We have to get water to the Bay faster to prevent flooding.

Houston needs more conveyance.
USACE Houston Flood Control Plan ~ 1940
An ounce of prevention is worth a pound of cure

- Benjamin Franklin

Why Now?
Why Not? Disproving the Myths

- Too Expensive
- Ground is No Good
- Groundwater Table is too High
- Never Done it Here Before
- Can’t Move Enough Water
Reliable Gravity Flow

Inlet:
Barker Reservoir
Elevation: 95.5 feet (1% Pool) Max 104 feet

Additional Potential Inlet Locations
Spring Branch – Memorial - Galleria

Outlet:
Houston Ship Channel
WSEL Elevation: ~0 – 10 feet

Tunnel Depth > 100 ft

Large Diameter Tunnel, 30-40 ft diameter
30 – 50 million gallons storage per mile, 50 – 150 acre-ft storage per mile

How it Works
Key Tunneling Project Drivers:

- Urban Constraints
- Minimize Environmental Impacts
- Minimize Community Impacts

Tunneling: The Future is Now
Tunneling is a Proven Solution
San Antonio River Tunnel

- 3 miles long
- 24 foot diameter
- 150 feet deep
- Built by SARA and USACE in 1997
- 6,700 cfs flow rate
San Antonio River Tunnel - Outlet
How is it built?
Significant Technological Advances
State-of-the-Art Excavation Methods

- Air lock
- Bulkhead
- Cutting wheel
- Excavation chamber
- Mixing arms
- Screw conveyor
- Thrust cylinders
- Tailskin
- Backfilling
- Tunnel lining
- Earth Pressure Balance TBM

Earth Pressure Balance TBM
Typical Tunnel Shaft
What do similar projects cost?

**dallas**
- Mill Creek Tunnel
  - 5 miles long
  - 35 foot diameter
  - $206 million

**san antonio**
- San Antonio River Tunnel
  - 3 miles long
  - 24 foot diameter
  - $230 million (2018$)
- San Pedro Creek Tunnel
  - 1 mile long
  - 24 foot diameter
  - $110 million (2018$)

**austin**
- Waller Creek Tunnel
  - 1.1 miles long
  - 20-26 foot diameter
  - $163 million
The **Super Tunnel** Alternative

- **Tunnel Length:** 23 miles
- **Tunnel Diameter:** >30 feet
- **Flow Rate:** 10,000-15,000 cfs
There is light at the end of the tunnel
THE PATH FORWARD

Flood Tunnel

presented by

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