

Tightness Testing Tanks

Non-Volumetric

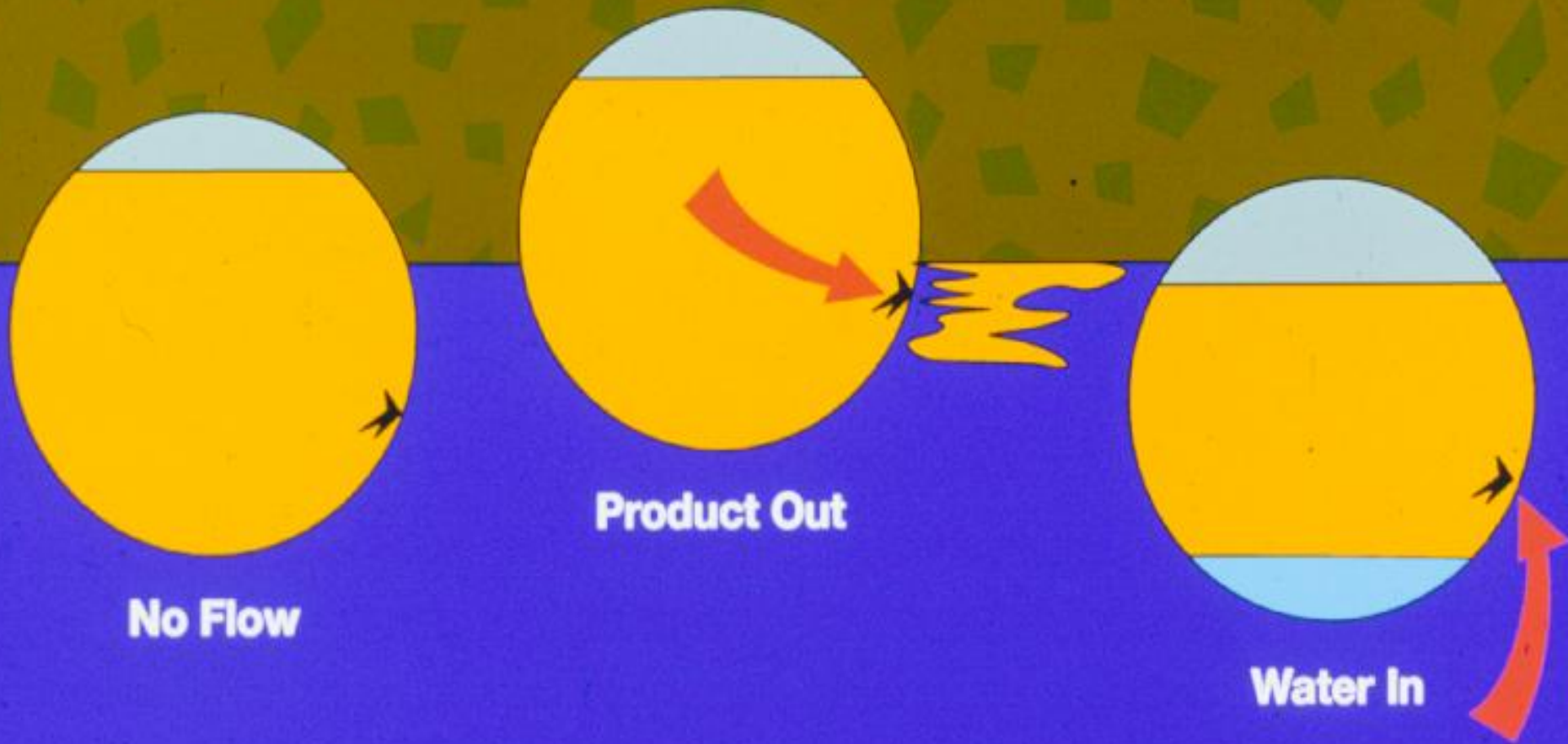
2 Styles of Non Volumetric

- 1) Mass Measurement- Alert
- 2) Ultrasonic- US Test
- Both require a separate Ullage Test

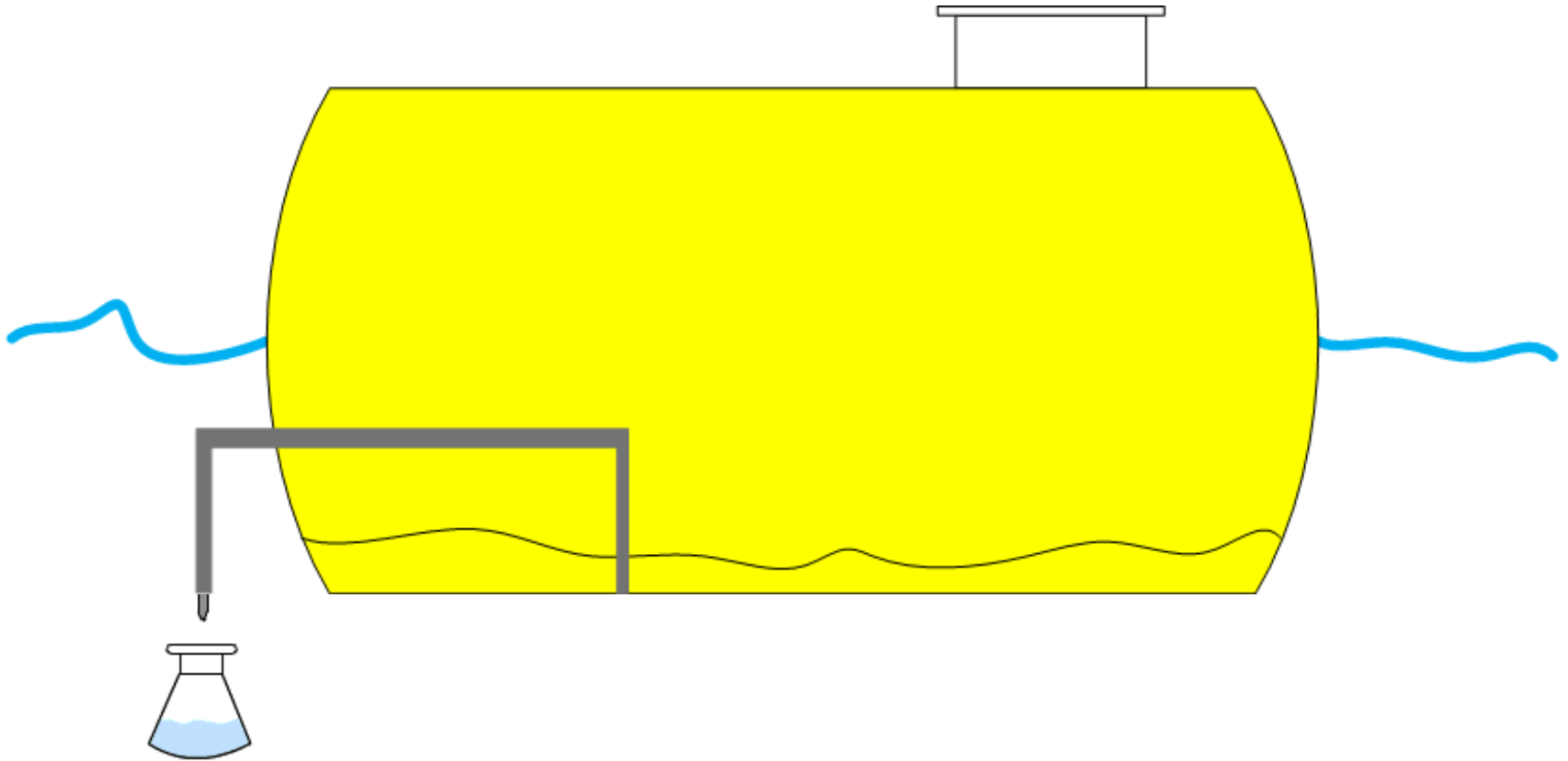
Tank Testing: Key Issues

- Water Levels around tanks
- Temperature
- Alcohol Based Fuels
- Tank vs. Tank System

Problem: *Ground Water*

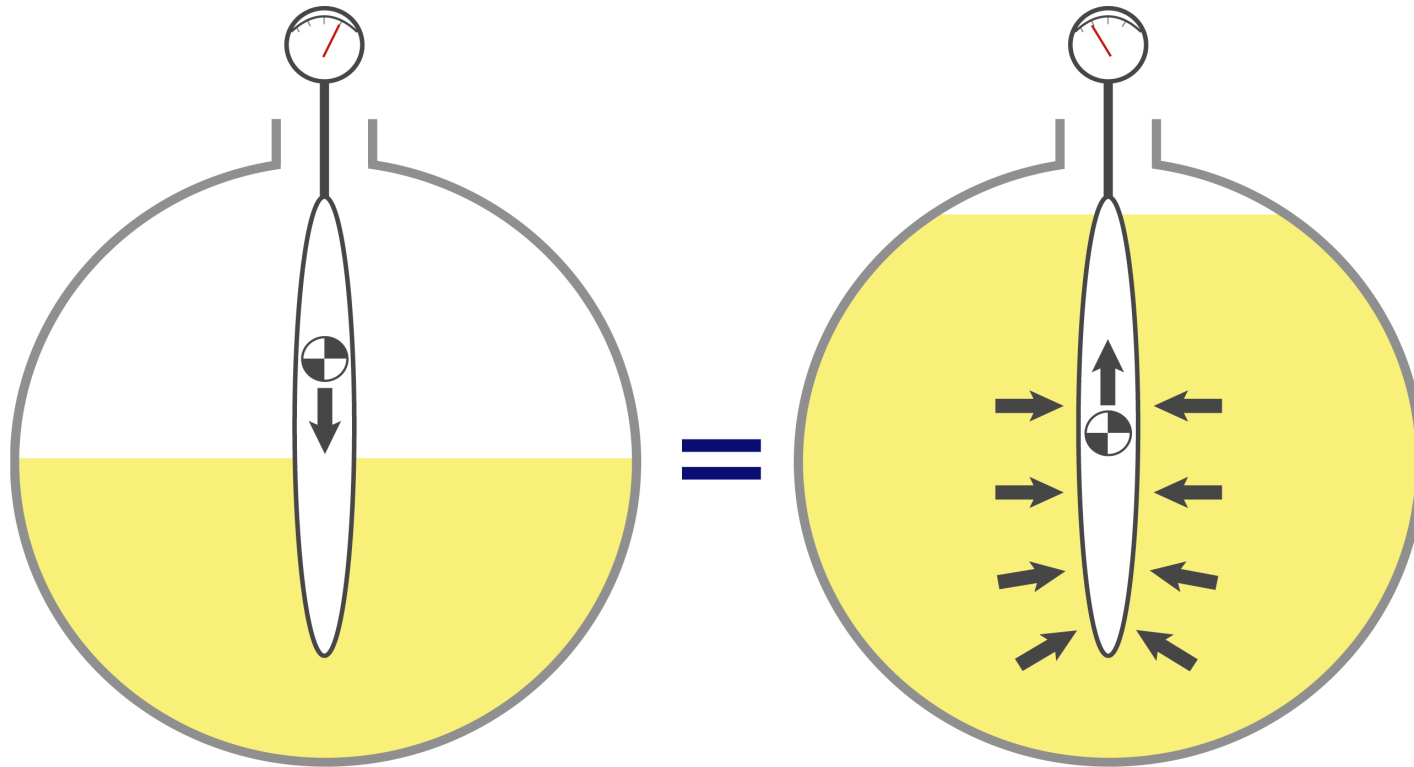


A high water table will equalize or reverse the leak



Alert Technologies

A probe is suspended in the tank and exposed to the entire coulomb of fluid in the tank thus becoming a mass sensor based on Archimedes's Principle

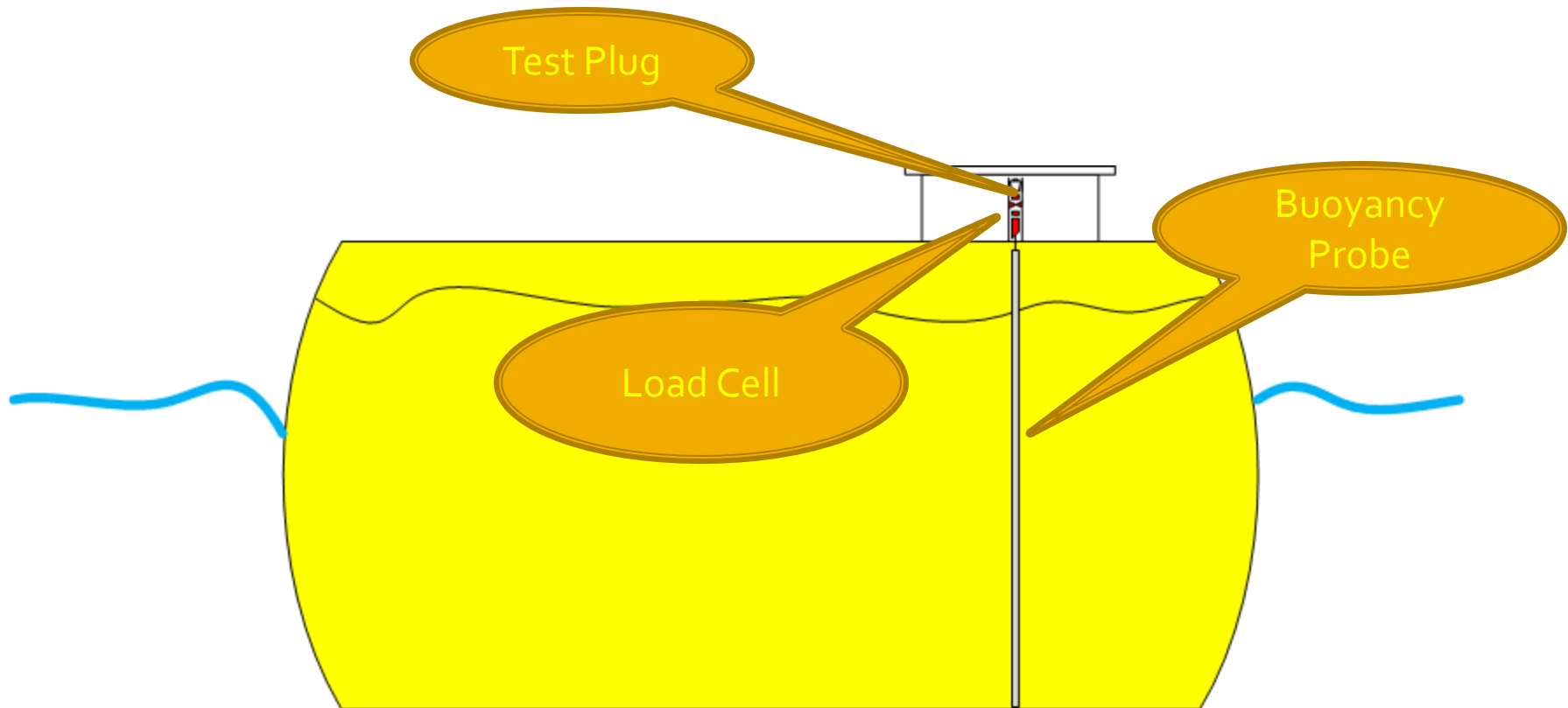


Gravitational Force
of the weight of the probe
(Downward)

Buoyancy Force
on the probe by the displaced fluid
(Upward)

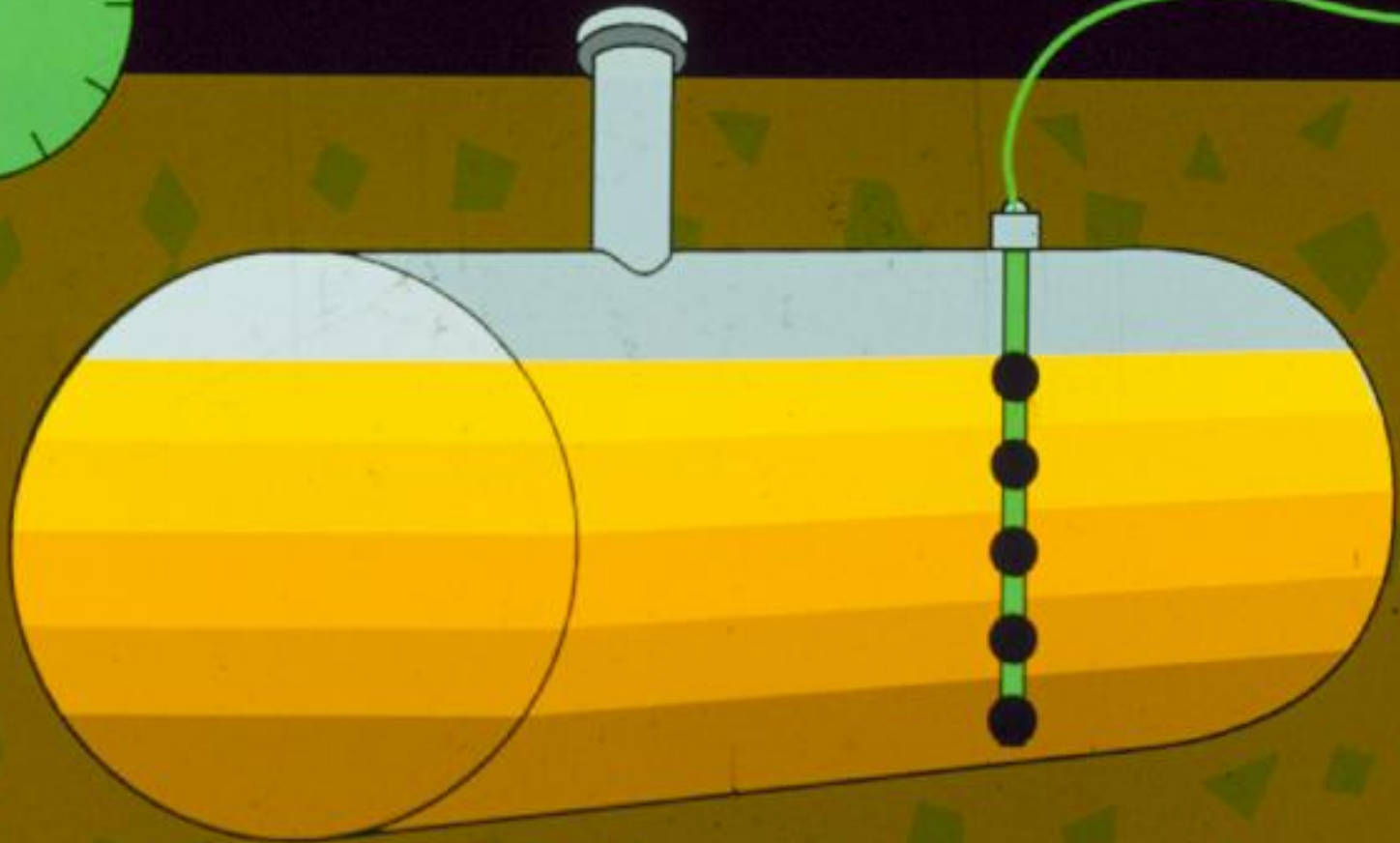
ALERT Technologies

Bypassing the water table issue by
pressurizing the tank during an underfill test, thus
producing an underfill/overflow test



Problem: *Temperature*

Solution: *Wait for temperature stratification*



Tank Test -Temperature

- More Volume delivered prior to test, will affect both Ultrasonic (US TEST) and Magnetostrictive (ATG) probes
- Will take longer to establish trend
- No Affect for MASS Measurement style probe (Alert)

Alcohol Based Fuels

- Phase Separation NOT SEEN by Floats
- Ultrasonic Probes may miss Water Ingress unless test runs long enough
- When does water show up
- Where water is present in tank bed, stick regularly

Product Only



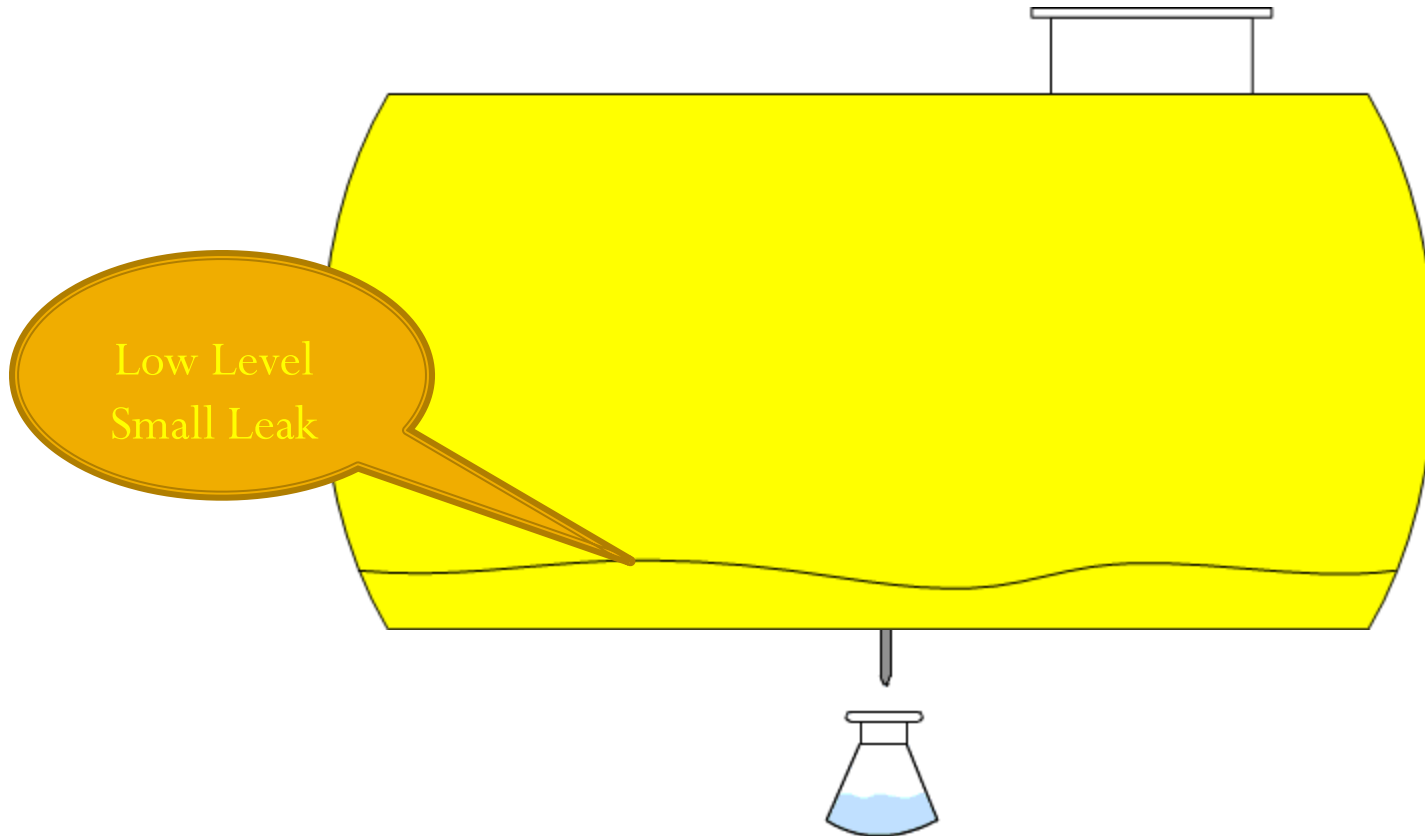
Phase Separated



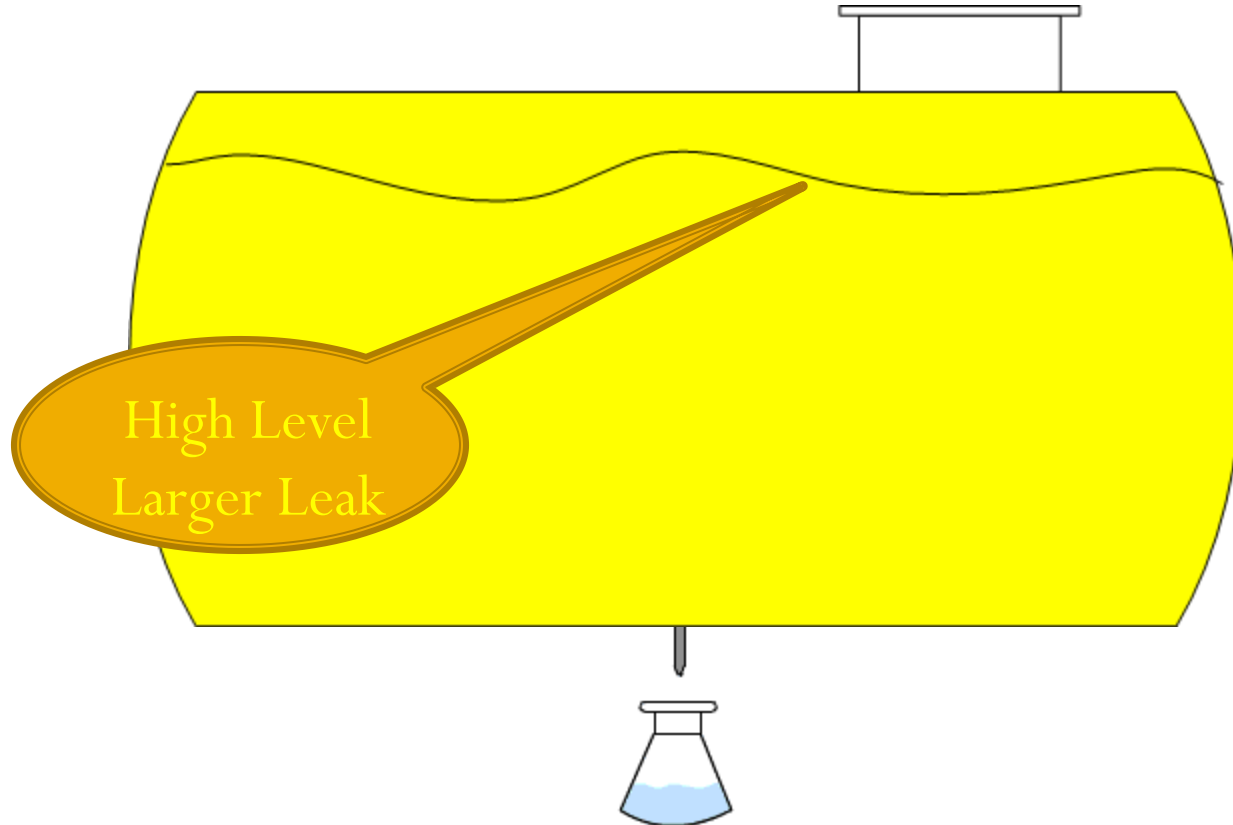
Water Only



**In reality a leak requires a differential pressure.
The more the pressure the larger the leak.**



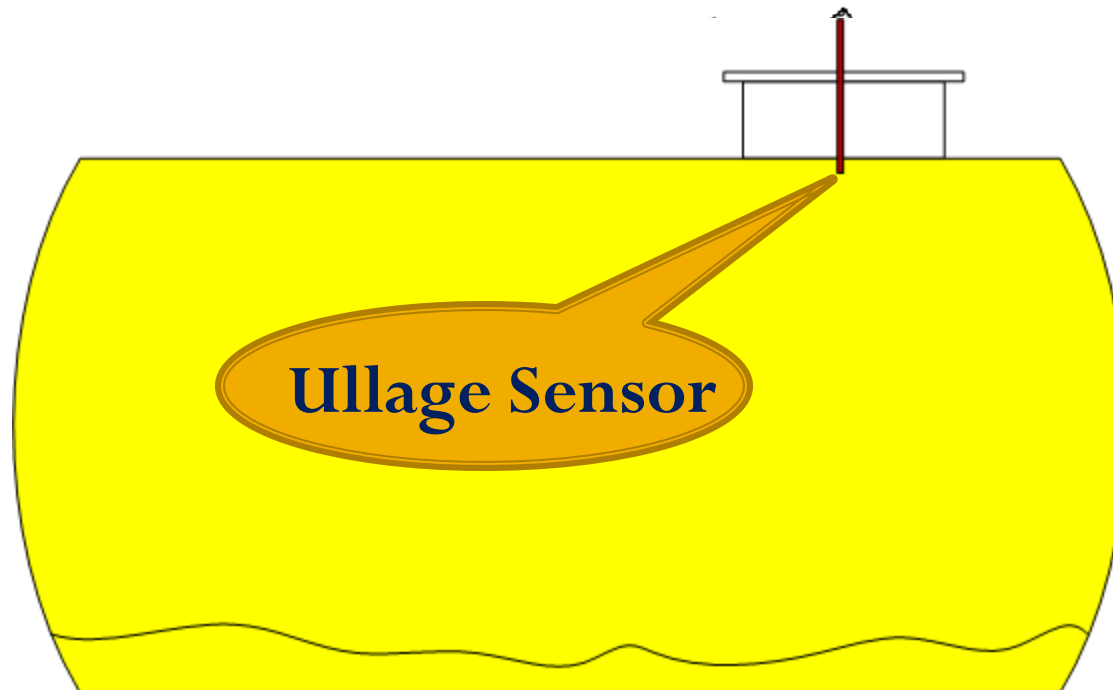
More pressure differential equals a larger leak



The Ullage leak

Pressure or vacuum is applied to the tank
a leak is heard and or measured

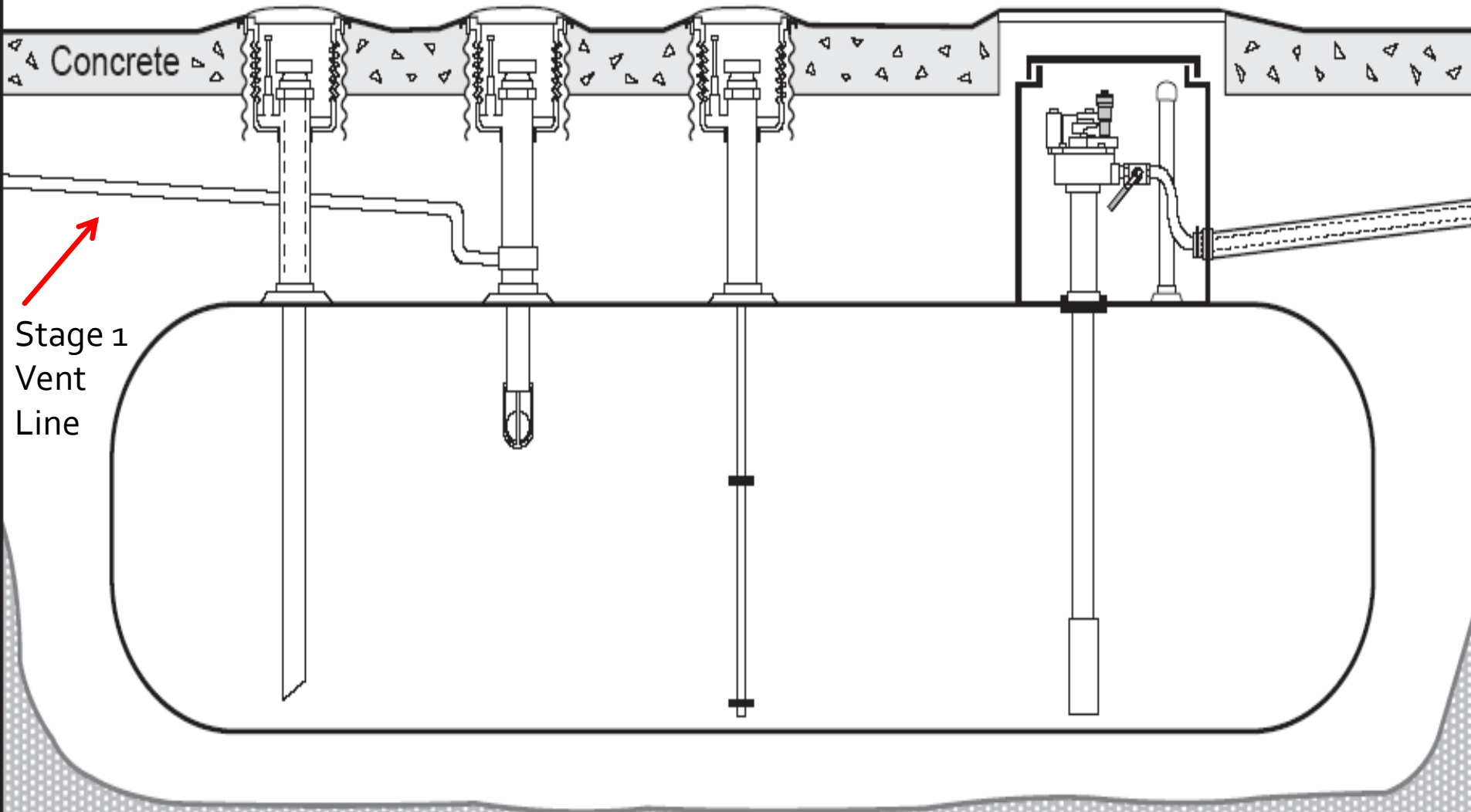
As long as ground water is known to be below the
liquid level in tank



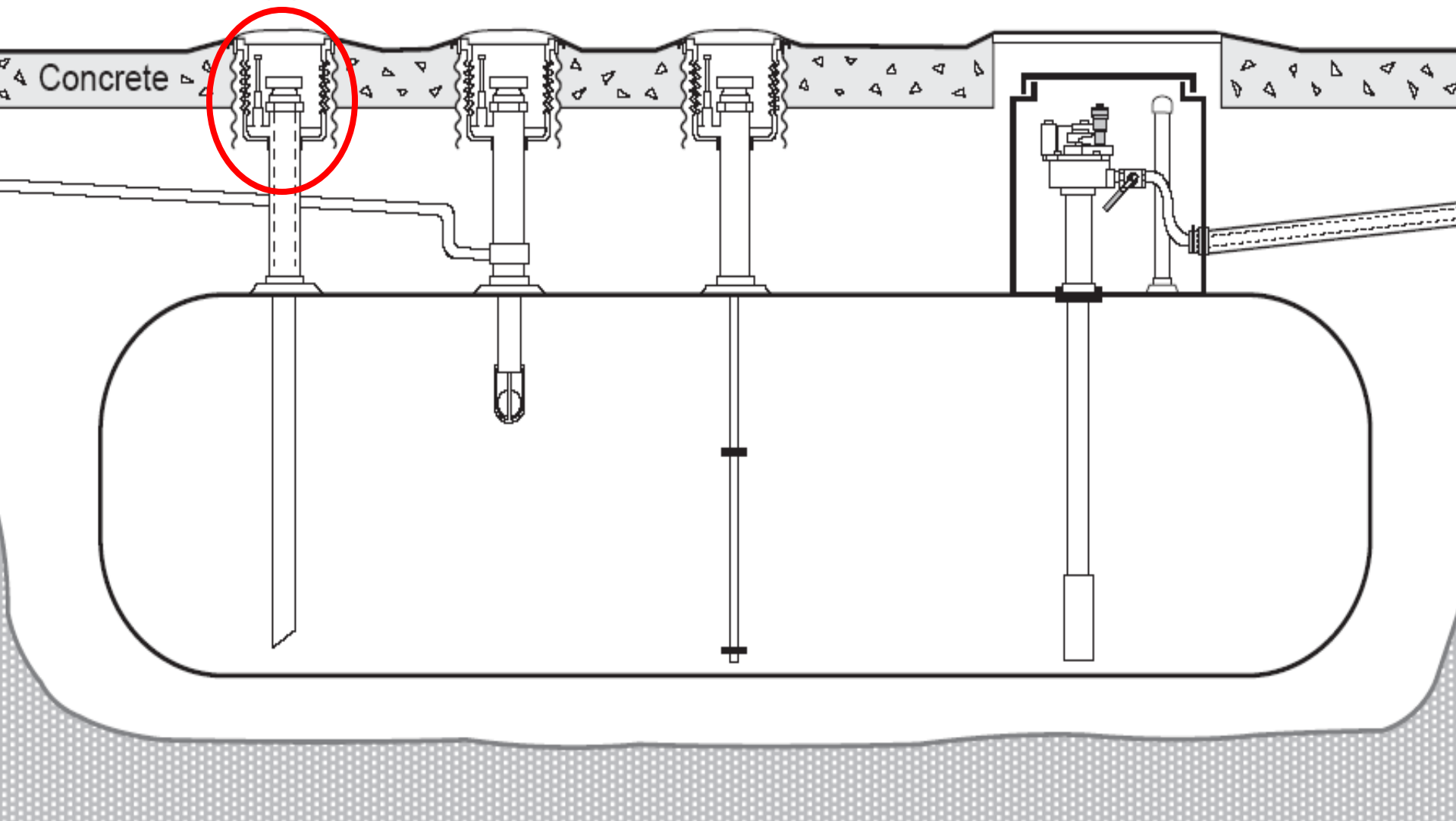
**ATG Test's The Tank with fluid only
VS.**

ULLAGE Test ALL COMPONENTS

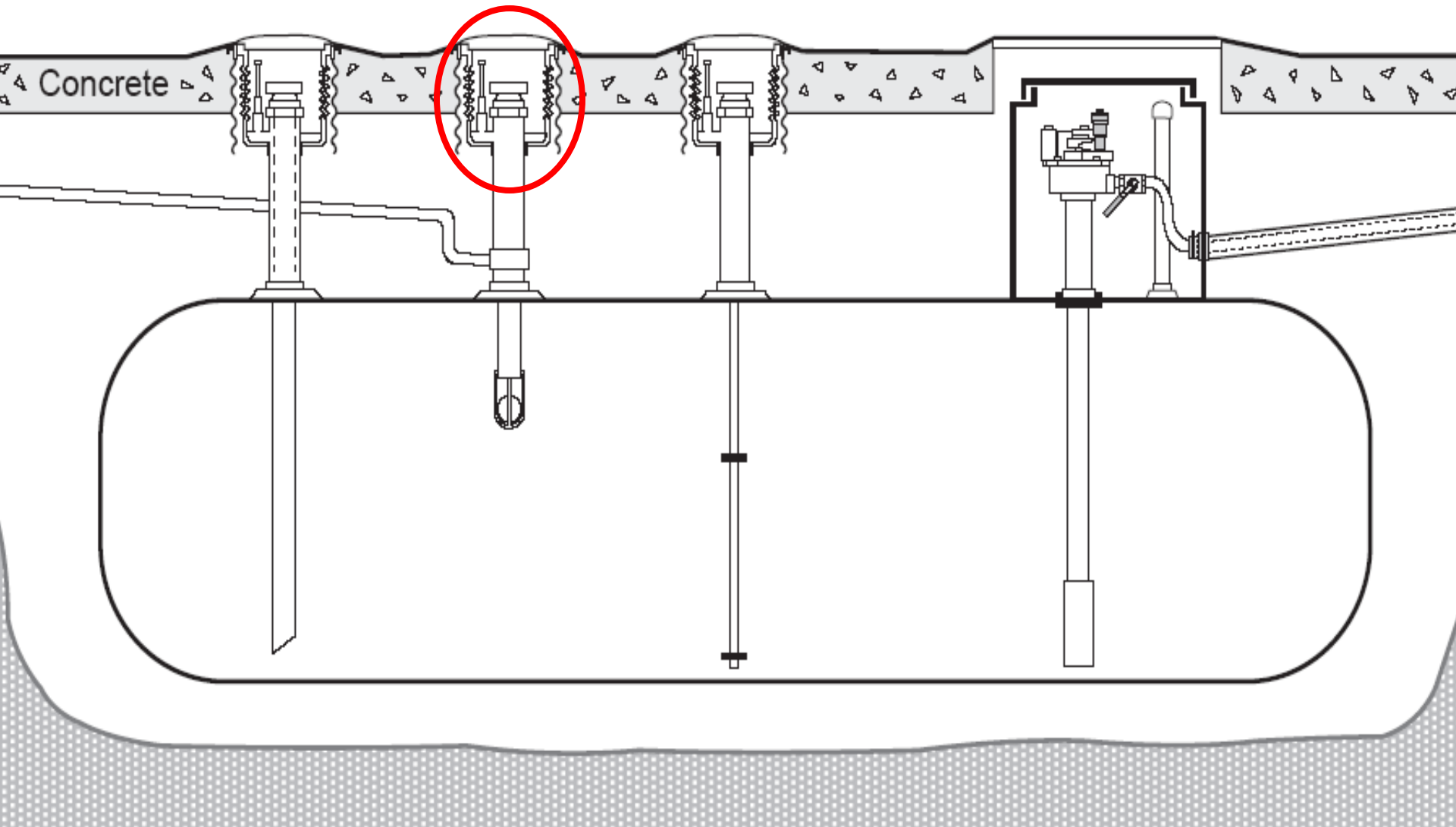
TANK SYSTEM- Not Just Tank



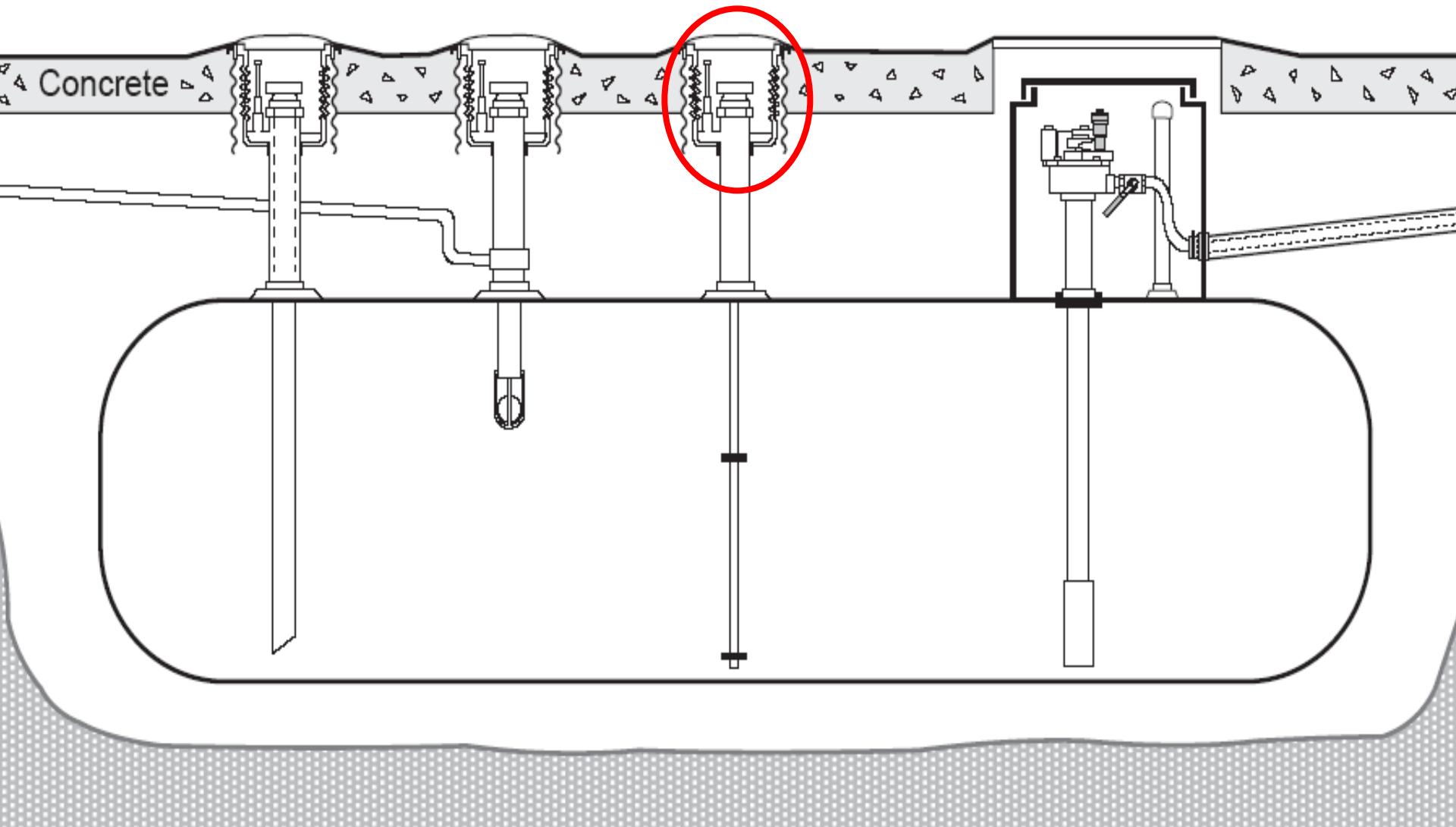
Fill
Riser

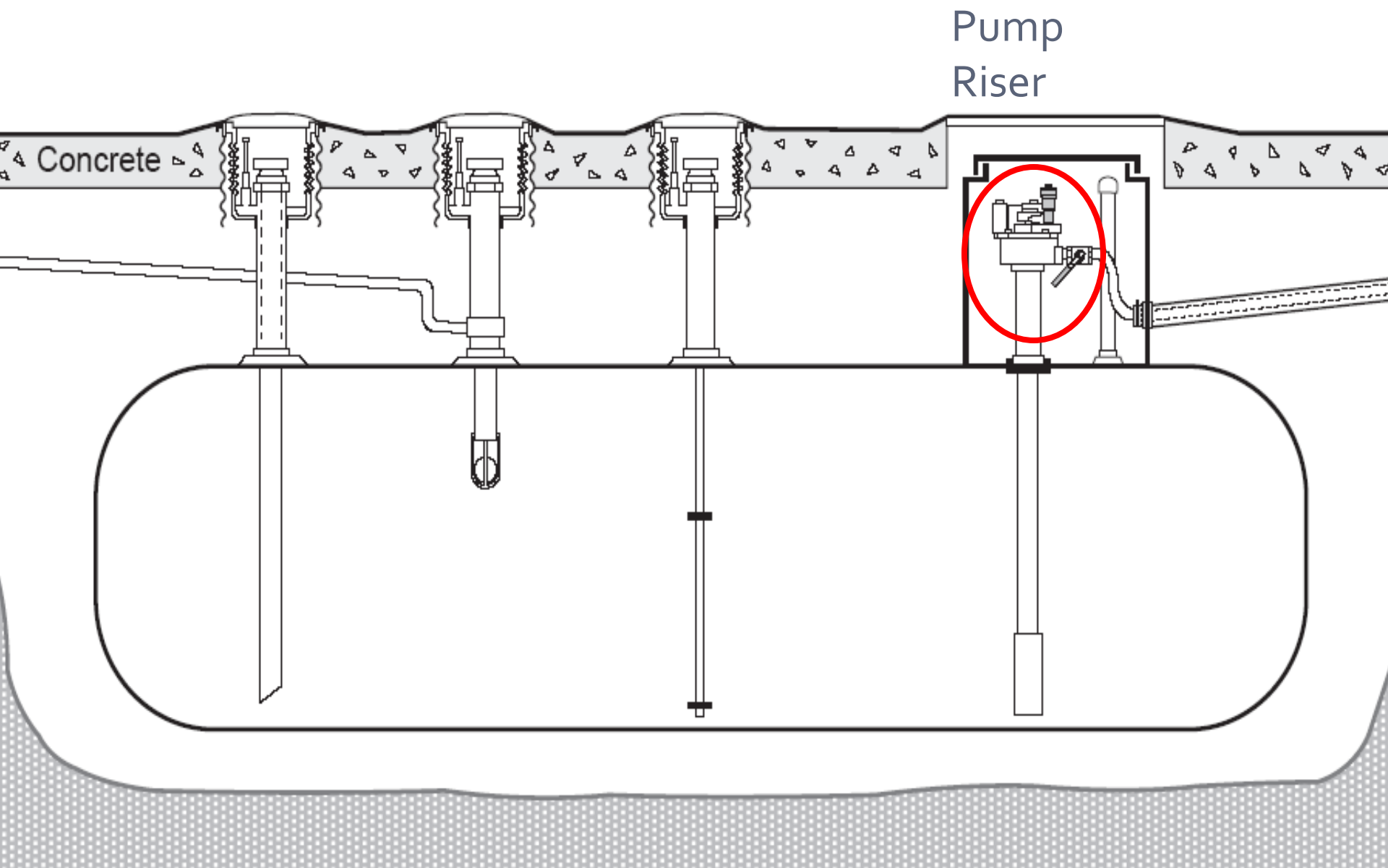


Vapor
Riser



Gauge
Riser





Testing Summary

- Water Table's can create tricky testing conditions
- Alcohol based fuels need CORRECT equipment to sense Phase Separation
- Temperature Issues present for Ultrasonic {US Test} and Magnostriptive probes {ATG's} (Not an issue for Mass Measurement)
- Installation Standards will be checked with a full system test

Alert Certification

- Technician- certified every 2 years
- Test is designed on overall testing aptitude
- Equipment Certified since 1995

Questions