

Low-Threat Case Closure Policy

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Meeting Topics

- Policy Background
- Criteria for Case Closures
- Low- Threat Case closure
- Present, and Future Petroleum UST Cleanup Efforts
- Contaminants Driving Ongoing Cleanup Efforts
- Q&A



Low-Threat Underground Storage Tank Case Closure Policy (Effective August 17, 2012)

- On May 1, 2012, the State Water Board adopted the Low-Threat Underground Storage Tank Case Closure Policy.
 - See State Water Board [Resolution No. 2012-0016](#).
- The administrative record for the Policy was approved by the Office of Administrative Law (OAL) on July 30, 2012.
- The Policy became effective on August 17, 2012 when the California Environmental Quality Act Notice of Decision was submitted to the Secretary of Resources.

Low-Threat Underground Storage Tank Case Closure Policy

- Preamble
- Criteria for Low-Threat Case Closure
 - General Criteria (a-h)
 - Media-Specific Criteria (1-3)
 1. Groundwater
 2. Vapor Intrusion to Indoor Air
 3. Direct Contact and Outdoor Air Exposure
- Low-Threat Case Closure (a-c)

Preamble

- The purpose of this policy is to establish consistent statewide case closure criteria for low-threat petroleum UST sites. The policy seeks to increase UST cleanup process efficiency.
- This policy is based in part upon the knowledge and experience gained from the last 25 years of investigating and remediating unauthorized releases of petroleum from USTs.
- This policy is a state policy for water quality control and applies to all petroleum UST sites subject to Chapter 6.7 of Division 20 of the Health and Safety Code and Chapter 16 of Division 3 of Title 23 of the California Code of Regulations.

Criteria for Low-Threat Case Closure

- The Policy emphasizes that the criteria described in this policy do not attempt to describe the conditions at all low-threat petroleum UST sites in the State and that the regulatory agency shall issue a closure letter for a case that does not meet these criteria if the regulatory agency determines the site to be low-threat based upon a site specific analysis.
- The Policy recognizes that even if all of the specified criteria in the Policy are met, there may be unique attributes of the case or site-specific conditions that make case closure under the Policy inappropriate. In these cases, the regulatory agency overseeing corrective action at the site must identify the conditions that make case closure under the Policy inappropriate.
- The Policy establishes both general and media-specific criteria that if satisfied, then the leaking UST case is generally considered to present a low threat to human health, safety and the environment.

The General Structure of the Policy

In order to qualify for low-threat UST case closure using this Policy:

- A site must satisfy all of the General Criteria, and
- A site must also satisfy the Media-Specific Criteria for Groundwater, Vapor Intrusion to Indoor Air, and Direct Contact and Outdoor Air Exposure by either:
 - Meeting the **‘Tier One Criteria’**
(Classes, Scenarios/Appendix 1-4, Table 1); or
 - A **Site-Specific Assessment/Analysis**; or
 - **Controlling Exposure**; or
 - Qualifying for an **Exception**
- Notification Requirements, Monitoring Well Destruction Requirement, and Waste Removal Requirement
- ***Professional judgment is required to determine if the appropriate criteria have been met.***

General Criteria

General criteria that must be satisfied by all candidate sites:

- a. **The unauthorized release is located within the service area of public water system;**
- b. **The unauthorized release consists only of petroleum;**
- c. **The unauthorized (“primary”) release from the UST system has been stopped;**
- d. **Free product has been removed to the maximum extent practicable;**
- e. **A conceptual site model that assesses the nature, extent, and mobility of the release has been developed;**
- f. **Secondary source has been removed to the extent practicable;**
- g. **Soil or groundwater has been tested for MTBE and results reported in accordance with Health and Safety Code Section 25296.15; and**
- h. **Nuisance as defined by Water Code section 13050 does not exist at the site.**

General Criteria (cont..)

- a. **The unauthorized release is located within the service area of a public water system**

“....For purposes of this policy, a public water system is a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year.”

General Criteria (cont..)

b. The unauthorized release consists only of petroleum

“For the purposes of this policy, petroleum is defined as crude oil, or any fraction thereof, which is liquid at standard conditions of temperature and pressure, which means 60 degrees Fahrenheit and 14.7 pounds per square inch absolute, including the following substances: motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents and used oils, including any additives and blending agents such as oxygenates contained in the formulation of the substances.”

General Criteria (cont..)

- c. **The unauthorized (“primary”) release from the UST system has been stopped**

“The tank, pipe, or other appurtenant structure that released petroleum into the environment (i.e. the primary source) has been removed, repaired or replaced....”

General Criteria (cont..)

d. Free product has been removed to the maximum extent practicable

“....In meeting the requirements of this section:

(a) Free product shall be removed in a manner that minimizes the spread of the unauthorized release into previously uncontaminated zones by using recovery and disposal techniques appropriate to the hydro geologic conditions at the site, and that properly treats, discharges or disposes of recovery byproducts in compliance with applicable laws;

(b) Abatement of free product migration shall be used as a minimum objective for the design of any free product removal system; and

(c) Flammable products shall be stored for disposal in a safe and competent manner to prevent fires or explosions.”

General Criteria (cont..)

- e. **A Conceptual Site Model (CSM) that assesses the nature, extent, and mobility of the release has been developed**

“....The CSM establishes the source and attributes of the unauthorized release, describes all affected media (including soil, groundwater, and soil vapor as appropriate), describes local geology, hydrogeology and other physical site characteristics that affect contaminant environmental transport and fate, and identifies all confirmed and potential contaminant receptors (including water supply wells, surface water bodies, structures and their inhabitants).... All relevant site characteristics identified by the CSM shall be assessed and supported by data so that the nature, extent and mobility of the release have been established to determine conformance with applicable criteria in this policy. The supporting data and analysis used to develop the CSM are not required to be contained in a single report and may be contained in multiple reports submitted to the regulatory agency over a period of time.”

General Criteria

f. Secondary source has been removed to the extent practicable

““Secondary source” is defined as petroleum-impacted soil or groundwater located at or immediately beneath the point of release from the primary source. Unless site attributes prevent secondary source removal (e.g. physical or infrastructural constraints exist whose removal or relocation would be technically or economically infeasible), petroleum-release sites are required to undergo secondary source removal to the extent practicable as described herein. “To the extent practicable” means implementing a cost-effective corrective action which removes or destroys-in-place the most readily recoverable fraction of source-area mass. It is expected that most secondary mass removal efforts will be completed in one year or less. Following removal or destruction of the secondary source, additional removal or active remedial actions shall not be required by regulatory agencies unless (1) necessary to abate a demonstrated threat to human health or (2) the groundwater plume does not meet the definition of low threat as described in this policy.”

General Criteria (cont..)

- g. Soil or groundwater has been tested for MTBE and results reported in accordance with Health and Safety Code Section 25296.15**

“Health and Safety Code section 25296.15 prohibits closing a UST case unless the soil, groundwater, or both, as applicable have been tested for MTBE and the results of that testing are known to the Regional Water Board. The exception to this requirement is where a regulatory agency determines that the UST that leaked has only contained diesel or jet fuel. Before closing a UST case pursuant to this policy, the requirements of section 25296.15, if applicable, shall be satisfied.”

General Criteria (cont..)

h. Nuisance as defined by Water Code section 13050 does not exist at the site

“Water Code section 13050 defines "nuisance" as anything which meets all of the following requirements:

- (1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
- (2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
- (3) Occurs during, or as a result of, the treatment or disposal of wastes.

For the purpose of this policy, waste means a petroleum release.”

Media-Specific Criteria

Candidate sites must satisfy all three of these media-specific criteria:

- 1. Groundwater**
- 2. Vapor Intrusion to Indoor Air**
- 3. Direct Contact and Outdoor Air Exposure**

Media-Specific Criteria

1. Groundwater

“...to satisfy the media-specific criteria for groundwater, the contaminant plume that exceeds water quality objectives must be stable or decreasing in areal extent...”

“A plume that is “stable or decreasing” is a contaminant mass that has expanded to its maximum extent: the distance from the release where attenuation exceeds migration.”

‘Tier One Criteria’ – Meet all of the characteristics of one of the classes (1-4).

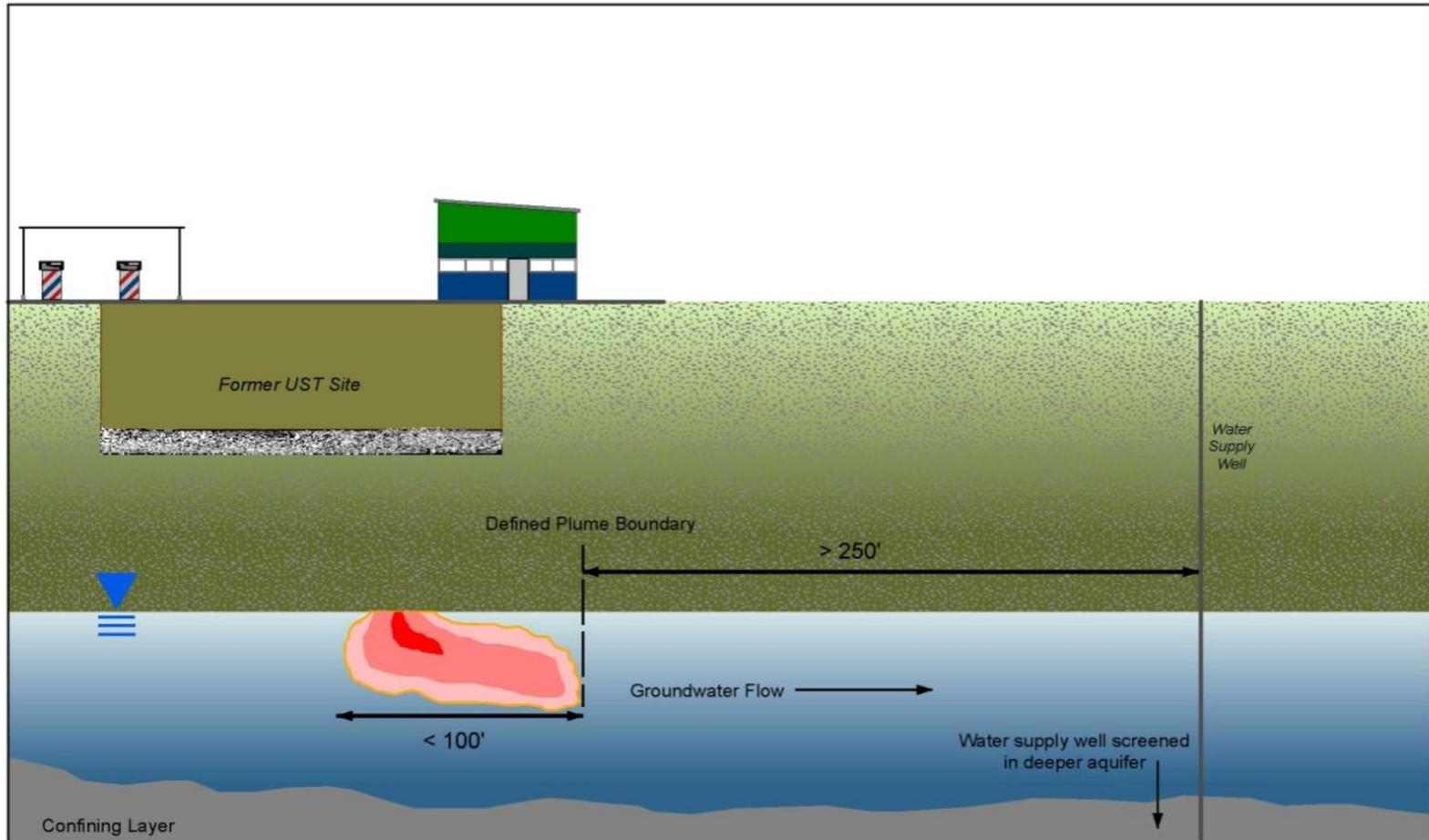
Site-Specific Analysis – Meet all of the characteristics of class (5).

“The regulatory agency determines, based on an analysis of site specific conditions that under current and reasonably anticipated near-term future scenarios, the contaminant plume poses a low threat to human health and safety and to the environment and water quality objectives will be achieved within a reasonable time frame.”

Exception – Sites with Releases That Have Not Affected Groundwater

“Sites with soil that does not contain sufficient mobile constituents [leachate, vapors, or light non-aqueous-phase liquids (LNAPL)] to cause groundwater to exceed the groundwater criteria in this policy shall be considered low-threat sites for the groundwater medium.”

Groundwater-Specific Criteria Class (1)



Groundwater Pathway Scenario 1

Scenario Characteristics

1. Contaminated Groundwater Plume is <math>< 100'</math> in Length.
2. There is no free-product.
3. The nearest existing water supply well and/or surface water body is >math>250'</math> from defined plume boundary.



Groundwater Elevation



Contaminated Groundwater Plume



Groundwater



Soil

Media-Specific Criteria

2. Petroleum Vapor Intrusion to Indoor Air

'Tier One Criteria' – “a. Site-specific conditions at the release site satisfy all of the characteristics and criteria of scenarios 1 through 3 as applicable, or all of the characteristics and criteria of scenario 4 as applicable; **or**”

Site-Specific Analysis – “b. A site-specific risk assessment for the vapor intrusion pathway is conducted and demonstrates that human health is protected to the satisfaction of the regulatory agency; **or**”

Controlling Exposure – “c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, the regulatory agency determines that petroleum vapors migrating from soil or groundwater will have no significant risk of adversely affecting human health.”

Exception – “....Satisfaction of the media-specific criteria for petroleum vapor intrusion to indoor air is not required at active commercial petroleum fueling facilities, except in cases where release characteristics can be reasonably believed to pose an unacceptable health risk.”

Media-Specific Criteria

3. Direct Contact and Outdoor Air Exposure

‘Tier One Criteria’ – “a. Maximum concentrations of petroleum constituents in soil are less than or equal to those listed in Table 1 for the specified depth below ground surface (bgs)...; **or**”

Site-Specific Analysis – “b. Maximum concentrations of petroleum constituents in soil are less than levels that a site specific risk assessment demonstrates will have no significant risk of adversely affecting human health; **or**”

Controlling Exposure – “c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, the regulatory agency determines that the concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health.”

Low-Threat Case Closure

“... If the case has been determined by the regulatory agency to meet the criteria in this policy, the regulatory agency shall notify responsible parties that they are eligible for case closure and that the following items, if applicable, shall be completed prior to the issuance of a uniform closure letter specified in Health and Safety Code section 25296.10 .”

a. Notification Requirements – Municipal and county water districts, water replenishment districts, special act districts with groundwater management authority, agencies with authority to issue building permits for land affected by the petroleum release, owners and occupants of the property impacted by the petroleum release, and the owners and occupants of all parcels adjacent to the impacted property shall be notified of the proposed case closure and provided a 60 day period to comment. The regulatory agency shall consider any comments received when determining if the case should be closed or if site specific conditions warrant otherwise.

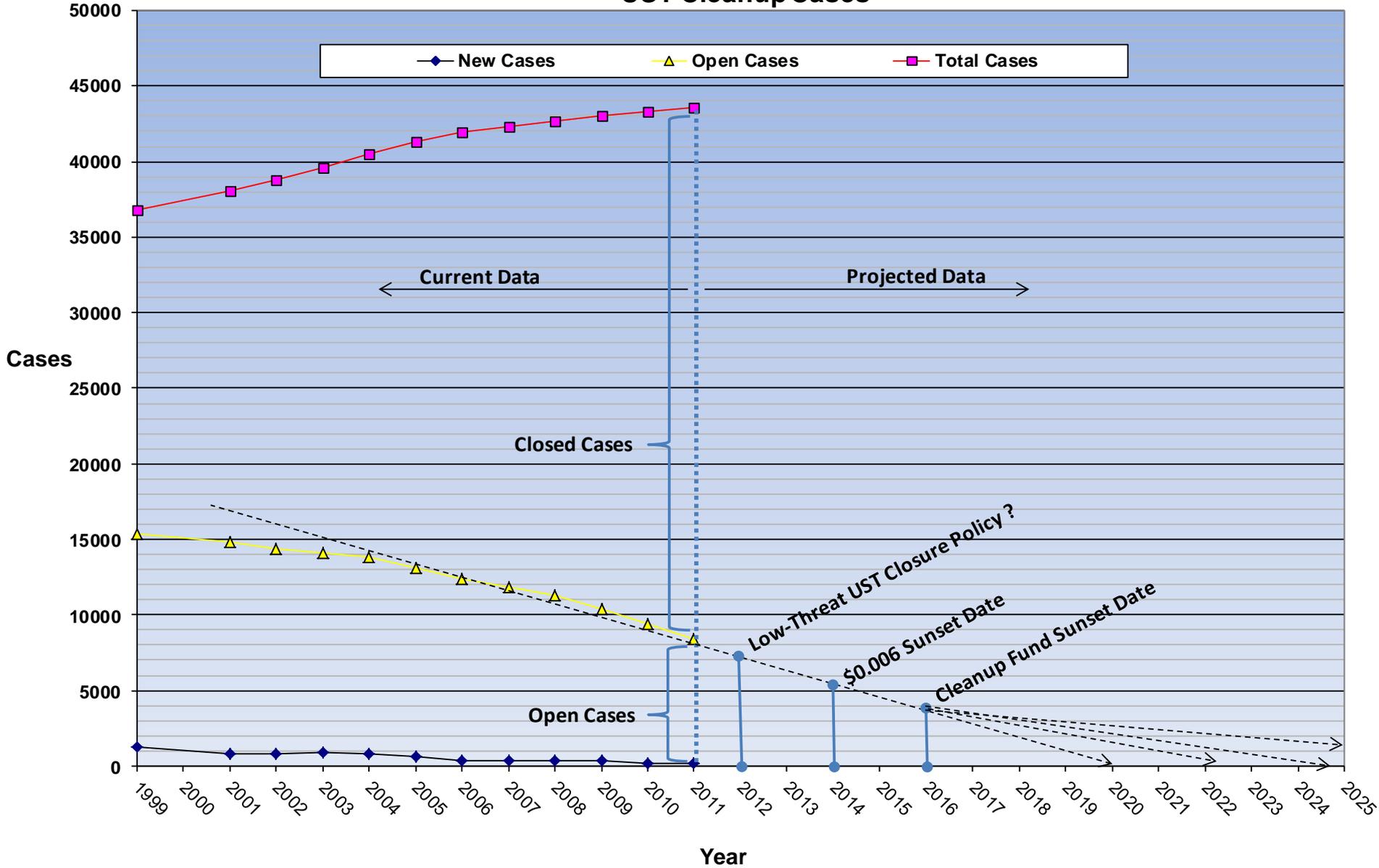
b. Monitoring Well Destruction – All wells and borings installed for the purpose of investigating, remediating, or monitoring the unauthorized release shall be properly destroyed prior to case closure unless a property owner certifies that they will keep and maintain the wells or borings in accordance with applicable local or state requirements.

c. Waste Removal – All waste piles, drums, debris and other investigation or remediation derived materials shall be removed from the site and properly managed in accordance with regulatory agency requirements.”

Past, Present, and Future Petroleum UST Cleanup Efforts



UST Cleanup Cases

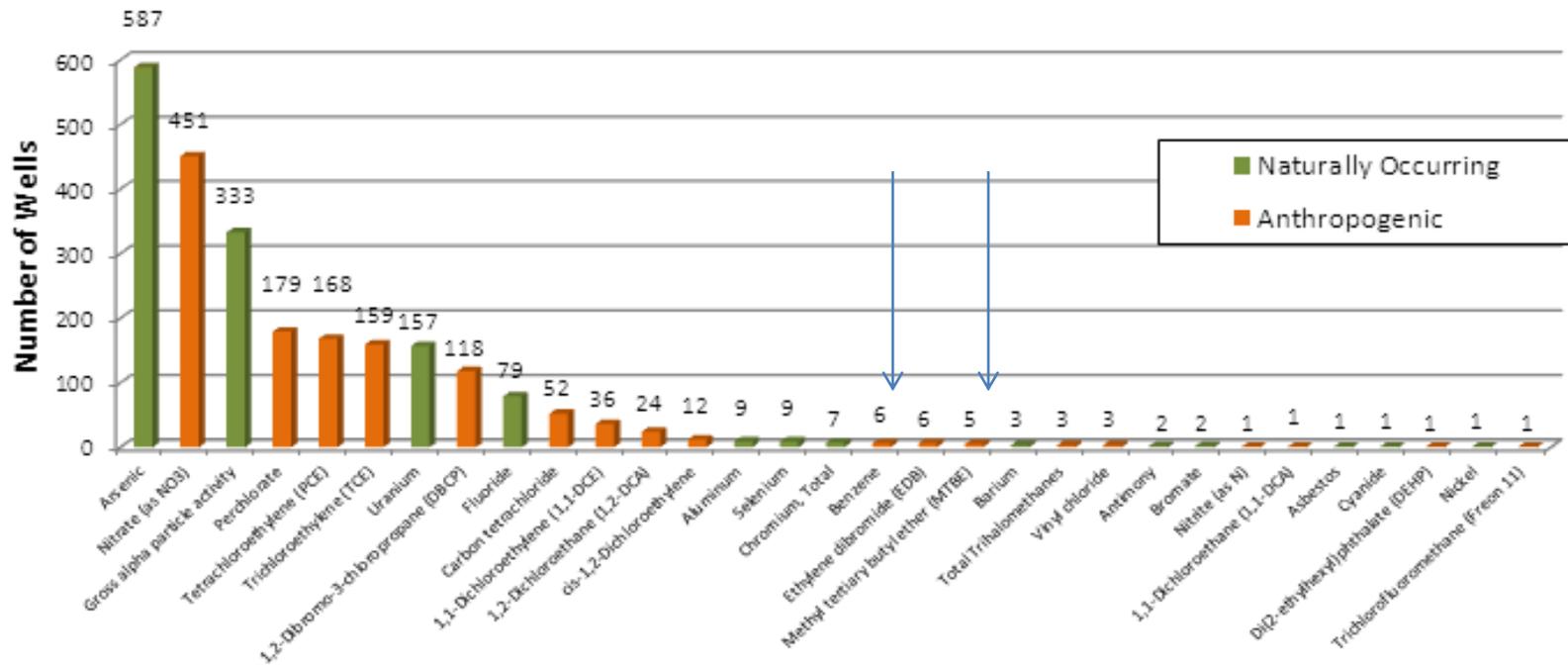


UST Impacts on Municipal Drinking Water Wells

- “**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

Contaminants Driving Ongoing Cleanup Efforts

Principal Contaminant Detections: Wells
Two or More Detections Above the MCL
in Currently Active Wells
2002-2010



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 (8396 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

Principal Contaminants

Draft AB 2222 Report

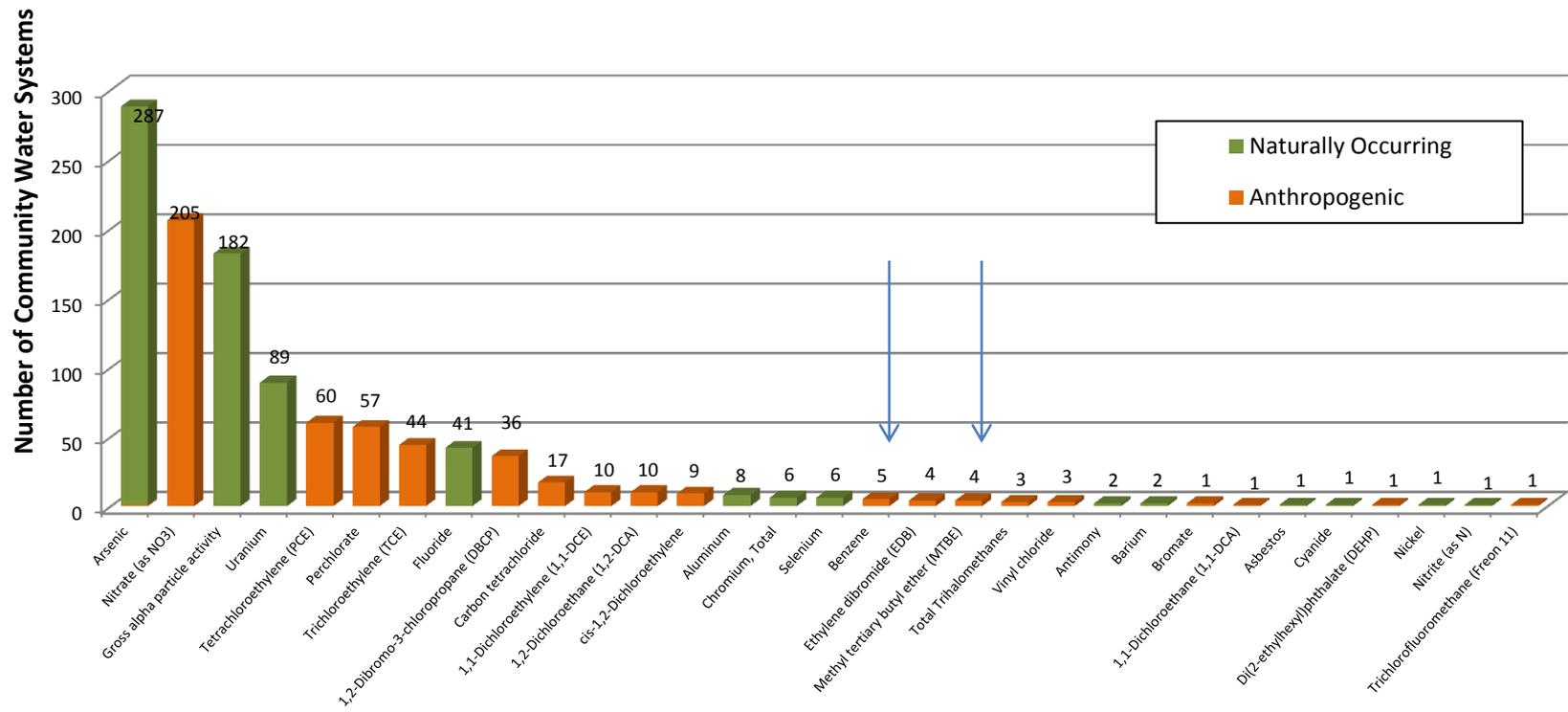
**Top ten principal contaminants detected
in currently active community water system wells (> 90 %):**

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...“ But...“Where’s the benzene?” (or MTBE...)

Contaminants Driving Ongoing Cleanup Efforts

Principal Contaminant Detections: Community Water Systems
Two or More Detections Above the MCL
in Active Wells 2002-2010



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