

# Elmore County Request to Expand the Treasure Valley Groundwater Model to the Mountain Home Plateau

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IDAHO WATER RESOURCE BOARD

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# Purpose of Presentation

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Elmore County requests that the IWRB authorize and fund expansion of the Treasure Valley Groundwater Model to include the Mountain Home Plateau Aquifer

# Declining Groundwater Levels Threaten the Economy of Western Elmore County

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- Ongoing problem for 40 years
- Continued declines will result in active administration and curtailments
- Similar to the ESPA, a numerical model is needed to objectively manage the aquifer and apportion costs and benefits for water projects
- On the Eastern Snake Plain, transfers, mitigation, reductions, and curtailment actions all rely on a model. Same will be true for the Mountain Home Plateau in the future.

# Expansion of the Treasure Valley Model

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- Now is the time. The model is still in development
- Staff and Technical Advisory Committee are in place
- The aquifer is continuous from the Treasure Valley to Mountain Home
- Supporting data are available from the IDWR East Ada project and from WD161 measurement program.

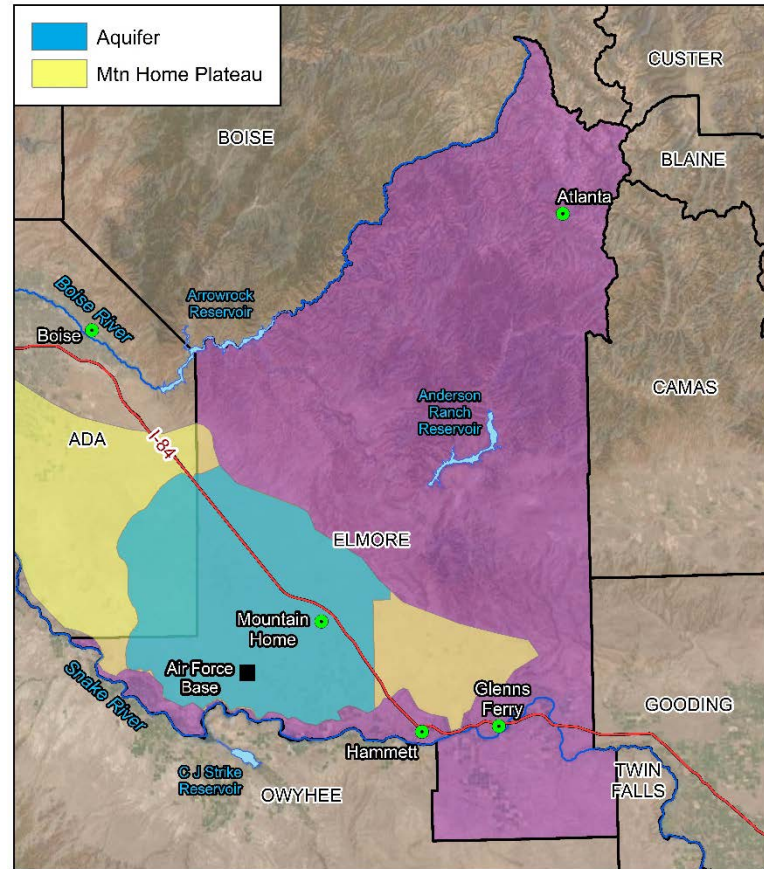
# Presentation Topics

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- Groundwater conditions
- Elmore County water projects
- Treasure Valley Groundwater Model

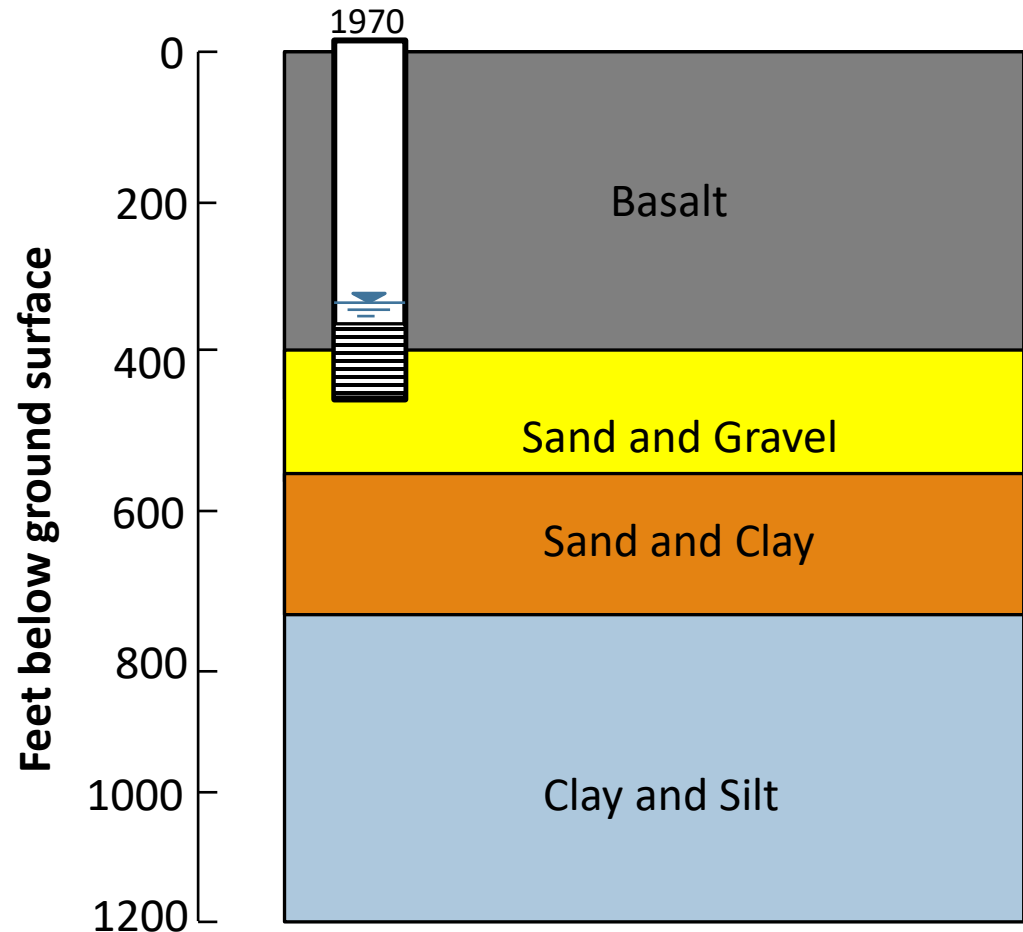
# Mountain Home Plateau Aquifer

- Approximated as the portion of the Mountain Home Ground Water Management Area located within the Mountain Home Plateau
- Recharge sources are surface streams and irrigation losses from imported Boise River and Snake River water supplies
- Discharge primarily to wells
- Negligible discharge to springs and seeps along the Snake River



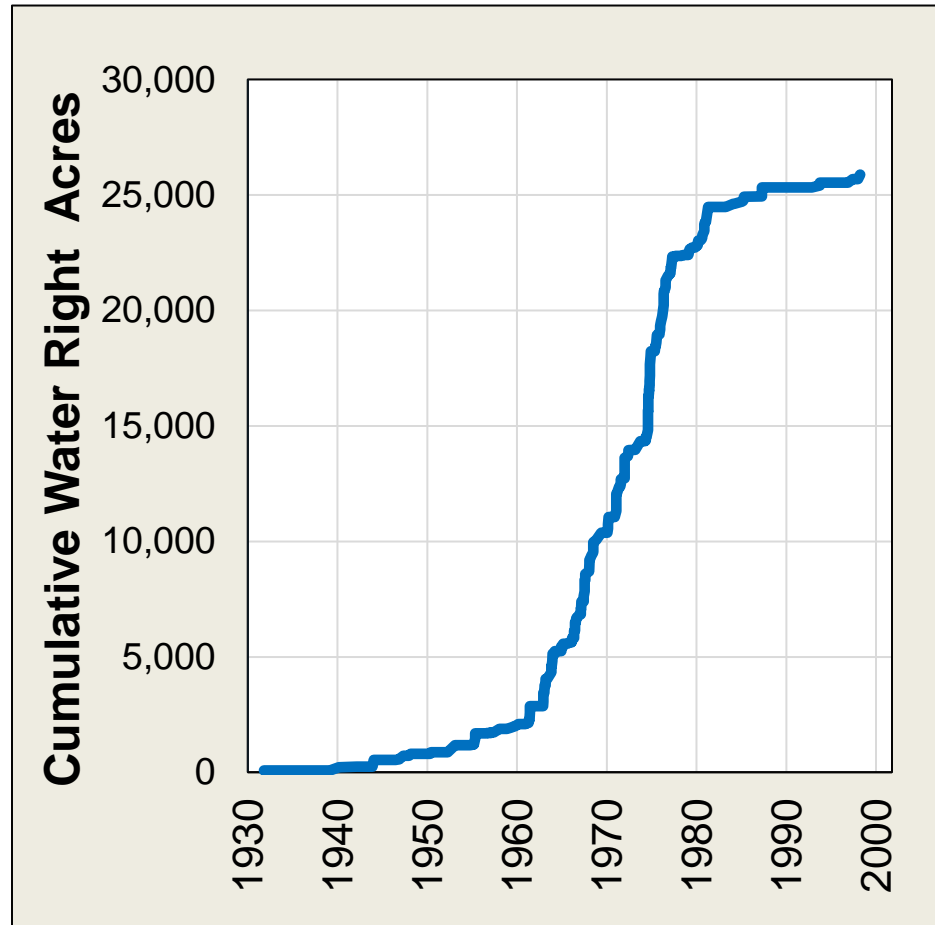
# Mountain Home Plateau Aquifer - Hydrogeology

- Regional aquifer is found in productive basalt, sand, and gravel deposits, typically at depths of 400 to 800 feet.
- Aquifer is underlain by clays and silts of the Glens Ferry Formation. These clays and silts do not yield significant water to wells.



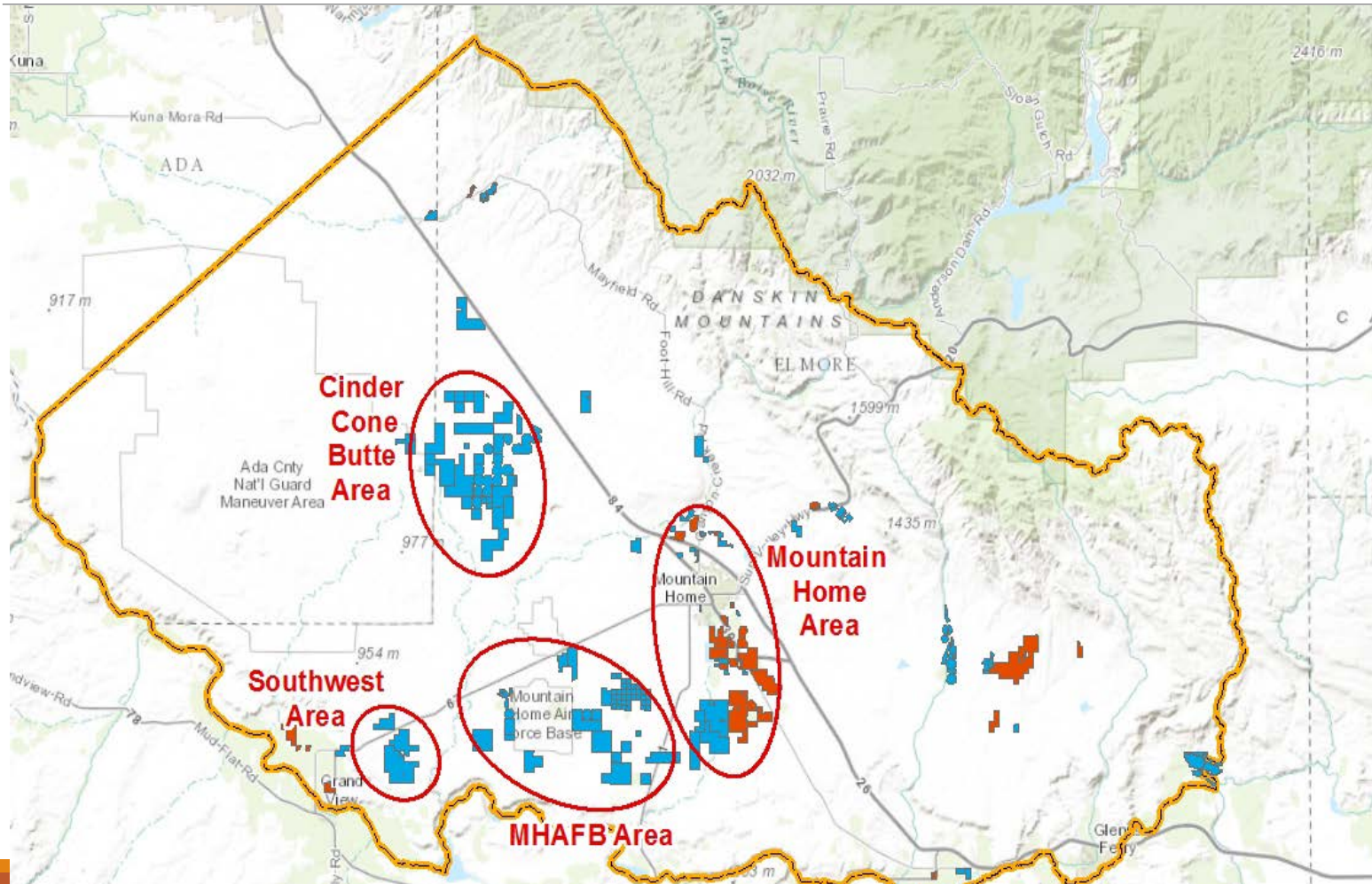
# Mountain Home Plateau Groundwater Development

- 85% agricultural irrigation
- 8% municipal
- 4% commercial/industrial
- 3% stockwater





# Groundwater Irrigated Areas



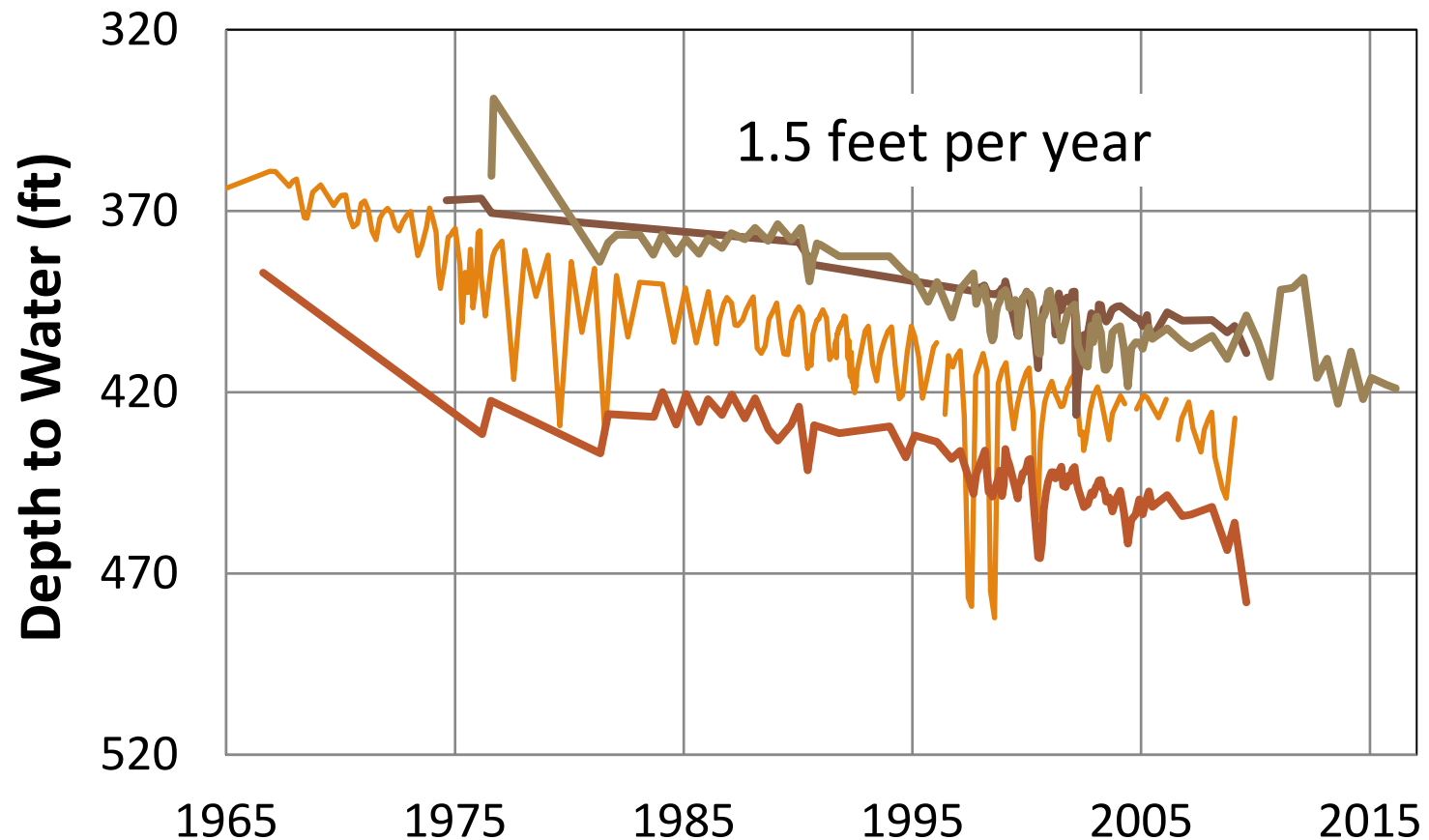
# Groundwater Deficit and Decline

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- annual groundwater pumping volume - 80,000 af
- annual aquifer recharge – 40,000 af +/-
- annual groundwater deficit 40,000 acre feet  
(80,000 af pumped – 40,000 af of recharge = 40,000 af deficit)
- Pumping deficit results in groundwater level declines  
as water is removed from storage in the aquifer

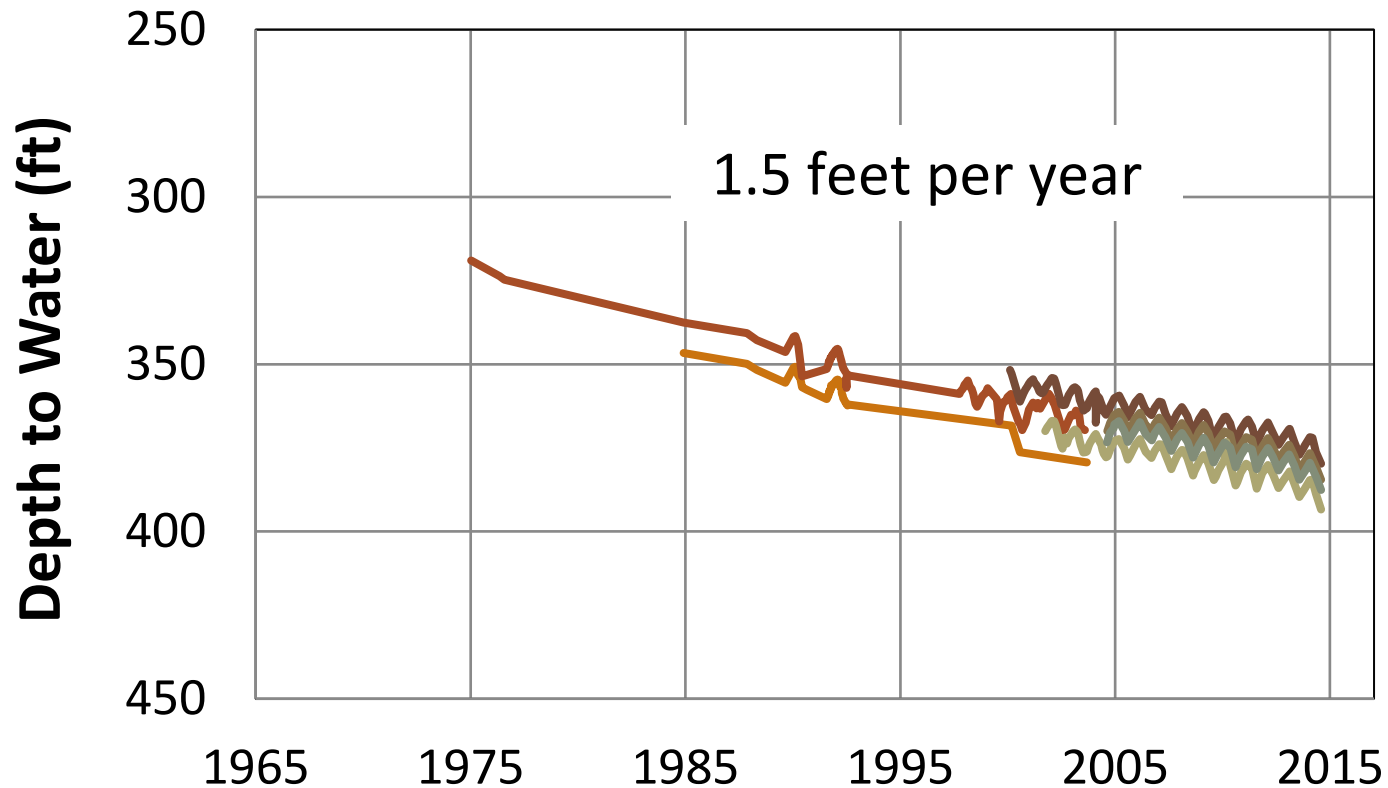
# Groundwater Level Declines South Mountain Home

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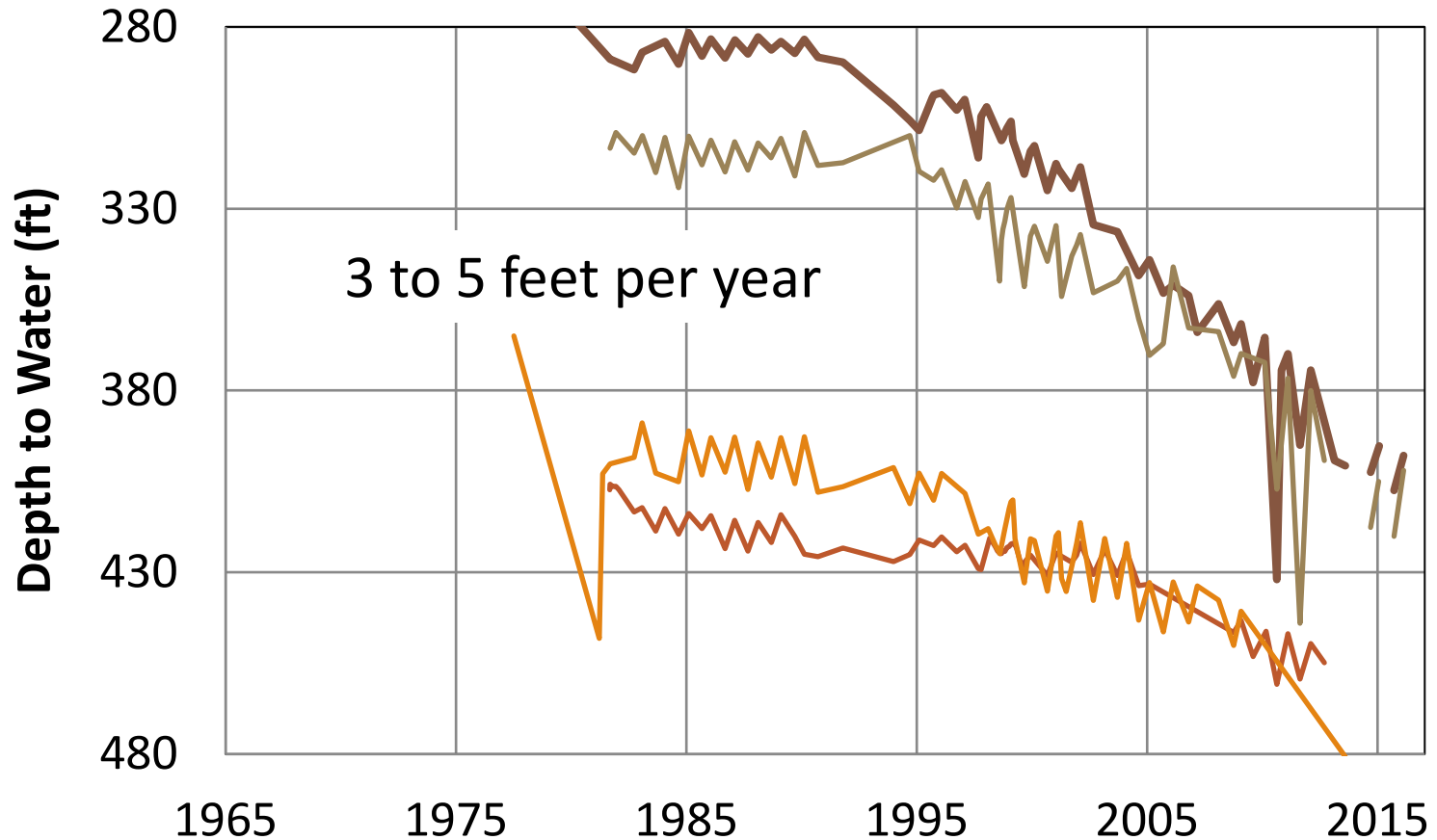


# Groundwater Level Declines Mountain Home Air Force Base

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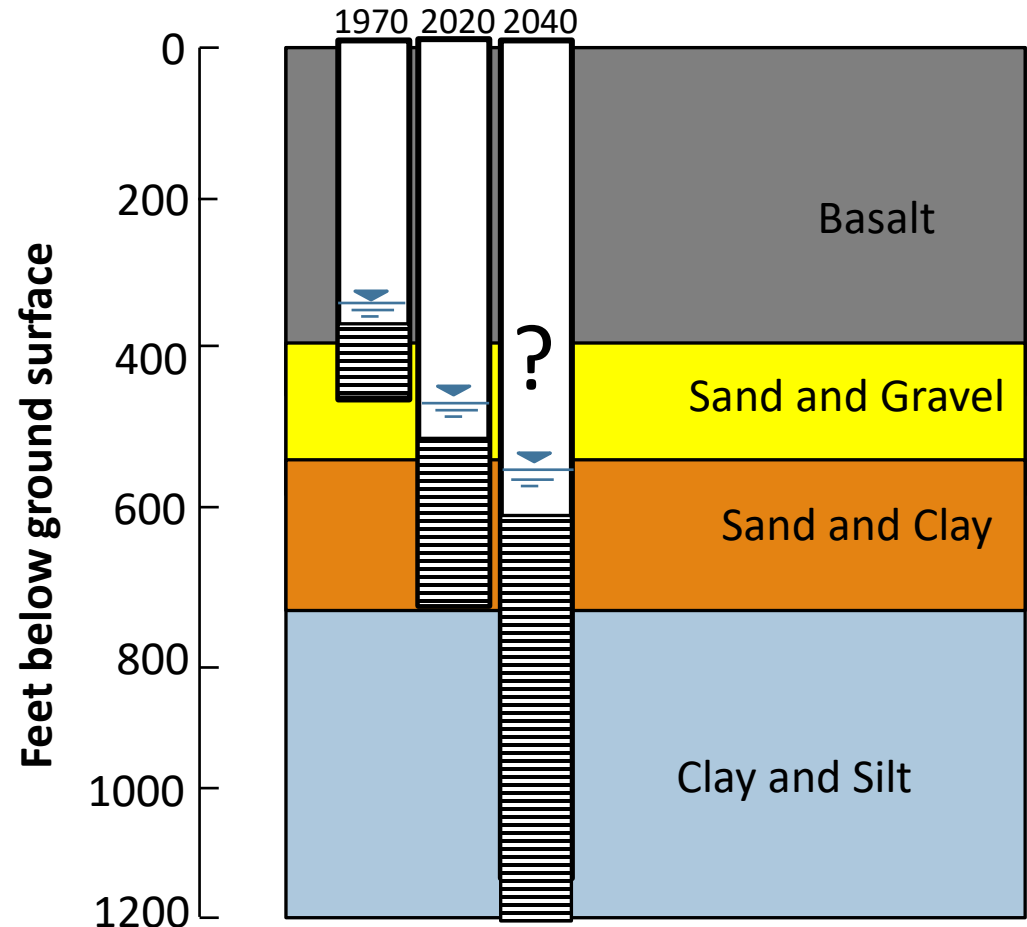


# Groundwater Level Declines Cinder Cone Butte



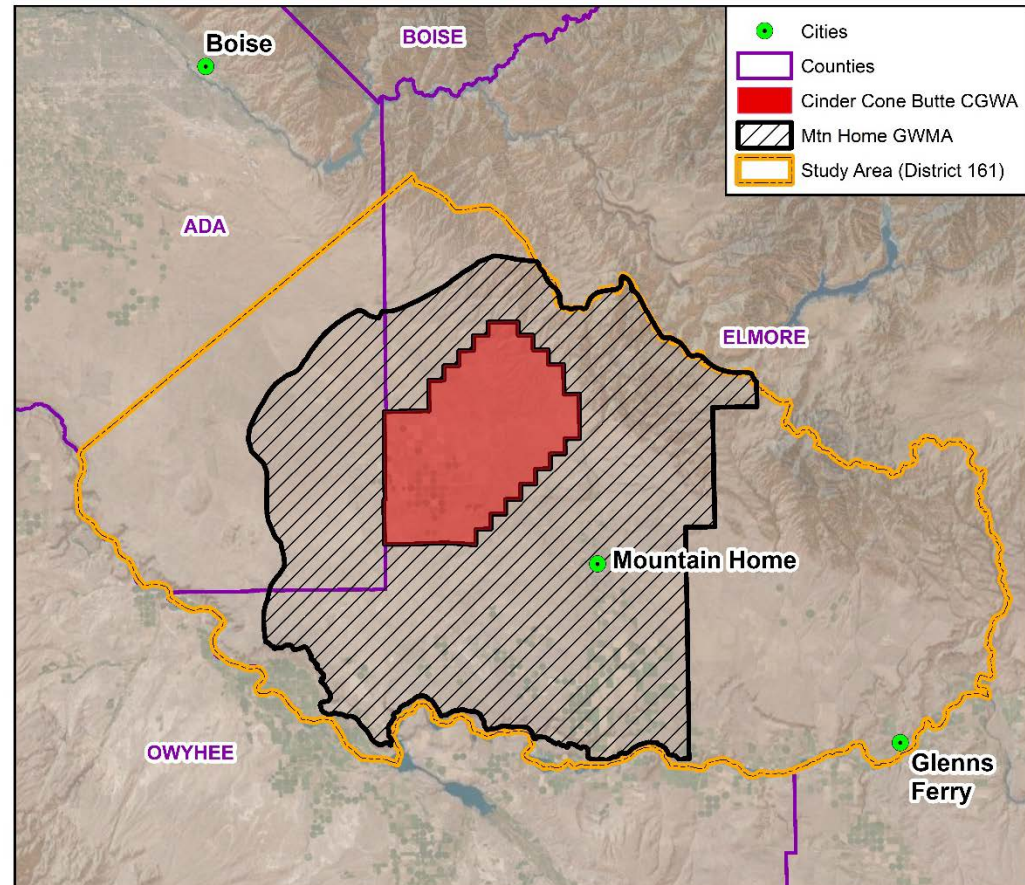
# Physical Impacts of Declining Ground Water Levels

- Increased pumping costs
- Deeper wells required
- Some wells cannot be effectively replaced with deeper wells



# Regulatory/Administrative Actions to Manage Groundwater

- Cinder Cone Butte Critical Ground Water Area – 1981
- Mountain Home Ground Water Management Area – 1982
- Water District 161 - 2016





# Cumulative Water-Level Decline Varies By Area

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- 100 to 200 feet at Cinder Cone Butte
- 75 to 100 feet south of Mountain Home
- 70 to 90 feet at MHAFB
- No decline north of Mountain Home or near Mayfield
- Recharge/pumping in one area might not impact other areas
- Numerical model needed for proper administration



# Water Development Activities by IWRB in Elmore County

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- 2/3 funding of 2017 Water Supply Alternatives Study
- Majority funding of Canyon Creek Recharge Improvements in 2018
- Anderson Ranch Dam Raise (Elmore County is seeking 10,000 af) – Ongoing
- MHAFB Snake River Pump Station and Pipeline - Ongoing

# Water Development Activities by Elmore County Commissioners

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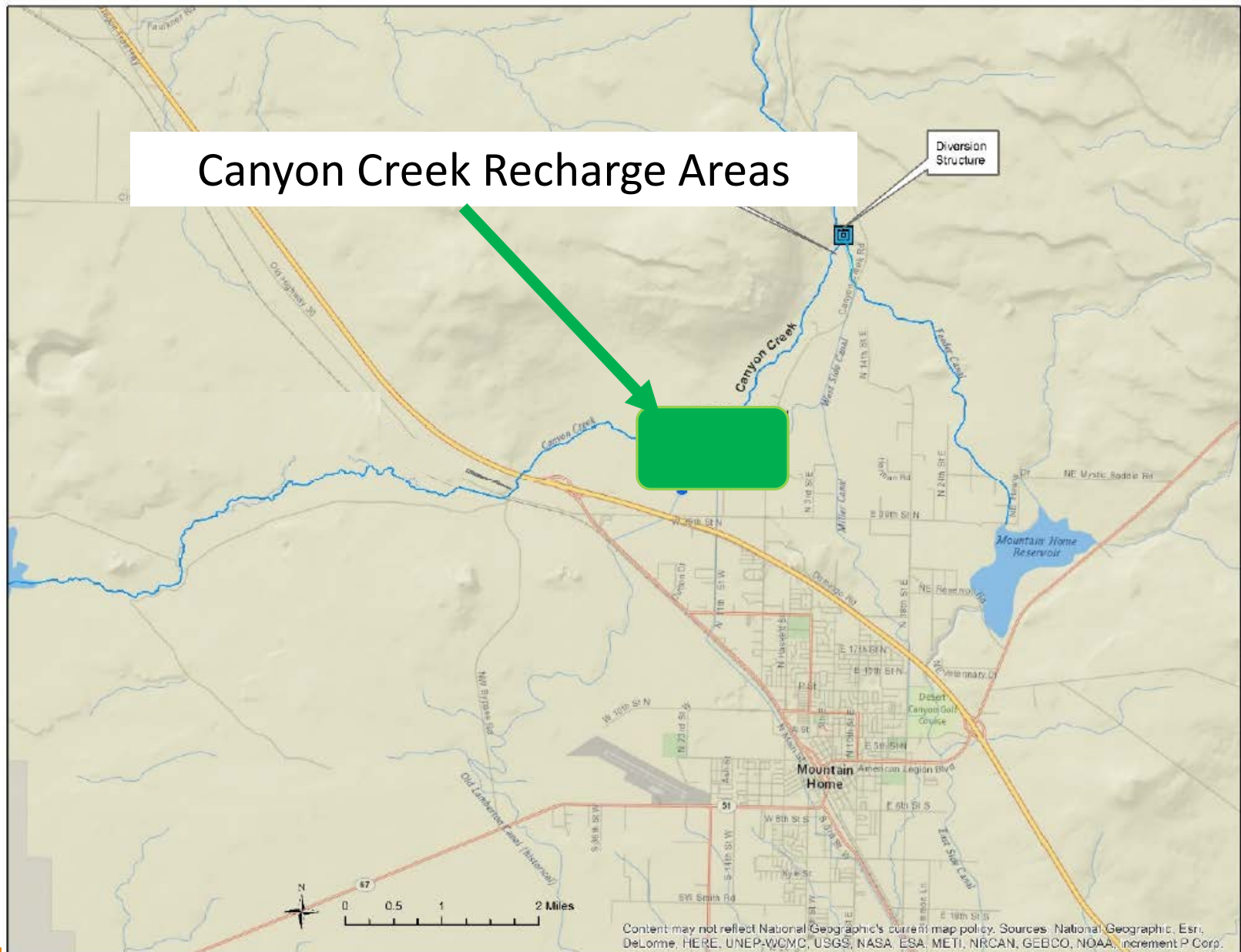
- 2015 Groundwater Study
- 2017 Water Supply Alternatives Study (1/3 County Funded)
- Water Right Actions
  1. Canyon Creek Recharge License (22.68 cfs)
  2. Canyon Creek Recharge Permit (200 cfs)
  3. SF Boise River Floodwater Permit (200 cfs)
  4. Snake River Application (20 cfs) - pending
- Anderson Ranch Dam Raise – Request for Storage
- Canyon Creek Recharge Facilities – Constructed 2018-19
- SF Boise River Pump Station and Pipeline – Design and Permitting

# Canyon Creek Recharge

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- Project construction completed February 2019 – 3 diversions to 4 gravel pit sites
- IWRB grant for construction; City assistance
- 200 cfs design capacity
- Water quality monitoring program
- 2000 to 3000 af average anticipated
- All available Canyon Creek flow was recharged in 2019; no flow available in 2020 and 2021

# Canyon Creek Recharge Areas





# Check and Headgates on Canyon Creek





# Flow Measurement Weir at Recharge Site



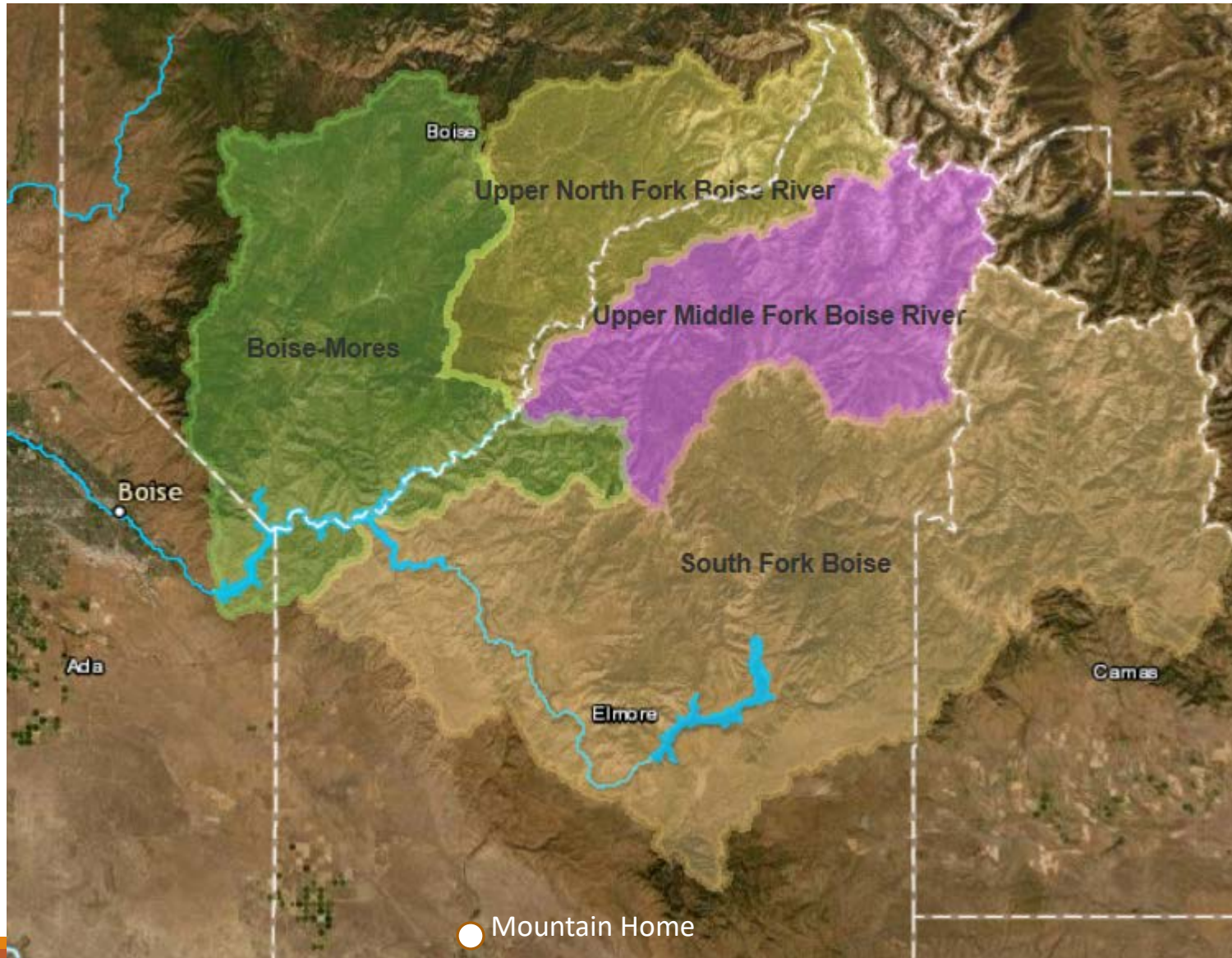


# Recharge Site





# South Fork Boise River Project



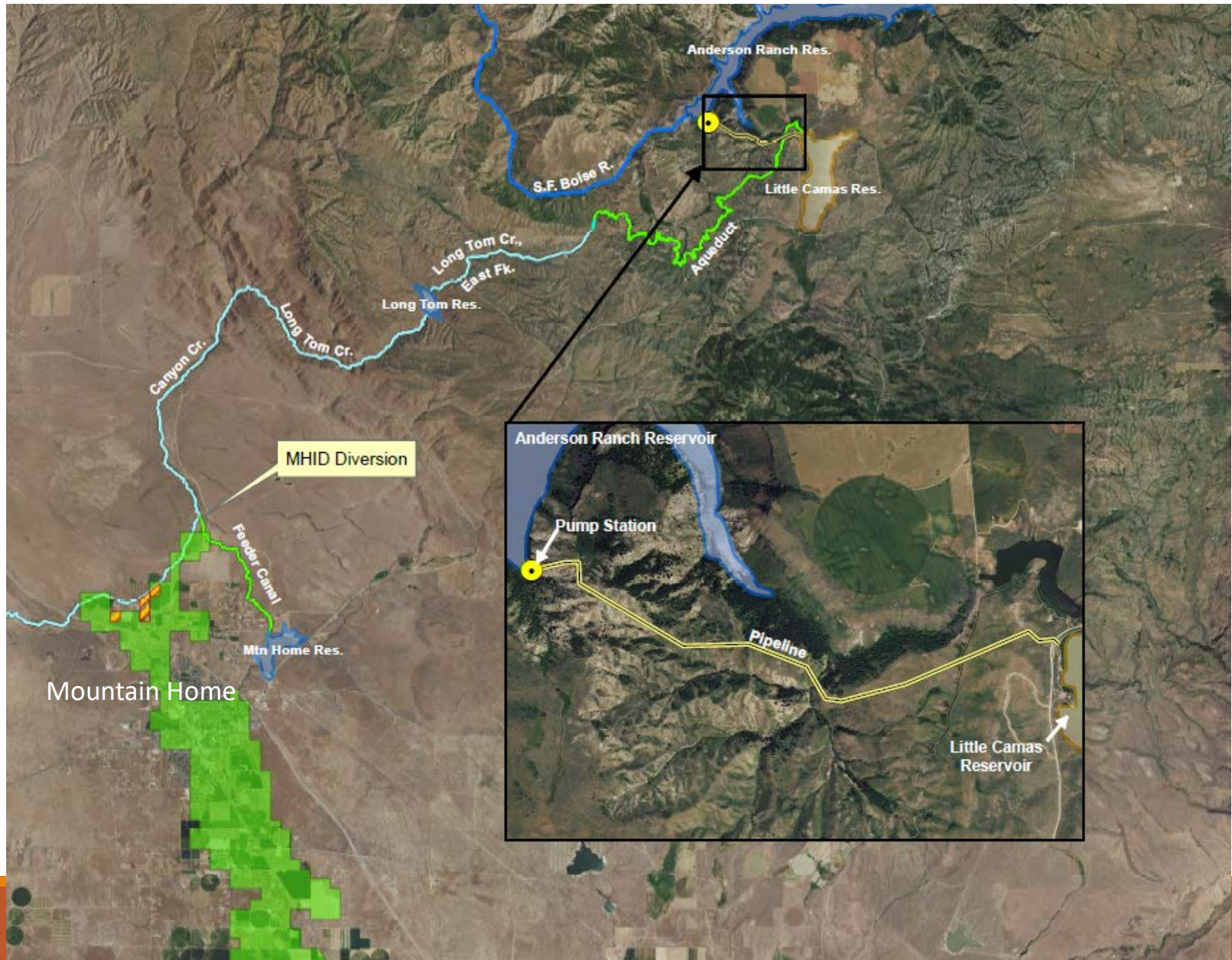


# SF Boise River Project Status

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- 200 cfs floodwater permit for County approved on August 13, 2019
- Elmore County is seeking 10,000 af of the new storage from dam raise
- Engineering in progress for pump station and pipeline from Anderson Ranch Reservoir to Little Camas Reservoir
- Potential for energy recapture through hydropower generation
- Pipeline easement obtained from private landowner; MHID agreement for use of facilities
- USFS ROW application with pending environmental studies

# South Fork Boise River Water Diversion Project



# Costs for Water

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- Estimated water cost of \$90 to more than \$200 per acre foot – much higher than current irrigation water costs
- Some costs might be reduced through energy recapture and optimized facility sizing
- How to pay? Who will pay? Who will benefit?

# Treasure Valley Groundwater-Flow Model

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“The purpose of this project is to develop a transient numerical groundwater-flow model of the lower Boise River basin (Treasure Valley). The general objective is to provide a tool for the management of surface and groundwater resources.”\*

\*July 1, 2019 Design Objectives

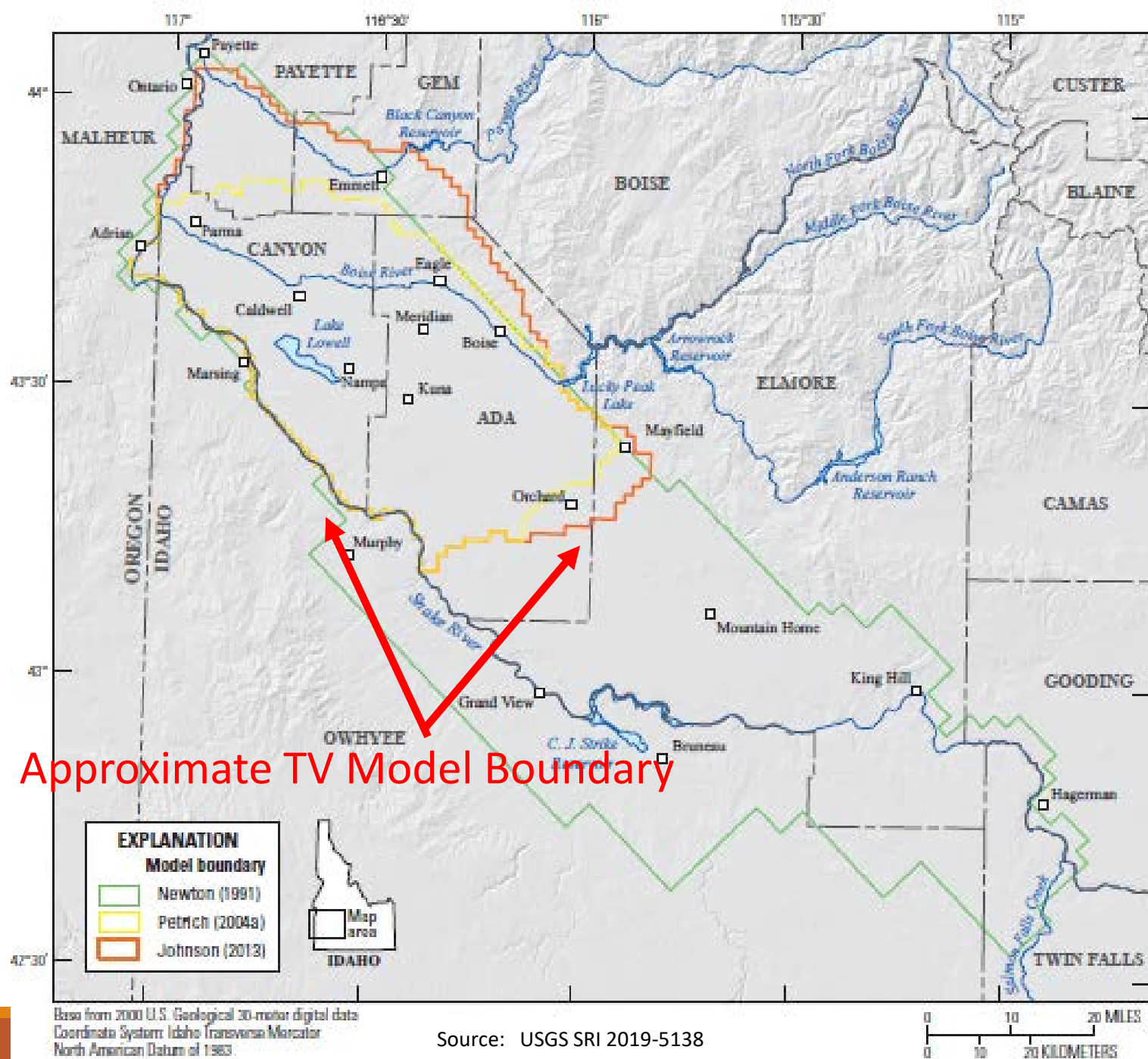
# Treasure Valley Groundwater-Flow Model – Specific Objectives\*

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- 1. Compile data*
- 2. Revise the hydrogeologic conceptual model*
- 3. Design, construct, and calibrate a transient model of the TVAS*
- 4. Improve understanding of groundwater/surface-water interaction*
- 5. Facilitate conjunctive administration*
- 6. Provide a tool for water resource planning*
- 7. Provide a tool for water allocation*
- 8. Identify data gaps and develop recommendations for further study*
- 9. Develop a tool based on best available science*
- 10. Be accessible and well-documented*

\*July 1, 2019 Design Objectives





# Summary

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- A numerical groundwater model is needed as an objective tool for administration and management of groundwater on the Mountain Home Plateau, and to support allocation of costs and benefits for water projects.
- The Mountain Home Plateau Aquifer is an extension of the Treasure Valley Aquifer. There is no hydraulic separation.
- The Treasure Valley Groundwater Flow Model is currently in development and could be extended to encompass the Mountain Home area.
- Elmore County requests that the IWRB authorize and fund expansion of the Treasure Valley Model into this area.

# Questions?

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