

A photograph of a pond with lily pads and trees reflected in the water. The text is overlaid on the image.

Quality Assurance Split Sampling at Selected Sites, Longhorn Army Ammunition Plant

Longhorn Restoration Advisory Board

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Background

- USGS has a partnership with USEPA through an interagency agreement. USGS provides technical support for USEPA Region 6.
- USEPA requested USGS assistance to collect quality assurance split samples during various sampling activities at LHAAP.

Background

- USGS prepared a quality assurance project plan that was approved by USEPA.

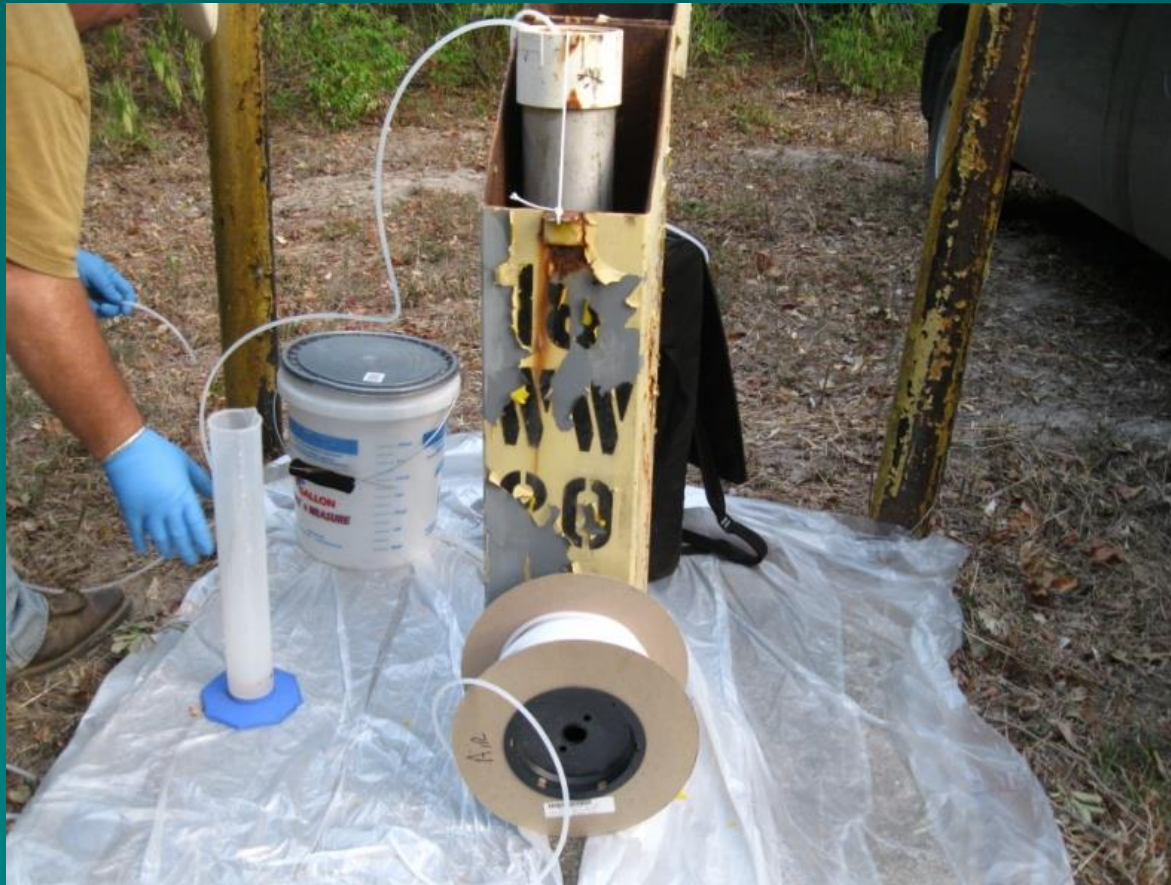
Objectives

- **Observe sampling procedures of U.S. Army contractor.**
- **Collect split samples from selected wells.**
- **Report findings of field and lab comparisons to EPA.**

Sampling Events

- September 2012,
22 wells at LHAAP 18/24 (volatile organic compounds, metals, and perchlorate)
- April 2013,
10 wells at selected sites for
1-4 dioxane special study

USGS observed the sampling procedures used by the U.S. Army contractor



Field Sampling Observations

- USGS observed several instances where standard operation procedures (as outlined in sampling plan) were not followed properly. USGS provided comments to the EPA and the Army has addressed those deficiencies.

Quality Assurance Split Sampling Comparisons

- The relative percent difference (RPD) between two quantities is the difference between them, expressed as a comparison to the size of one or both of them. (20 RPD used as the standard)
Such measures are unit less.

Examples of Relative Percent Difference

Well Number	Contaminant µg/L	AECOM	USGS	RPD
MW-23	Perchlorate	53,100	49,000	8
MW-7	Perchlorate	34,100	57,000	50.3
MW-16	Trichloroethene	38.7	39	0.8
MW-9	Chromium	12.6	10	23

Results

September 2012 (site 18/24, 22 wells)

- RPDs were exceeded in 24 out of 60 paired samples. Analytical method difference and dilutions were the primary factors for exceedances.

What is 1,4 Dioxane?

- Used as a stabilizer in chlorinated solvents such as 1,1,1-trichloroethane
- Probably carcinogenic
- Highly mobile (in water) compared to other solvent compounds
- Degradation is slow

Results

April 2013 (10 wells)

- RPDs were exceeded in 5 out of 6 paired samples (20 RPD used as the standard). Analytical method and sampling protocol differences are the most likely reasons for RPD exceedance.

Conclusions

- Overall, most laboratory splits of the contaminants of concern show good repetition.
- Field collection and analytical method differences are primary factors in exceedances of RPD for selected contaminants (perchlorate and 1,4 dioxane).
- Army and contractor have followed recommended changes in sample collection provided by the EPA.