

# 1 Problem

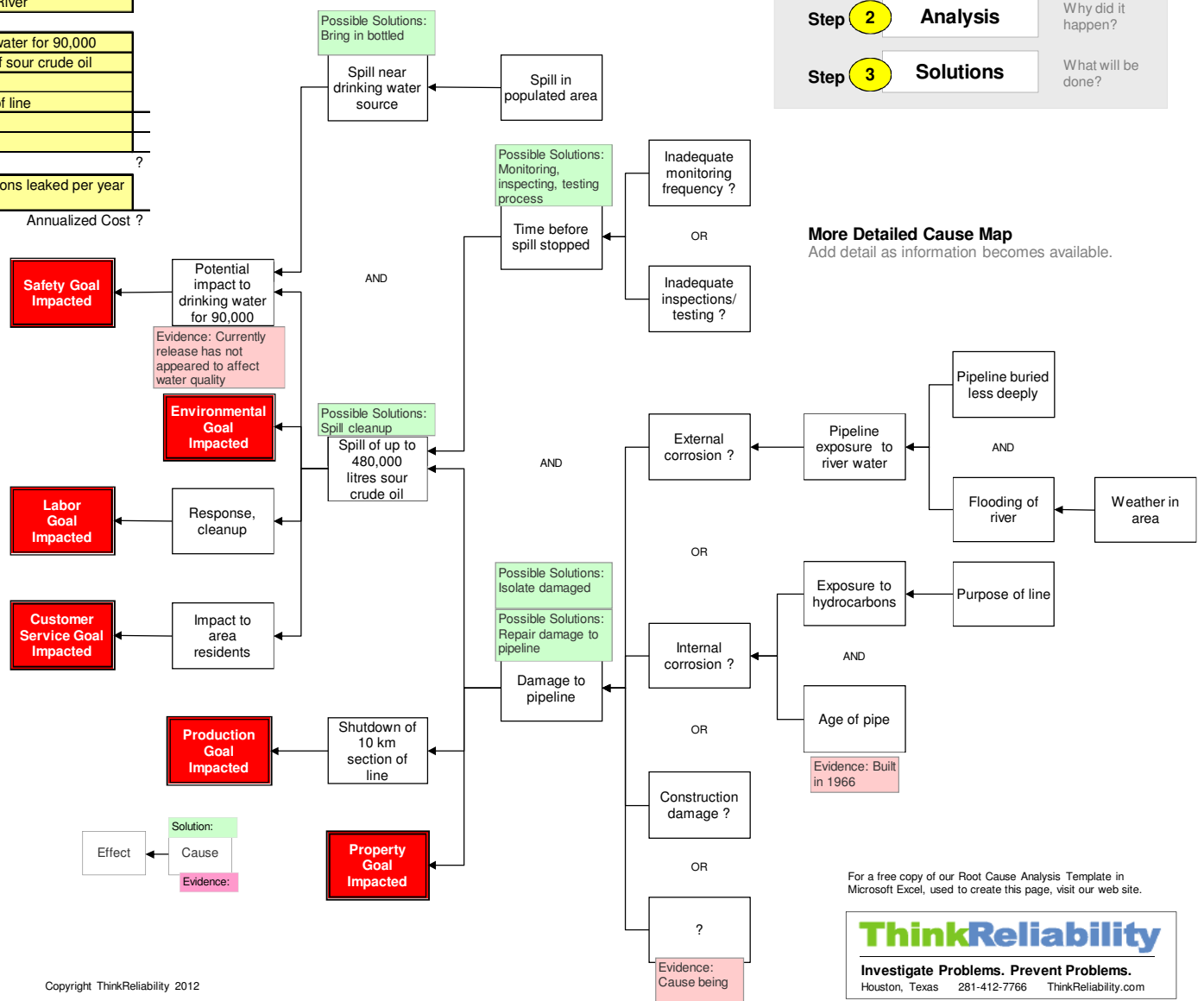
<b>What</b>	Problem(s)	Oil spill, pipeline damage
<b>When</b>	Date	June 7, 2012
	Time	8:40 pm (notification)
	Different, unusual, unique	River crossings prone to pipeline breaks
<b>Where</b>	State, city	Alberta, Canada
	Facility, site	Rangeland South pipeline
	Task being performed	Pipeline crossing Red Deer River
<b>Impact to the Goals</b>		
	<b>Safety</b>	Potential impact to drinking water for 90,000
	<b>Environmental</b>	Spill of up to 480,000 litres of sour crude oil
	<b>Customer Service</b>	Impact to area residents
	<b>Production-Schedule</b>	Shutdown of 10 km section of line
	<b>Property, Equip, Mtls</b>	Damage to pipeline
	<b>Labor, Time</b>	Response, cleanup
	Frequency	3.4 million litres of hydrocarbons leaked per year since 2005
	Annualized Cost ?	

# PIPELINE SPILL

## Leak in Alberta threatens drinking water

"We don't believe the release poses any potential threat to water quality."  
- Vice President of Crude Oil Operations

### Cause Map



Cause Mapping is a Root Cause Analysis method that captures basic cause-and-effect relationships supported with evidence.

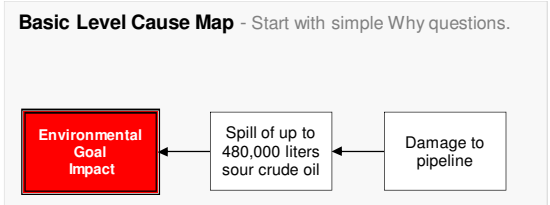
### CAUSE MAPPING

Problem Solving • Incident Investigation • Root Cause Analysis

- Step 1 Problem** - What's the Problem?
- Step 2 Analysis** - Why did it happen?
- Step 3 Solutions** - What will be done?

**More Detailed Cause Map**  
Add detail as information becomes available.

# 2 Analysis



# 3 Solutions

No.	Action Item	Cause
1	Bring in bottled water	Spill near drinking water source
2	Monitoring, inspecting, testing process	Time before spill stopped
3	Spill cleanup	Spill of up to 480,000 litres sour crude oil
4	Isolate damaged area with valves	Damage to pipeline
5	Repair damage to pipeline	

For a free copy of our Root Cause Analysis Template in Microsoft Excel, used to create this page, visit our web site.

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