



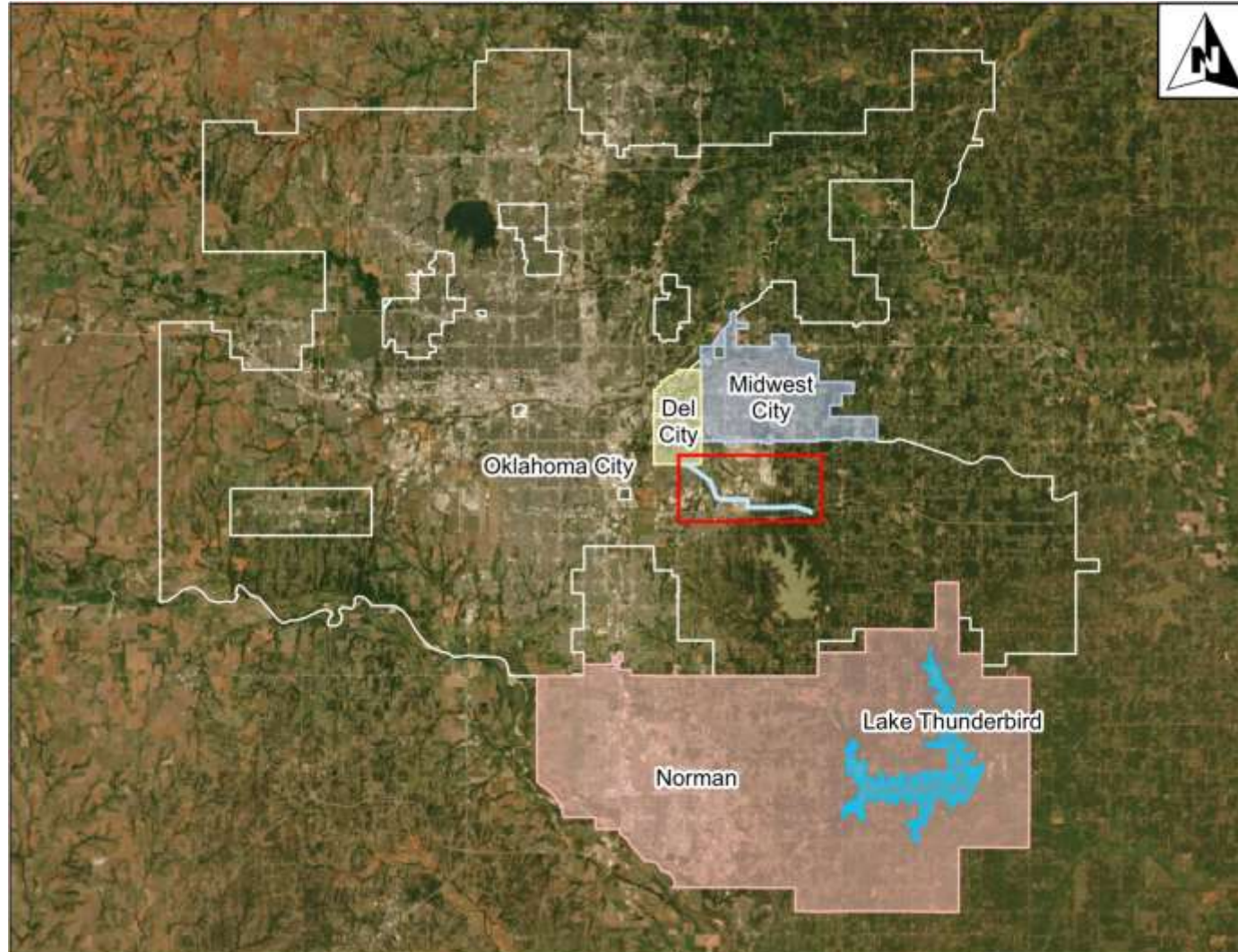
Going Trenchless in Central Oklahoma:

Del City Pipeline Improvements Project

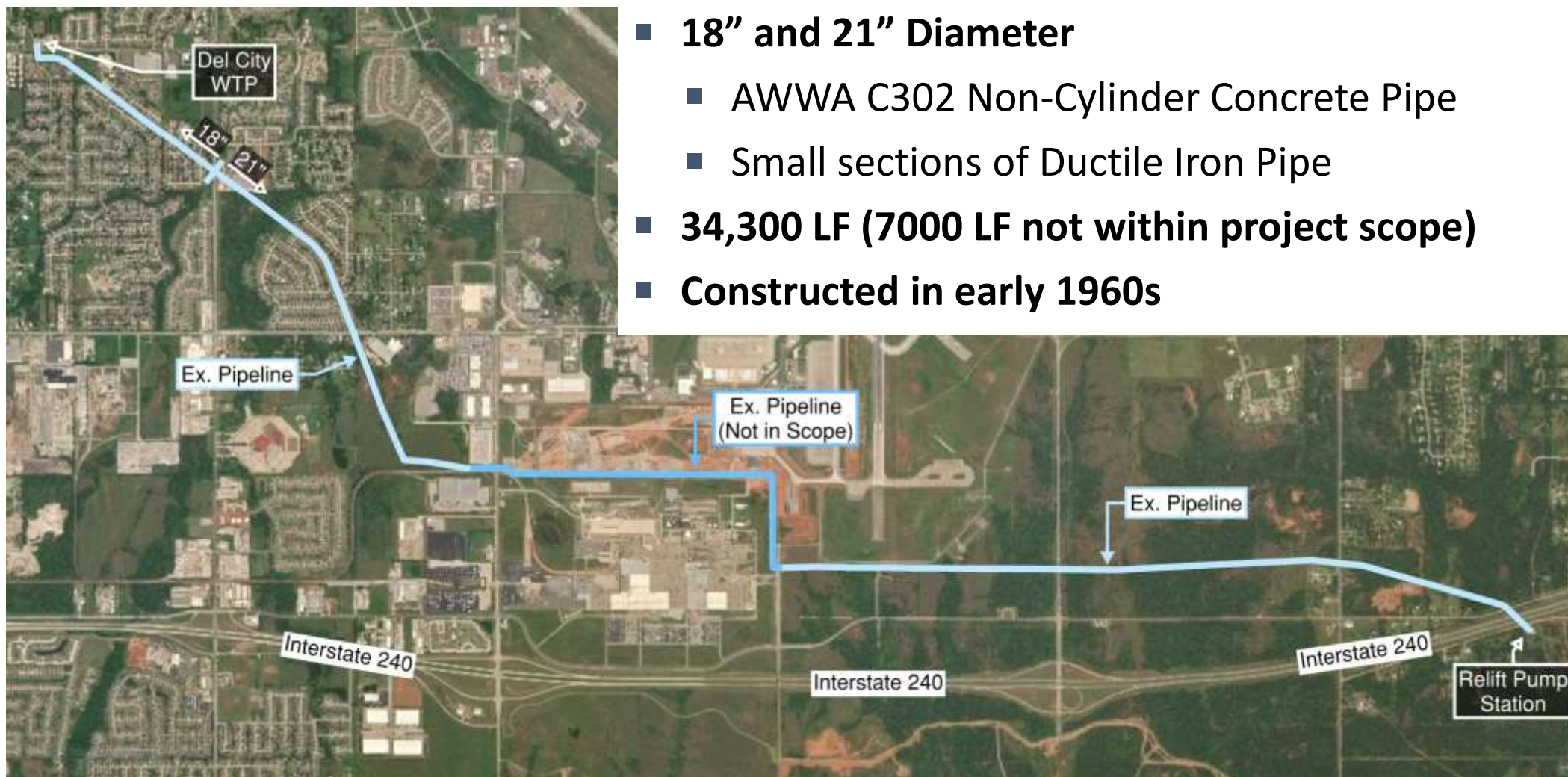


PLUMMER

Central Oklahoma Master Conservancy District



Ex. Del City Pipeline Overview



- **18" and 21" Diameter**
 - AWWA C302 Non-Cylinder Concrete Pipe
 - Small sections of Ductile Iron Pipe
- **34,300 LF (7000 LF not within project scope)**
- **Constructed in early 1960s**

Pipeline Issues

- 300+ Point Repairs
 - Found multiple leaks on walkthrough
- Causes:
 - Questionable bedding material
 - No compaction
 - No inspection
- Tight development on/around pipeline easement





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Ex. Del City Pipeline



Project Constraints

- Design Issues:
 - Large variation in land usage
 - Limited easements
 - Trenchless installation options limited
- Many Affected Parties:
 - United States Bureau of Reclamation Standards
 - DEQ State Funding (DWSRF) Requirements
 - Tinker AFB Coordination
 - City of Oklahoma City Permitting
 - Oklahoma DOT Highway Crossings
 - Owner/Developer for pipeline relocation



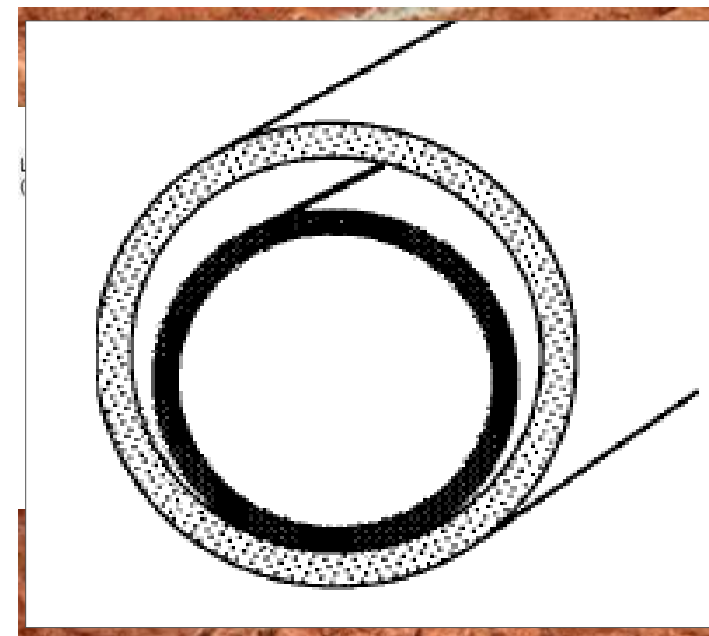
Trenchless Requirements

- COMCD Requirements:
 1. No permanent easement acquisition
 2. Minimal disruption to OKC residents
 3. Minimal reduction in hydraulic capacity
 4. Fully structural liner
- Del City Water Treatment Plant Requirements
 1. No more than three weeks per shutdown
 2. At least one week between shutdowns
 3. Shutdowns only between October and February



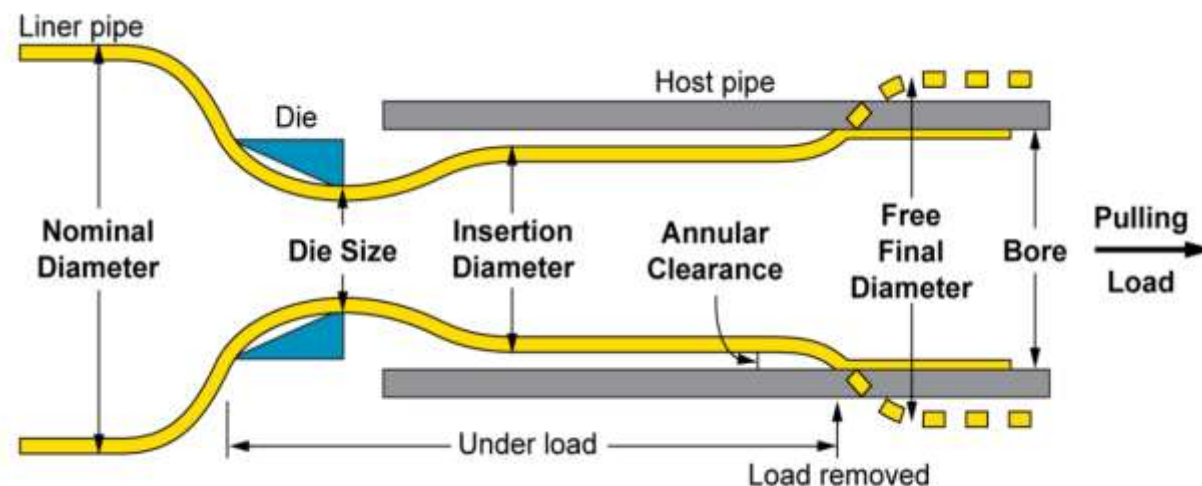
Trenchless Installation Methods

- Pipe Bursting Issues:
 - Original Point Repairs: Concrete Encasement
 - Later Point Repairs: Pipe repair collars
- Cured-in-Place-Pipe (CIPP) Issues:
 - CIPP for pressure pipe is less established
 - Reduced liner strength at fittings
 - Short install lengths and long installation times
 - Most expensive
- Traditional HDPE Sliplining Issues:
 - Reduction in Hydraulic Capacity (Annular Space)



Trenchless Installation Methods (Ctd.)

- Pipe Bursting
- Cured-in-Place-Pipe (CIPP)
- Traditional Sliplining
- **Compressed Fit HDPE Liner (“Swagelining” / “Tite Liner”)**
 - Long pull lengths
 - Quick installation
 - Most economical
 - Minimal reduction in hydraulic capacity



<https://images.app.goo.gl/NxawGskAxwMHu4Mj6>



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Compressed Fit HDPE Liner



Proposed Pipeline



Design Methodology (Compressed Fit HDPE)

- Class IV structural liner per AWWA M28 (Rehabilitation of Water Mains)
 - Structurally sound even with complete failure of host pipe
 - Can span loose areas
 - Reduces failure likelihood
- DR21 HDPE Pipe
- Upsized from 21" to 24" diameter in open-cut portions
 - Increased hydraulic capacity counteracts ID loss in lined sections

Current Status

- Open cut portions under construction
- Trenchless sections to be installed in Winter 2020-2021





Questions?

Contact Information:

Robert Weinert, PE

rweinert@plummer.com

(405) 440-2725