Zink Lake Issues

- Major Problems Impacting Economic Impact of New Dam
  - Public Safety
    - Water quality unsuitable for intended and proclaimed uses
    - Water hazards of "roller effect"
    - Uncontrolled access for public, anglers, boaters, and kayakers
    - West bank subsurface, air, and waters polluted by refinery petrochemicals
  - Adverse wildlife impacts to some critical and economically beneficial fish
  - Present 404 permit violations by City
  - Lack of sound economic ROI
    - Water quality and lake depth prevents realization of the claimed $122 million annually and over 1,800 new jobs annually to the City

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Introduction

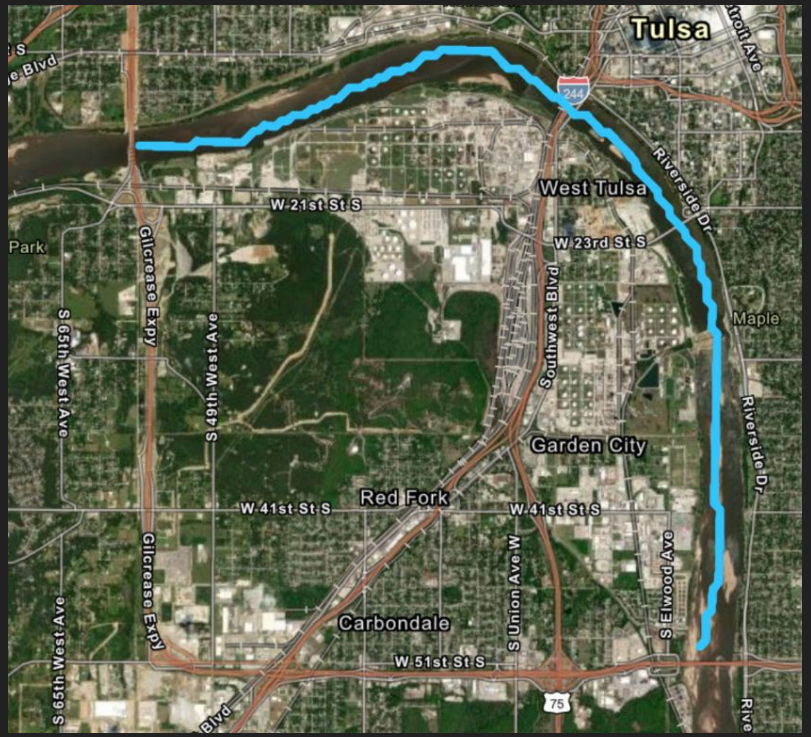
The Arkansas River

The Arkansas River is a braided river/stream. The image to the right shows one from Denali National Park.

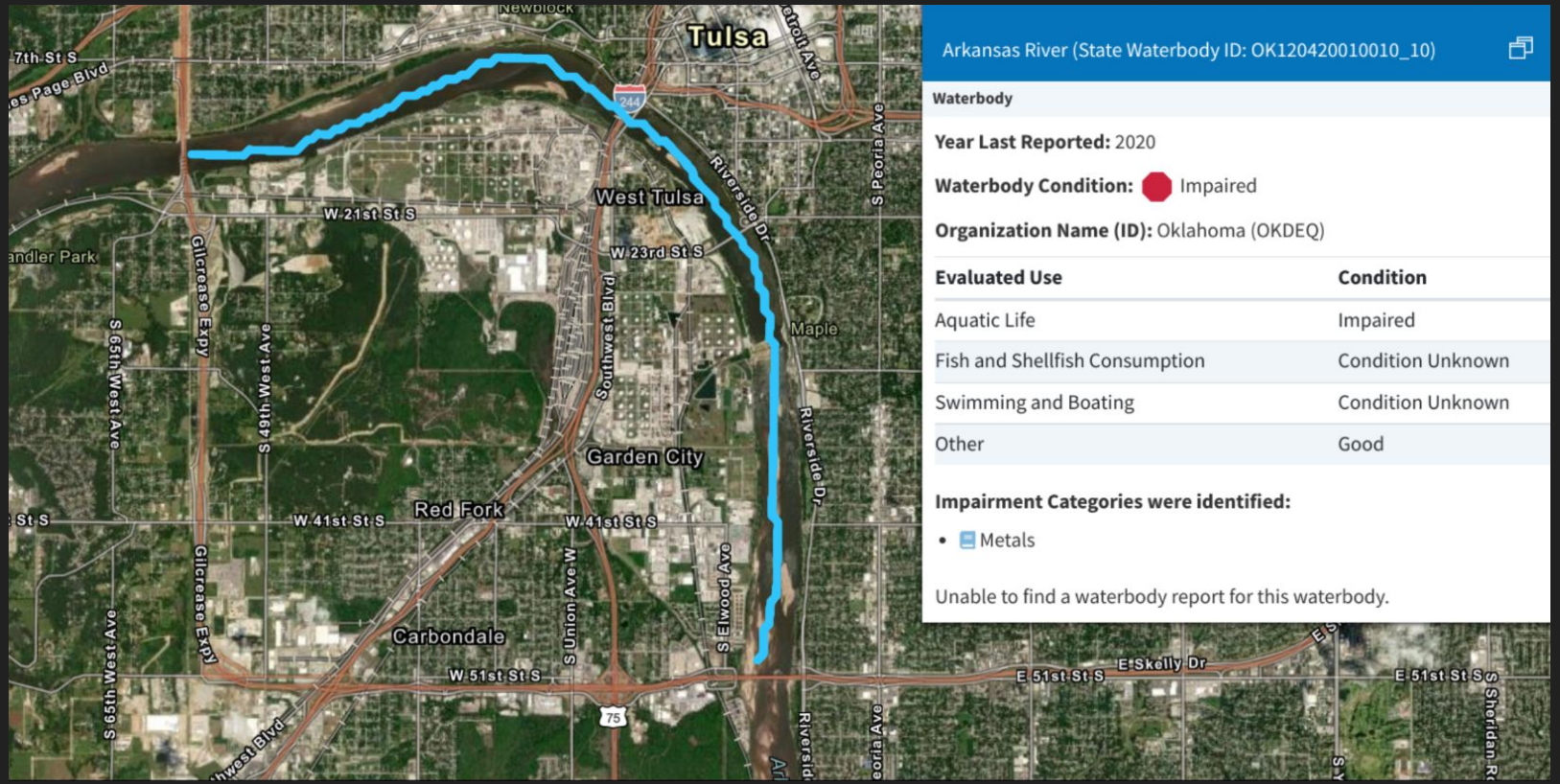
“Braided streams and rivers have multi-threaded channels that branch and merge to create the characteristic braided pattern […] The most important factors leading to their development are large bed load and readily erodible bank material, which enable channel shifts to occur with relative ease.”

National Park Service

02. The Arkansas River and Pollution



7.32 Miles of the Arkansas River has numerous stormwater outfalls and sources of pollution for the stretch it flows through Tulsa.



Arkansas River (State Waterbody ID: OK120420010010_10)

Waterbody

Year Last Reported: 2020

Waterbody Condition: Impaired

Organization Name (ID): Oklahoma (OKDEQ)

Evaluated Use	Condition
Aquatic Life	Impaired
Fish and Shellfish Consumption	Condition Unknown
Swimming and Boating	Condition Unknown
Other	Good

Impairment Categories were identified:

- Metals

Unable to find a waterbody report for this waterbody.

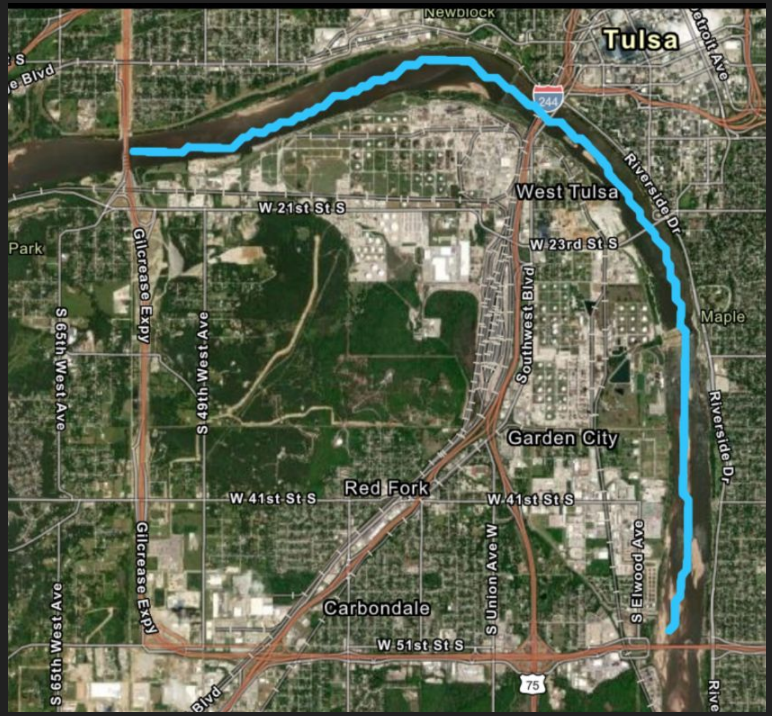
Photo taken February 2023

Photos taken February 12, 2023

Above, petroleum seepage in Zink Lake
Right, pollution 21st Street Bridge

Photos taken February 12, 2023

03. Public Safety - Risks

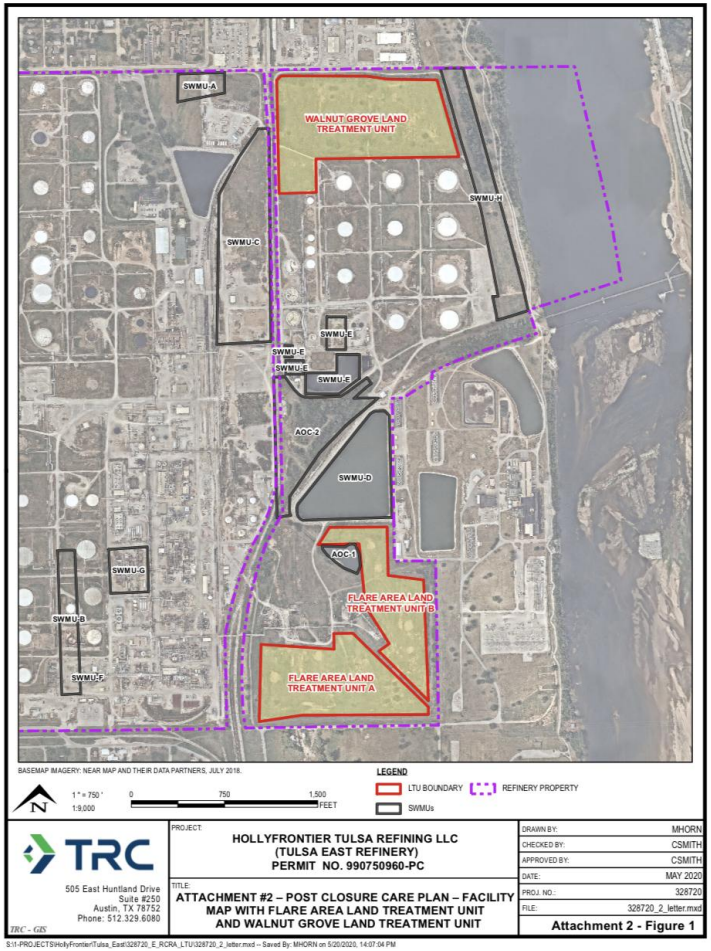


Refineries are required by the EPA to file what is called a Risk Management Plan with an Offsite Consequence Analysis.

The Offsite Consequence Analysis for HF Sinclair's two Tulsa refineries include worst-case scenario reports.

Photo taken January 2023

Photo taken December 16, 2021



From HF Sinclair's July-December 2022 Semi-annual Report

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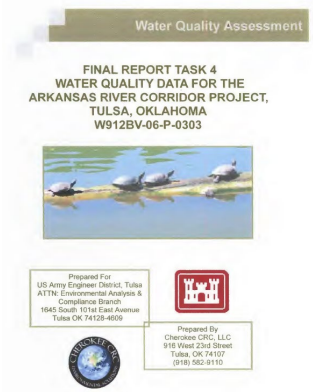
Zink Lake – Public Safety

* Water Quality:
  * Bacteria levels exceed standards for accidental ingestion
  * Near constant petrochemical seepage along west bank from refinery
  * All previous testing reports from 1978 to 2010 shows water unsafe
  * Certification of water safety by City has never existed and none exists to date
  * Air pollution worse along west bank

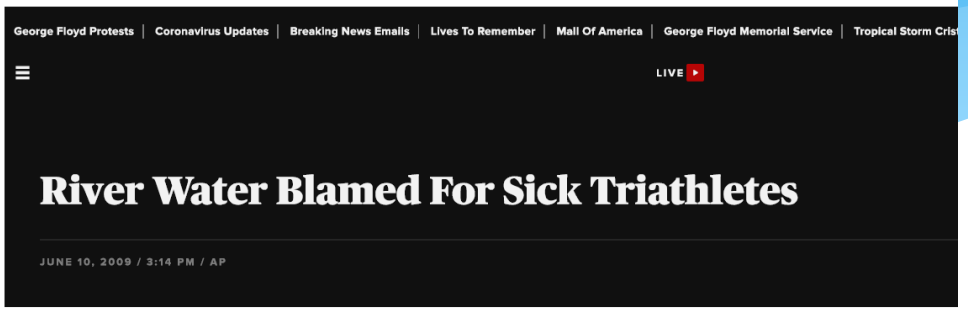


2006 Corps Report

5/12/2023

Recreation Lake?

River Water Blamed For Sick Triathletes - CBS News



Parasites, viruses and bacteria in the Oklahoma River were to blame for sickening dozens of participants in an i

At least 45 participants in the Boathouse International Triathlon in Oklahoma City became sick with gastrointes

The Oklahoma State Department of Health said the illness was related to exposure to water during swimming p

* Water quality would preclude any events other than those that would not involve people accidentally ingesting water
  * Canoes, kayaks, and small sail boats overturn regularly
  * Triathlons are out of the question
* No certifications from INCOG, health dept., or state agencies that would allow for accidental ingestion of water
* No in-depth testing for newer toxins of concern has been done by State, County, or Federal entities. Only routine chemicals screened.
* Documented pollutants are routinely present along west bank and in Zink Lake due to refinery operations

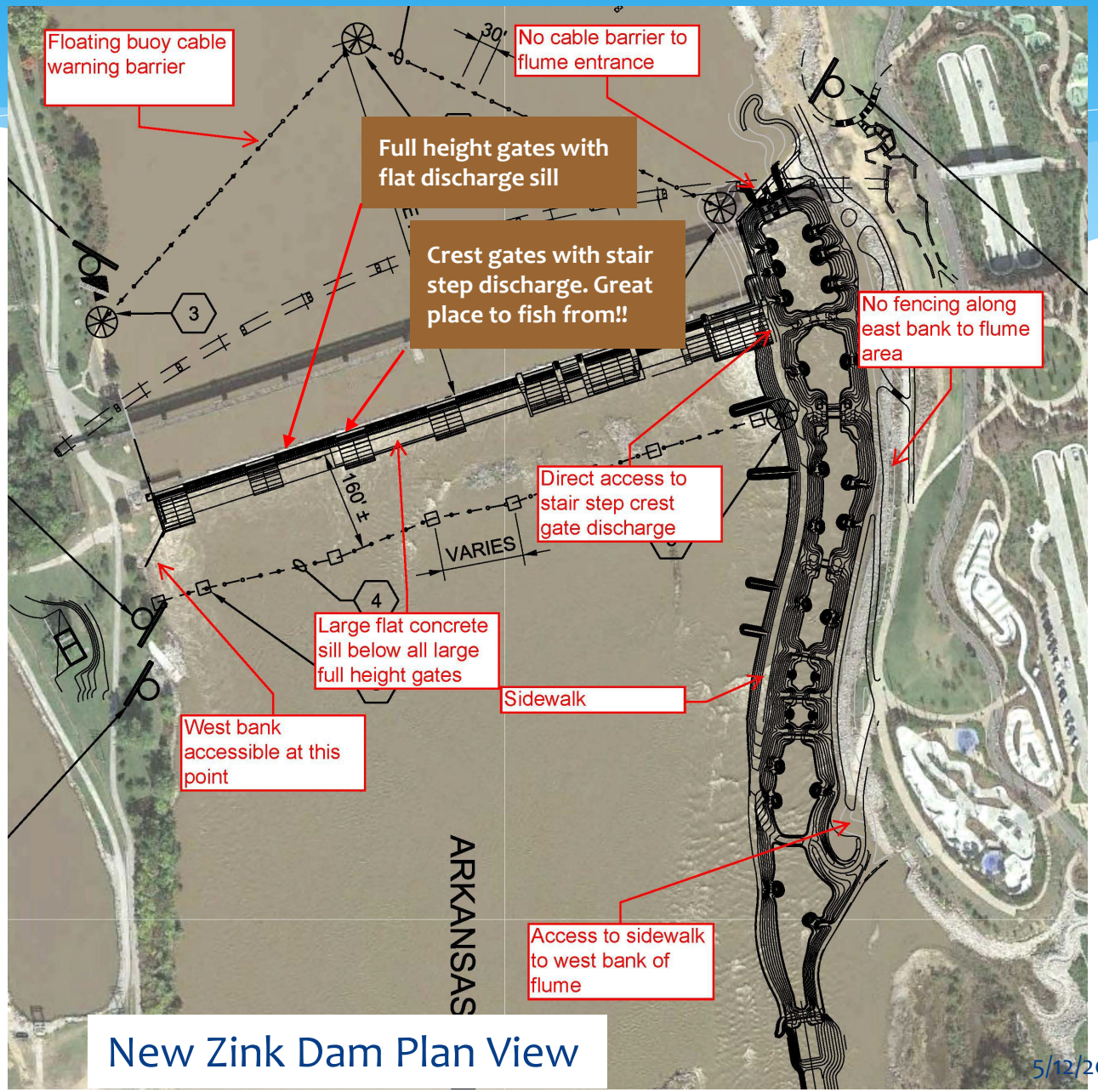
1984 River Parks Sign

Dam Features Creating Hazards

Full height gates: Normally up except during fish migration and high flows above 40,000 cfs in river, then fully down. During low flow conditions they may need to be lower or completely down to keep flows moving. (No lake!!).

Crest gates: Gates regulate flow at upper 3 ft. of pool level and provides visual effects during adequate flow conditions.

Cable & Buoy: A subsurface cable with marker buoys will be installed upstream of dam **to warn but not stop** boaters from getting near upstream gates.



New Zink Dam Plan View

Safety Issues Full Height Gate

No barriers to prevent this.

11’ drop over top of gate to concrete sill if flows are less than that shown.

Safer??

Unless gate is fully down, the same “roller effect” will be present

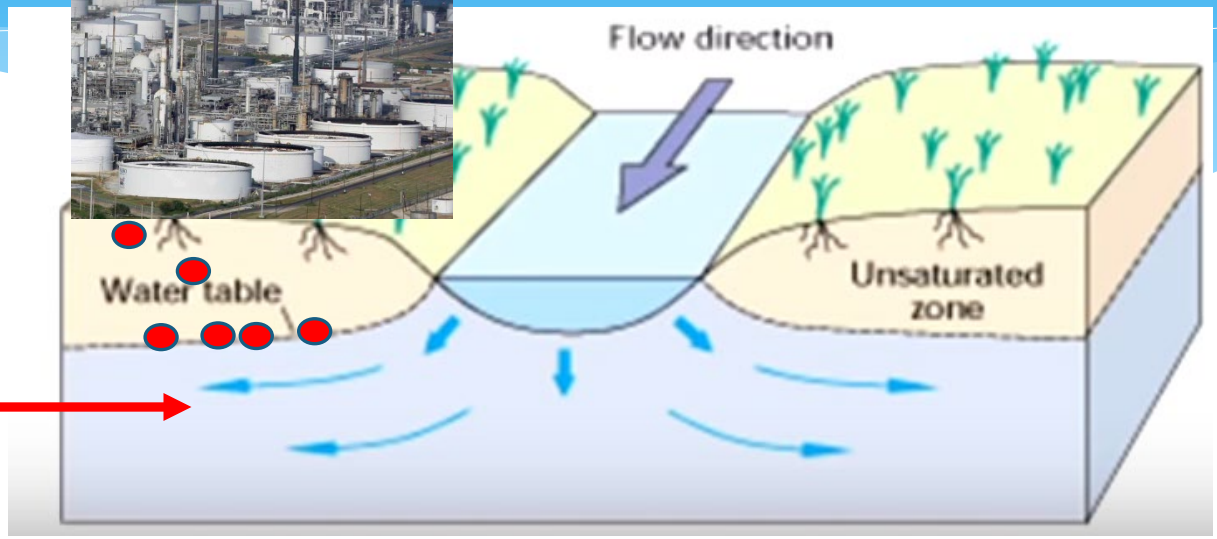
(Mclaughlin Whitewater)

New Zink Dam Crest Gate

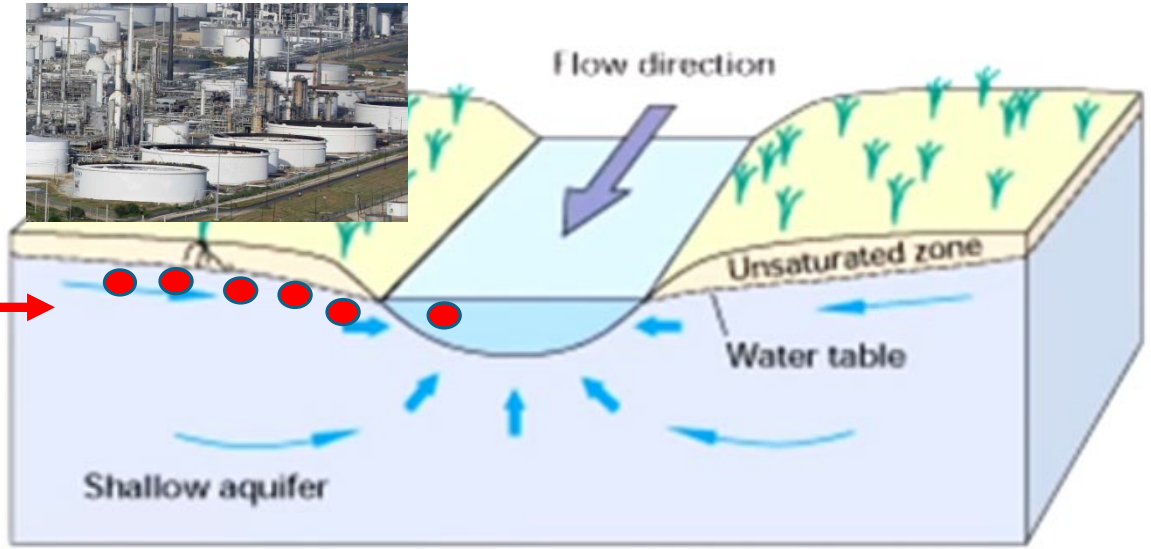
- Crest gates cannot control sediment buildup except when sediment reaches top of concrete.
- Passage of fish essentially impossible past these gates per Fish and Wildlife service
- Same or greater hazards to upstream and downstream anglers

Subsurface Refinery Pollution Movement

* Storage tanks can leak
* Zink Lake full: water will flow out of the river and into subsurface of refinery picking up toxins

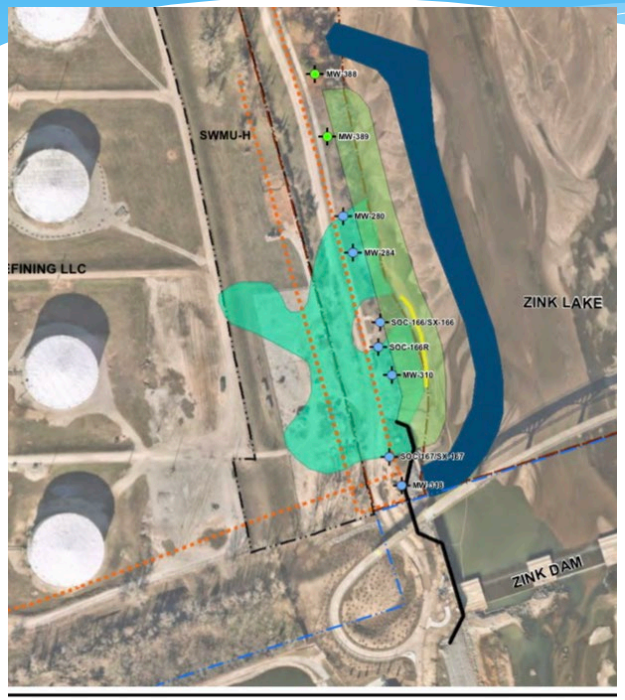


* Zink Lake low: water will flow back from the refinery and into the river carrying toxins with the water
* Confirmation: Corps of Engrs (CH2M) EIS report for Zink Lake



<< Video explaining subsurface water flow

New Zink Dam Effect on Refinery Pollution



Extract from Holley Frontier letter to City via ODEQ (2020)

Special Instructions for Zink Dam and Pedestrian Bridge Construction Projects

"The construction project must protect soils greater than I foot below pre-construction ground surface within the RP A Leased Area such that there is no disturbance of or contact with of these soils. This provides a 1 foot buffer for protection of soil at a depth of 2 feet or greater……CONTRACTOR shall not disturb (e.g., tire ruts, excavation, etc.) any soil greater than 1 foot below pre-construction ground surface within the HFTR property that is leased to the RPA….. CONTRACTOR shall initially manage soil and water generated during drilling/boring above bedrock in a controlled manner such as placement of soil on polyethylene sheeting or directly into a sealed container (e.g., drums, roll-off) and placement of water into a sealed container.

Since:

* Refinery seeps subsurface pollutants into river annually
* Caps on west bank are only a Band-Aid
* Cap failure: Degradation or ruin of fishing in river costing $ millions annually

5/12/2023

New Zink Dam Effect on Refinery Pollution

Solutions:

* Refinery must provide long term effective measures to prevent toxin migration into the river and west bank soils.
* New Zink dam operations must mimic that of the short term natural river flow
  * Lake pools should not create conditions that cause more water to migrate greater distances into the refinery subsurface and force more chemicals downstream past pollution caps now in place on the west bank

New Pollution Cap on West Bank

OPERATION AND LEGAL CONCERNS

* River Parks Authority will manage
* Who will operate the boating activities, recreational flume controls, and be liable for injuries? River Parks Authority?

Quote from City Website:

Groundbreaking Held for Vision Tulsa Project- Zink Dam Modifications

The project also will include a 1,050-foot-long recreational flume along the east bank of the river south of the pedestrian bridge. The flume will have seven drops or pools, and potential users will include kayakers, tubers and surfers.

- City can be sued "Public Nuisance"

PAST AND FUTURER OPERATION AND LEGAL CONCERNS

* Same ineffective protections and signs as old dam
* Security, policing, and emergency response will most likely happen at same rate or greater than old dam

Many have drowned near low-water dam
PHIL MULKINS World Action Line Editor
Jul 10, 2008

"It's illegal to swim or boat within 400 feet upstream of Zink Dam, at 29th Street, or within 150 feet downstream of the dam mainly because the dam will kill you. It has killed at least 13 people since it was built to impound Zink Lake in 1983.

A Tulsa city ordinance, …..under the "jurisdiction of the Park and Recreation Board of the City of Tulsa." Its Section 103 says, "No person shall stand, wade, swim or boat in the Arkansas River from the low water dam, upstream to the safety cables north of the Pedestrian Bridge within 400 feet north of the Pedestrian Bridge. …. a violation for anyone to be within the cabled area downstream of the low-water dam."

When we talked to Caldwell (Fire Dept.) in 1998, ….logbooks to 1983 and found that 12 drowning victims had been pulled from the river below the dam. "

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SUMMARY

* What needs to happen:
  * City government and others should stop misleading the public in their statements about the safety and other unsupportable statements related to the dam and lake
    * **Tell the public the truth**
  * City government must fund on going testing of the river water in the new lake for City Health Dept. to certify the water as safe for ingestion
  * City must rewrite the present dam operations plan for the 404 permit so that the fish migration, spawning, and reasonable frequent passage can take place
  * Provide long-term funding for RPA, fire, and police to handle unforeseen increases in maintenance, security, and safety

* More information? https://www.quadrelec.com/pages/public.html