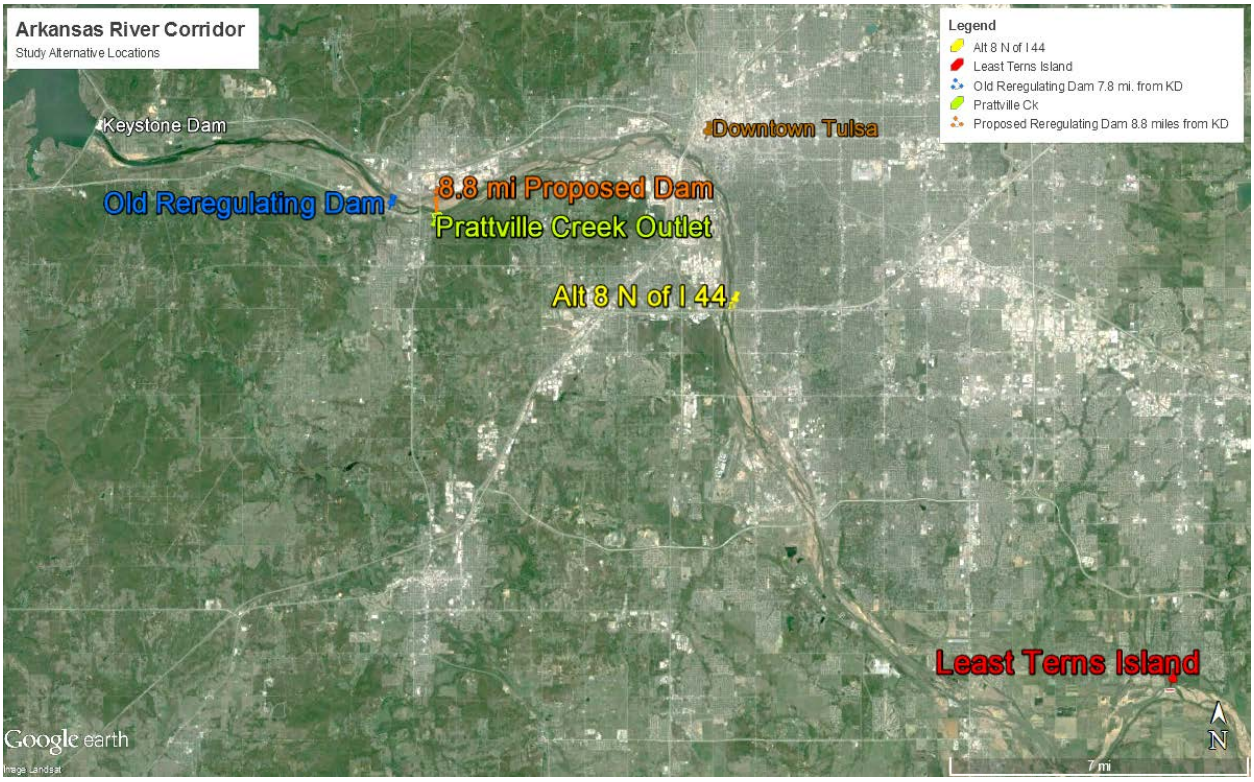
Arkansas River Corridor Study

Hazardous Toxic Radiologic Waste (HTRW) Initial Survey

September 2016

1. PURPOSE. The Purpose of this document is to present the results of an initial survey of potential HTRW impacts at the five study location shown on Figure 1 below. This survey was done in accordance with ER 1165-2-132 “HTRW in Civil Works Projects”.

Figure 1: Arkansas River Corridor Study Locations



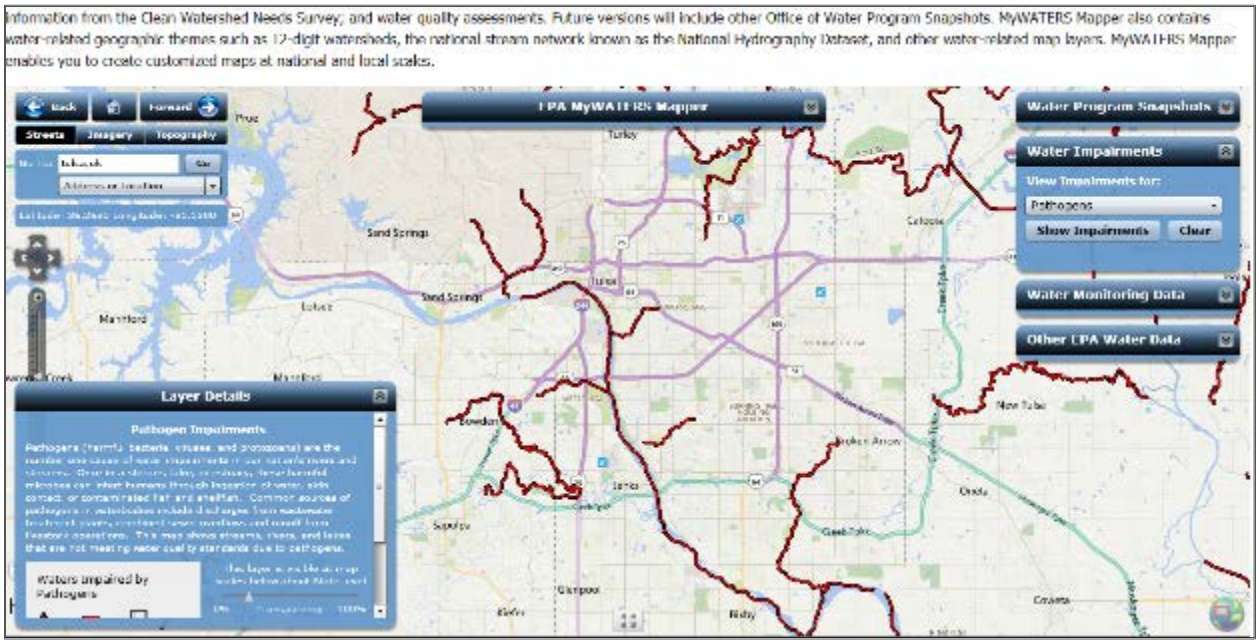
2. OVERALL CONCERNS.

2.1. Impaired Waters. The following map from the EPA MyWaters Mapper Site shows that most of the study area river corridor is listed as Impaired Water due to pathogens (harmful bacteria, viruses, and protozoans), which is also the leading cause of water impairment in our nation's rivers and streams. Once in a stream, lake, or estuary, these harmful microbes can infect humans through ingestion of water, skin contact, or contaminated fish and shellfish. Common sources of pathogens in waterbodies include discharges from wastewater treatment plants, combined sewer overflows and runoff from livestock operations. The Impairment is classified under Clean Water Act Section 303(d): Impaired Waters and Total Maximum Daily Loads (TMDLs).

The inlet from Braveheart (formerly Blackboy) Creek and Harlow Creek at approximately 11.5 miles from Keystone Dam (the most downstream area of impairment) shows an impairment as a result of from Escherichia Coli (E. Coli). The

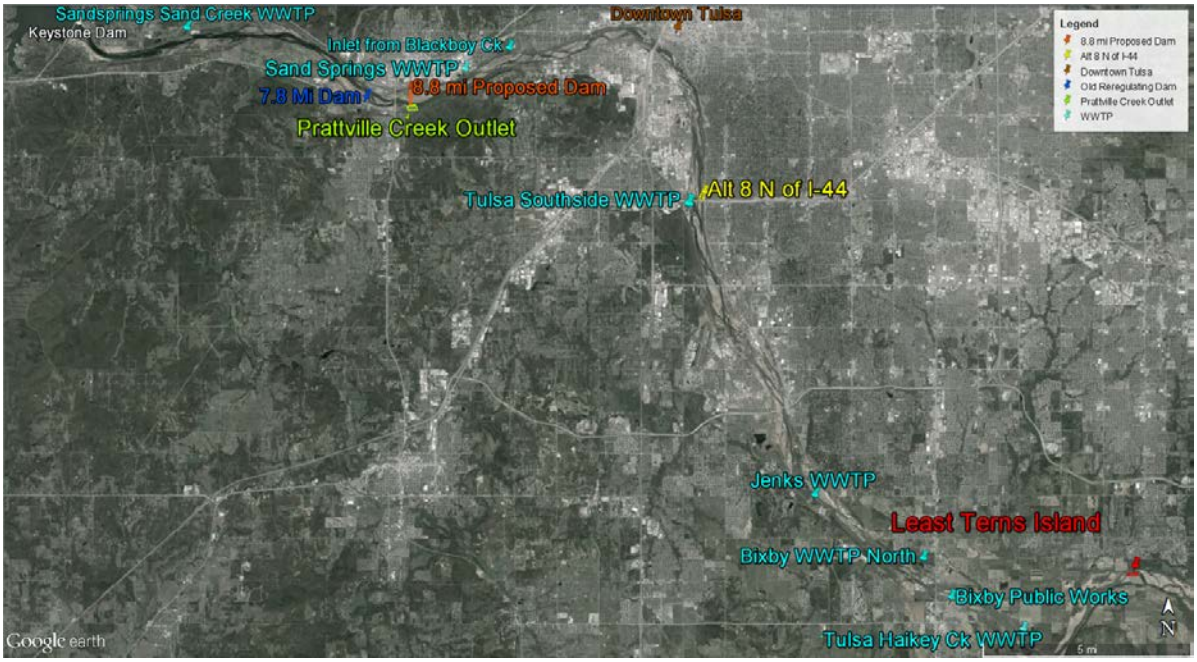
Arkansas River is listed as impaired (303(d)) throughout the rest of study area because of Fecal Coliform and Enterococcus Bacteria exceeding TMDLs.

Figure 2: Impaired Waters in the Project Vicinity



There are seven wastewater treatment plants within the study area that have effluent outlets directly into the Arkansas River, shown below on Figure 3. Some tributaries also have wastewater effluent containing pathogens. The water coming from these facilities may affect construction of the alternatives in terms of the Health and Safety requirements and management of water during construction.

Figure 3: Wastewater Treatment Plant Locations



3. PROPOSED ALTERNATIVES HTRW SURVEY

The HTRW survey was compelted in compliance with American Society for Testing and Materials (ASTM) E-1527-13.

3.1. Upstream Reregulating Dam - 7.8 Miles from Keystone Dam.

This site is located appriximately 7.8 miles downstream from the Keystone Dam, and was the location of the previous reregulating dam. The following paragraphs describe sites upstream of the alternative that may affect the alternative.

The Sand Creek Lagoon System WWTP is a permitted facility that has a treatment capacity of 50,000 gallons per day, located 2.4 miles downstream of Keystone Dam. The effluent from is facility currently is in compliance for BOD^5 and pH. No HTRW risks are expected from this site.

Another nearby permitted facility is the Webco Industry Star Center, specializing in pipe bending and fabrication. This facility has an individual National Pollutant Discharge Elimination System (NPDES) Permit for non-contact cooling water that is currently in compliance. No HTRW risks are expected from this site.

The Mohawk Material-Ready-Mixed Concrete is also upstream from proposed site but does not have surface water discharges. No HTRW risks are expected from this site.

There are several secondary nonferrous metal fabrication facilities north of the Sand Springs Levee and the Old Reregulating Dams site such as Sheffield Steel and GERDAU AMERISTEEL, but none have permitted discharges to the river or storm drains. No HTRW risks are expected from these sites.

Figure 4: Proposed Re-regulating Dam Location

The Sand Springs Sand and Gravel Co., located just downstream of this alternative and west of Highway 97, has an NPDES Individual Permit to release total suspended solids & pH. This NPDES permit is in compliance. No HTRW risks are expected from this site.

There is an old oil well 800 feet downstream of the 7.8 mile Dam Site and 2 abandoned oil pipelines that could impact construction of water diversion structures. The locations of these features must be identified before construction of the alternative begins.

No other potential for HTRW was indicated in this survey for the Old Reregulating Dam Site Alternative.

3.2. Prattville Creek Outlet

There are housing developments and 1 dry cleaner with no surface water discharges on Prattville Creek (aka Anderson Creek). Adjacent and to the west of the Prattville Creek outlet is the Future Farmers of America (FFA) Hog Farm.

According to a 2009 CH2M Hill site reconaissance, “Prattville Creek, which enters from the south just downstream of Highway 97 and the proposed site of the 8.8 mile dam, was noteworthy for its active severe erosion and bank failure in the lower meander approaching the river.” Additionally, “a very large electrical transmission line crosses the river near the confluence of Prattville Creek. Several drinking water wells were documented in the project area” (Arkansas River Corridor Projects Site Reconnaissance Summary April 30, 2009; CH2M HILL).

Figure 5: Looking South At Prattville Creek Outlet, Google Earth 2016, Green/Yellow Line Represents Location Of The 8.8 Mile Dam Alternative Site

Figure 6: Prattville Creek Outlet (Imagery date 3/29/2015), Note: Prattville Creak is also given as Anderson Creek on some maps

Figure 7: Prattville Creek & FFA Hog Farm looking Southeast, from Arkansas River Corridor Projects Site Reconnaissance Summary April 30, 2009; CH2M HILL

No potential for HTRW was indicated in this survey for the Prattville Creek restoration alternative.

3.3. Reregulating Dam Location Alternative, 8.8 Miles downstream from Keystone Dam

The alternative for a low water dam downstream of HW 97 (8.8 miles) may result in HTRW costs to the project, because there are several locations of concern on the northern river bank. The sites of concern that may affect the alternative are described below.

The Sand Springs Petrochemical Complex (SSPC) National Priority List (NPL) site is located adjacent to the north bank of the Arkansas River at this location. Historically, there were several thousand cubic yards of sulfuric acid sludge, with a pH ranging from l.5 to 2.5 and containing heavy metals and organics, in the unlined sludge pits adjacent to the north bank of the river. The sludge deposits on the river side of the levee were of similar composition as the acid sludge pits north of the levee.

Figure 8: Old Sinclair Refinery Looking East (approximately 1930s) Prior to Levee Construction

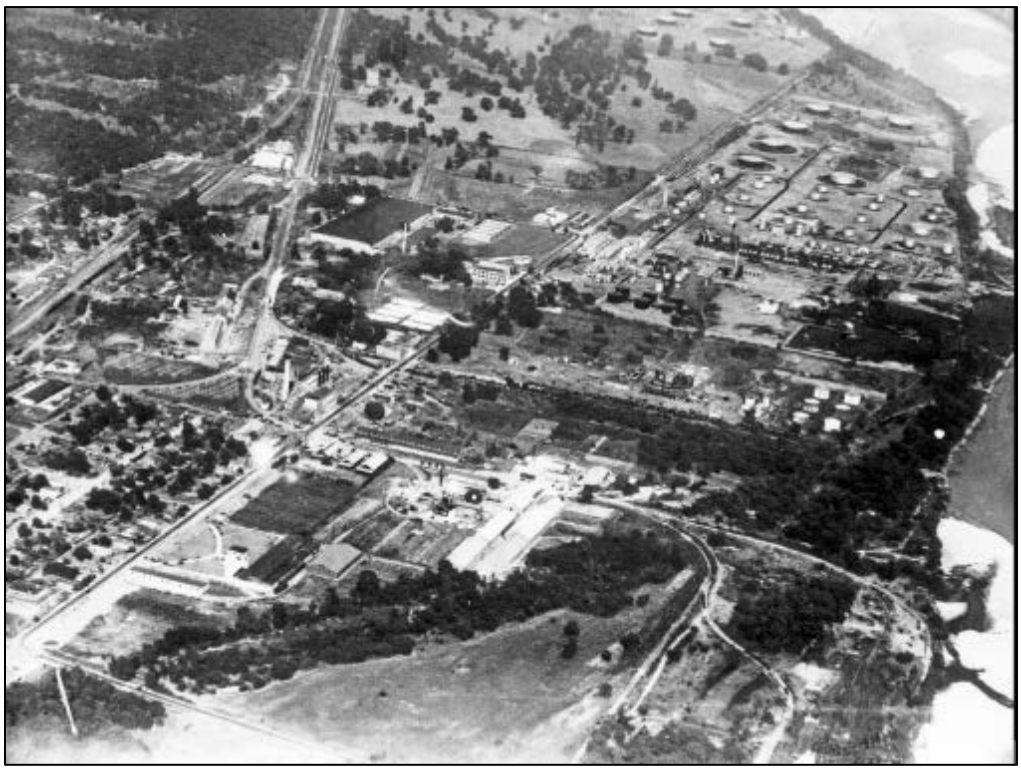


Figure 9: A Preliminary SSPC Site Plan Showing Acid Sludge Pits Along the River

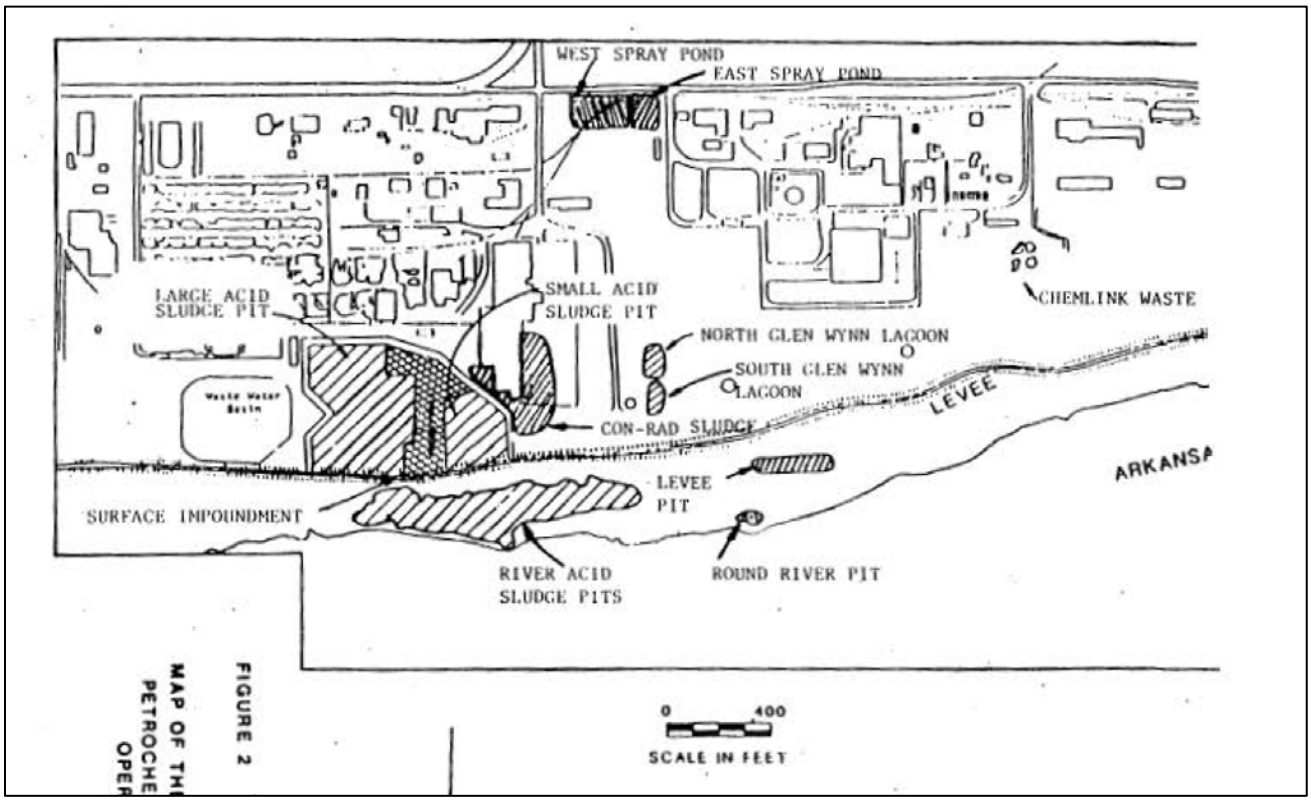


Figure 10: Sand Springs Petrochemical Site Photograph Prior To Excavation of Sludge, Looking west

Figure 11: SSPC, Looking North during one of the Sludge Excavations (approximately 1989 to 1991)

Figure 12: Current State of SSPC Area

The SSPC site was put on the NPL in the 1980s, when soil and water samples confirmed that contact with contaminated sludge at the site could pose environmental and human health risks. The remedial action (RA) involved excavation, stabilization, solidification and placement of approximately 206,500 cubic yards of petroleum waste in an on-site landfill. Treatment of the waste material was completed and the landfill was closed on August 22, 1995. During routine

operation and maintenance (O&M) activities in May 2001, seeps of black sludge were observed near the former acid sludge disposal pit along the northern bank of the Arkansas River. In September 2004, a work plan was prepared for excavating the waste materials. The sludge, as well as a foot of soil beneath the soil/sludge interface was removed. About 16,000 to 20,000 cubic yards of material, including sludge, mixed soil, neutralizing lime, and debris were disposed of at a landfill in 2006. The site was then backfilled, graded, and planted with grass. A portion of the north bank of the Arkansas River has also been rip-rapped (rock used to armor shorelines) to prevent erosion by the Arkansas River. Location the acid sludge pits was confirmed through field inspections.

The cost for remediation of the sludge was estimated to be approximately $500 per cubic yard in 1995. An internet survey did not find the cost for the remediation in 2006. As discussed above, it is possible additional waste materials may exist in the area of the former NPL site including within the proposed project footprint some distance away from the known site. The risk, while unknown, is not considered great. Carrying the risk forward as an explicitly acknowledged factor for the project is prudent, as while not expected, encountering materials (e.g. waste) requiring special disposition is possible and would be handled through best management practices during construction.

Fencing has been placed around the landfill. Institutional land use controls (LUCs) have been recommended to ensure protection of human health and the environment and to facilitate any potential land use activities, but they have not been implemented at this time. The proposed area for the LUCs does not include the proposed project footprint.

Further investigation into the risks to the proposed project posed by the SSPC site should be considered as part of the design investigation process

Compass Landfill is another NPL site just downstream of this location although it is on the south bank of the river. It is not considered a source of risk to the project.

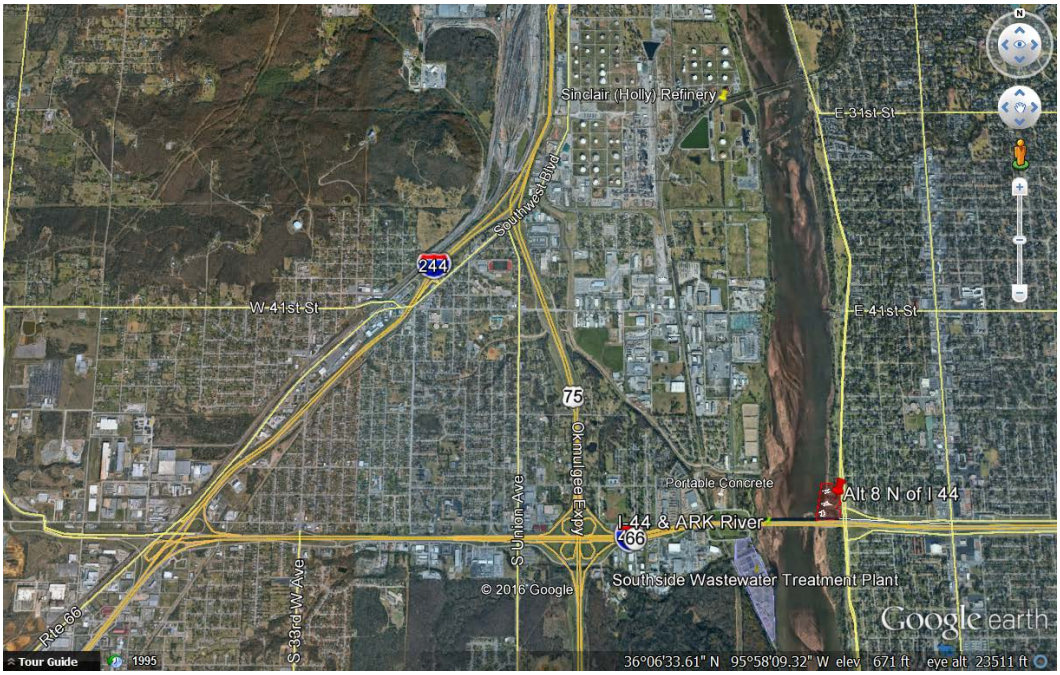
The Glen Wynn site was used as an oil and solvent recycling facility that received household waste and resold anything that could be burned as heating oil. The waste from this process was poured into an unlined river sand pond beside the land side of the levee. There are also photographs and ground penetrating radar field tests that show the owner of this site may have buried crushed drums in the levee. The risk to the proposed project from the Glen Wynn site appears to be low.

Figure 13: Location of the Mid-River Power Line Support in relation to the proposed alternative (green line)

The alternative for a low water dam downstream of HW 97 (8.8 miles) may have an HTRW cost (e.g. if unexpected waste material is encountered during construction), because of the potential for previously unidentified waste material or activities within the area of the project site.

3.4. Alternative 8 –East Side of Arkansas River and I-44 Bridge

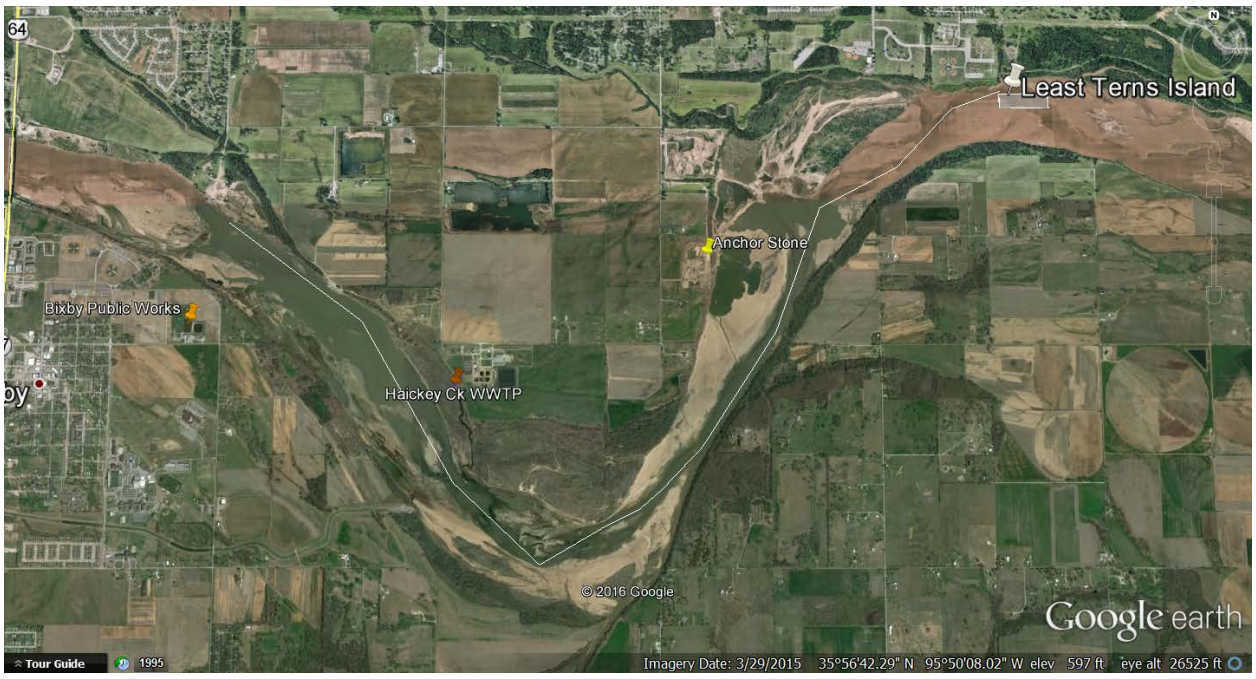
Figure 14: Location of Alternative 8 and Holly Refinery



The location of this proposed alternative is 1.5 miles downstream from the Holly Refinery, which has a NPDES permit that has been out of compliance for the last three years.

3.5. Least Tern Island

Figure 15: Least Tern Island Proposed Site



No potential for HTRW was indicated in this survey for the Least Tern Island alternative.