Lubbock or Leave It

Bringing the Canyon Lakes Interceptor Back to Life

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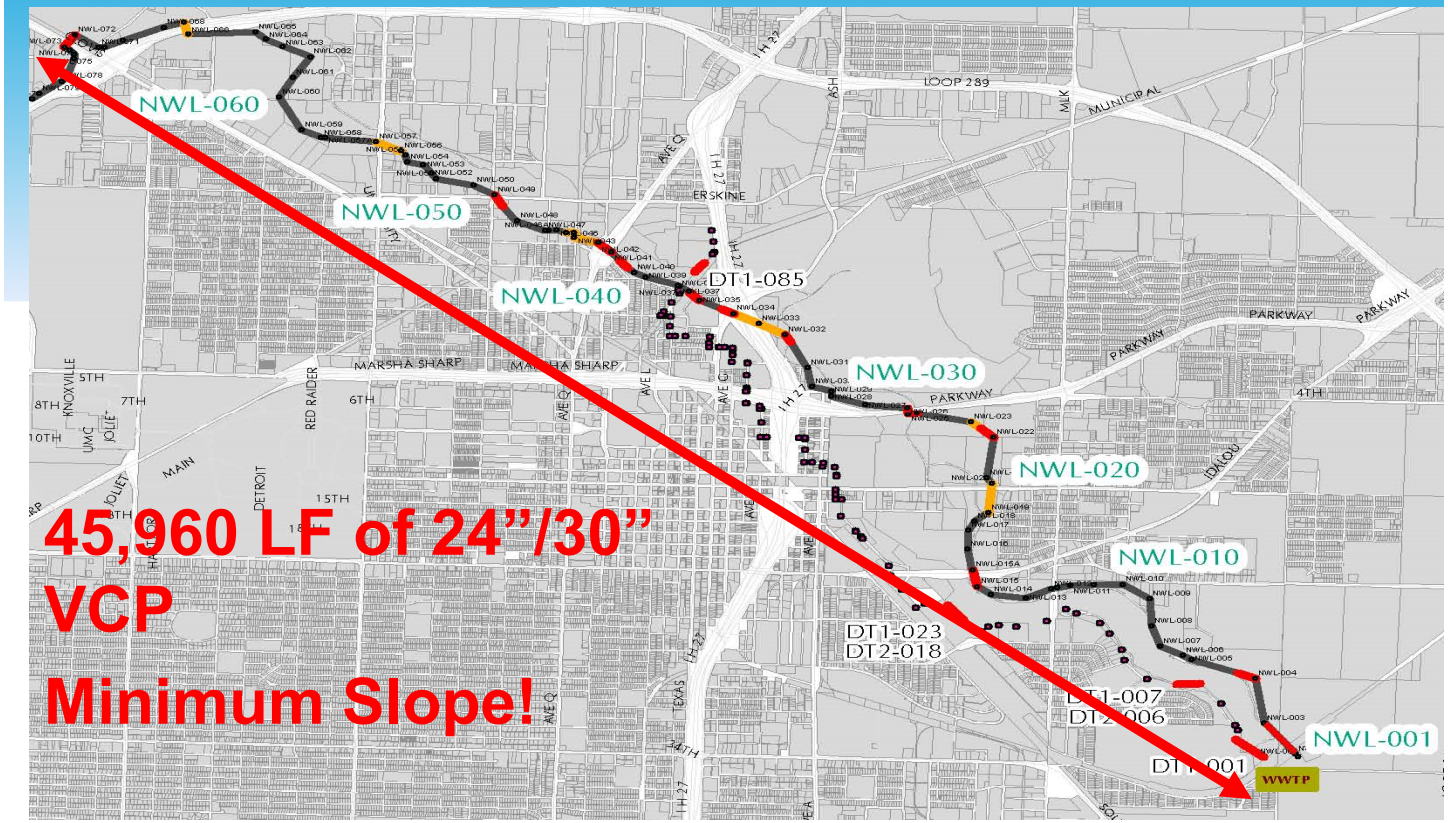
A LEO A DALY COMPANY

City of Lubbock
TEXAS

The Canyon Lakes Interceptor was surcharging and needed upgrades

- The history
- Diagnosing the problem
- Developing the solution
- Phased implementation
- Results

The interceptor was nearing 50 years old and in need of upgrades



Multiple project constraints required a unique solution

Prehistoric settlements

Agriculture Museum

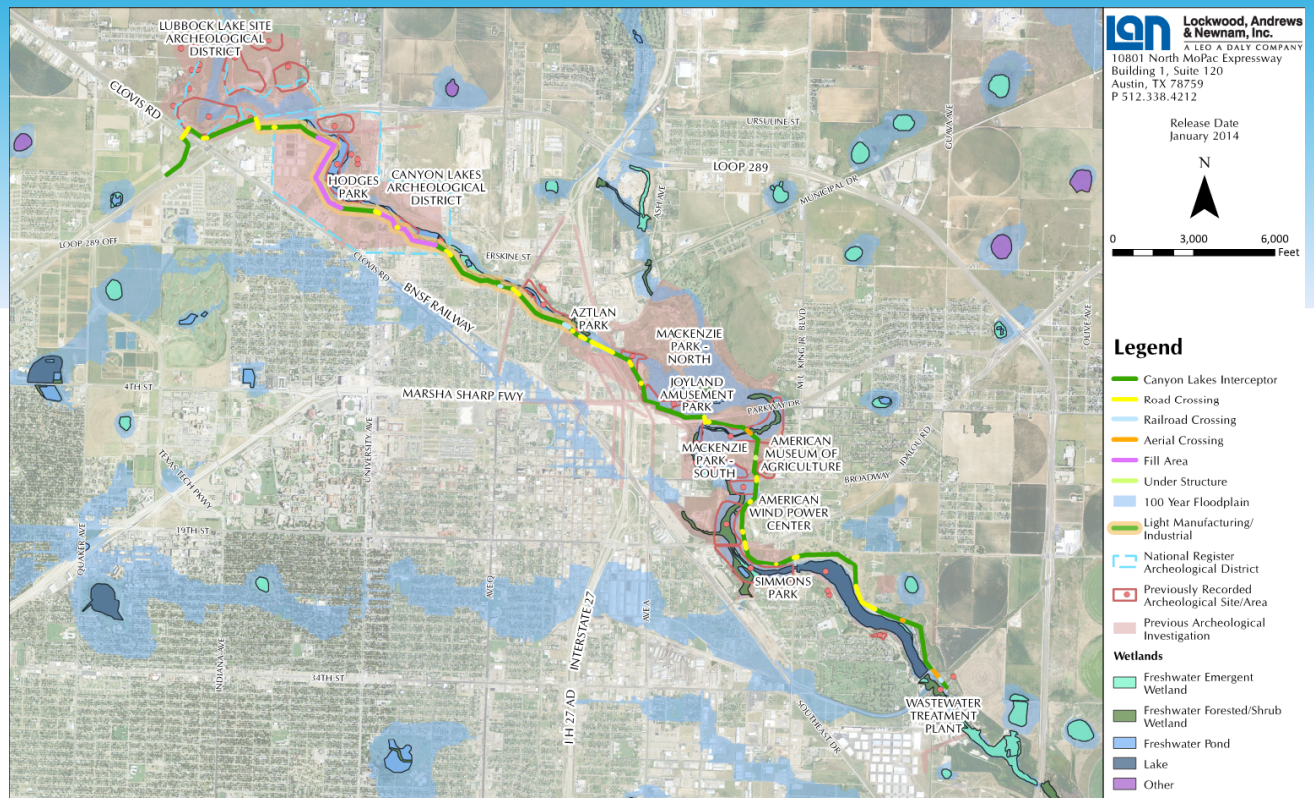
1970 Tornado backfill

Joyland Amusement Park

Lubbock Lake Landmark

Wind Power Museum

Waters of the US surround the project work site

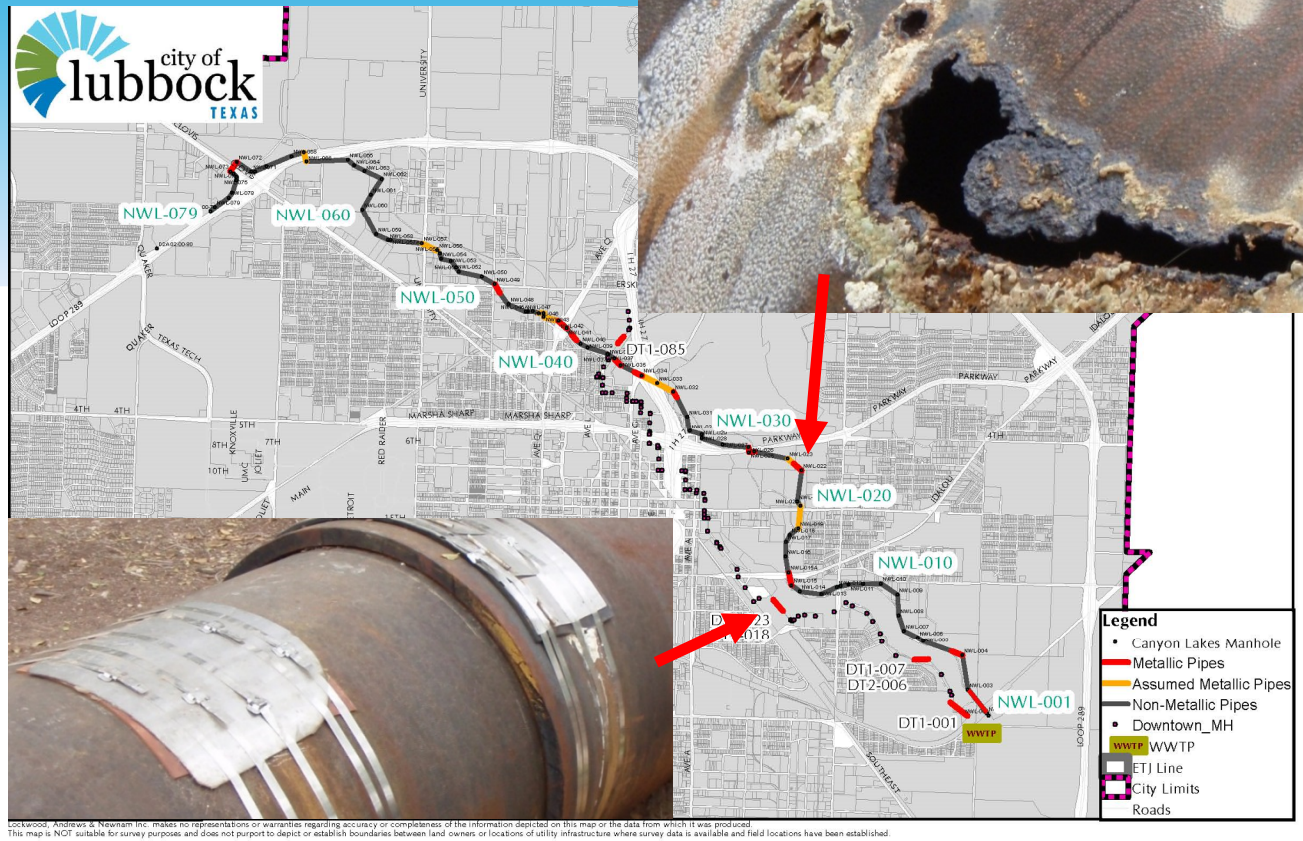


A condition assessment was conducted to understand the system

- CCTV (37,383 of 45,960 LF)
- Ultrasonic thickness testing

- Manhole inspection (85 MHs)

CCTV showed several segments of metallic pipe



We inspected 10 aerial crossings and found 8 needed replacement

Steel carrier pipe (2)
Ductile iron carrier pipe (7)
PVC carrier in steel casing (1)

The assessment identified three major categories of problems

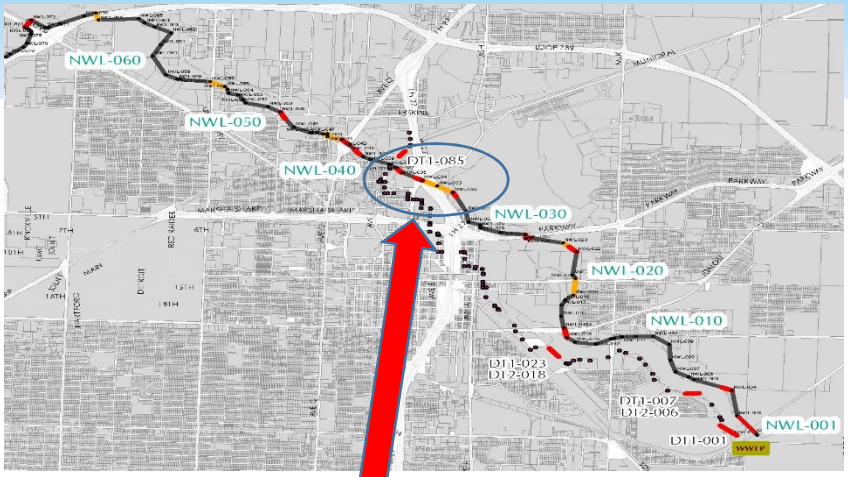
The first major category:

Isolated condition defects

- Collapsed pipe
- Offset joints
- Thinning pipe wall
- Tuberculation

Several rehab methods were used to address the condition of the interceptor

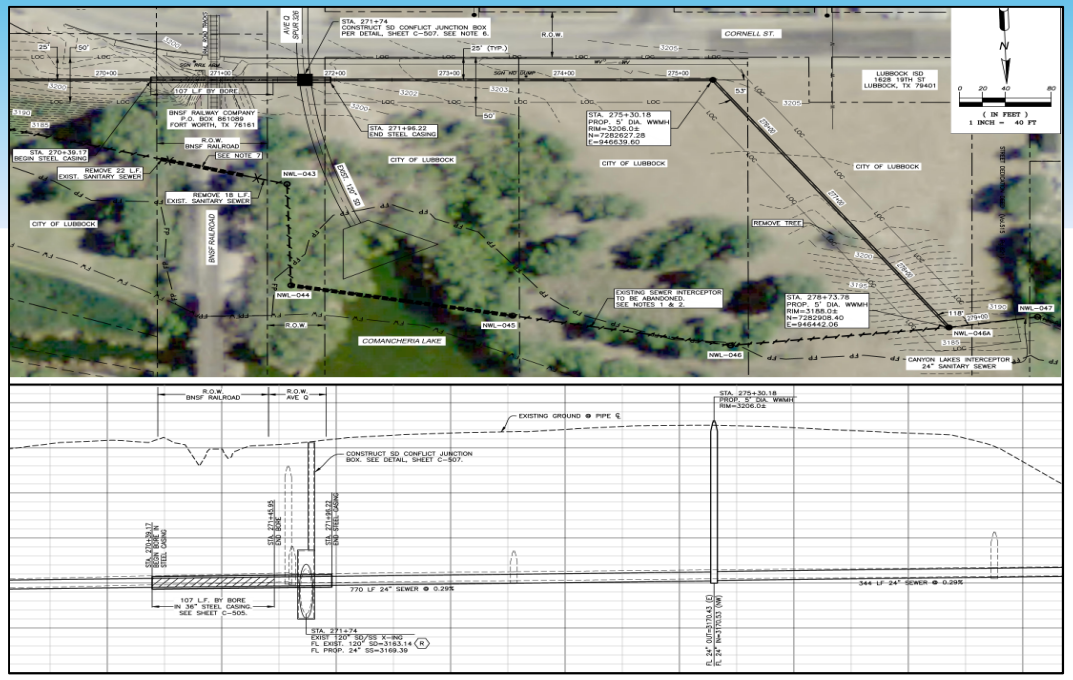
19 Road / RR / Creek Xings metallic pipe replacements



Heavy Clean / CCTV remaining segments

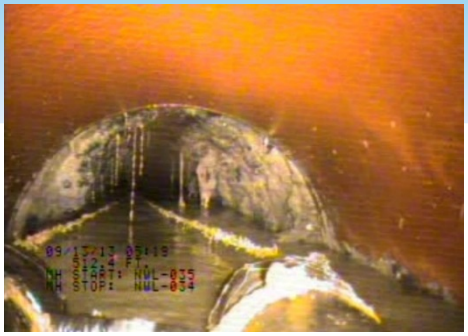
4,400 LF CIPP MH to MH

We found an opportunity to eliminate a siphon

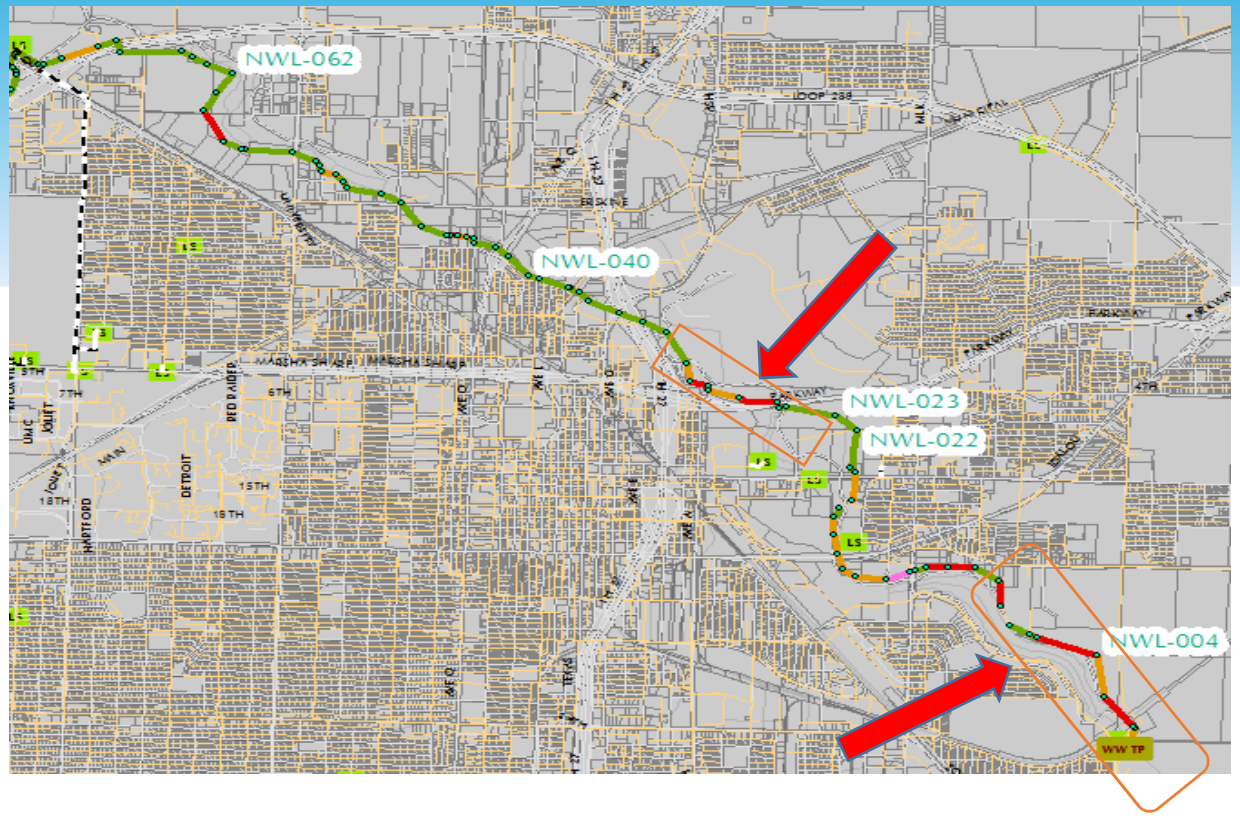


Construction uncovered a major pipe collapse

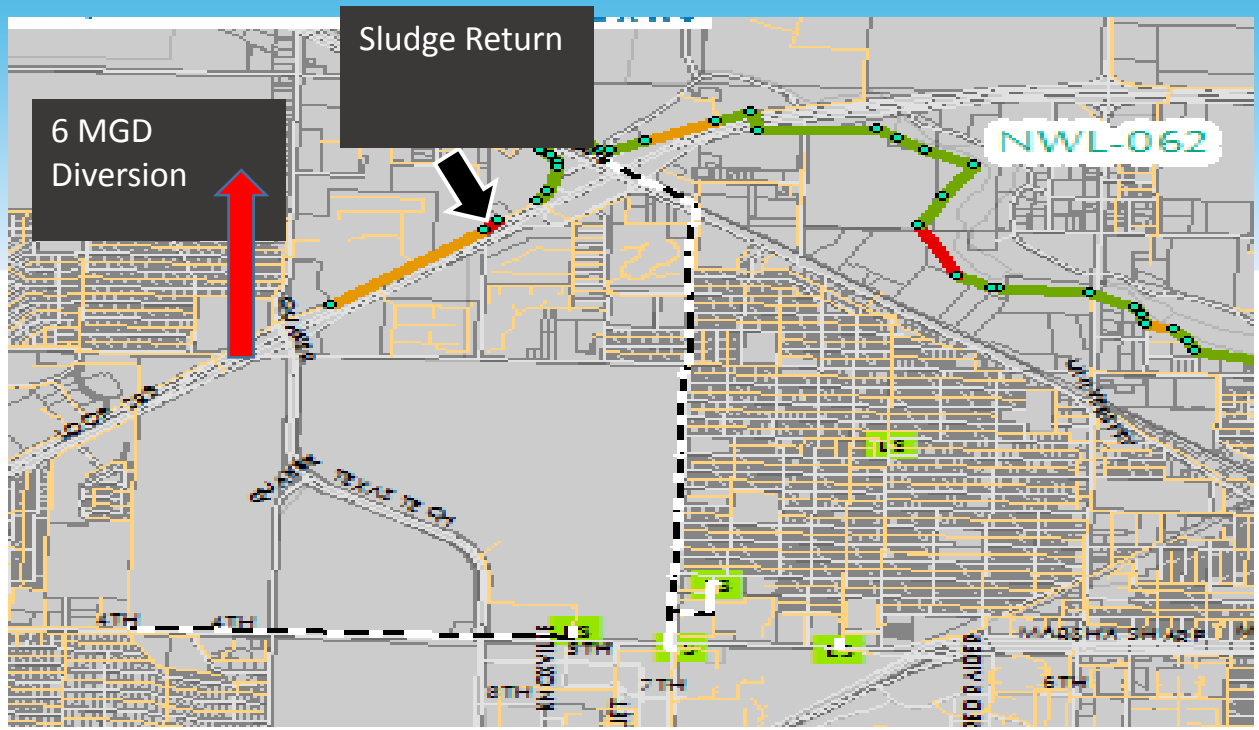
The second finding was deteriorated manholes



The third major diagnosis was an overall lack of capacity

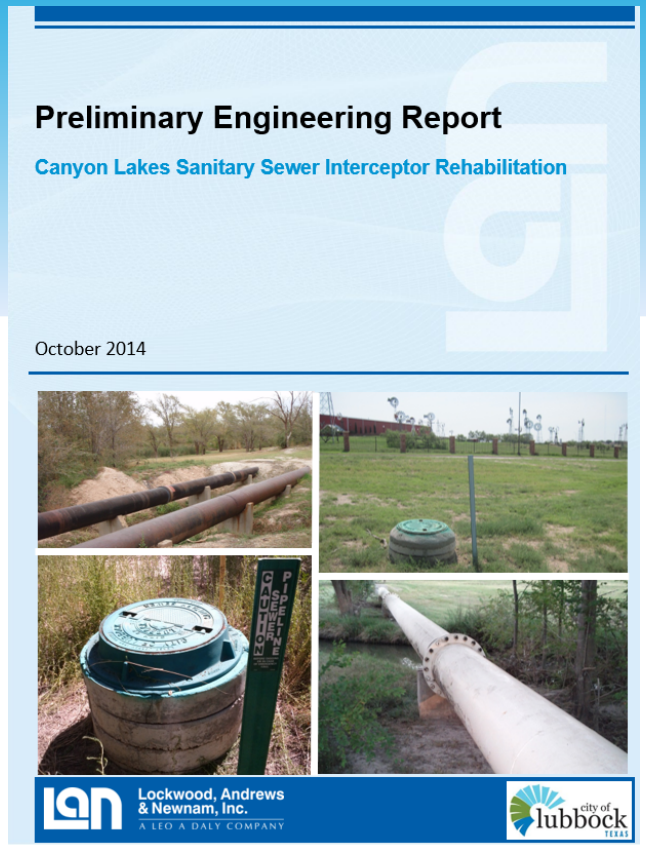


To address the additional capacity we identified a new WWTP flow diversion



Finally, our PER also addressed maintenance

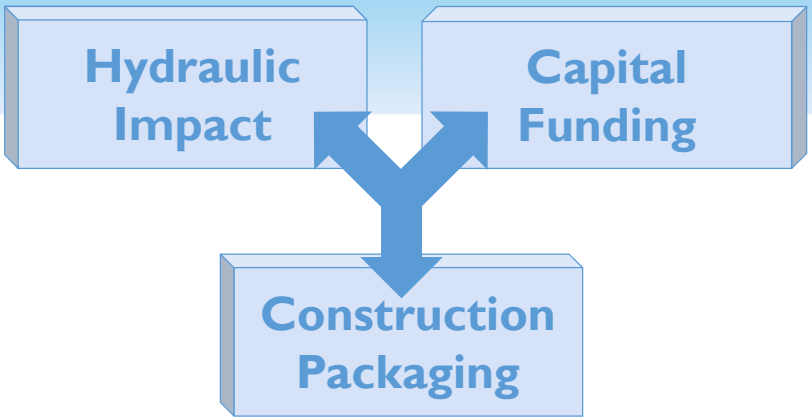
- Recommendations:
  - Improve manhole spacing
  - Provide manholes at all bends



The final solution included some impressive metrics

Auger Boring	12 bores / 2,000 LF
CIPP MH to MH (estimated)	4,400 LF
Open Cut	4,000 LF
Heavy Cleaning	6,000 LF
Aerial Crossings	8 segments / 1,100 LF
New Manhole	35 (Primarily to improve spacing)
Manhole Rehab	70

Balancing the work



Phasing the Work | Hydraulics

Goal -> Maximize impact early

- Phase 1 (FY16): Remove sources of blockage (new pipe)
- Phase 2 (FY17): Remove sources of blockage (cleaning)
- Phase 3 (FY17): Pipeline point repair and rehabilitation
- Phase 4 (FY18): Manhole rehabilitation

Phasing the Work | Funding

Goal -> Work within annual budgets

- Phase 1 (FY16): Replace metal carrier pipe
- Phase 2 (FY17): Clean heavy tuberculation
- Phase 3 (FY17): Pipeline point repair and rehabilitation
- Phase 4 (FY18): Manhole rehabilitation

Phasing the Work | Construction

Goal -> Minimize cost with packaging

- Phase 1 (FY16): Bored crossings of all roadways
- Phase 2 (FY17): Cleaning and CCTV assessment
- Phase 3 (FY17): Trenchless rehabilitation (CIPP)
- Phase 4 (FY18): Manhole rehabilitation

Approach Results

Parameter	Original (Replacement)	Proposed (Phased Rehab)	Reduction
Length of Improvements (LF)	43,600	12,100	72%
Land Disturbance (AC)	27	4	85%
Archeological Disturbance (AC)	22	3	86%
Construction Cost ($)	$ 18,500,000	$ 14,200,000	23%
Construction Duration (Days)	440	320	27%

TSPE South Plains 2015 Trailblazer Award

Current Project Status

Phase 1 (Metal Pipe | Road Crossings)

- In construction ($5,300,000 Contract Value)

Phase 2 (Cleaning | Assessment)

- Advertising for bid ($1,200,000 Engineer's OPCC)

Phase 3 (Pipeline Rehabilitation)

- In design
- Anticipated bid fall 2017 ($7,000,000 Engineer's OPCC)

Phase 4 (Manhole Rehabilitation | Construction)

- Anticipated bid ~fall 2017 ($1,000,000 Engineer's OPCC)