Underground Storage Tank Focus on Groundwater Priorities and Funding

State Water Resources Control Board

January 8, 2013 Board Meeting

Item #4

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Presentation Topics

1. Highlight resources expended on UST cleanup
2. UST Program and Cleanup Fund improvements to use resources more efficiently
3. Examine groundwater impacts from UST releases compared to other contaminants
4. Assess alignment of resources with groundwater priorities
5. Take a look forward as UST Cleanup Fund sunset date (end 2015) approaches

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1. Resources Expended on UST Cleanup

UST "Case" vs "Claim"

- Case = UST release site / project to clean it up
- 6,423 open UST cases (other than Dept. of Defense)
- Claim = for cases eligible for the UST Cleanup Fund, "a submittal to the Fund for the reimbursement of costs incurred due to an occurrence…"
- UST Cleanup Fund maximum = $1,500,000 per occurrence per claim
- 3,500 claims currently active; 4,700 on waiting list
- Claims can be for either open cases or closed cases

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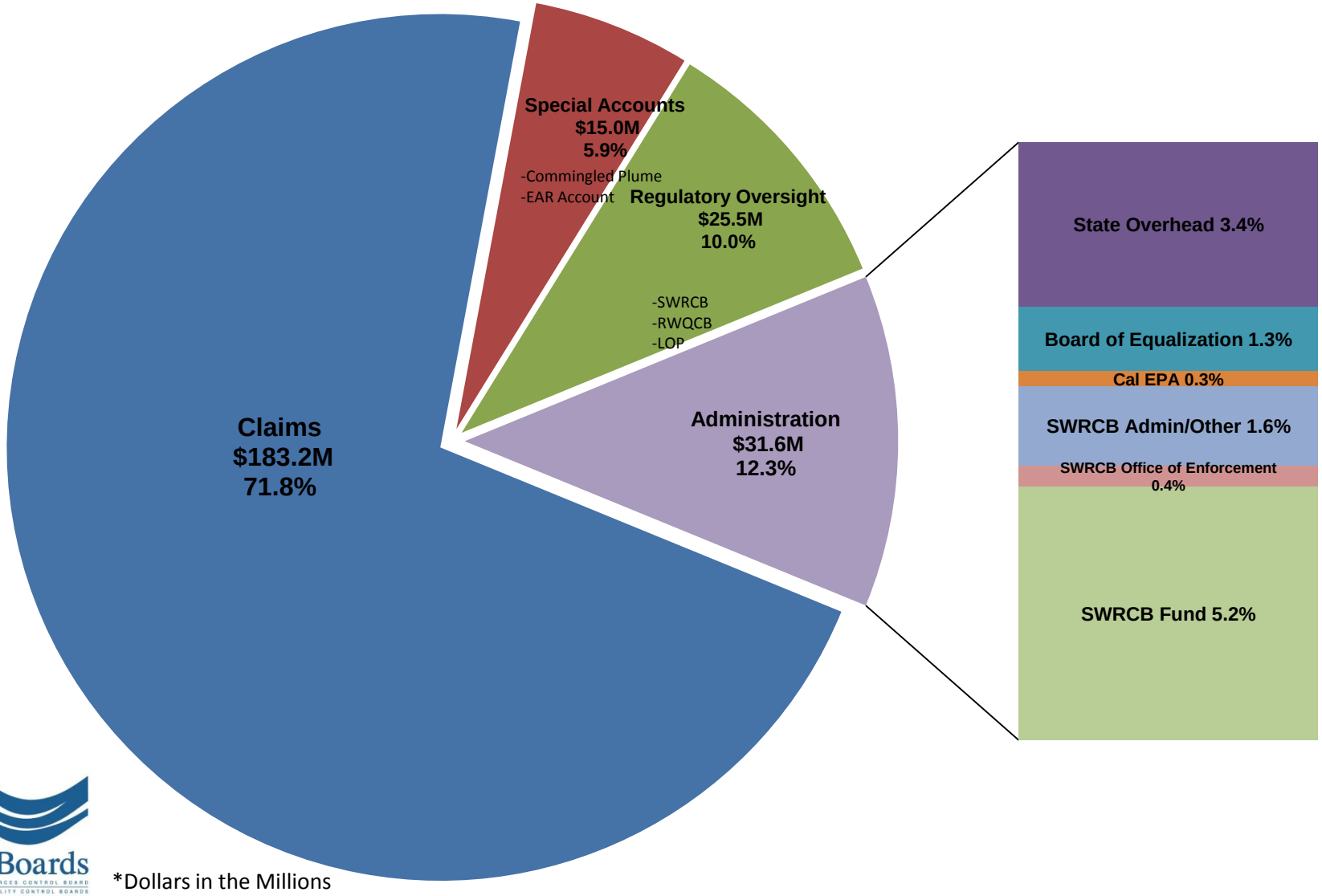
Cleanup of UST Cases

- Primary source of funding = UST Cleanup Fund
- Statute restricts use of UST Cleanup Fund to petroleum releases from USTs
- Since fee collection began in 1991, UST Cleanup Fund has provided:
  - Financial assurance for many operating USTs (RCRA Subtitle I)
  - Resources to clean up many highly-polluted cases
    - Removal of contaminants to prevent impacts to water supply wells
    - Restoration of brownfields to productive use
- Funded by UST storage fee, added to fuel purchase price

UST Cleanup Fund Annual Expenditures
Total $255,300,000 / year



*Dollars in the Millions

UST Cleanup Fund's Annual Expenditures

- Since Fund inception: **$3,200,000,000** ($3.2 billion) reimbursed to:
  - ~ 8,200 claims now closed, and
  - 3,500 claims currently active
- All revenues are committed and expended annually – No money left in the pot
- **$183,000,000** annual reimbursements go mostly for ongoing remediation

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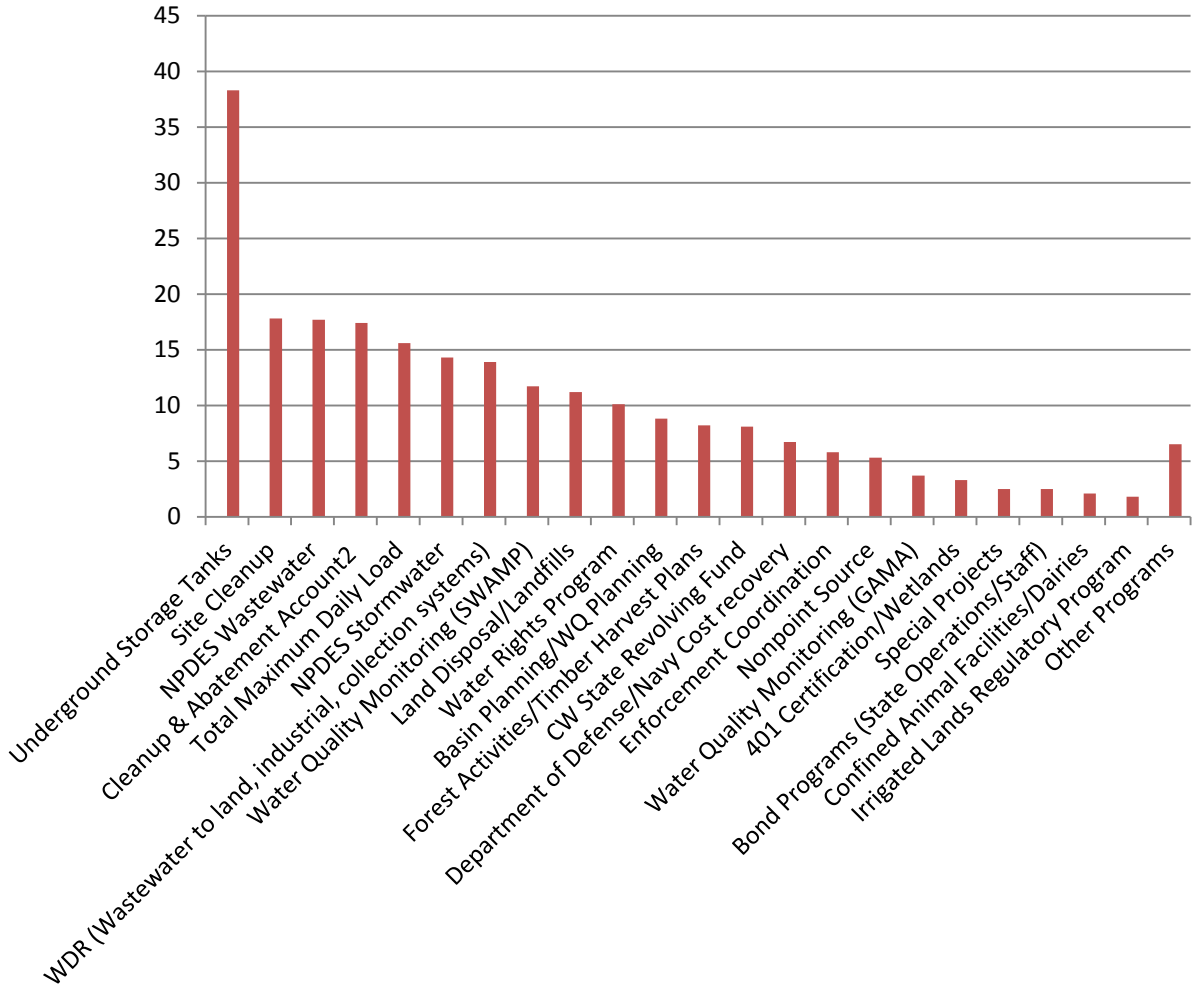
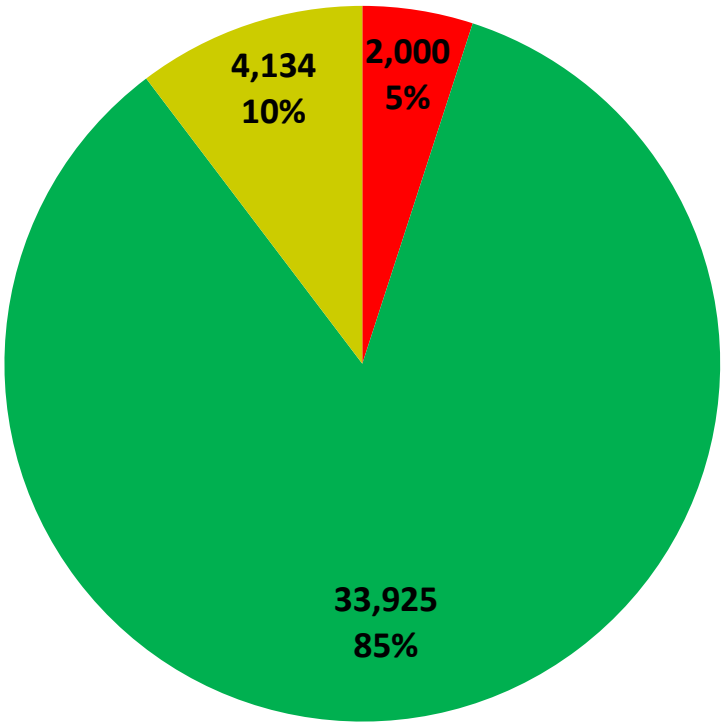
Data from Resource Alignment Report, April 17, 2012 Board Meeting

Water Board FY 2010-11 Expenditures by Program (in millions)



2. UST Program and Cleanup Fund Improvements to Use Resources More Efficiently

Currently- Operating USTs
~ 40,000 total



ENVIRONMENTAL PROTECTION:

- **Red** = **POOR** (single-walled USTs, 5%)
- **Green** = **VERY GOOD** (double-walled USTs, 85%)
- **Gold** = **EXCELLENT** (VPH USTs, 10%)

Operating USTs: Take-Home Messages

- Previously, many more operating USTs; many were single-walled
- Currently, except for single-walled, USTs are much improved over older designs and offer very good to excellent environmental protection
- As a result, the few new UST leak cases (~100/year) are primarily newly-discovered old leaks, not new leaks
- UST cleanup program primarily addresses legacy cases, with shrinking universe of cases

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UST Cleanup Program Challenges

- Average case has been open 17 years (USEPA report – see website at end of PPT)
- Many cases not yet assessed, therefore not being either remediated (if necessary) or closed
- Continuing to spend large amounts of funding, primarily from California citizens (vehicle drivers) via UST storage fee
- Dramatic increase over time in average expenditure per claim:
  - Closed claims averaged $180,000/claim
  - Current claims averaging $500,000/claim and counting
  - Current claims projected total = **$750,000**/claim

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Recent State Water Board Steps

- State Water Board moving aggressively to close low-threat cases so that resources can be used to clean up the remaining high-priority cases (especially cases without viable responsible parties)
- 2009: Two State Water Board Resolutions
- 2012: Three State Water Board Resolutions:
  - Res. No. 2012-0016 adopted UST Low-Threat Closure Policy
  - Res. No. 2012-0061 delegated closures that meet Policy criteria to Executive Director
  - Res. No. 2012-0062 approved Plan for Policy implementation and additional program improvements

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Fraud against UST Cleanup Fund

- Office of Enforcement's recent investigations and arrests for fraud against Fund; 4 press releases in 2012
- UST Enforcement Unit continues numerous (and counting…) investigations
- Fraud against UST Cleanup Fund apparently widespread
- UST Cleanup Fund administration making adjustments with goal of fraud prevention

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Unintended Environmental Consequences of UST Cleanup

- UST remediation generates Greenhouse Gases (GHG)
  - UST Cleanup Fund commonly sees $5,000/month utility bills to run remediation systems
  - In-house study's preliminary finding: average active cleanup site generates between 5 to 30 metric tons GHG emissions per year
  - Equivalent to GHG emissions from 1 to 6 vehicles per year
  - Does not include ancillary equipment, sampling and other vehicle mileage, and other related sources of GHG
- Balance between "necessary evil" of GHG production generated from needed cleanup and unnecessary GHG production from cases that should be closed
- Air quality impacts: conversion of groundwater pollution into air pollution

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3. Groundwater Impacts from UST Releases Compared to Other Contaminants

UST Impacts on Domestic Wells

and Smaller Unregulated Water Systems

- Estimated total number in State ranges from 250,000 to 600,000
- Estimated total population served in State = ~ 2,000,000
- State does not regulate the quality of private domestic well water, and does not require private domestic well owners to test for water quality
- Small systems with < 15 connections also unregulated
- Per cent contaminated unknown; GAMA found pathogens and nitrates
- "**California Impacted Municipal and Domestic Wells**" by Sullivan International Group on behalf of USEPA found:
  - Only 34 UST cases out of 6423 total open cases (~0.53 %) confirmed by UST regulators to be currently impacting domestic wells within the State of California
  - Of the 34, 2 cases were not petroleum
  - Only 54 domestic wells (**0.02%** of minimum number 250,000) confirmed by UST regulators be currently impacted by UST cases within the State
  - Additional "potential impacts" could not be confirmed but also few in number
  - Either wellhead treatment or alternative source is being supplied

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UST Impacts on Municipal Drinking Water Wells

- "**California Impacted Municipal and Domestic Wells**" by Sullivan International Group on behalf of USEPA found:
  - 45 UST cases out of 6423 total open cases (0.70 %) are reported by UST regulators as currently impacting municipal drinking water wells in State of California
  - Of the 45 cases, 3 were not petroleum
  - 27 municipal drinking water wells reported by UST regulators as currently impacted by UST cases
  - Additional "potential impacts" could not be confirmed but also few in number
- 27 wells = **0.32%** of 8,396 total wells in AB 2222 study
- Even if factor in wells taken out of service (and no longer active), still a **very** low percentage

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Community Water System Well Impacts
AB 2222 Draft Report

Statewide reliance on groundwater contaminated by one or more principal contaminants between 2002 and 2010:

- Total number of community water systems that rely on groundwater as primary source of drinking water = 2,584 (8,396 wells)
- Of these, 682 community water systems (26% of total) rely on groundwater contaminated by one or more principal contaminants
- Both natural and anthropogenic sources
- 1,662 active wells (20% of total) were associated with the 682 community water systems
- aka 1,662 “contaminated wells” for this presentation

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Principal Contaminants
Draft AB 2222 Report

Top ten principal contaminants detected in currently active community water system wells (> 90 %):

1. **Arsenic** – detected in 587 wells, in 287 community water systems (w.s.)
2. **Nitrate** – detected in 452 wells, in 206 community w.s.
3. **Gross alpha radioactivity** – detected in 333 wells, in 182 community w.s.
4. **Perchlorate** – detected in 179 wells, in 57 community w.s.
5. **Tetrachloroethylene (PCE)** – detected in 168 wells, in 60 community w.s.
6. **Trichloroethylene (TCE**) – detected in 159 wells, in 44 community w.s.
7. **Uranium** – detected in 157 wells, in 89 community w.s.
8. **1,2-dibromo-3-chloropropane (DBCP)** – detected in 118 wells, in 3 community w.s.
9. **Fluoride** – detected in 79 wells, in 41 community w.s.
10. **Carbon tetrachloride** – detected in 52 wells, in 17 community w.s.

But…"Where's the benzene?" (or MTBE…)

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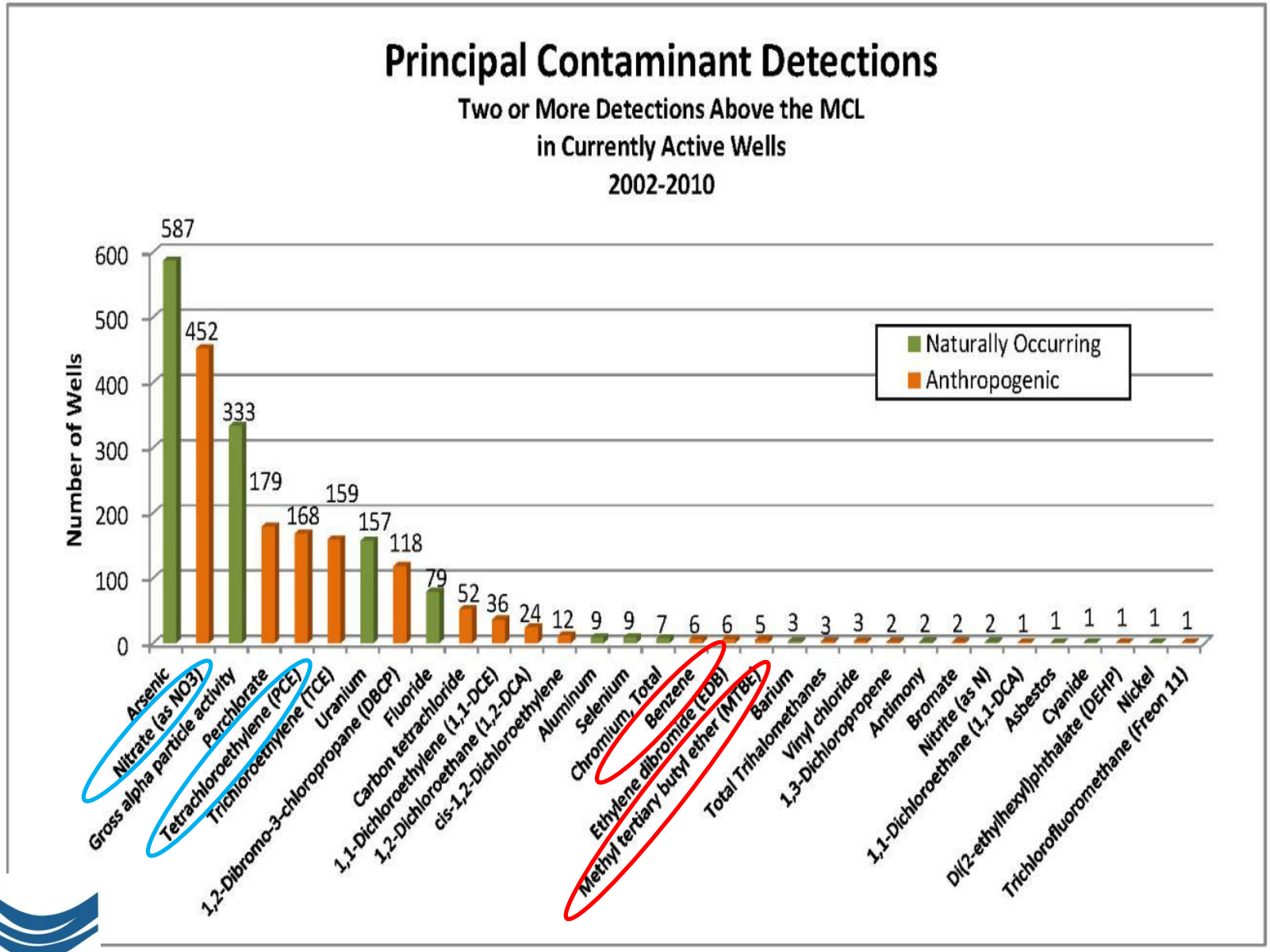
Principal Contaminant Detections
Two or More Detections Above the MCL
in Currently Active Wells
2002-2010
Number of Wells
0
100
200
300
400
500
600
Naturally Occurring
Anthropogenic
587
452
333
179
168
159
157
118
79
52
36
24
12
9
9
7
6
6
5
3
3
3
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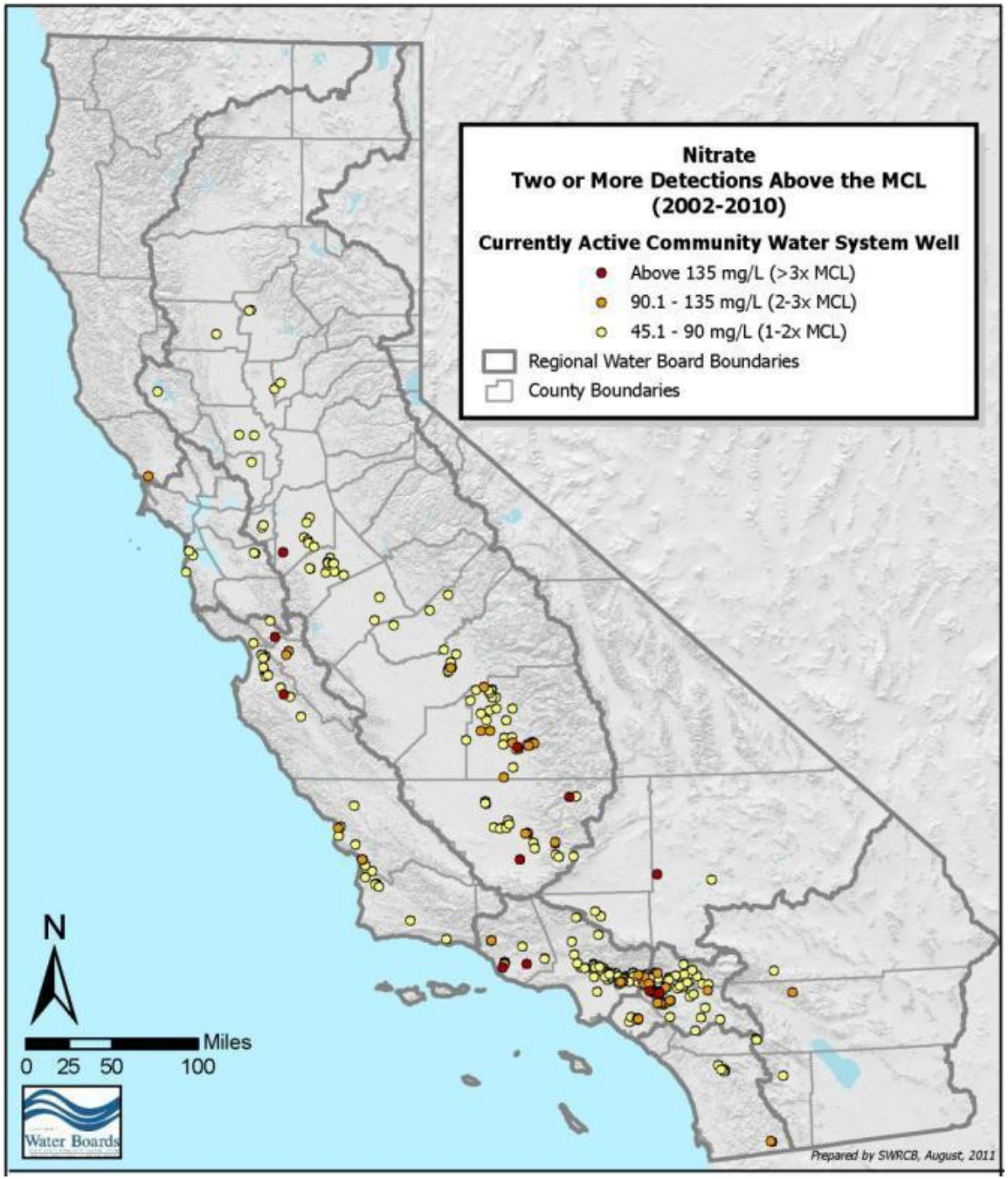
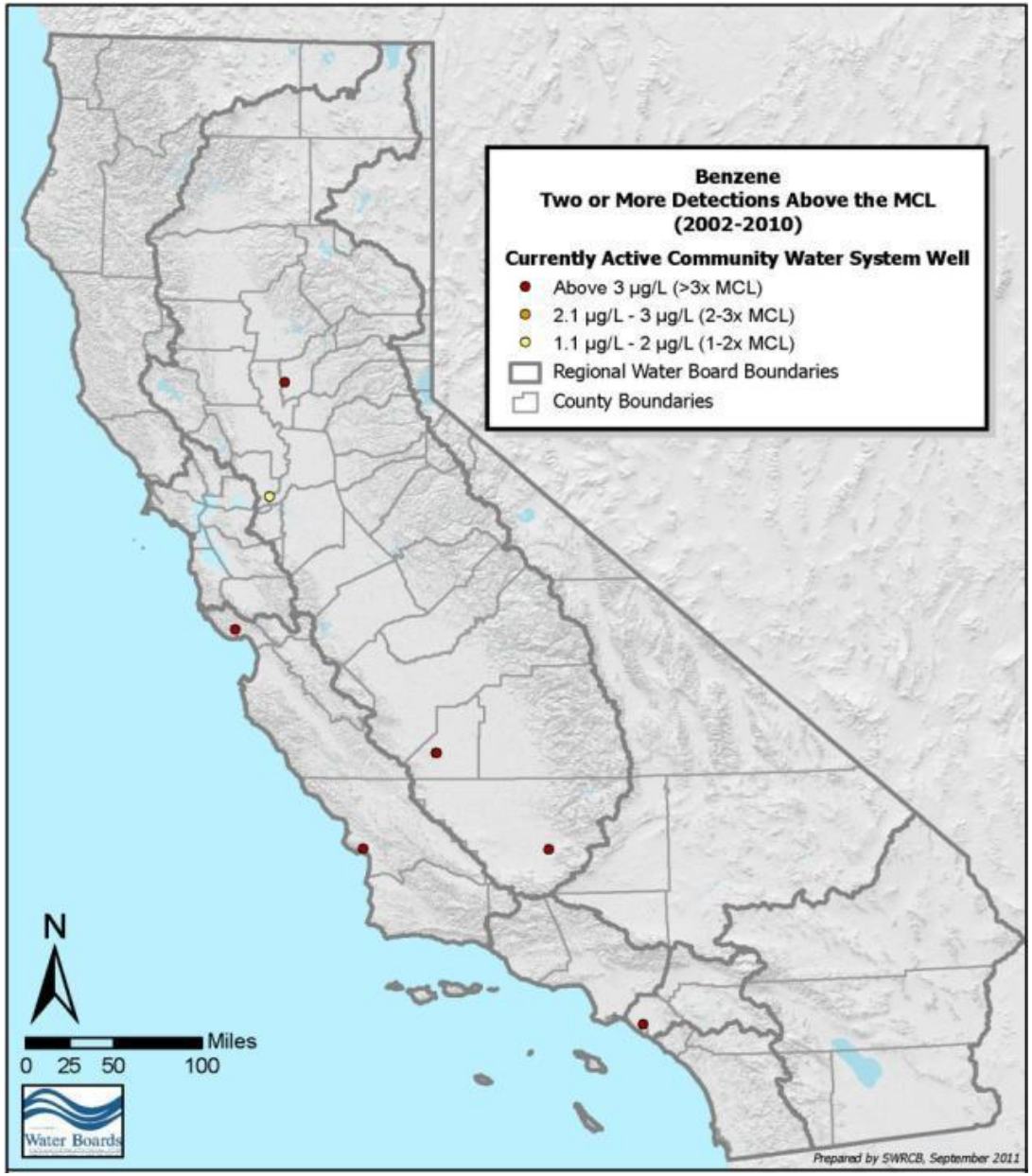
1
1
Arsenic
Nitrate (as NO3)
Gross alpha particle activity
Perchlorate
Tetrachloroethylene (PCE)
Trichloroethylene (TCE)
Uranium
1,2-Dibromo-3-chloropropane (DBCP)
Fluoride
Carbon tetrachloride
1,1-Dichloroethylene (1,1-DCE)
1,2-Dichloroethane (1,2-DCA)
cis-1,2-Dichloroethylene
Aluminum
Selenium
Chromium, Total
Benzene
Ethylene dibromide (EDB)
Methyl tertiary butyl ether (MTBE)
Barium
Total Trihalomethanes
Vinyl chloride
1,3-Dichloropropene
Antimony
Bromate
Nitrite (as N)
1,1-Dichloroethane (1,1-DCA)
Asbestos
Cyanide
Di(2-ethylhexyl)phthalate (DEHP)
Nickel
Trichlorofluoromethane (Freon 11)


Nitrate
Two or More Detections Above the MCL
(2002-2010)
Currently Active Community Water System Well
Above 135 mg/L (>3x MCL)
90.1 - 135 mg/L (2-3x MCL)
45.1 - 90 mg/L (1-2x MCL)
Regional Water Board Boundaries
County Boundaries
N
Miles
0 25 50 100
Water Boards
Prepared by SWRCB, August, 2011


Benzene
Two or More Detections Above the MCL
(2002-2010)
Currently Active Community Water System Well
Above 3 µg/L (>3x MCL)
2.1 µg/L - 3 µg/L (2-3x MCL)
1.1 µg/L - 2 µg/L (1-2x MCL)
Regional Water Board Boundaries
County Boundaries
N
Miles
0 25 50 100
Water Boards
Prepared by SWRCB, September 2011

Methyl tertiary butyl ether (MTBE)
Two or More Detections Above the MCL
(2002-2010)
Currently Active Community Water System Well
Above 39 µg/L (>3x MCL)
26.1 µg/L - 39 µg/L (2-3x MCL)
13.1 µg/L - 26 µg/L (1-2x MCL)
Regional Water Board Boundaries
County Boundaries
N
Miles
0 25 50 100
Water Boards
Prepared by SWRCB, September 2011

Groundwater Contamination from Benzene/MTBE: AB 2222 Draft Report

- Only 6 wells contaminated with benzene:
  - **0.36%** of the 1,662 "contaminated wells"
  - **0.096%** of the 6,222 total wells tested for benzene
- At least 2 of the 6 wells not due to UST releases
  - Other refined petroleum sources (pipelines, etc)
  - "Geogenic" origin of some well contamination (see website)
- Remaining 4 benzene wells = **0.24%** of 1,662 "contaminated wells"
- 5 wells contaminated with MTBE, of which 1 already included as benzene well
- 4 remaining benzene wells plus 4 additional MTBE wells

  = **0.48%** of the 1662 "contaminated wells"

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4. Alignment of Resources with Groundwater Priorities

Excerpt from SWRCB News Clips 12.26.12:

Viewpoints: State needs to guarantee clean drinking water
http://www.sacbee.com/2012/12/26/5075878/state-needs-to-guarantee-clean.html
By Luis Alejo and Henry T. Perea

> "…Most of us assume we will have clean drinking water when we turn on the faucet, but for more than 2 million Californians, this isn't guaranteed. In fact, unless action is taken, the number of people without clean drinking water is likely to grow…."

A Funding Comparison: $2,000,000

- State Water Board approved Resolution No. 2012-0053, allocating $2,000,000 from Cleanup and Abatement Account to CDPH:
  - For interim water drinking water supplies
  - For severely disadvantaged communities pursuing a long-term solution to (nitrate) contamination of their drinking water
  - Expected to pay for two years of interim drinking water for 2,700 service connections (at $30 per month per service connection)

- In comparison, for UST cleanup, $2,000,000 would only pay for:
  - amount spent to date for 4 currently-active average UST Cleanup Fund claims (@$500,000/claim)
  - projected total amount for 2.6 currently-active average UST Cleanup Fund claims (@$750,000/claim)
  - 1.3 claims @ maximum amount of $1,500,000
  - At many UST sites, work done with this funding will not significantly improve public health

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Drinking Water Contamination Sources Compared with Funding

Groundwater contamination sources:

- **UST**
  - **< 1%** of the "contaminated wells" and domestic/small
- **PCE**
  - **10%** of the "contaminated wells"
- **NITRATES**
  - **27%** of the "contaminated wells"

Funding to address contamination:

- **UST**
  - Cleanup Fund
    $183,000,000 per year
- **PCE (and OTHER SOLVENTS)**
  - **No** ongoing funding source for orphan sites other than Water District ratepayers
- **NITRATES**
  - **No** ongoing funding source other than Water District ratepayers
  - Small, Disadvantaged Communities affected

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5. Looking Forward

OPERATING USTs

- High quality current operating USTs vastly reduces risk of new releases, except single-walled
- UST Cleanup Fund currently provides financial assurances required for operating USTs
- Many CA operating USTs also use private insurance for financial assurances
- Some other States use private insurance or public-private entity

UST CLEANUP FUND SUNSET / PROGRAM WIND-DOWN

- Current UST Cleanup Fund sunset date now <3 years away
- State Water Board actions to wind down UST cleanup program by
  - Adopting Policy directing closure of low-threat cases
  - Approving Plan to address highest-priority UST cases and move all cases towards closure
- Other States that have sunset their funds (Texas, Arizona, etc) built in interim dates for an orderly wind-down, rather than "cliff" scenario:
  - Switch to other financial assurances mechanisms for operating USTs
  - Deadline for new claim eligibility and resolution of eligibility disputes
  - Deadline for submittal and processing of requests for reimbursement

FUNDING TO ADDRESS HIGHER-PRIORITY CONTAMINANTS

- Groundwater Strategic Plan…solvents…nitrates
- Upcoming Nitrate Report to Legislature

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Referenced Websites

AB 2222 draft report:
http://www.waterboards.ca.gov/gama/ab2222/docs/cmntes_rely_gw.pdf

UC Davis Report for the SWRCB SBX2 1 Report to the Legislature:
http://groundwaternitrate.ucdavis.edu/

"State needs to guarantee clean drinking water" Luis Alejo and Henry T. Perea:
http://www.sacbee.com/2012/12/26/5075878/state-needs-to-guarantee-clean.html

"**California Impacted Municipal and Domestic Wells**" Sullivan International Group on behalf of USEPA:
http://www.waterboards.ca.gov/water_issues/programs/ust/docs/ca_impacted_municipal_domestic%20wells.pdf

USEPA's UST Report for FY 2011-12:
http://waterboards.ca.gov/water_issues/programs/ust/docs/annual_agency_status_fed_fy2012.pdf

"Geogenic Sources of Benzene in Aquifers Used for Public Supply, California"
Matthew K. Landon and Kenneth Belitz, U.S. Geological Survey, Environ. Sci. Technol. 2012, 46, 8689−8697: http://ca.water.usgs.gov/pubs/LandonBelitz.pdf

UST Program: http://www.waterboards.ca.gov/water_issues/programs/ust/

UST Cleanup Fund including Quarterly Report:
http://www.waterboards.ca.gov/water_issues/programs/ustcf/

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