DEVELOPING A GIS APPLICATION TO SUPPORT PIPELINE DEWATERING ANALYSIS

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• ONE OF THE LARGEST RAW WATER SUPPLIERS IN NORTH TEXAS

• OWN AND OPERATE 4 RESERVOIRS

• MAINTAIN 22 MILES OF THE TRINITY RIVER FLOODWAY/FW LEVEE

• OWN AND OPERATE 150 MILES OF LARGE DIAMETER RAW WATER PIPELINE

• CONSTRUCTING AN ADDITIONAL 150 MILES OF LARGE DIAMETER RAW WATER PIPELINE IN PARTNERSHIP WITH DALLAS WATER UTILITIES
A TYPICAL DEWATERING SCENARIO BEGINS WITH ISOLATING THE PIPELINE BY CLOSING BUTTERFLY VALVES AND, WHERE APPLICABLE, DRAINING THE PIPELINE TO A RESERVOIR, THEN OPENING A NUMBER OF BLOW OFF VALVES TO DRAIN WATER.
PIPELINE FLUID LOSS ESTIMATOR TOOL
AKA PFL OR “DEWATERING” TOOL NEEDS ASSESSMENT

- REPORT WATER LOSS TO THE TEXAS WATER DEVELOPMENT BOARD
- ENHANCE VALVE MANIPULATION/DEWATERING Efforts
REQUIREMENTS

• ESTIMATE WATER LOSS TO REPORT BACK TO THE WATER DEVELOPMENT BOARD

• VISUALIZE WHERE WATER REMAINED IN PIPE AFTER A DEWATERING EXERCISE

• PROVIDE AN INTERFACE FOR TRWD PIPELINE OPERATORS TO VISUALIZE DIFFERENT VALVE MANIPULATION SCENARIOS
ESRI ARCMAP ADD-IN
TRANSITION TO WEB APPLICATION
### PIPELINE FLUID LOSS ESTIMATOR TOOL

**Pipe: CC**

- **Drained:** 1,283,254.50 gal
- **Remaining:** 7,536,826.97 gal

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PFL TOOL DEVELOPMENT
DATA REQUIREMENTS

- LINEAR REFERENCED PIPELINE ROUTE(S)
- LINEAR REFERENCED VALVES
- LINEAR REFERENCED ELEVATION POINTS
- ROW STATIONING/ROUTE(S)
BENEFITS

• MORE ACCURATE WATER LOSS REPORTING
• VISUALIZE DEWATERING SCENARIOS
• ESTIMATING WATER LOSS FROM PIPE FAILURES
LESSONS LEARNED: NEEDS ASSESSMENT

• ANALYSIS IS ONLY AS GOOD AS YOUR DATA

• AS EXPECTED, PERFORMANCE CAN BE SLOW WITH TOO MUCH DATA

• IDENTIFY QUESTIONS THAT WILL BE ANSWERED WITH THE TOOL
  • WHEN THE TOOL WAS ORIGINALLY DEVELOPED THE DATA WAS NOT DEVELOPED TO ANSWER THE RIGHT QUESTIONS AND HAD TO BE UPDATED
  • EACH PIPELINE WAS CONSIDERED A SEPARATE LINEAR REFERENCED MODEL, BUT WHEN WE BEGAN TRYING TO ANSWER QUESTIONS WITH THE TOOL WE RECOGNIZED THE NEED TO COMBINE ALL SECTIONS INTO ONE COHESIVE LINEAR REFERENCED SYSTEM

• KEEP YOUR AUDIENCE AND USERS IN MIND