



California Land Recycling Conference
September 17, 2025 @ 4:15



Collaborative Innovation in Complex Remediation: Solar-Powered SVE and Stakeholder Alignment at the Preco Site

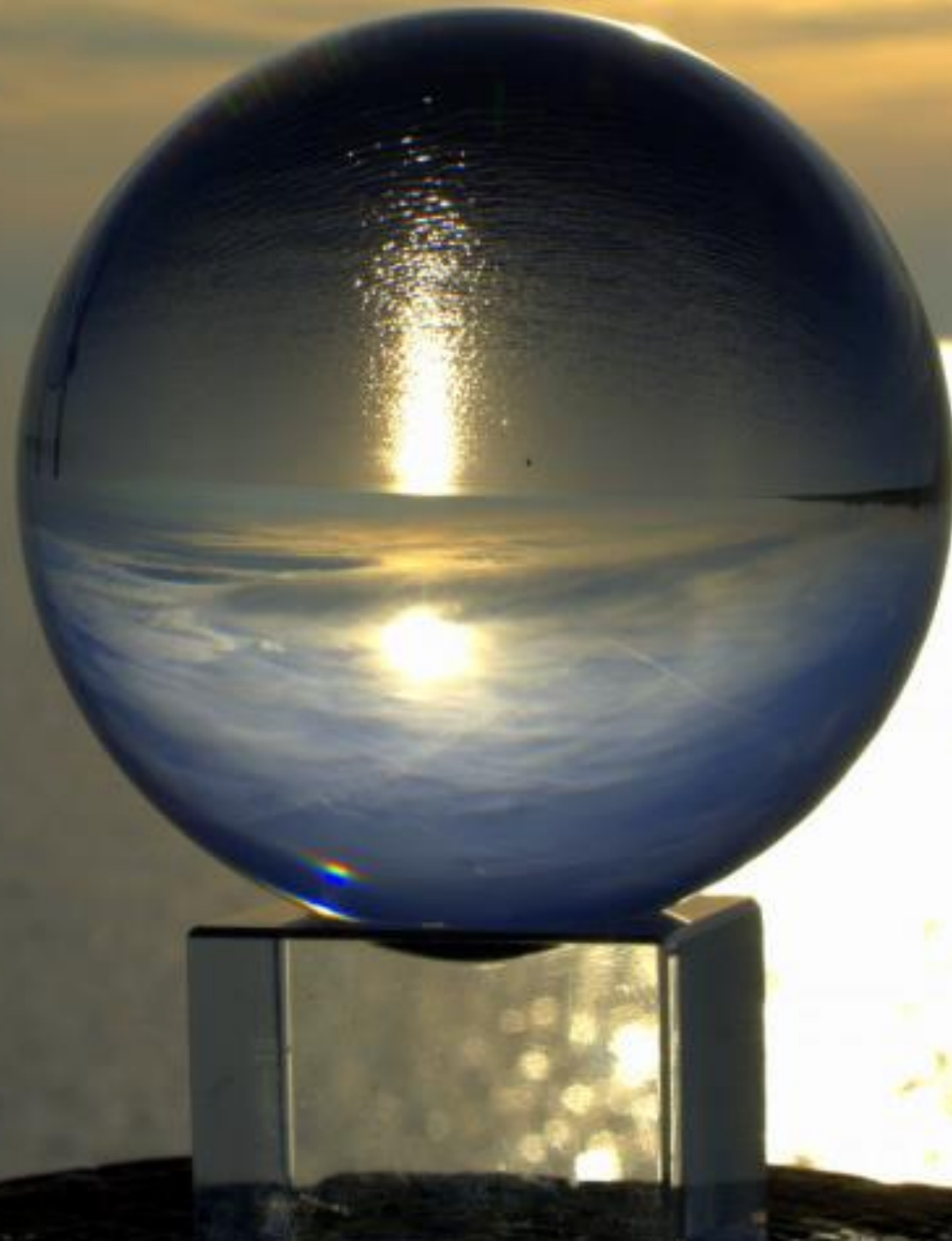
Roohi Toosi, PE, President at Apex Environmental & Water Resources
Mehmet Pehlivan, PG, CHG, Principal Hydrogeologist at JHA Environmental, Inc.



JHA
Environmental

Value!

“Money is just a tool for us to do impactful things and not the purpose of what we do.”

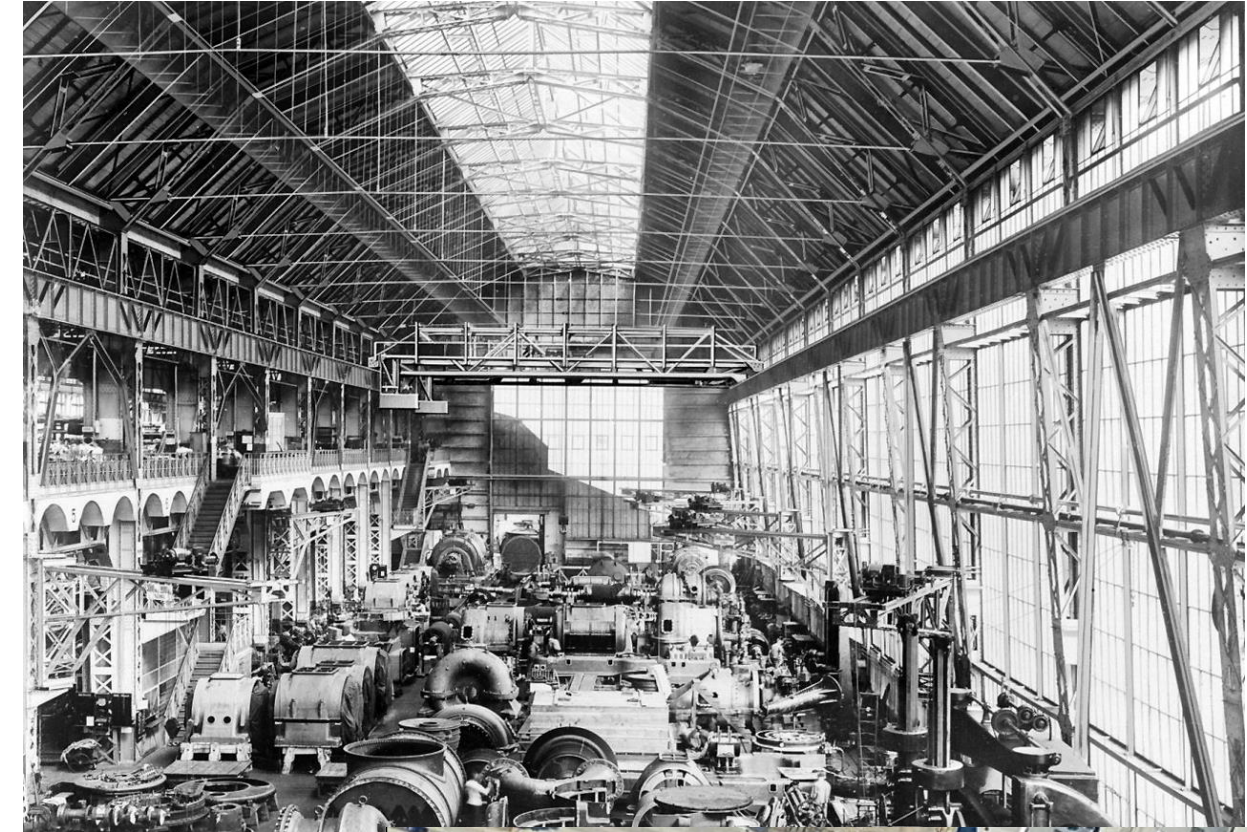


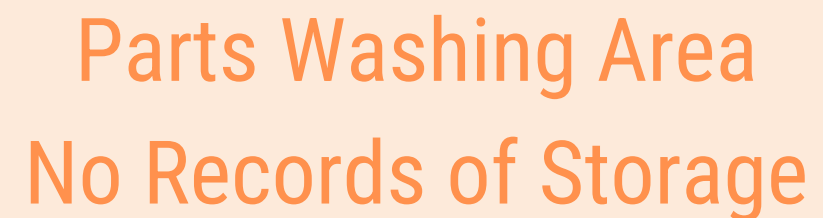


Former Preco Site



- Environmental Regulatory Compliance Case Since 1988
- Preco Historically Manufactured Metal Parts from 1940s to 1988
- LA Water Board Regulatory Oversight
- UST Leak was Reported in 1988 and Closed in 2001
- Chlorinated Solvent Contamination at the Site and Vicinity is Attributed the Site Historical Operations.
- 35+ Years of Remedial Investigation and Remediation

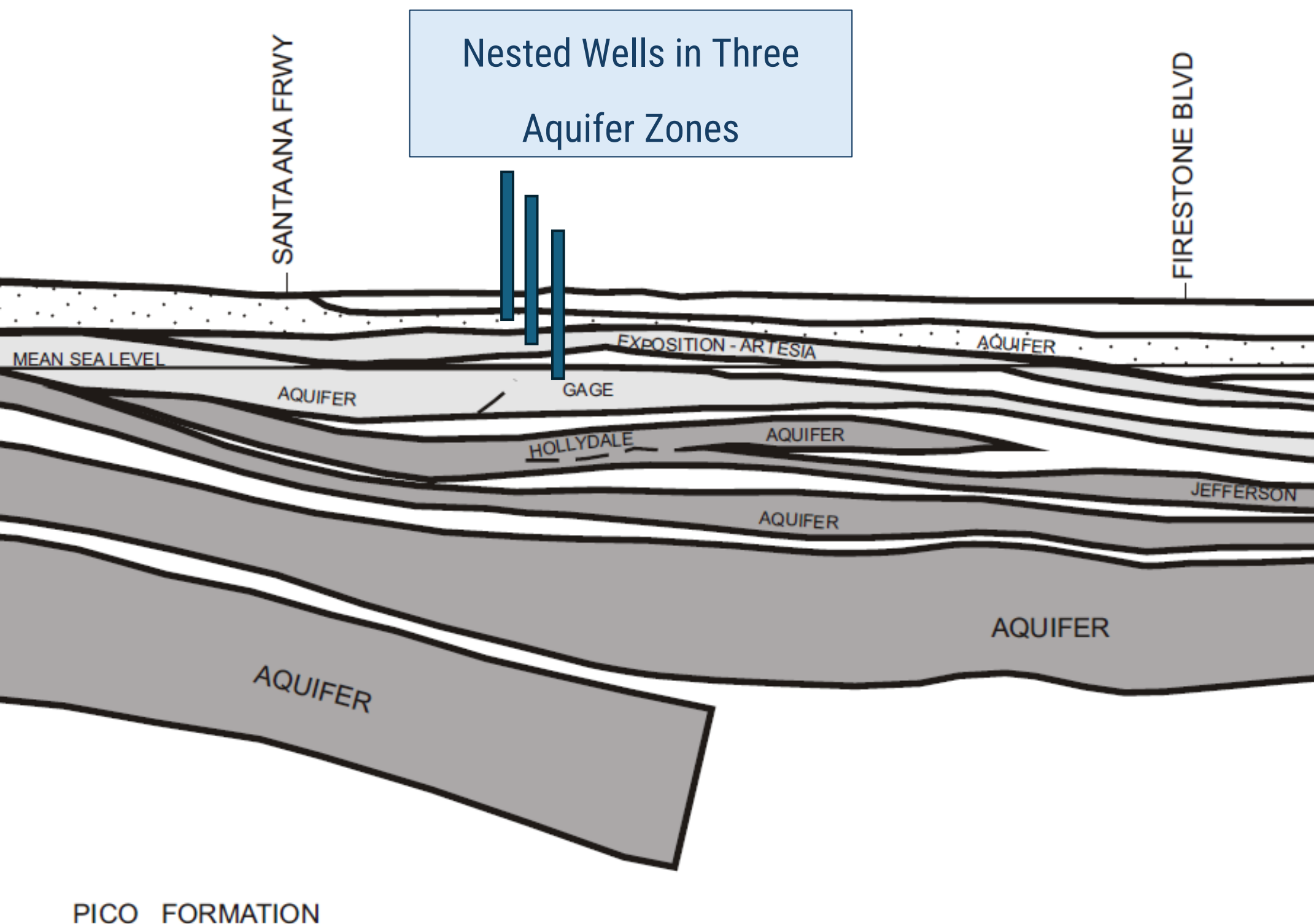




- **1989 UST Removal and Soil Excavation:**
 - One 5,000-gallon gasoline UST and two 2,000-gallon diesel USTs removed from EAST area of Site
- **1996 Soil Excavation and Confirmation Sampling:**
 - 1,820 tons of soil removed from SOUTHWEST area of Site. Impacted by hydrocarbons and metals.
- **1998-2000 SVE Operations:**
 - 5,400 pounds of VOCs (species unspecified) were removed by SVE.
- **2001 Soil No Further Action**
 - Soil-only NFA issued.
 - Groundwater case remained open



Complex Hydrogeology



- **Three Aquifer Layers**
 - Shallow Zone A: 80-120 ft bgs
 - Intermediate Zone B: 135-165 ft bgs
 - Deep Zone C: 185 to 205 ft bgs
- **Impacted by Regional Flow**
 - Rio Hondo Spreading Grounds are located 2 mi Upgradient
- **Impacted by Drought**
 - The Shallow Zone A aquifer went dry since 2014 and reappeared in 2024
 - Zone A is the most impacted aquifer

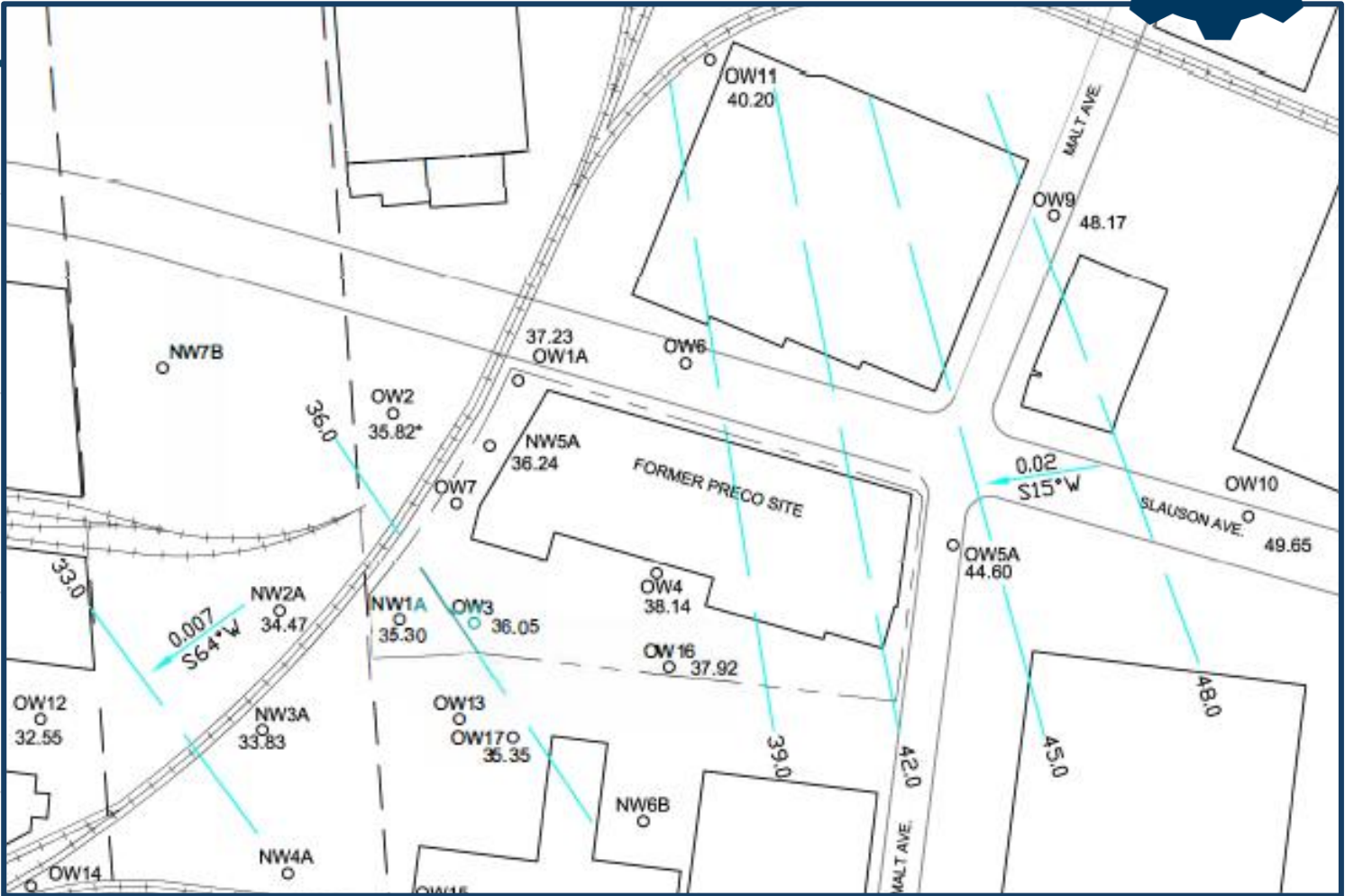
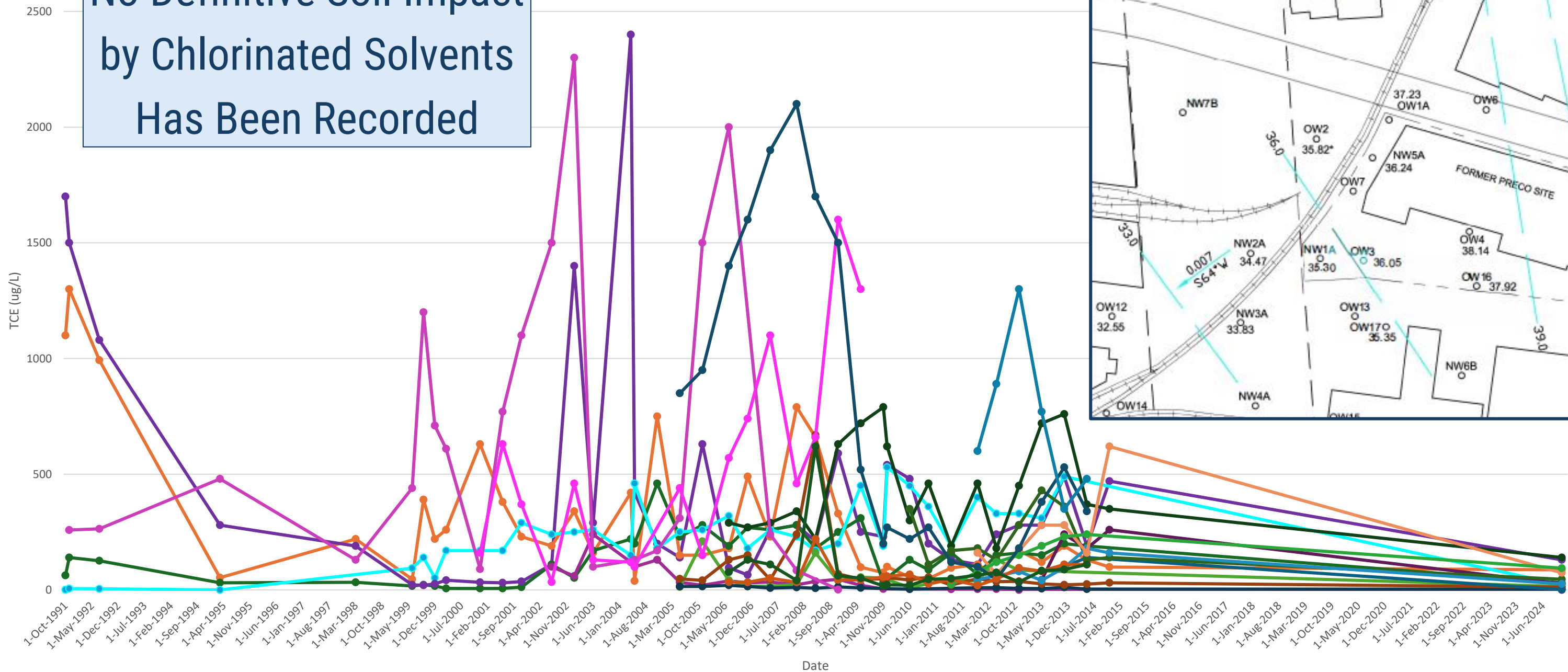


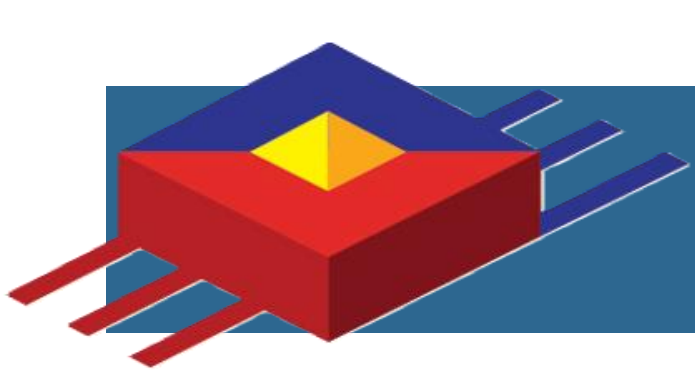
Complex Co-Mingled Plume



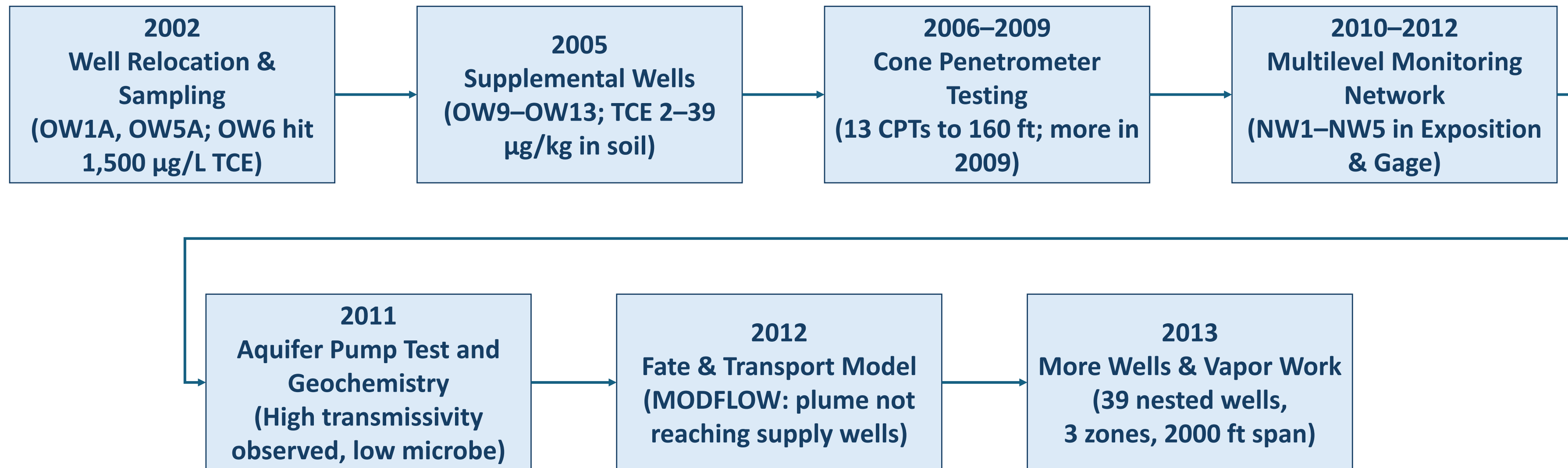
No Definitive Soil Impact
by Chlorinated Solvents
Has Been Recorded

History of TCE Detection In Shallow Aquifer





Extensive Investigative Work Since 2001 Soil NFA



Decades of extensive work – but contamination remained untreated.



Tribute to Dinesh RAO (January 17, 1967, to June 3, 2021)



- **2014 Noticed Something Is Off:** Dinesh was CDR's founder with a desire for transparency and justice
- **2015 Closure Request:** Based on available data submitted a closure request, which was denied
- **2015 ISCO RAP:** Prepared a ISCO RAP which was approved for implementation; Aquifer went dry, injection infeasible
- **2019-2020 SVE Operations:** SVE was operated to address residual VOCs in shallow zone's deep soil
- **2021 Closure Request:** Denied again, SVE rebound
- **2021-2023 Disconnect:** Unfortunately, Dinesh passed away and the case manager retired.



Summer 2023 Reconnect with Water Board



JACOB & HEFNER
ASSOCIATES



- **July 28, 2023:** Water Board Issued Directive Order
- **September 9, 2023:** Stakeholders Met to Agree on Path to Closure:
- **Agreed Upon Path to Closure**
 - Resuming SVE Operations (even though it was run for two years and residual vapor is below $36,000 \mu\text{g}/\text{m}^3$)
 - Prepare RAP for groundwater remediation of Zone B with max $48 \mu\text{g}/\text{L}$ detection of TCE
 - Conduct Vapor Intrusion Assessment



Solar SVE System



Up to 500 CFM Capacity, two-1000 lbs., Trailer mount GAC Vapor treatment System

Various Location Permitted system can be operated up to one year. Using a 110 feet deep GW monitoring well with 15 feet of vadose zone screen for extraction.

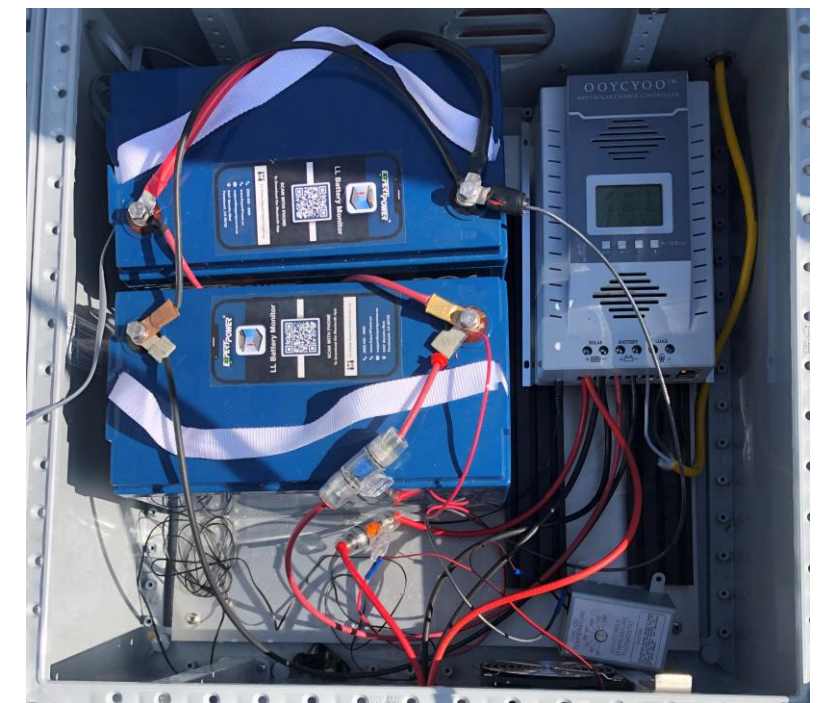
POWER SUPPLY

Eight 100-Watt Solar panels

Four LifePO4 Batteries

3000-watt DC/AC inverter

Maximum Power Point Tracking (MPPT) Solar Charge Controller





The Blower



**Started with a
Festa radon
AMG hawk
blower 66-Watt,
0.59 Amp**

**Switching to DC blower help with saving
on power consumption and increasing
uninterrupted operation time**

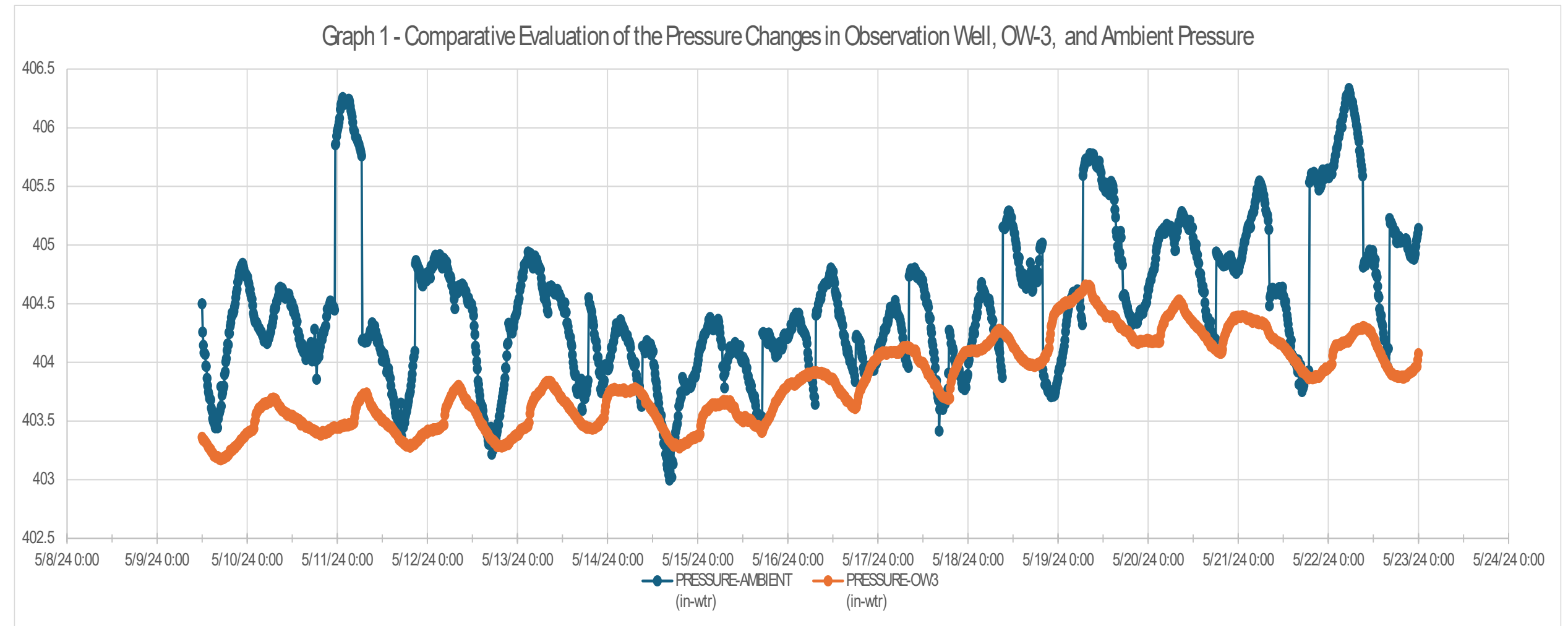


**Sailingflo 4" in-line
Marine Bilge Air
Blower 12V up to 270
CFM capacity
Centrifugal Bilge Fan**





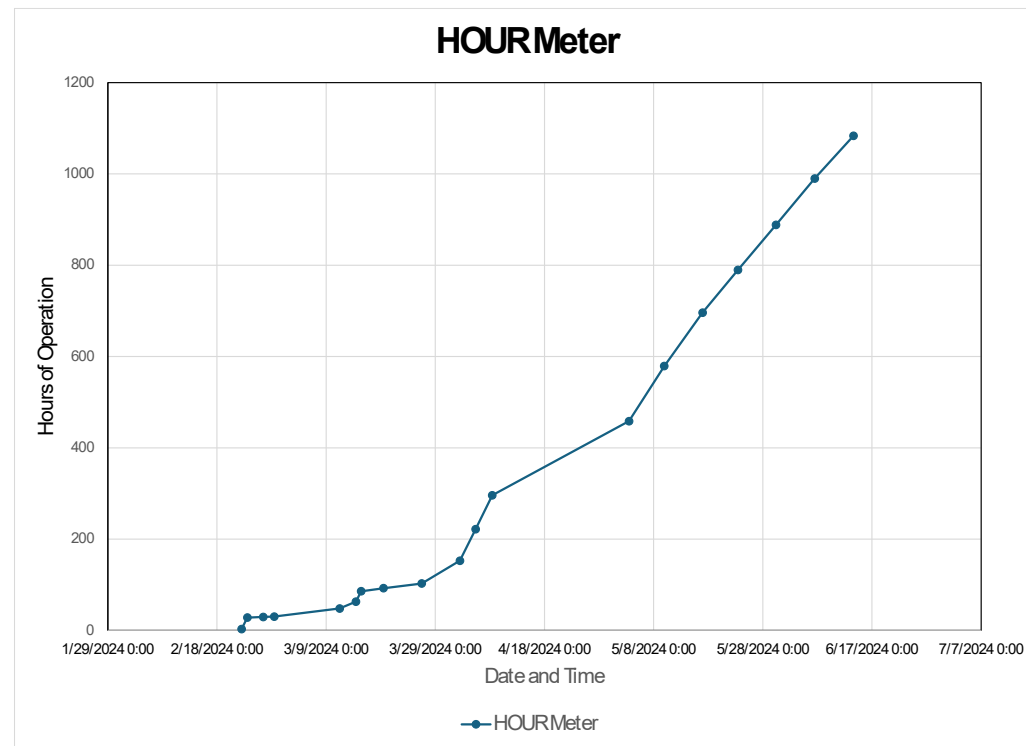
Operation Challenges



Installed a barometric transducer in one of the observation well and on the system trailer to record barometric pressure changes in the well and ambient air.



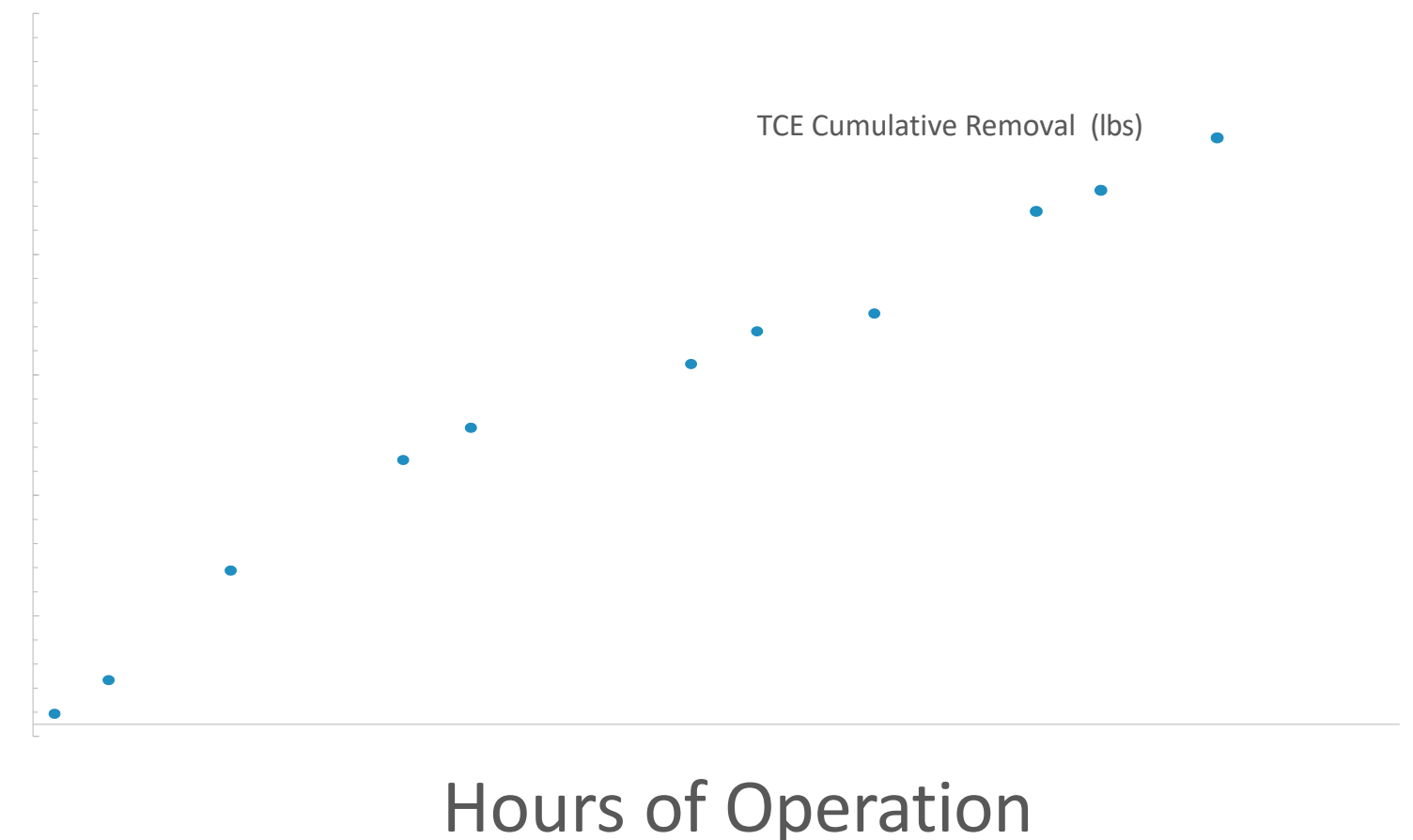
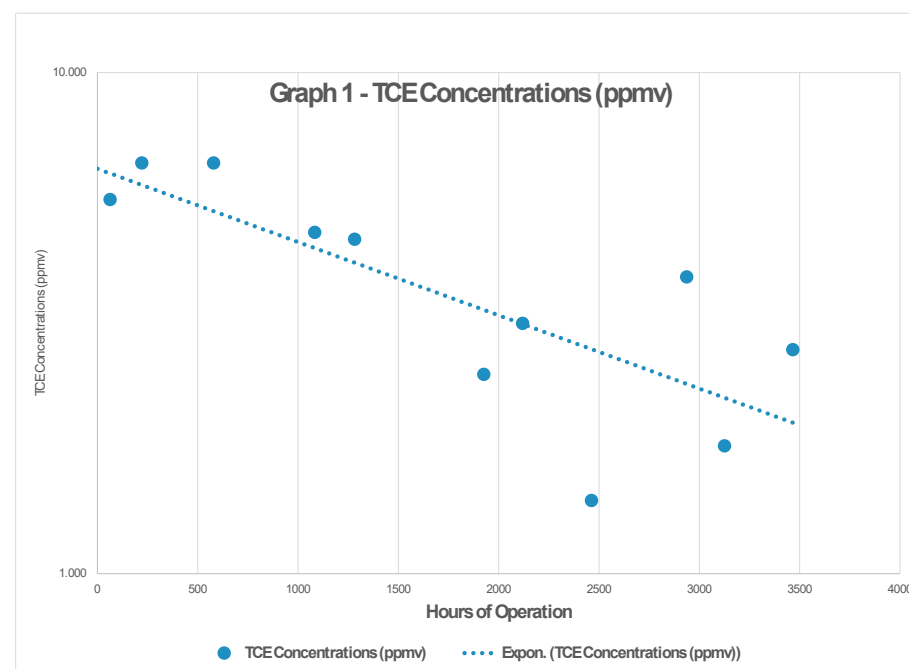
System Operation

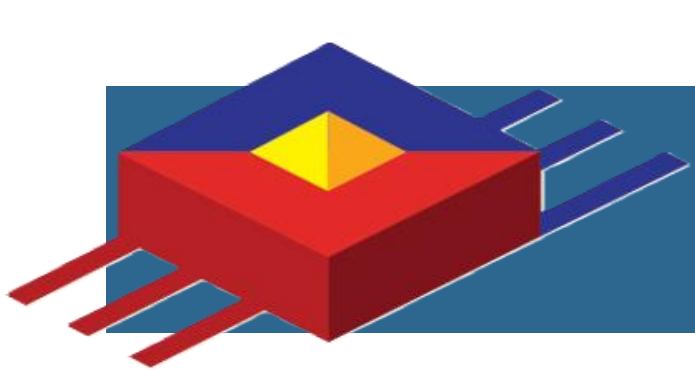


Started system in February 2024.
Experienced frequent shutdown, periods of cloudy and rainy days.
After modifications System ran continuously.

The system ran for 3,466 hours (~50% up time) and removed:

- 288 pore volume from 32 feet of ROI
- 55 lbs. of Hexane (PID);
- 1.8 lbs. of PCE;
- 7.31 lbs. of TCE.





Current Conditions



- **Vapor Intrusion Assessment (No Health Risk)**
 - Two rounds of IAQ/Sub-Slab sampling: no hazardous levels of PCE/TCE in indoor air
 - Sub-Slab samples show max TCE of $14 \mu\text{g}/\text{m}^3$ and max PCE of $930 \mu\text{g}/\text{m}^3$
 - Up to $15,000 \mu\text{g}/\text{m}^3$ TCE/PCE at 15 ft bgs soil vapor; up to $1,100 \mu\text{g}/\text{m}^3$ at 5 ft bgs
 - Risk assessment concluded no risk to site workers
- **Groundwater TCE (2H2024) (Max $140 \mu\text{g}/\text{L}$ of TCE to Address)**
 - A Zone: 12/18 detections above MCL; from $12 \mu\text{g}/\text{L}$ in OW-11 to $140 \mu\text{g}/\text{L}$ in OW-12
 - B Zone: 2/9 detections above MCL; $17 \mu\text{g}/\text{L}$ in NW-7B and $22 \mu\text{g}/\text{L}$ in NW-8B
 - C Zone: 1/9 detection above MCL; at $27 \mu\text{g}/\text{L}$ in NW-1C
- **Groundwater PCE (2H2024) (Max $65 \mu\text{g}/\text{L}$ of PCE to Address)**
 - A Zone: 14/18 detections above MCL; from $5.1 \mu\text{g}/\text{L}$ in OW-5A to $65 \mu\text{g}/\text{L}$ in OW-4
 - B Zone: 2/9 detections above MCL; $18 \mu\text{g}/\text{L}$ in NW-8B and $19 \mu\text{g}/\text{L}$ in NW-7B
 - C Zone: No detections exceeded the EPA MCL



Path to Closure (Recent Meeting)



- **Integrated Vadose Zone and Groundwater RAP**
 - Water Board still deems remediation is required at the site and requested two separate RAPs for addressing vadose zone and groundwater
 - APEX requested an integrated approach to the overall remediation (pending directive)
- **Deep Soil Vapor Profile**
 - Off-gassing from confining layer and residual water in shallow aquifer most likely acts as a continuous source for vapors. Investigation planned to confirm
- **Reduced Groundwater Monitoring**
 - APEX's statistical review shows that ongoing monitoring of B and C Zones adds no new value: these wells (except two) have reported non-detects in eight consecutive sampling events.
- **Evaluate Natural Attenuation**
 - Natural attenuation and potential off-site contributors will be extensively investigated for the RAP

AI & Automation to Help

Transferring Lab Data

Data Tables

Cybersecurity Challenge

Review Historical Docs

Summarize Notes

Write Reports

Data Evaluation

Conduct Research

Discussion on Topics

Write Emails

And many more use cases



Thank You!

Questions?

Alternative Blower

(higher flow and vacuum)

Industrial / Chemical Processing Blowers

DR 353 & CP 353

.75 HP Regenerative Blower

FEATURES

- Manufactured in the USA - ISO 9001 and NAFTA compliant
- CE compliant - Declaration of Conformity on file
- Maximum flow: 100 SCFM
- Maximum pressure: 50 IWG
- Maximum vacuum: 45 IWG
- Standard motor: 3/4 HP, TEFC
- Cast aluminum blower housing, impeller & cover; cast iron flanges (threaded)
- UL & CSA approved motor with permanently sealed ball bearings
- Inlet & outlet internal muffling
- Quiet operation within OSHA standards



MOTOR OPTIONS

- International voltage & frequency (Hz)
- Chemical duty, high efficiency, inverter duty or industry-specific designs
- Various horsepower for application-specific needs

BLOWER OPTIONS

- Corrosion resistant surface treatments & sealing options
- Remote drive (motorless) models
- Slip-on or face flanges for application-specific needs

ACCESSORIES

- Flowmeters reading in SCFM
- Filters & moisture separators
- Pressure gauges, vacuum gauges, & relief valves
- Switches - air flow, pressure, vacuum, or temperature
- External mufflers for additional silencing
- Air knives (used on blow-off applications)
- Variable frequency drive package

Blower Performance at Standard Conditions

