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Responsive,
Trusted



**INSTALLATION OF A DUAL PHASE EXTRACTION
SYSTEM IN A RESIDENTIAL NEIGHBORHOOD**

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SEACOR
ENVIRONMENTAL INC.

Background

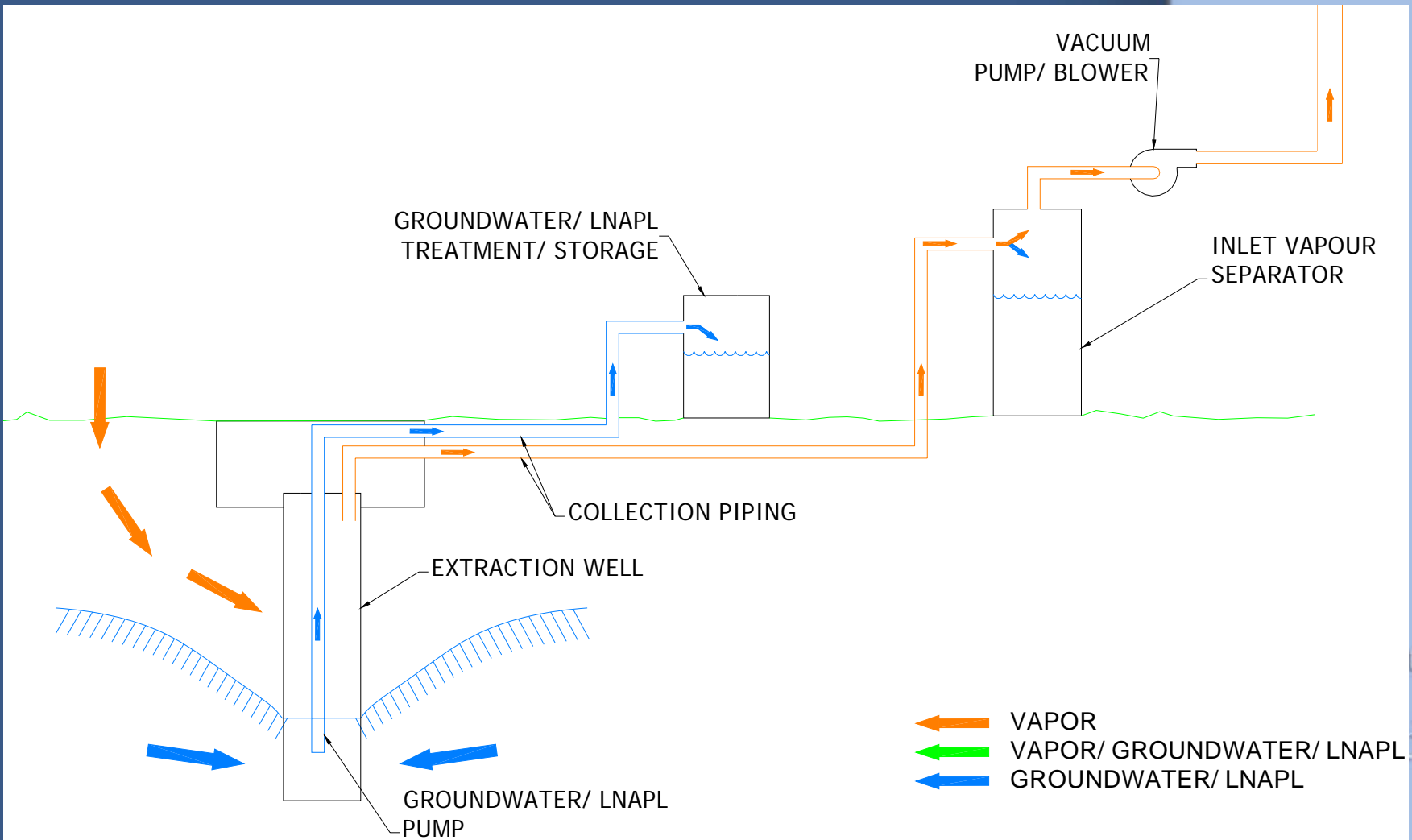
- Service Station since 1960's
- Gasoline with benzene being the driver
- Plume extended 150 m off-site
- Below a street, avenue and laneway
- Below residential properties and commercial businesses

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Conditions

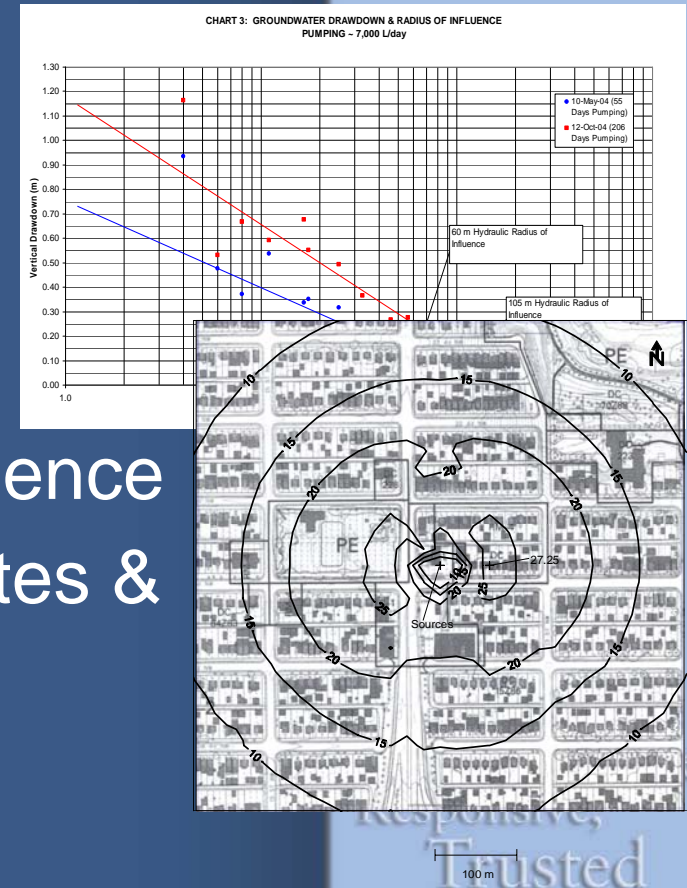
- 0 – 3 m; Silty Clay
- 3 m – 12 m; Silty Sand
- Groundwater at 6.5 m to 7.5 m
- Unconfined
- $k = 3 \times 10^{-6}$ m/sec

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Design

- Pilot testing
- Formation air flow
- Applied vacuum
- Pneumatic & hydraulic influence
- Groundwater production rates & water treatment chemistry
- Air emissions chemistry & dispersion modeling



Construction Tender

- General Contractor Requirements
- Scope Definition
- Detailed Schedule
- Change Orders
- QA/QC



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Process Equipment

- A rotary lobe blower
- Downhole pneumatic pumps
- Air sparge tank with granular activated carbon backup
- An air emissions stack
- Two heated & insulated buildings



Distribution Piping

- Compressed Air Piping - Kitec
- Vapour Piping - HDPE
- Groundwater Piping – HDPE



Electrofusion



Butt fusion

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Construction Activity

- Phase 1
 - 100 mm Extraction wells (39)
 - Utility, Process & Treatment equipment (2 bldgs & 1 AST)
 - On-site distribution piping
- Phase 2 & 3
 - Off-site distribution along streets, boulevards and laneway

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Trenching

- 400 m of open trench to 1.2 m
- 50 m of directional drilling
 - Street crossing
 - Tree root sensitivity



Insulating

- Heat-trace, styrofoam & spray foam insulation
- Cellular concrete insulation “Cematrix™ CMI-475”
- www.cematrix.com



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Pipe Integrity

- Pressure applied to Kitec and HDPE pipes
- Conducted after the trenches were backfilled
- Identified some fittings that required tightening or replacement

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Summary

- Key Factors to Success:
 - Communication – client kept residents & businesses in the loop, readily available
 - Design – thorough plan & specifications based on pilot data
 - Tender Package – defines expectations, materials
 - QA/QC – monitoring/inspection



Adaptive,
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Helpful Tips

- Phase the work
- Develop contingency plans
- Construction boundaries - safety

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