



High Confidence Cross Bore Inspection Programs and Gas Utility Data Integration



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Cliff House
Cape Neddick, Maine

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What's the Problem

- Trenchless - does not “see” the potential pipe damage to existing lines
- Sewer utilities are unknown or unmarked, often excluded from 811 in most states
- All buried utilities are at risk – gas and electric have resulted in cross bore inspection programs.



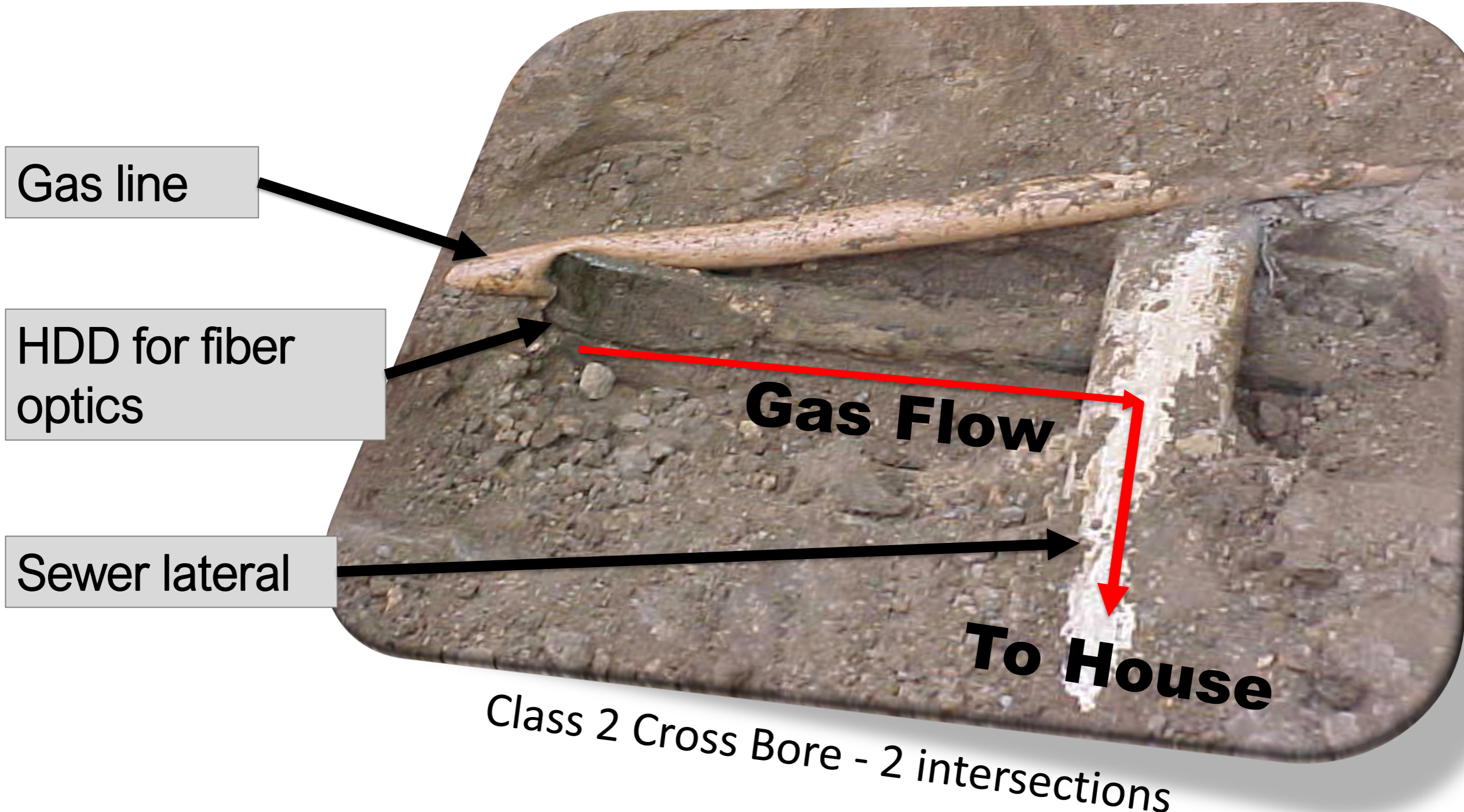
Cross Bores



Cross Bore Explosion, Texas



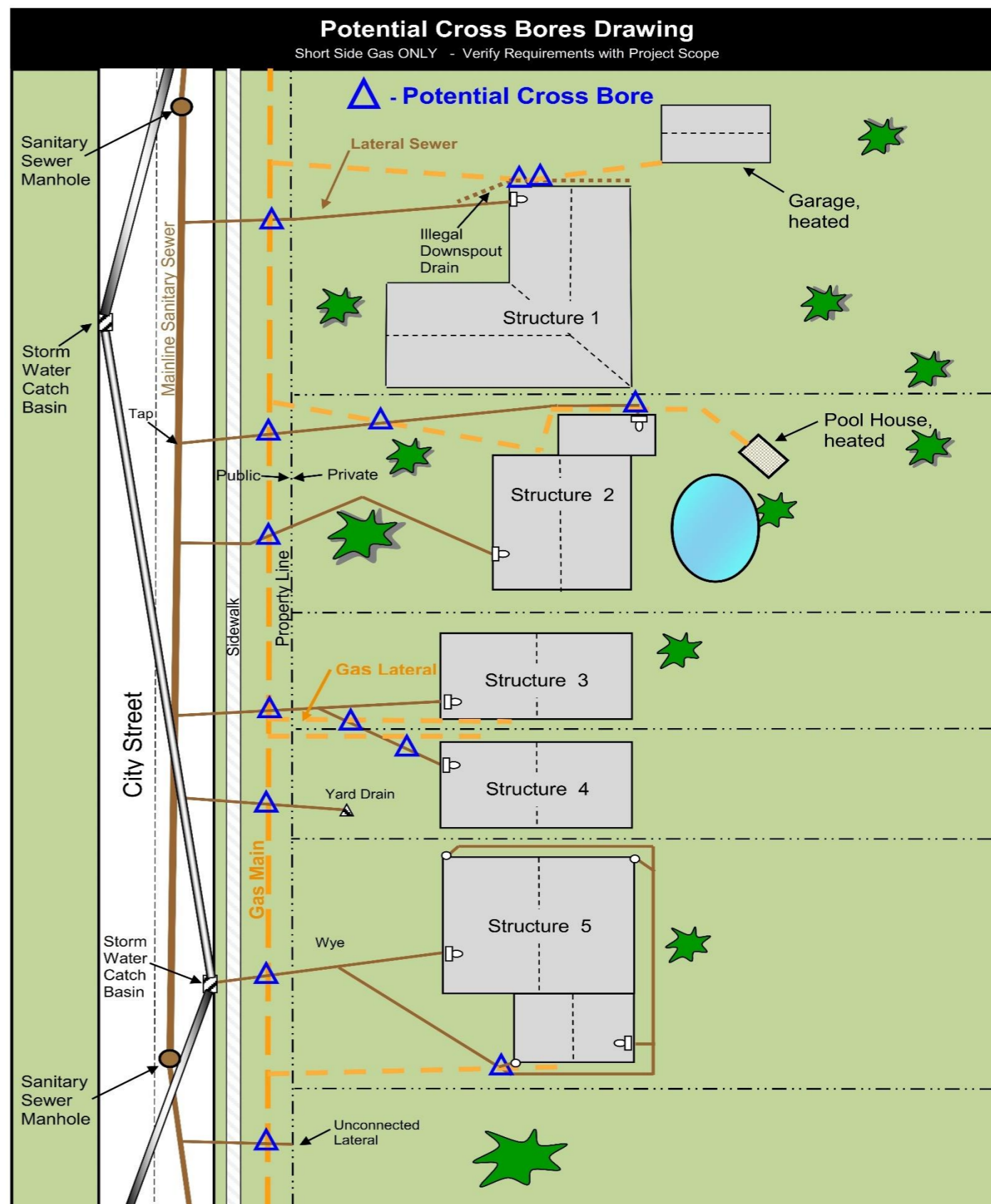
Cross Bore Explosion, Texas



Potential Cross Bores - Gas In Sewer (only)

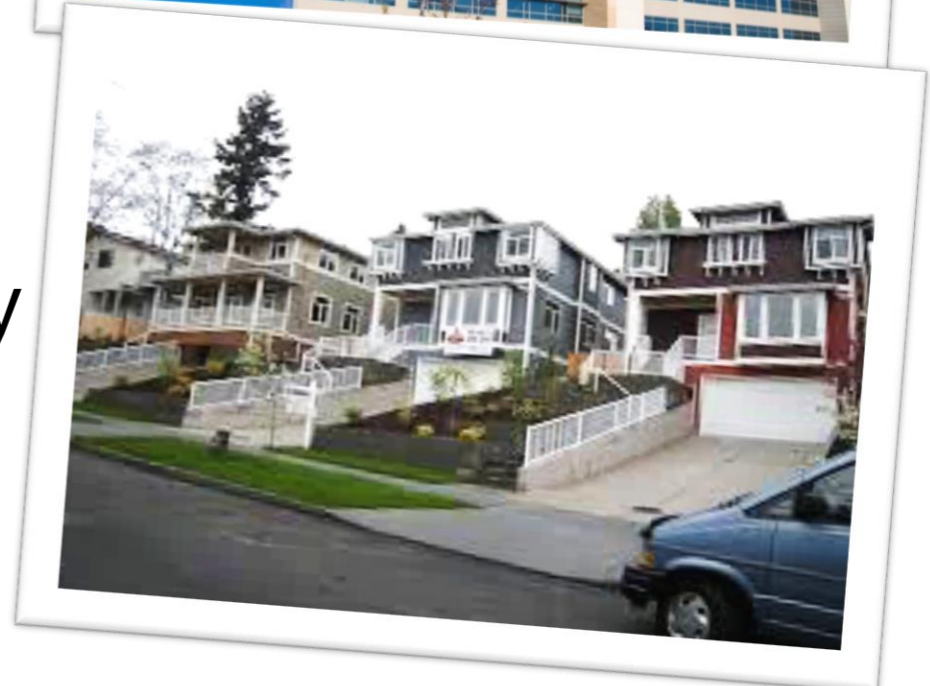
- Sanitary sewers
- Storm sewers
- Yard drains
- Gutter drains
- Cleanouts
- Offset cleanouts
- Branched laterals

Note: Excludes communications, electric & water potential cross bores



Cross Bore Risk, estimated

- 0.4 gas cross bores / mile of gas line installed with trenchless.
- Large projects: up to 3 per mile
- Small projects: 12 cross bores of 147 parcels
- Found at a Hospitals and Schools
- Most expensive cross bore explosion reported = \$30 million, 2 girls extensively burned





Quantifying Cross Bore Elimination for Gas

- Cross bore risk occurs with trenchless installations
- Approximately 80% of identified gas cross bores are of sewer laterals
- Number of gas/sewer cross bores => estimated >250,000 ²
 - No cross bore risk results from joint trench, open trench or inserted pipes (in most cases).

Note: total gas distribution pipeline main and services, U.S. 3.45 million miles ¹

¹ Compiled from U.S. Department of Transportation

² Extrapolated from average of numerous gas cross bore programs



Estimates of Costs, Gas Legacy and Gas New Construction

- New construction cross bore inspections, installed using trenchless=> 4 to 6.5% average of construction costs
 - Verifying large projects are lower cost
 - Verifying single services are higher cost
- Total gas distribution leaking pipe replacement is \$300 billion¹
- Legacy inspection costs are essentially the same order as new installation inspections
- Known non-trenchless installation can be eliminated from risk using utility records with high confidence.

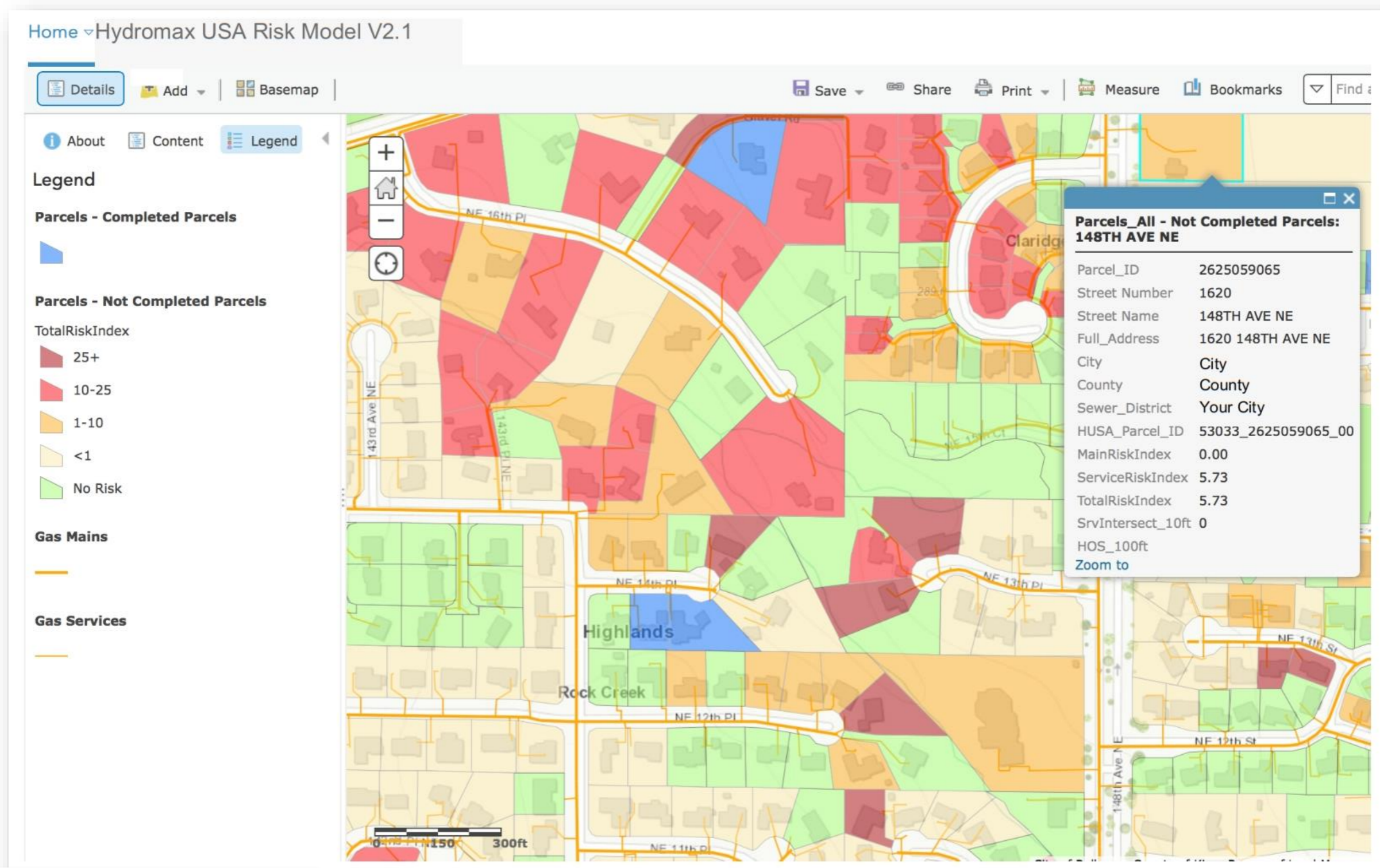
¹ *Underground Construction Magazine, Jan. 2018* - Using estimates from the American Gas Association and PHMSA data, the cost to replace leak-prone pipe in the United States is still greater than \$300 billion.



Benefits for Elimination of Cross Bore Risk

- Safer operations – system integrity is known
- Meets regulatory requirements
- Proactive efforts provide positive public perception
- Catastrophic incidents are expensive
 - injuries, damages and reputation loss
- Planned risk reduction programs are less disruptive and less expensive than reactive efforts

GIS Digital Data – Prioritize with Risk Analysis Data



[Click for Web Link](#)

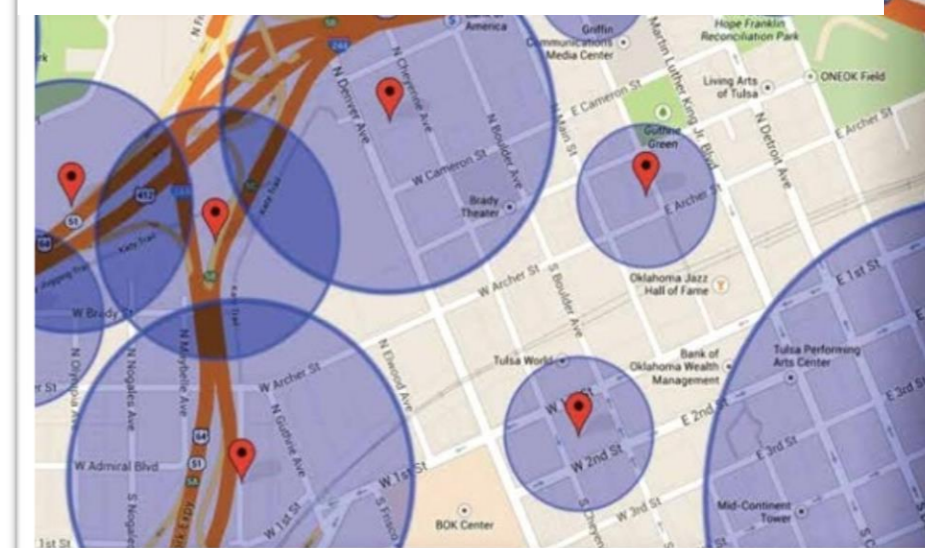
Future Data Integration – Track Installation of Gas Pipe Lines and the Materials

- **ASTM F2897 - 15a, Standard**
Specification for Tracking and Traceability Encoding System of Natural Gas Distribution Components (Pipe, Tubing, Fittings, Valves, and Appurtenances)
 - Track materials with GPS location, time, date
- **Record HDPE pipe Fusion**
 - temperatures, OQ operator and location
 - Create as-built drawings

HDPE Material & Tracking Barcode



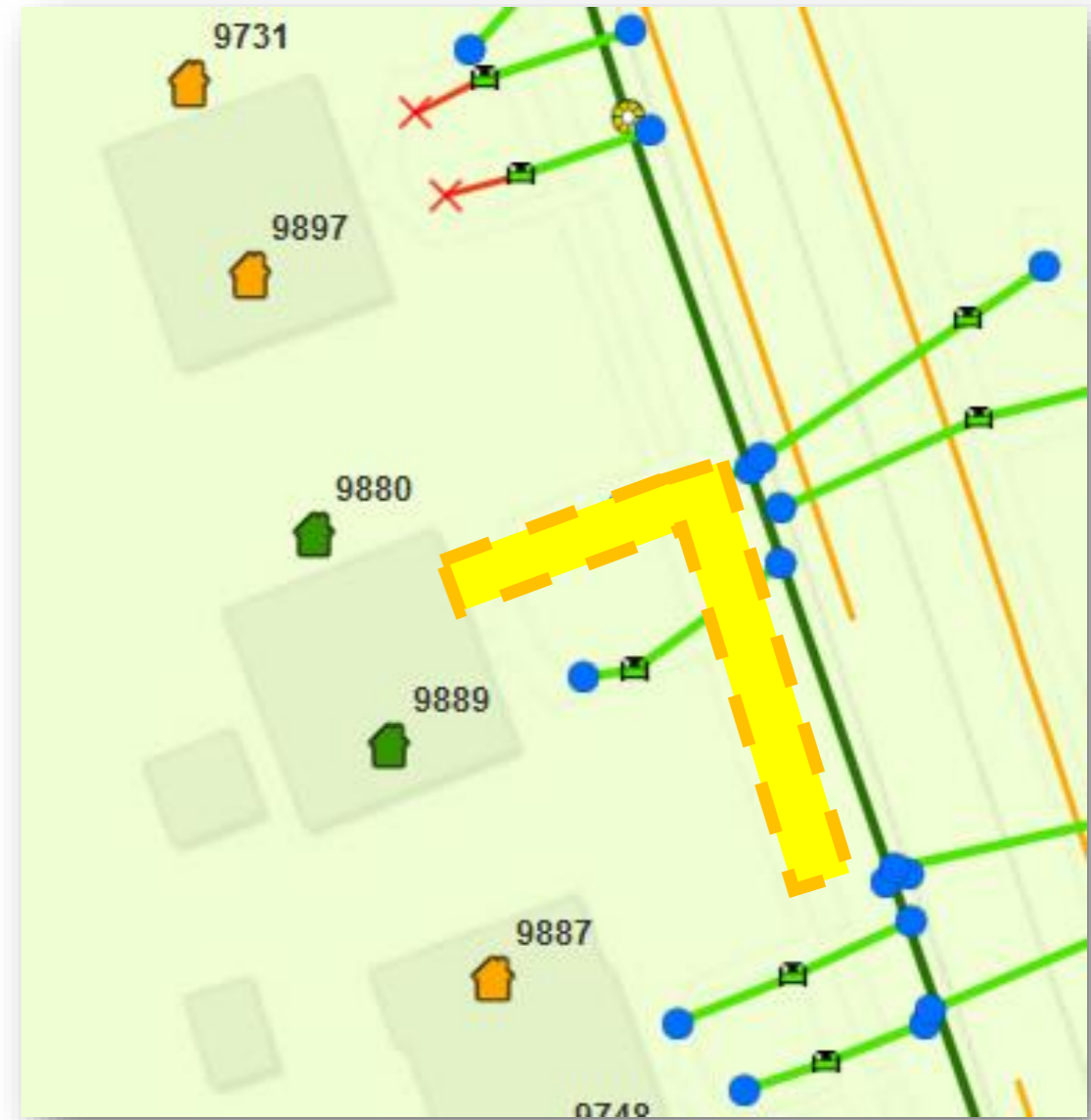
HDPE Fusion Record Locations – GPS



Courtesy McElroy Manufacturing, Inc.

Future Risk Reduction, Using Data for Integration & 811 Locates

- Integrate data from cross bore, leak survey, construction and other internal sources.
- 811 Locates can be generated with GIS maps
- Fortiss BC presented the average time to respond to a request was 18 minutes
- Reduces wait time, increases 811 effectiveness, lowers cost



Using Inspection and Installation Data Across Enterprise

- Digital and geo-referenced data (GIS) increases productivity and safety, with faster updates resulting in accurate info.
- Digital data is collected in the field for all asset changes, inspection and maintenance – GIS Maps
- QAQC capability is enhanced
- GIS information served to design, invoicing, maintenance and installation teams for more efficient operations.
- Identify bad products for replacement with geo-referencing.
- Better long range planning for the enterprise.



Thank you!

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