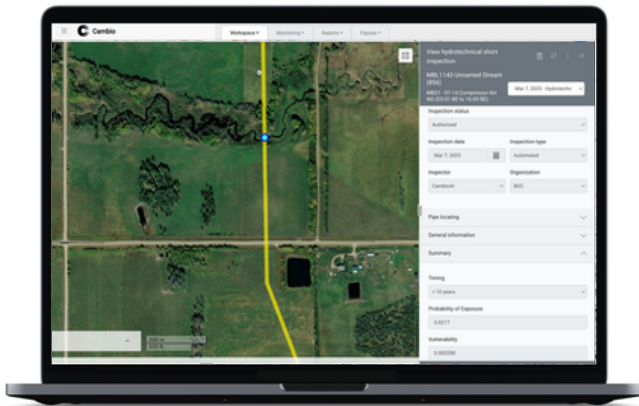


**CAMBIO™ WATER
CROSSING POF**



**Identify the pipeline crossings that matter
and confidently deprioritize the rest.**

Cambio™ Water Crossing PoF is a machine learning–based service that predicts probability of failure (PoF), exposure likelihood, and vulnerability at pipeline water crossings.



“We achieved in a few weeks and at a small fraction of the cost what would otherwise have taken a decade and well over a million dollars using traditional inspection approaches.”

Esbern Hansen, P.Eng., Shell Canada

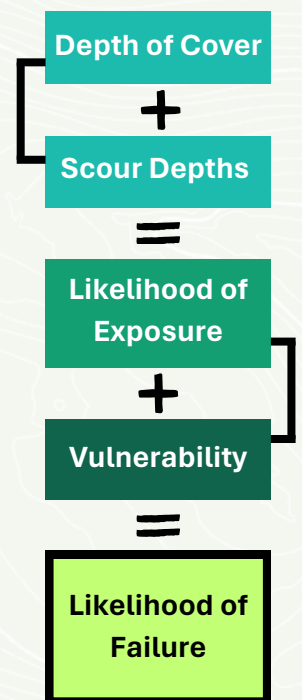
**FROM FIELD INSPECTIONS TO
SCALABLE RISK SCREENING**

Watercourse hazard has traditionally been assessed through site visits. But it’s only about 4% of sites that represent more than 90% of watercourse hazard exposure.

Our probabilistic machine learning techniques quantify uncertainty in predictions and allow screening conservatism to align with organizational risk tolerance. The model integrates a wide range of inputs, including:

- Watershed characteristics (area, hydrology, soils, climate)
- Stream metrics (Strahler order, gradient, flood frequency)
- Pipeline attributes (diameter, wall thickness, material, age, MOP)

Cambio Water Crossing PoF applies supervised machine learning models trained on over 33,000 field inspections across ~20,000 watercourse crossings across North America.





SYSTEM-LEVEL SCREENING

Prioritize crossings for inspection within large inventories

Screen uninspected, remote, or data-limited crossings

Identify high-risk crossings before field deployment

Standardize screening across regions and operating units

PROGRAM OPTIMIZATION

Optimize inspection frequency and budget allocation

Adjust screening conservatism based on organizational risk tolerance

Support risk-based integrity planning for water crossings

Track prioritized crossings in Cambio for ongoing monitoring

DELIVERABLES DESIGNED FOR OPERATIONS

Results are integrated into Cambio to support inspection planning and ongoing monitoring.

Prioritized water crossing assessments with predicted PoF categories for individual crossings

Component-level indicators with each assessment (exposure likelihood, estimated depth of cover, vulnerability drivers)

Why teams choose Cambio Water Crossing PoF

Scalable Screening at System Scale

Up to 90% Reduction in Field Inspection Costs

Physically Grounded, Interpretable Models

Earth science intelligence for building and operating resilient infrastructure

