Agenda

- History
- Recent Background
- Design Elements
- Construction
Project Involvement

Holly Frontier
River Parks Authority
New Pedestrian Bridge
PSO
The Gathering Place
City of Tulsa
Tulsa County
CH2M HILL
INCOG
USACE
SWPA
CITIZEN
STAKEHOLDERS
History
1954 – Pre-Keystone Dam
Keystone Dam

- Authorized by the Flood Control Act of 1950
- 1956: Construction Started
- 1964: Completion for flood control
- 1968: Commercial operation of hydropower
- Cost: $123 million
- 1968: Re-regulating dam complete 7 miles downstream
  - 16 deaths at the structure
  - Removed in 1980’s

1966 – Keystone Dam Operational
1970's

- 1973 – KRMG’s first Great Raft Race
- 1974 – River Parks Authority (RPA) created
- 1974 – Tulsa received Midland Valley Bridge title – converted to pedestrian bridge
- 1974 – RPA hired architect Roy Harrover
- 1975 – Harrover plan – released
  - Low water dam at pedestrian bridge
  - Amphitheater
  - Ferries, shopping, entertainment
- 1979 – first Oktoberfest (on east side, moved to west side in 1981)
- 1980 – proposed retail area property sold, reinvested to build the dam

Tulsa Mayors during this time
Bob LaFortune – 1970-1978
Jim Inhofe – 1978-1984
1977 – 10 years post Keystone

Amphitheater
West Festival Park
Zink Dam – March 1977 EIS Application

SITE PLAN

FIGURE 1-1

Rounded Sill

Economic Development
Report on Low Water Dam and Recreational Lake – October 1977

- Fountain – 100’ tall
- Bascule gates
- No channeled flow to PSO
Existing Zink dam

- W. R. Holway and Associates (Engineer of Record)
- Constructed in 1982
- 7 feet in height (above river channel)
- 1,030 feet in length
- Ogee spillway design
- 880' fixed dam
- 5' high bascule gates; 3 sections at 50' each
  - 1 west bank, 2 east bank
Original Zink Dam Construction
Original Zink Dam Construction
Original Zink Dam Construction
Zink Dam Survived the 1986 Flood
The Tulsa Wave

…ponding area below the dam would provide a collection point for the fish prior to their migration upstream.” – Report, Oct 1977
Current Background
Project Has Involved Significant Planning & Design Effort
Design continued to evolve - 2012
Design continued to evolve - 2015
Pedestrian bridge
Design continued to evolve - 2017
Design has continued to evolve - 2018
Design continued to evolve - 2019
Design continued to evolve - 2020
Historical Project Drivers

- Prominence of Tulsa Wave
- Maintenance Challenges of Existing Zink Dam
- Improved Environmental Conditions
- Lack of Regulated Flows
- Dangerous Undertow of the Ogee Weir

It’s been a Tulsa idea since 1964, and it was still a major theme in community forums held by then-Mayor Bill LaFortune in 2002 to gauge what citizens wanted the city to invest in most.

Vision Tulsa vote approved April 5, 2016. $63M

- $48M for Zink Dam and Bank Stabilization
- $15M for Zink Pedestrian Bridge

May 1964: the County and City hired HTB for river feasibility study and master plan. Street Commissioner Bob LaFortune and County Attorney David Hall visited San Antonio’s Riverwalk and Austin’s Town Lake.

- https://www.publicradiotulsa.org/, 2020
Final Design Elements
Zink Dam Modifications Project

- Increase pool depth to 10 feet
- Increase Zink Lake to reach upstream of I-244 bridge
- Additional gates, total of 54% of the dam face area
  - 432’ full height gates
  - 400’ crest gates
  - 197’ fixed dam
- Public Access/Recreational Improvements
- Bank Stabilization
- Compensatory Mitigation/Preservation
- Roller mitigation on fixed dam and crest gates
Open Channel Flow

REVERSAL OF FLOWS
TRAPS VICTIMS

Diagram showing the reversal of flows and trapping of victims in an open channel flow scenario.
Recreational flume
East Bank
Animated Modeling

GREEN WAVE AT 500CFS

Wave Height = 3 ft
Gate Layout

- 3' Crest Gate
- 10' Full Height Gate
- Future WaveShaper Gate
- Fixed Crest
Gate layout

- Full Height Gates
  - 10 ft High Gates
Gate Design Provides Unique Operational Capability
Improving Collaboration

- Prime Contractor: Crossland Construction Company
- Inspection: City of Tulsa and HNTB
- Managing Variable Flows
- Sharing Risk between Owner and Contractor
- Incentives/disincentives
  - Support scheduled public events
- Synchronization between Bridge & Dam
Biggest Risk: High River Flows

- Establish maximum working flowrate
  - 20,000 cfs
- Establish maximum coffer protection
  - 40,000 cfs
- Risk shared between Owner and Contractor
  - Standby time above 20,000 cfs
  - Breach conditions specified and compensated
Construction!
Ground Breaking! August 13, 2020
Trail Connectivity and Detours
Construction phase 1 – East demolition
Construction phase 2 – West side
Construction Phase 3 – East side
18 hours after NTP
Fish Relocation back into the River
Demolition Continues
New Pedestrian Bridge Pending Permitting
Schedule

- **NTP**
  - 19 October 2020

- **Phase 2a**
  - 240 Days

- **Phase 2**
  - 360 Days

- **Phase 3**
  - 840 Days

- **Improved Zink Dam**
  - Early 2023!
Brooke Caviness, PE
Stormwater Design Lead, City of Tulsa
bcaviness@cityoftulsa.org

Lars Ostervold, PE
Senior Project Manager, Jacobs
Lars.ostervold@jacobs.com