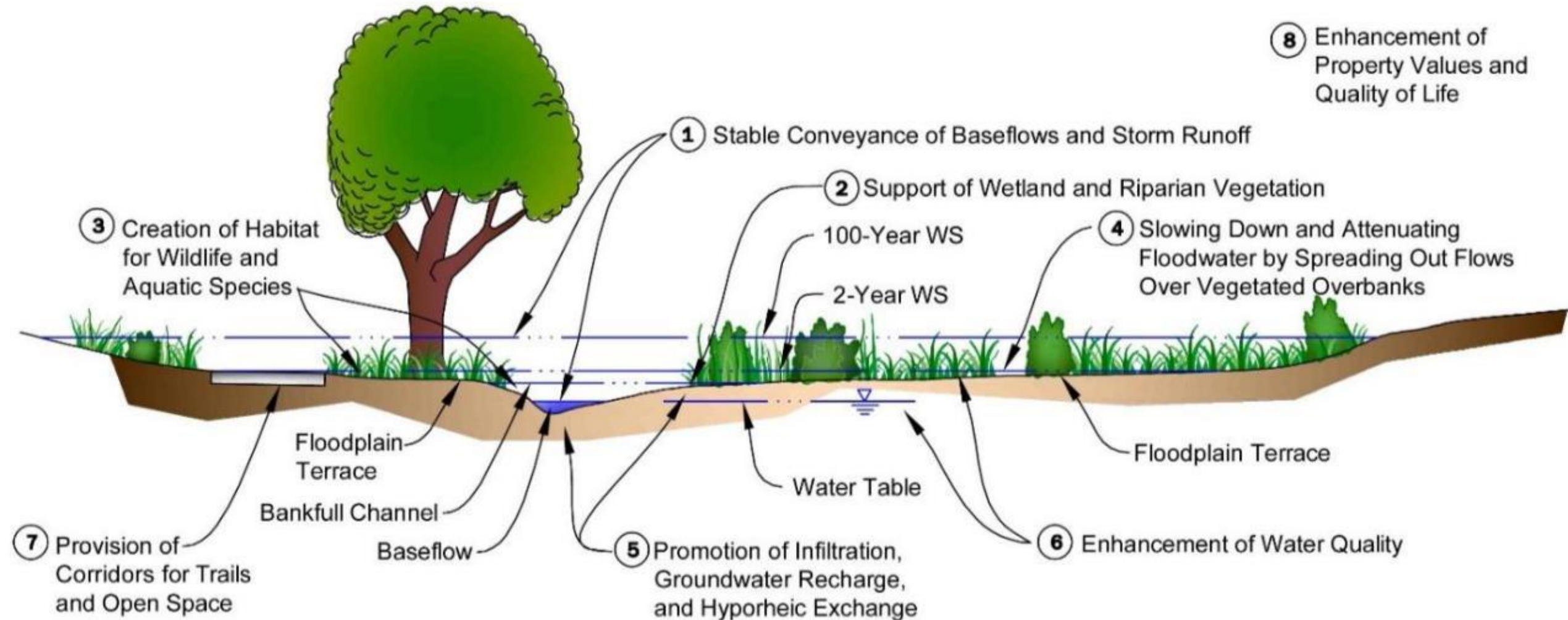
A loss of Hope



AWE³

- Ecosystem Restoration (Awe of Diversity)
 - Nature Based Solutions
 - Process-Based Natural Corridor Design
 - Stream Management Corridors - SMC
 - Floodplain Restoration
 - Natural Channel Design
 - Vegetated Threshold Design
 - Stormwater BMPS
 - Bio Retention Cells
 - Stormwater Wetlands
 - Grass-lined Swales
 - Riparian Restoration and Buffers
 - Ecological Restoration

Functions and Characteristics of Natural Stream Corridors



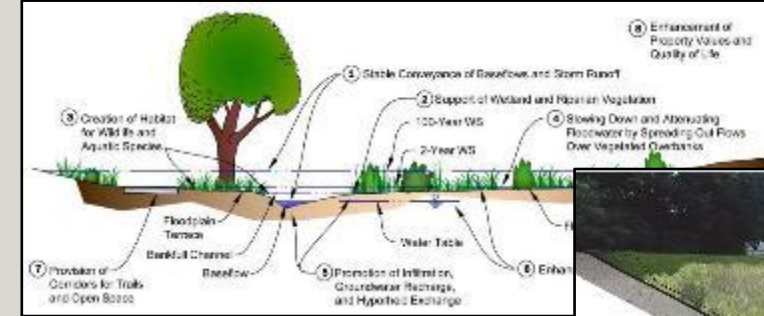
Stream Management Corridors (SMCs) vs. Traditional Channel

■ SMC Practices

- Restore degraded natural or excavated (trapezoidal channels) stream corridor
- Design storm event completely contained within SMC

■ Benefits

- Construction & maintenance costs \leq traditional drainage improvement measures
- Self-Mitigation relative to CWA Section 404 mitigation requirements can reduce or eliminate mitigation costs
- Improved water quality, ecology, air quality, and community aesthetics/quality of life
- Greenway Hike & Bike Trails can connect communities, provide recreational opportunities, and increase property values



NBS Solutions vs. Traditional Practices

Roadside Ditch & Stormsewer Alternatives

Bioretention Swales



vs.

Curb & Gutter Stormsewer



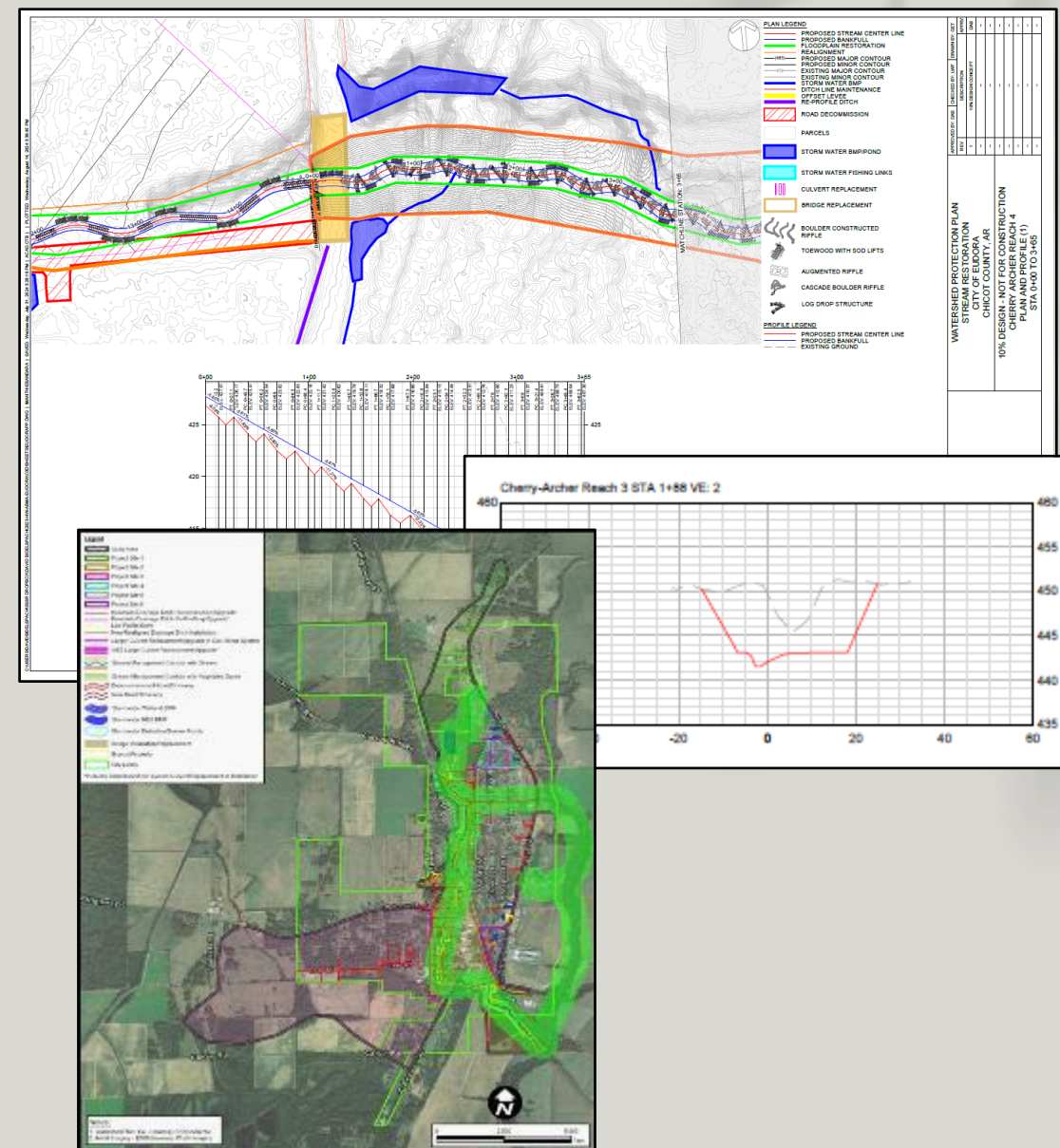
Advantages

- Costs \leq Traditional
- Decreased Downstream Flooding
- Improved Water Quality, Aesthetics & Usage/Recreation
- Increased Property Values

NBS Solutions vs. Traditional Practices

ABMA City of Eudora Watershed Drainage Improvements

- NBS-Focused alternative with SMCs and NBS Stormwater Detention and Collection
- Lower cost than Traditional-Focused with armored channel
- No CWA Mitigation Needed (self-mitigating)
- ROI of NBS is much greater compared to Traditional (1.26 BCR vs. 0.20 BCR)



NBS Solutions vs. Traditional Practices

THE FIVE ELEMENTS OF URBAN STREAM FUNCTION

GEOMORPHIC FORMS AND PROCESSES

inform the response of a stream to water and sediment inputs from the watershed, which in turn, define the location, shape, and form of the active channel and floodplain within the landscape.

[RESPOND]

HYDRAULICS CHARACTERISTICS

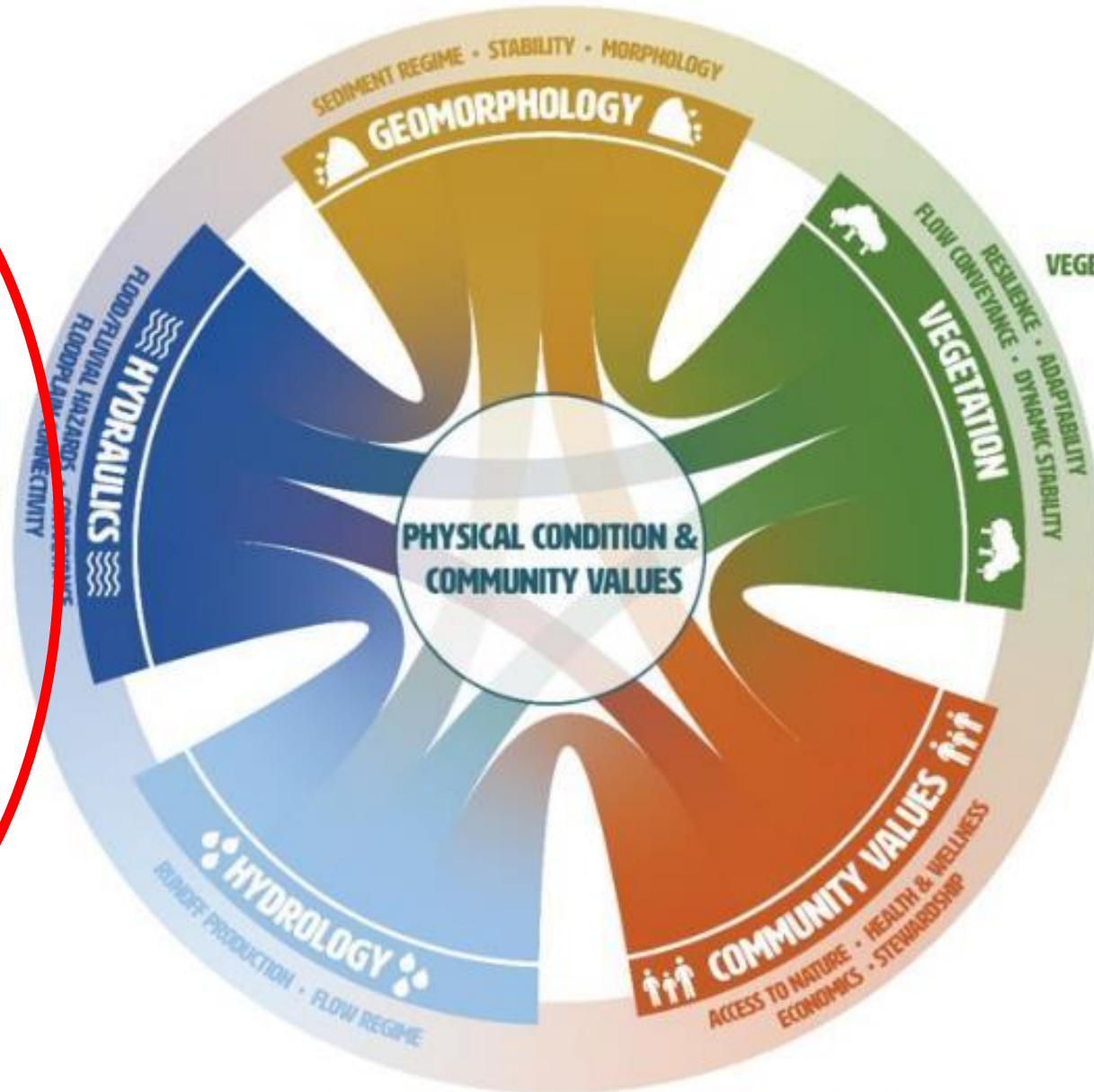
define the relationship between the physical form of the stream system and the energy of moving water, expressed in depths, velocities, and forces of flow.

[MOVE]

HYDROLOGIC PROCESSES

distribute precipitation in a watershed, and determine the portion that makes its way to the stream via surface runoff and subsurface inflow.

[DISTRIBUTE]



VEGETATION STRUCTURE AND PROCESSES

support stream dynamics and stability, provide flow resistance and filtering, improve infiltration, and create habitat.



[RESIST]

COMMUNITY VALUES

reflect stewardship of our waterways by integrating experiential, aesthetic, and cultural attributes that foster appreciation for streams as natural systems intertwined with resilient communities and critical infrastructure.



[CONNECT]

Colors represent each of the five elements of urban stream function and maintenance. Colored bands reflect the connections between these elements and that each element influences, and is influenced by, the other elements.

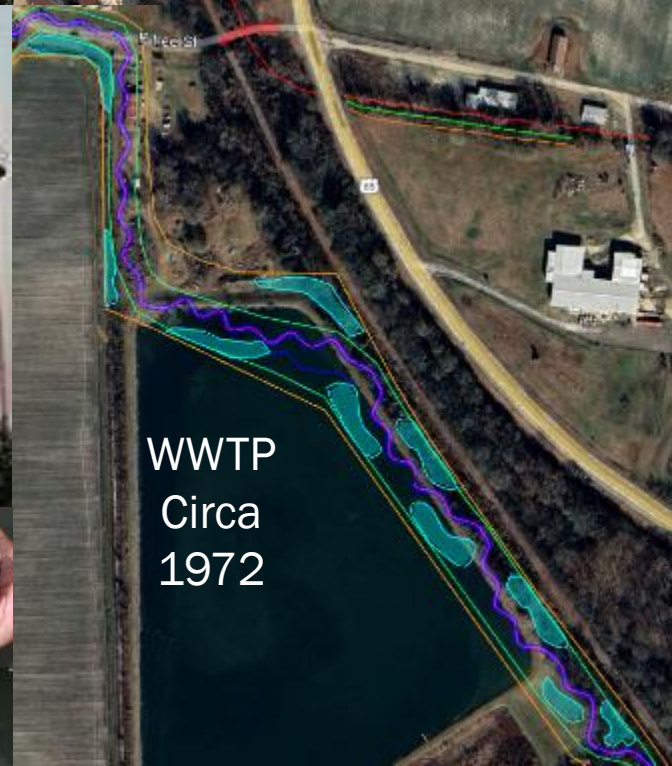
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 - Riparian Restoration and Buffers
 - Ecological Restoration

Develop, Build and Restore Nature
with purpose and process

AWE³

- Economic Restoration (Awe of Sharing)
 - Nature-Based Construction
 - Heavy Equipment Training
 - Revegetation - Riparian
 - Cooperatives
 - Workforce Development
 - Fishing Links – Recreational EcoSport
 - Aquaculture Catfish and other protein
 - Vertical Aeroponics



AWE³

- Economic Restoration (Awe of Sharing)
 - Nature-Based Construction
 - Heavy Equipment Training
 - Revegetation - Riparian
 - Cooperatives
 - Workforce Development
 - Childhood Education
 - Fishing Links – Recreational EcoSport
 - Aquaculture Catfish and other protein
 - Vertical Aeroponics



Example
Toulmins
Spring
Reach 4

Cross Section View

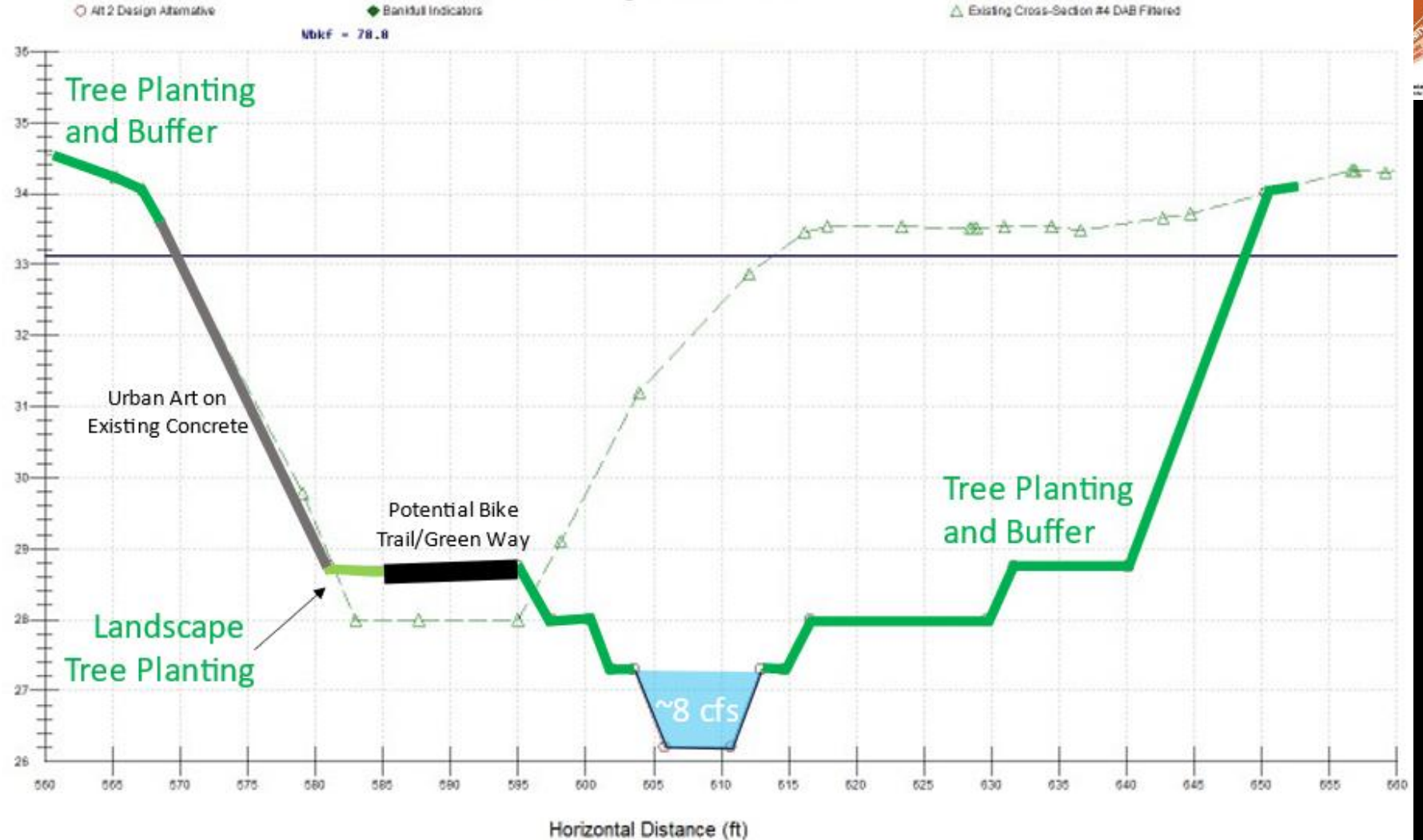


What Can We Do to Promote Restoration?



Priority 2 Restoration

Alt 2 Design Alternative



NON-POINT SOURCE POLLUTION
 Non-point runoff is the leading cause of water quality problems in streams and rivers. It is caused by rain or snowmelt runoff over a wide area. It is the most difficult to control because it is not from a single source.

WATER QUALITY CRITERIA
 Water quality criteria are standards for water quality. They are used to determine if water is safe for drinking, swimming, and other uses.



RESTORATION STRATEGIES AND PROCESSES
 Restoration strategies and processes are used to improve the health of urban streams. They include actions like planting trees, installing stream bank stabilization, and creating artificial wetlands.

COMMUNITY BENEFITS
 Stream restoration projects provide many benefits to the community, including improved water quality, increased property values, and enhanced recreational opportunities.

awE³

- Ecosystem Restoration (Awe of Diversity)
- Economic Restoration (Awe of Sharing)
 - TRAINING OF ALL AGES
- Ekklesia Restoration (Awe of Gathering)



Local Education STREAM'GINEERING



Local Outdoor Education Vacation Ecological School YES

Little Stream Guardian Certificate

I can
I can be a
Stream
Detective

I can
I can be a
Path
Clearer

I can
I can help
the
water sing

I can
I can build a
Strong
Bank

I can
I can make a
Green
Blanket

Blank photo boxes: 3 circles, 2 squares

Share wherever you are and wherever you go

1. Dream big, stay in wonderment and awe of natural ecosystems.
2. Ecosystem restoration is a privilege to be thankful for.
3. Humans are a species of concern for ecological restoration.
4. Ecological Restoration is generally a luxury.
5. Teach the children early in ecological restoration.
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Fishing Links Ecosystem Sport -Tool

Demonstration of ecosystem
function

3-hr journey at defined location

Promote native species

Digital applications

Connect to wonderment and awe