



EPA Pavillion Groundwater Investigation

**2010-2011 Sampling
Summary of Results and Next Steps**



Agenda

- Why are we here, what next
- Background
- Drinking water well sampling overview and results
- Deep monitoring wells sampling results
- Actions currently ongoing
- Next steps



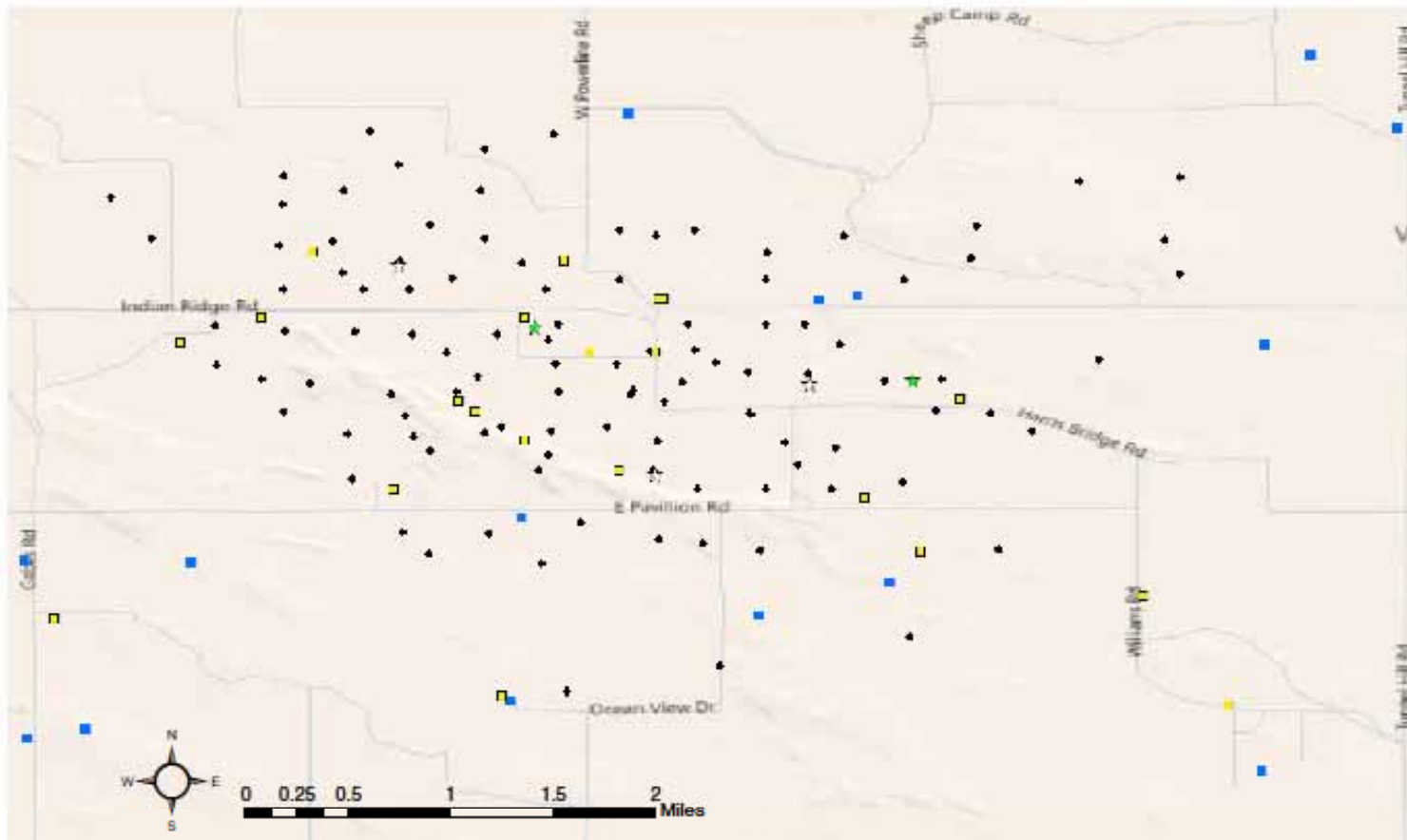
Pavillion Groundwater Investigation Background/History

- EPA approached by residents in 2008 with concerns about adverse changes to drinking water
- After discussions with WDEQ, EPA initiated sampling of drinking water wells in 2009. Second sampling took place in 2010.
- Based on results, EPA installed 2 monitoring wells to assess conditions deeper in the aquifer.
- EPA sampled monitoring wells and select drinking water wells in Oct 2010 and April 2011.
- Working collaboratively with agencies and stakeholders through State's path forward process

Drinking Water Well Sampling Results

- A total of 42 private drinking water and 4 stock wells were sampled
- Similar constituents/concentrations found in all phases:
 - Thermogenic methane in 10 of 28 wells from ~10 to ~800 ppb
 - Diesel and Gasoline Range Organics are widespread (10s to 100s ppb)
 - Specific petroleum-related compounds (e.g. adamantanes) found in some wells at ppb levels
 - 2-butoxyethanol phosphate (9 wells), phenols, naphthalene
 - High sodium and sulfate (characteristic of entire aquifer)
 - No significant nitrate or pesticides
- Low levels of DRO in public wells but no exceedance of primary drinking water standard
- ATSDR recommended that residents use alternate water for cooking and drinking. And ventilation of bathrooms for those wells with high methane

Domestic Wells with Detections of Organics



Legend

- Domestic Water Well w/ Methane and/or DRO Detection
- Domestic Water Well
- ☆ Pit Monitoring Well
- ★ EPA Monitoring Well
- Production Well

Production Well Information from <http://wogcc.state.wy.us/>

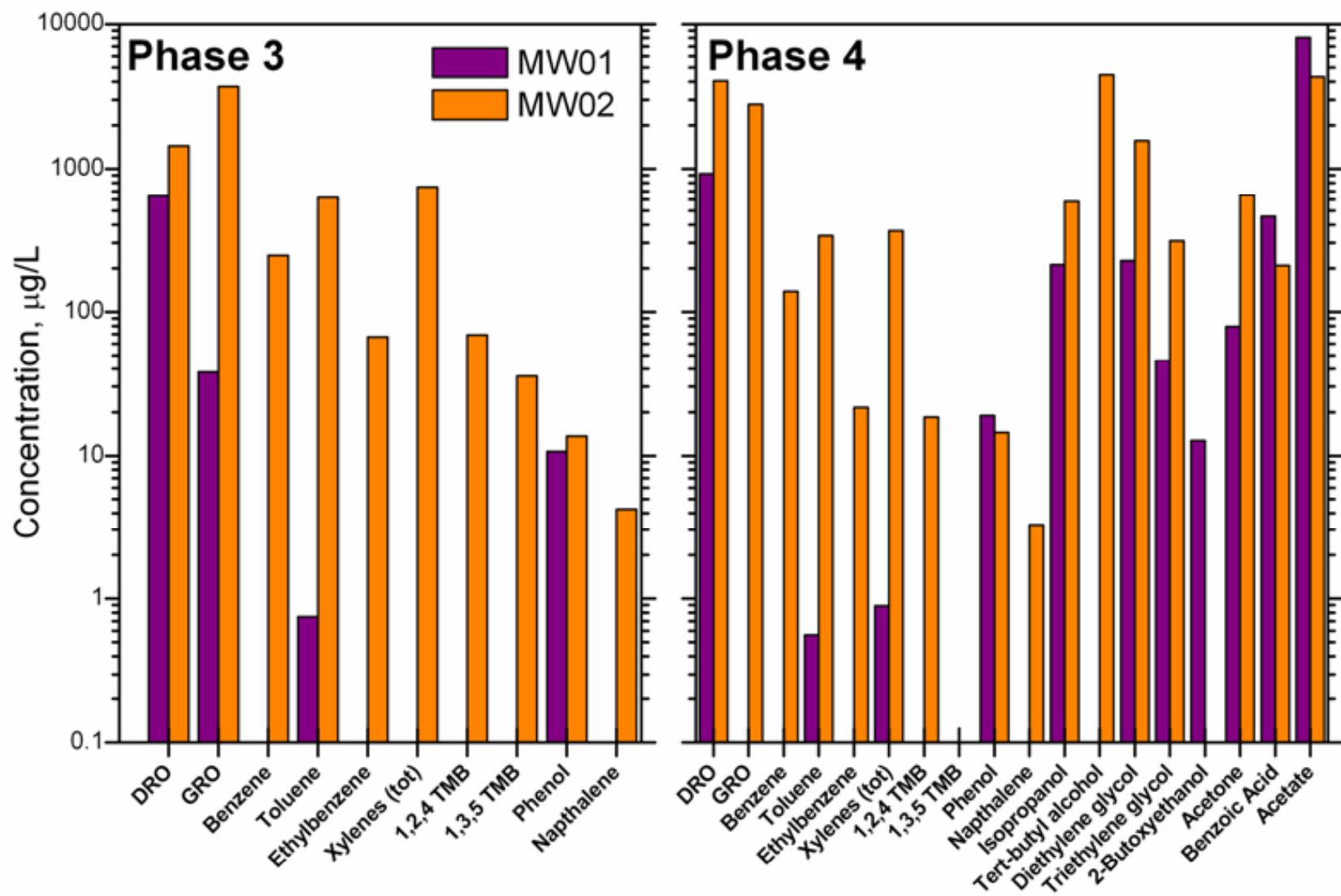
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Monitoring Well Sampling Results

- Elevated pH— ranging from 11.2-12
- Potassium (8-18x) and chloride (18x) significantly elevated
- Synthetic organic compounds including glycols, alcohols and 2-butoxyethanol
- Methane at near-saturation levels (up to 19 mg/L)- similar isotopic signature to production gas
- Other petroleum-related detections— BTEX (including benzene at 50x the MCL), phenols, trimethylbenzenes, DRO

Deep Monitoring Well Sampling Results



Actions Ongoing

- Since last August Encana has been voluntarily funding alternate water for residents with organic contaminants in their wells
- Work group continuing on voluntary cleanup of legacy pits in field
- Continuing work to assess wellbore integrity
- Investigation of alternatives for permanent alternative source of water
- Review of data from deep monitoring wells
- Final report

Next Steps

- The data has already gone through a rigorous quality assurance review process that was recently completed
- EPA is sharing the data and background information with the work groups and the public to provide an opportunity for input prior to releasing our findings
- EPA plans to issue our report and findings by late November and to initiate a formal peer review process with opportunity for public comment
- The peer review process may take several months. The peer review panel will accept comment from all stakeholders and the public. Once that is completed and our findings finalized, we will release a final report in the early spring