



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**

Well MIDDLE-2051 Investigation and Results

Presentation to Citizens Advisory Board

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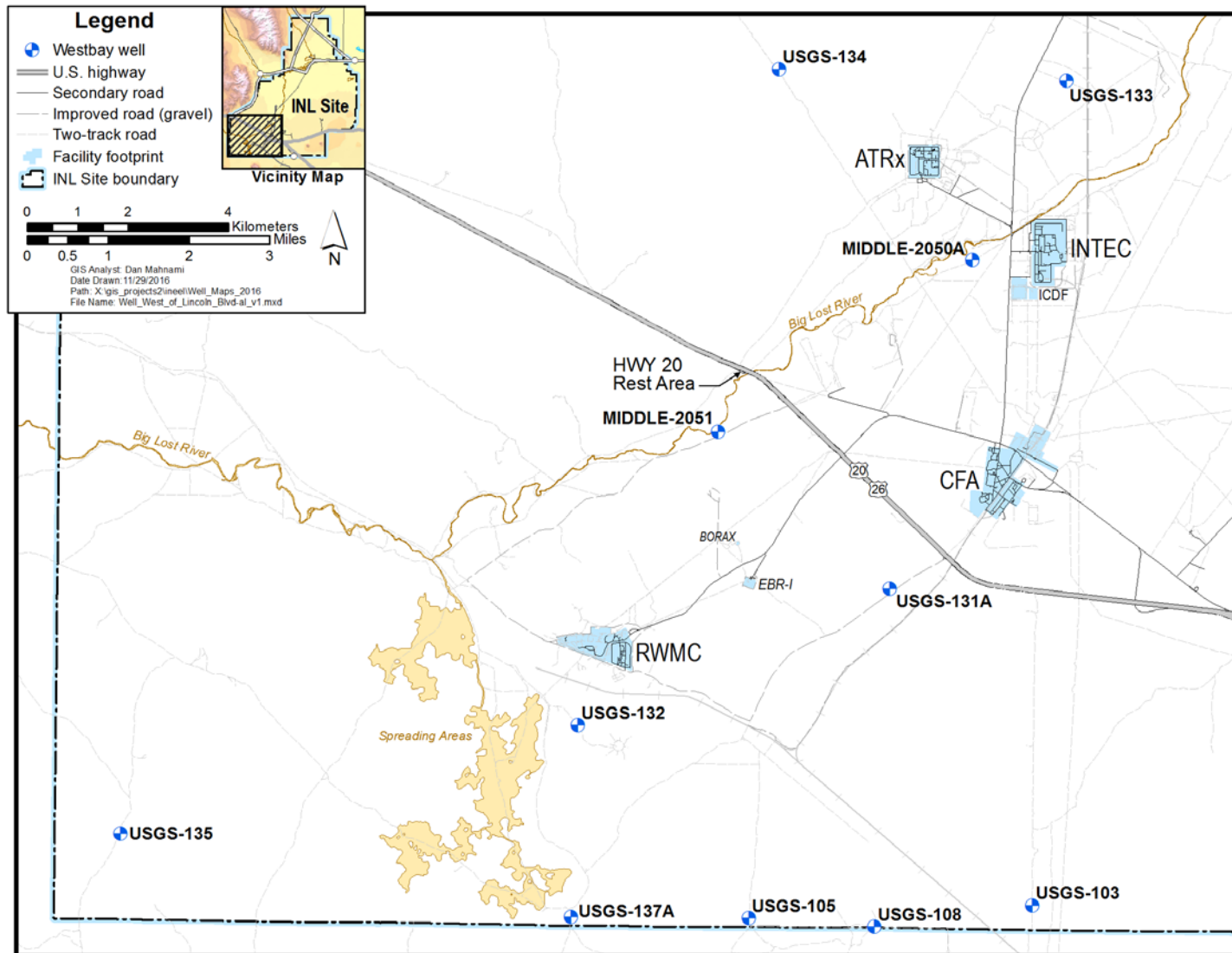
Well MIDDLE-2051



Recap

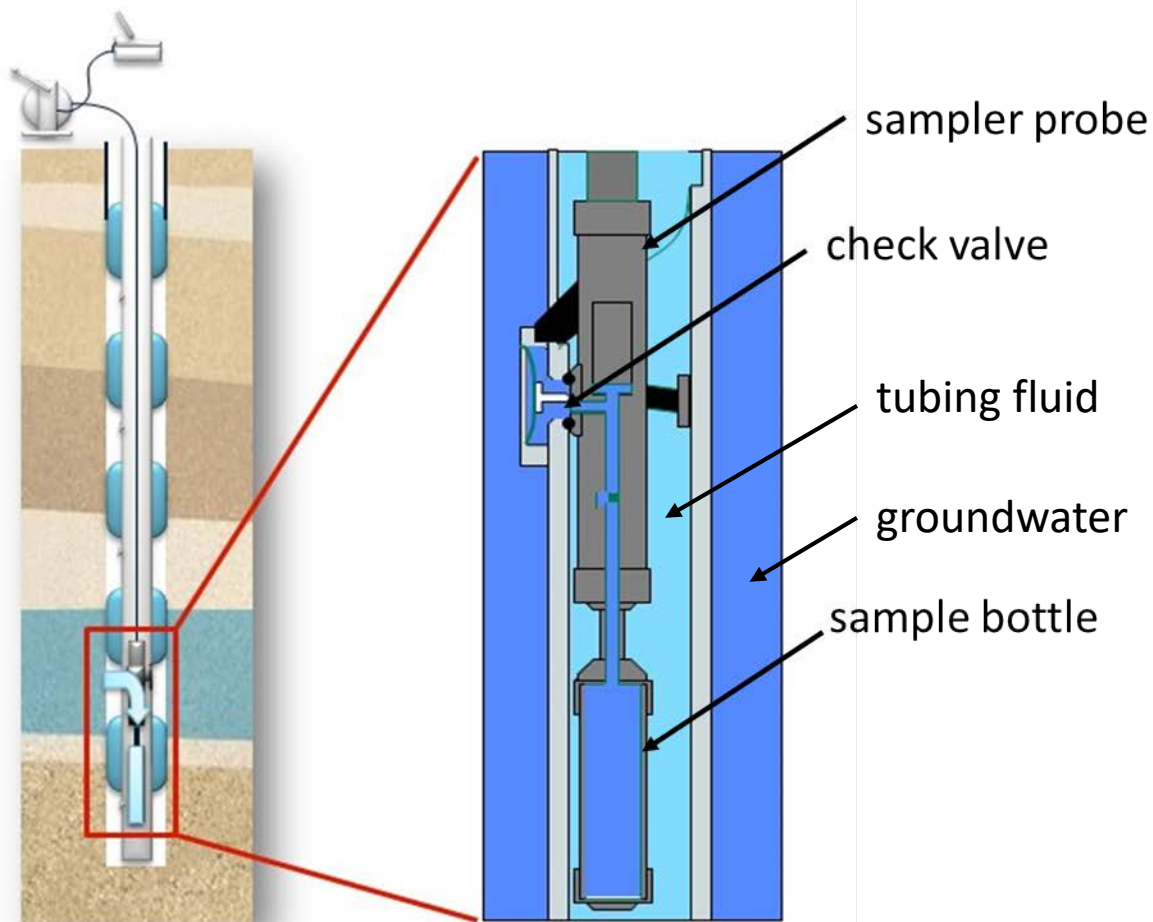
- In November 2015, the solvent perchloroethylene (PCE) was detected in water samples from well MIDDLE-2051
- Follow-up sampling demonstrated that the Westbay well tubing fluid was contaminated with PCE – **but PCE was not present in the aquifer** (outside the well)
- The agencies agreed to implement the New Site Identification process from the Operable Unit 10-08 ROD to further investigate the nature and extent of the problem.

Location of 11 Westbay Wells



Westbay Well Details

Westbay Fluid Sampling



Downhole Camera Image

Well MIDDLE-2051 sampling port (looking down)



Investigatory Approach

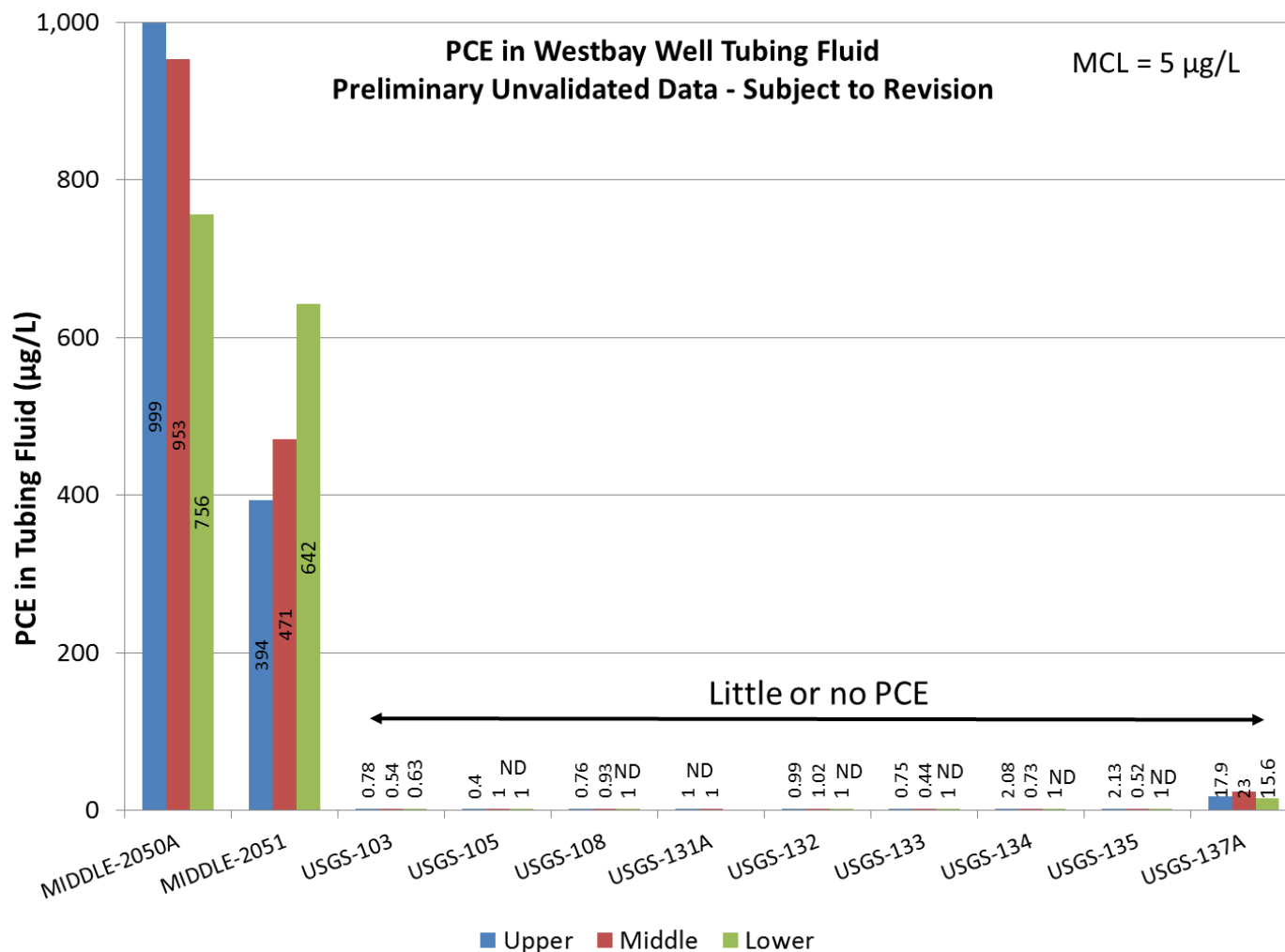
Investigation Study Questions:

- How could the well(s) have become contaminated?
- Could there be similar problems with other Westbay wells?
- Can the well(s) be rehabilitated satisfactorily?
- What preventative measures or improvements can be made?

Tasks Completed

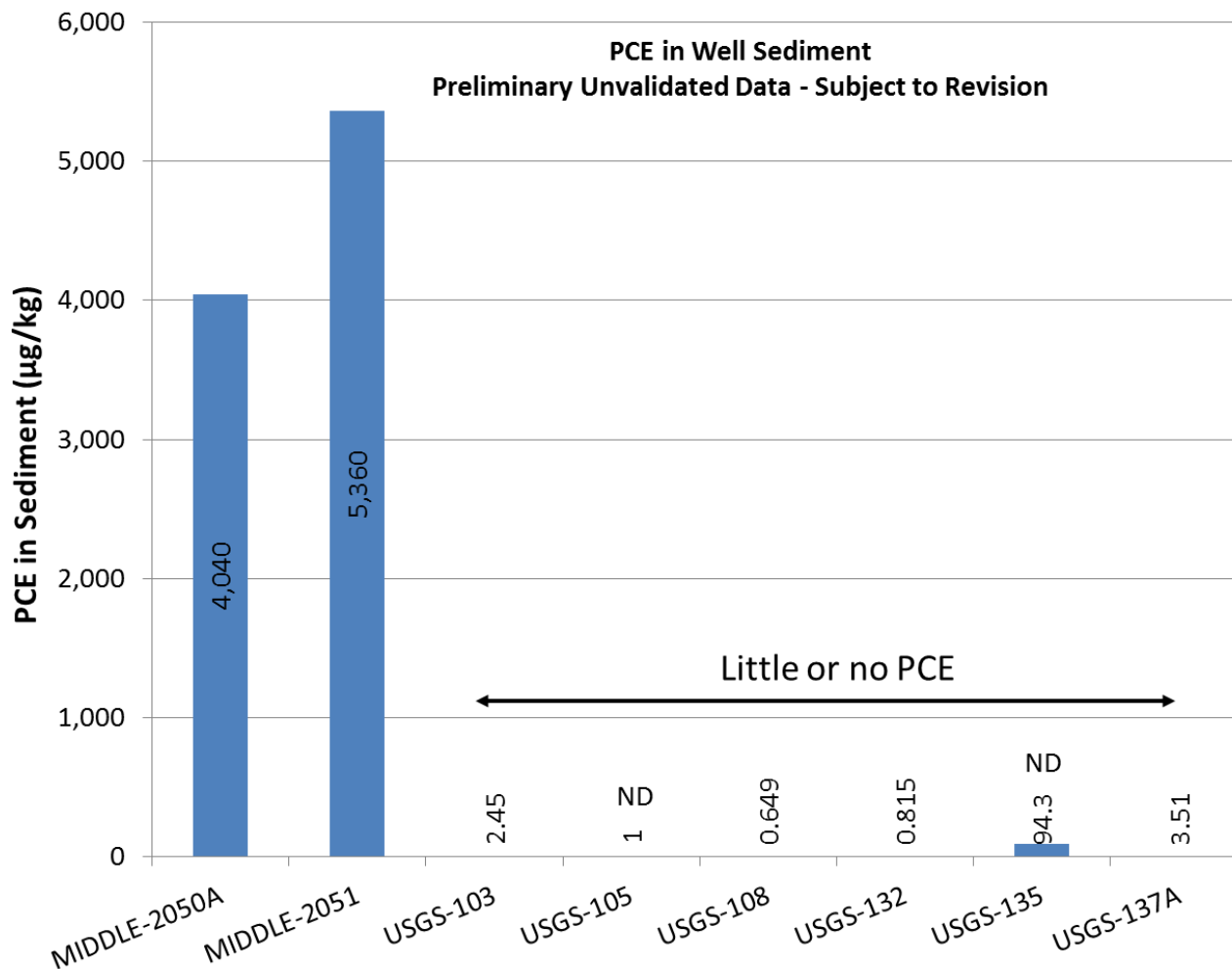
- Prepared Field Sampling Plan - approved Jan. 2017
- Collected tubing fluid samples from WB wells
- Collected sediment samples from WB wells
- Performed downhole video inspection of Westbay wells
- Reconstructed chronology for well MIDDLE-2051
- Inspected sampling equipment storage areas (ICP and USGS)
- Collected swipe samples from WB equipment (ICP and USGS)
- Laboratory analysis of water and swipe samples
- Assess need for well rehabilitation – in progress
- Prepare final report of findings – in progress

Results - Westbay Tubing Fluid



Note: tubing fluid is isolated within the Westbay well and does not contact the groundwater.

Results - Westbay Well Sediment



Investigation Results

- PCE source remains unknown...no smoking gun, but PCE could have been introduced via:
 - Contaminated water truck or water hose used during well construction (2005)
 - Contaminated downhole equipment used after well construction
- Extent of PCE contamination in 11 Westbay wells:
 - 2 wells contain PCE up to 200x MCL (Wells MIDDLE-2050A and MIDDLE-2051)
 - 8 wells contain little or no PCE (<MCL)
 - 1 well contains PCE at 5x MCL (Well USGS-137A)
- Can the well(s) be rehabilitated satisfactorily?
 - Yes; several methods can be used to remove PCE from the tubing fluid
 - All of the WB wells can be used as is for non-VOC sampling & analysis
- Preventive measures and process improvements:
 - Cleanup of the tubing fluid in PCE-contaminated wells will reduce the chance of cross contamination
 - Equipment decontamination procedures have been revised to be more rigorous to eliminate possible carry-over of PCE from one well to the next.

Conclusions

- PCE is present in the tubing fluid in MIDDLE-2051 & MIDDLE-2050A;
- The tubing fluid in eight of the WB wells contain little or no PCE (<MCL);
- The tubing fluid in one WB well contains a little PCE (5x MCL);
- PCE is not present in groundwater or the aquifer;
- Contaminated tubing fluid is not a threat to the aquifer or environment;
- The New Site Investigation process was employed, but because PCE has not been released to the environment, the affected WB wells will not become new CERCLA Sites.
- Affected Westbay wells constitute valuable assets for groundwater monitoring, and will be rehabilitated, as necessary;
- Well rehabilitation options are being evaluated, and will be performed as well maintenance.