IDAHO Department of Water Resources

Statewide Aquifer Conditions

Presented to

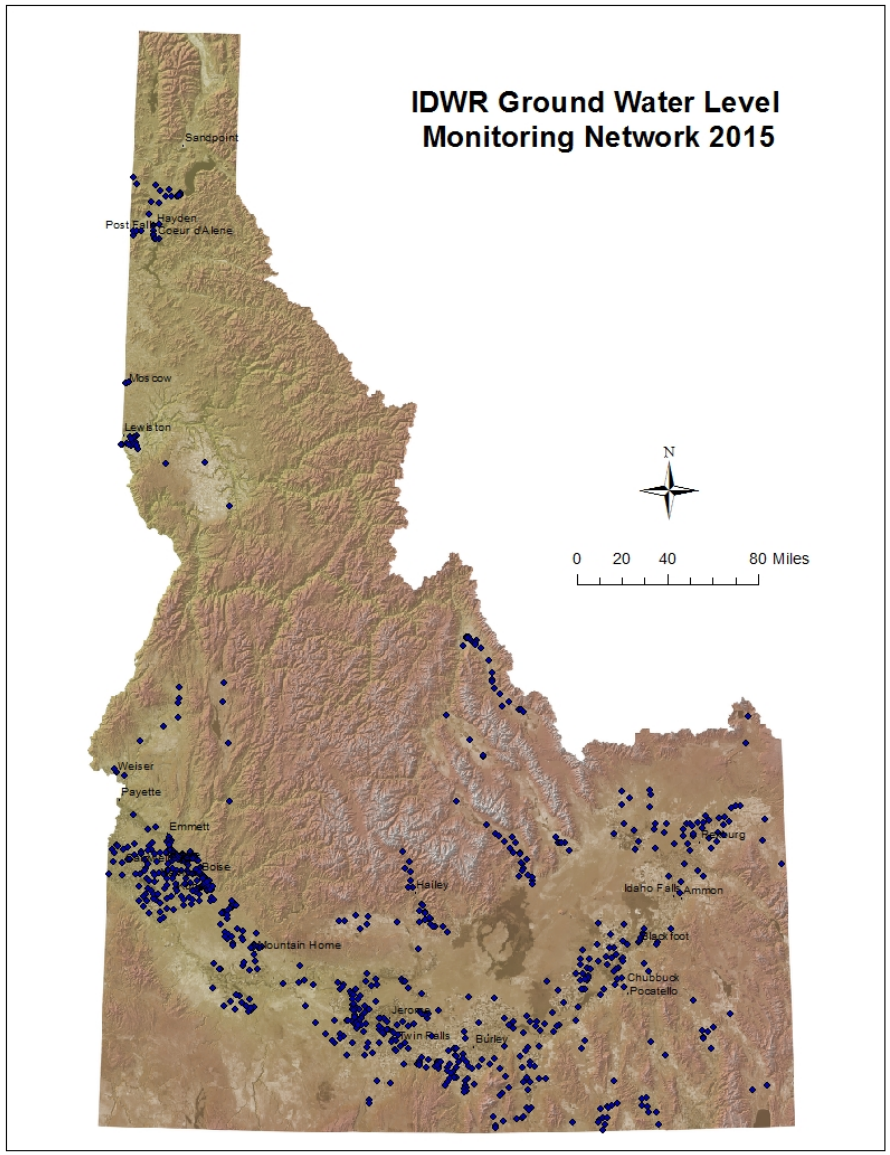
The Idaho Water Users Association

January 20, 2016

Idaho Ground Water Monitoring

- IDWR currently monitors over 900 wells across the state.
- Monitoring efforts include instrumented wells (transducers) and physical hand measurements.
- Monitoring schedules vary from monthly to semi-annually.
- Data is stored internally at IDWR and is available to the public through the IDWR website.

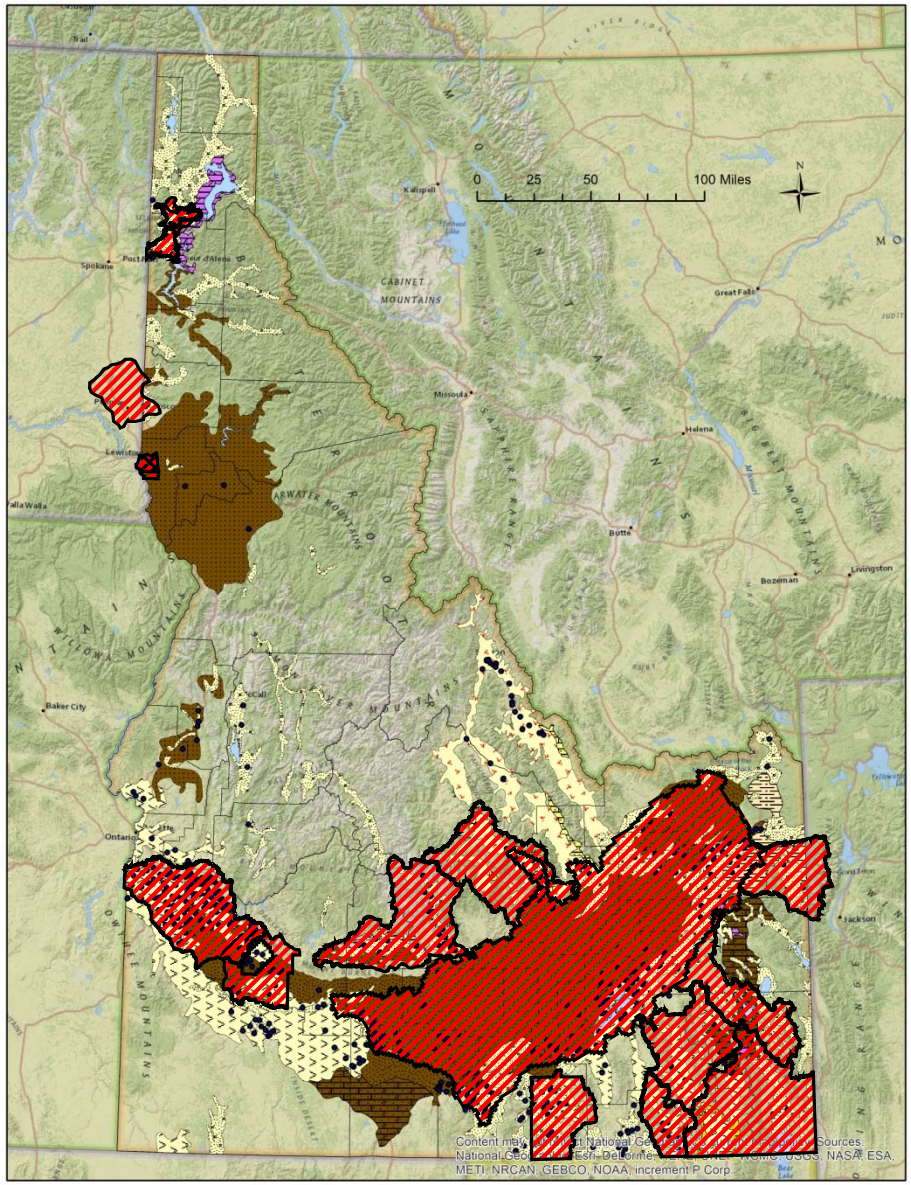
•http://maps.idwr.idaho.gov/map/hydroonline



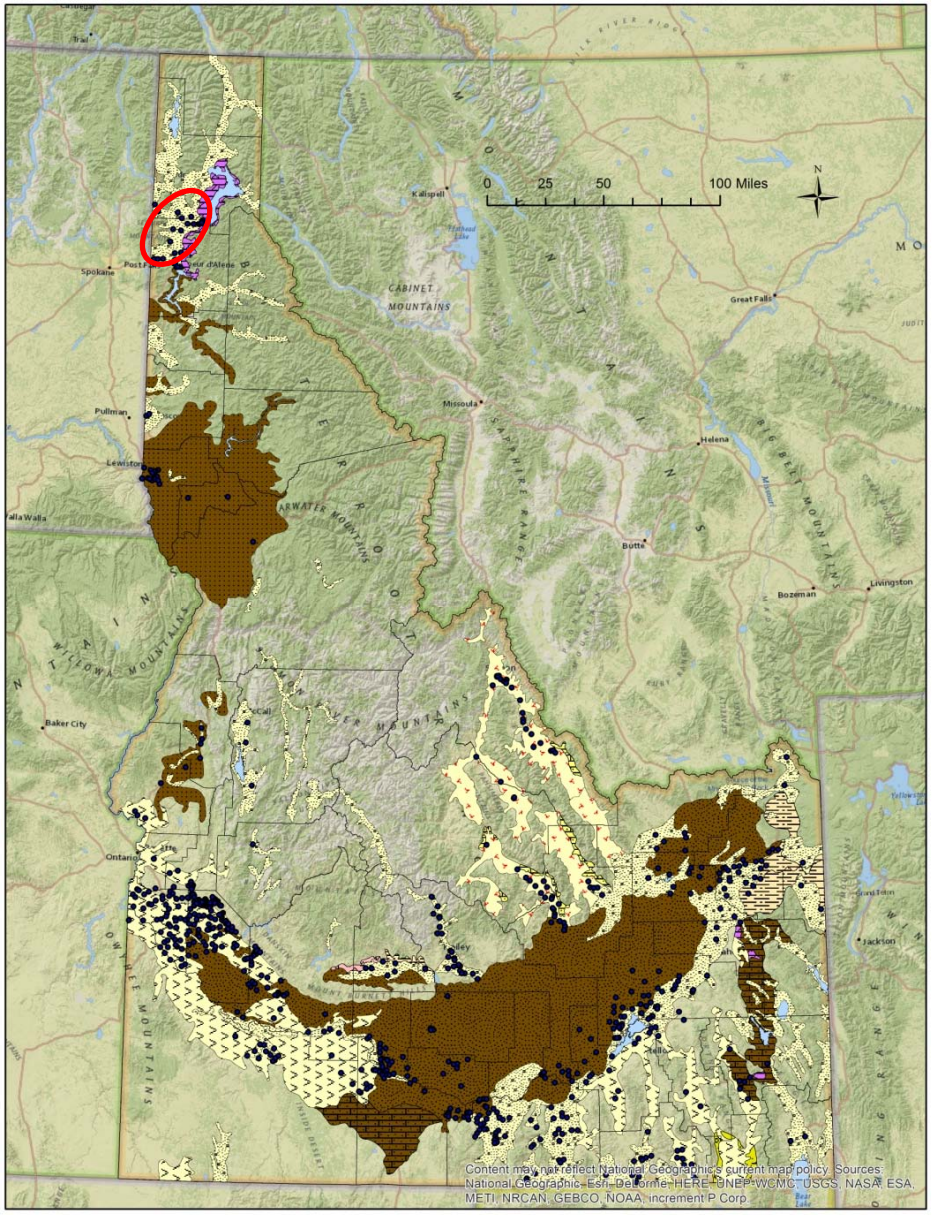
Idaho Aquifers

Discuss 3 aquifers in Northern Idaho

10 aquifers in southern Idaho.

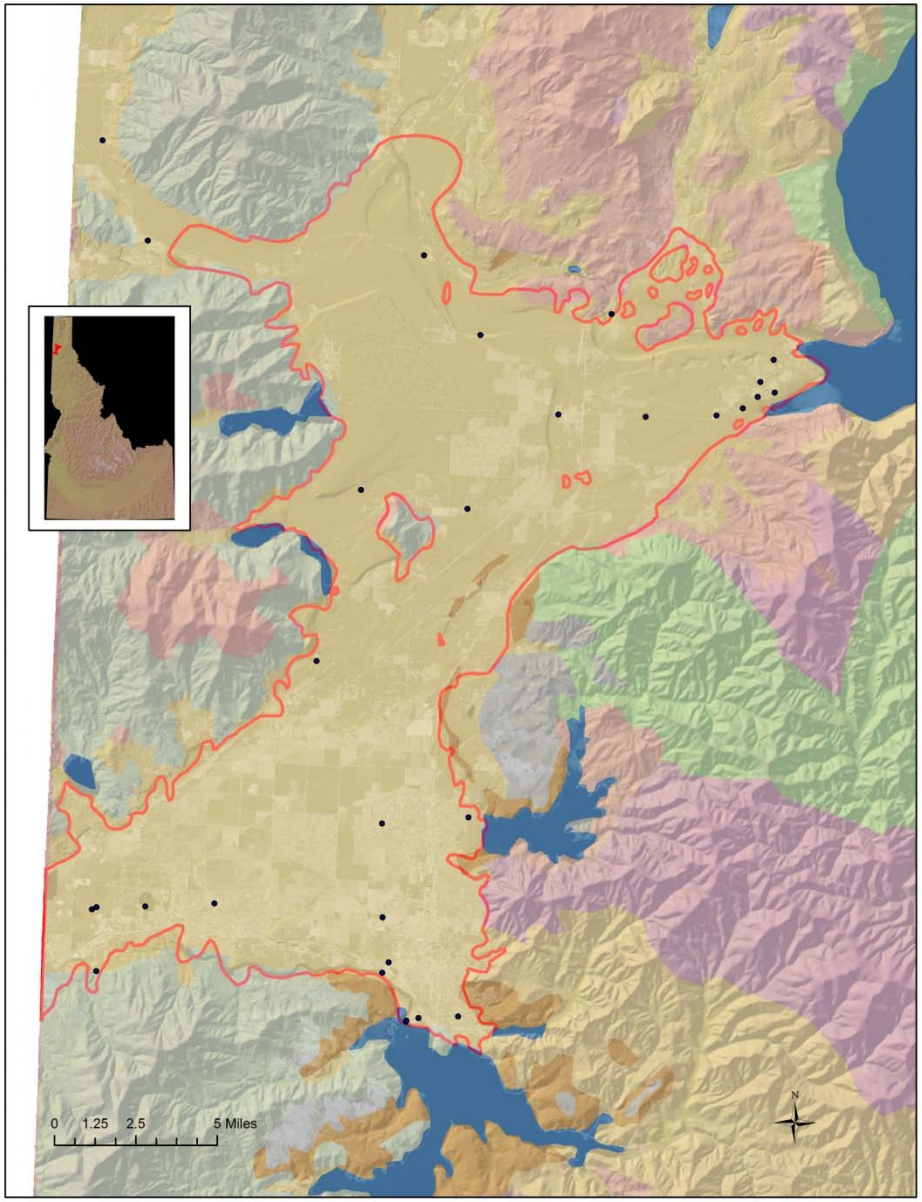


Rathdrum Prairie Aquifer

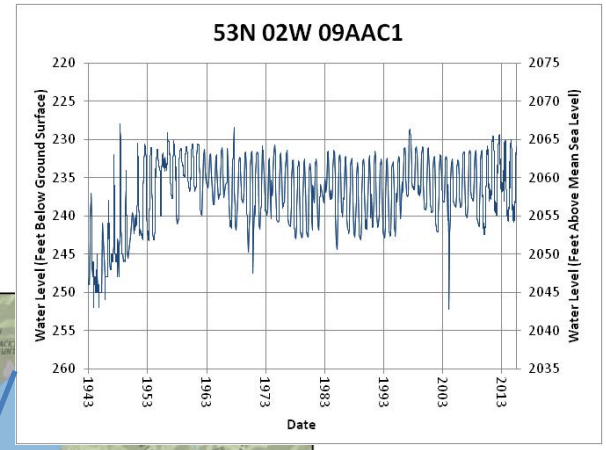


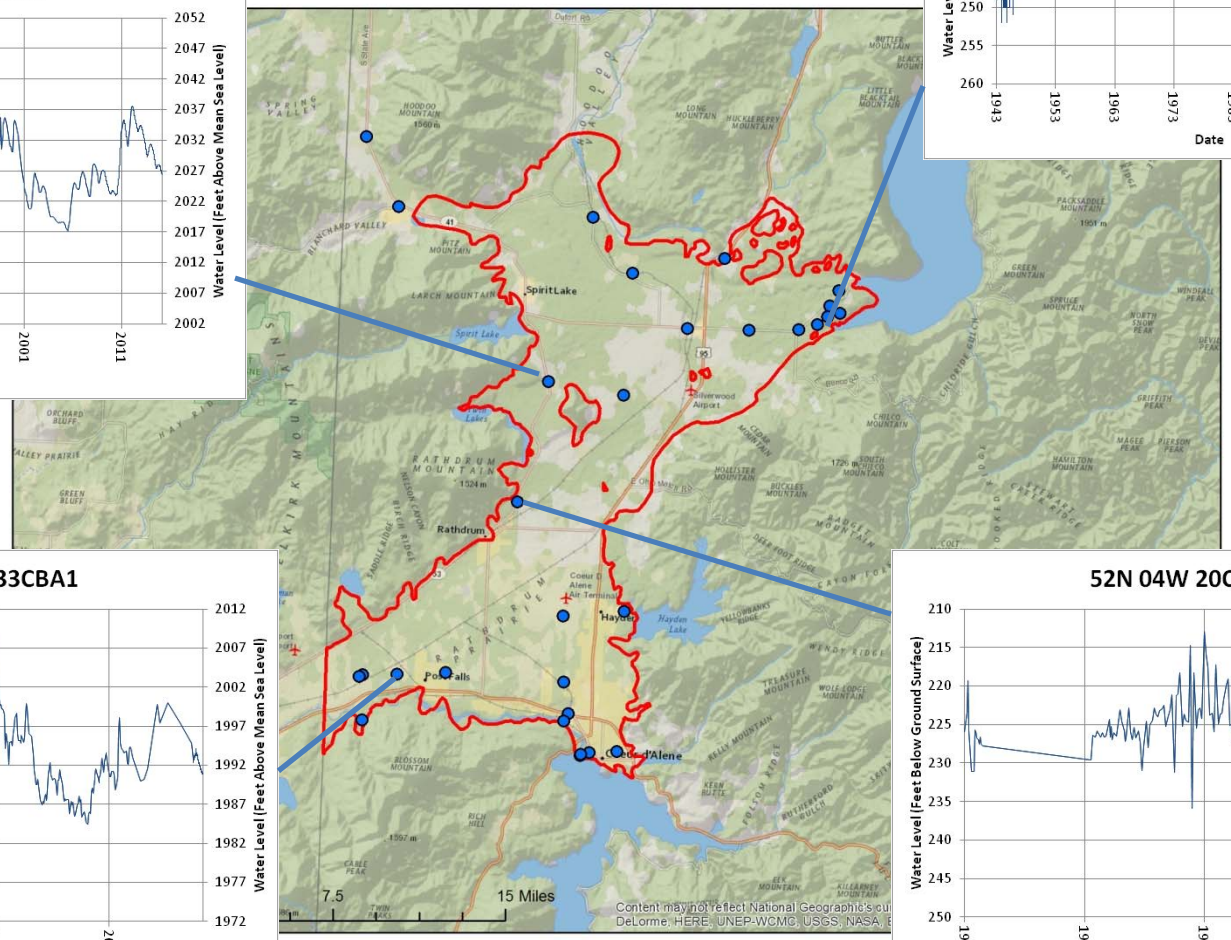
Rathdrum Prairie Aquifer

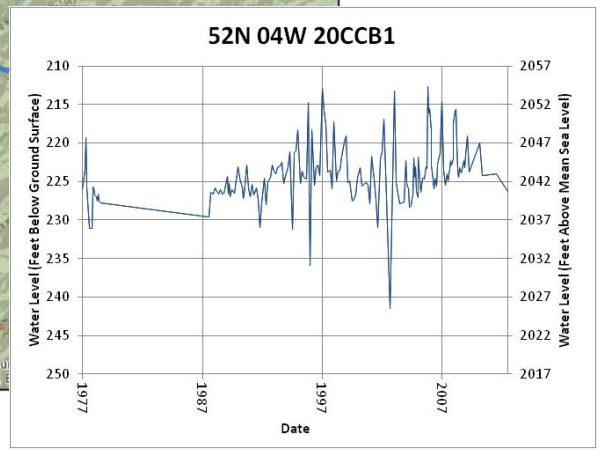
- GWMA (2002)
- Previous investigations
- Model development
- Drinking and irrigation supply
- Interstate aquifer system



Rathdrum Prairie Hydrographs

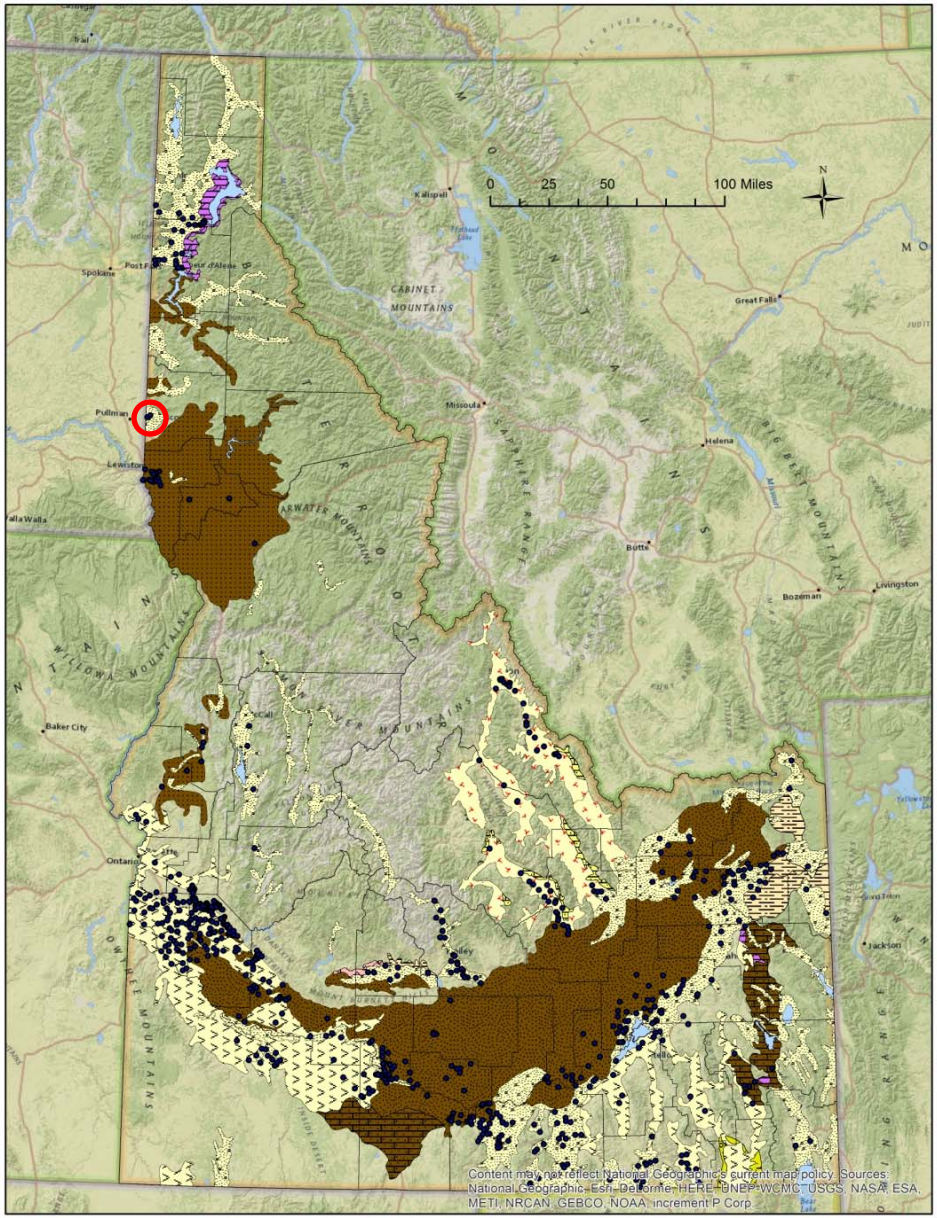






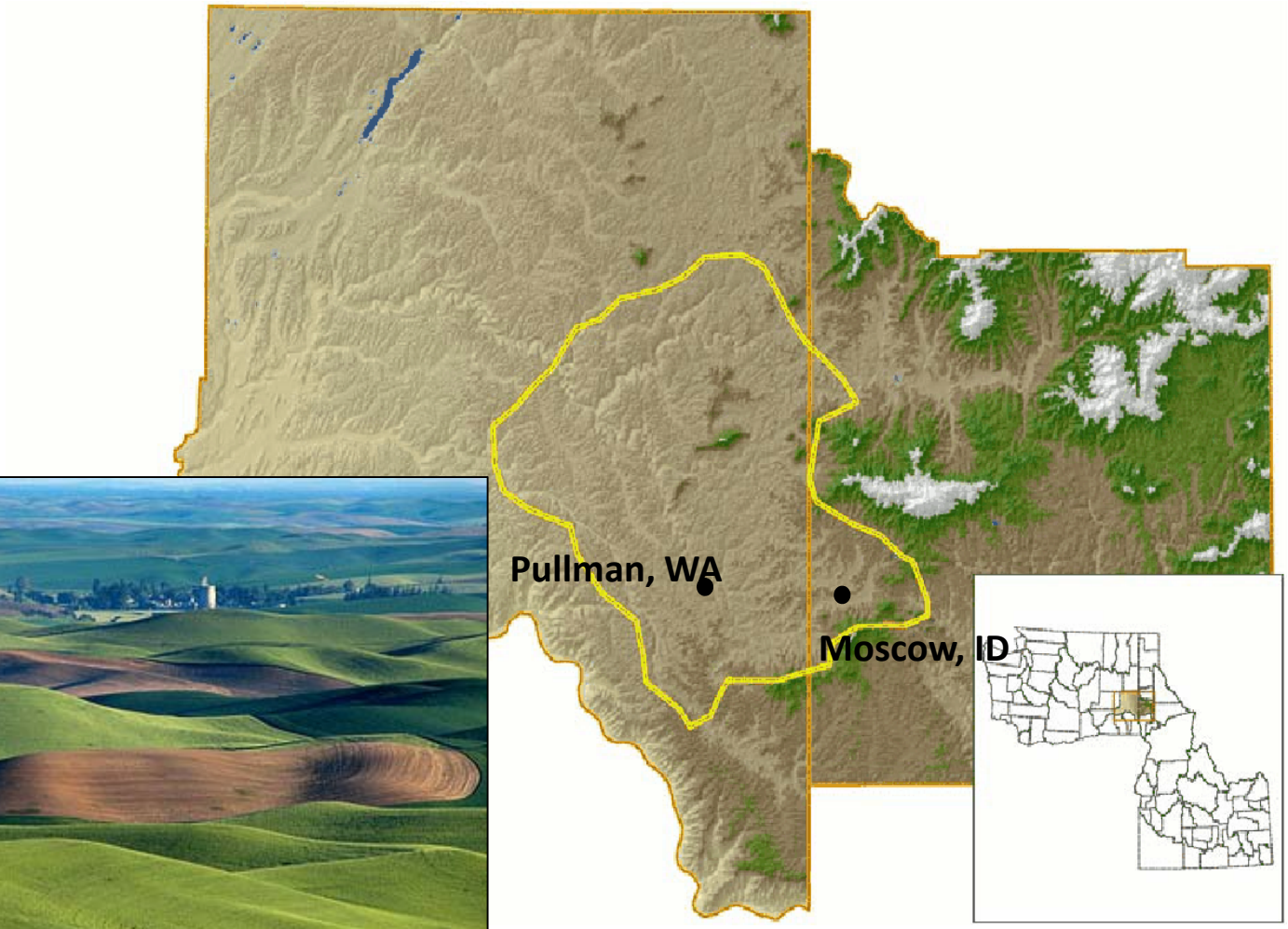
30 wells monitored

Palouse Basin Aquifer

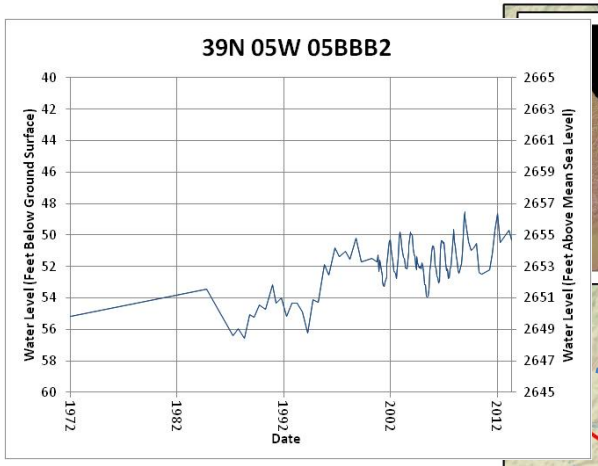


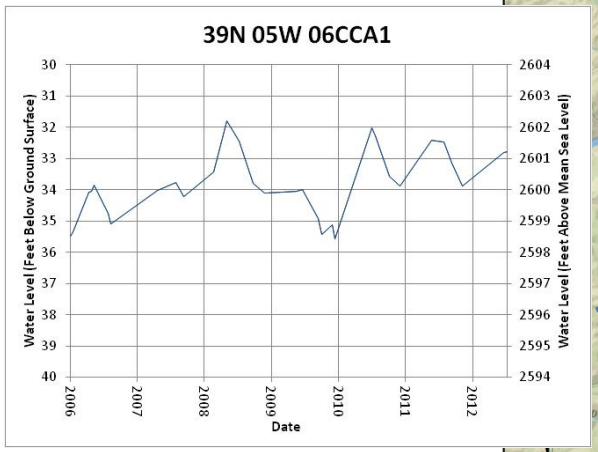
Palouse Basin Aquifer

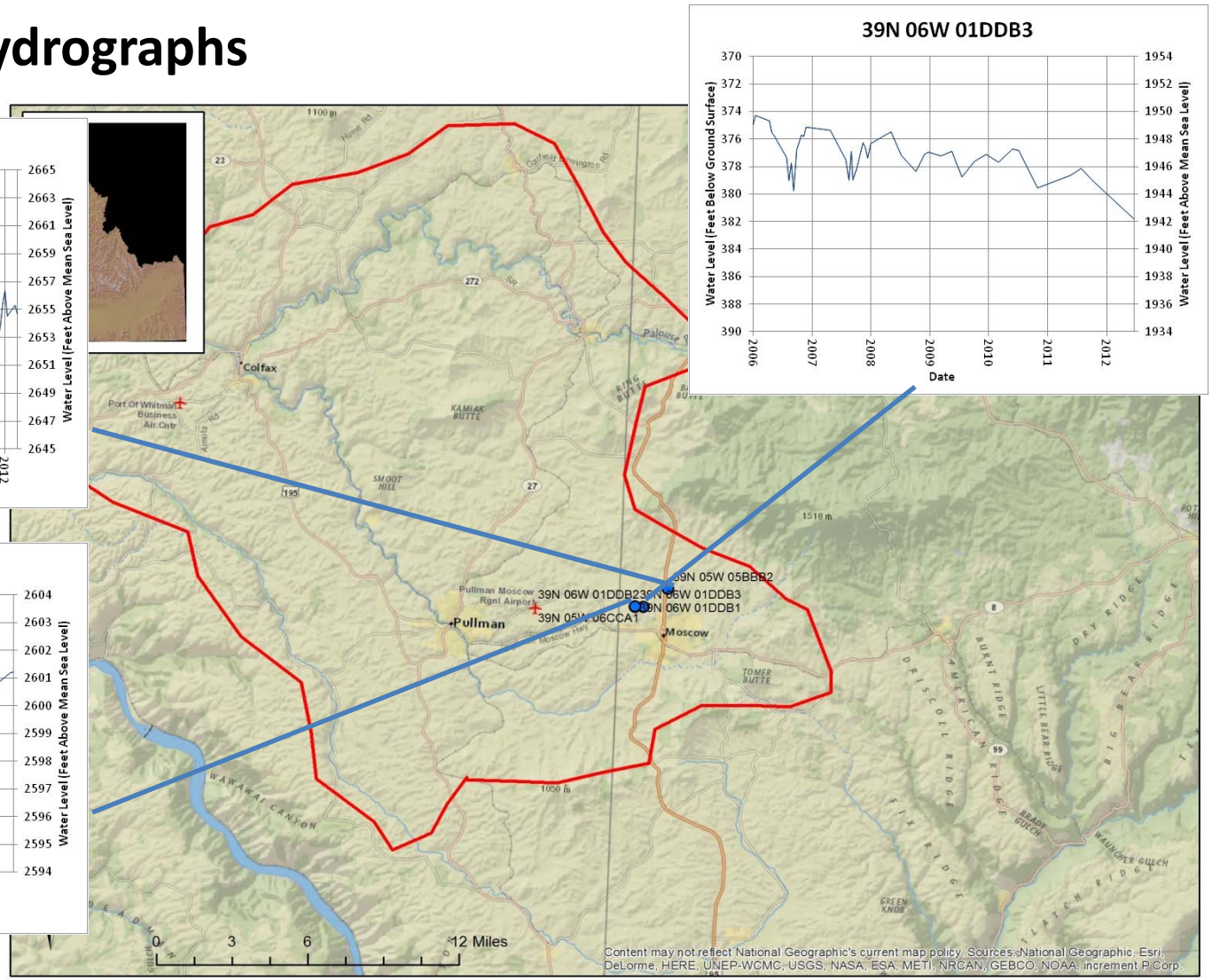
- Basalt aquifer (upper and lower)
- Municipal use, no irrigation.



Palouse Basin Hydrographs

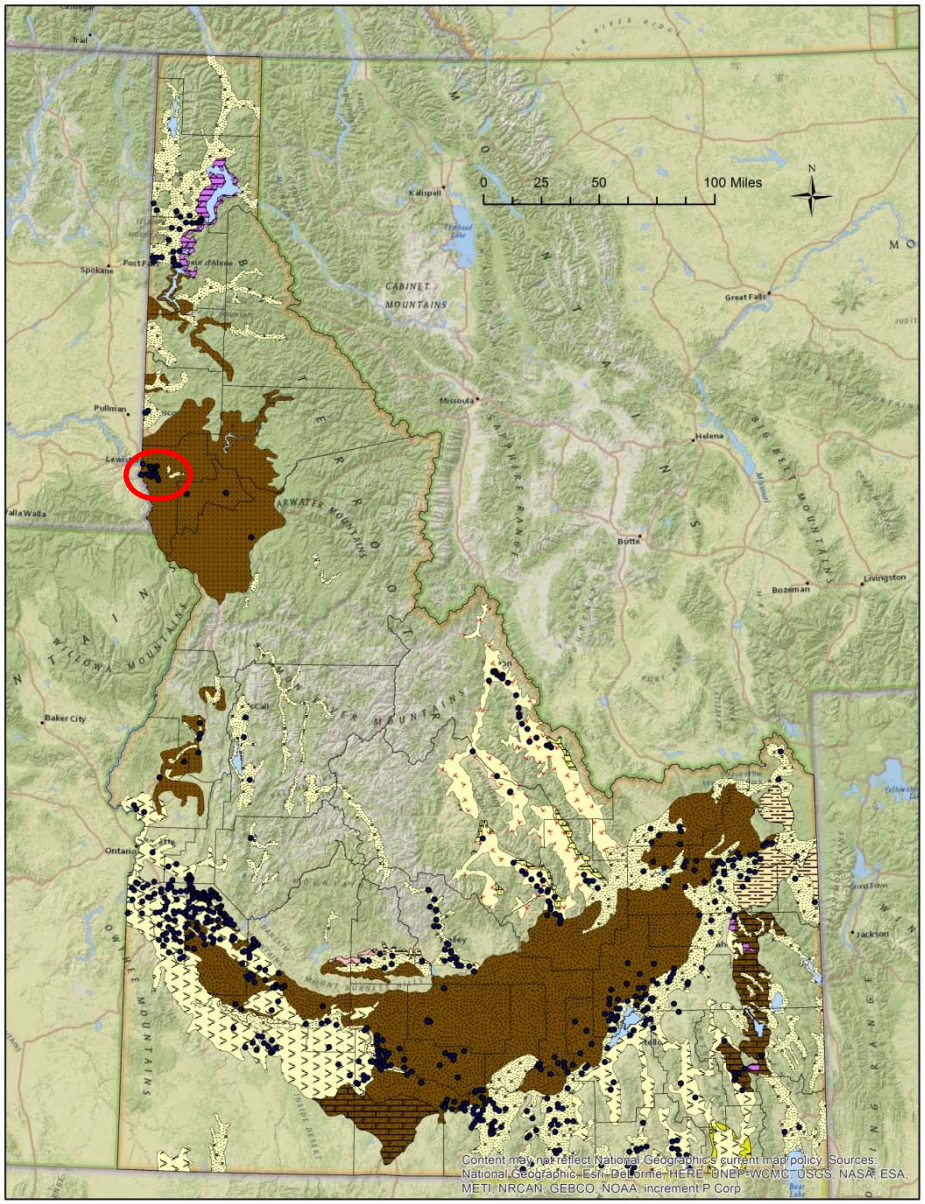






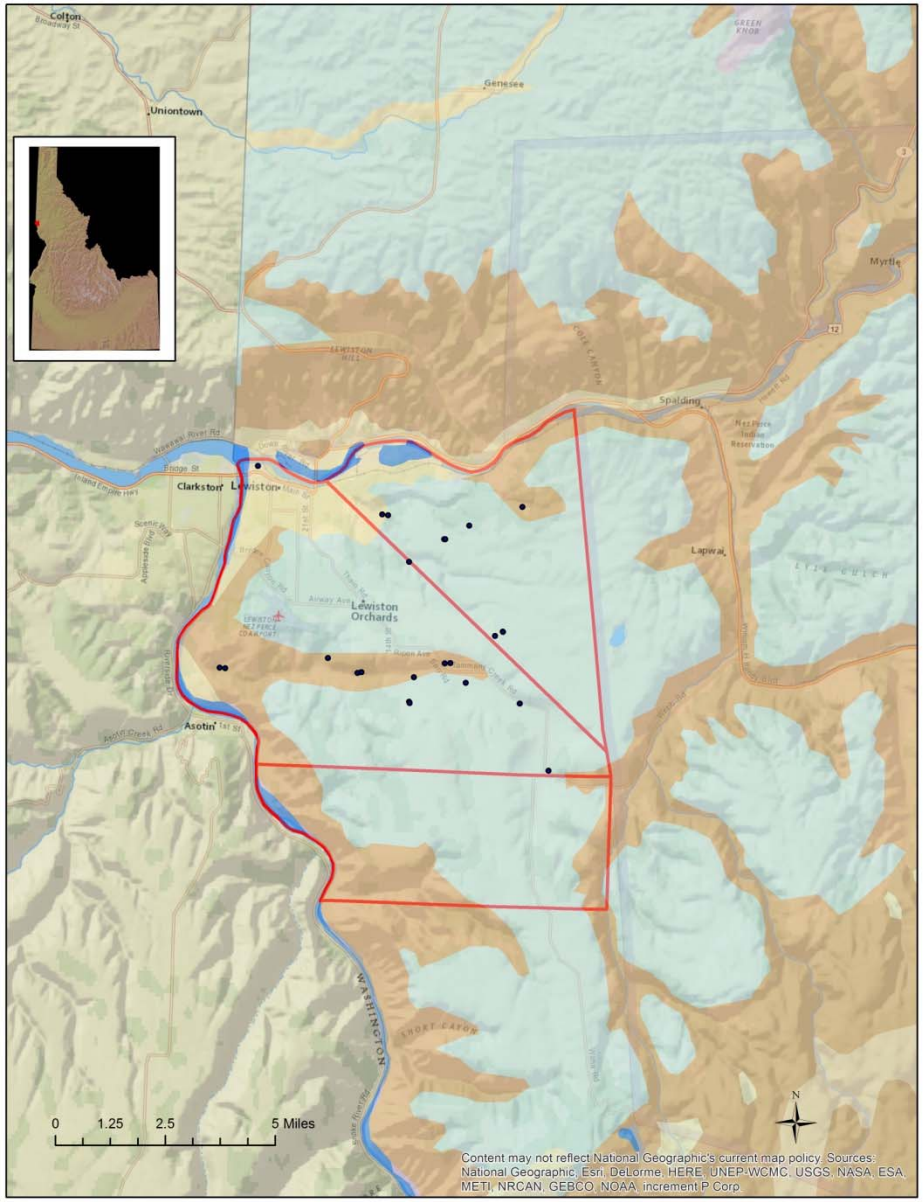
3 wells monitored

Lewiston Basin

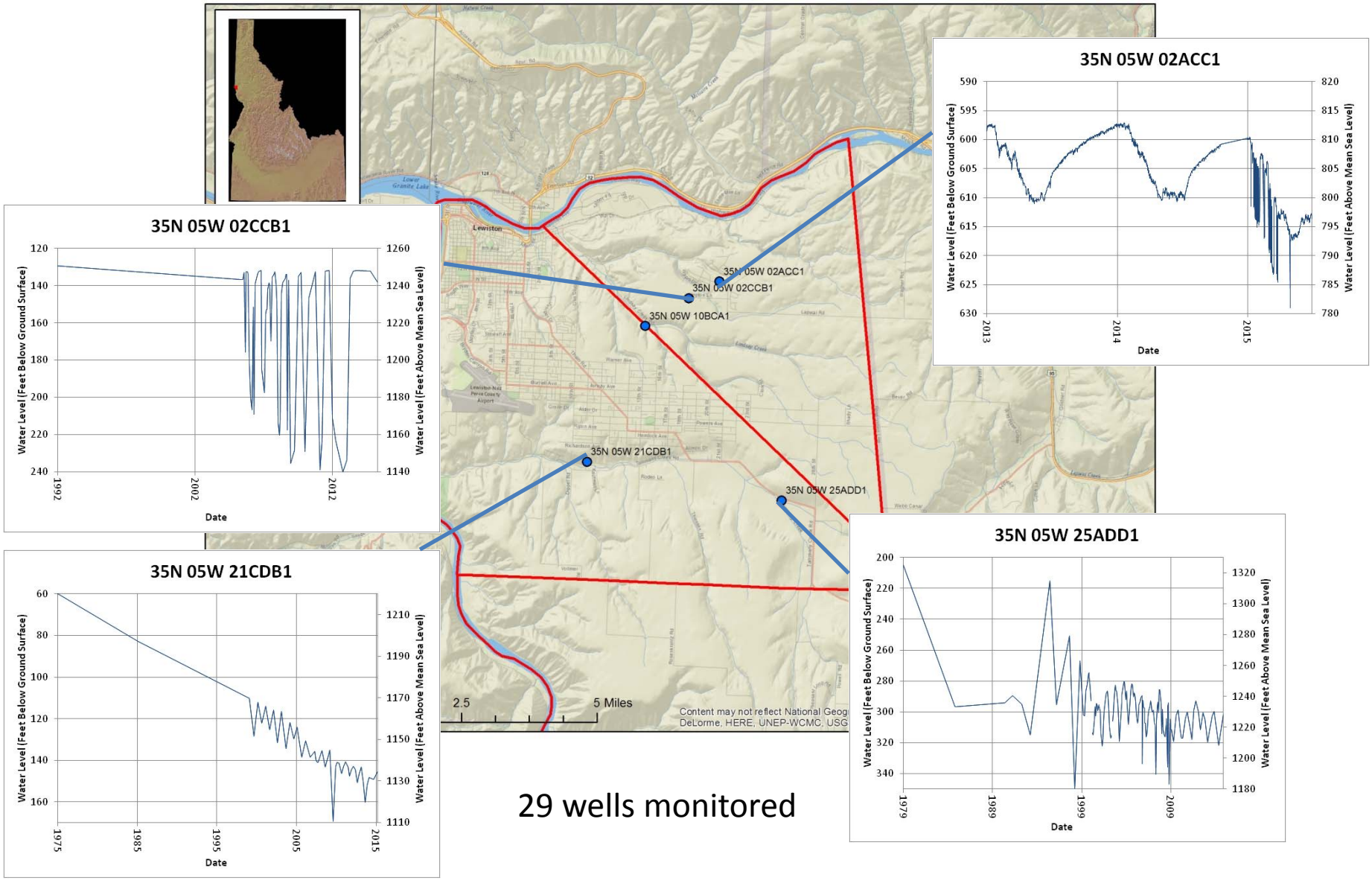


Lewiston Basin

- GWMA (2013)
- Multiple basalt aquifers
- GW primary water source (domestic/municipal)

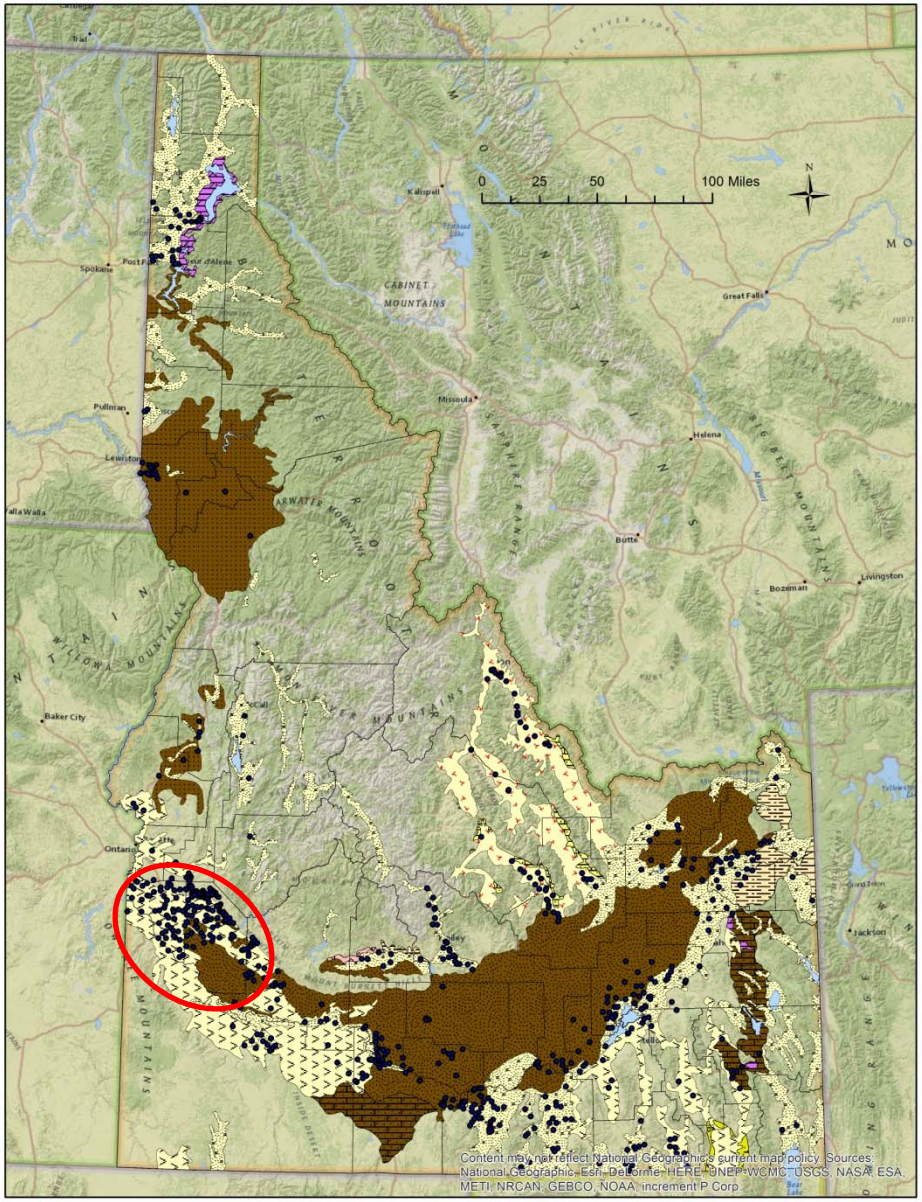


Lewiston Hydrographs



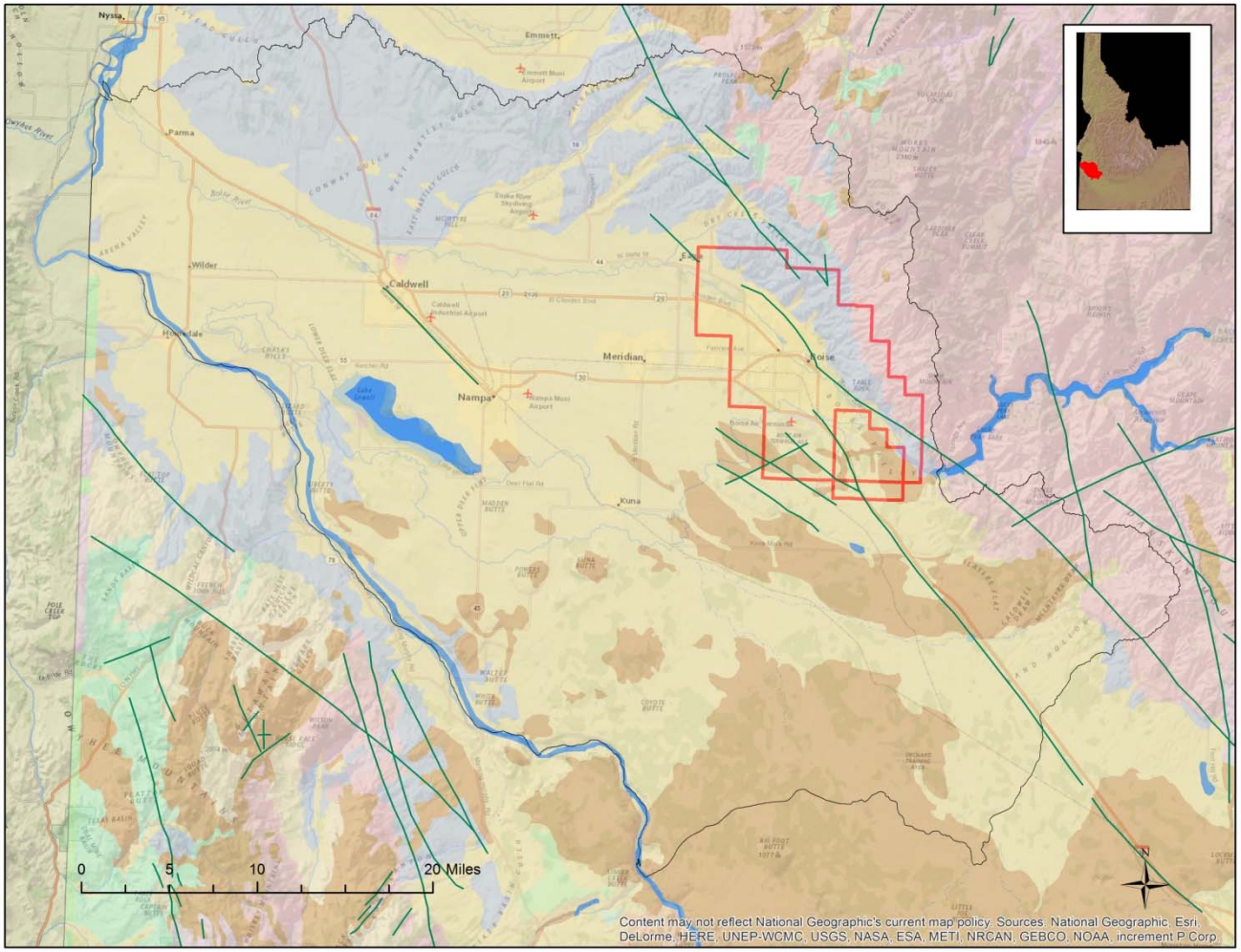
29 wells monitored

Treasure Valley



Treasure Valley

- Complex hydrogeology
- Previous investigations
- Model development
- Reservoir water supply (SW irrigation)
- Ground water management areas



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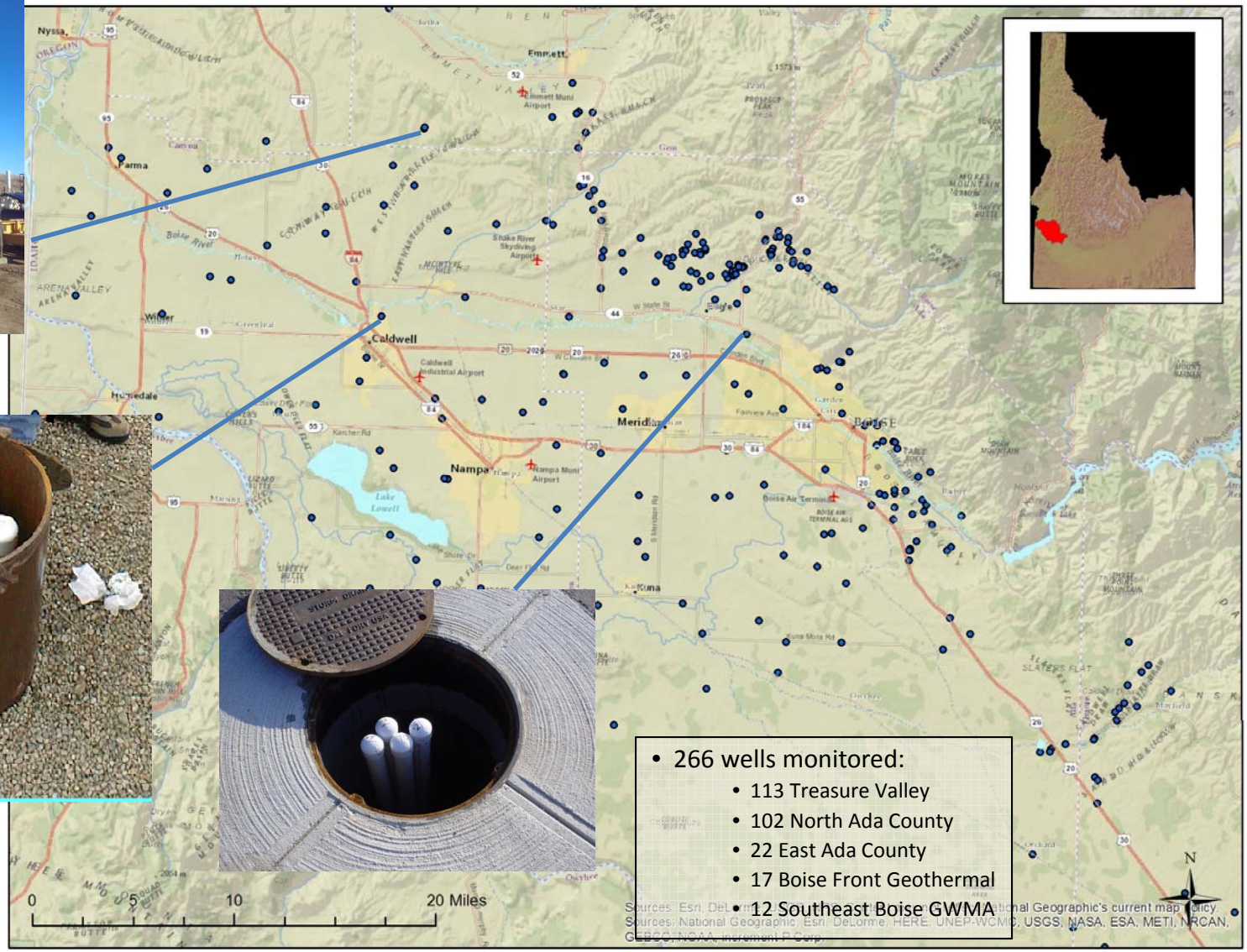
Treasure Valley Monitoring Network



- 266 wells monitored:
  - 113 Treasure Valley
  - 102 North Ada County
  - 22 East Ada County
  - 17 Boise Front Geothermal
  - 12 Southeast Boise GWMA

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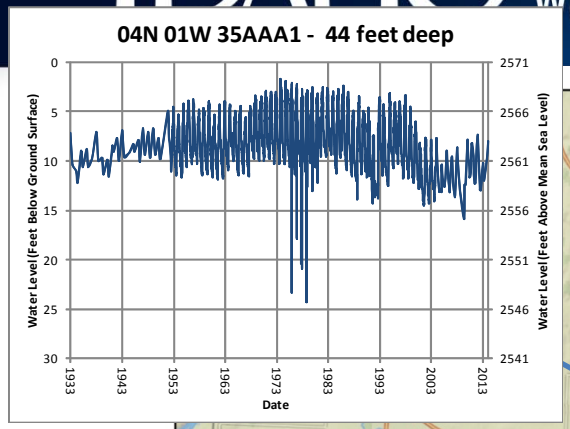
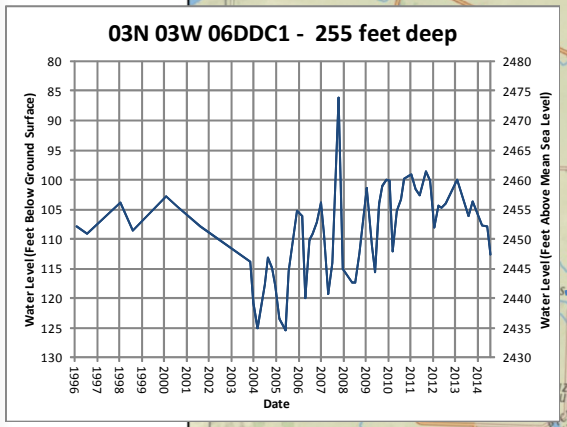
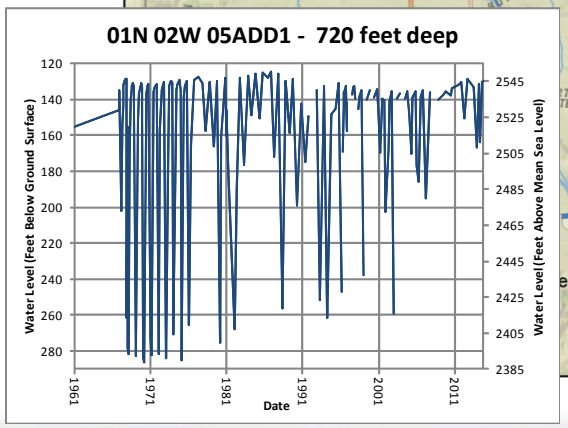
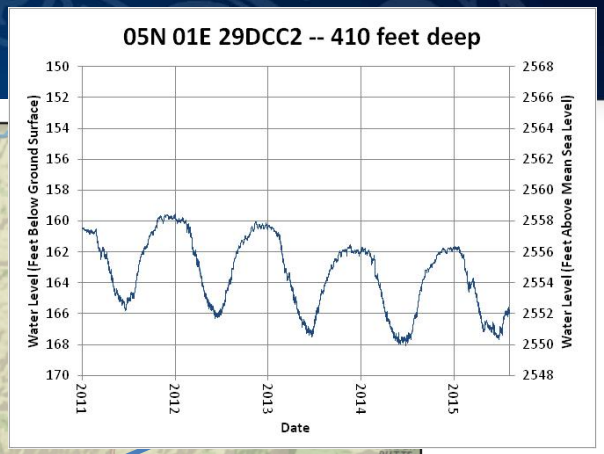
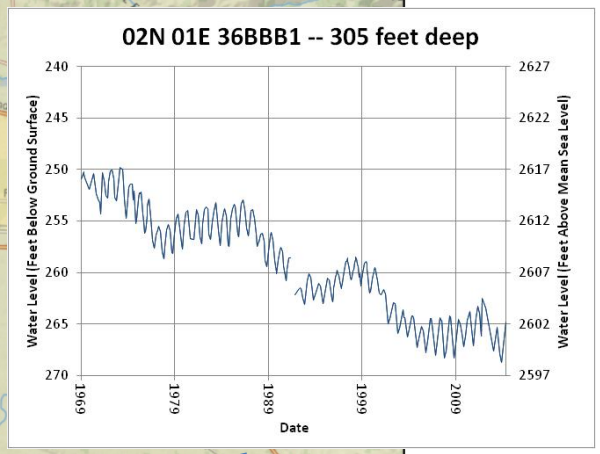
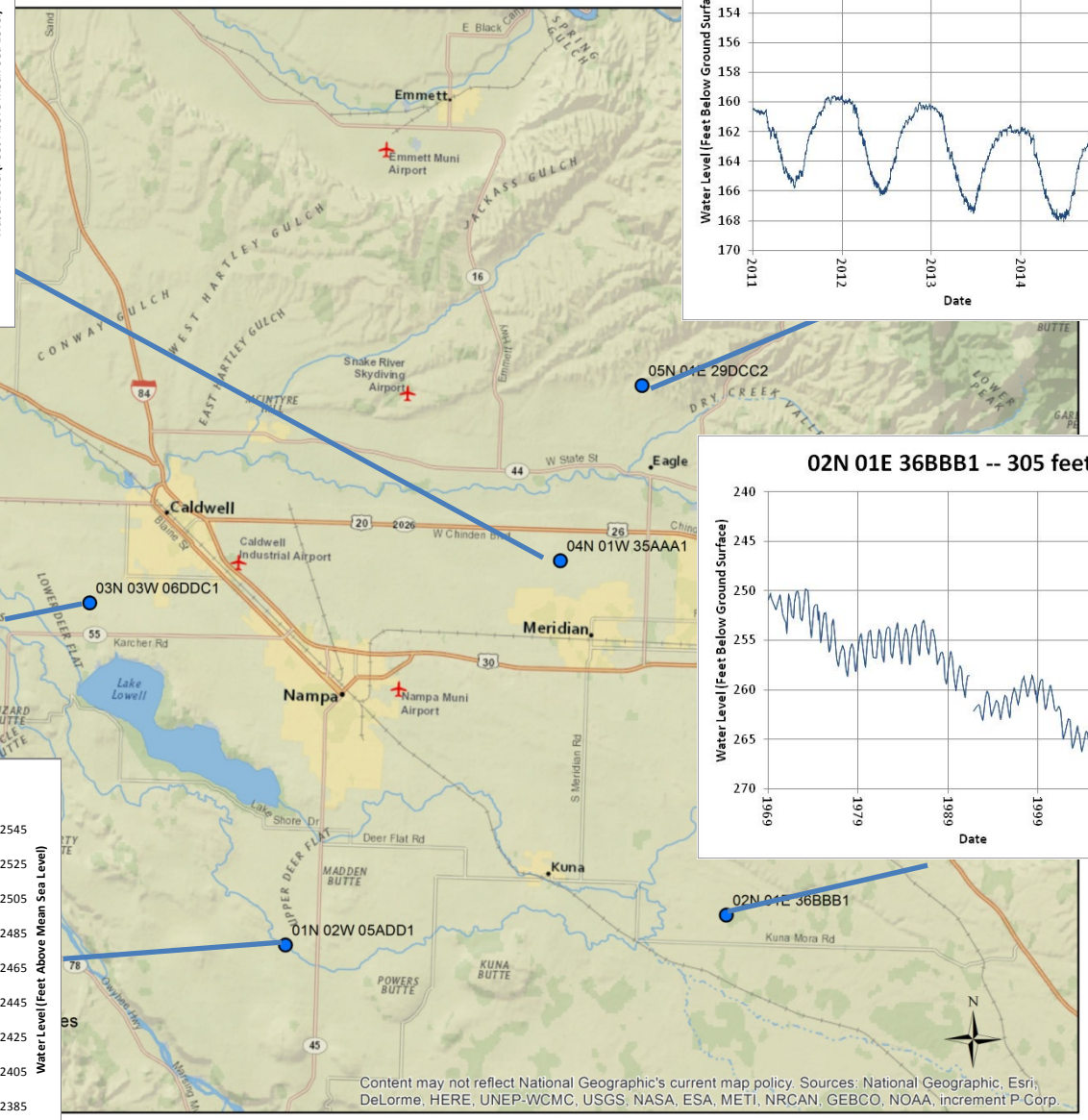




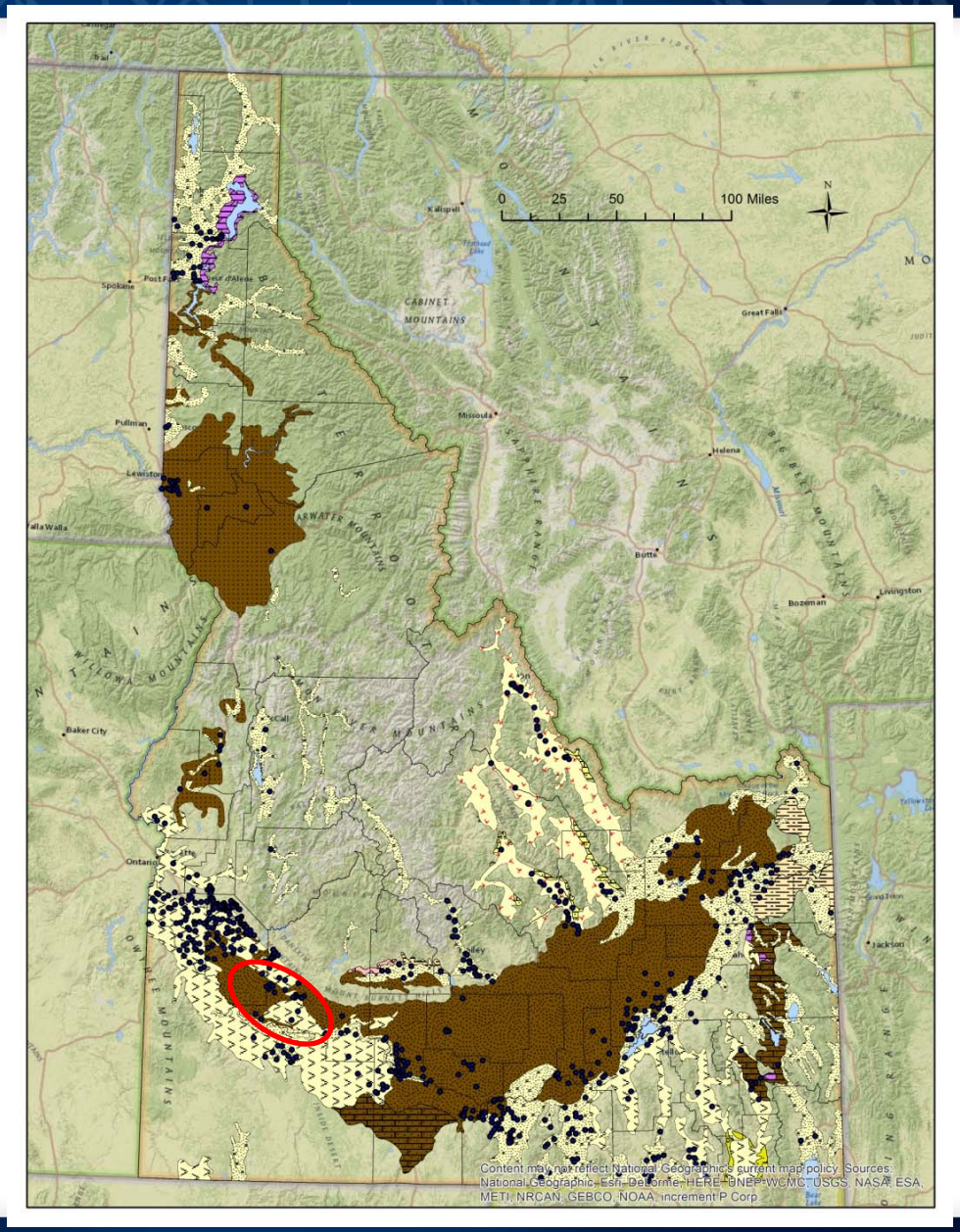






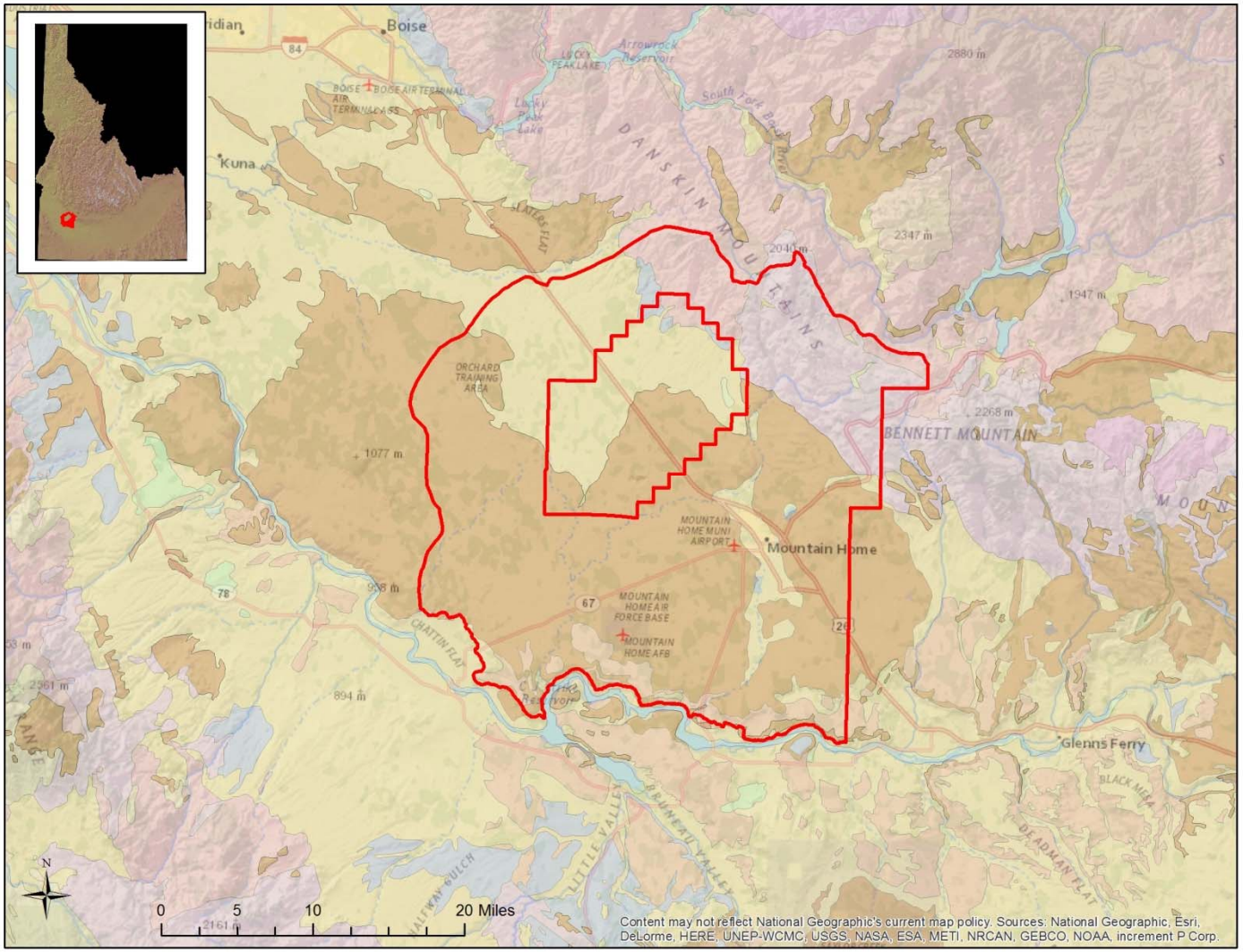


Mountain Home



Mountain Home

- Cinder Cone CGWA (1981)
- GWMA(1982)
- Sedimentary aquifer capped by basalt.
- Perched aquifer near Mountain Home



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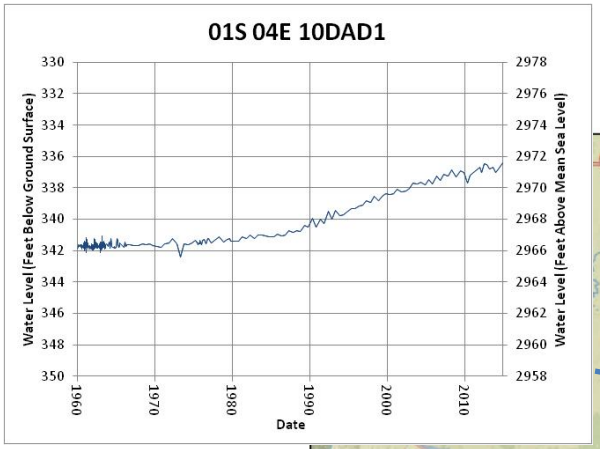
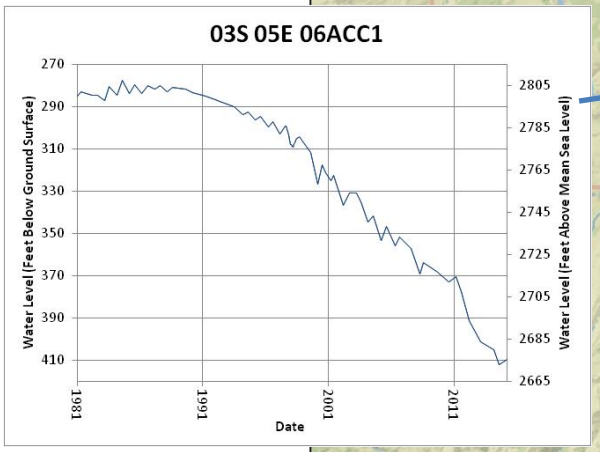
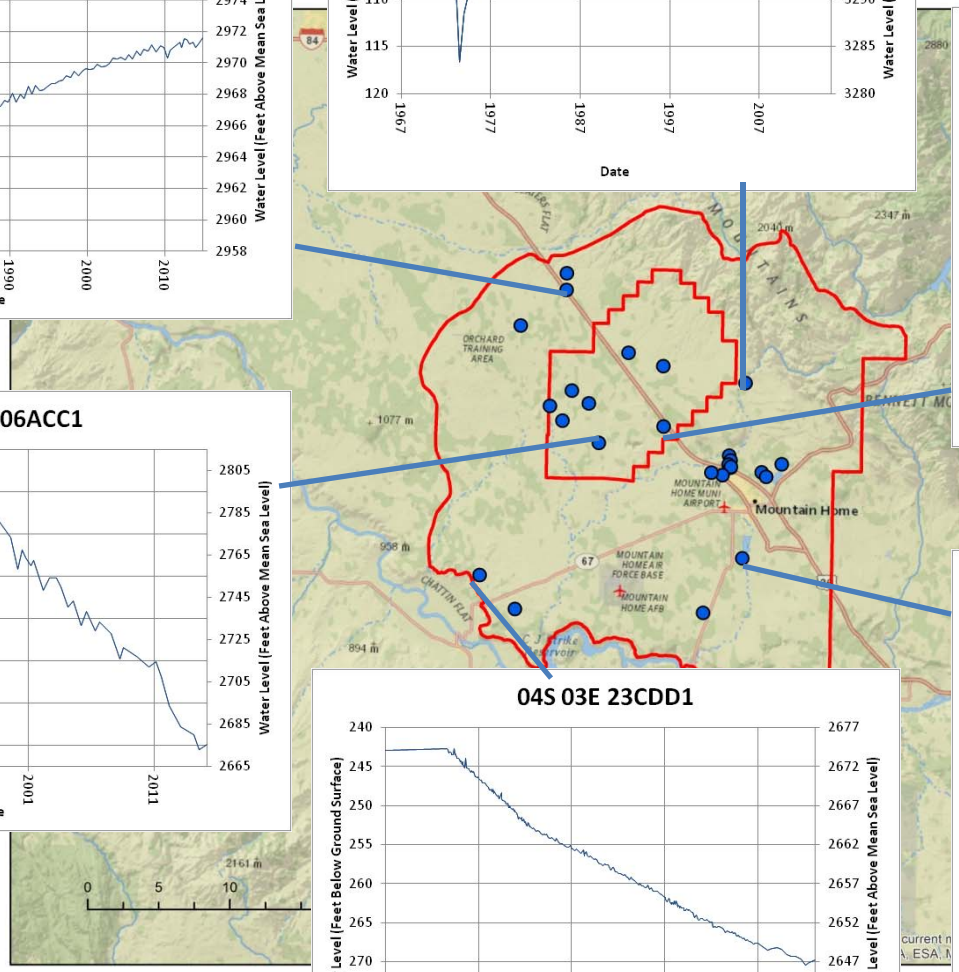
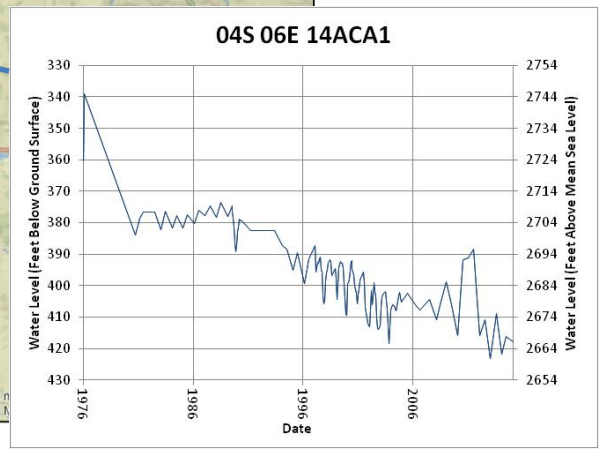
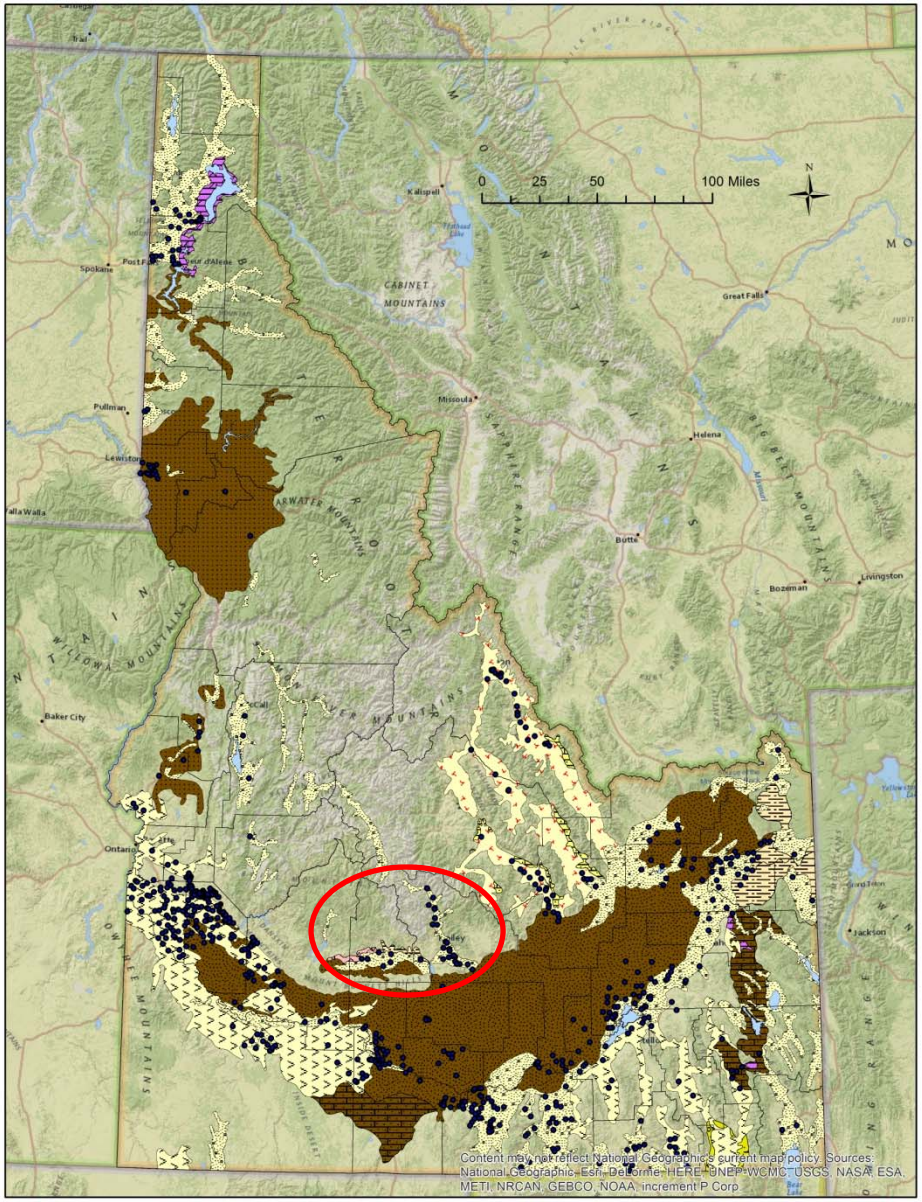






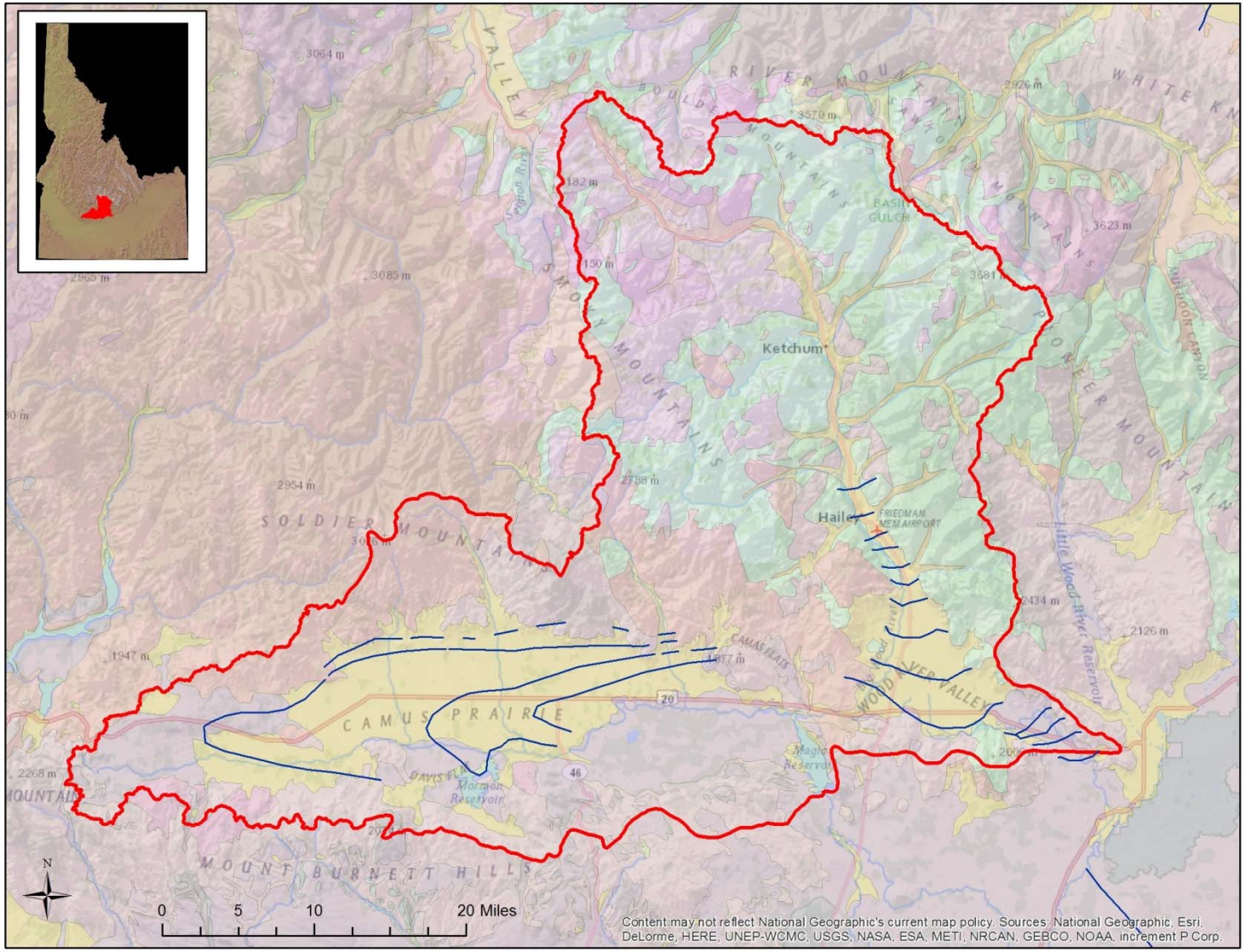


Big Wood Valley

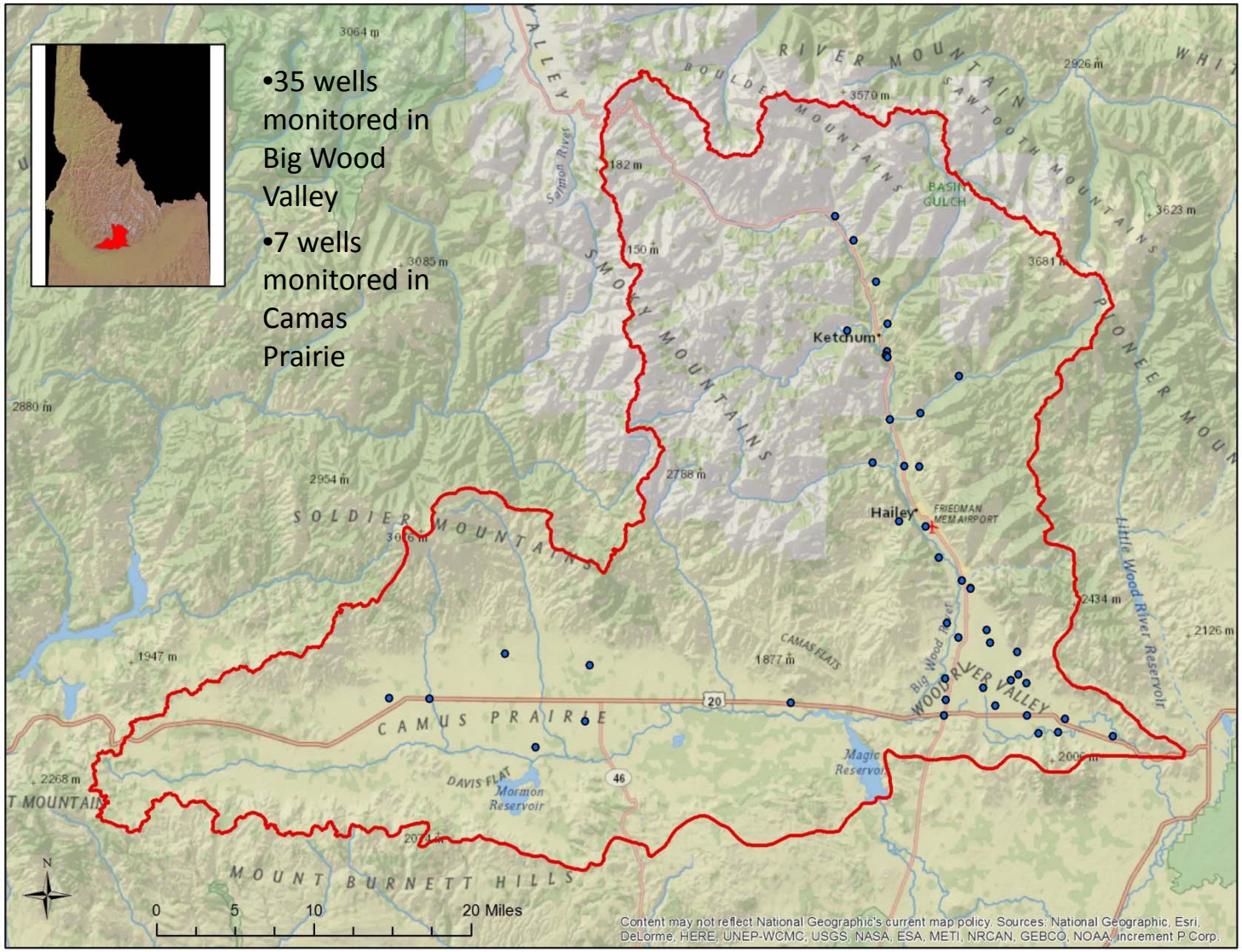


Big Wood Valley

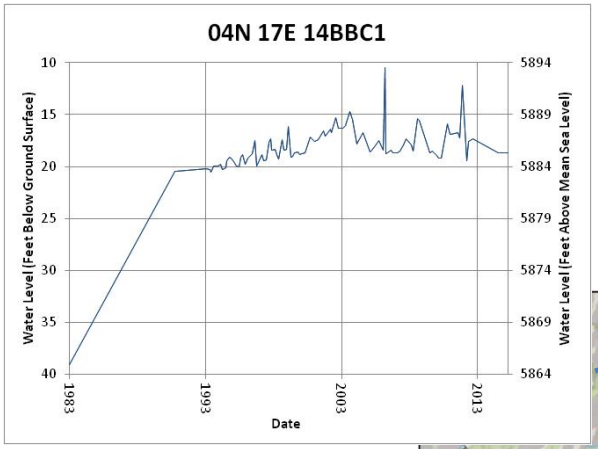
- GWMA (1991)
- SW/GW connection
- Model Development
- Big Wood Valley -- Alluvial aquifer flowing from north to south. Merges with confined aquifer "Bellevue Triangle" to the south.
- Camas Prairie – Alluvial aquifer flowing west to east.
- Discharge to Silver Creek Big Wood River.

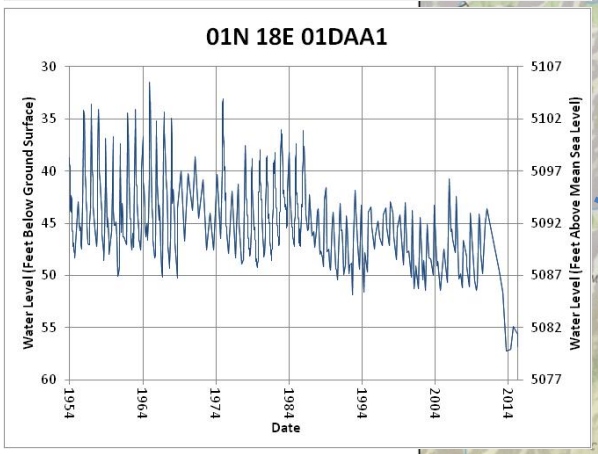


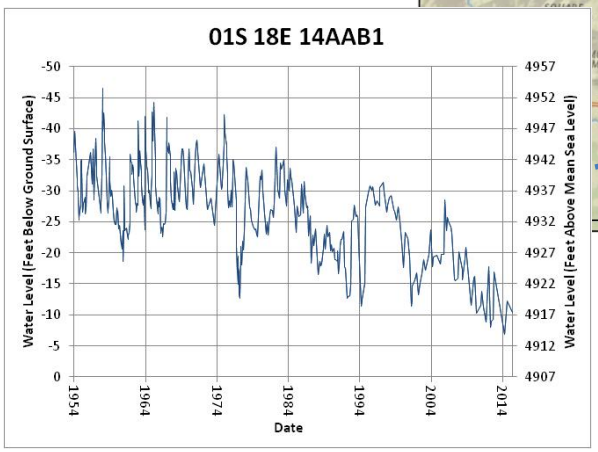
Big Wood

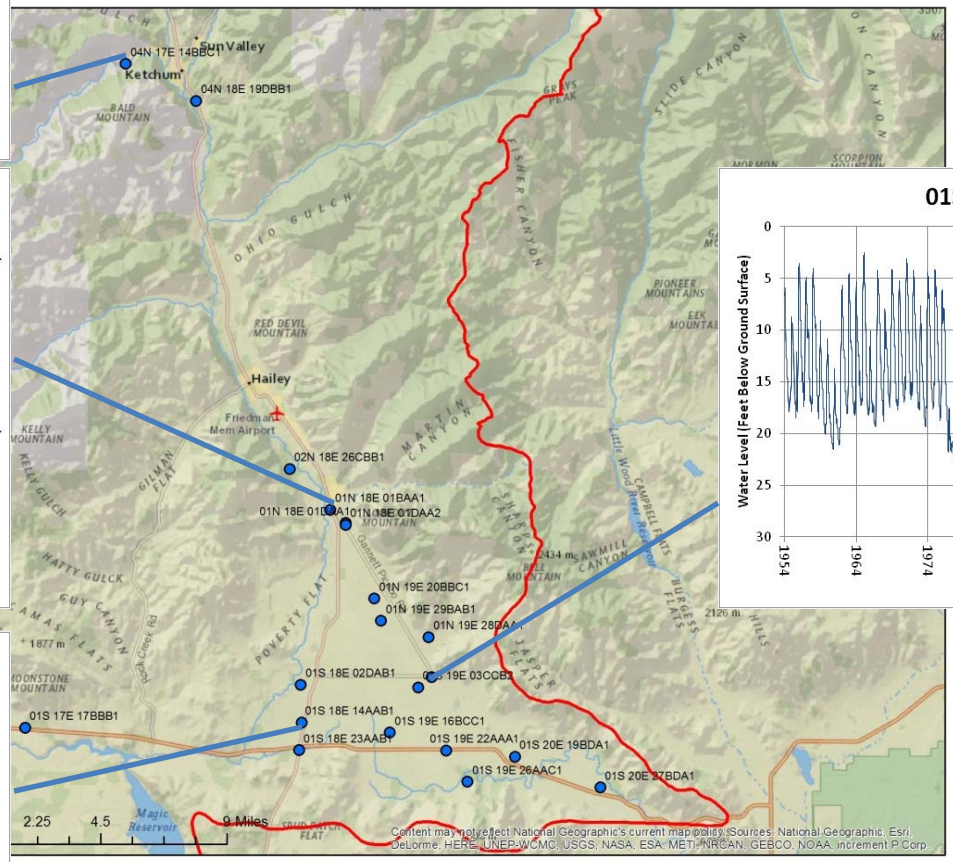

•35 wells monitored in Big Wood Valley
•7 wells monitored in Camas Prairie
Ketchum
Hailey
FRIEDMAN MEM AIRPORT
RIVER MOUNTAIN
SAWTOOTH MOUNTAINS
BOULDER MOUNTAINS
SMOKY MOUNTAINS
SOLDIER MOUNTAINS
CAMAS PRAIRIE
WOOD RIVER VALLEY
Big Wood River
Little Wood River Reservoir
Magic Reservoir
Mormon Reservoir
DAVIS FLAT
CAMAS FLATS
MOUNT BURNETT HILLS
PIONEER MOUN
Salmon River
BASIN GULCH
3064 m
3570 m
2926 m
182 m
3623 m
3085 m
150 m
3681 m
2880 m
2954 m
2788 m
2434 m
2126 m
1947 m
1877 m
2268 m
2000 m
0 5 10 20 Miles
Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

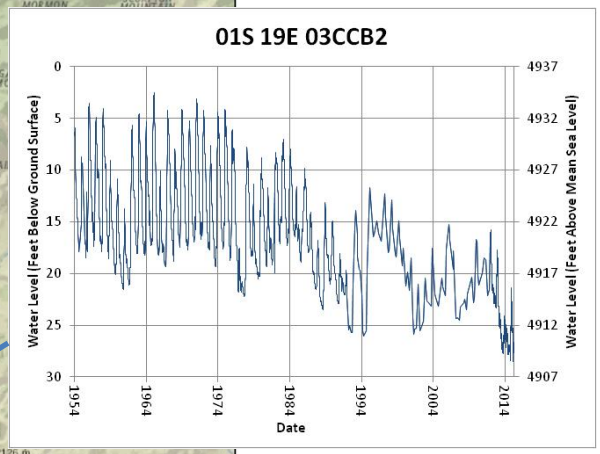
Big Wood Hydrographs





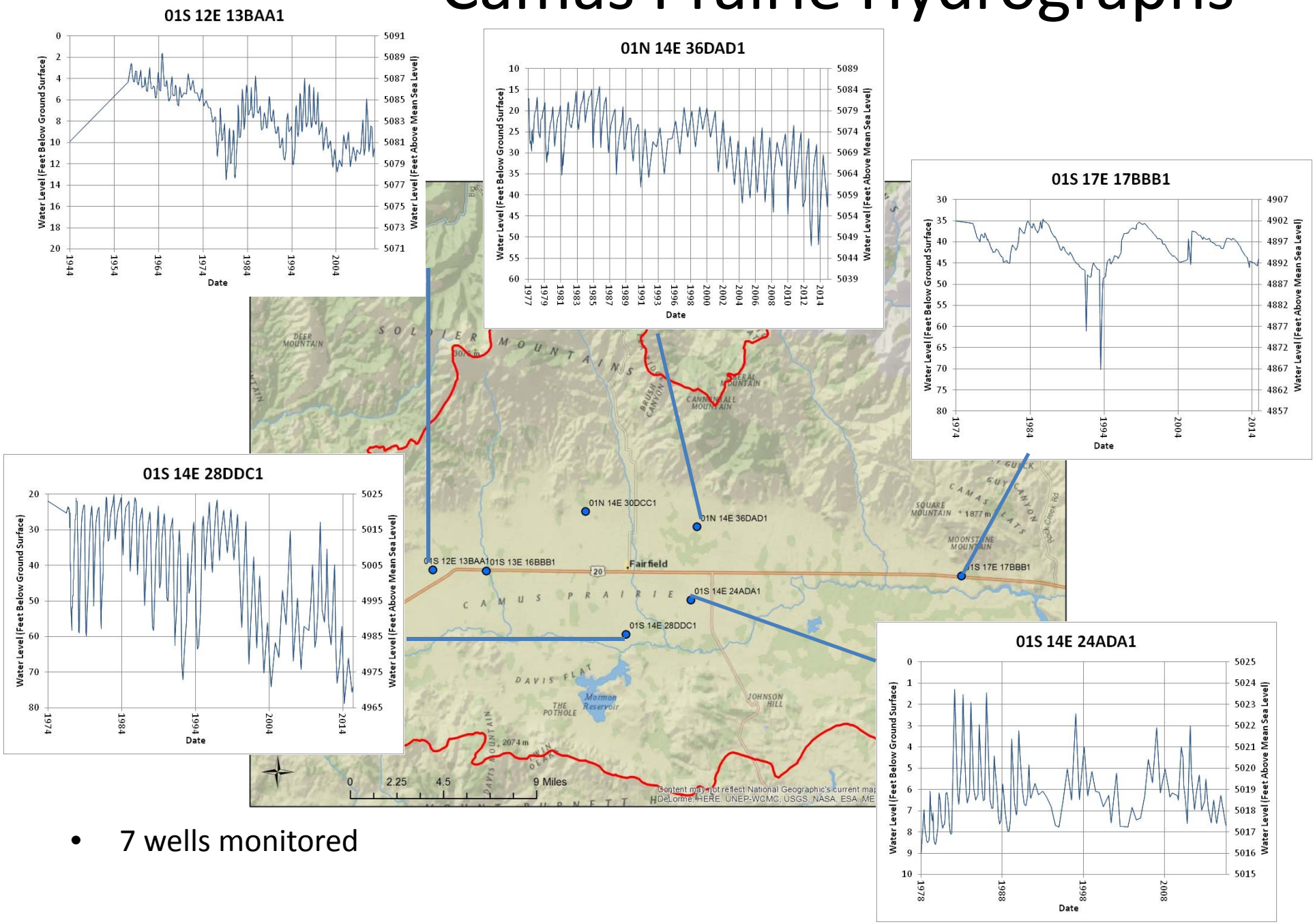






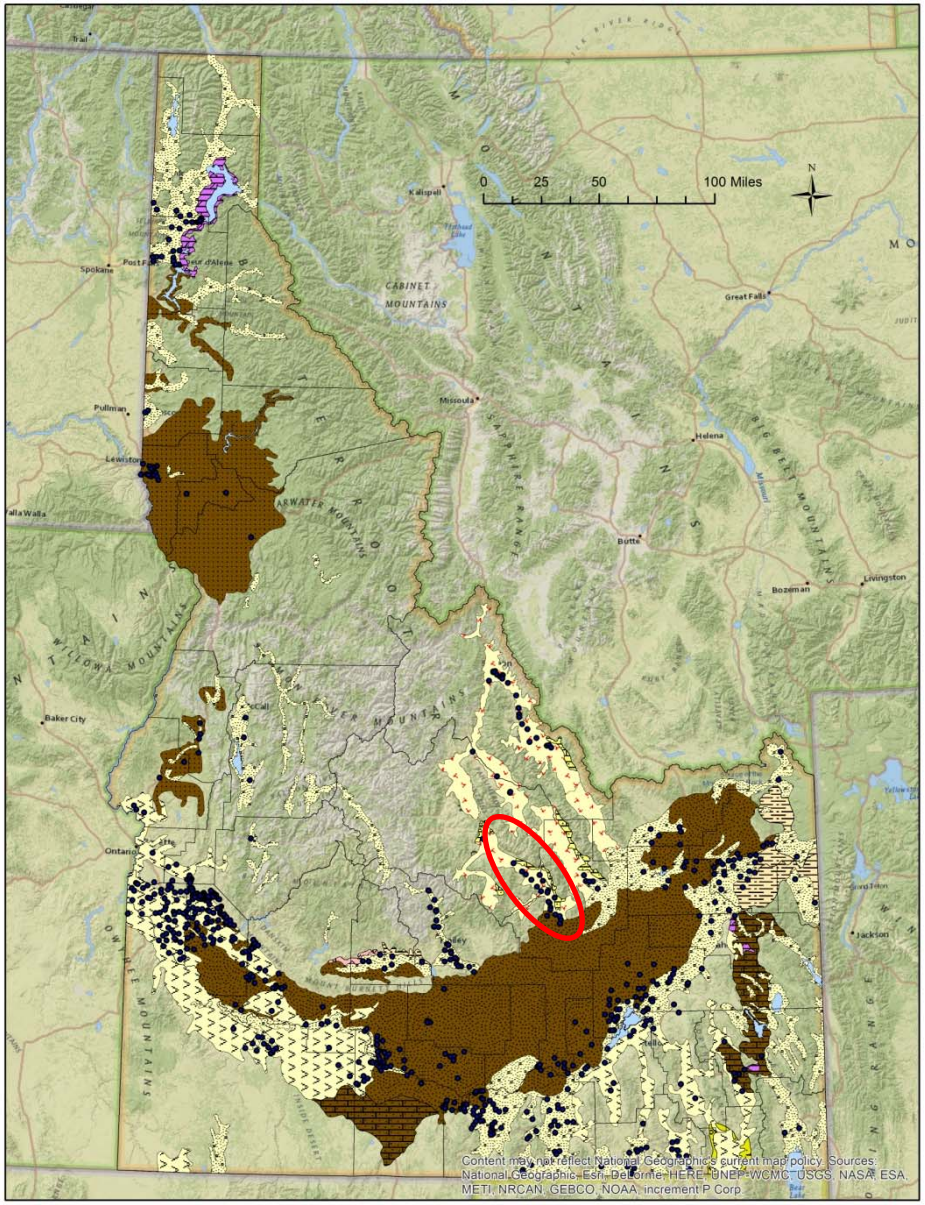
•35 wells monitored in Big Wood Valley

Camas Prairie Hydrographs



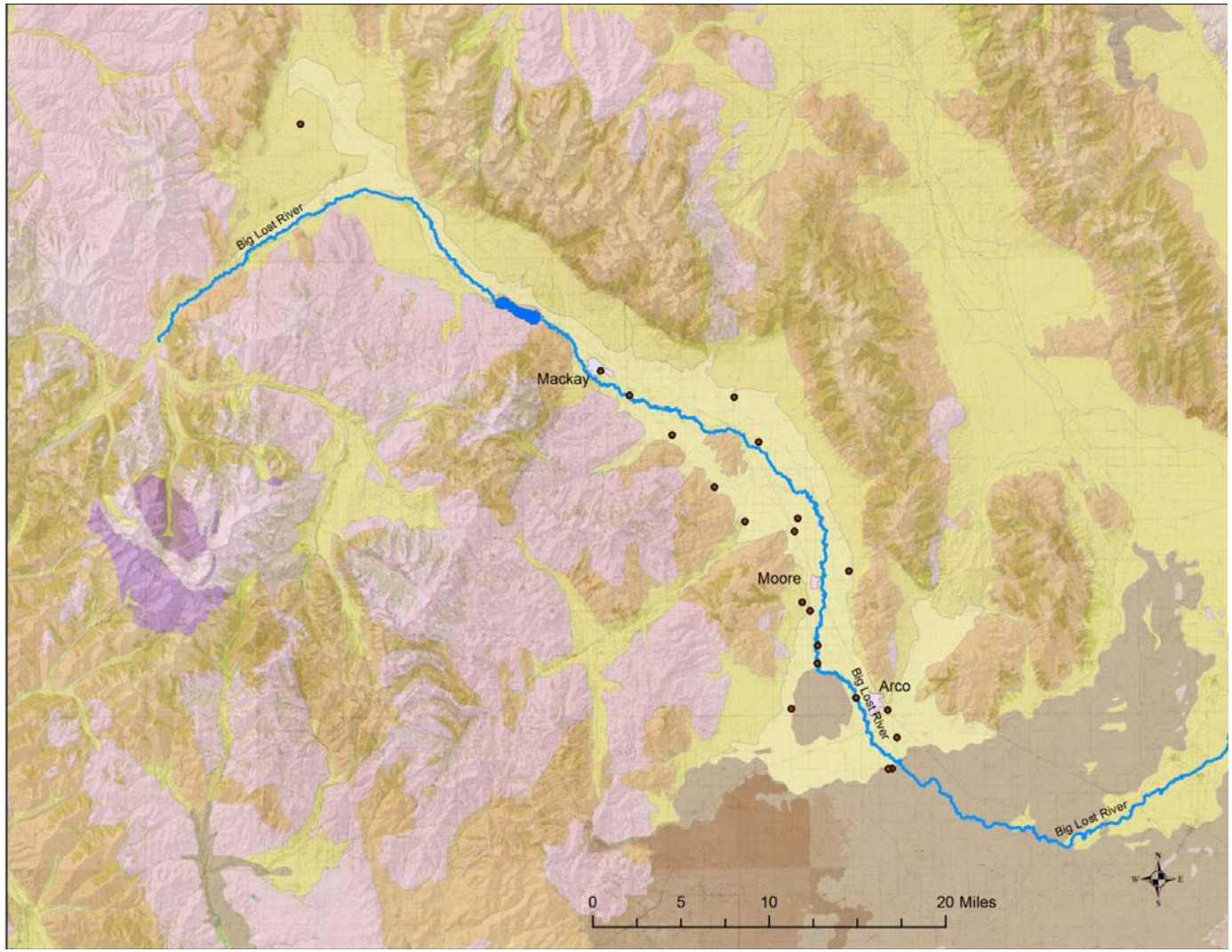
- 7 wells monitored

Big Lost Valley

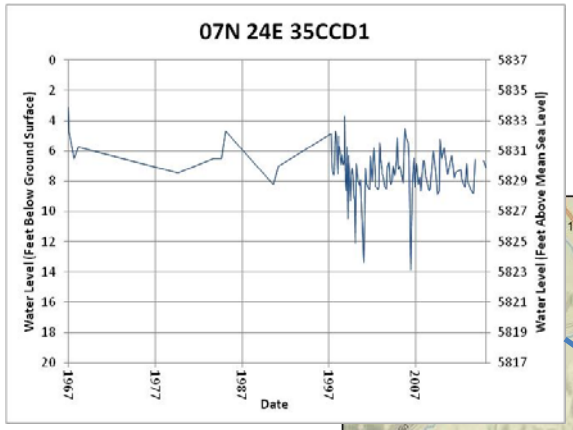


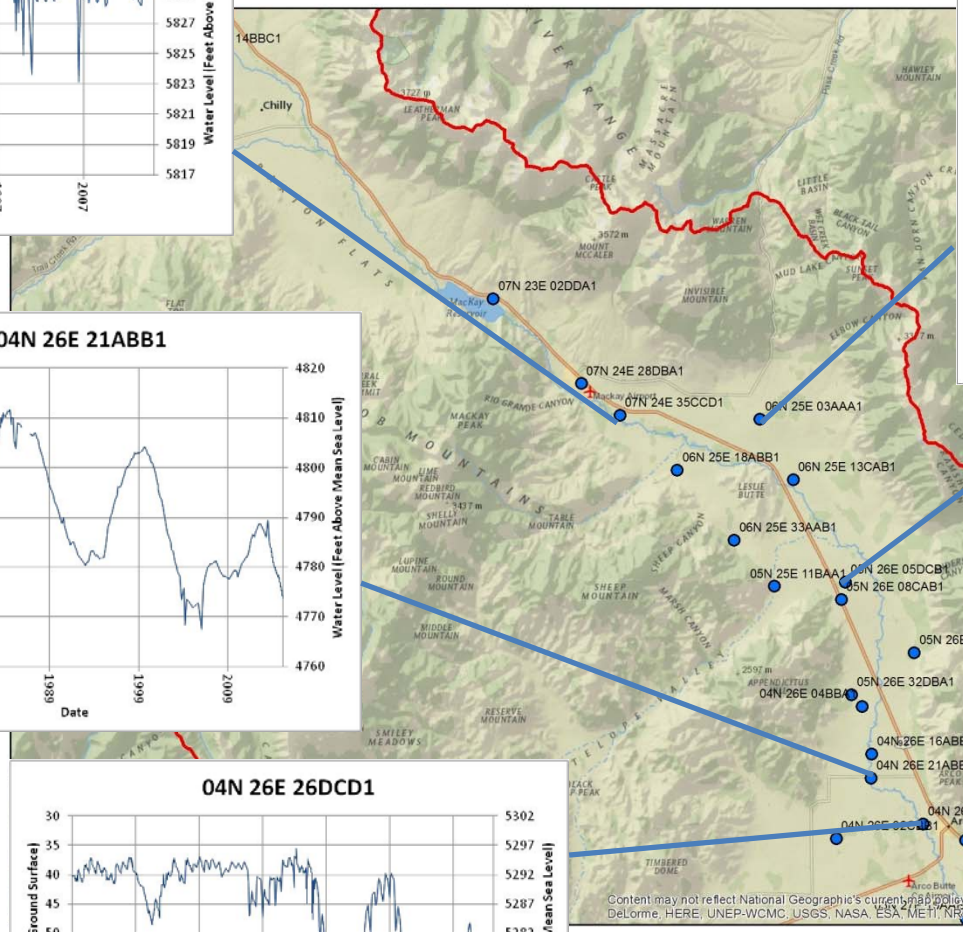
Big Lost

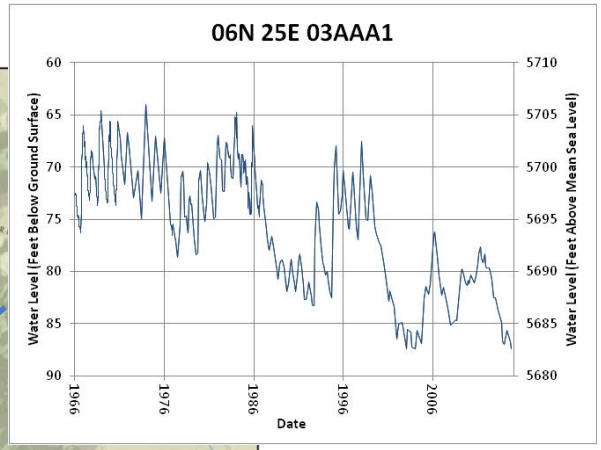
- Ground water flows down the valley, from north to south.
- Surface water / ground water connection.
- Declining water levels in lower portion of valley.
- Tributary to ESPA

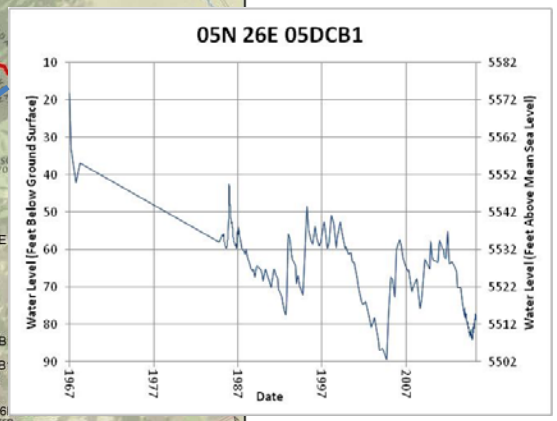


Big Lost Hydrographs



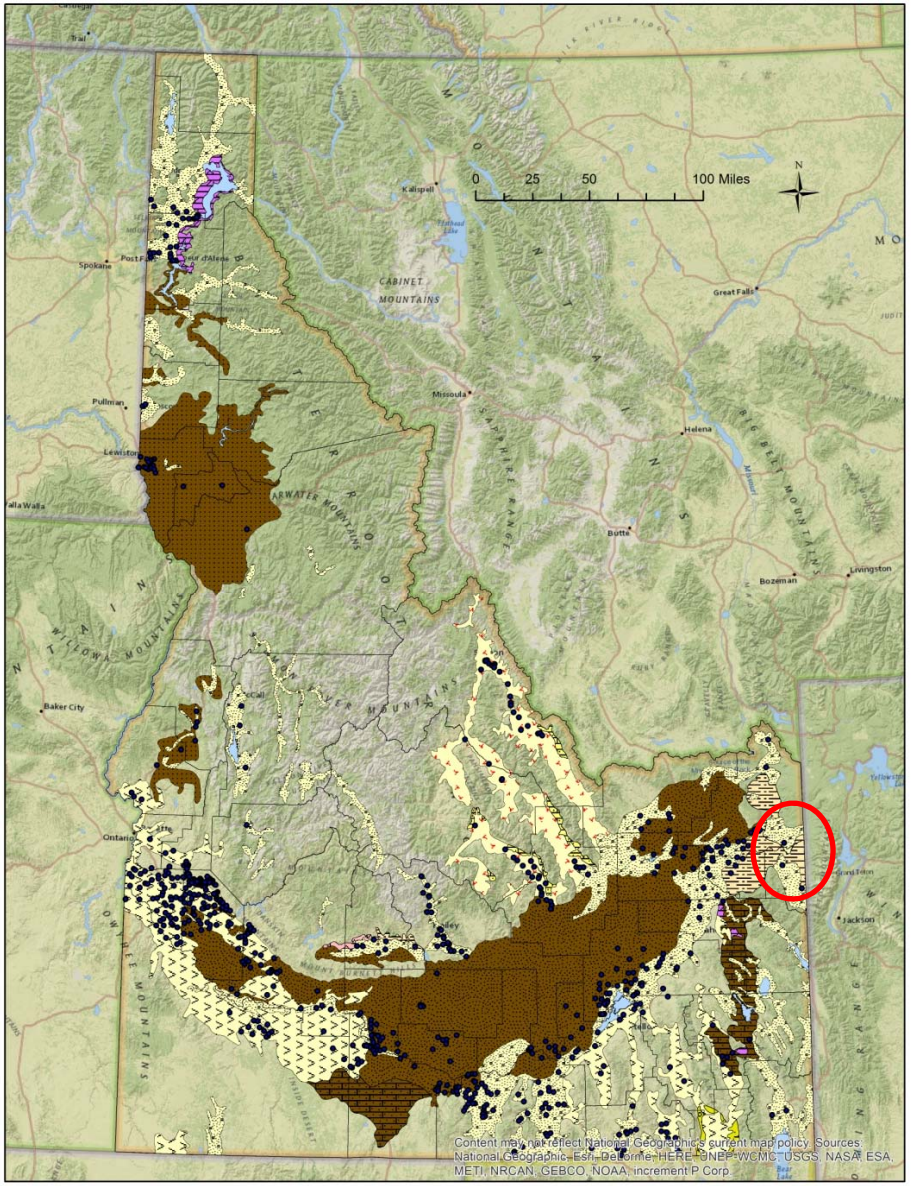






- 23 wells monitored

Teton Valley

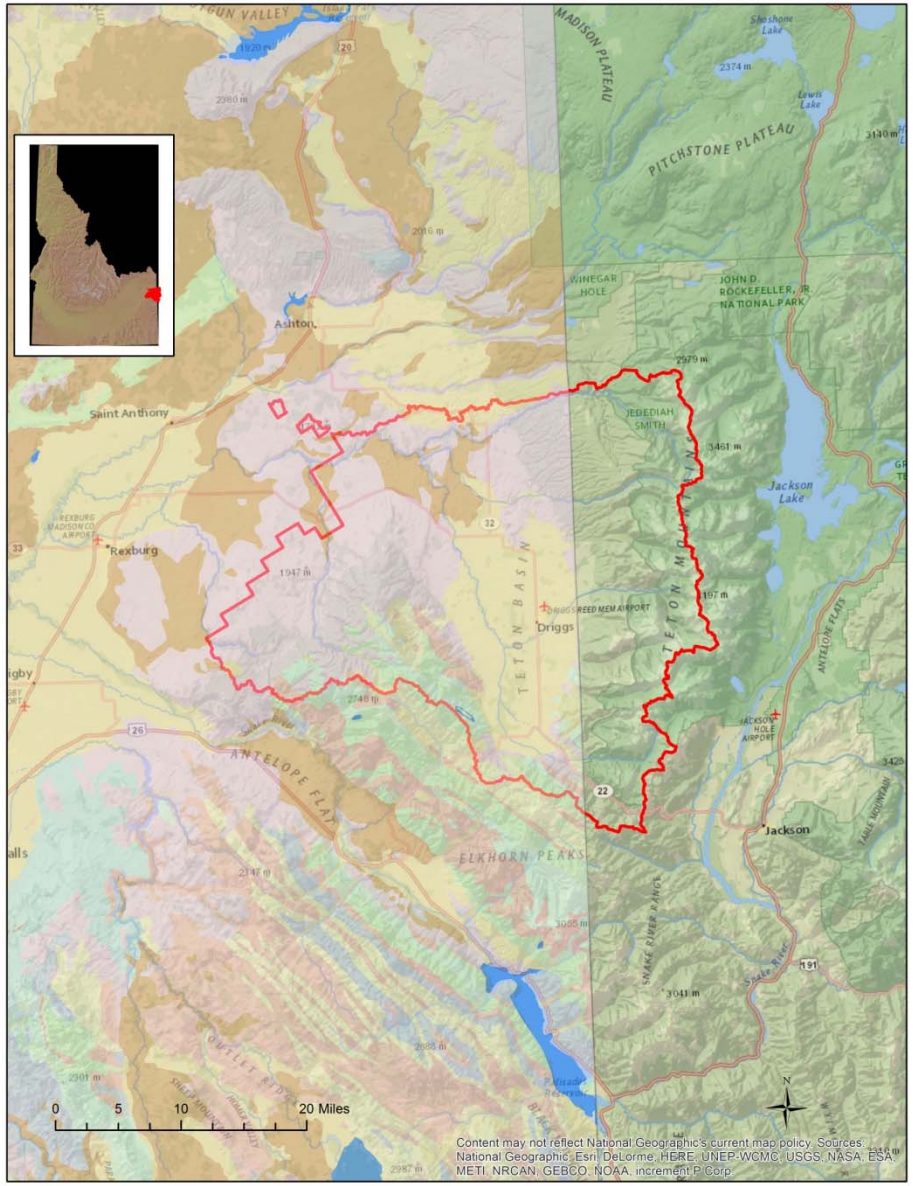


Teton Valley

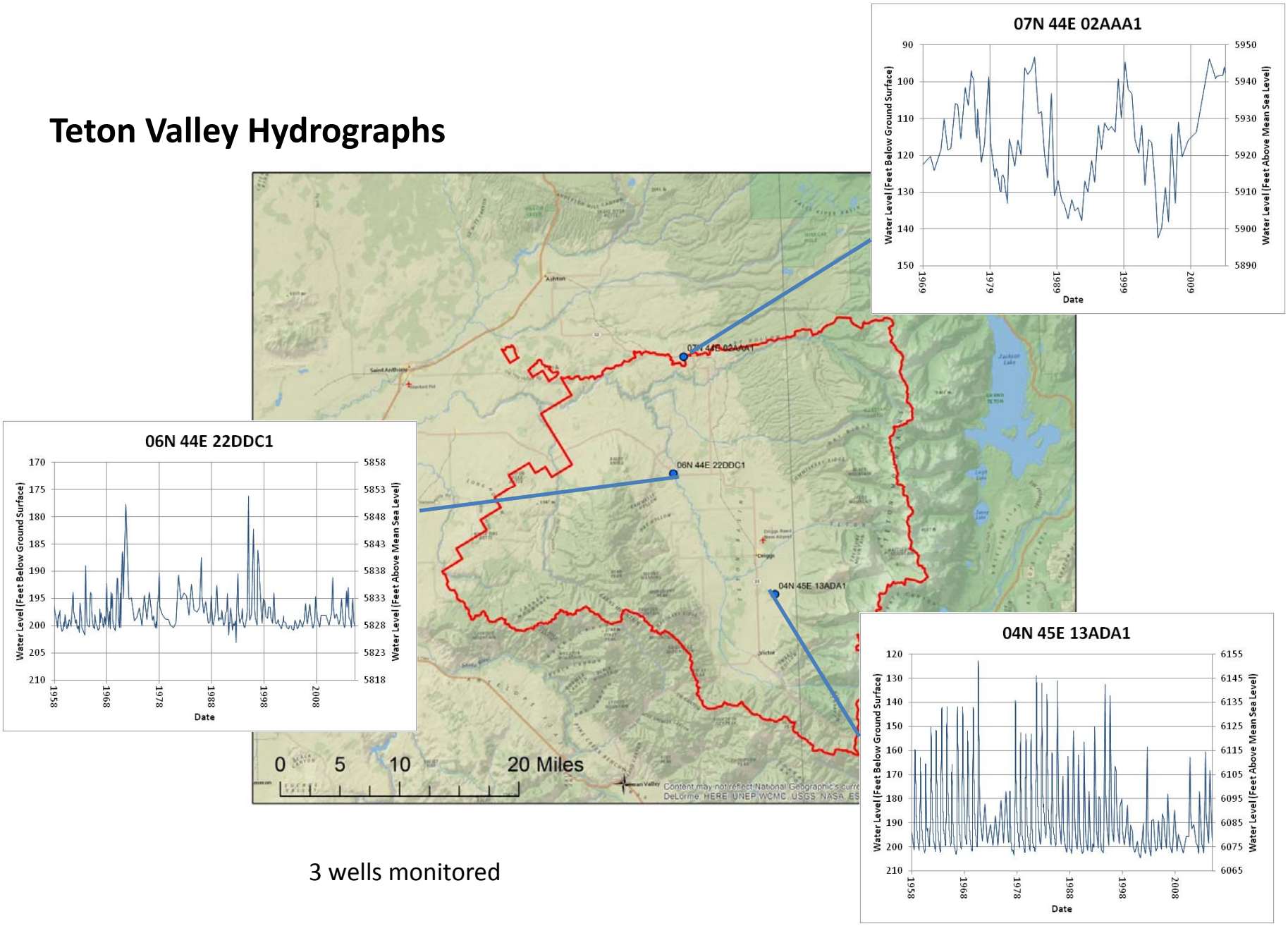
Alluvial aquifer

SW irrigation

Tributary to ESPA

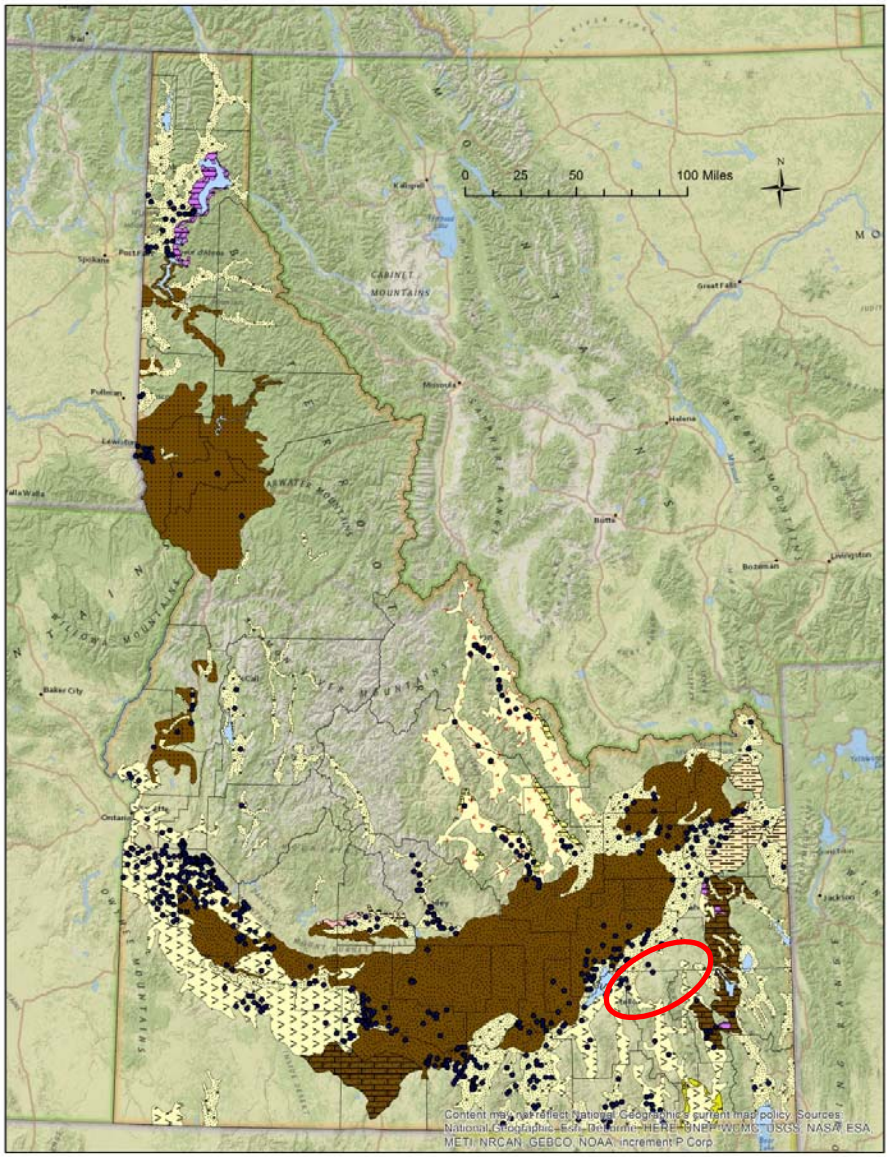


Teton Valley Hydrographs



3 wells monitored

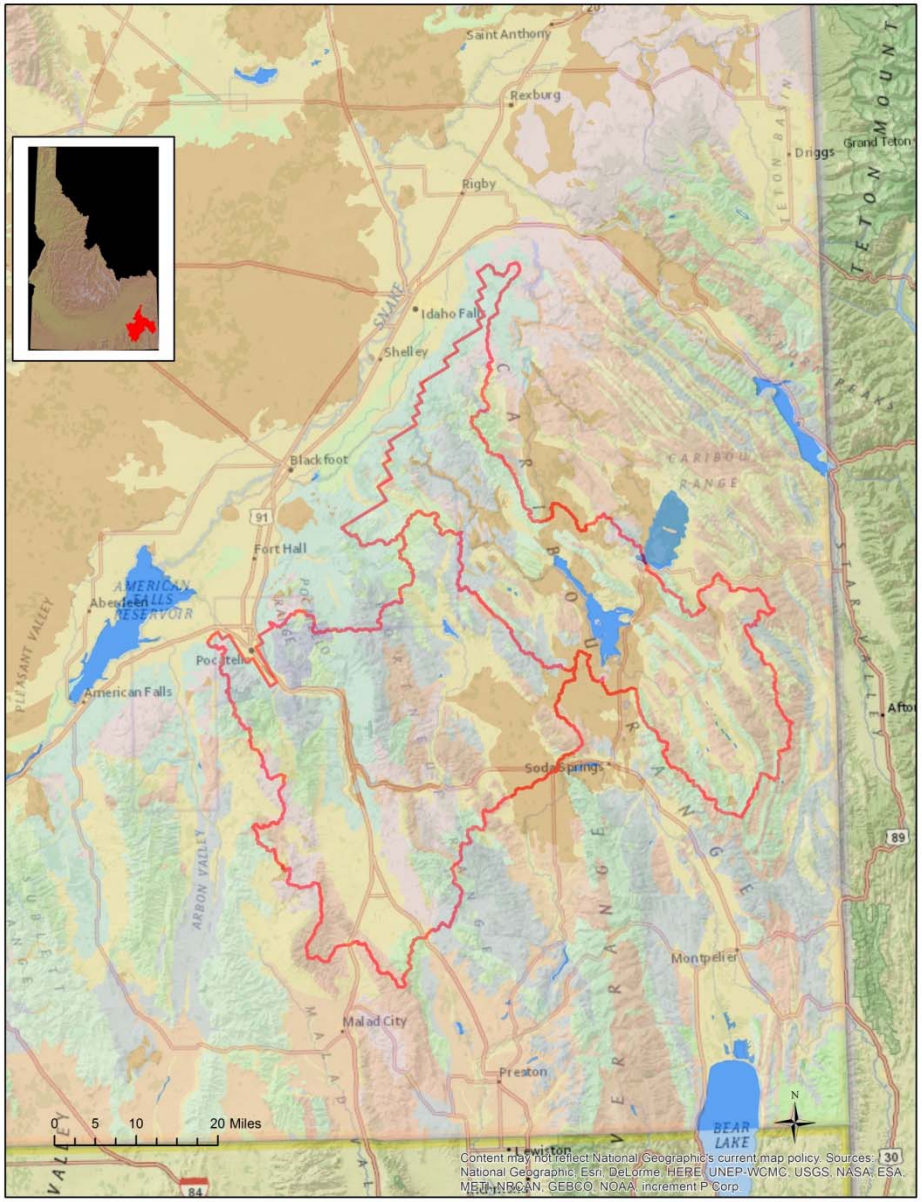
Portneuf and Blackfoot River Valley



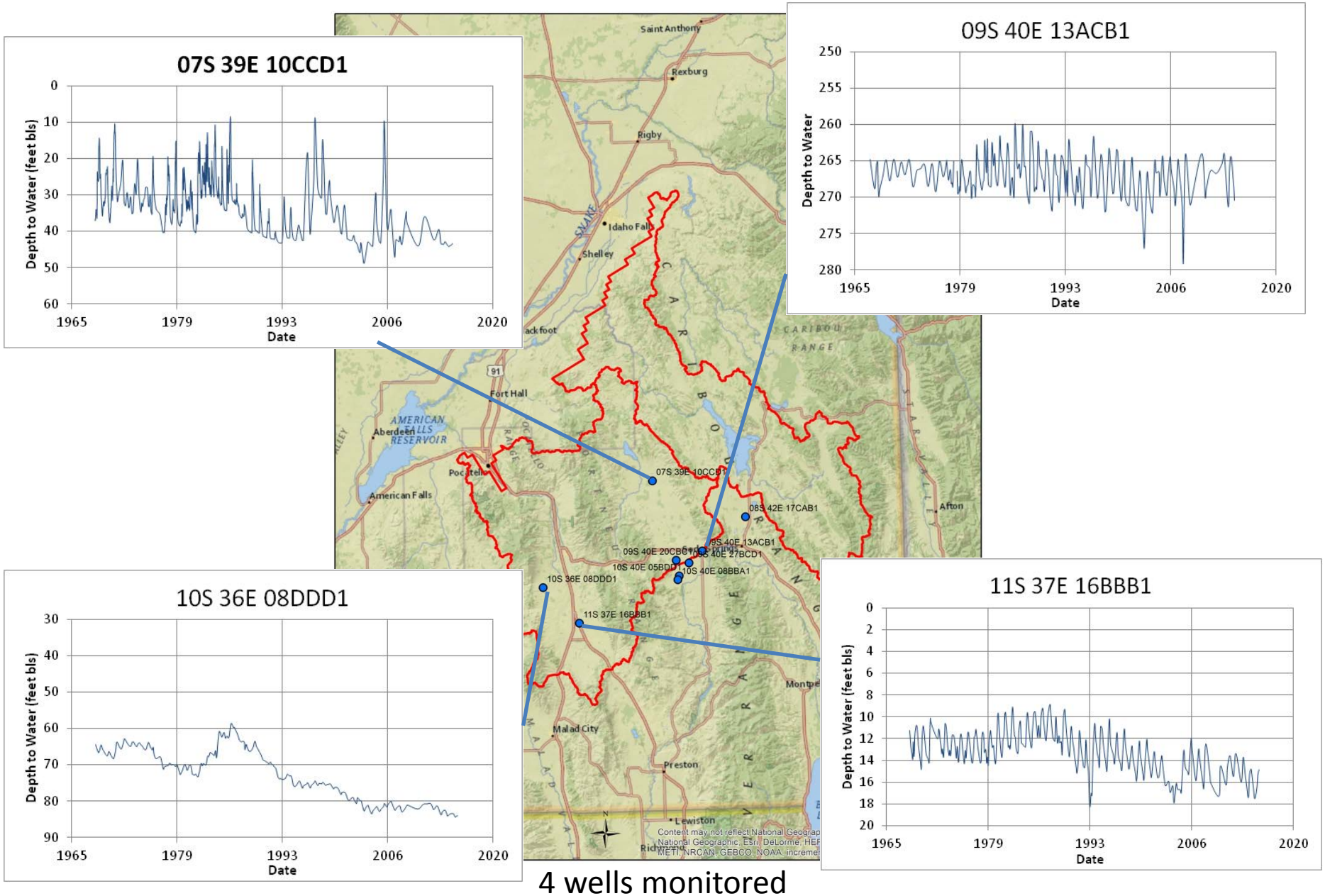
Portneuf River Valley and Blackfoot River Valley

Mixed hydrogeology

Tributary to ESPA

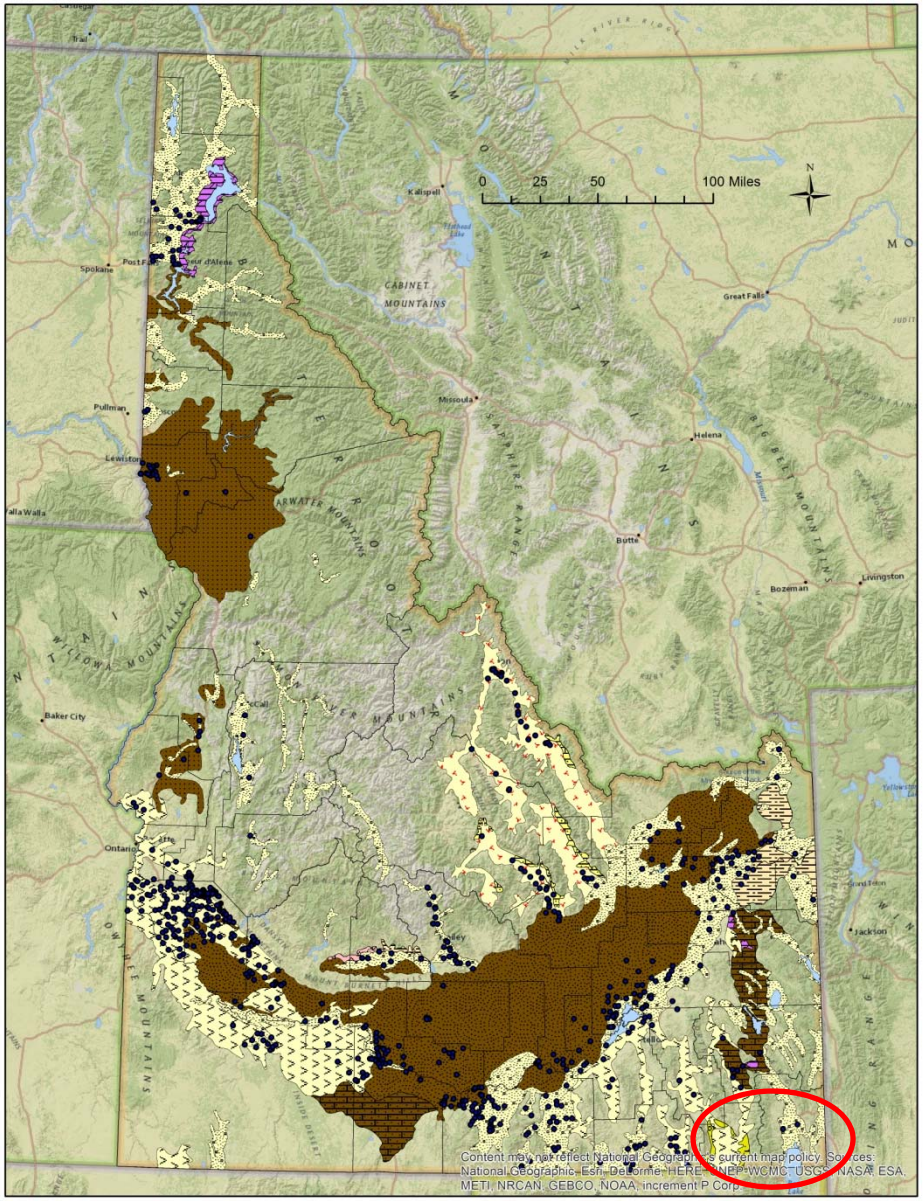


Portneuf and Blackfoot Hydrographs



4 wells monitored

Bear River


0 25 50 100 Miles
N
Kalispell
Spokane
Post Falls
Coeur d'Alene
CABINET MOUNTAINS
Great Falls
Missoula
Helena
Pullman
Lewiston
Walla Walla
Butte
Bozeman
Livingston
Baker City
Ontario
Jackson
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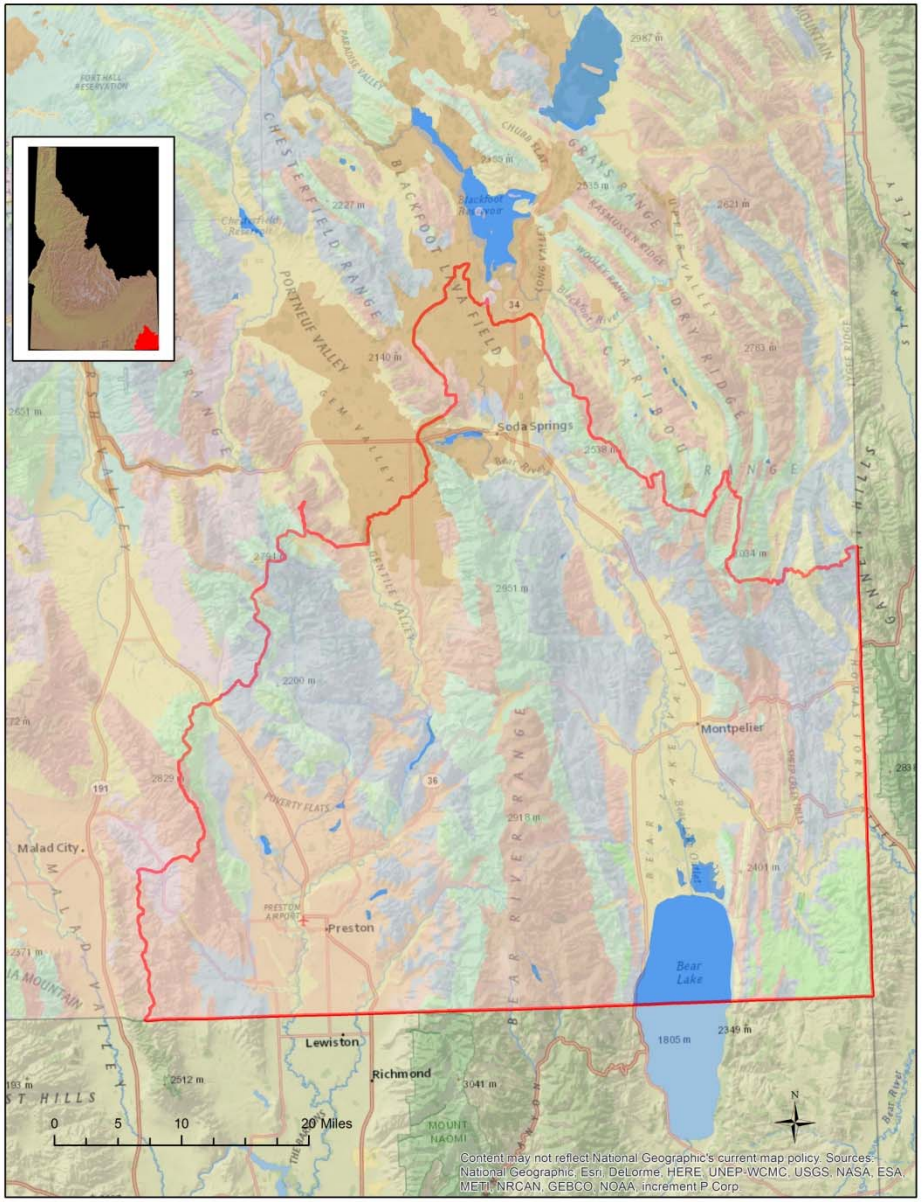
Bear River Aquifer

Unique multi-state flow paths

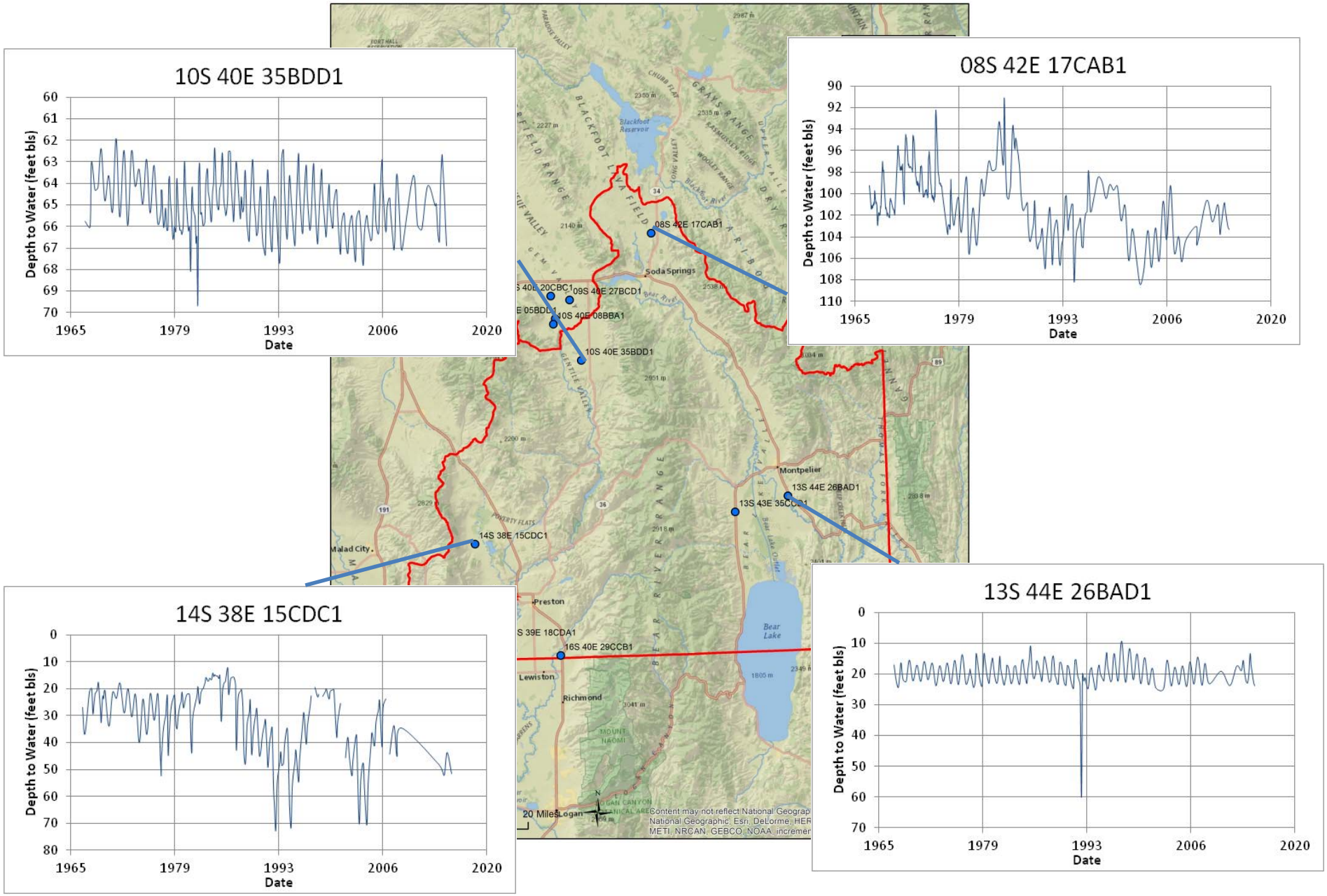
GWMA (2001)

Alluvial aquifer system

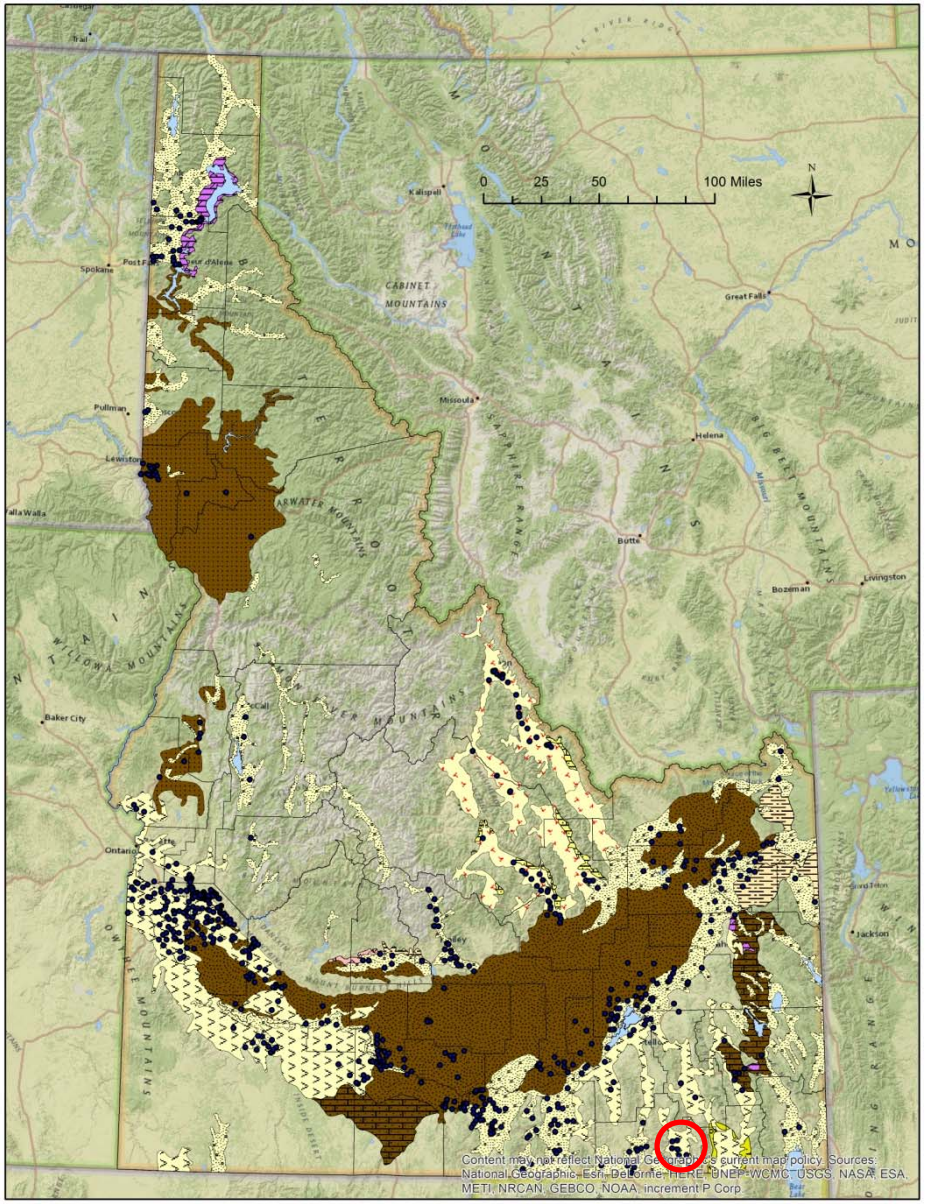
SW irrigation



Bear River Hydrographs

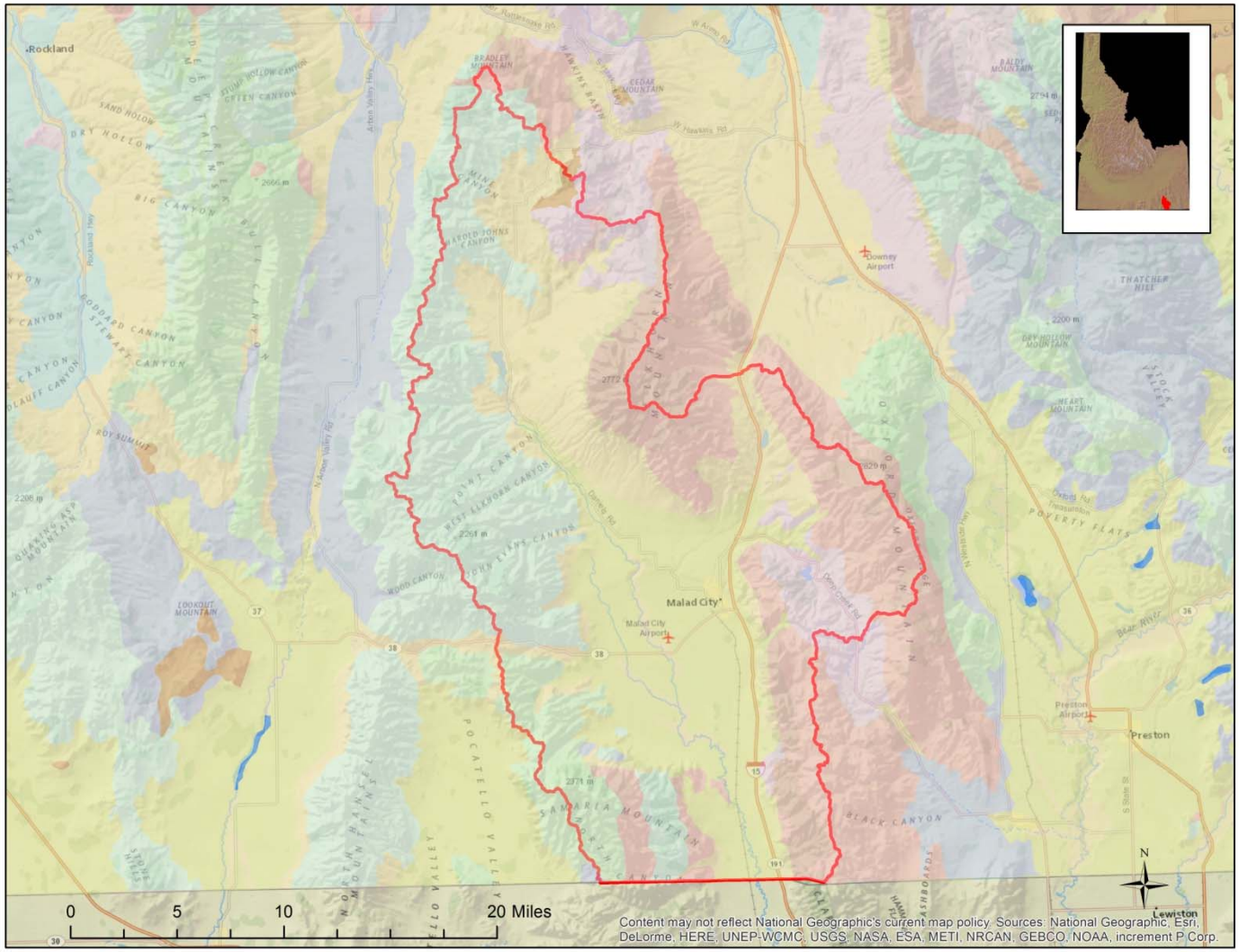


Malad River Valley

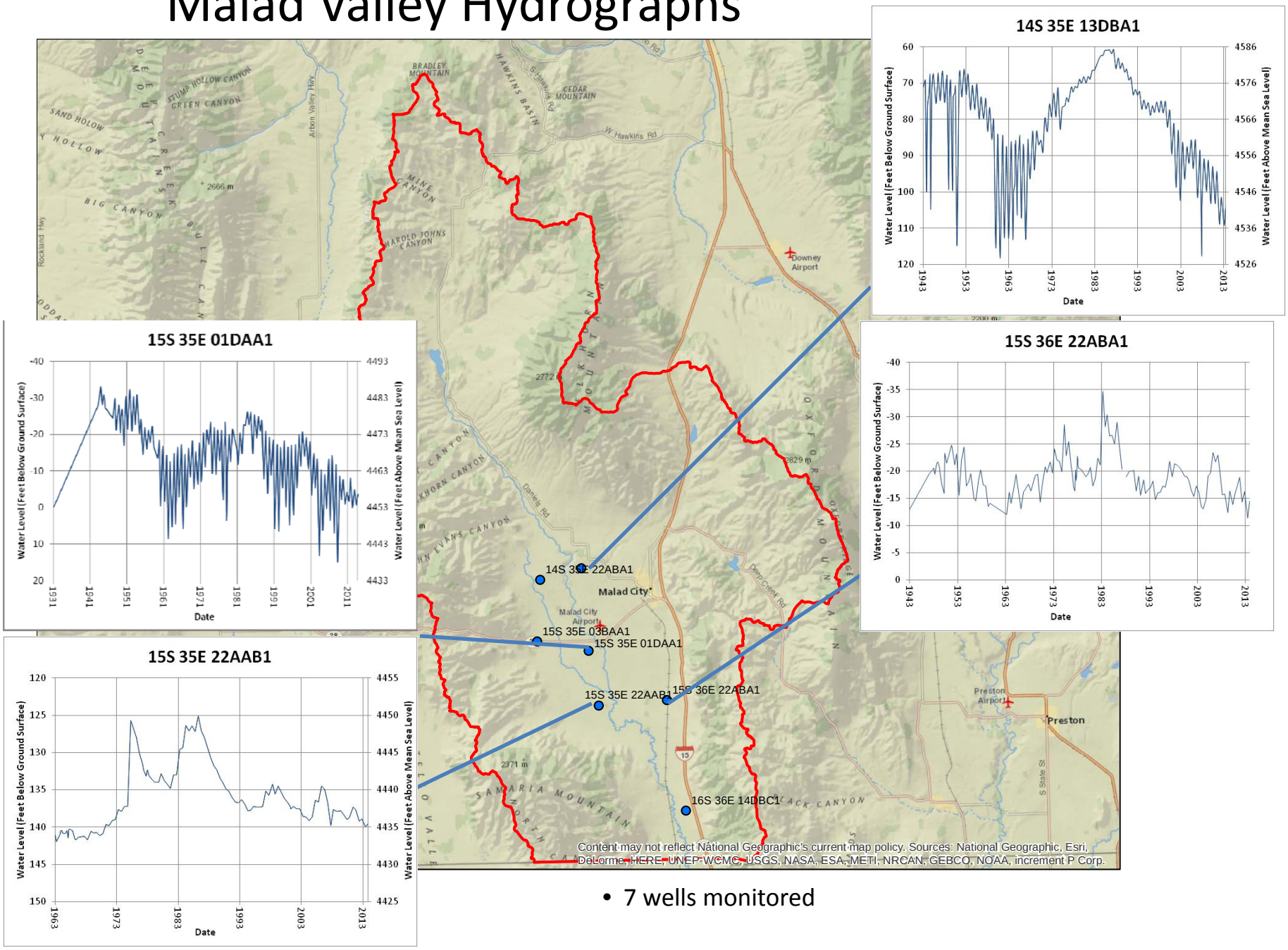


Malad Valley

- GWMA designated in 2015
- Sedimentary aquifer flowing north to south.
- Confined (flowing) conditions exist.

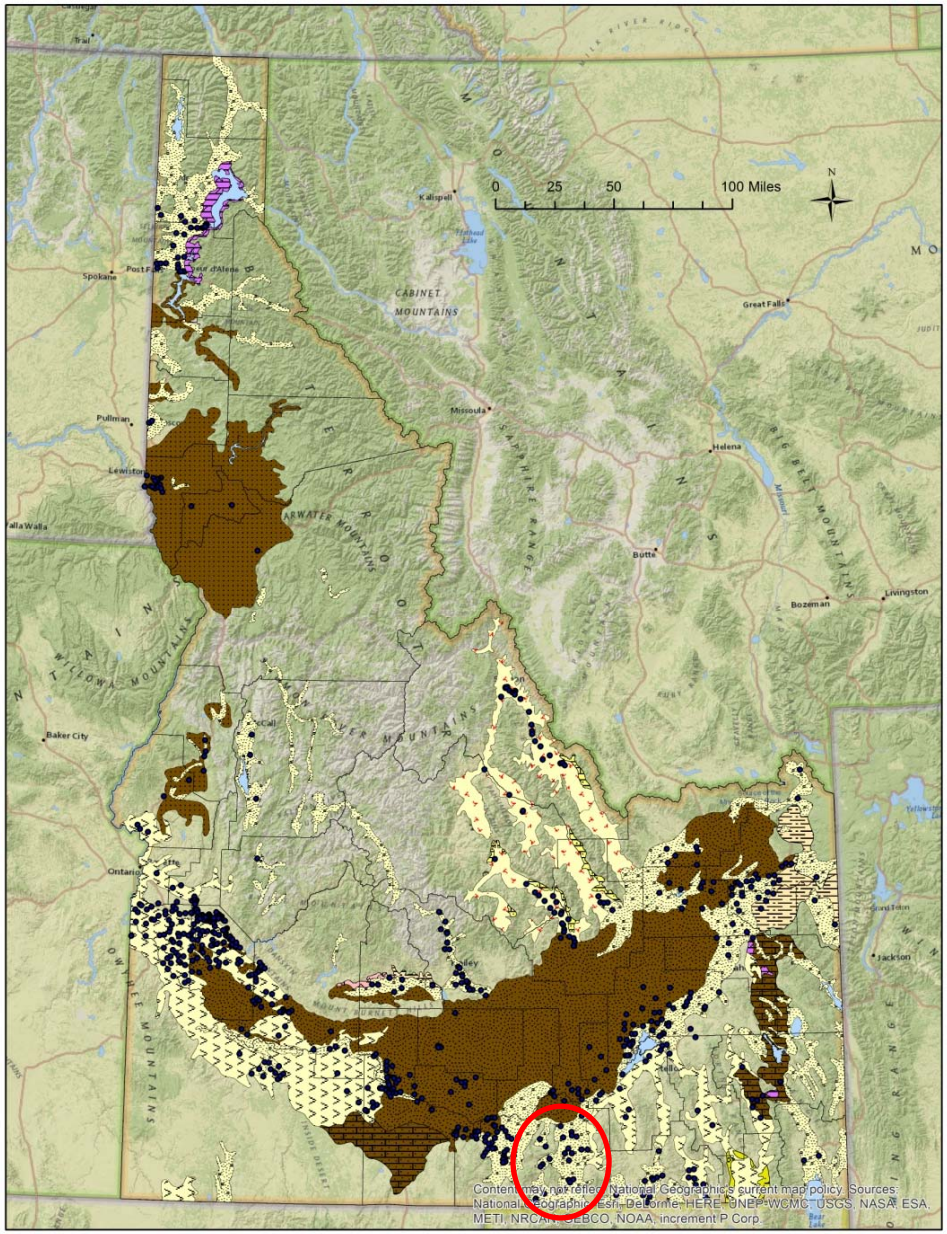


Malad Valley Hydrographs



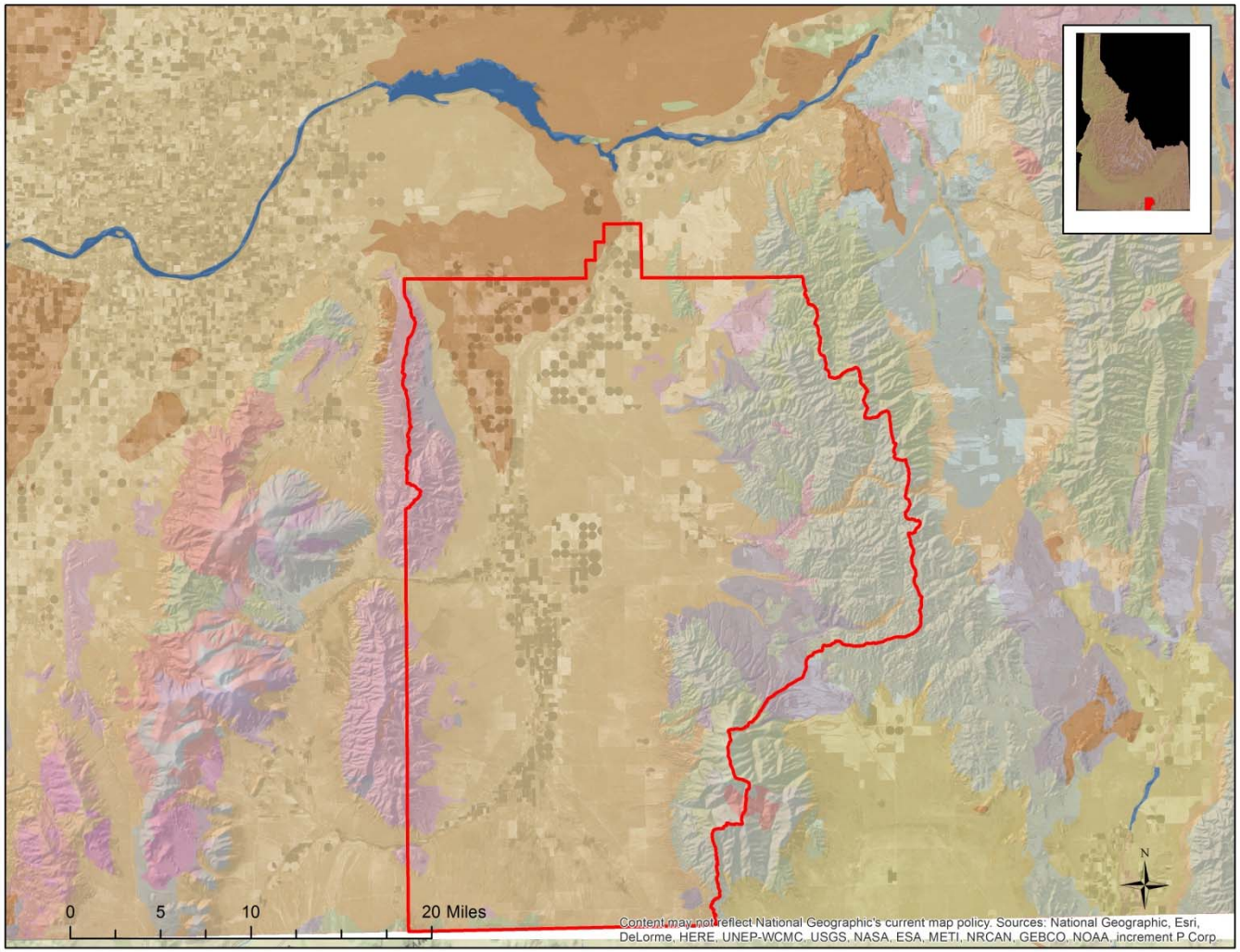
- 7 wells monitored

Raft River Valley

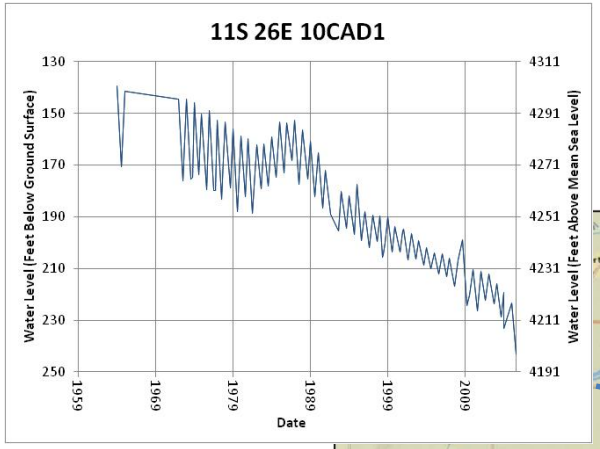


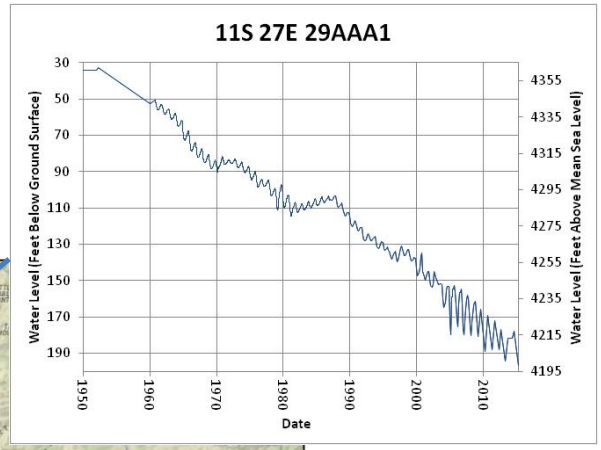
Raft River Valley

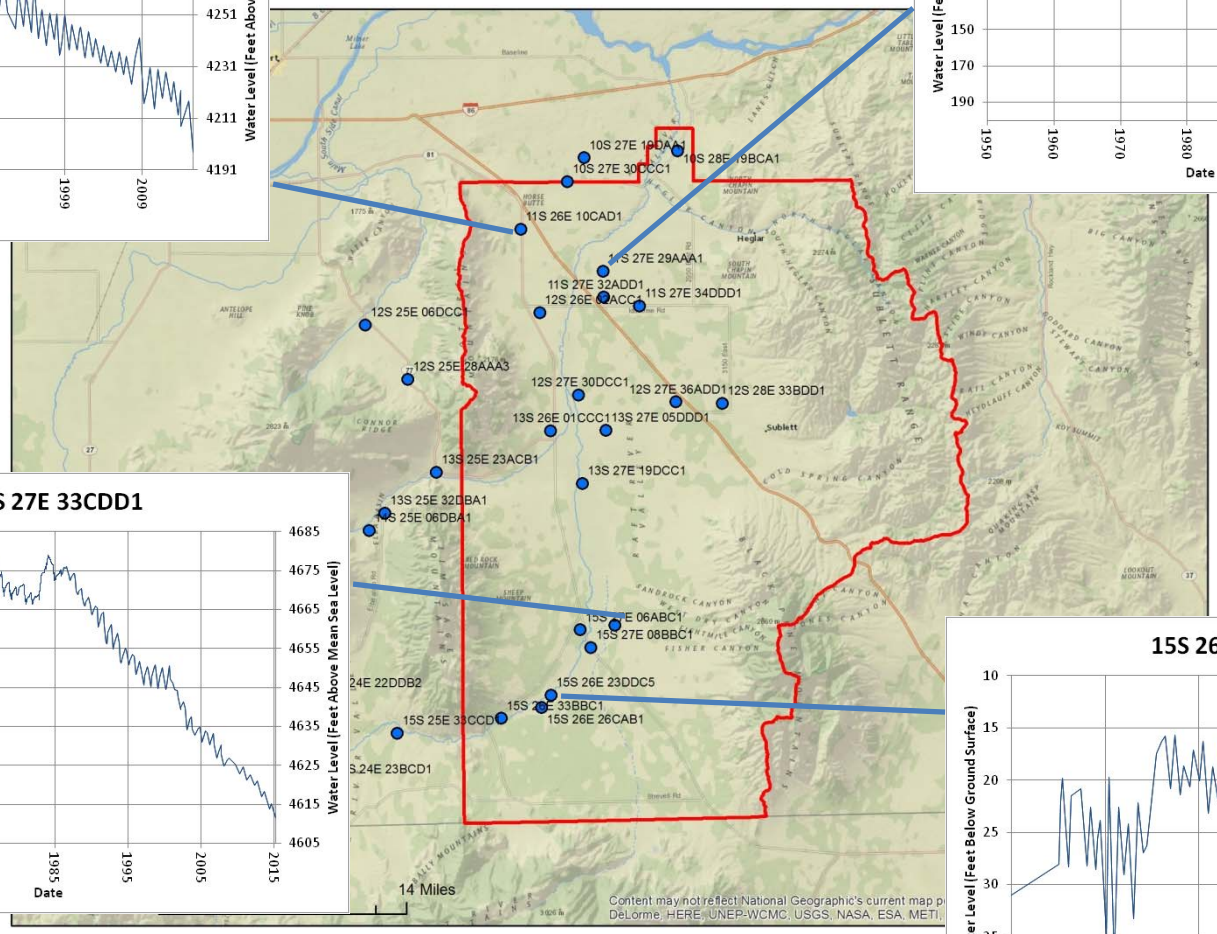
- CGWA designated in 1963
- Sedimentary aquifer flowing from south to north.
- GW pumping is primary source of irrigation water.

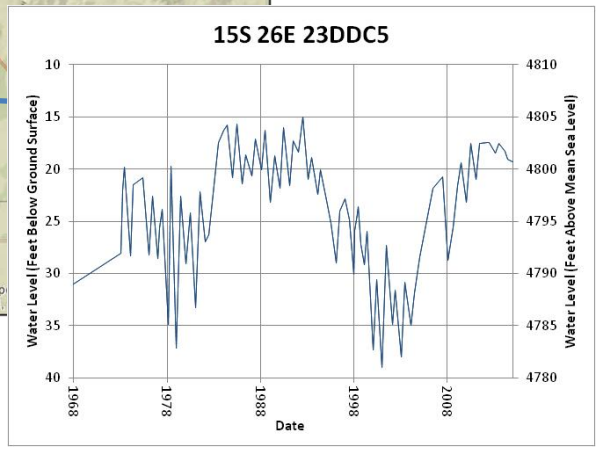


Raft River Hydrographs



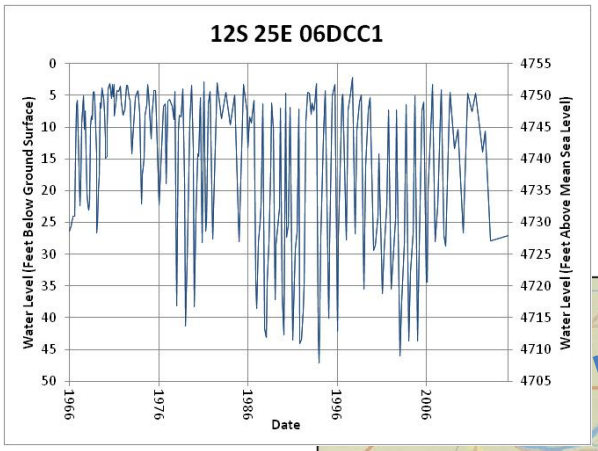


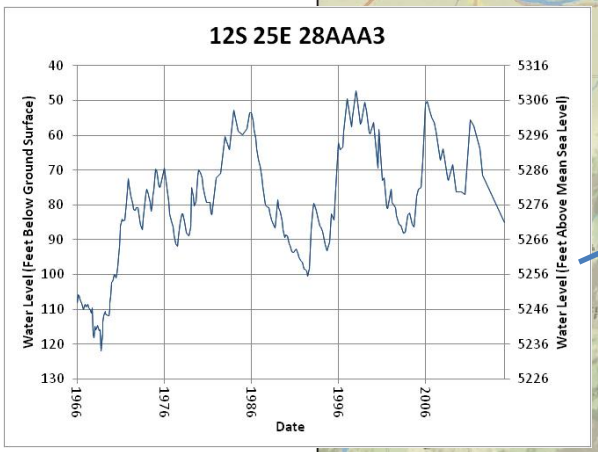


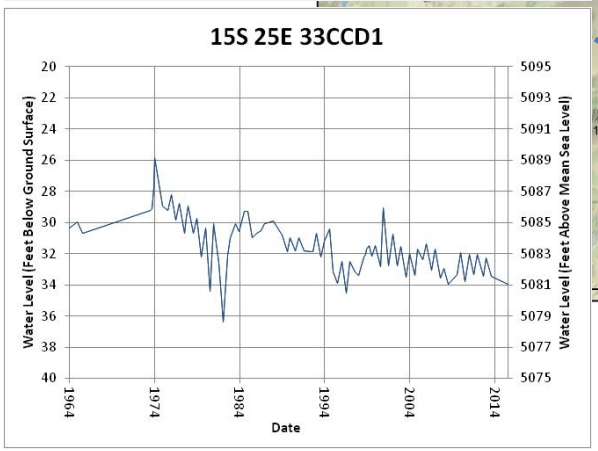


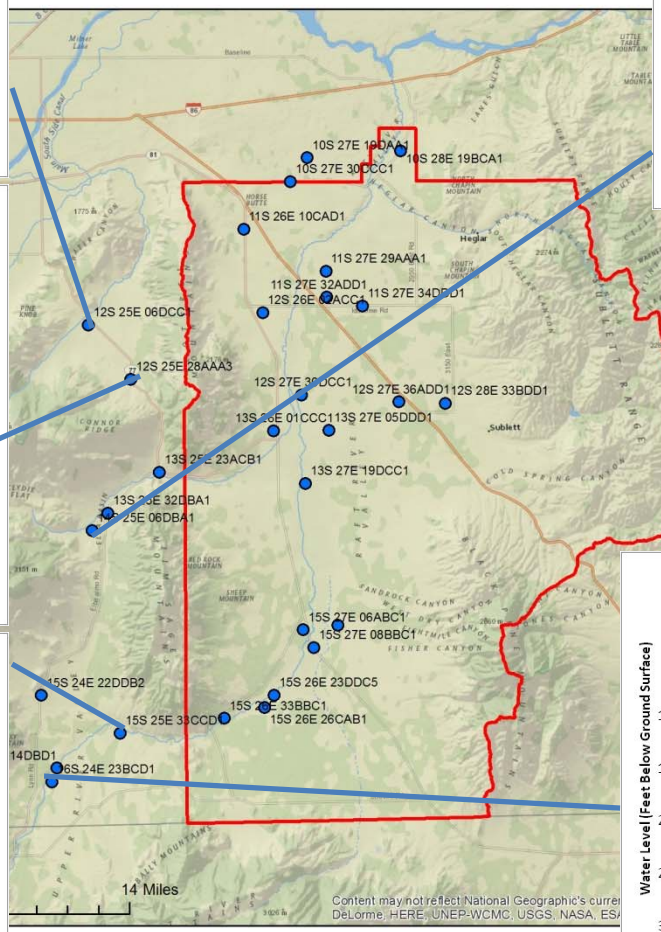
21 wells Monitored

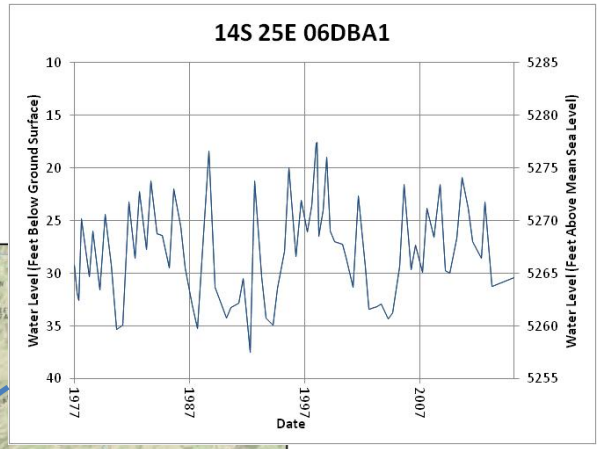
Southern Subbasins Hydrographs

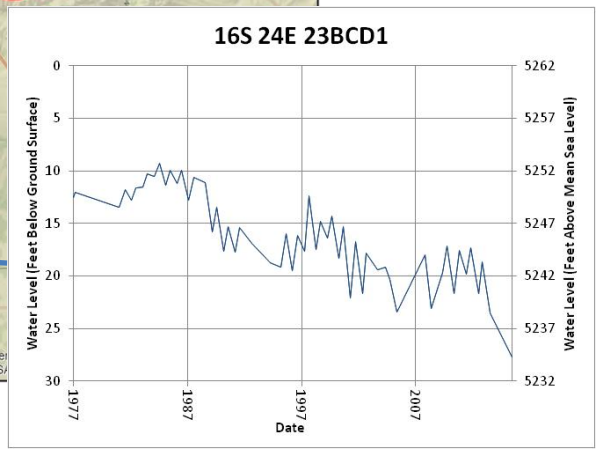






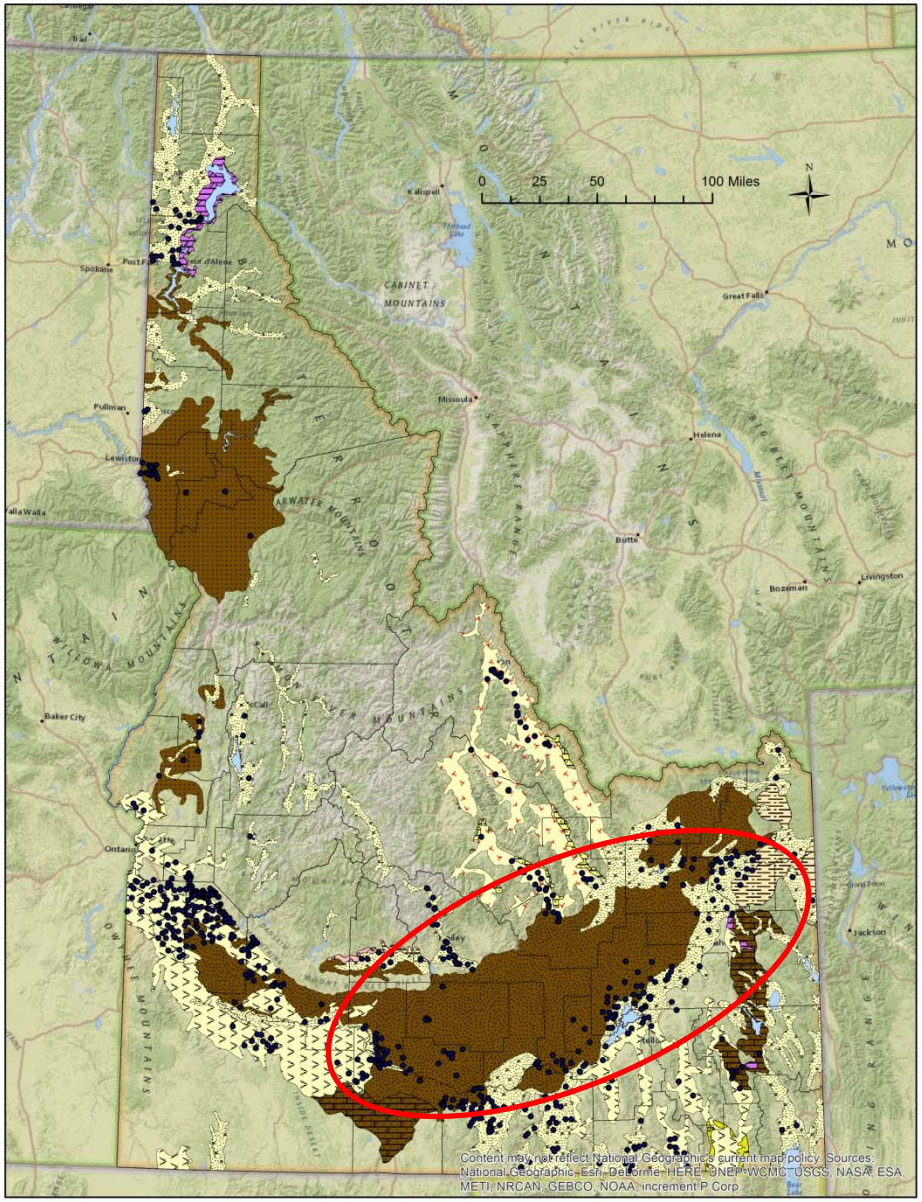






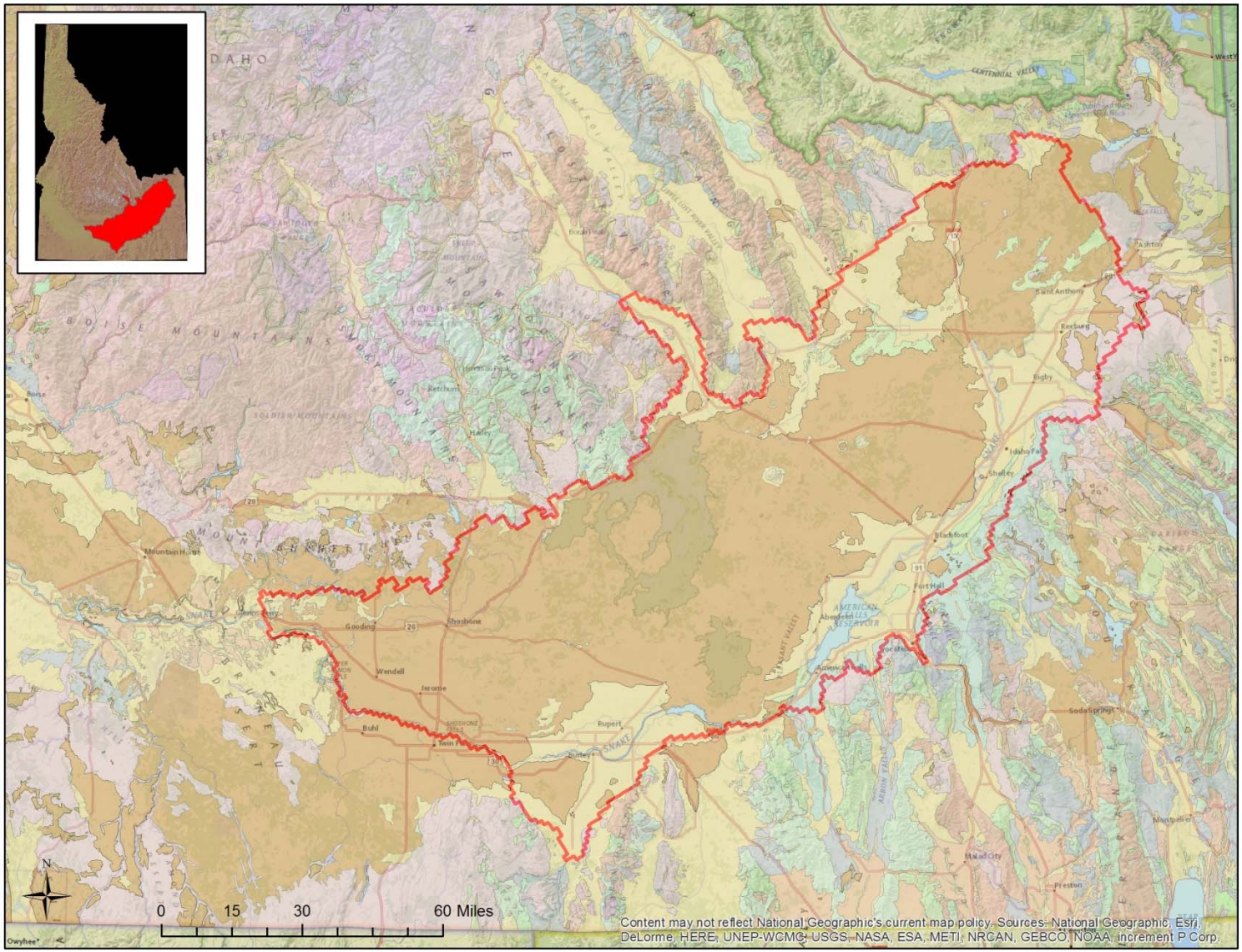
9 wells monitored

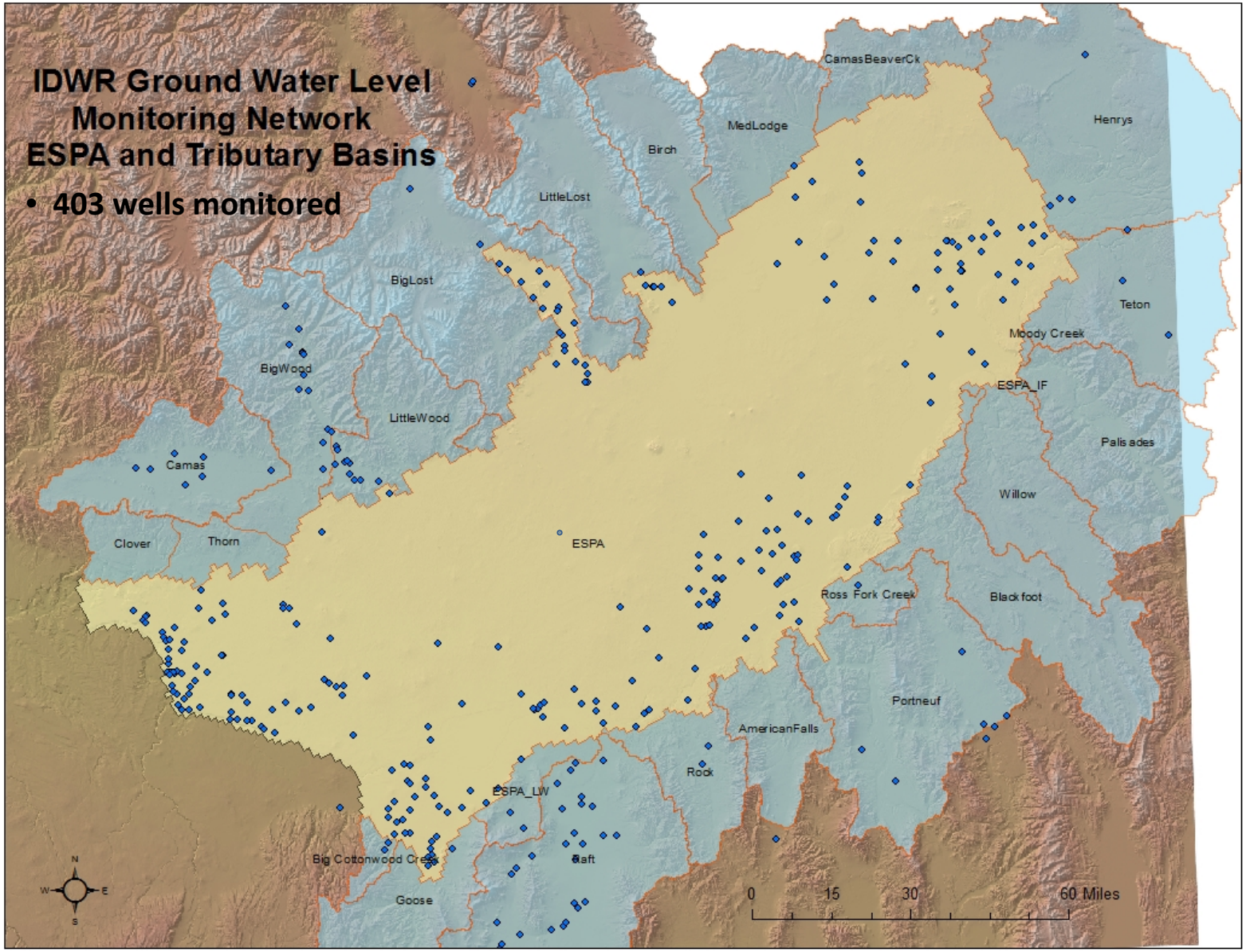
Eastern Snake Plain Aquifer



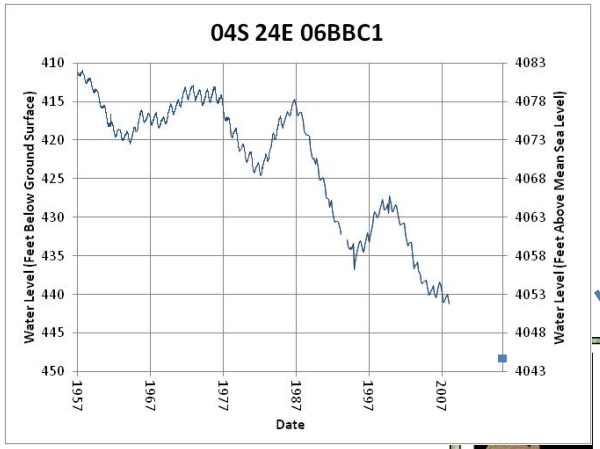
ESPA Aquifer:

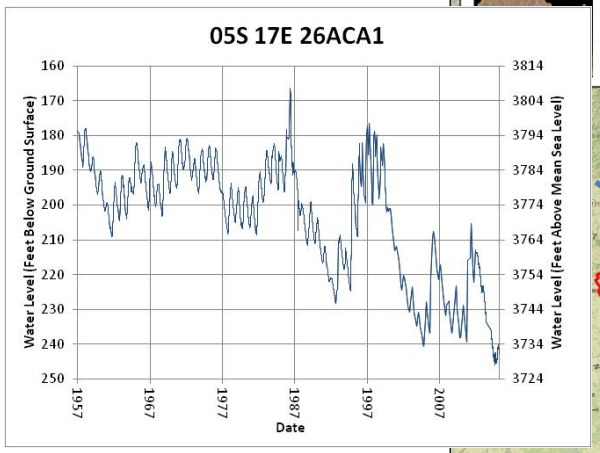
- Aquifer composed primarily of basalt.
- Perched Aquifers in sediments.
- Generally unconfined, some confining sediments.

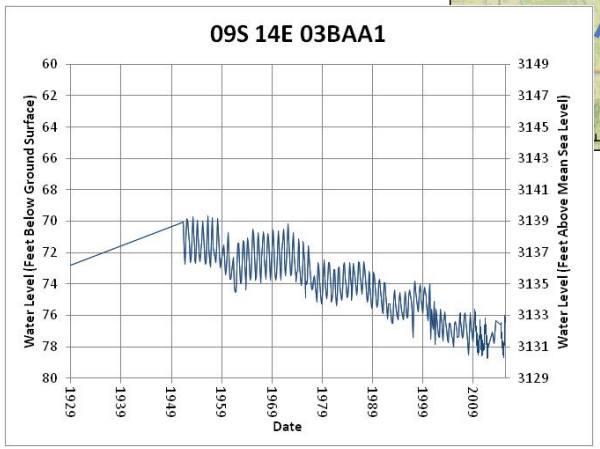


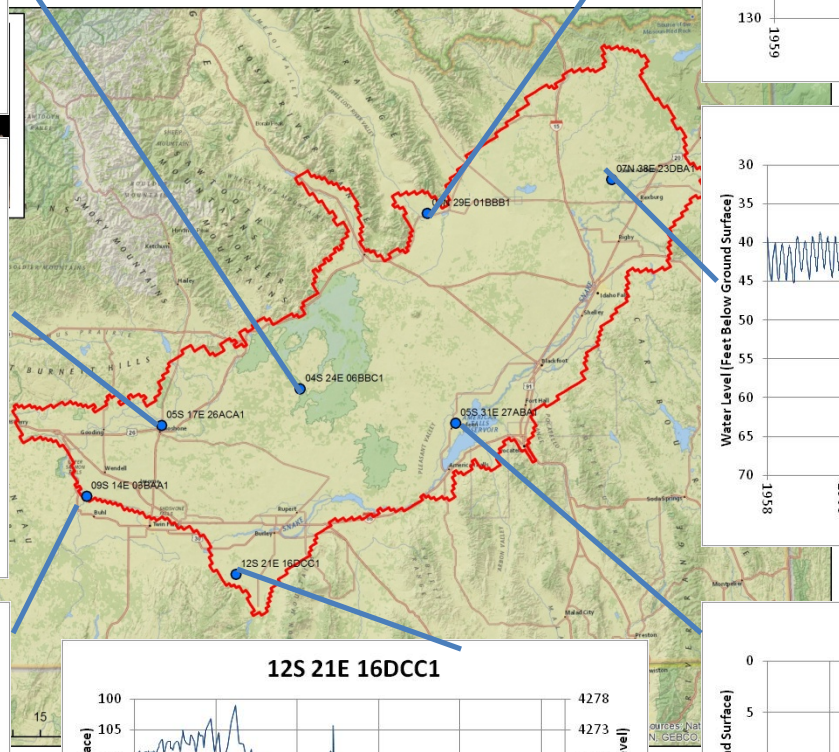

IDWR Ground Water Level
Monitoring Network
ESPA and Tributary Basins
• 403 wells monitored
CamasBeaverCk
MedLodge
Henrys
Birch
LittleLost
BigLost
Teton
Moody Creek
BigWood
ESPA_IF
LittleWood
Palisades
Camas
Willow
Clover
Thorn
ESPA
Ross Fork Creek
Blackfoot
Portneuf
AmericanFalls
Rock
ESPA_LW
Big Cottonwood Creek
Raft
Goose
N
W
E
S
0
15
30
60 Miles

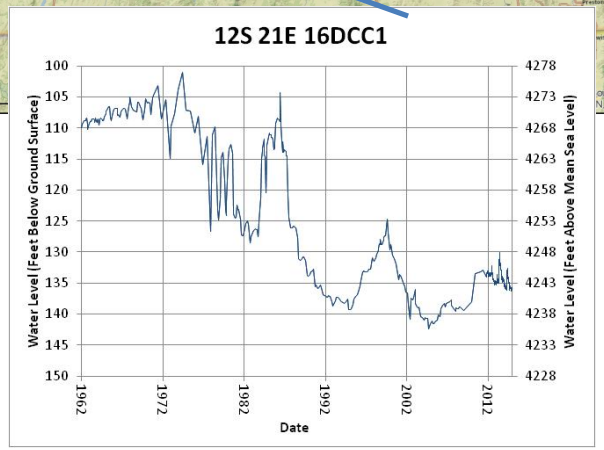
ESPA Hydrographs

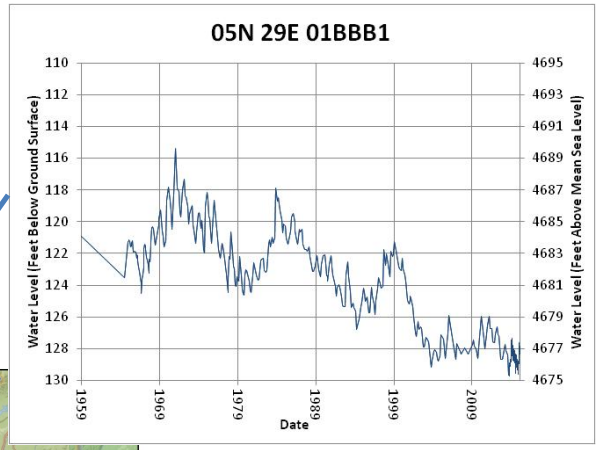


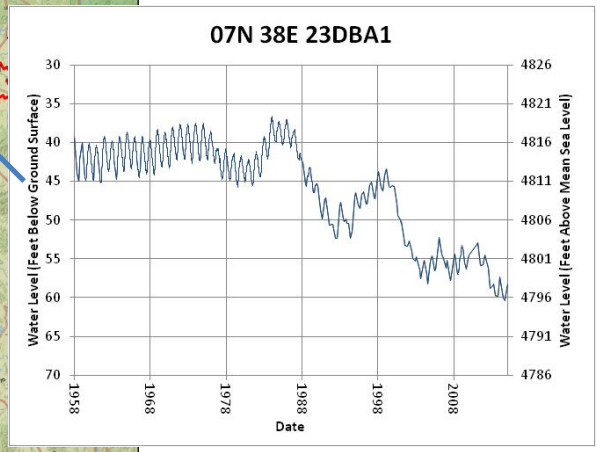


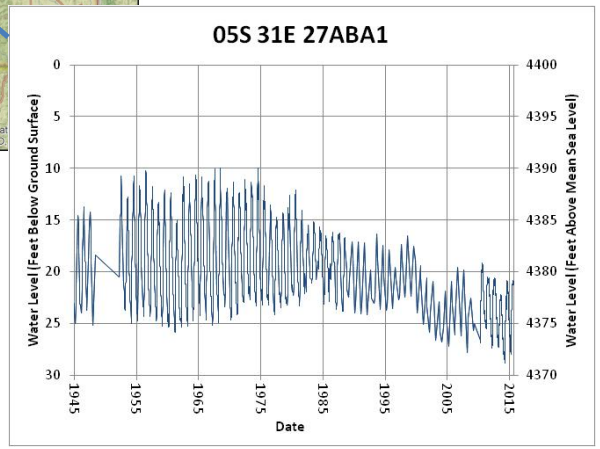




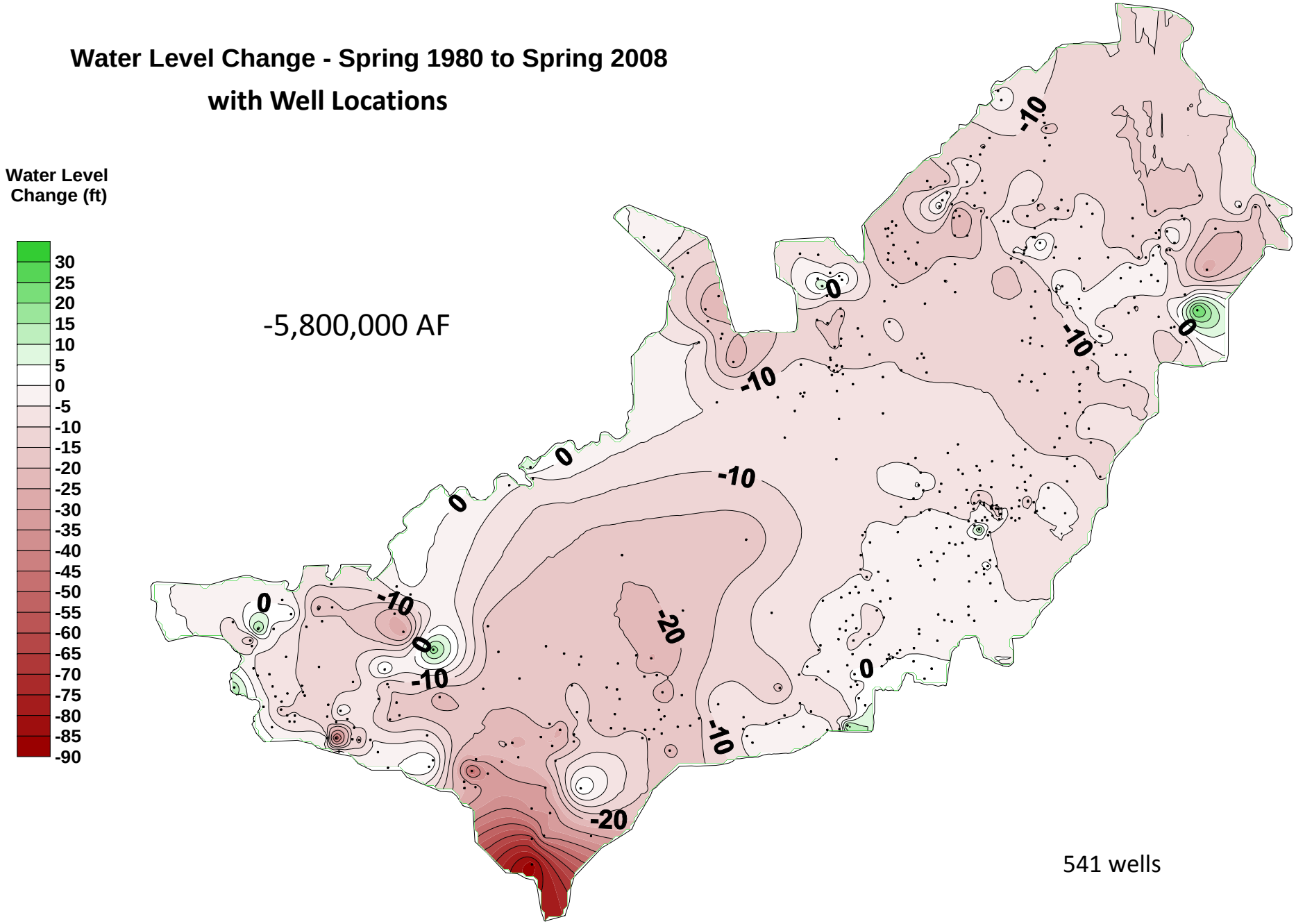




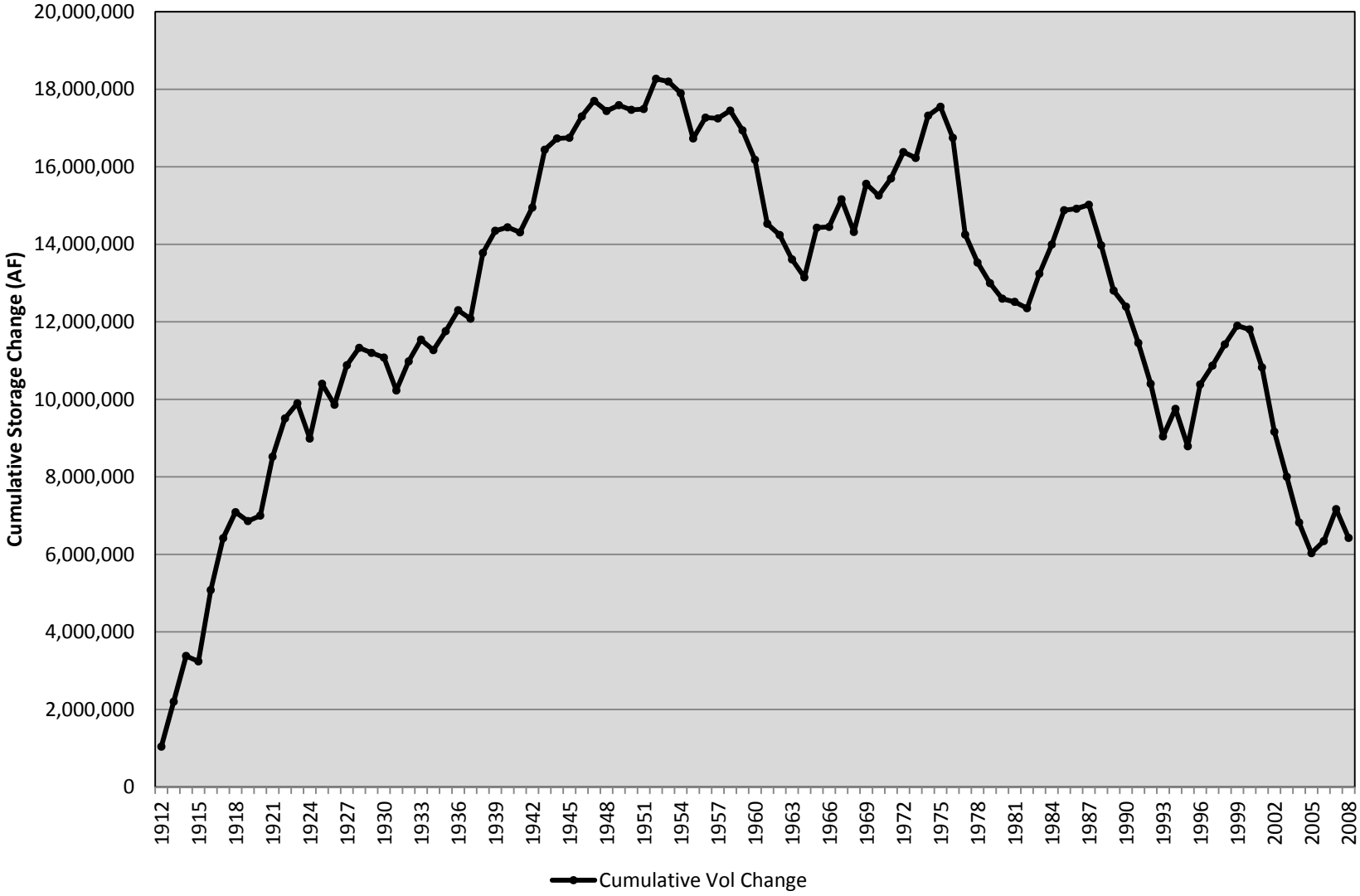




Water Level Change - Spring 1980 to Spring 2008
with Well Locations



Conclusions

- IDWR maintains a statewide ground water level monitoring network.
- Water level data indicates declining water levels in multiple basins.
- ESPA: Additional data needs in central portion of the ESPA and several of the tributary basins. Well deepening and recharge projects.
- Statewide: General basin characterization efforts.

ESPA - Cumulative Change in Aquifer Storage