Rathdrum Prairie Future Water Demand Projections

Rathdrum Prairie
CAMP Advisory Committee Meeting

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Outline

- Project Team
- Why project water demand?
- Describe approach to projecting water demand
- Preliminary results
- Discussion

Project Team

- **SPF Water Engineering**
  - Christian Petrich
  - Jennifer Sukow
  - Mike Martin
- **AMEC**
  - Chuck Brendecke
  - Lee Rozaklis
  - Cam Stringer
  - Jean Marie Boyer
  - Subhrendu Gangopadhyay
- **Idaho Economics**
  - John Church
- **Taunton Consulting**
  - Bob Taunton

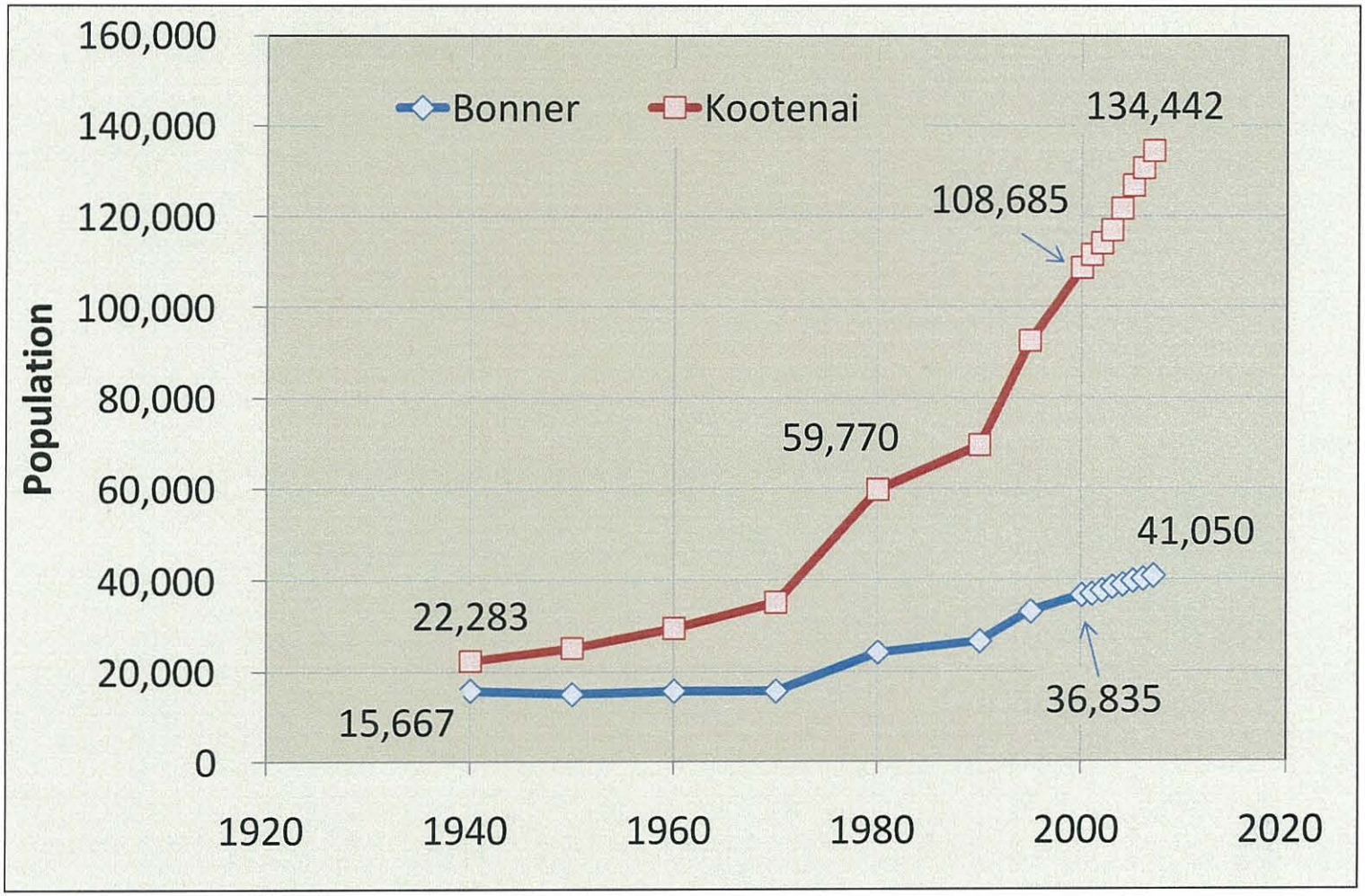
Why project water demand?

- Evaluate existing supply in context of projected demand
- Evaluate alternatives for meeting projected water demand
- Develop long-range plans for conjunctively managing surface and ground water resources
- Evaluate potential effects of climate change, conservation and re-use on future water demand and supply

Approach to Projecting Water Demand

- Compile historic population data
- Project future population and employment growth
- Estimate current water demand (by sector)
- Project future water demand
  - Domestic, commercial/industrial, irrigation uses
- Adjust demand based on
  - Climate variability
  - Water conservation potential
- Use "scenarios" to describe possible future water-use outcomes
- Develop "best guess" of future water use

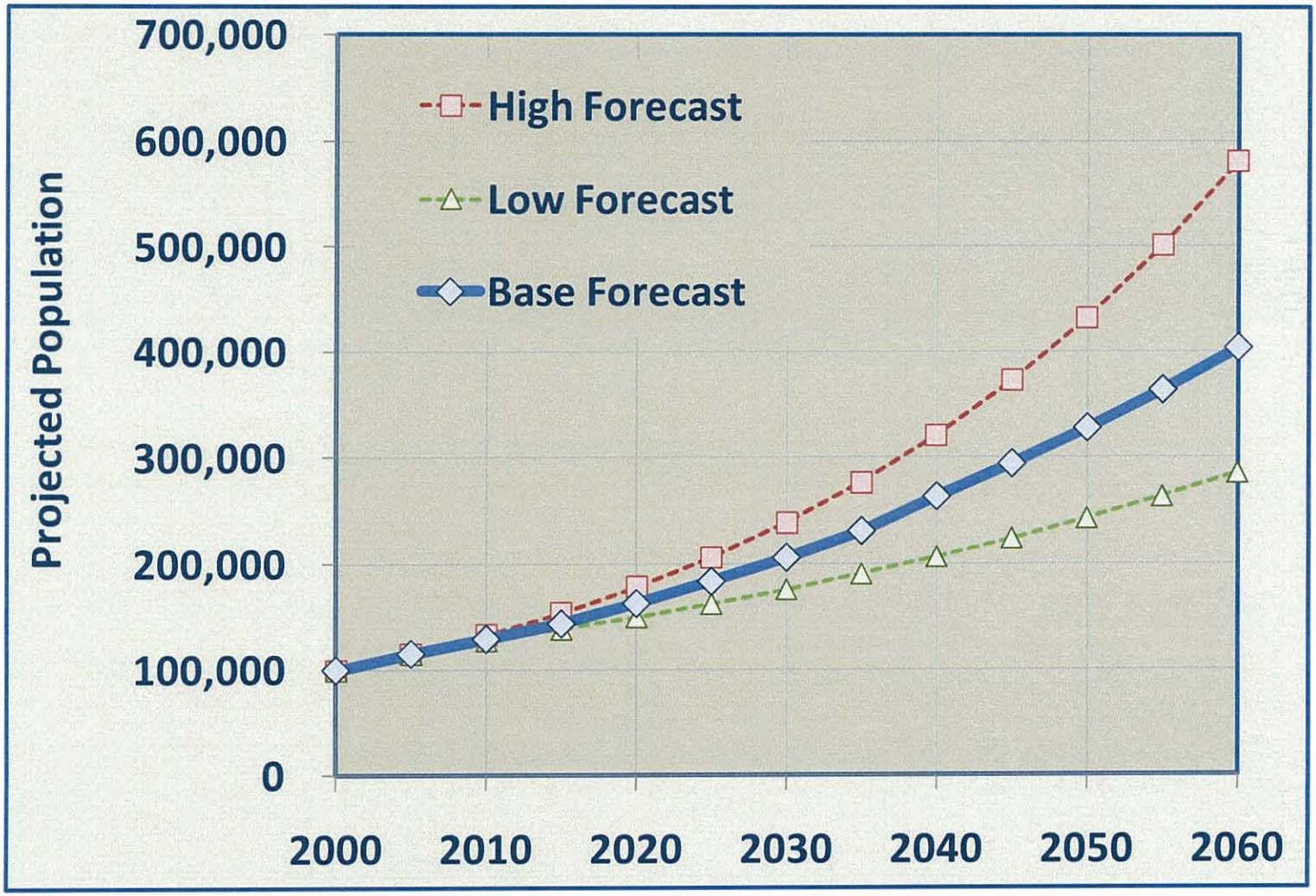
Historic Population Growth



Future Population Growth

- Population and job growth projections developed with an econometric model
  - Based on national and regional economic trends
  - Basic and secondary job growth
- Describe and/or assume
  - Spatial distribution
  - Density

Population Forecast

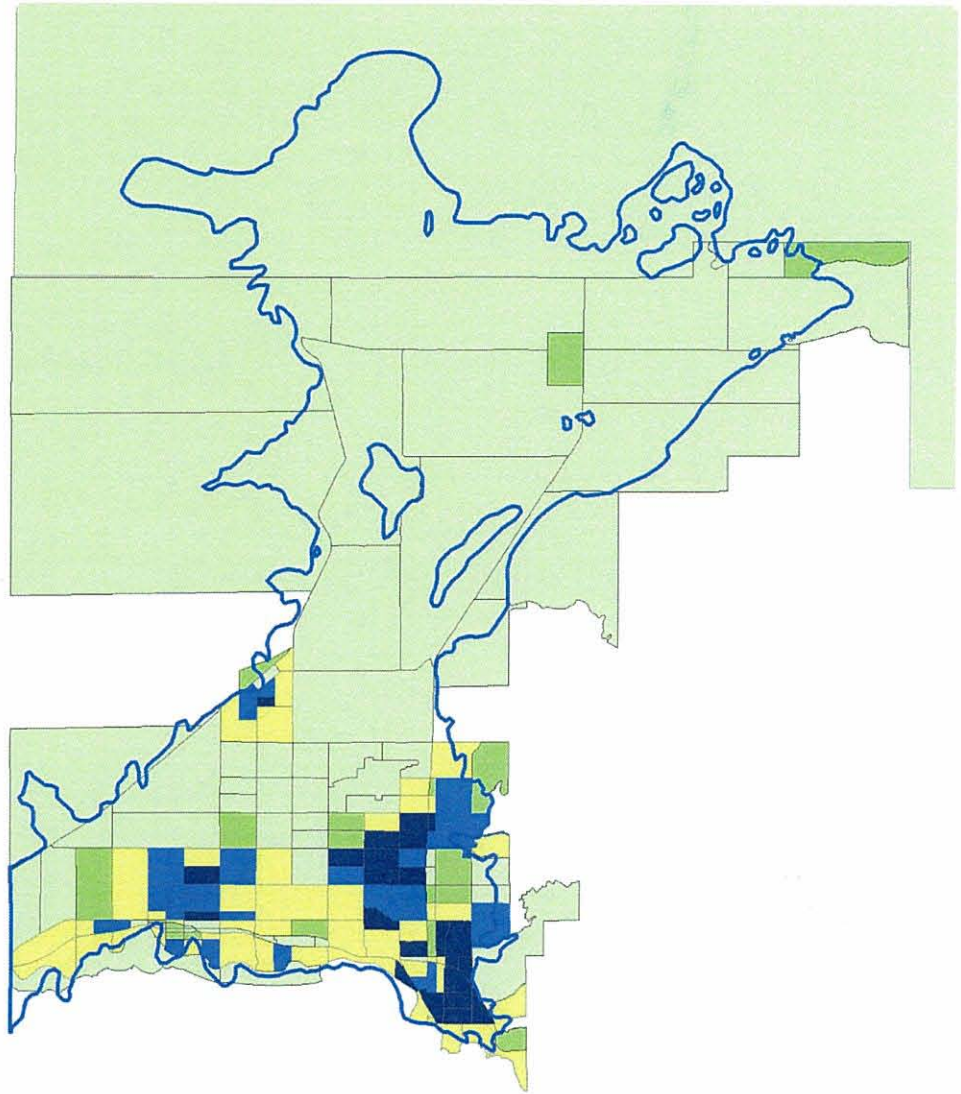


Population Distribution and Density

Rathdrum Prairie Aquifer Boundary

Housing Units per Acre

- 0 – 0.5
- .5 – 1
- 1 – 2
- 2 – 3
- 3 – 5



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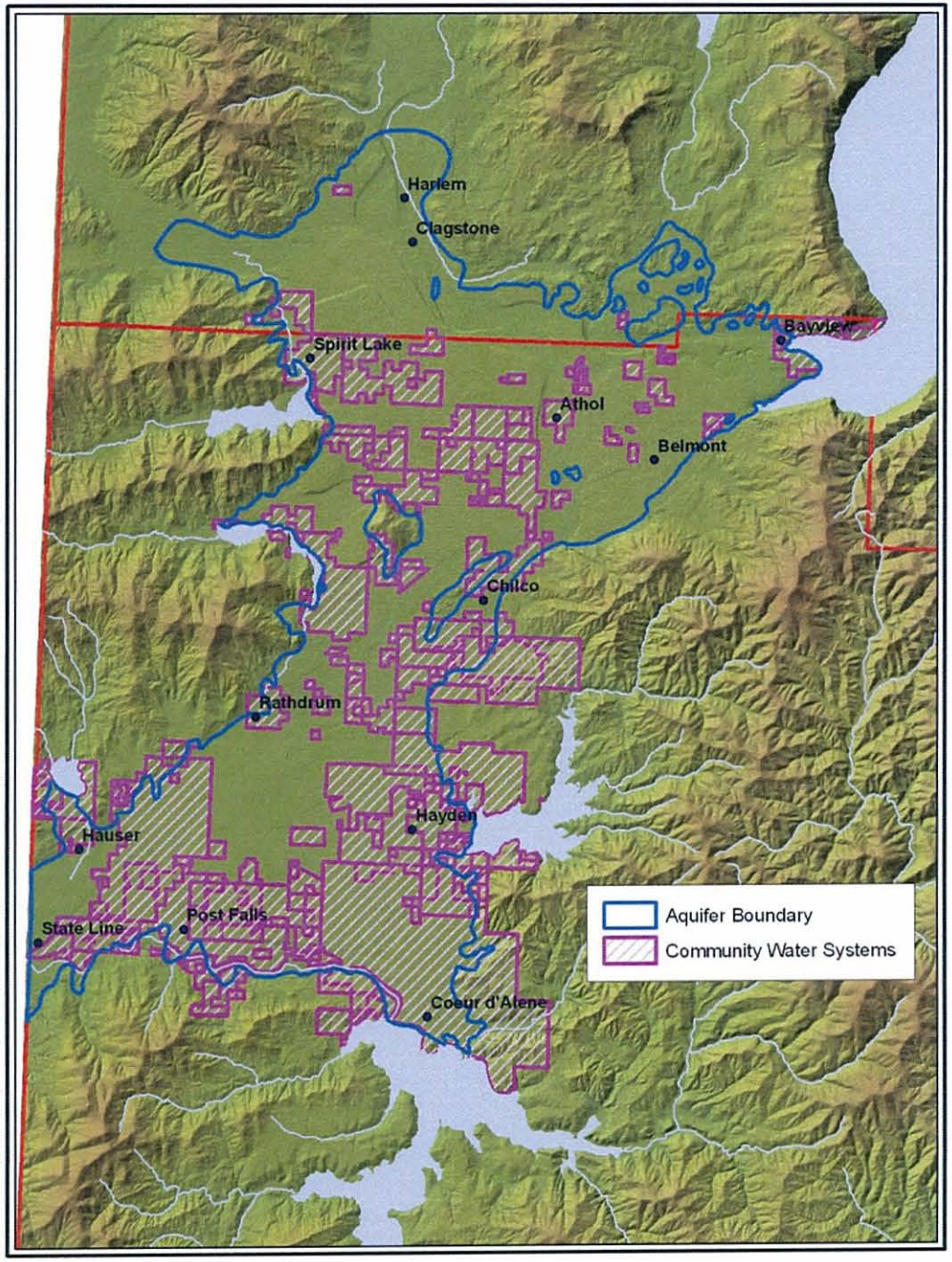
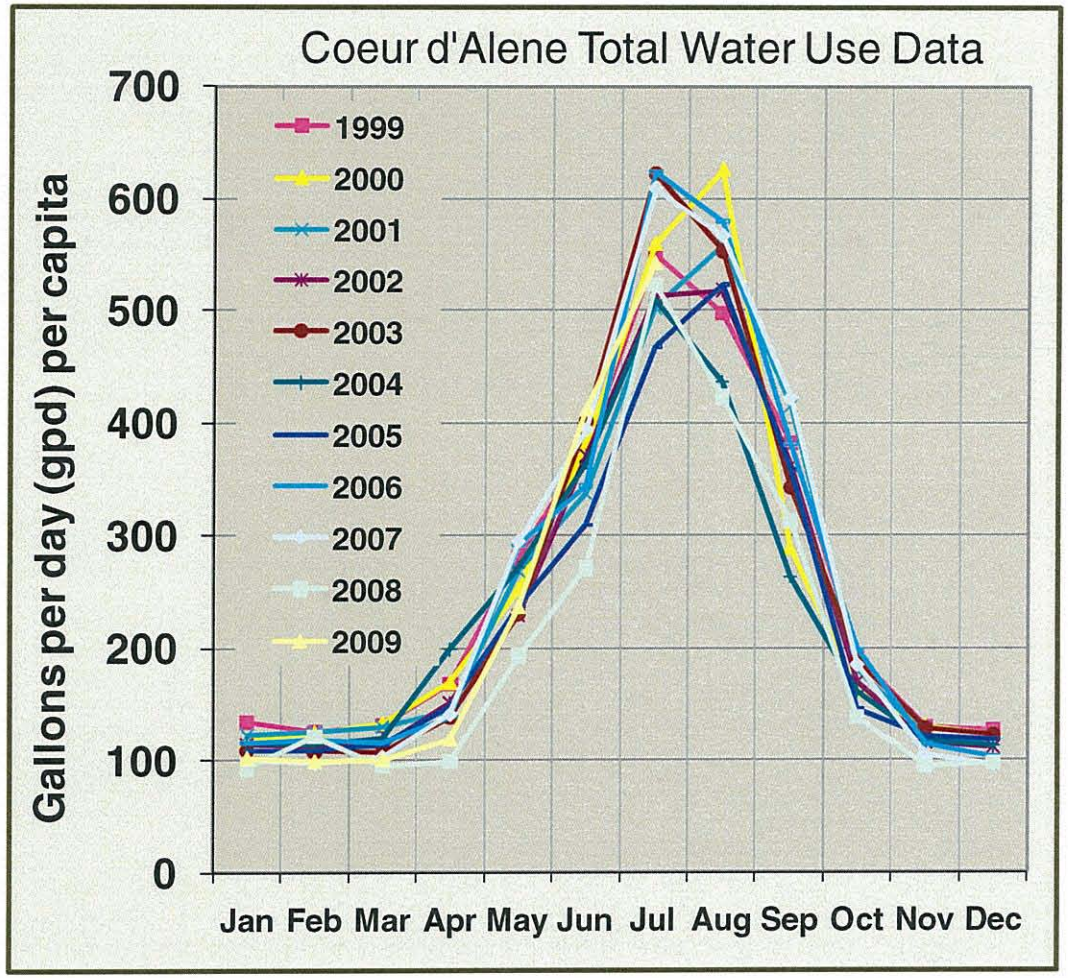
Current Water Use

- Based on
  - Public water system data
  - Employment
  - Water rights
  - Focus on ground water use



Seasonal Use

- Winter use: non-irrigation (i.e., domestic use)
- Domestic use: estimated to be between 170 and 190 gpd/unit
- Note variability in irrigation season



Irrigation Demand

- Agricultural irrigation estimates based on
  - Estimated irrigated acreage
  - Average consumptive use per acre
- Residential and municipal irrigation
  - Estimated irrigated area based on current and future distribution of housing density
  - Average consumptive use per acre

Consumptive Use

- Consumptive use is that portion of water "lost from the hydrologic system"
- Large amounts of pumped water return to
  - Aquifer
  - Spokane River

Commercial & Industrial Demand

- Future water demand based on
  - Water demand per employee
  - Employment growth estimates
- Large-scale water users based on
  - Water rights

Additional Factors

- Water conservation - potential reductions in domestic and irrigation use
- Potential regulatory constraints
  - NPDES permitting constraints
  - TMDL restrictions
  - Possible changes in future ground water quality standards

Uncertainty

- *"Prediction is difficult, especially about the future"*
  – Neils Bohr
- Projecting water use 50 years from now has some uncertainty
  - Existing water use
  - Population projections
  - Housing and irrigation distribution projections
  - Commercial and industrial use projections
- Nonetheless, understanding of possible future water-demand outcomes important for current policy/management decisions

Develop Demand Scenarios

- Evaluate uncertainty inherent to demographic, economic, and environmental conditions
- Test major assumptions
- Explore effect of potential water management alternatives on future water demand
- Identify "most likely" future water demand outcomes
- Monitor projections and actual water use over time

Status

- Completed:
  - Preliminary population projections
  - Data collection for existing water use
- Currently
  - Constructing forecasting tool (spreadsheet)
  - Beginning draft report
- Draft report: February 2010
- Final report: March 2010

Questions?

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