

NATIVE HEALTH MATTERS FOUNDATION

NATIVE HEMP EVENT:

FEB. 26-27

**Using Biochar and Hemp to Remediate the Tar Creek Superfund Site
in Ottawa County, Oklahoma**

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Grand Riverkeeper

LEAD Agency, Inc.

Local Environmental Action Demanded

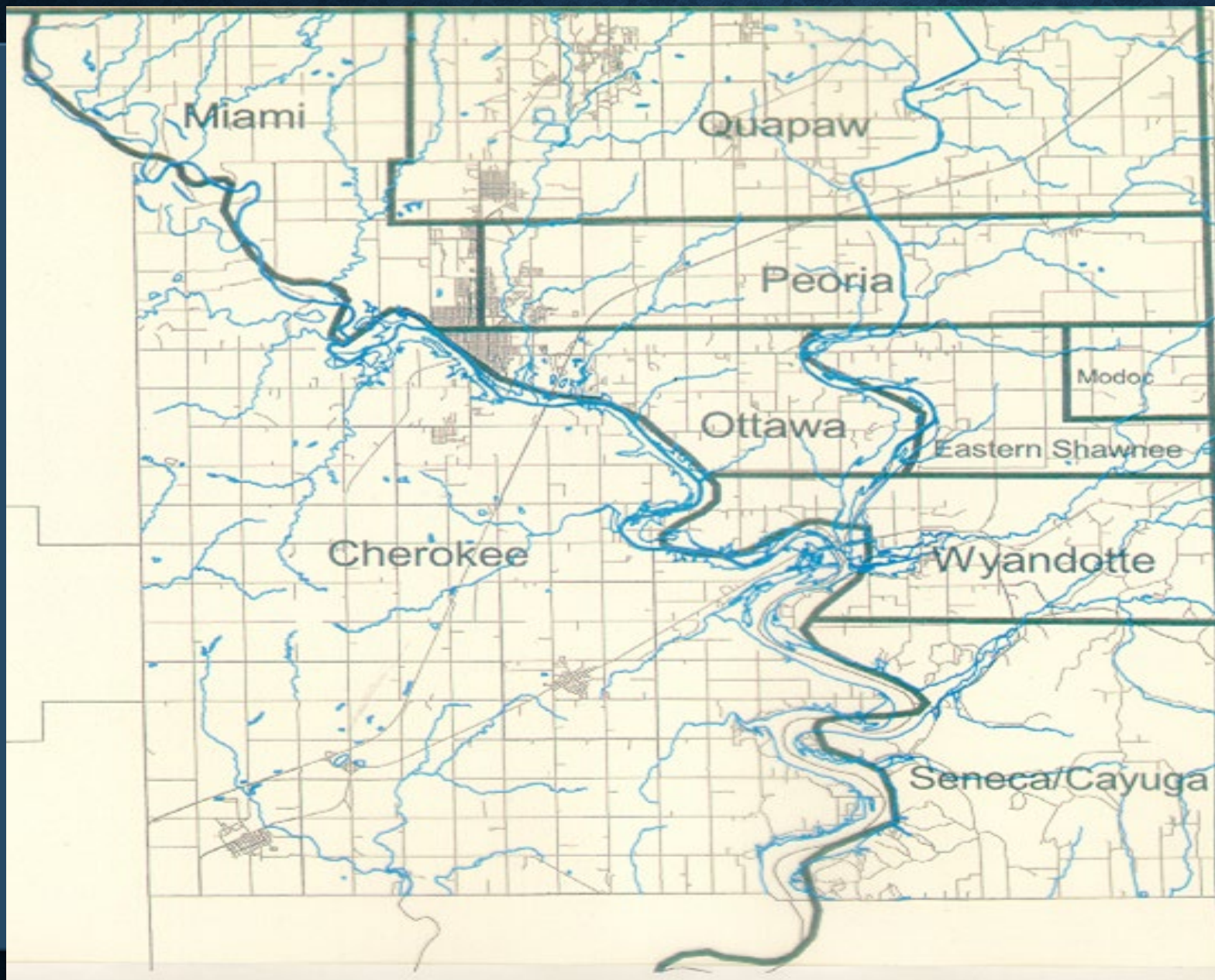
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Location: Tri-State Pb-Zn Mining District ca. 1850-1970 ~ 2,500 Sq. Mi.



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APPROXIMATELY 1,500 ACRES OF LAND HAVE BEEN REMEDIATED UNDER OU-4.
THE TAR CREEK SUPERFUND SITE IS DESCRIBED AS HAVING 'NO CLEARLY DEFINED BOUNDARIES,' **THE APPROXIMATE SURFACE AREA OF OU5 IS ABOUT 437 SQUARE MILES OR ABOUT 280,000 ACRES.**





Tar Creek!



Metals of Primary Concern:

Lead, arsenic, cadmium, manganese, iron and zinc

- According to ATSDR TOX Profiles, 2003:
- Lead: long-term low level exposure (10 micrograms/deciliter and above) can result in pre-term birth, decreased IQ and growth in children, increased blood pressure in middle-aged males, impaired learning and reduced birth weight.
- Cadmium: Long-term low level (0.001 – 5 mg/kg/day) exposure produces renal or kidney damage and increased blood pressure, lung disease, diabetes, weak bones and cancer.
- Arsenic: Long-term low level exposure (50 – 500 ug/kg/day) causes skin or lung cancer, systemic effects and skin lesions.
- Iron: Chronic ingestion of high levels causes diabetes, liver disease, myocardial infarction, myocardiopathy and heart attack.
- Manganese: Exposure is associated with Parkinson's Disease, ADHD and nervous system problems.
- Zinc: At high levels can cause latent liver dysfunction, pulmonary fibrosis, lower levels of HDL (high density lipoprotein cholesterol).

PENSACOLA DAM-GRAND LAKE O' THE CHEROKEES FLOOD OF 2019







TRADITIONAL CLEANUP METHODS PROBLEMATIC

1. Chat piles are waiting to be sold on market as commodity;
2. Chat covered soils are scraped down to acceptable level for metals the fresh soil backfilled, soil amendments applied and seeded.
3. Running out of local sources for top-soil.
4. EPA seeking alternatives for large site, i.e., soil amendments and seeding without scraping wherever possible.
5. Using spent mushroom factory compost and poultry waste as amendments. Now turning Tar Creek green (new orange!)

BIOCHAR & HEMP REMEDIATION PILOT PROJECT

Step One:

Use biochar to clean excess nutrient loading from Grand Lake;

Tar Creek Superfund Site Application:

Prepare approximately six pilot plots of varying contaminated areas of the site for introduction of biochar & hemp, just biochar & just hemp;

Continuous sampling during growing season;

Sample resulting soils of plots at varying depths and finished hemp crop for heavy metals of concern;

Evaluate results for EPA Feasibility Study.



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