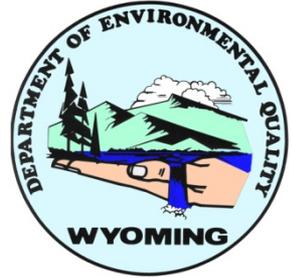
An aerial photograph of a wide river valley in Wyoming. The river winds through the center of the frame, surrounded by brownish-green fields and some trees. In the middle distance, there is a small cluster of buildings and a tall oil derrick, representing an oil and gas production site. The background shows rolling hills and snow-capped mountains under a clear blue sky.

Managing Oil and Gas Production Site and Midstream Facility Emissions Inventories in Wyoming

Brian R Hall
Natural Resources Program Principal
WY Department of Environmental Quality
Air Quality Division

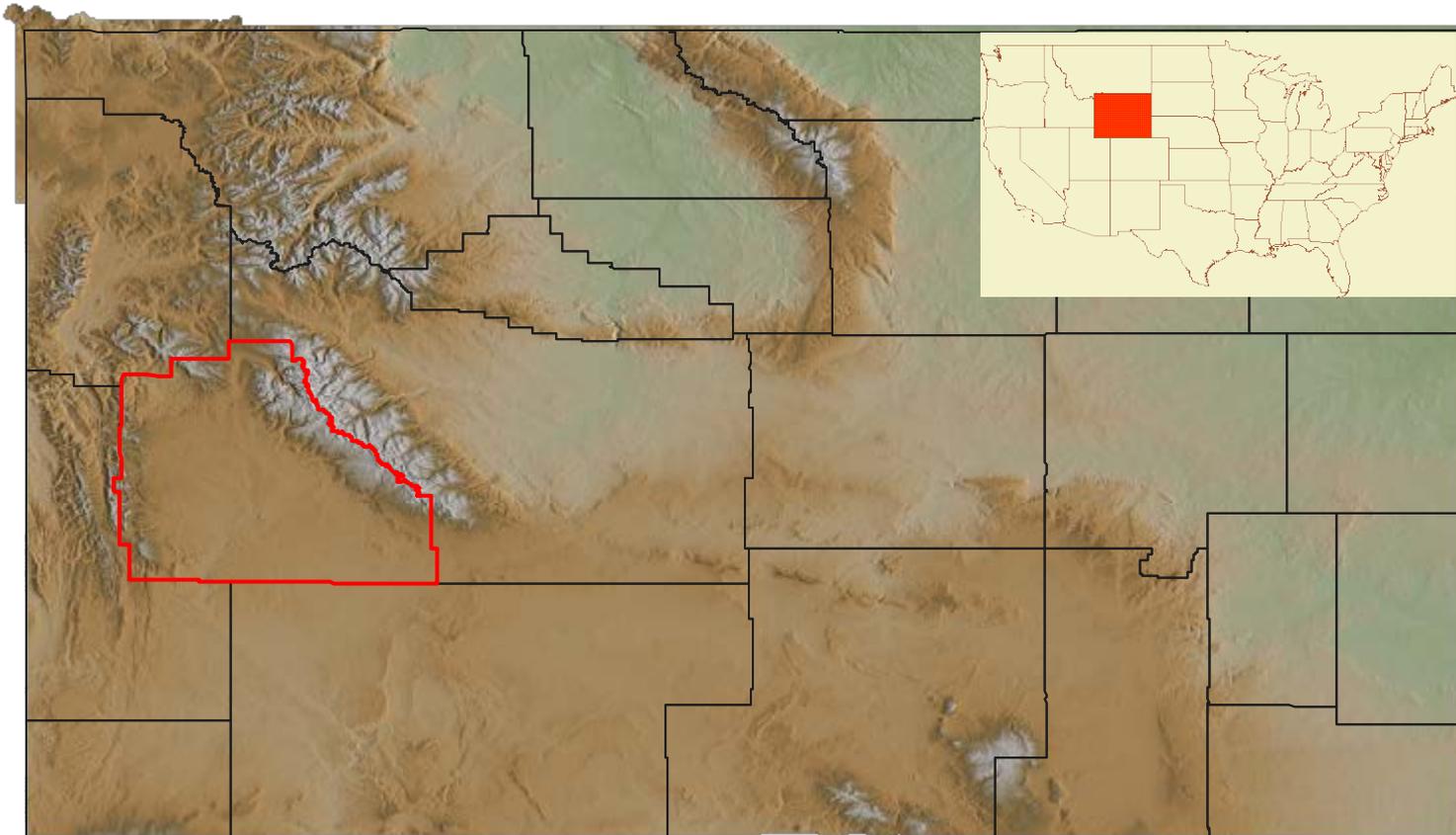
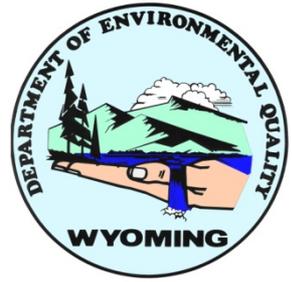
20th International Emissions Inventory Conference
August 15, 2012

Topics

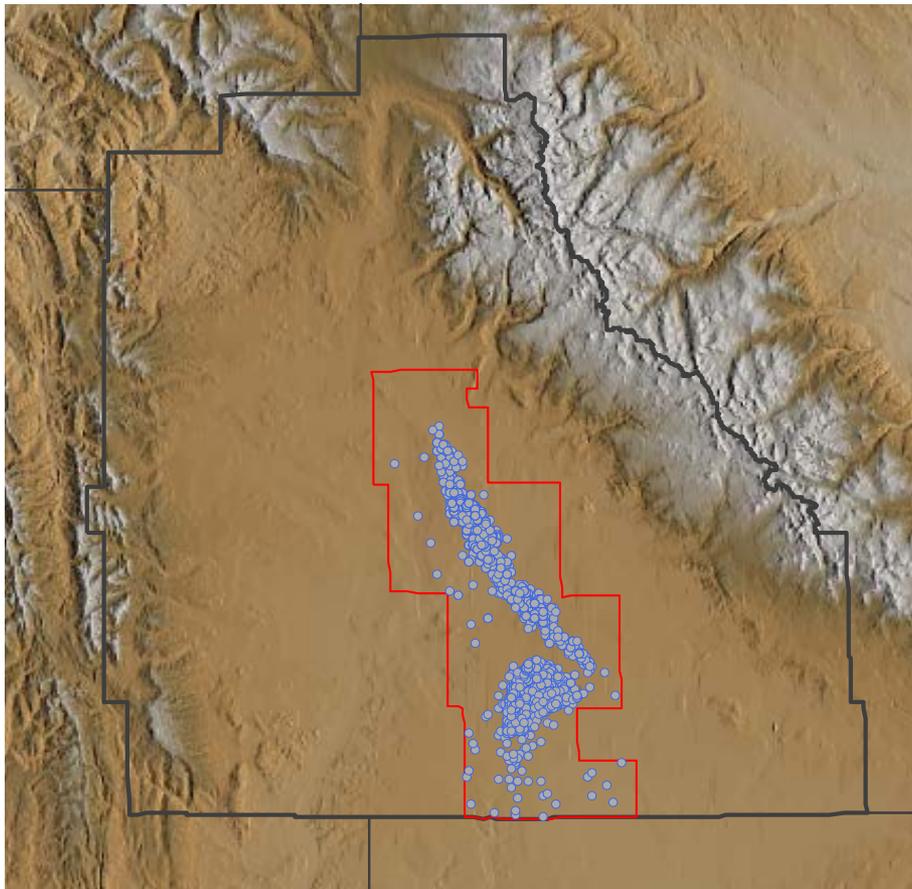
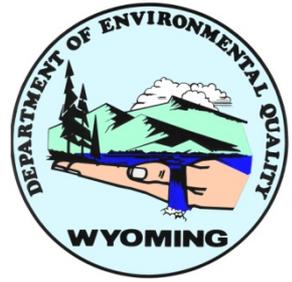


- ◆ Oil and Gas Development in Sublette County, Wyoming
- ◆ Emissions Inventory Development for the Oil and Gas Sector
- ◆ Management of Emissions Data

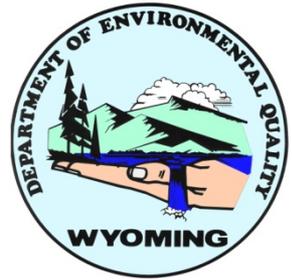
Oil and Gas Development



Oil and Gas Development



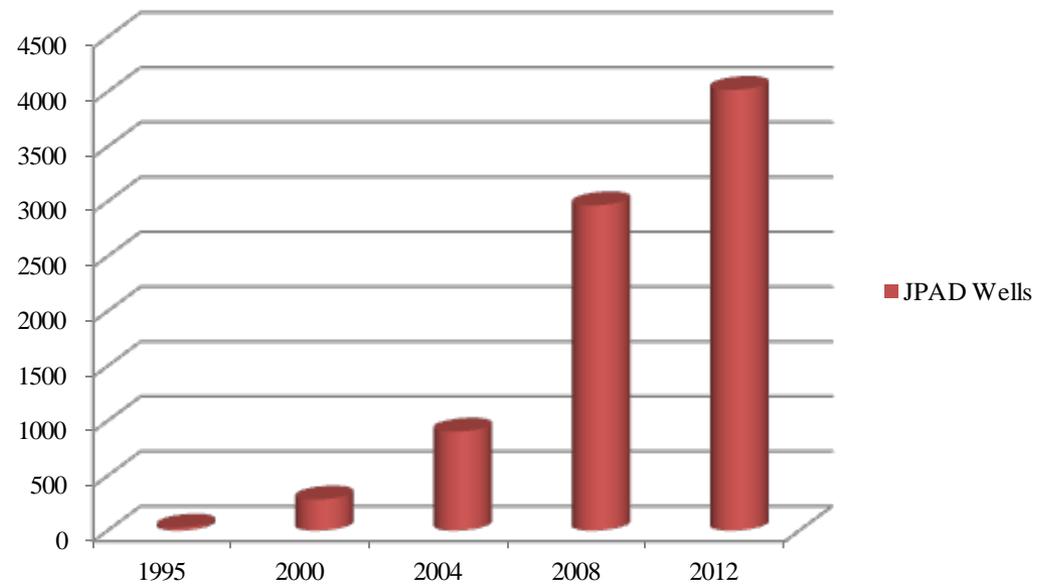
- ◆ Jonah Field and Pinedale Anticline Development (JPAD)

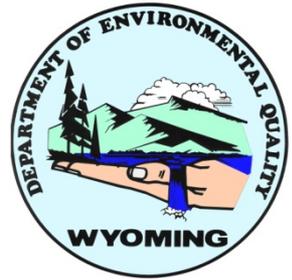


Oil and Gas Development

◆ Producing JPAD Wells

- 26 in 1995
- 282 in 2000
- 901 in 2004
- 2964 in 2008
- 4016 in 2012

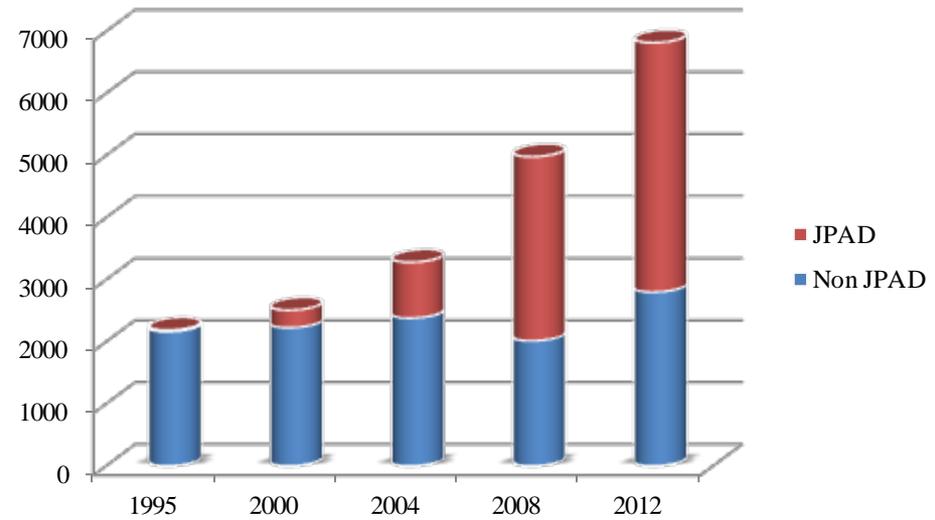
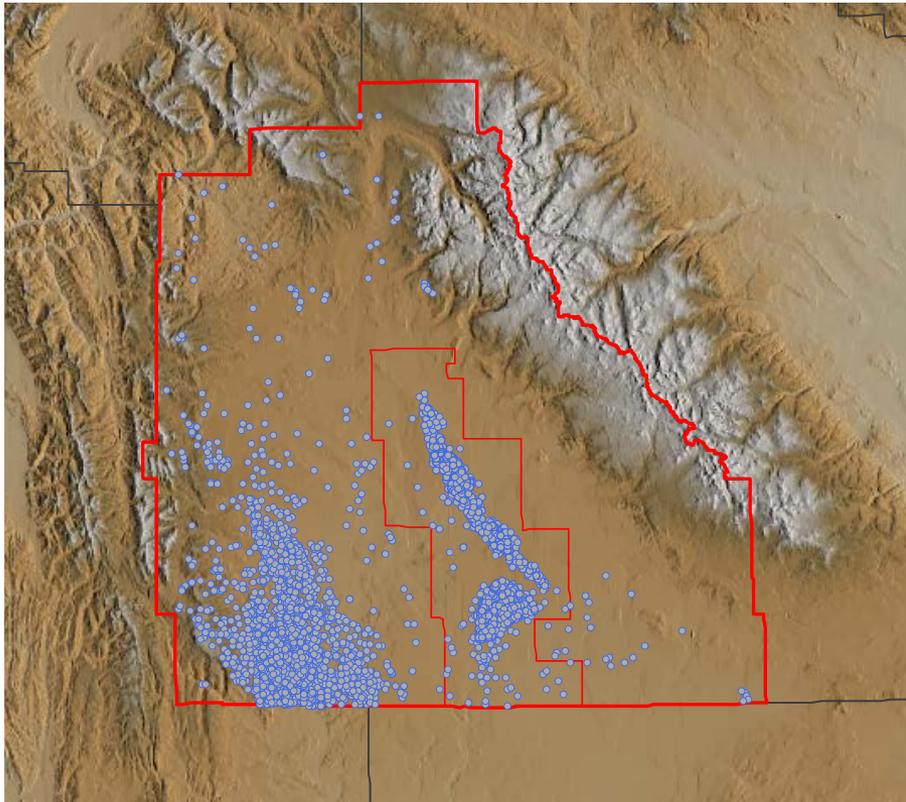
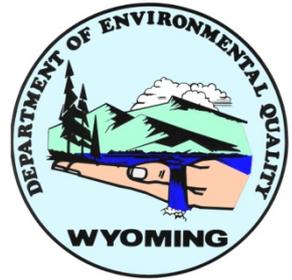




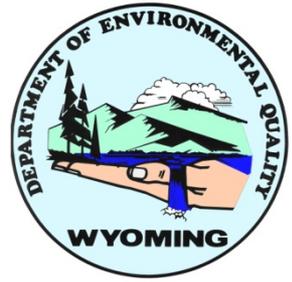
Inventory Development

- ◆ Emission Inventories began in 2004
- ◆ Annual Inventories
- ◆ 2004 JPAD inventory included:
 - 8 Emission Sources
 - drill rigs, wellhead engines, process burners, tanks, dehydration units, pneumatic pumps, well venting, and well completions
 - 7 Pollutants
 - NO_x, SO₂, Total VOCs, and speciated BTEX compounds
 - BTEX : Benzene, Toluene, Ethyl-Benzene, Xylene

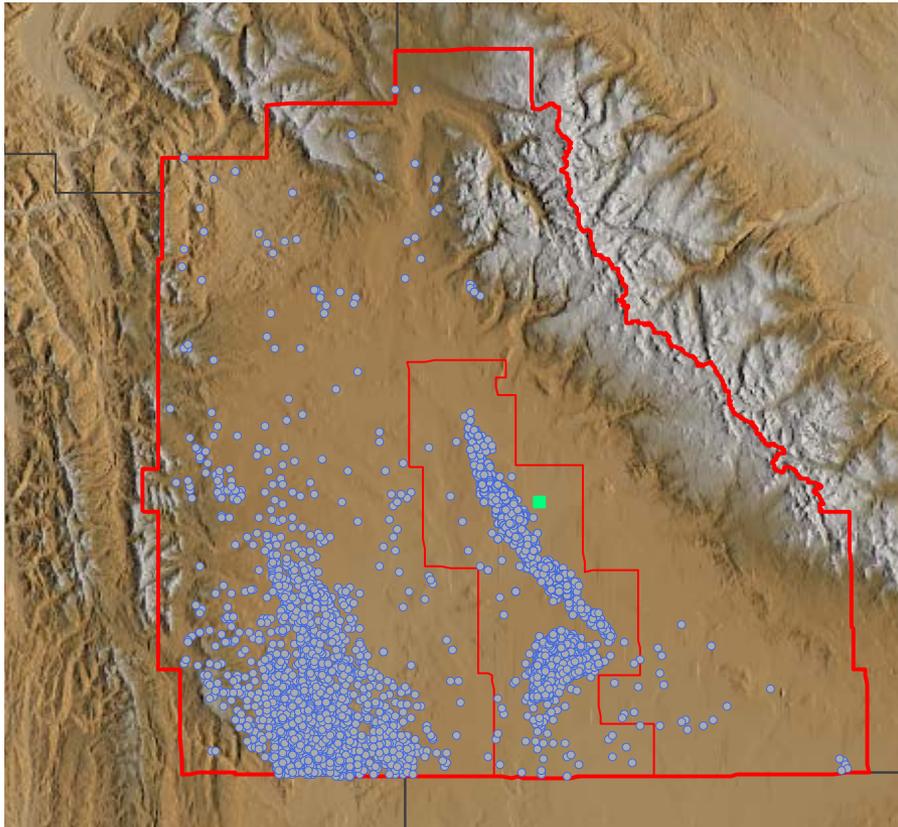
Oil and Gas Development



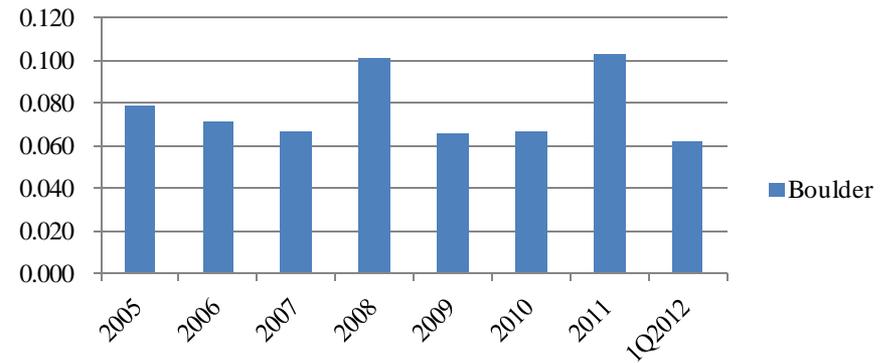
Oil and Gas Development



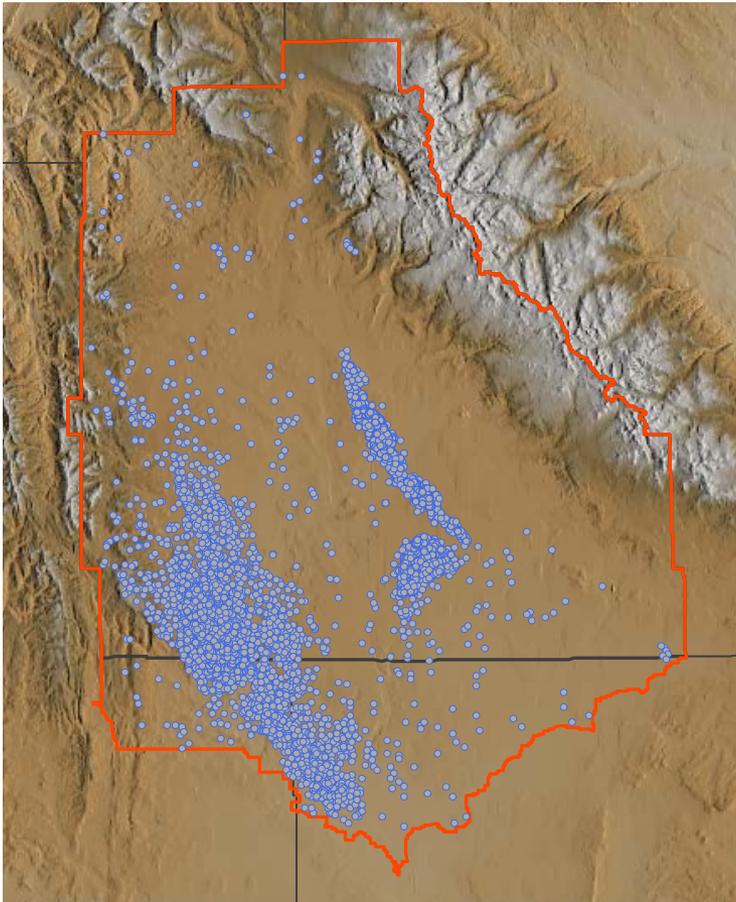
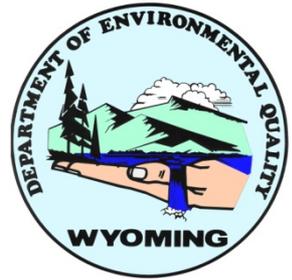
- ◆ Rise in ambient ozone concentrations



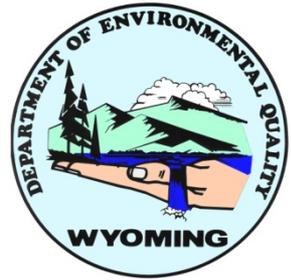
Boulder 4th highest 8-hour daily maximum



Oil and Gas Development

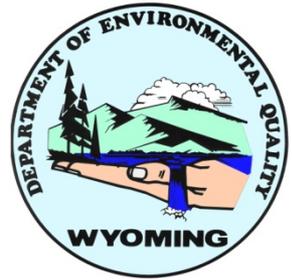


- ◆ Creation of non-attainment area for ozone
- ◆ Proposed by WDEQ in 2009
- ◆ Official Designation May 2012
- ◆ Upper Green River Basin (UGRB)



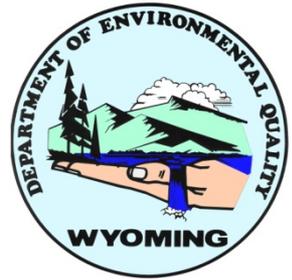
Inventory Development

- ◆ Winter Inventories Requested
 - Began in 2007
 - February 1 – March 31
 - 2007-2008 used original JPAD format but expanded geographically to Sublette County
 - Included midstream facilities in addition to production facilities
- ◆ Inventory forms evolve to include midstream facilities



Inventory Development

- ◆ 2004 JPAD inventory included:
 - 8 Emission Sources
 - drill rigs, wellhead engines, process burners, tanks, dehydration units, pneumatic pumps, well venting, and well completions
 - 7 Pollutants
 - NO_x, SO₂, Total VOCs, and BTEX
- ◆ 2008 Forms evolve to included Midstream Facilities:
 - 14 Emission Sources
 - 8 sources above plus fugitives, truck loading, non-road mobile, on-road mobile on both paved and unpaved roads, flares and compressor engines
 - 25 Pollutants
 - 7 pollutants above plus C1 through C10+ speciated hydrocarbons, CO, H₂S, and formaldehyde

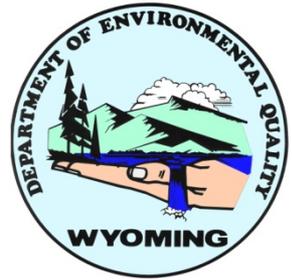


Inventory Development

- ◆ Annual Inventories use new format in 2008
 - Expand geographically to UGRB

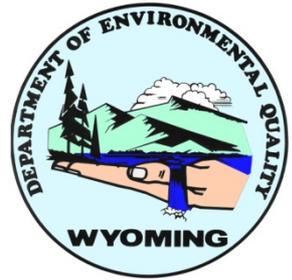
- ◆ Winter Inventories use new format in 2009
 - Expanded Geographically to UGRB

- ◆ Statewide Minor Source Inventory
 - 2008 and 2011 use new format



What does this mean?

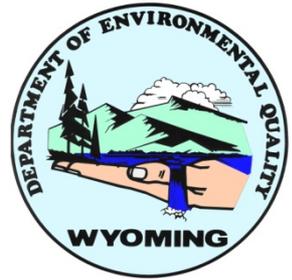
- ◆ Winter Inventories Collected
 - 445 from 2007-2012
- ◆ Annual Inventories Collected
 - 1073 from 2004 to Present
 - Includes 2008 and 2011 Statewide effort
- ◆ Only Oil and Gas production and midstream operations



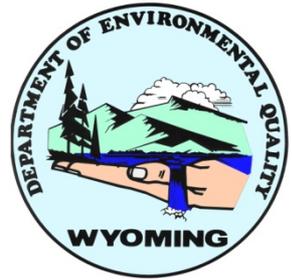
Data Management

- ◆ We've got a Data Management Challenge
- ◆ We also need to submit 2008 data to EIS
- ◆ We also need faster access to data from Wyoming Oil and Gas Conservation Commission (WOGCC)

OGER Data System



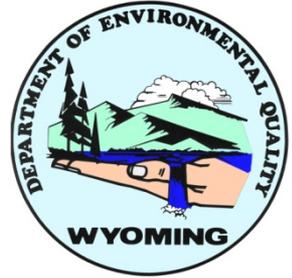
- ◆ Received EPA Exchange Network Grant
- ◆ AQD Partners with Windsor Solutions
 - Upgrade Node v 1.1 to 2.0
 - Submit facility and point data to EIS
- ◆ Exchange data with WOGCC
- ◆ Build a web application for AQD Staff



OGER Data System

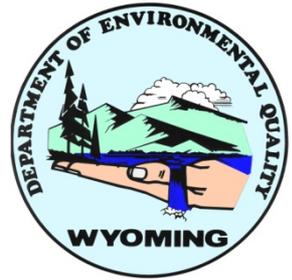
- ◆ Production data as far back as 1978
- ◆ Logical place to store emissions data
 - Expanded database to store emissions*
- ◆ Batch Upload of spreadsheets
- ◆ Integrated Spatial Viewer
- ◆ Nonpoint data flow to EIS

OGER Data System

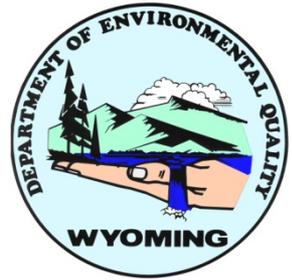


◆ DEMO

OGER Data System



- ◆ Next Steps...
- ◆ Inventories on the web
- ◆ E-reporting
 - Blowdowns
 - Workovers
 - Other emission source test results
- ◆ Integration with other AQD Data Systems



Questions?

- ◆ Questions?
- ◆ Inventory forms are available for download:
 - <http://deq.state.wy.us/aqd/ei.asp>
- ◆ Brian R Hall
 - brian.hall@wyo.gov