

Environmental Justice and Environmental Perspectives

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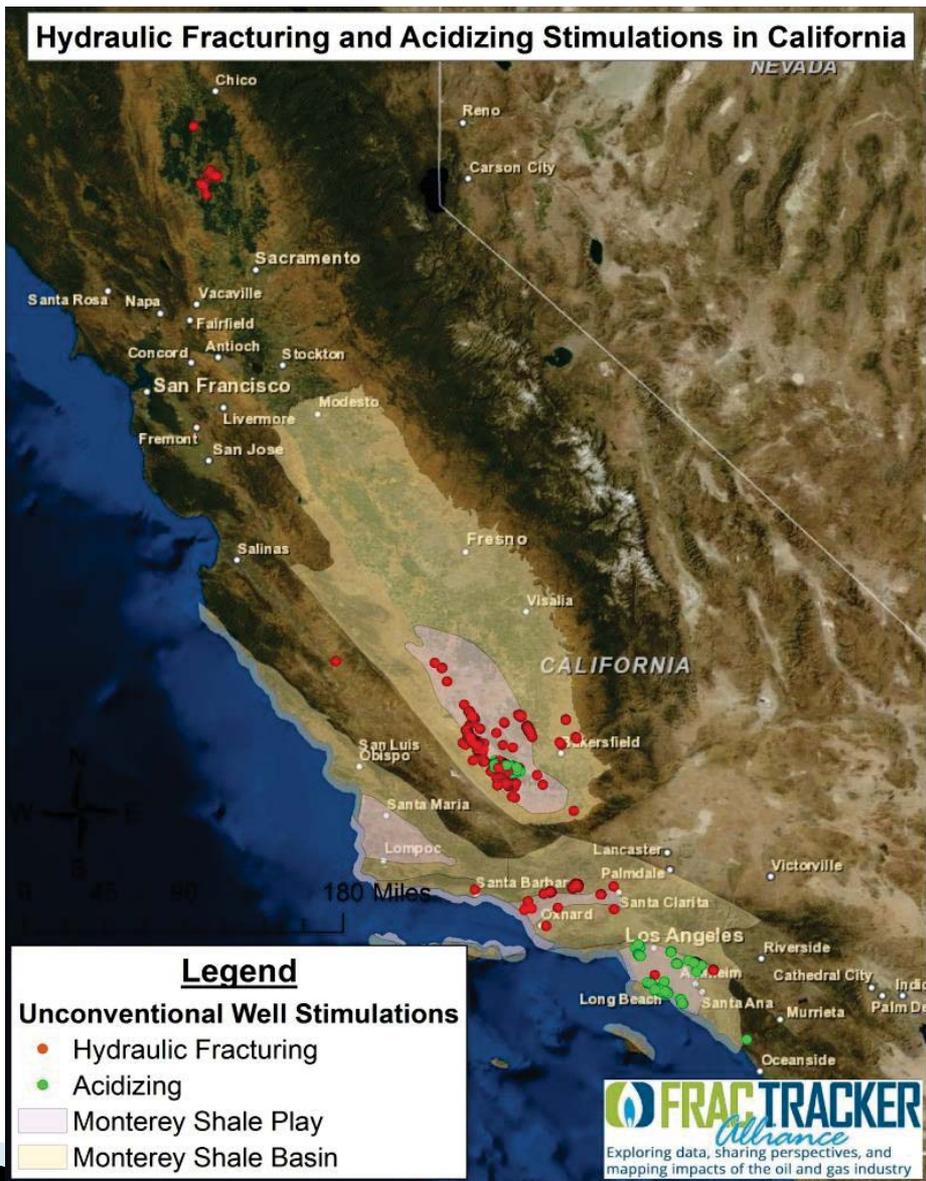
Environmental Justice

“The environmental justice movement addresses the reality that low-income communities and communities of color bear a disproportionate burden of environmental pollution and as a result, residents struggle with negative health and quality of life impacts.”

– California Environmental Justice Alliance



WHERE



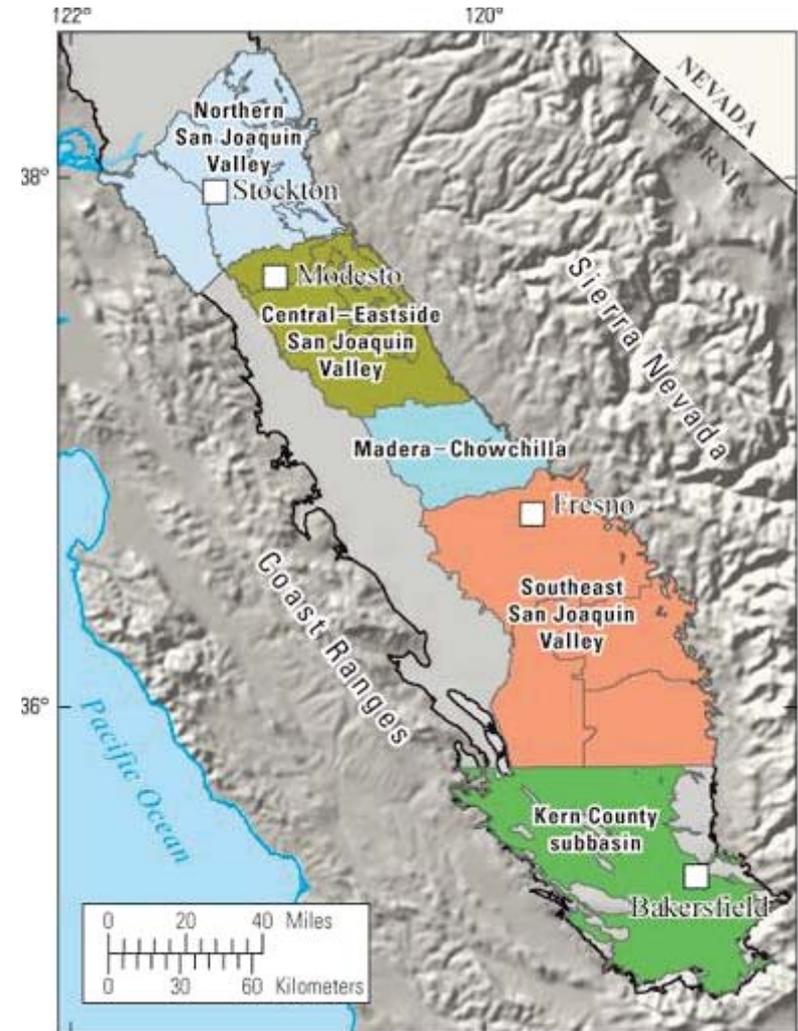
Kern County Water

Highest Concentrations:

-Arsenic

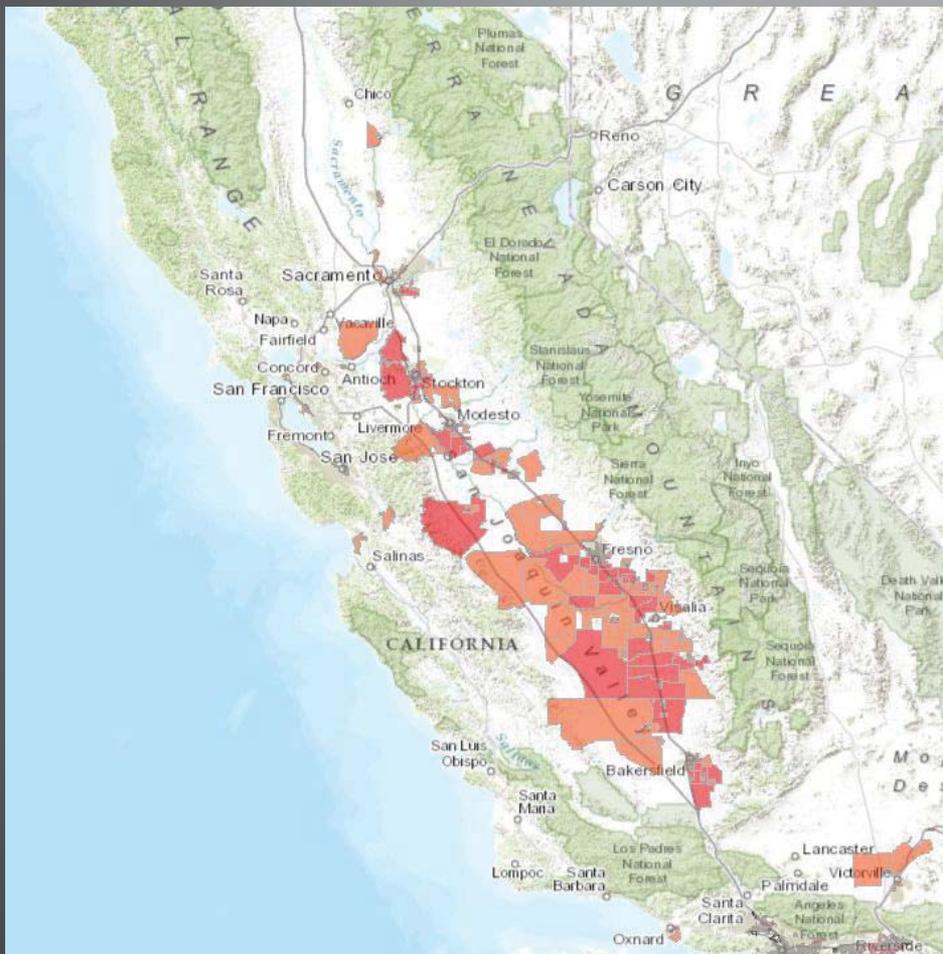
-Nitrates

-Total dissolved solids (TDS)



U.S. Geological Survey and the California State Water Resources Control Board

WHO



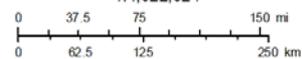
May 17, 2014

CES2.0 draft results

CI10grps

-  11 - 20% (Highest Scores)
-  Top 10% (Highest Scores)
-  High pollution, low population

1:4,622,324



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, Swisstopo, IGN, Kartchner NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

WHAT



Wasco, CA; May 2014



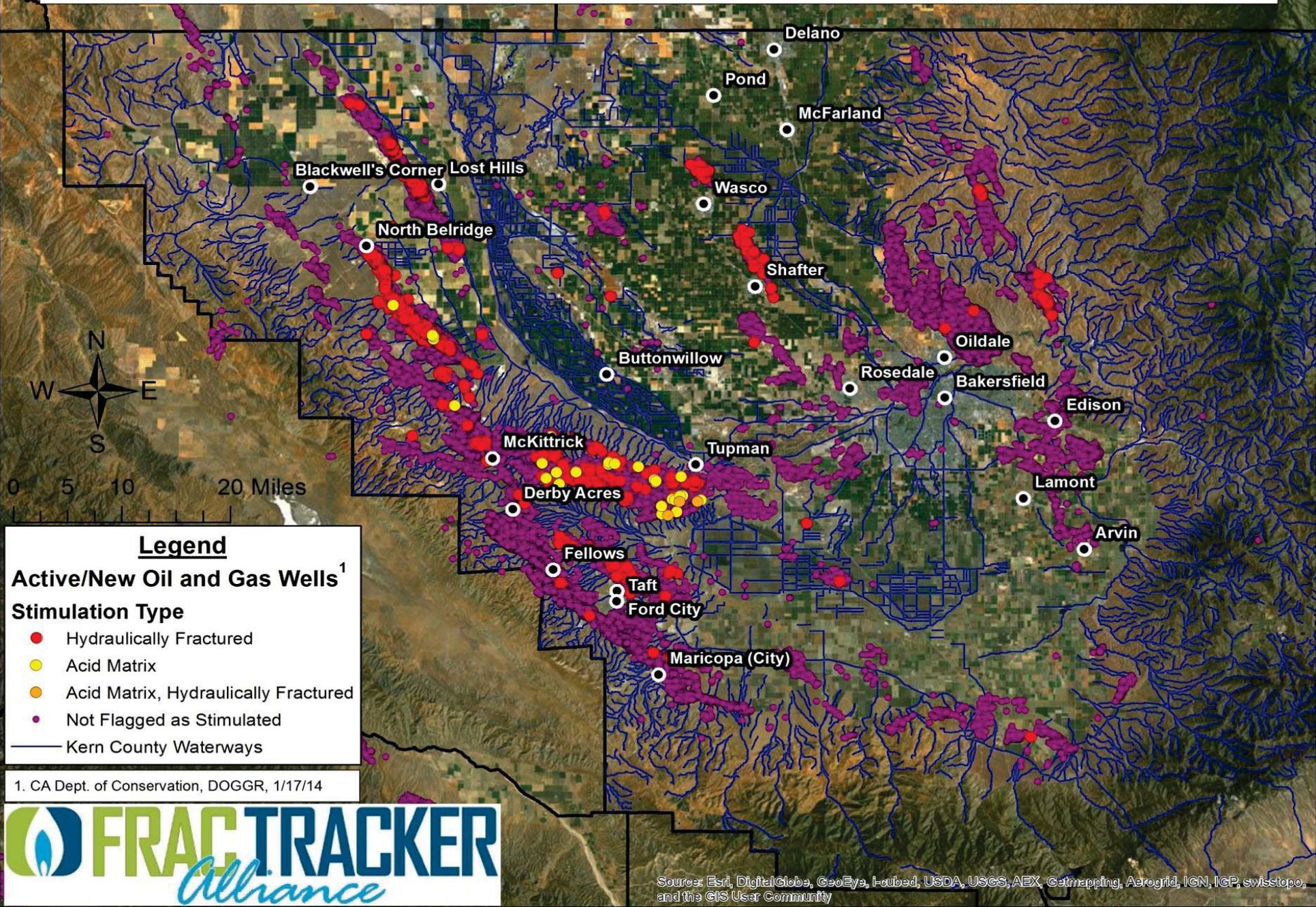
**Sequoia Elementary School;
Shafter, CA.**

Multiple Contamination Pathways: Holistic Approach Needed

- ▶ Surface spills, leaks, runoff
- ▶ Migration through fractures/geology
- ▶ Well casing/cement failures
- ▶ Disposal



Kern County Waterways and Active/New Oil and Gas Wells



Drilling Near Waterways

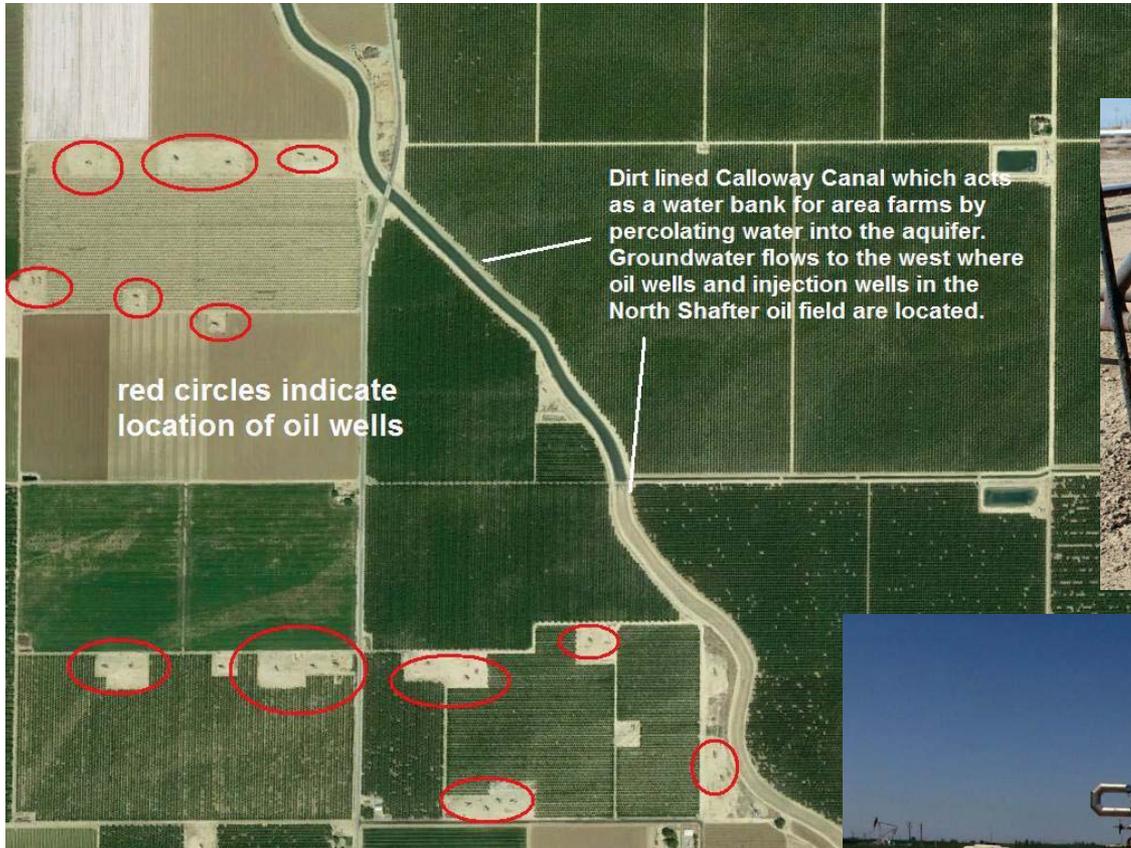
**Fracked and/or Acidized Oil and Gas Wells in Kern County:
1,316 Wells have been stimulated according to DOGGR**

Number of Wells (% of 1,316)	Distance to Surface Waterway
521 (40%)	1500 feet
784 (60%)	0.5 miles
1229 (93%)	1 mile

**All Oil and Gas Wells in Kern County
61,840 wells are listed as new, active or idle according to DOGGR**

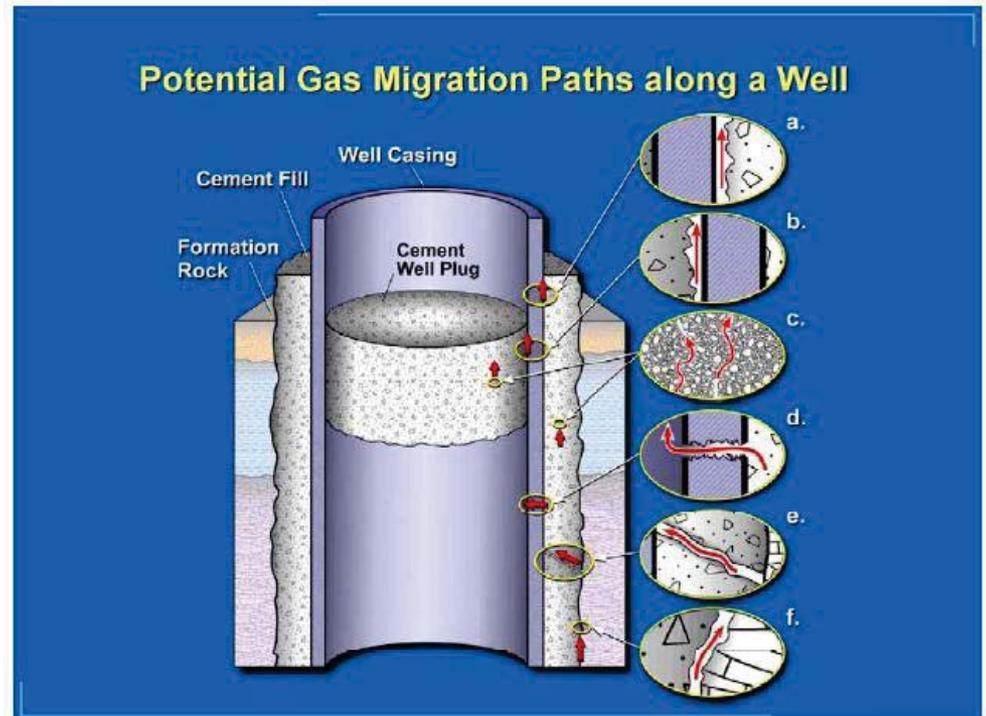
Number of Wells (% of 61,840)	Distance to Surface Waterway
33,918 (55%)	1500 feet
40,979 (66%)	0.5 miles
49,038 (79%)	1 mile

Surface Issues: Conflicting Land Uses?



Well Casing Failures

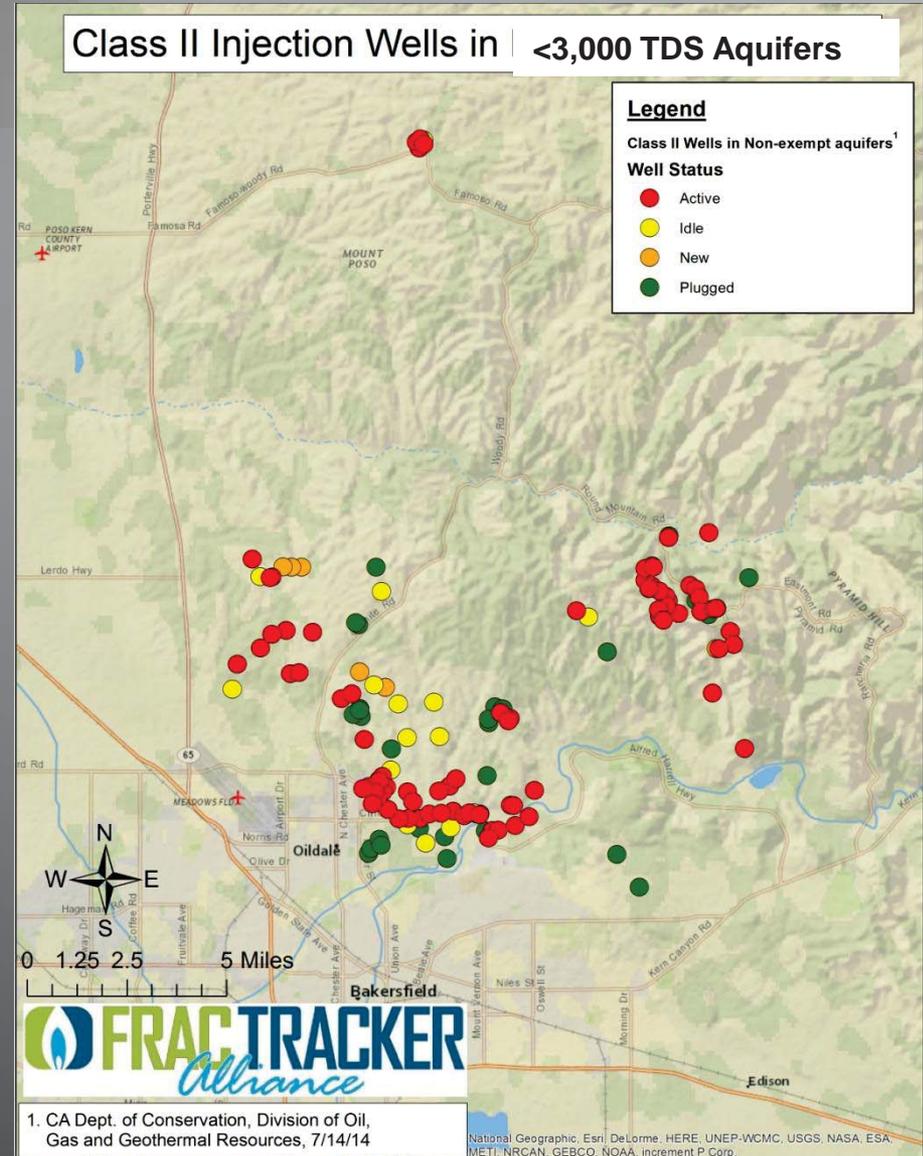
- ▶ DOGGR has never inventoried casing failures
- ▶ Reports from other states (Ingraffea study)



Source: Alberta Energy Utilities Board

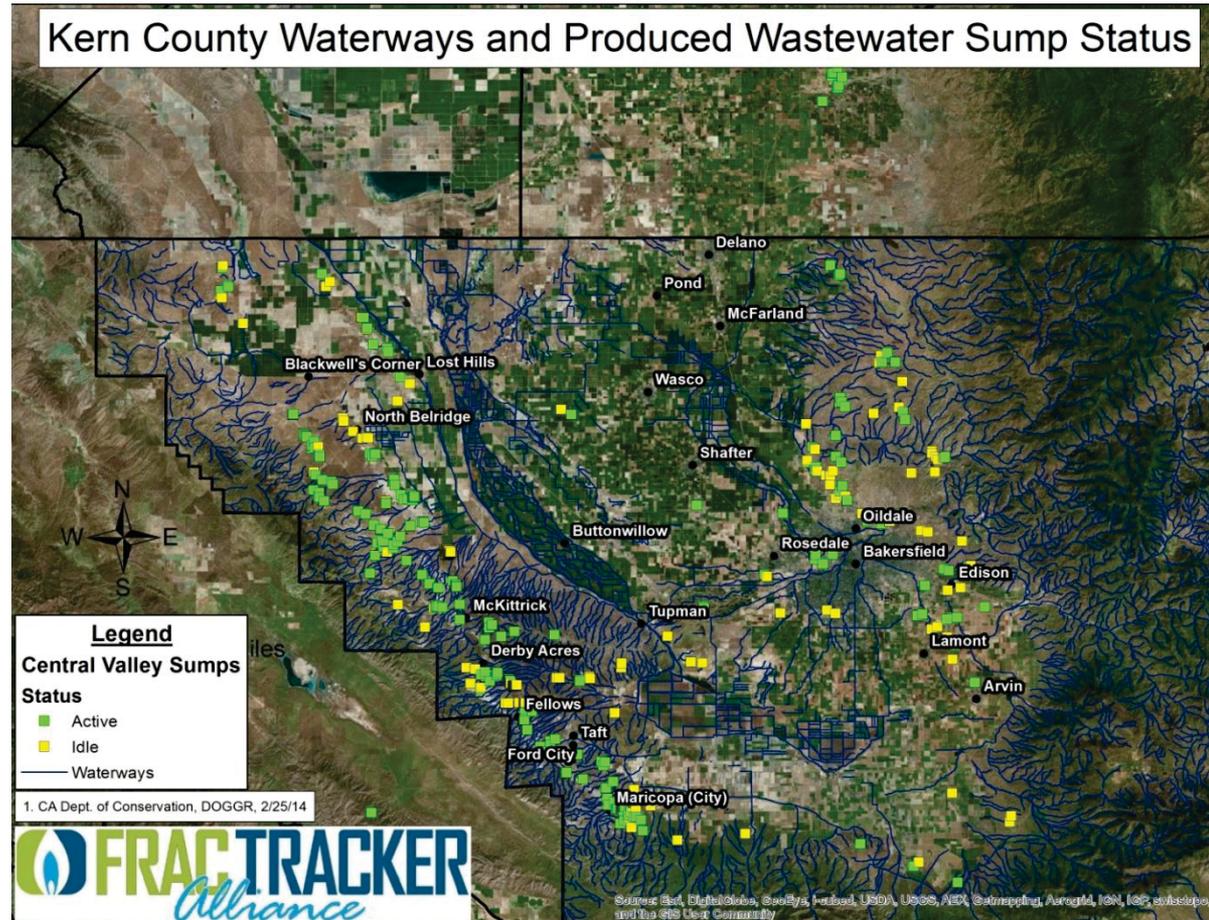
Waste Disposal

- ▶ UIC wells need monitoring
 - 130 billion gallons of produced water annually
 - Recent problems with UIC
 - Aquifer Exemption for UIC is problematic and may not be properly enforced
 - Hundreds of violations annually (DOGGR reports to EPA)

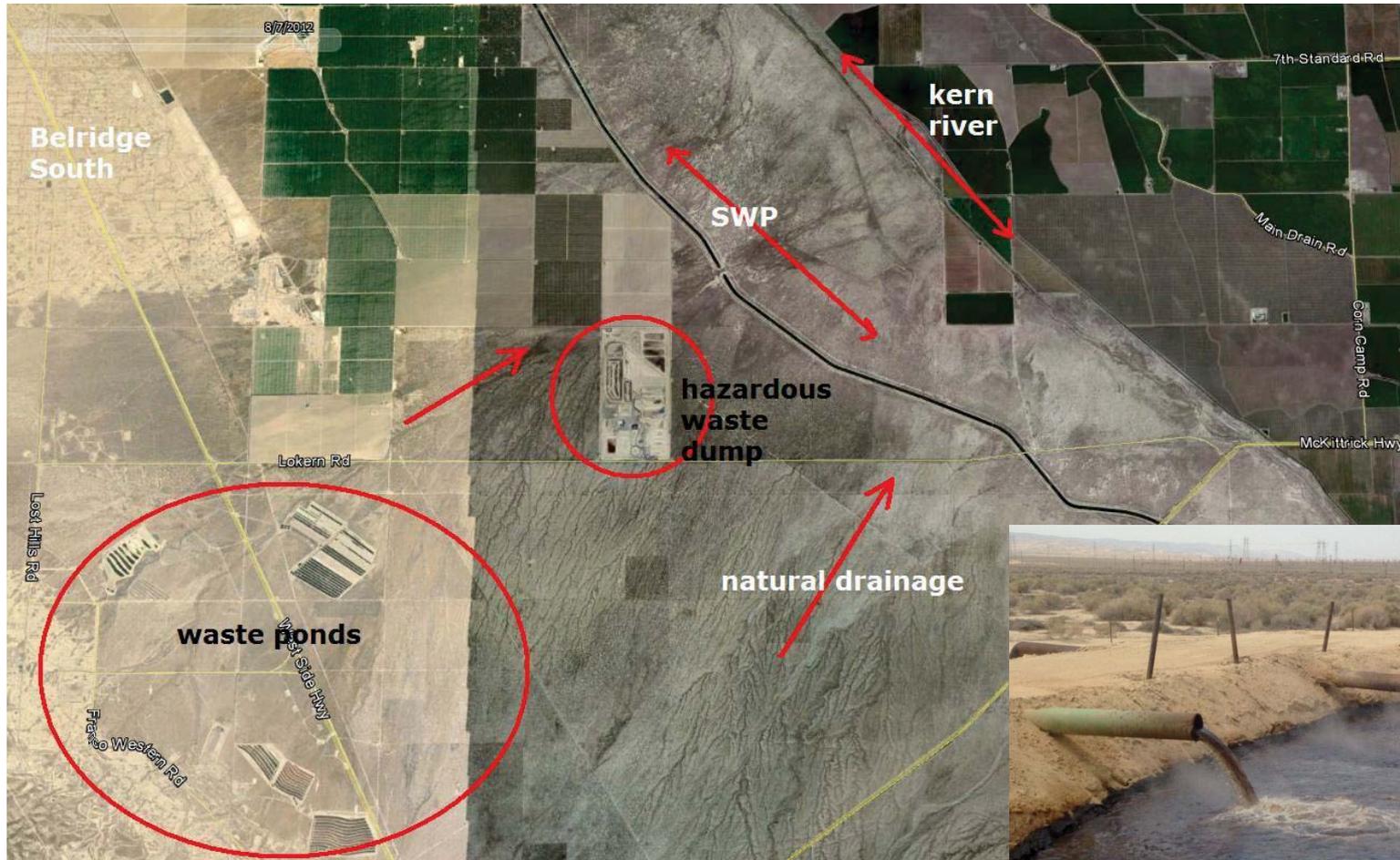


Unlined Pits

- ▶ 432 active pits in the Valley
- ▶ Many out of compliance with Basin Plans, WDR's, Porter Cologne



McKittrick Pits Example



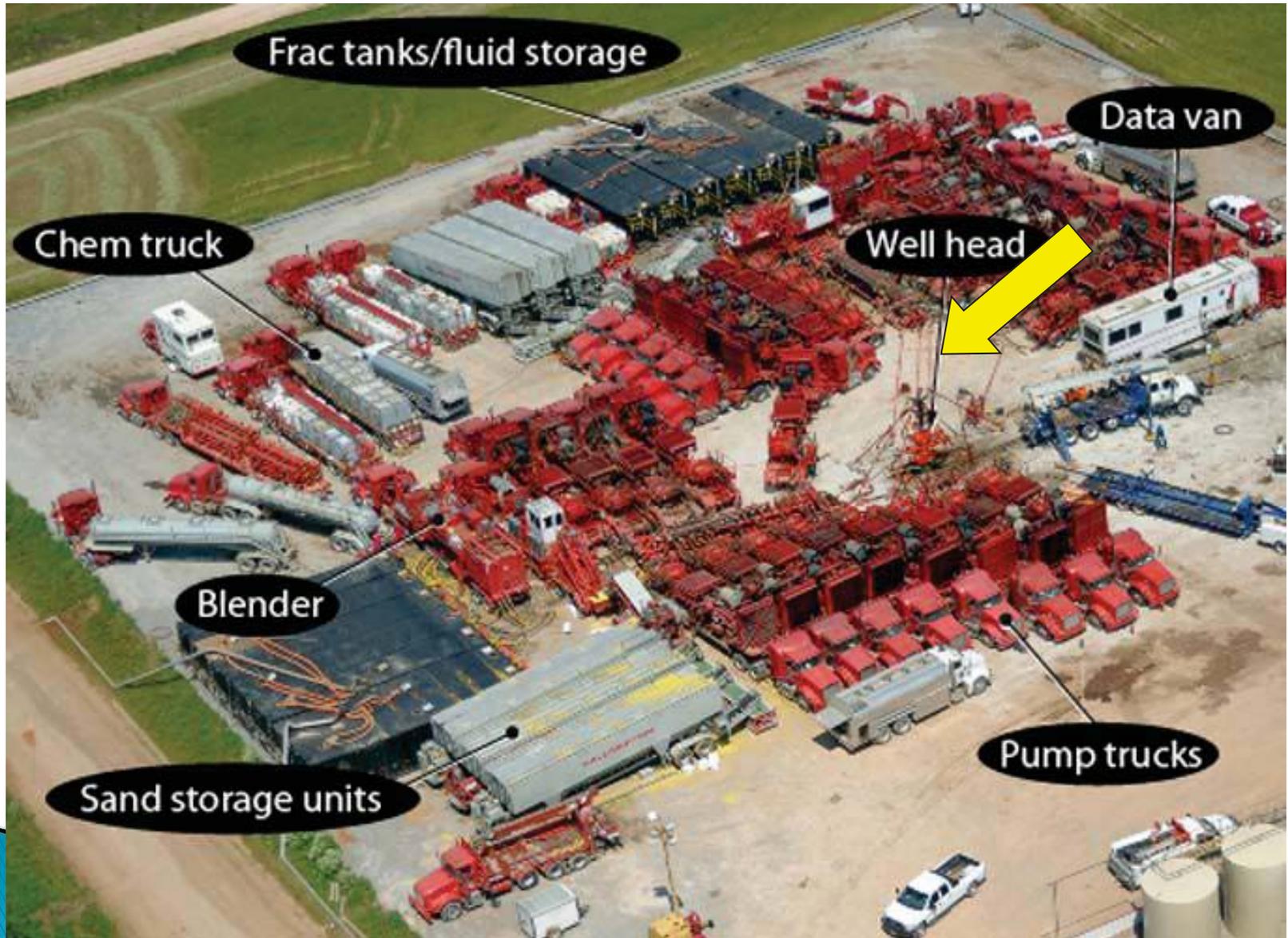
Where to Monitor?



THE NEED FOR WATER MONITORING IN THE OIL & GAS E&P SECTOR

**Dr. Tom Williams. Senior Technical Advisor
Citizens Coalition for Safe Community
Los Angeles County, CA**

REAL FRACK JOB



OOPS—JUST SMALL LEAKS



THIS MESS FOR A 6" PIPE



YEAH, BAD FRACK DAY



DON'T WORRY-TRADE SECRET



OPERATORS

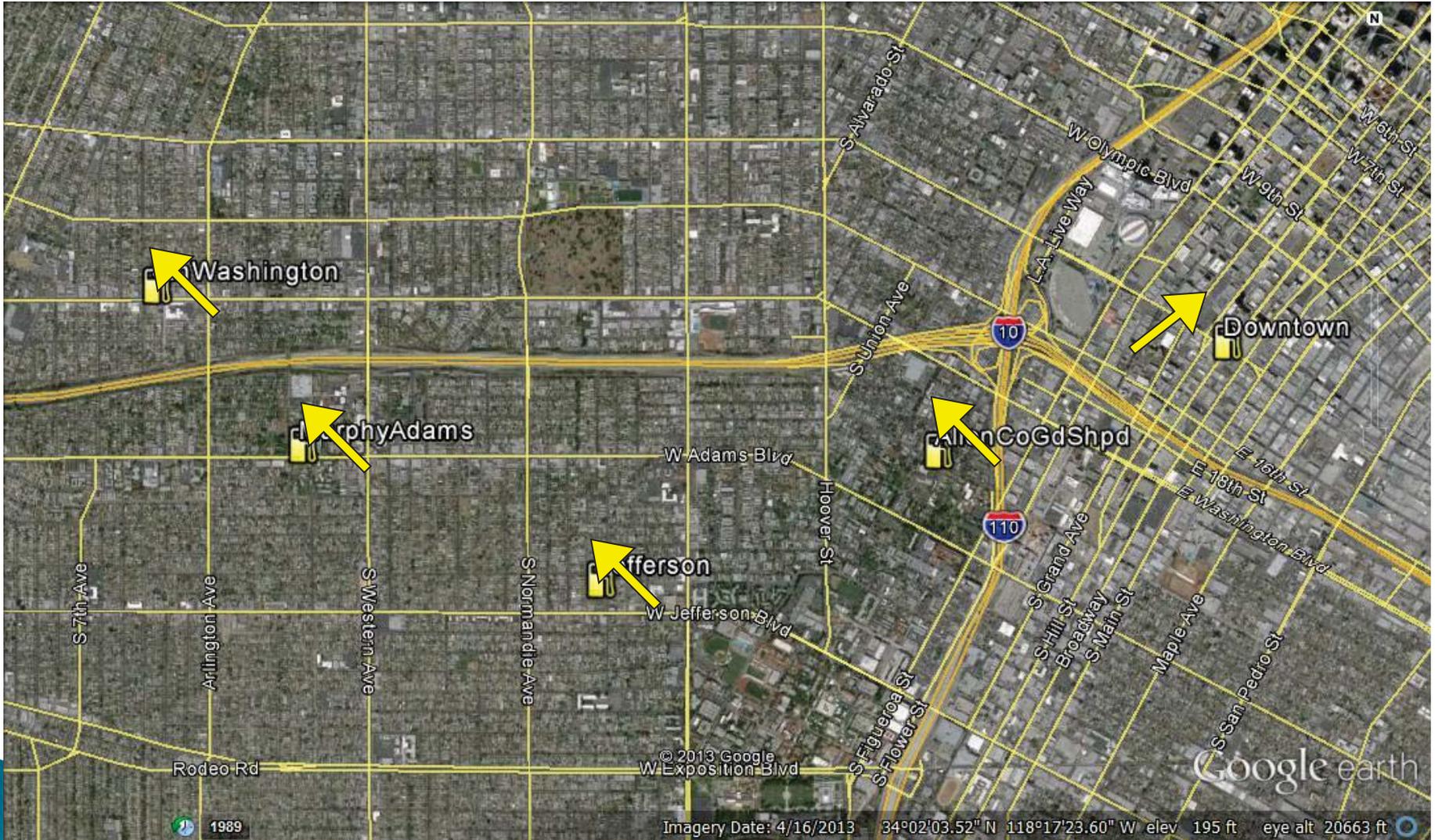
UIC-Produced Water Plan-WHAT,WHEN,& WHERE?

- ▶ Produced Water Characterization – Natural Tracers
- ▶ Boron/Barium/Bromine,TPH,TDS,Temp.,
- ▶ Monitor-Sample/Test or Sensors pH/Cond.
- ▶ 5days<>30days / 10%Column/25ft above Bedrock

RISKS

- ▶ 10, 100, 200, 500, 1000ft of alluvium
- ▶ Private, Corporate, and Public Wells
- ▶ Barren, Rural, Suburban, or Urban

WHAT RISK-GW/City/People?



GROUNDWATERS

Alluvial – Base of Extent/# Samples

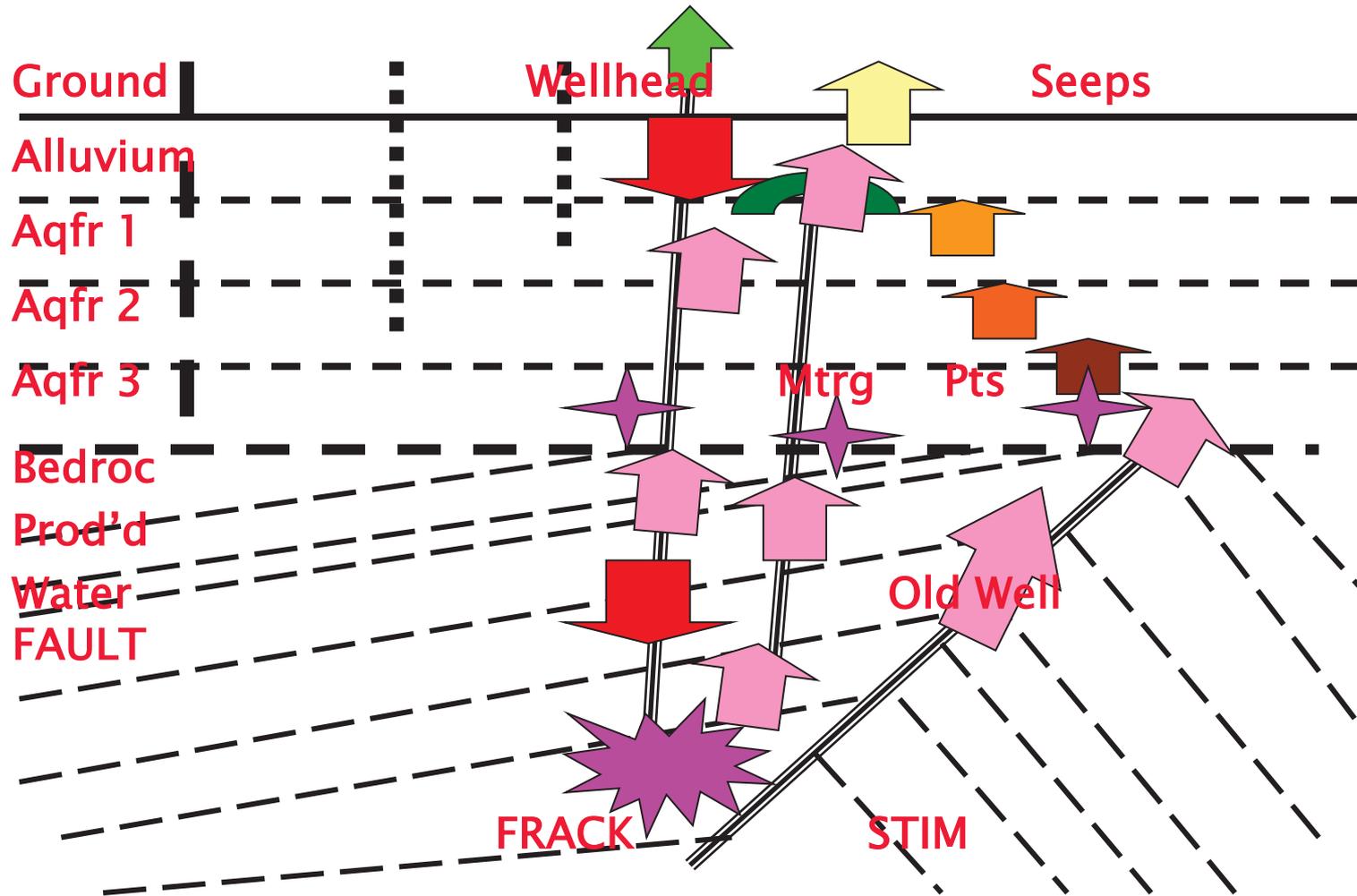
- ▶ Direct Potable – 1 000ppm
- ▶ Base of Fresh Water – 2000ppm
- ▶ Protected Waters – <10,000 (Exclude Orange Co. Coast)
- ▶ Recharge > Storage > Discharge Basins – Not Mentioned

Bedrock

- ▶ Base of Fresh Water – Surface Casing
- ▶ Useful/Usable Water – 1–Pass RO
- ▶ Beneficial Water – 1–Pass RO

Water Districts/Companies – Aquifers

OPERATORS - PATHWAY/PLAN



REGIONALS

Basins–Field – WHAT, WHEN, WHERE, & WHO?

TDS/Temp/pH/Sensors > Action–Trigger > Samples
Boron/Barium/Bromine, TPH, Chrome,
Nickel, Vanadium

Monitor = 3–Tier Sensors > Sample/Test
NOW >> 700d Baseline >> Upgrade

Basin–Source/Recharge > Path/Storage > Discharge
> 100 wells Township (6x6mi)
– Agriculture/Water Company
– Ag Coops – Producing Aquifers 10Kgal/d
– Water Districts

OIL & GAS IMPACTS

Secrecy vs Neighbors' Policies – API July Guide

O&G Zones > Stimulation/Fracking

- **Surface Sources 0–10ft**
- **Above BoFW Sources 10–1000ft**
- **Intermediate Levels – 1000–4000ft**
- **Production Levels – >2000ft**

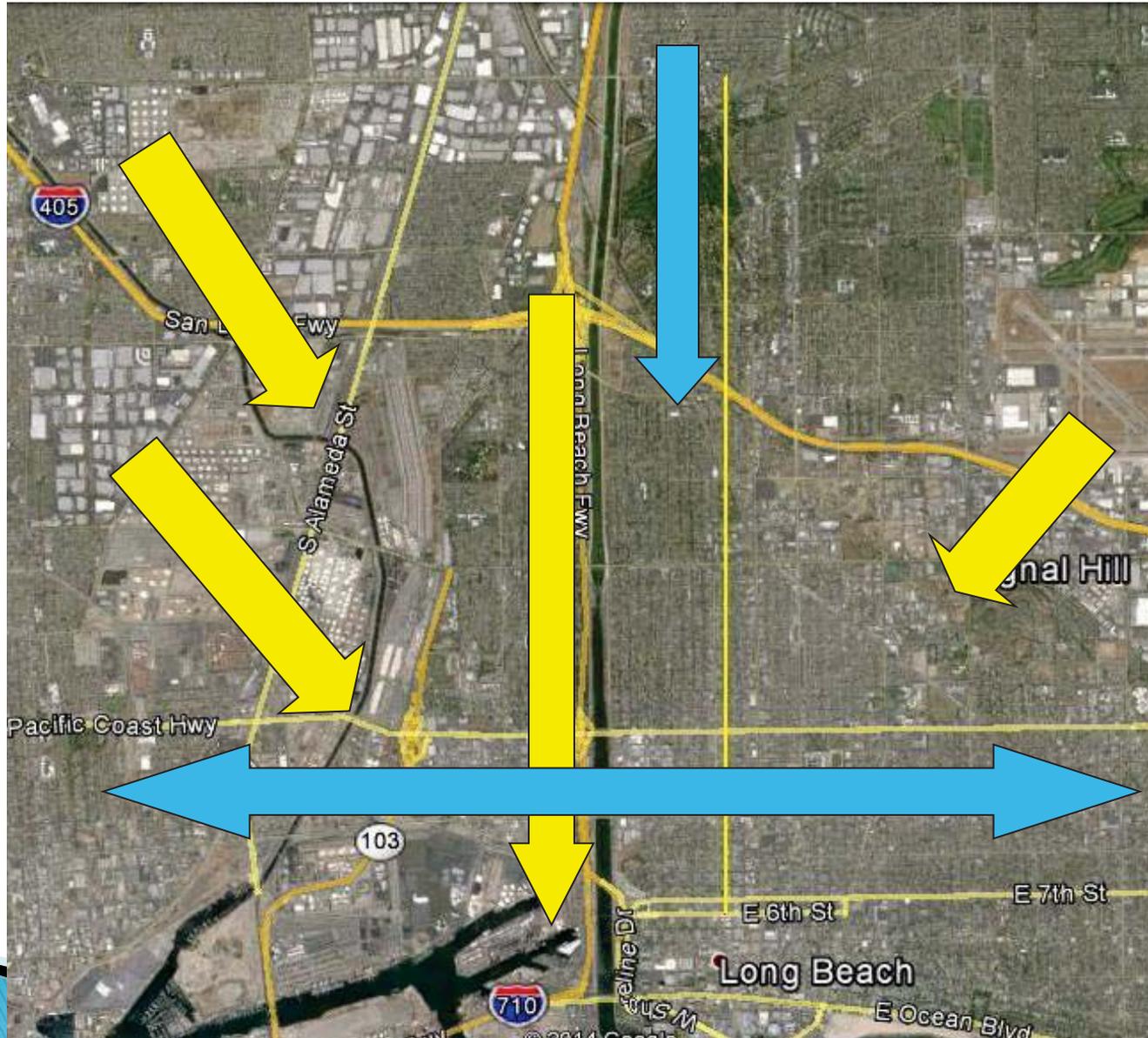
Risks/Pathways

- **Ponds/Pits/Sumps/Pipes/Tanks**
- **Faults – Fractures/Stresses**
- **Orphan/Abandoned/Idled Wells**
- **Bad Well Integrity**

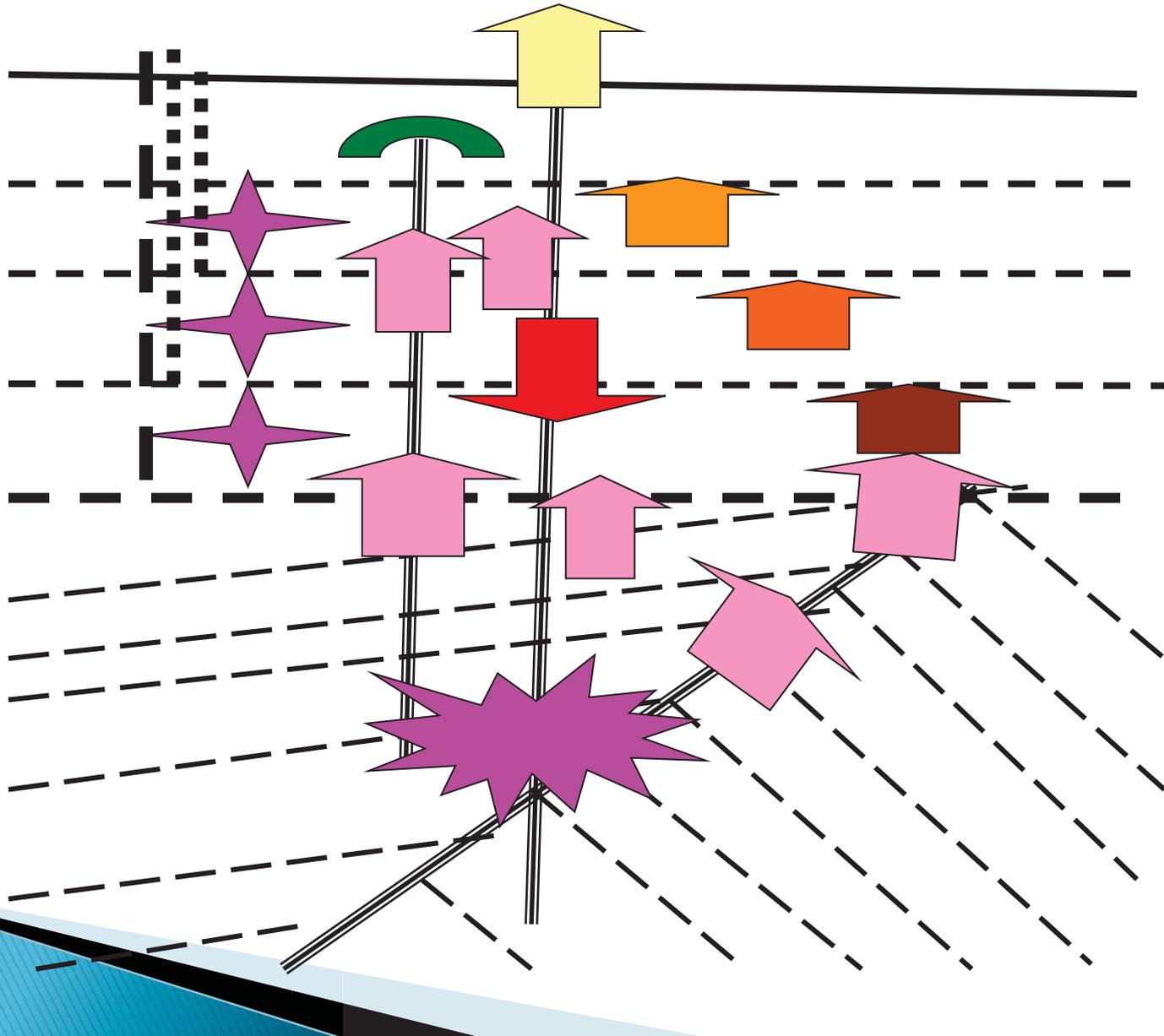
MONTEBELLO FIELD/FOREBAY



SO.LA RIVER – GW/O&G



The Solution



Thank You



www.crpe-ej.org



www.earthworks.org



www.cleanwateraction.org



www.nrdc.org



www.ccfasc.org