

# Bioengineering and Riparian Buffers: Building Tribal Capacity to Improve WQ in Kansas

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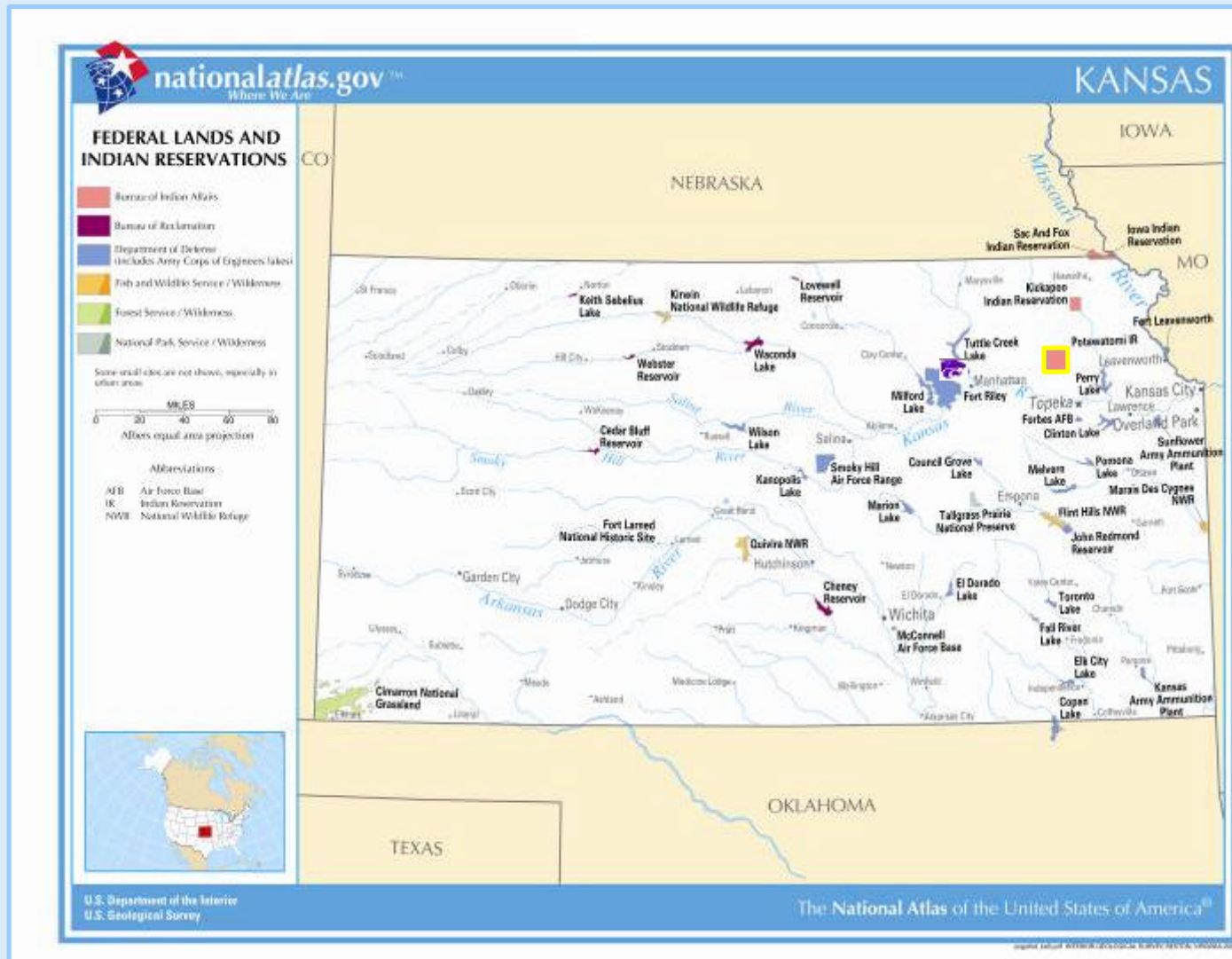


# Objective

- To develop a series of streambank stabilization and riparian buffer demonstration sites, while building tribal capacity for environmental restoration work.



# Kansas Reservation Locations



# Tribal Council

- Basic unit of government within most tribes. May be called “Council of Elders”
- Requested and received a letter of support for the proposal to USDA



# Tribal Council

- Appeared before the Tribal Council to request use of the tribe's heavy equipment, including a backhoe and a tractor. Council asked, "Did you just assume we would provide this equipment for your project?"
- Tribal Council requested black walnut, *Juglans nigra*, and red elm, *Ulmus rubra*, be planted in the buffers



# Spring Break?

- Each year hired KSU students and Haskell students, and high school tribal members.
- Served as an excellent “cultural exchange” opportunity.



# Teaching Stream Bank Renovation Techniques

- Staff from several tribal departments helped install the demonstration areas, which built “tribal capacity”
- Tribal departments included Roads & Bridges, EPA, and Land Management



# Crow Creek Revetment Before





# Crow Creek Revetment Setting Willow Posts



# Crow Creek Revetment Installation



# Crow Creek Revetment After 1 Month



# Crow Creek Revetment After 1 ½ Months



# Crow Creek Revetment After 2 Months—Willows



# Crow Creek Revetment After 3 Months



# Crow Creek Revetment After 4 Months



# High School Tree Planters





# Prophecy Meets Bioengineering

- “When the buffalo, beaver and eagle return, the Potawatomi will be prosperous again.”



# Mitchell Revetment- Little Soldier Before



# Mitchell Revetment After



# Project Criticism

- County Extension Board
- Kickapoo Tribe



# State/Tribal Relations Joint Legislature Committee

- Good news project
- Contentious issues—taxes, fees, gambling



# Using the Demonstration Sites

- HINU and KSU class field trips
- Extension tours
- Bureau of Indian Affairs
- Research data on effect of fabric mulch and tree shelters



# Accomplishments

- Four riparian buffer and 3 stream bank stabilization sites have been established
- Over 4,000 trees have been planted
- Over 300m of eroding streambank healed
- KSU Extension has a good relationship with the Potawatomi Tribe
- The tribe is now restoring other riparian areas without direct KSU assistance



# Crow Creek Trees- 5<sup>th</sup> year





# Soldier Creek Revetment Rock Veins and Fish Habitat



# Soldier Creek Revetment After 1 Year



# Advice

- Learn about the tribe's traditional resource uses
- Incorporate things the tribe values into the project
- Be ready to negotiate on points of conflict



# Acknowledgements

- Prairie Band Potawatomi Nation
- KSU Research and Extension
- USDA Water Quality Program
- NRCS
- BIA
- KDHE

