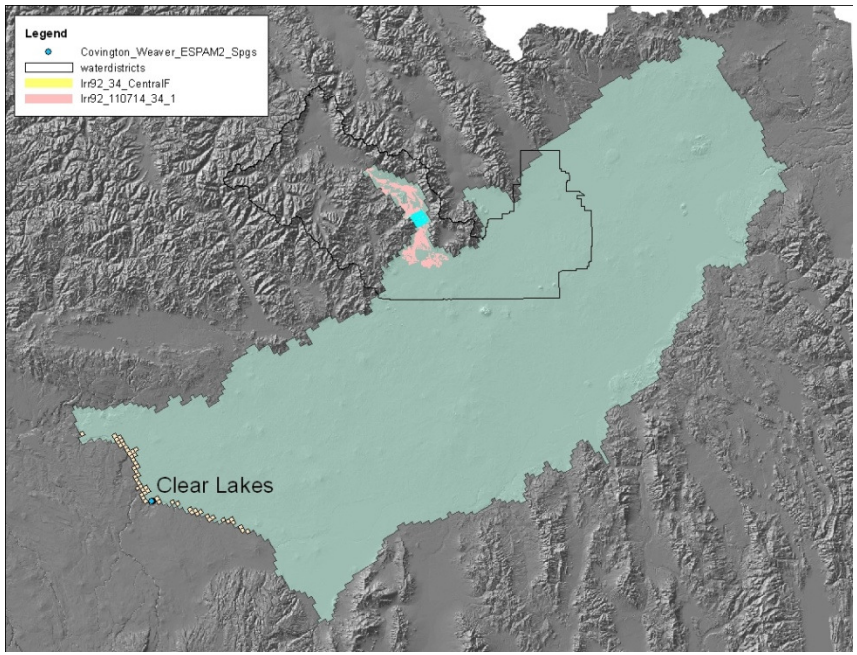
Predictive Uncertainty WD 34 – Clear Lakes

Allan Wylie IDWR

Predictive Uncertainty



- Impact of centroid for irrigated lands within WD34 on Clear Lakes
- How tightly assumptions and calibration data constrain prediction
- 2.7 +3.4 -0.4
- Maximize = maximize the prediction
- Minimize = minimize the prediction

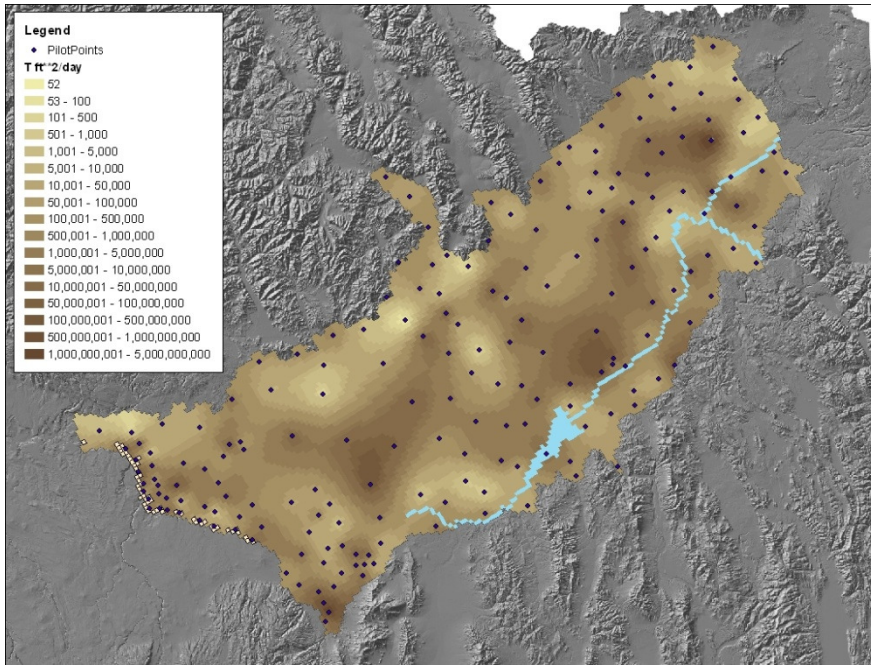
Calibration with E110712A, A B & C Springs and Return Flow Targets

- Adjustable Parameters
  - Transmissivity
    - Pilot Points
      - 1e-10 – 1e+10
  - Specific Yield
    - Pilot Points
      - 0.01 – 0.30
  - Riverbed Conductance
    - By reach
      - 1.0 – 1e+10
  - Drain Conductance
    - By drain cell
      - Up to 2 drain cells per model cell
      - 1e-10 - 3e+8
  - Canal seepage
    - Uniform by entity
      - 1.05 – 0.95
  - Non-irrigated recharge
    - Thin Thick and Lava
    - 2.0 – 1.0e-6
  - ET
    - Surface Water Entity
      - Sprinkler and Gravity
      - +/-5%
    - Groundwater Entity
      - Sprinkler and Gravity
      - +/-5%
  - Perched River Seepage
    - River reach
    - +/-20%
  - Tributary Underflow
    - 2 – 0.5
    - Split Cam/Bev and Hnry Fork
      - 8 – 1e-6

Calibration with E110712A, A B & C Springs and Return Flow Targets

- Adjustable Parameters (cont)
  - On Farm Parameters
    - EffSp
      - Fixed 0.85
    - EffGr
      - Fixed 0.8
    - DPin
      - 0.98 – 0.6
    - DPex
      - 0.98 – 0.6
    - Entities with no returns DPin and DPex fixed at 1.0

Maximize



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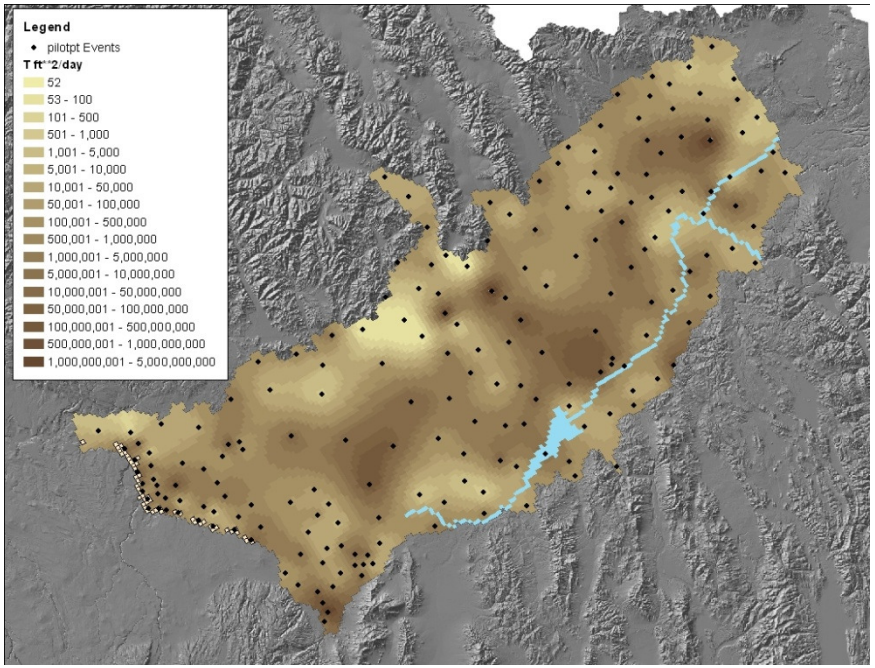

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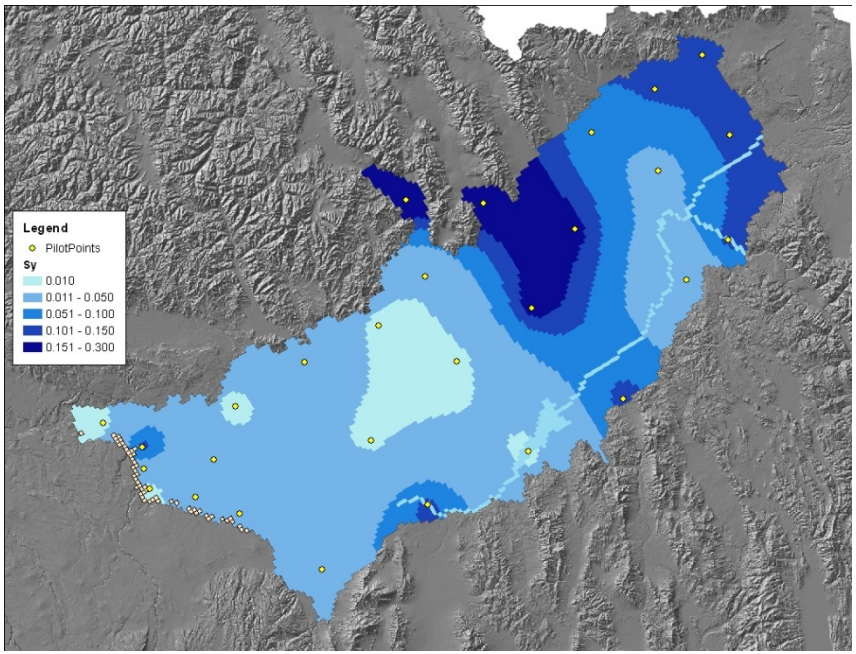

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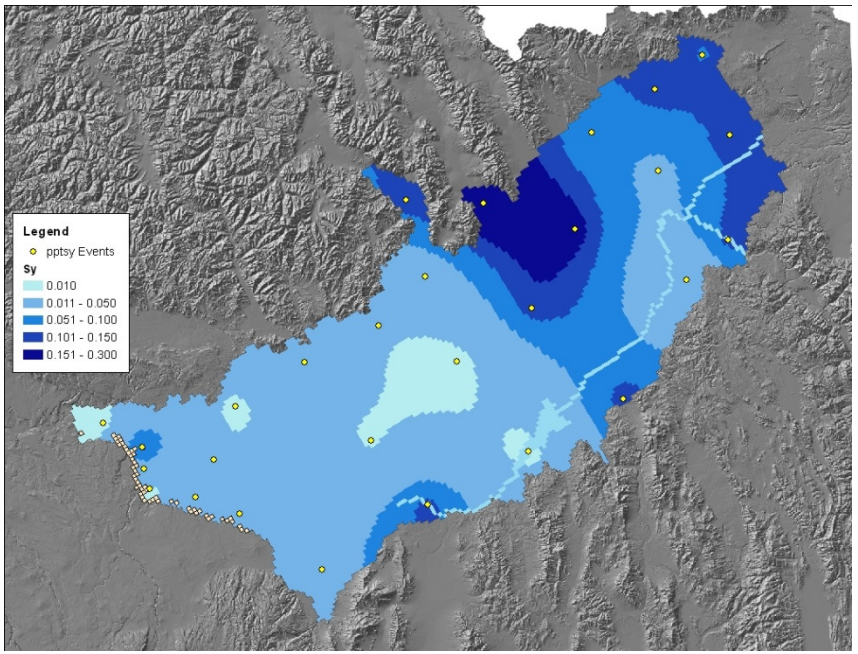

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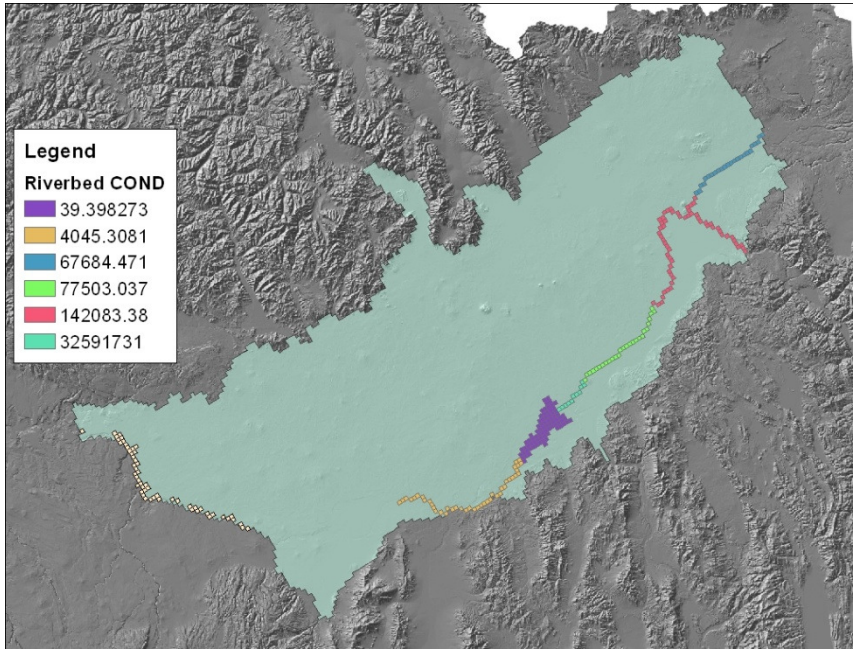

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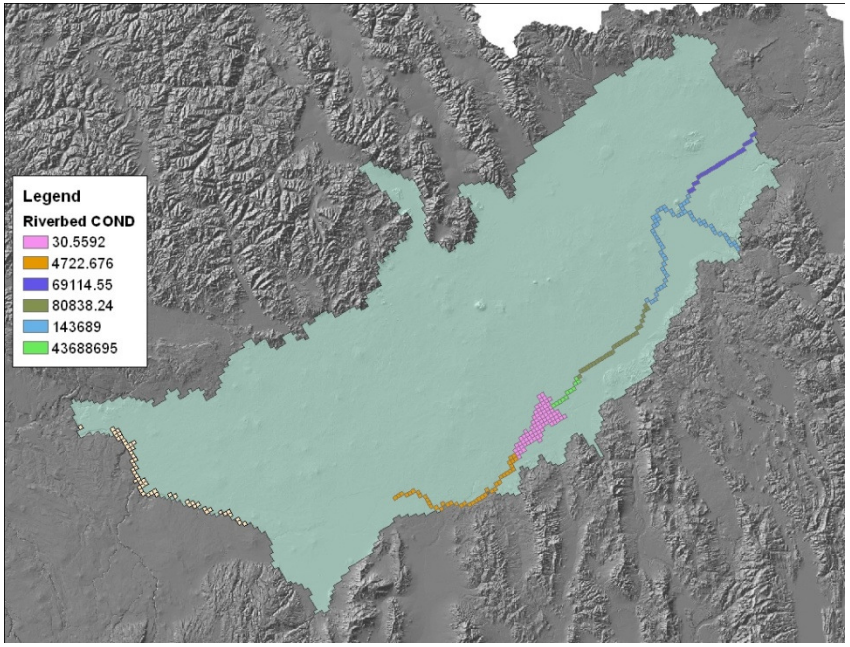

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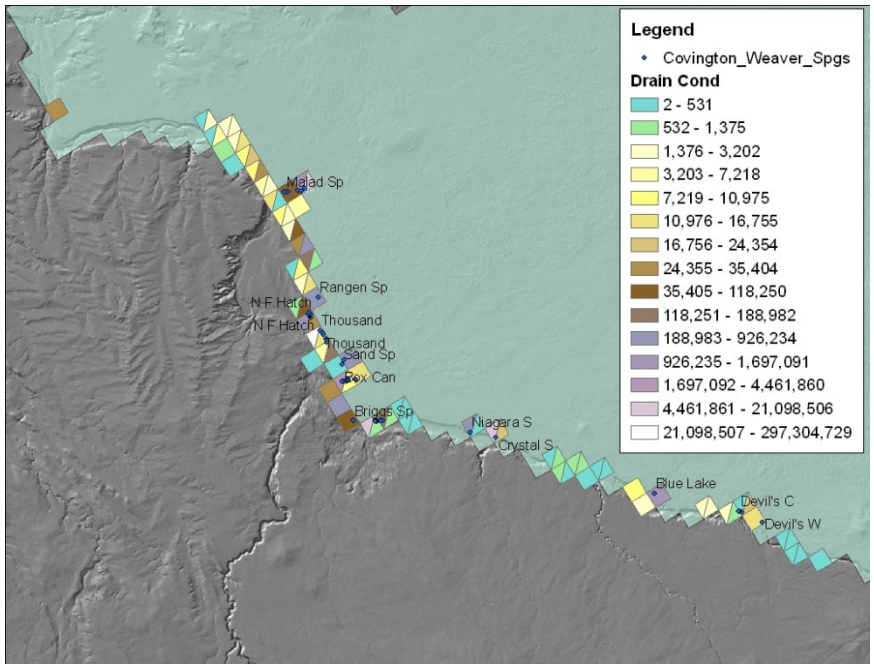

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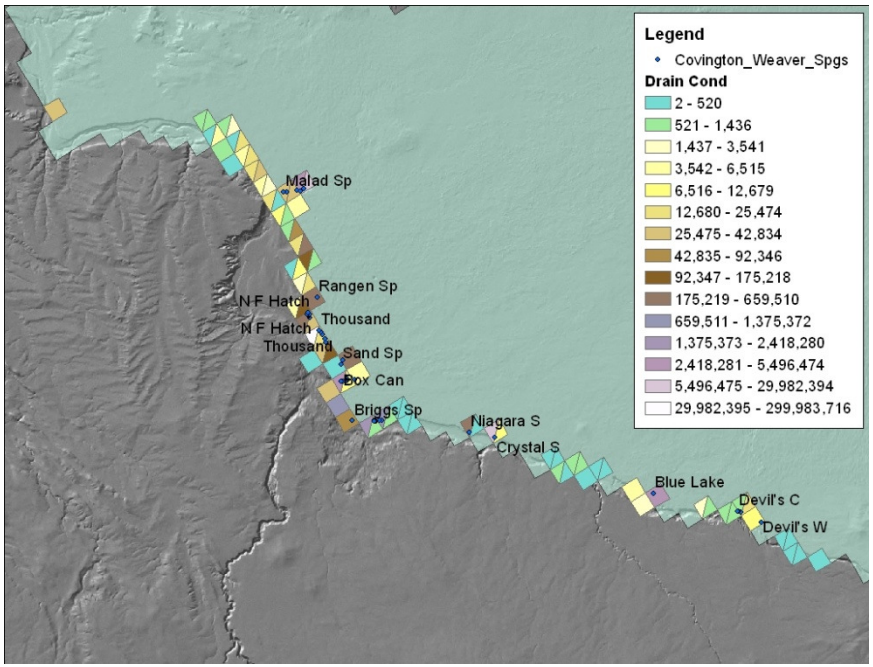

Perched River Seepage

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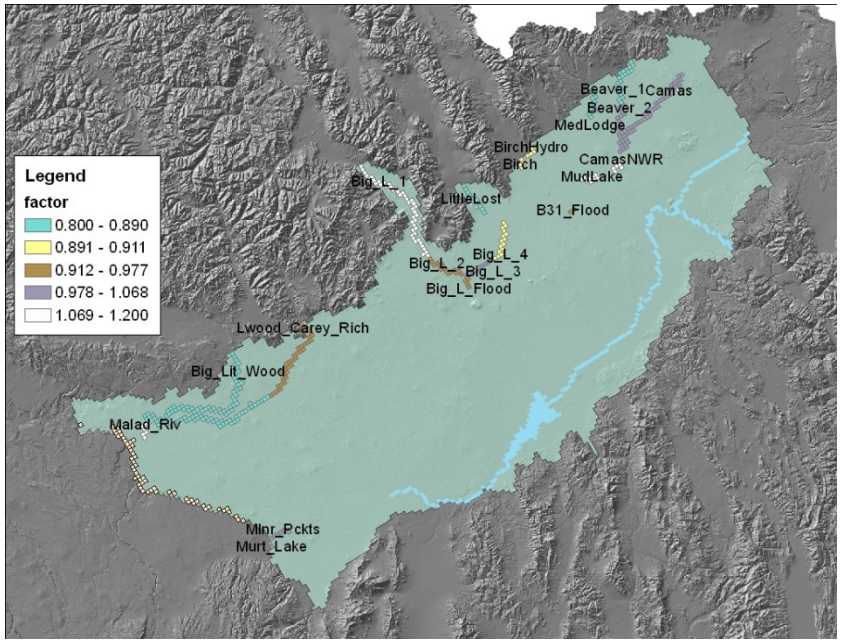

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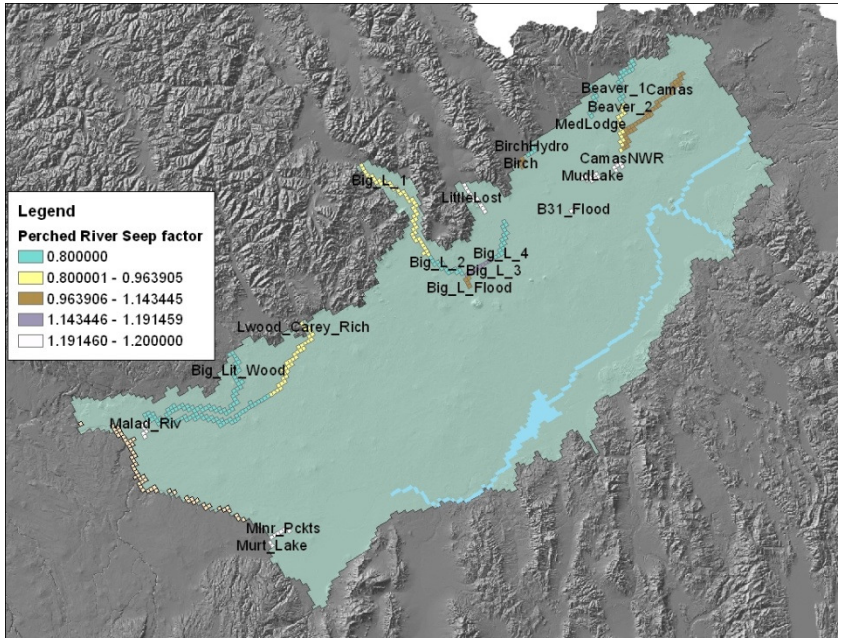

Tributary Underflow

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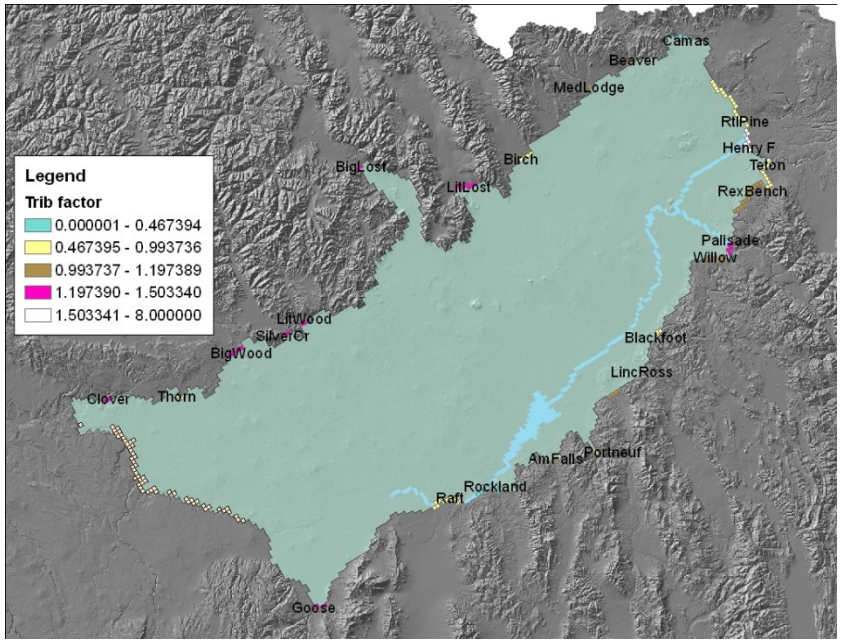

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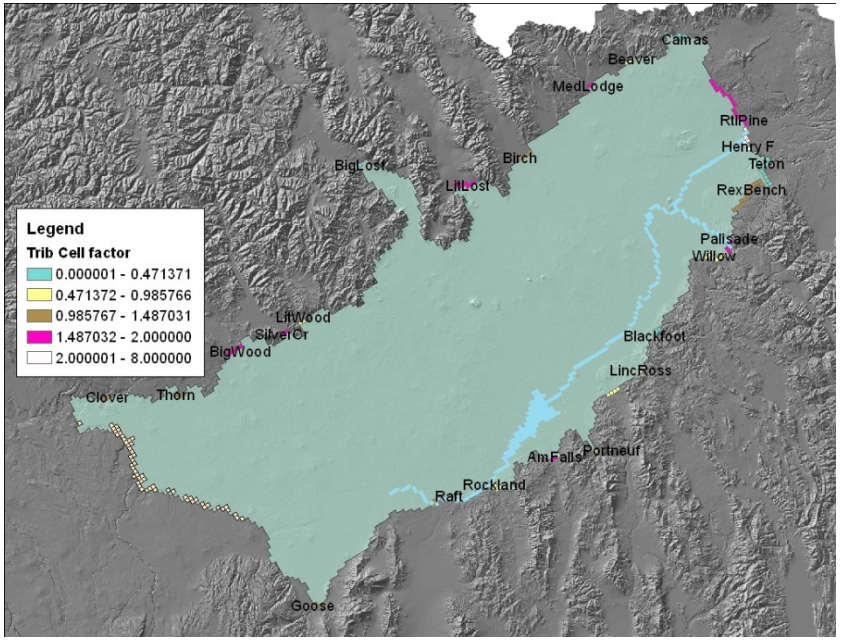

Non-irrigated Recharge

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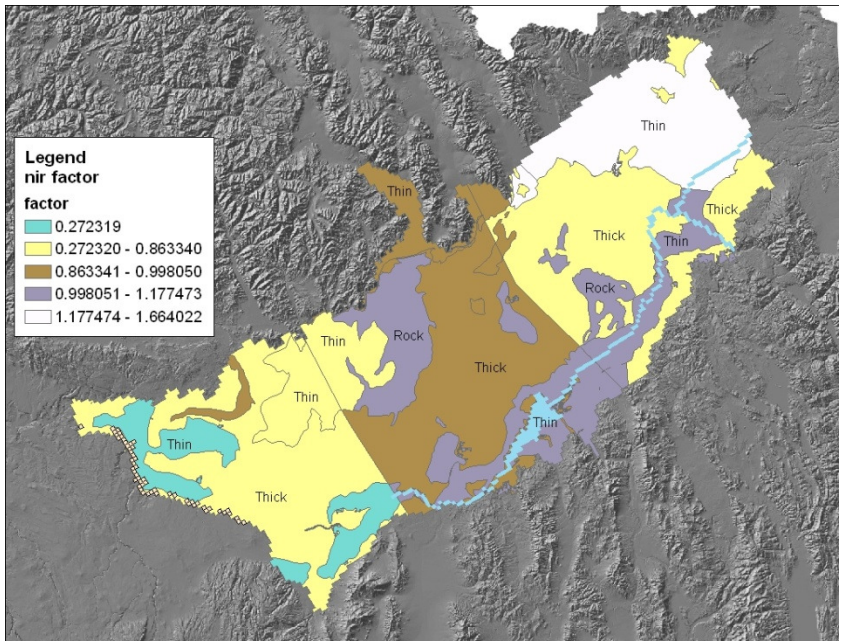

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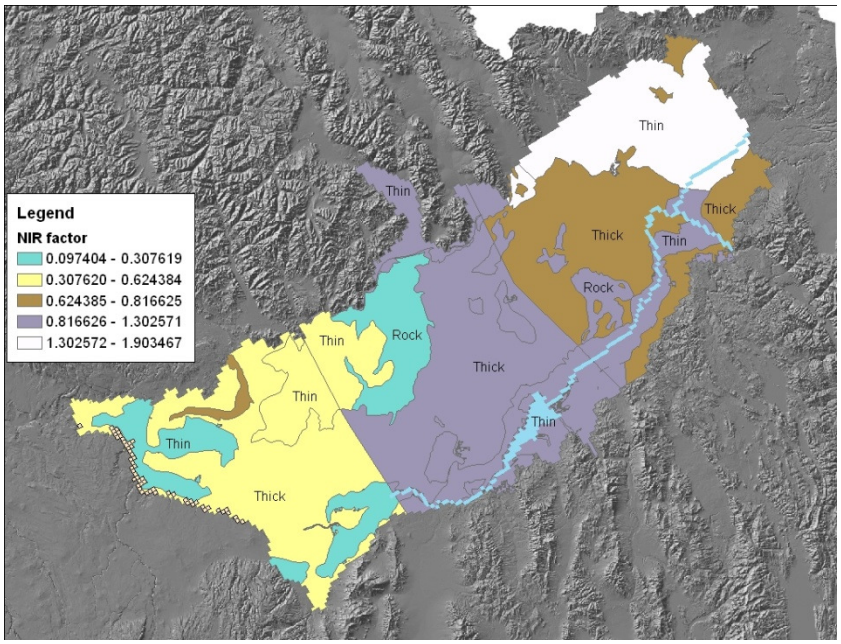

ET Surface Water Sprinkler

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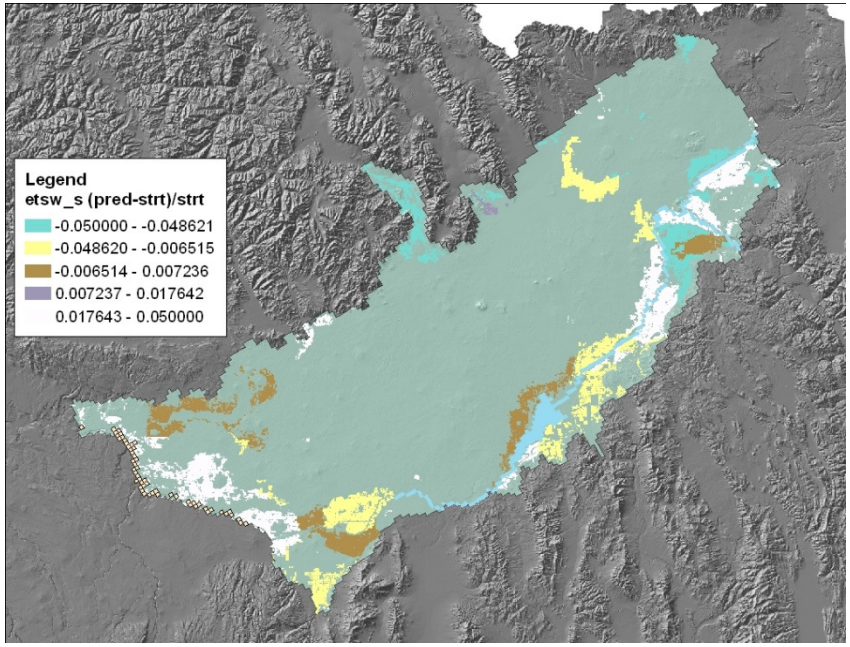

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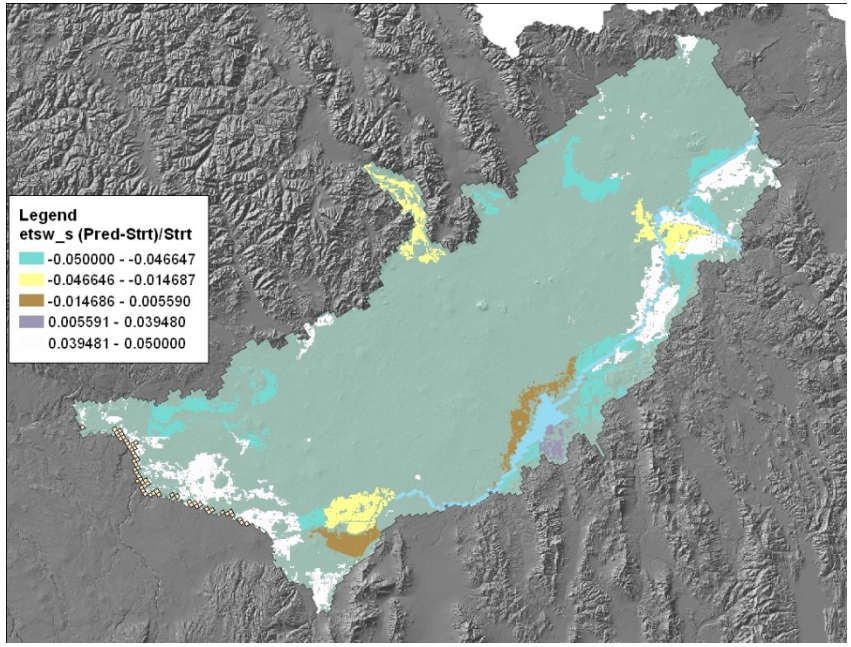

ET Surface Water Gravity

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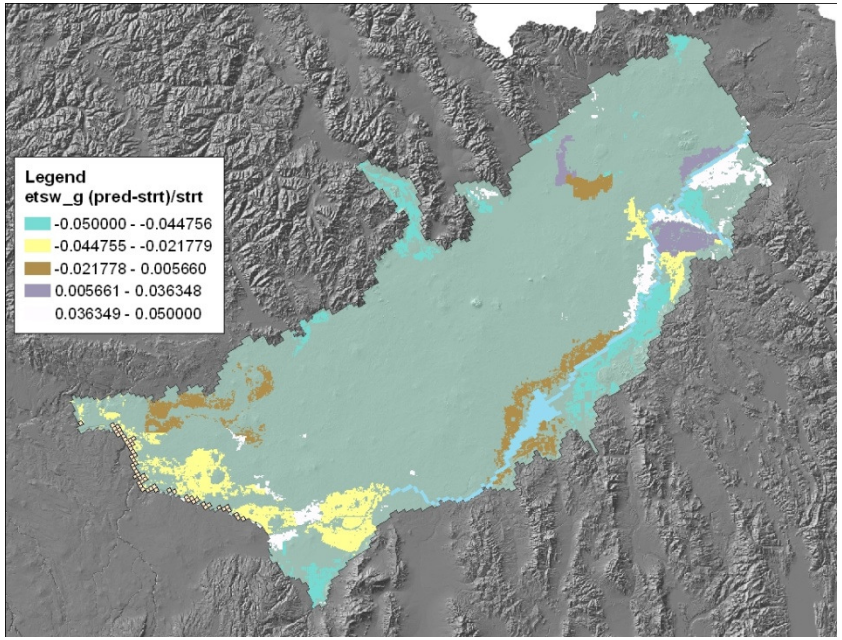

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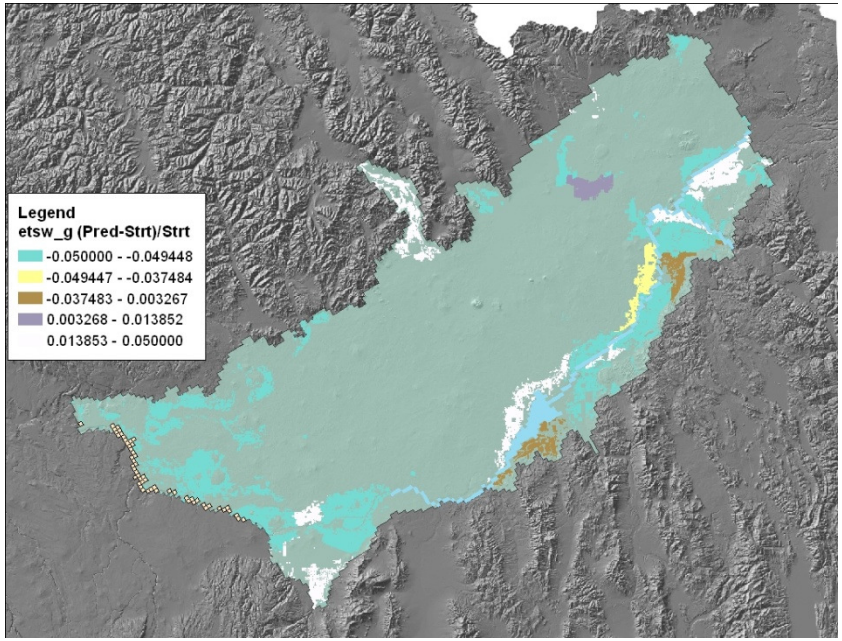

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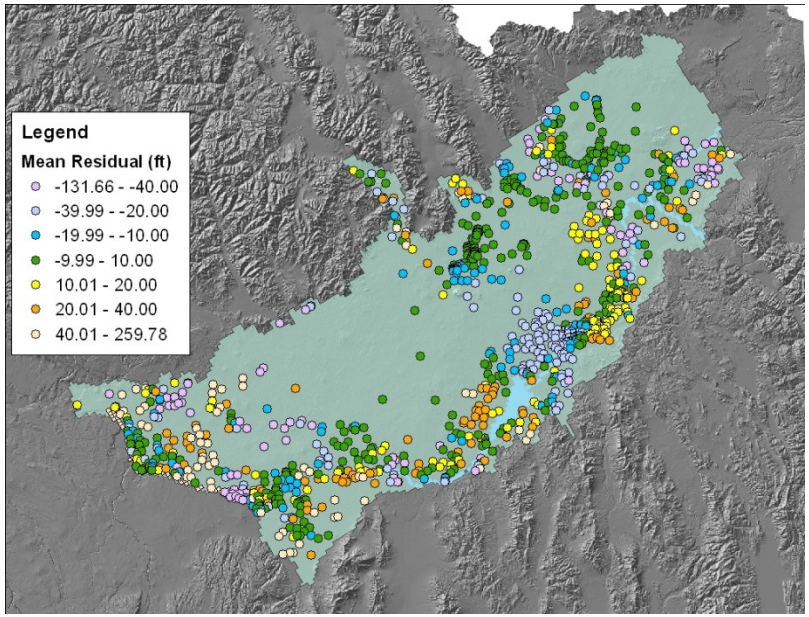
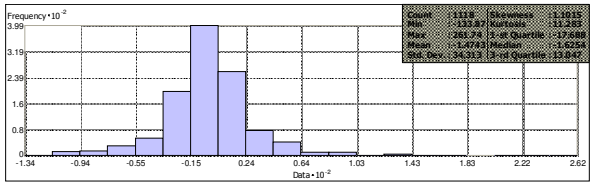


Histogram
Transformation: None



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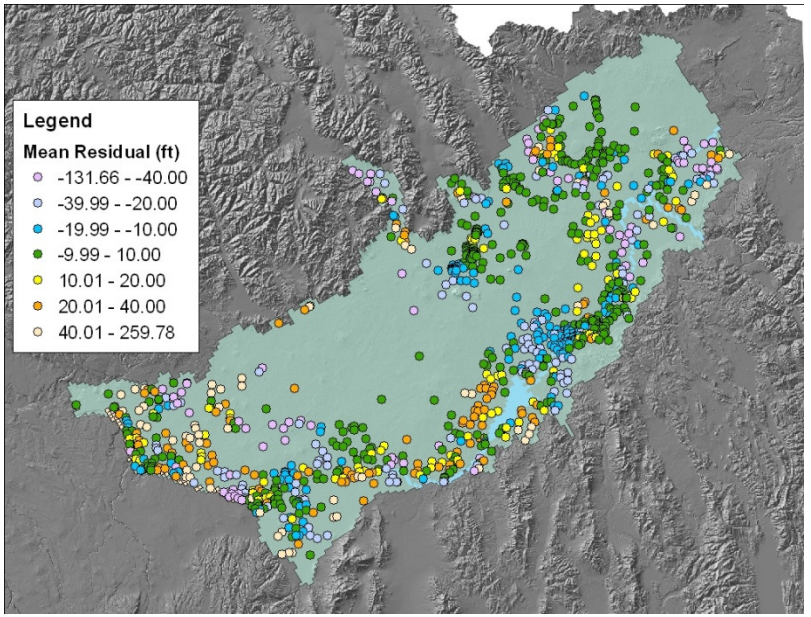

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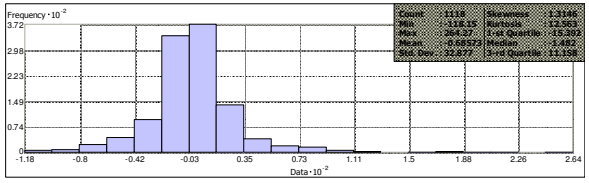

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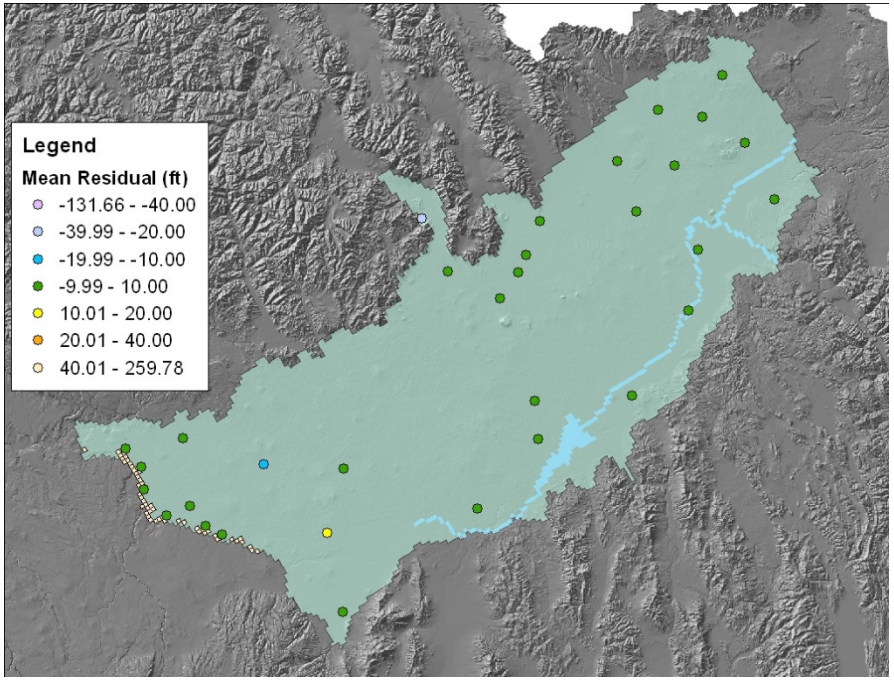

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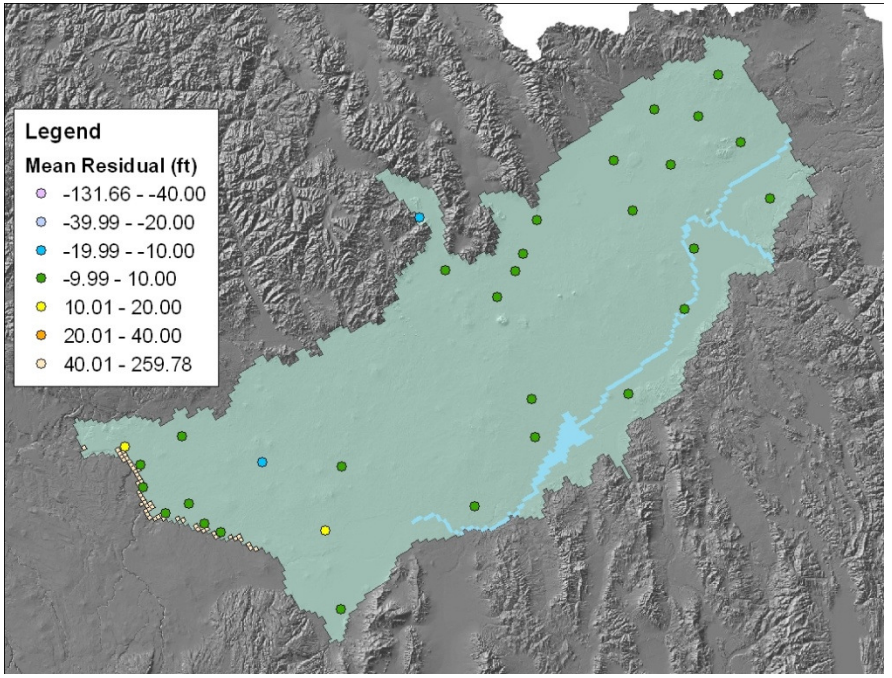
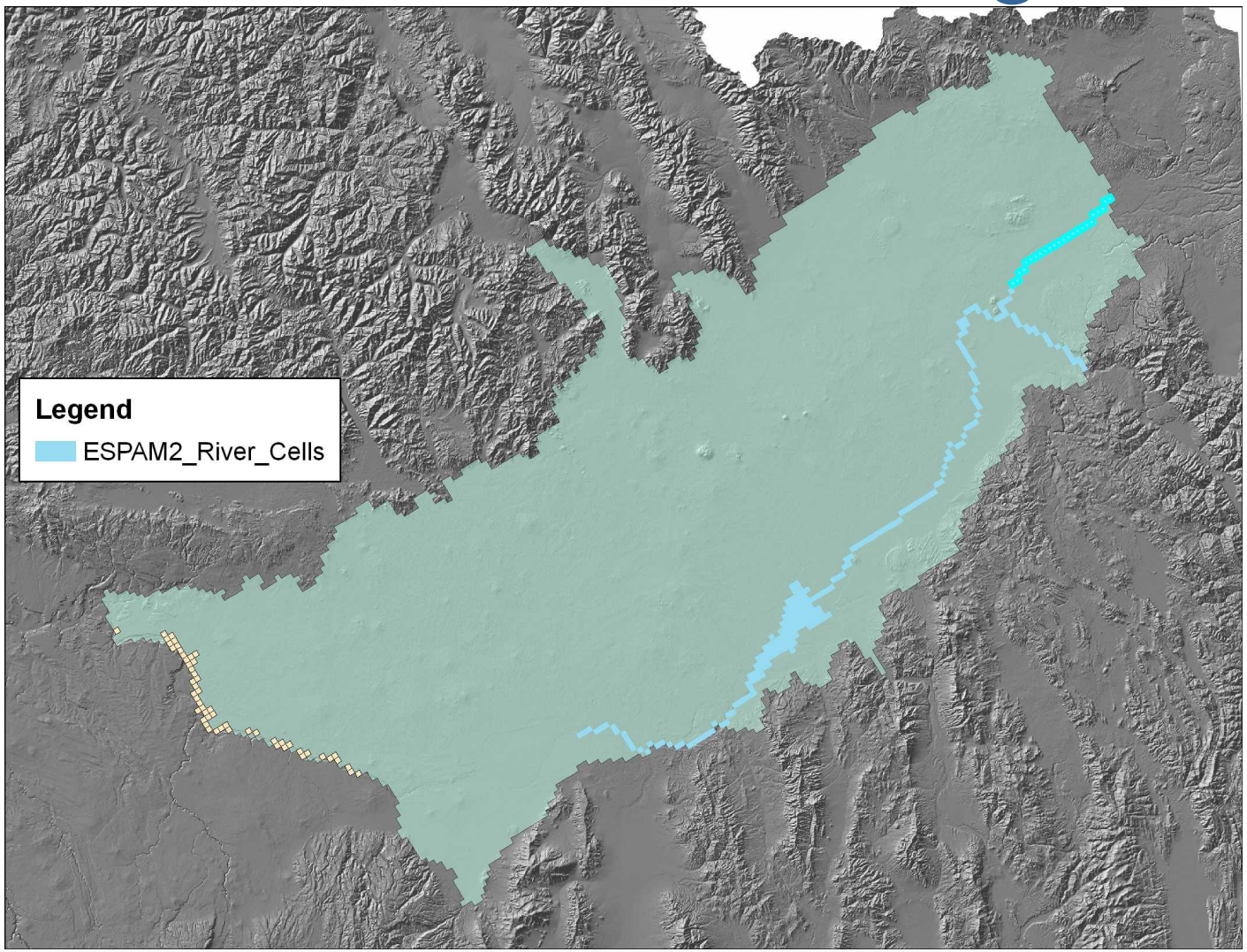
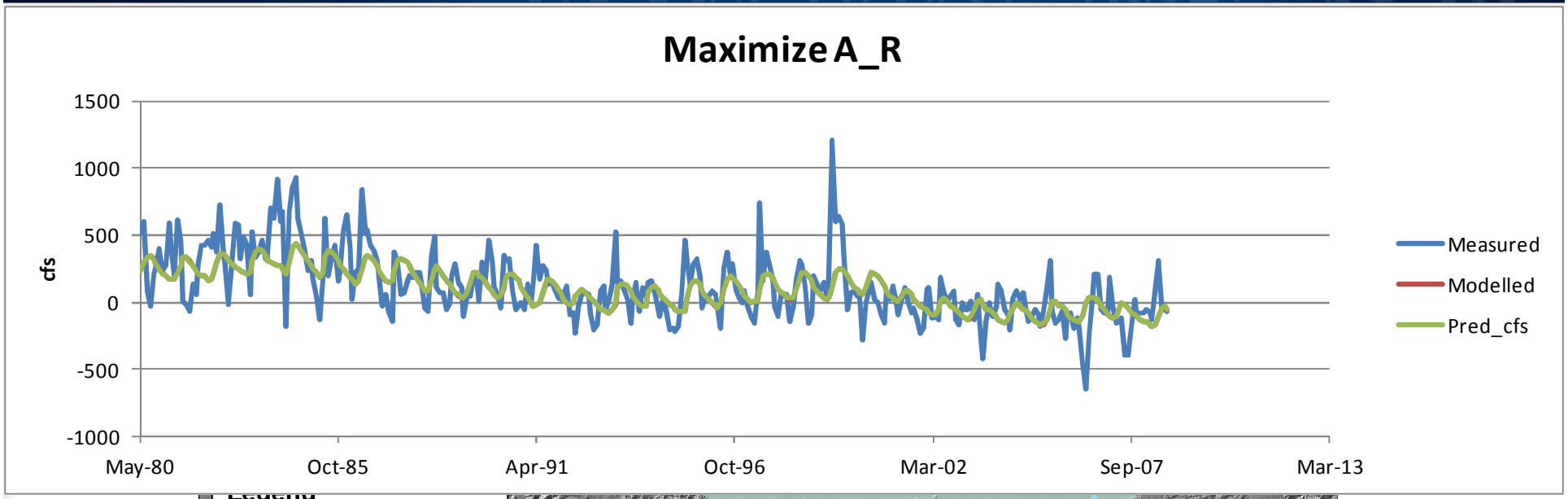


Ashton - Rexburg

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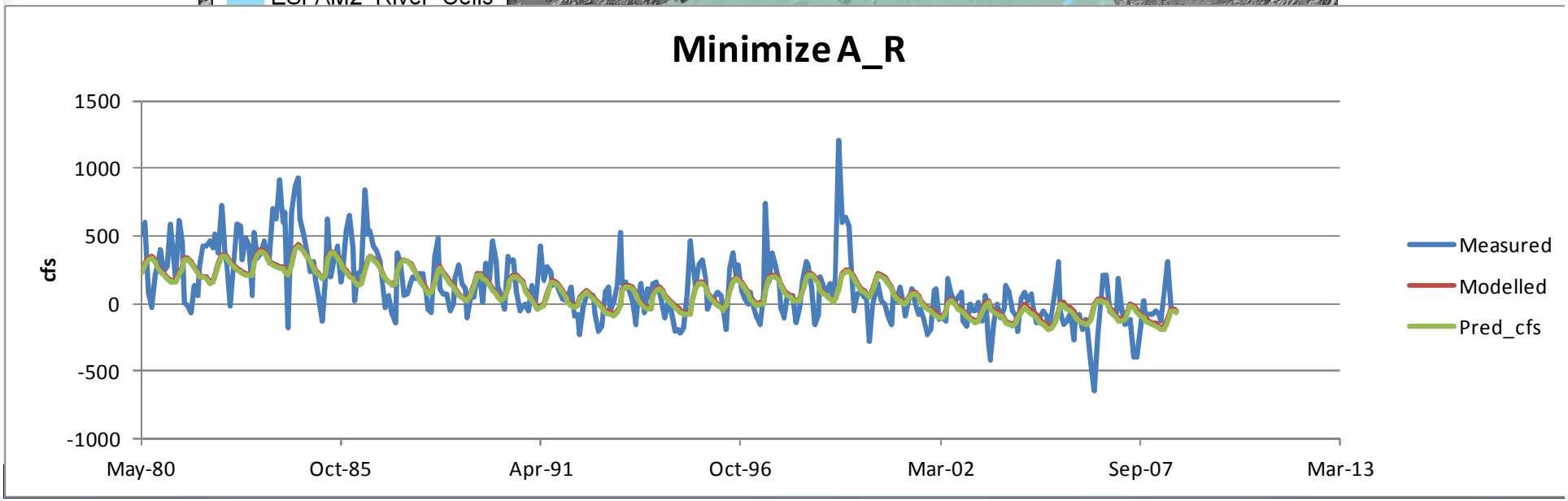
Pred_cfs

ESPAM2_River_Cells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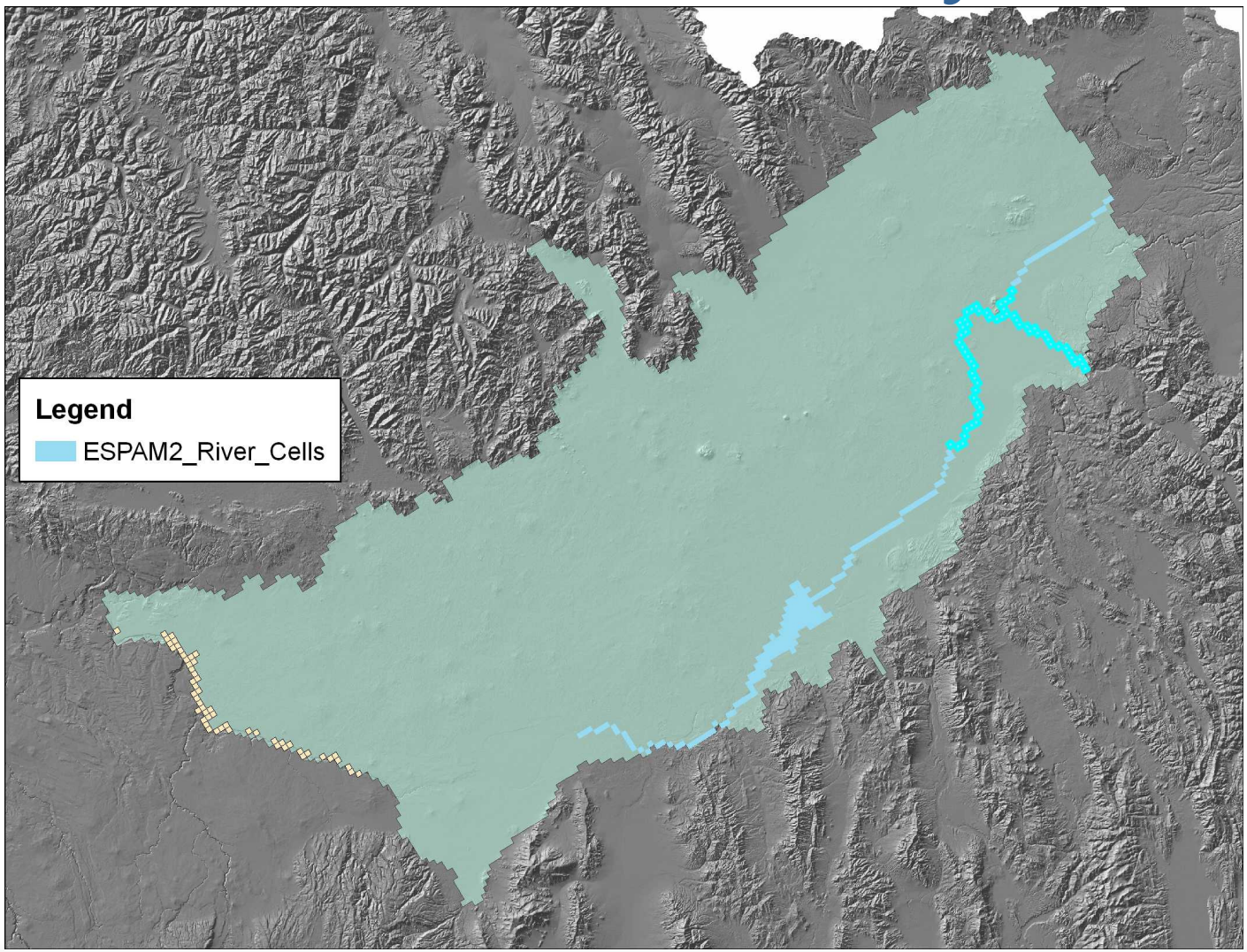
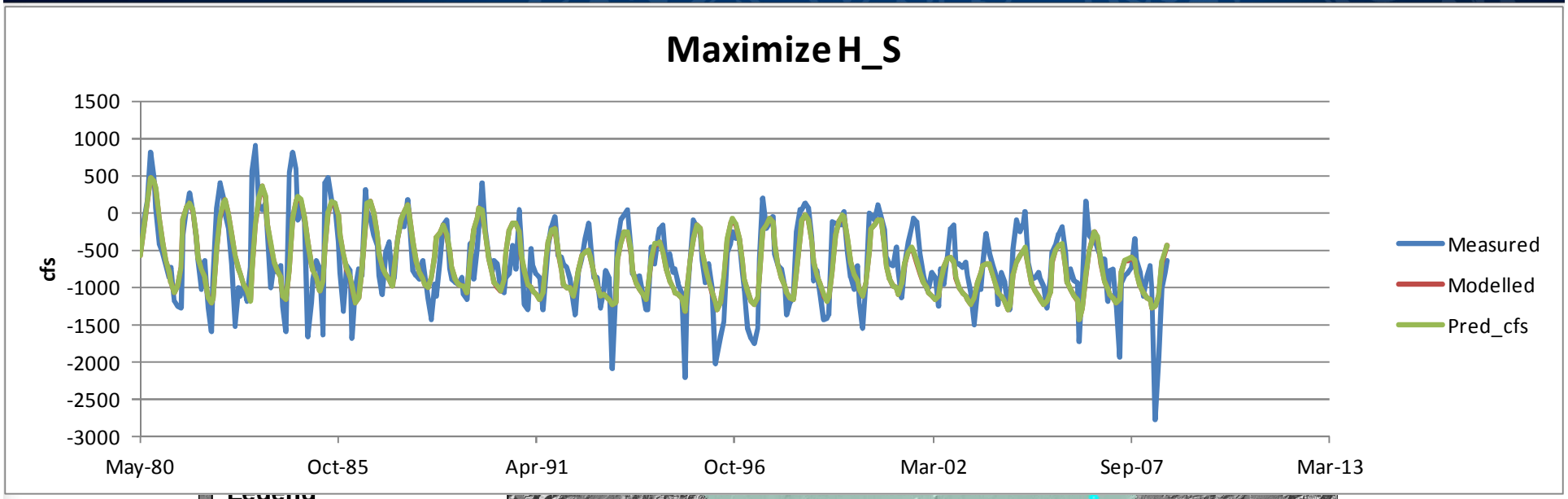
Heise - Shelley

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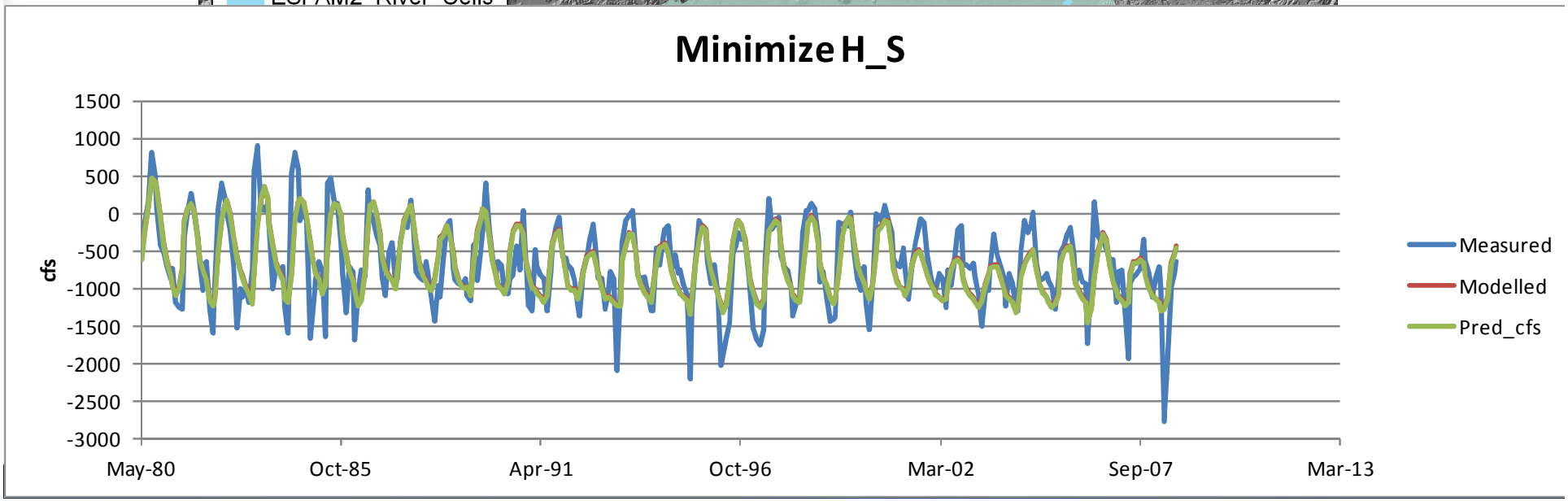
ESPAM2 River Cells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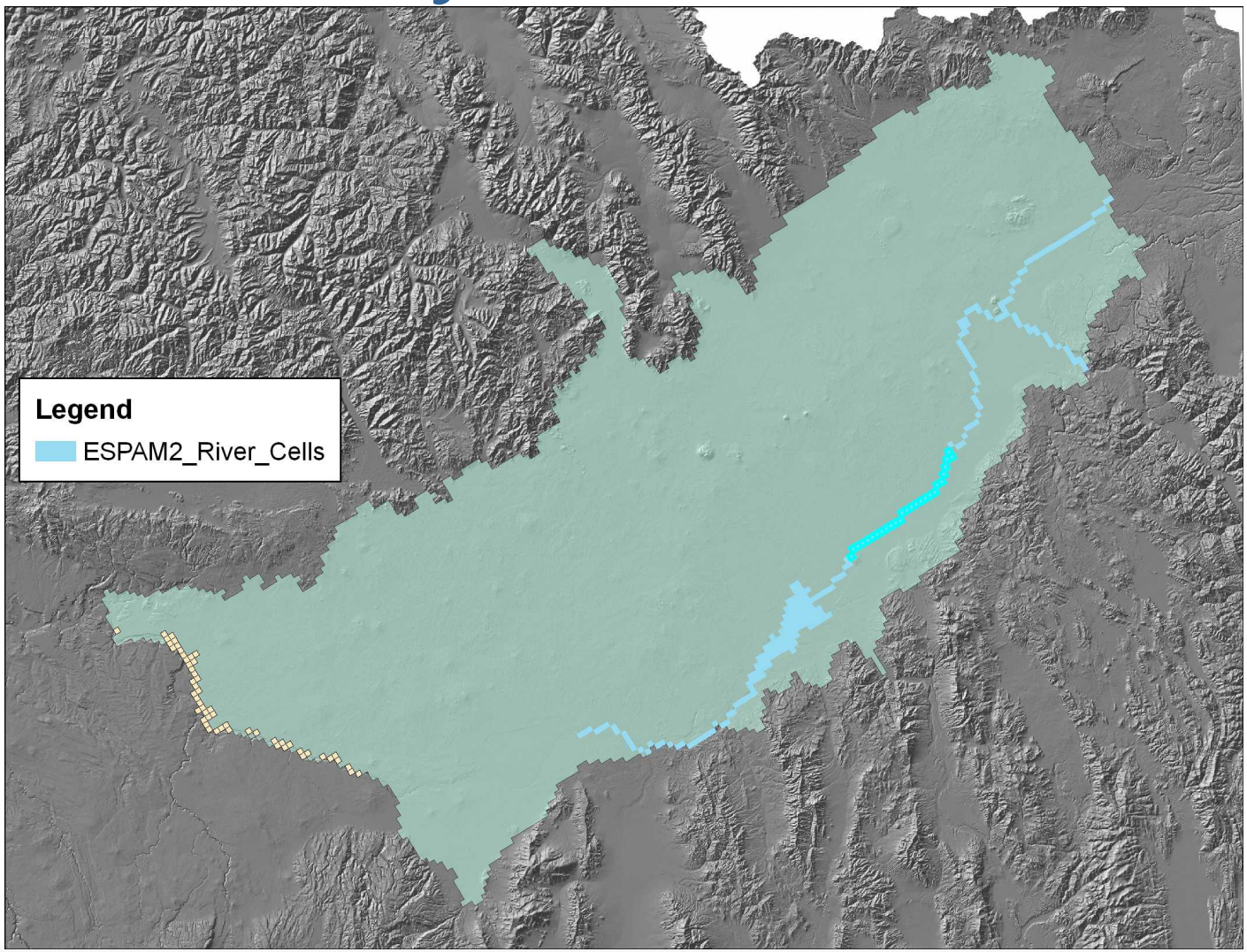
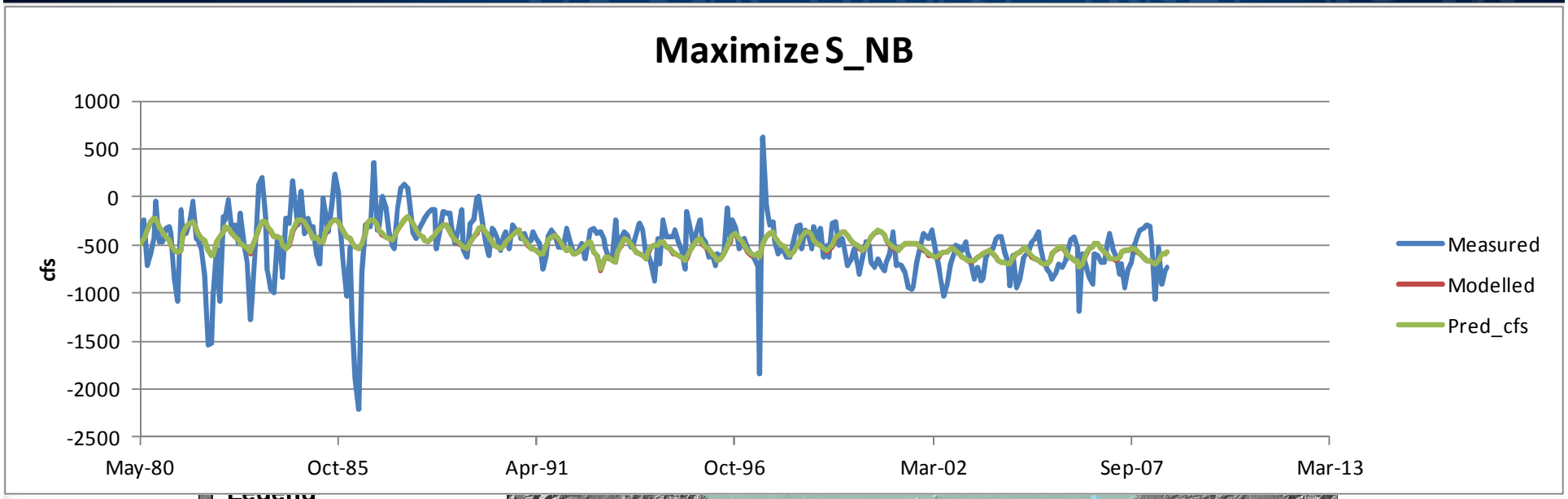
Pred_cfs

Shelley – nr Blackfoot

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Legend
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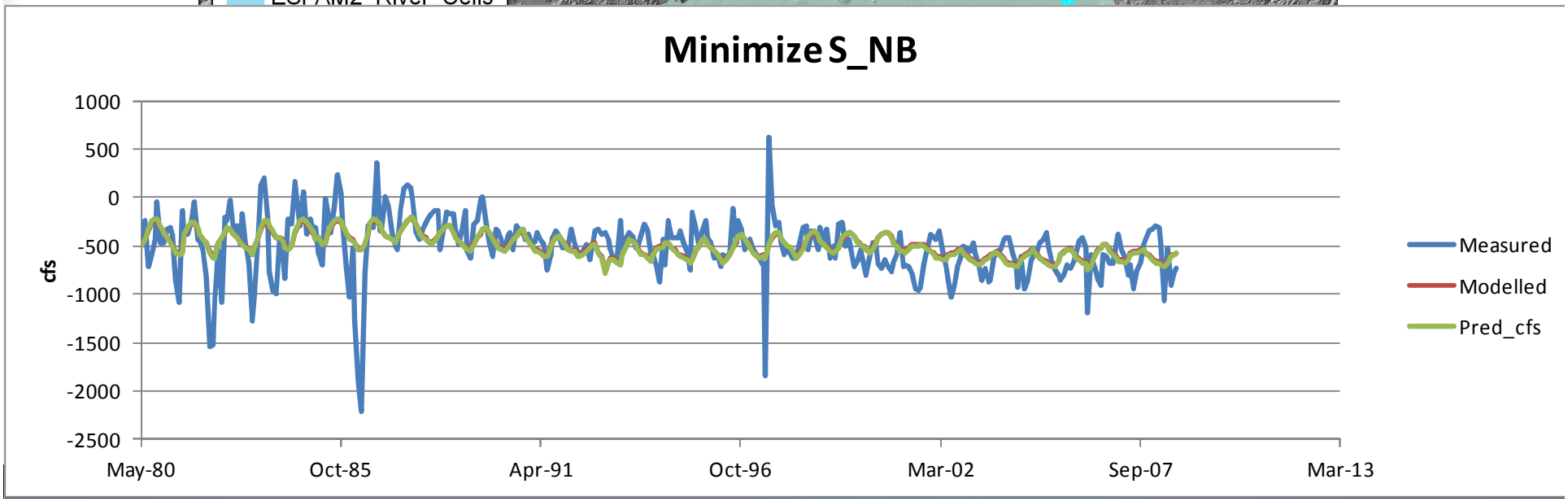
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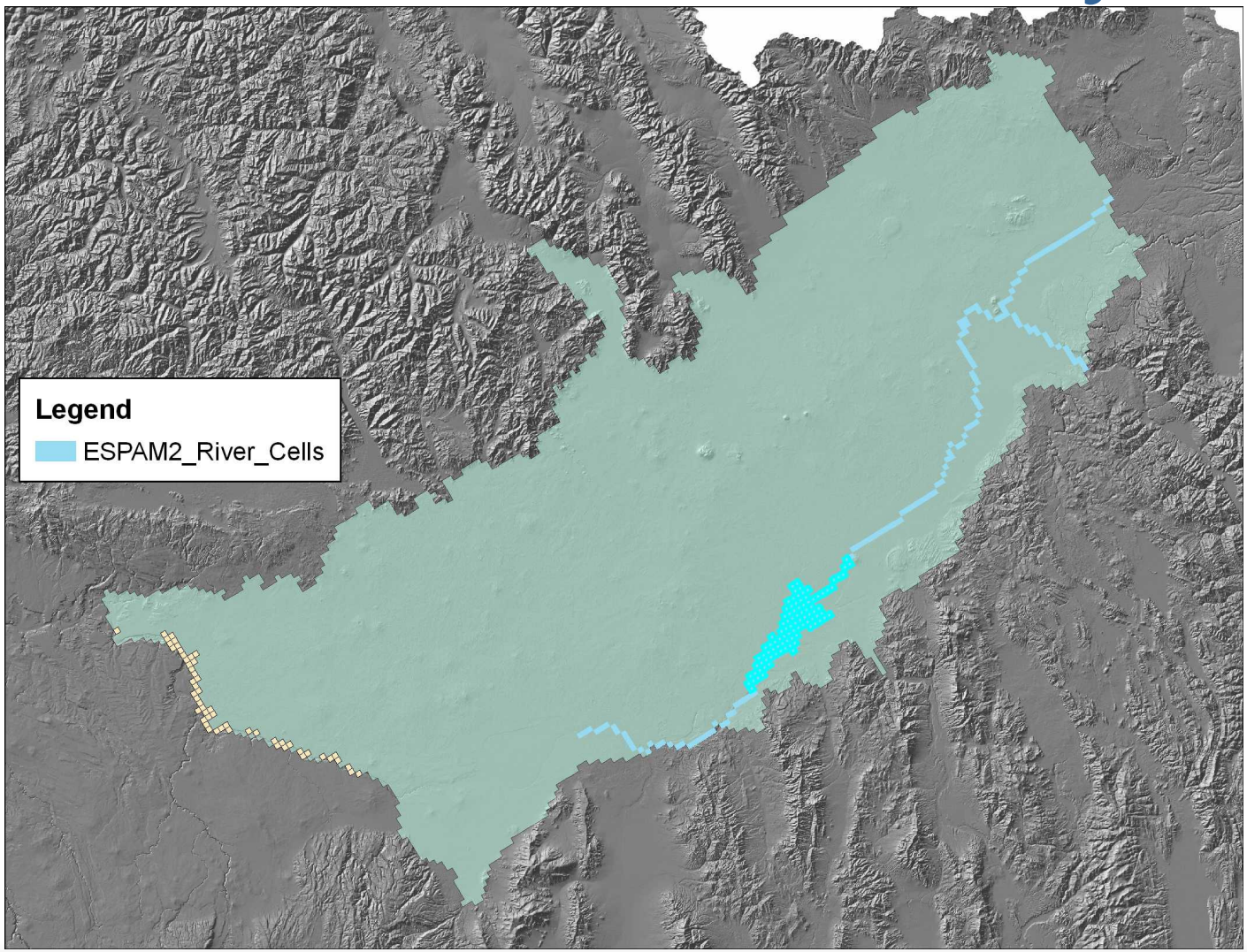
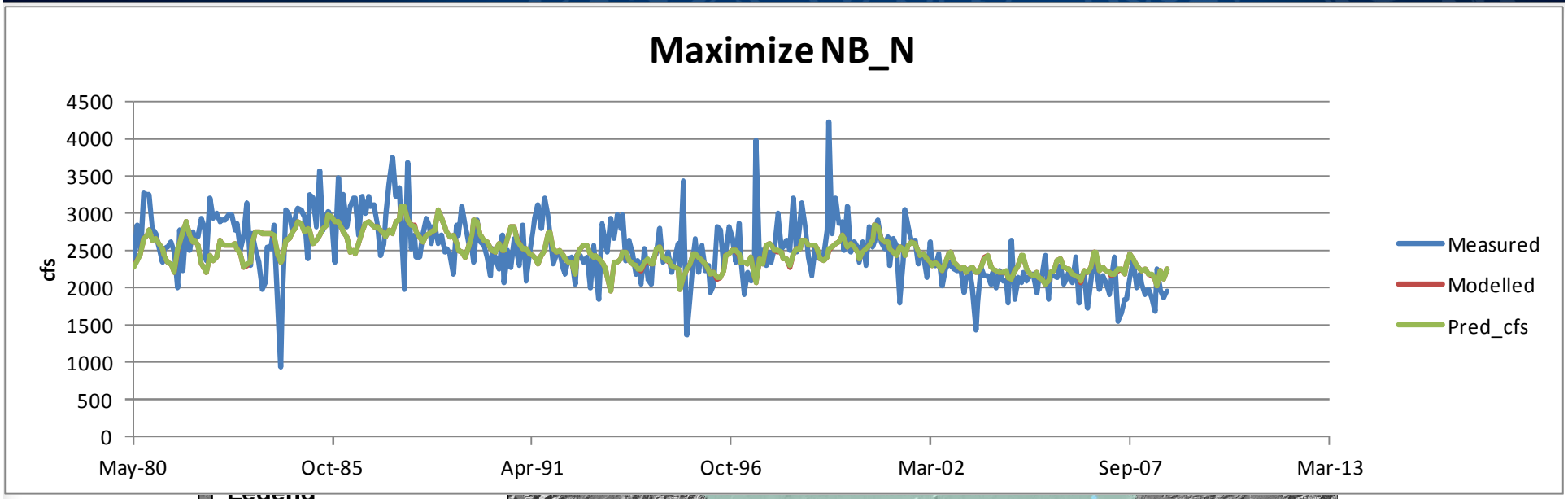
Nr Blackfoot - Neeley

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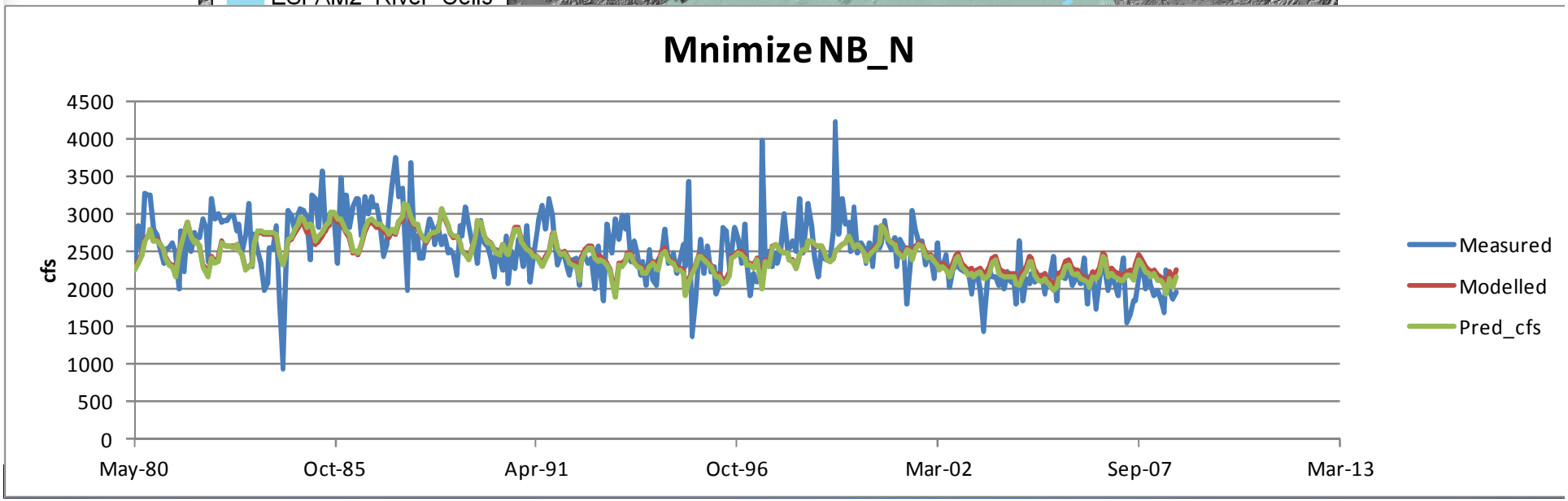
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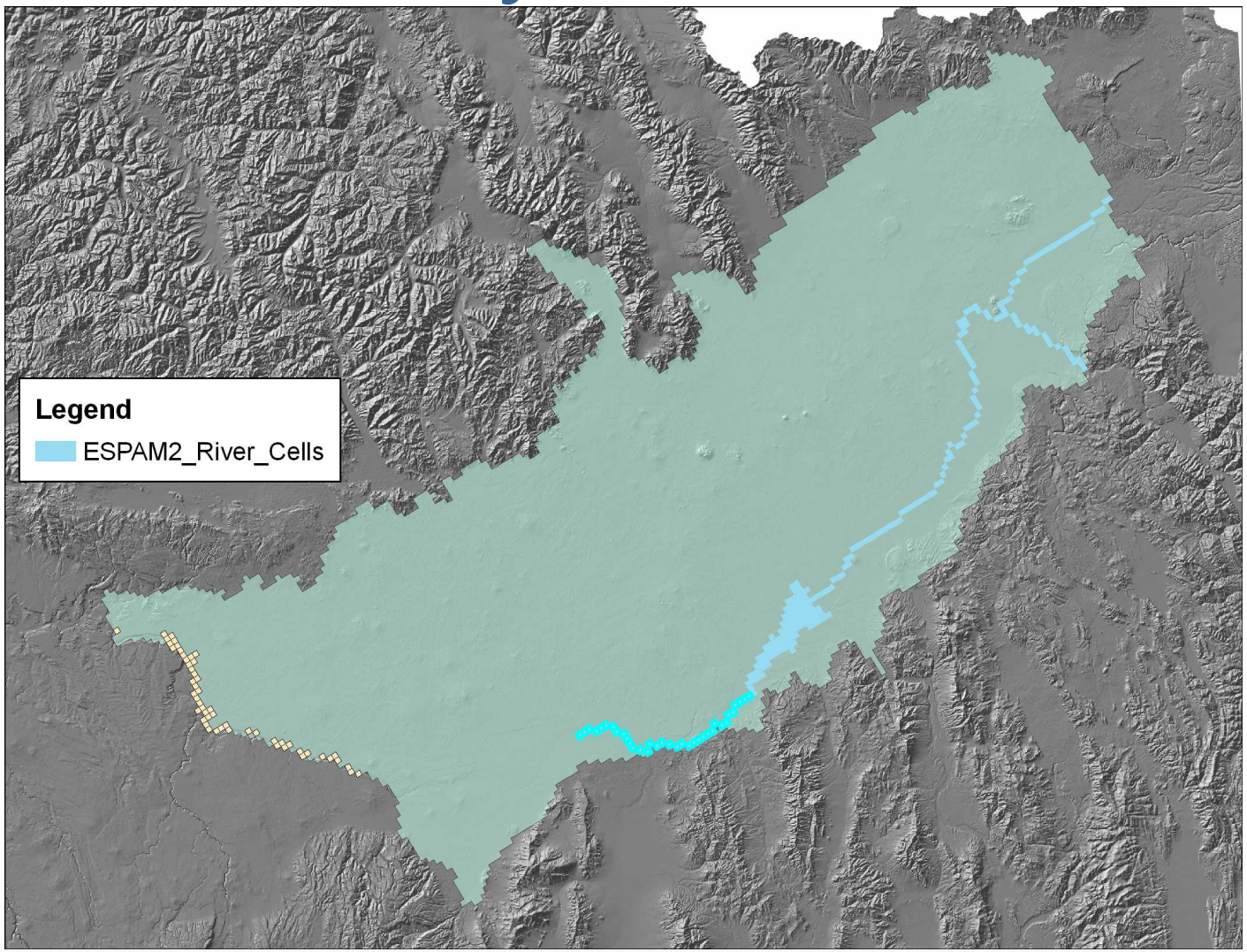
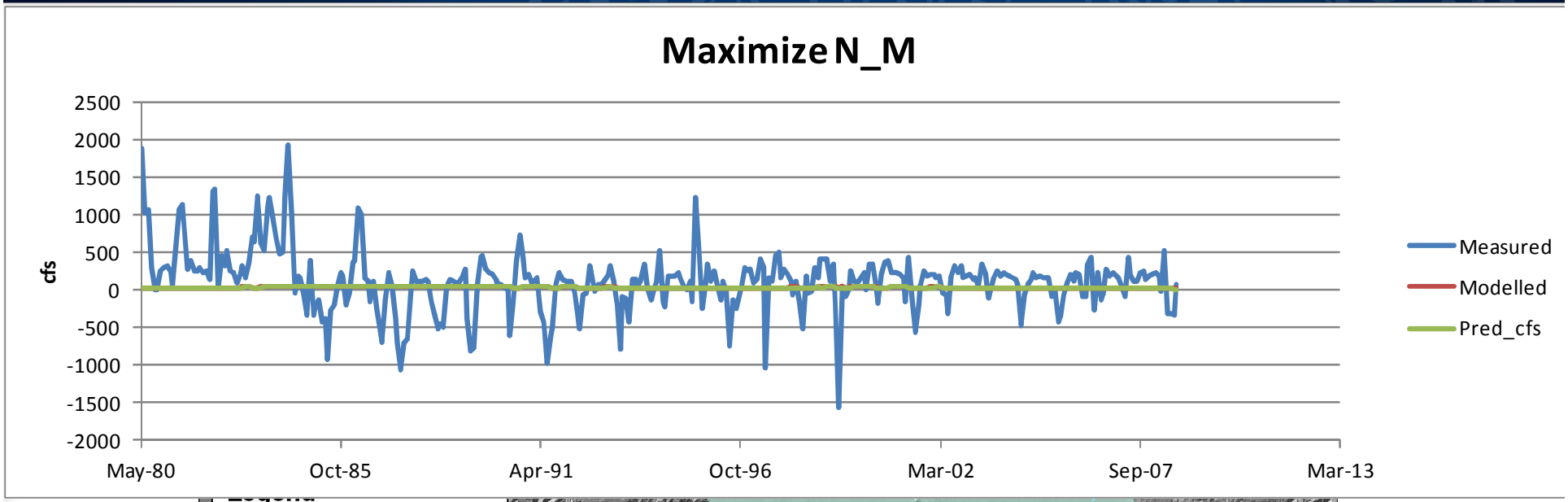
Neeley - Minidoka

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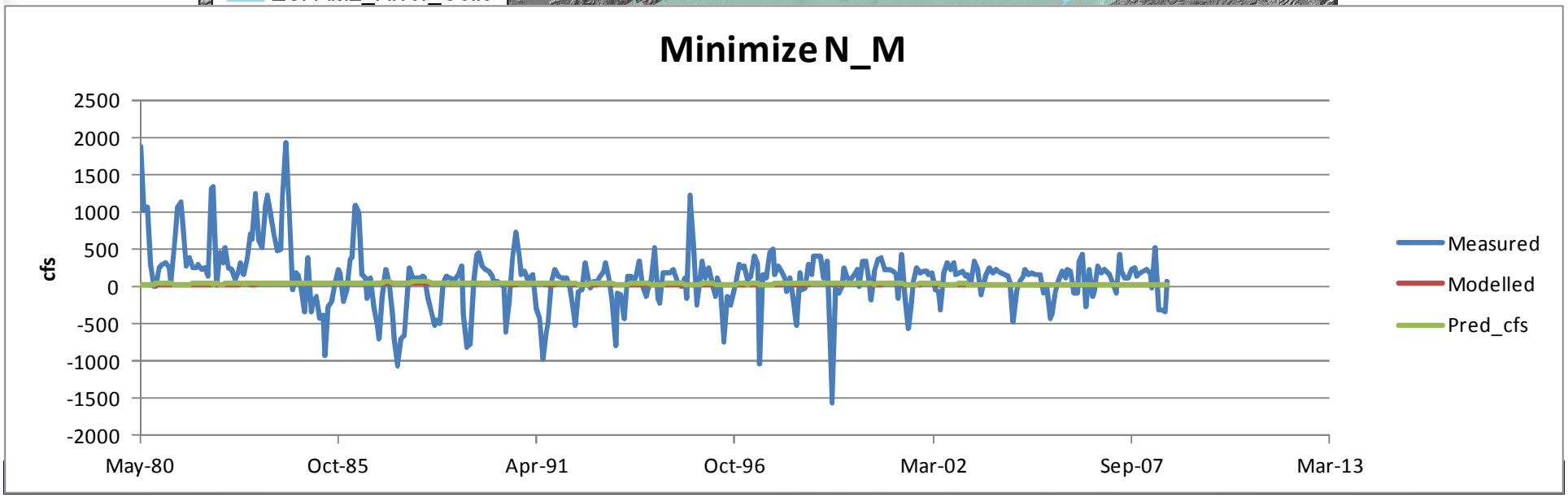
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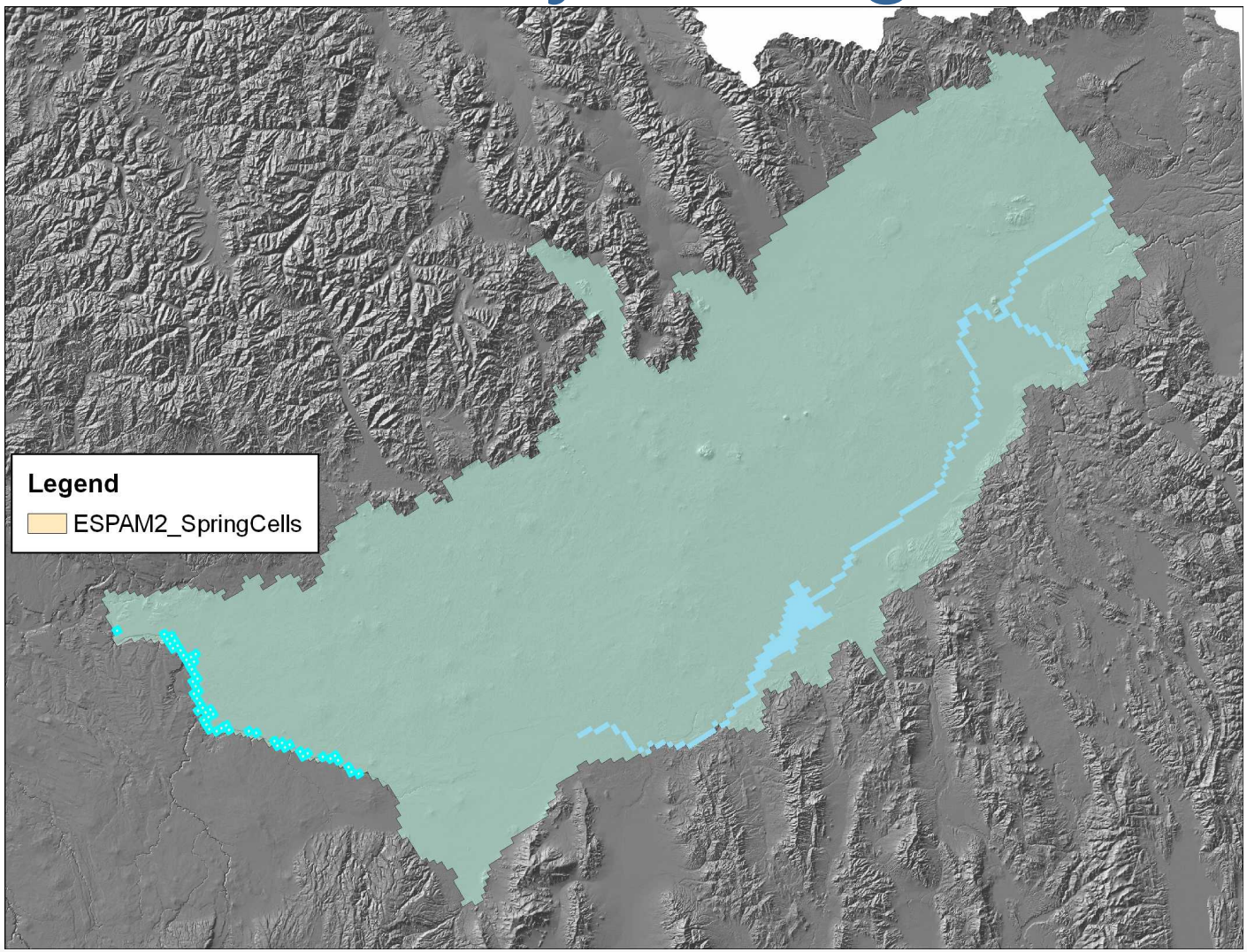
Kimberly – King Hill



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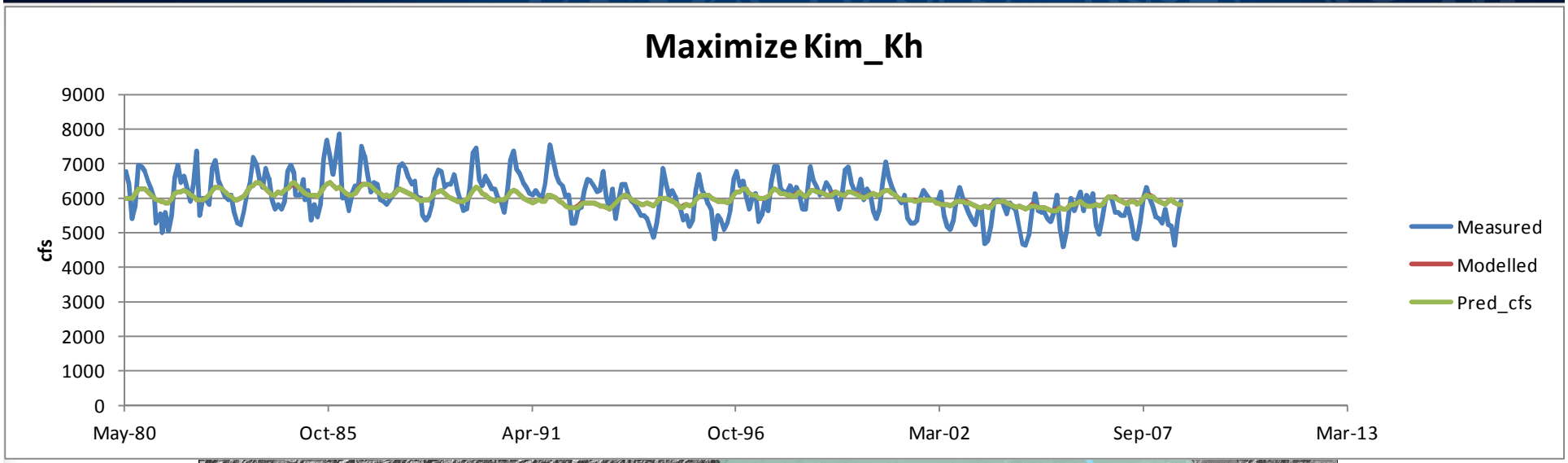
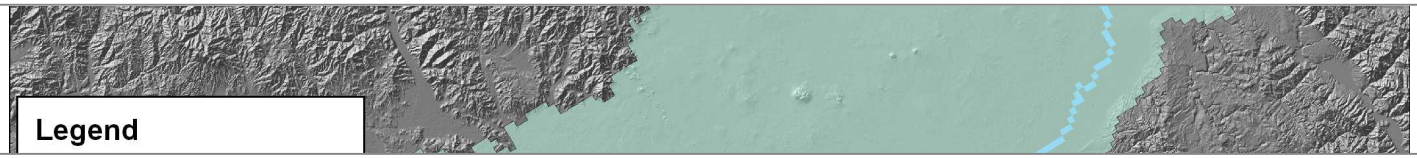
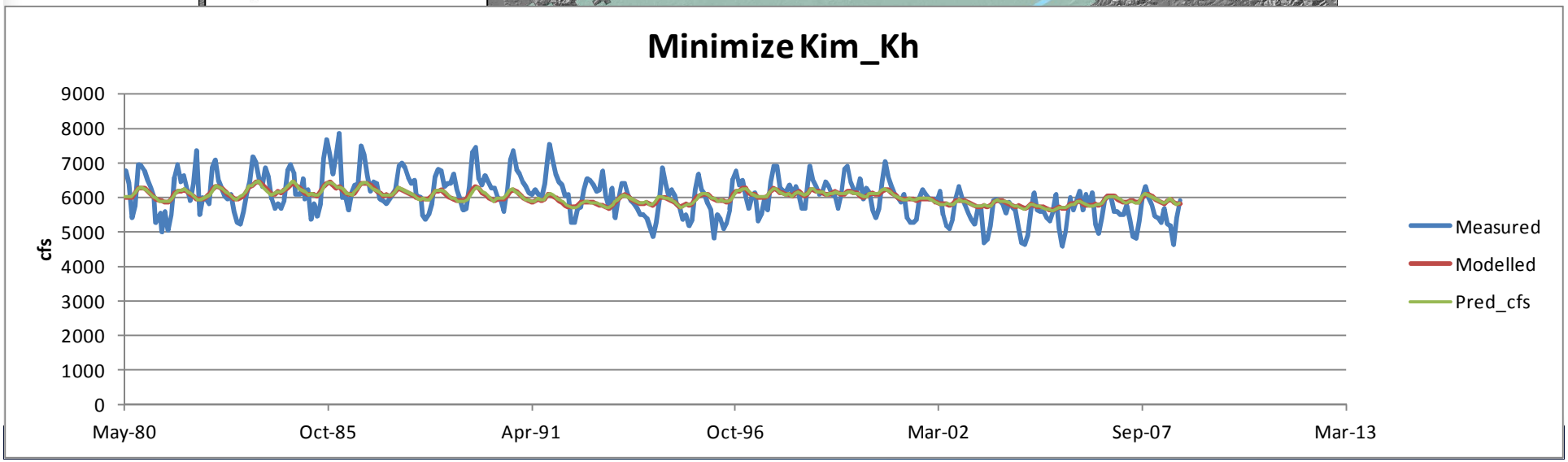
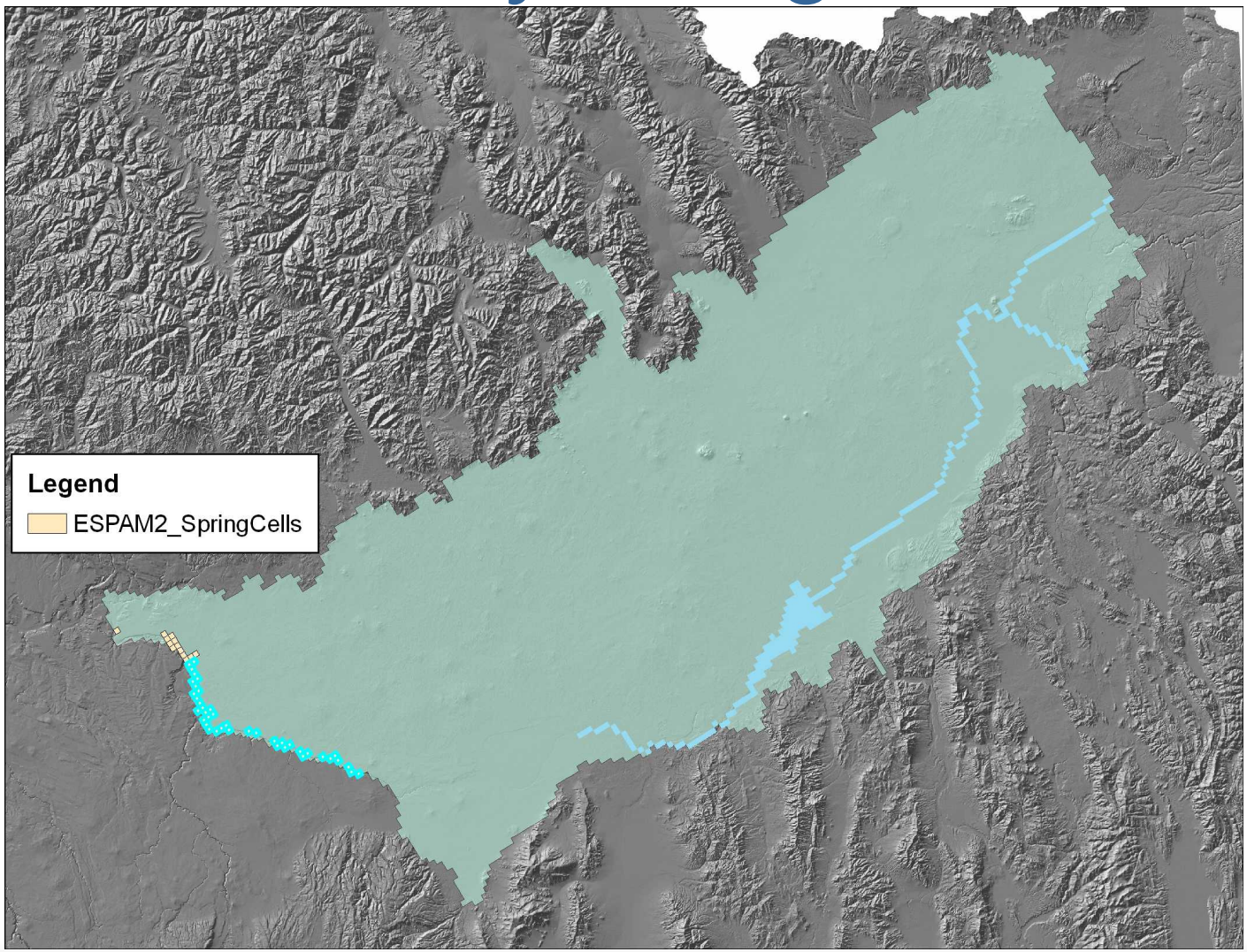






Kimberly - Hagerman



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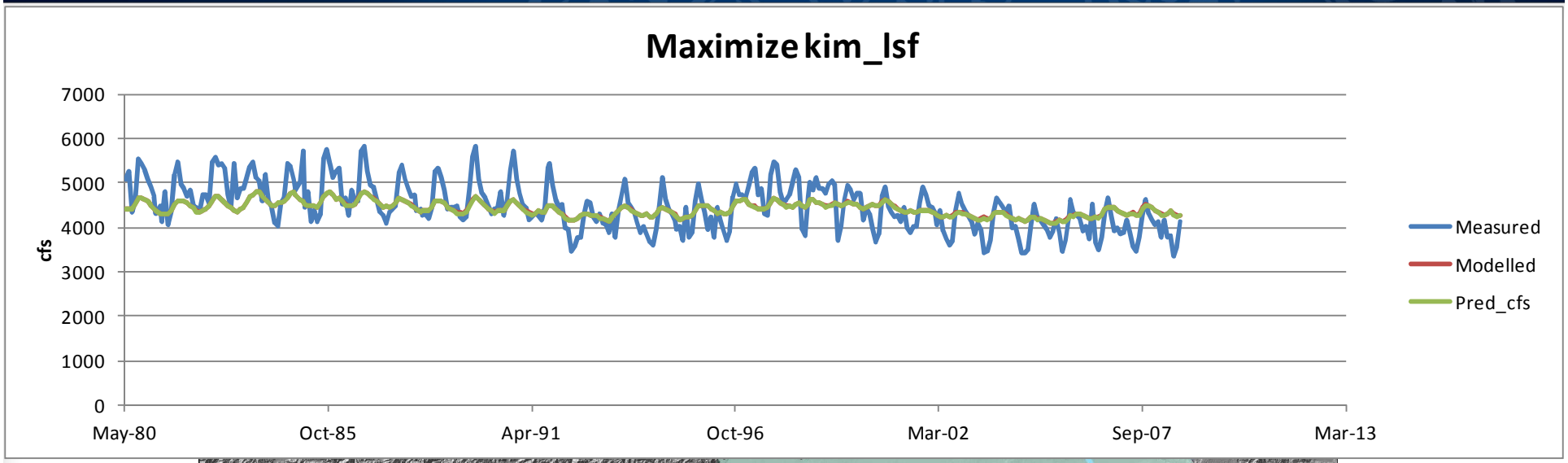
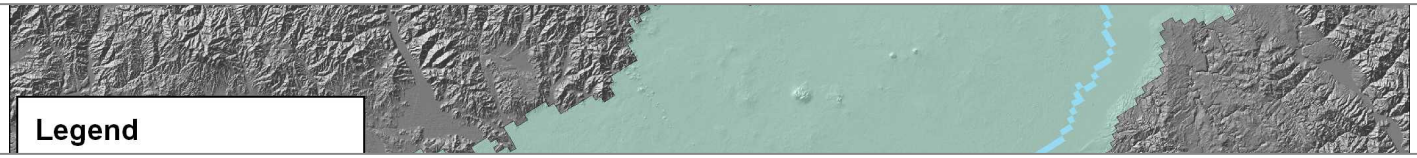
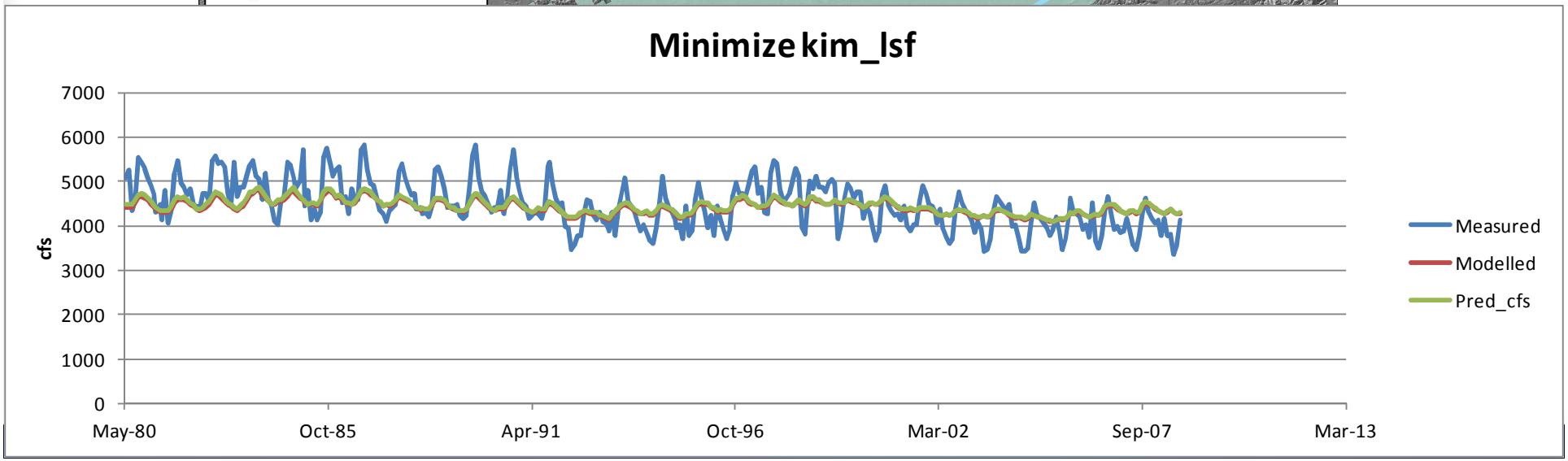
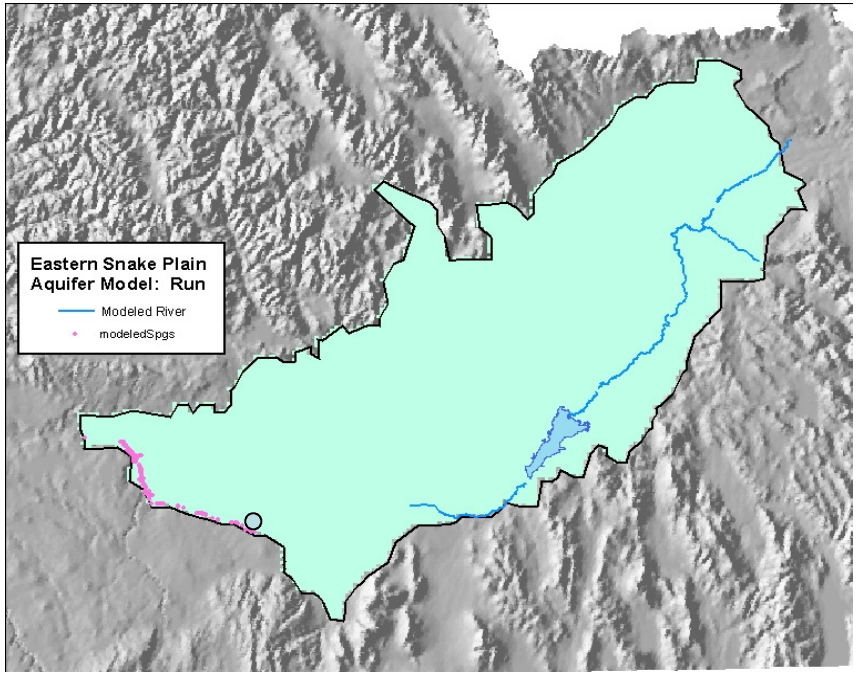




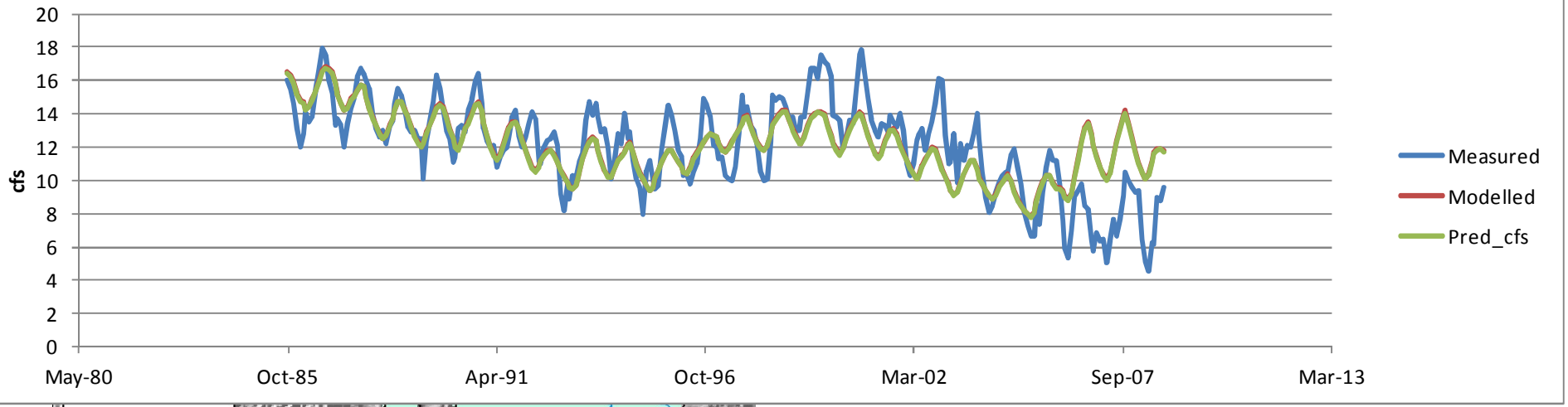




- Devils Washbowl

IDAHO Department of Water Resources

Maximize DEVILSWB



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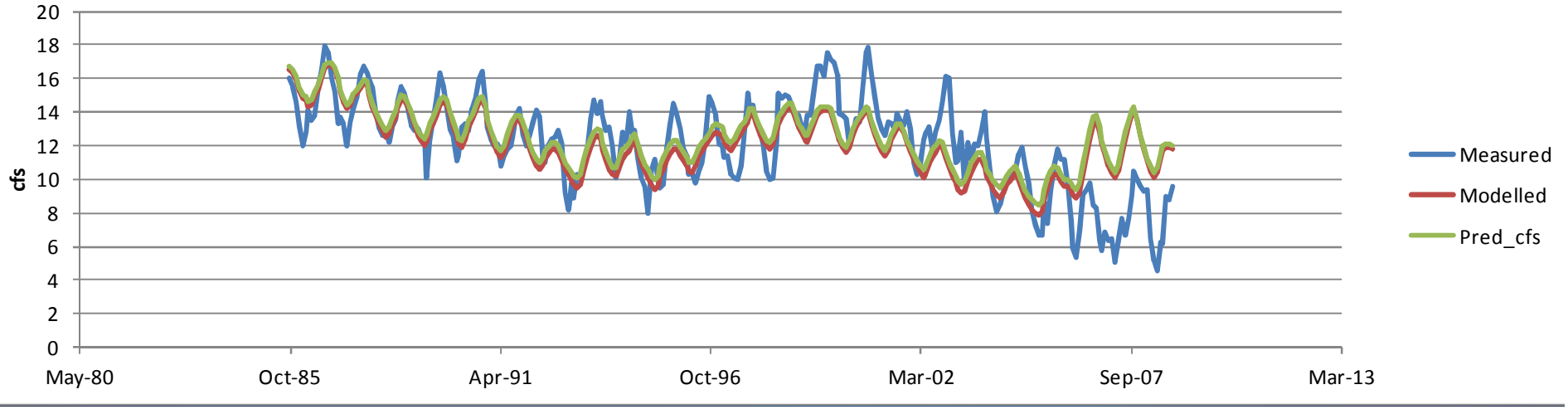
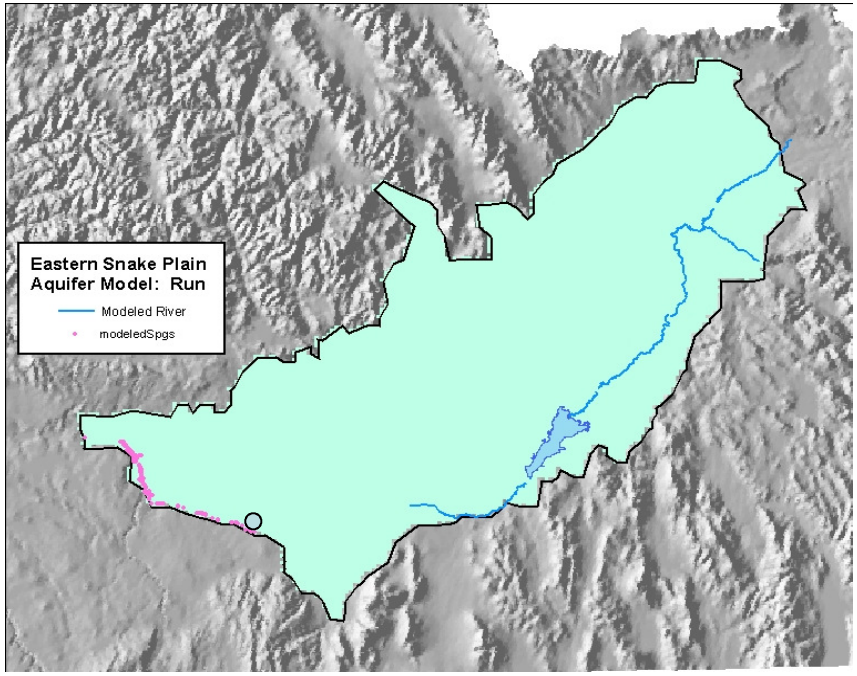
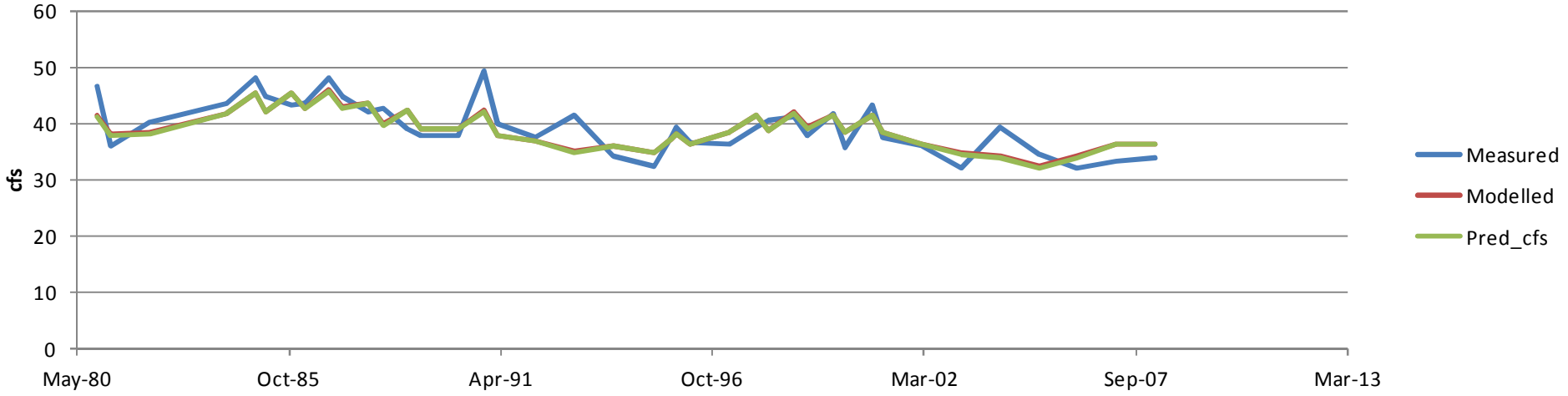




- Devils Corral

IDAHO Department of Water Resources

Maximize DEVILSC



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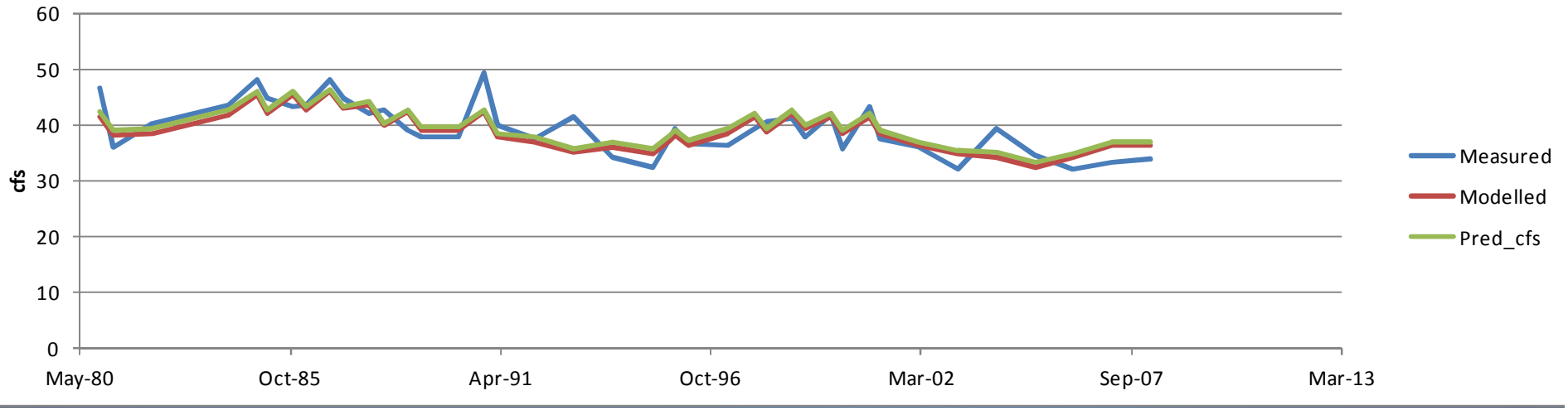
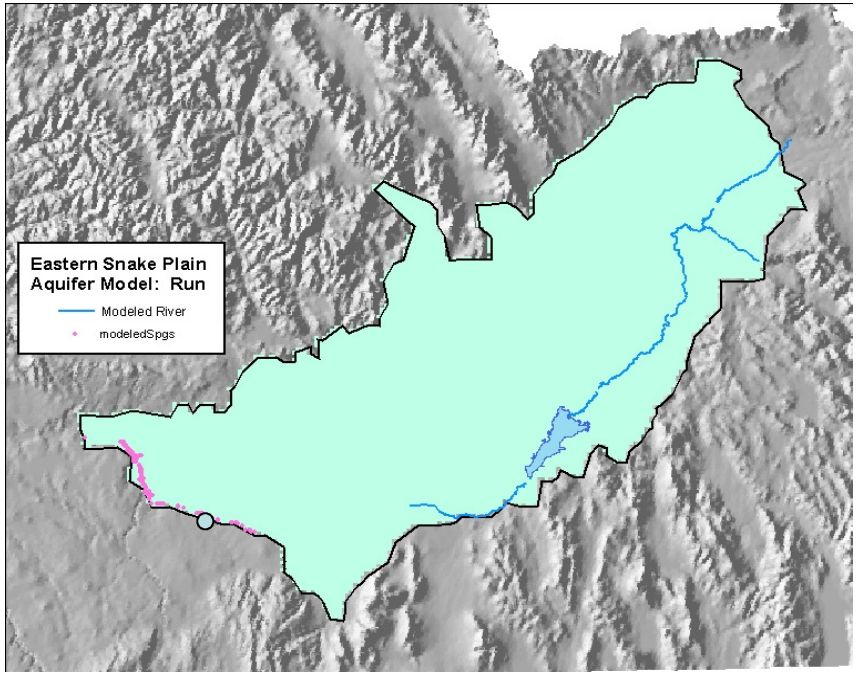
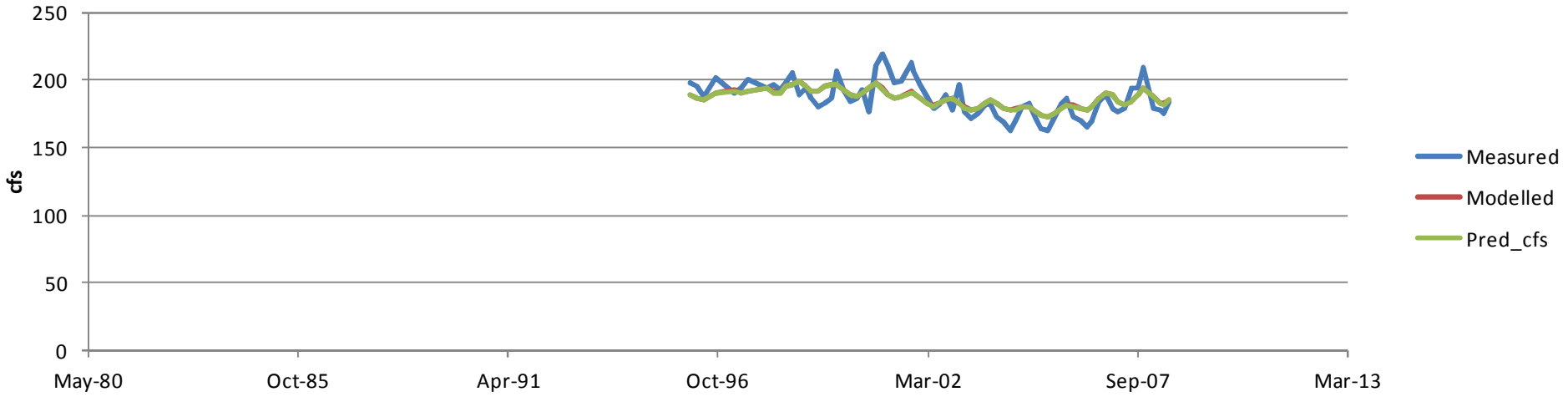



Eastern Snake Plain
Aquifer Model: Run
Modeled River
modeledSpgs

- Blue Lakes

IDAHO Department of Water Resources

Maximize BLUELK



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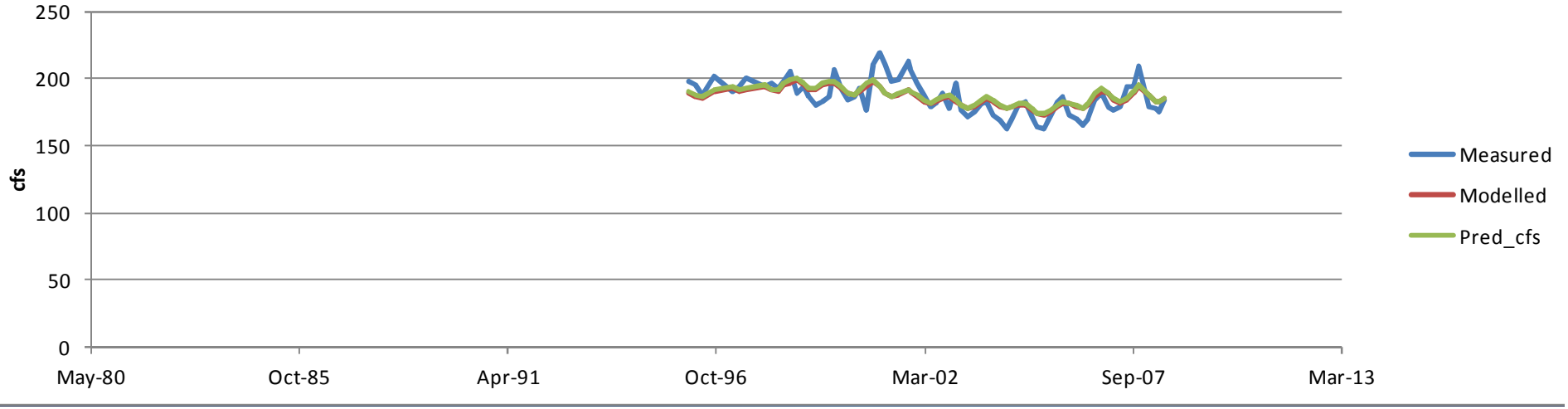
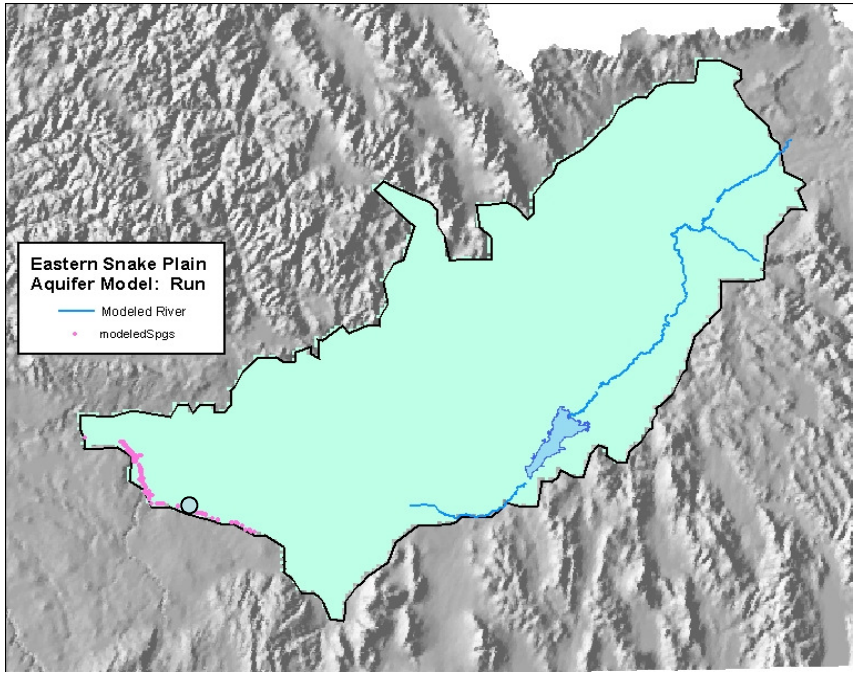
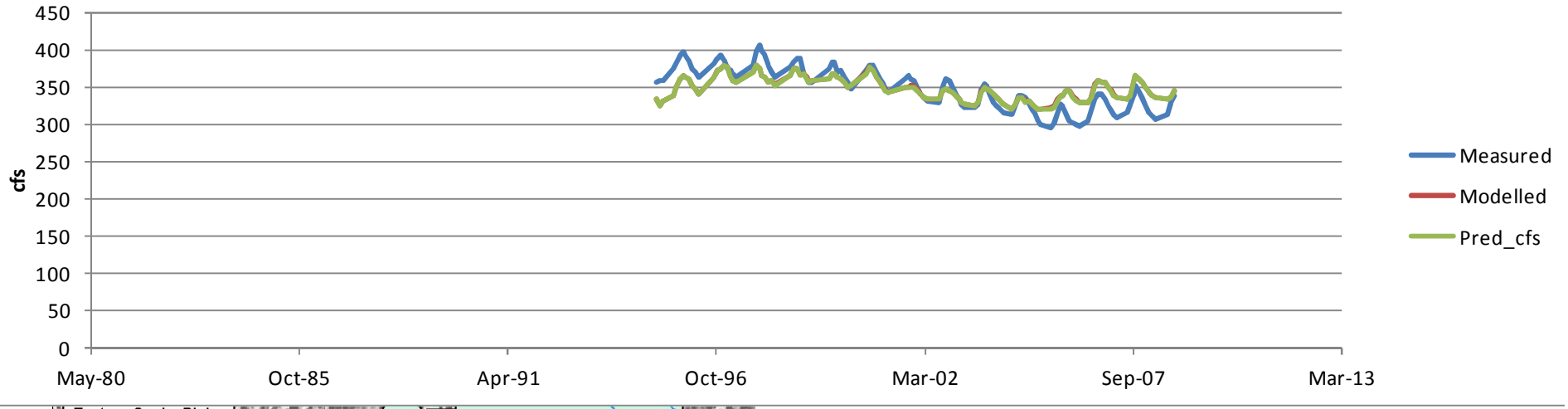




- Crystal Springs

Maximize CRYSTAL



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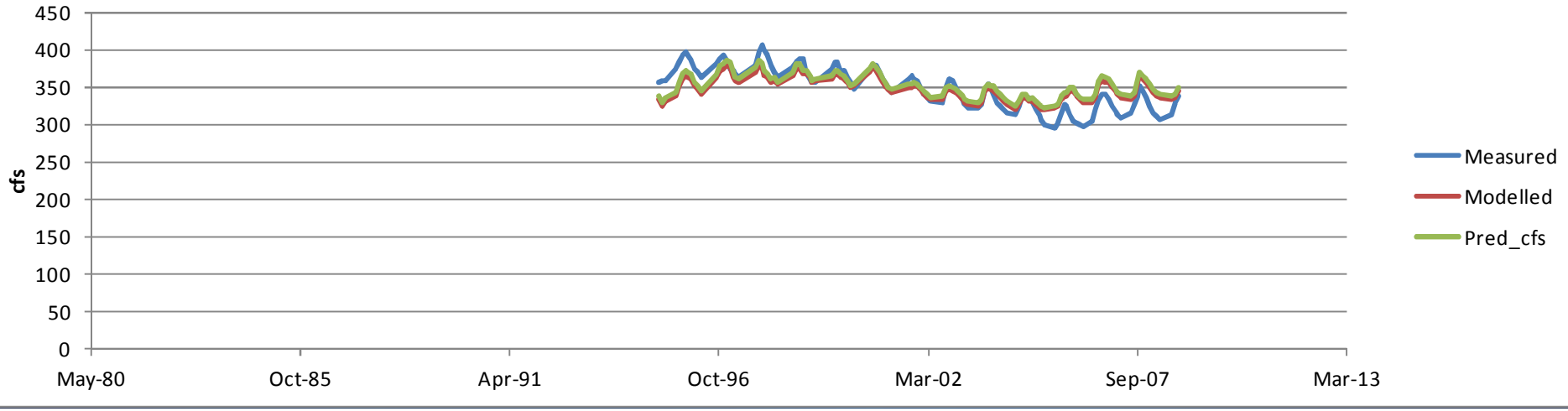
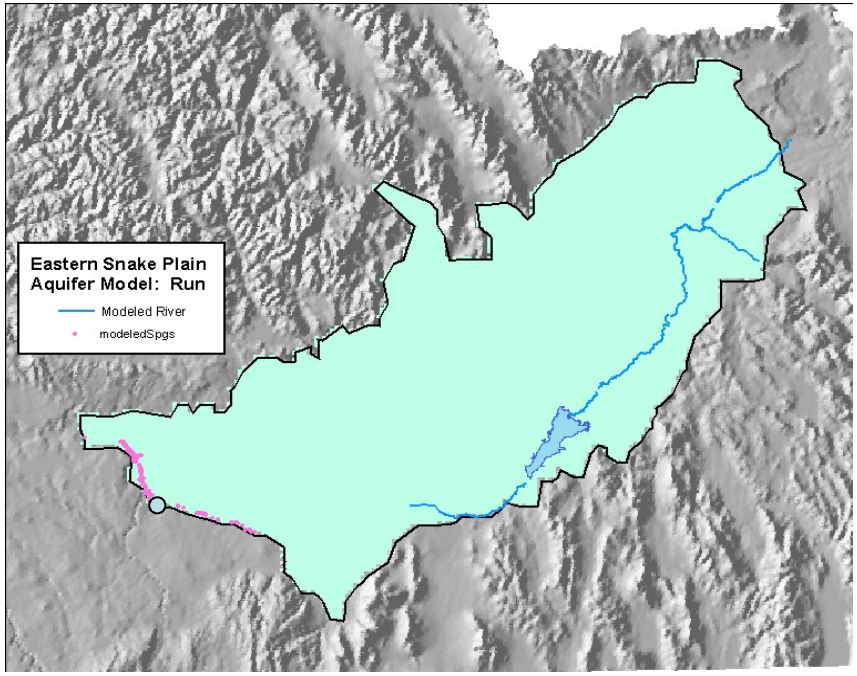
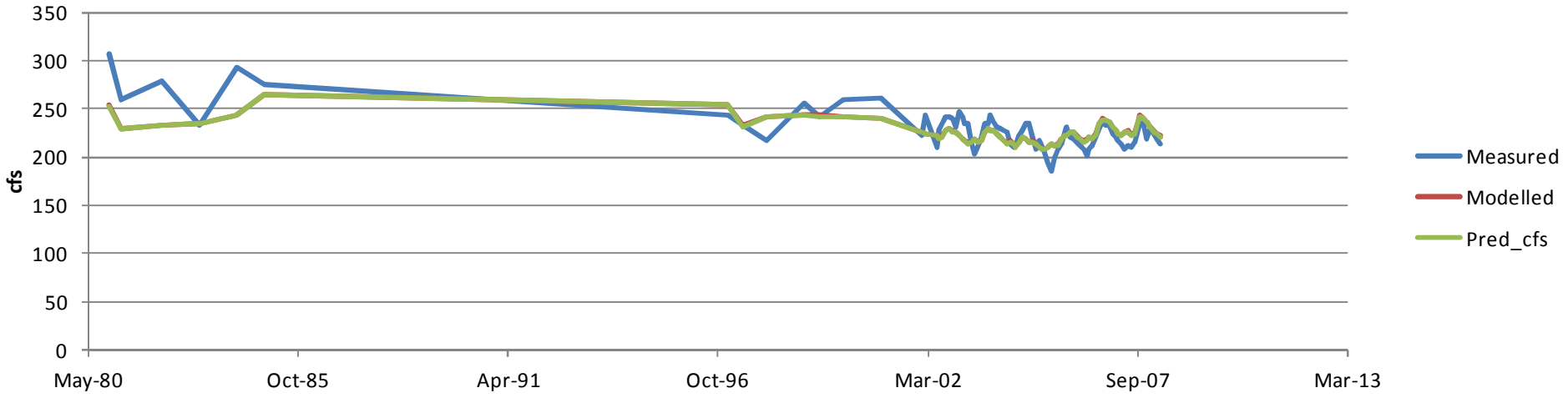



Eastern Snake Plain
Aquifer Model: Run
Modeled River
modeledSpgs

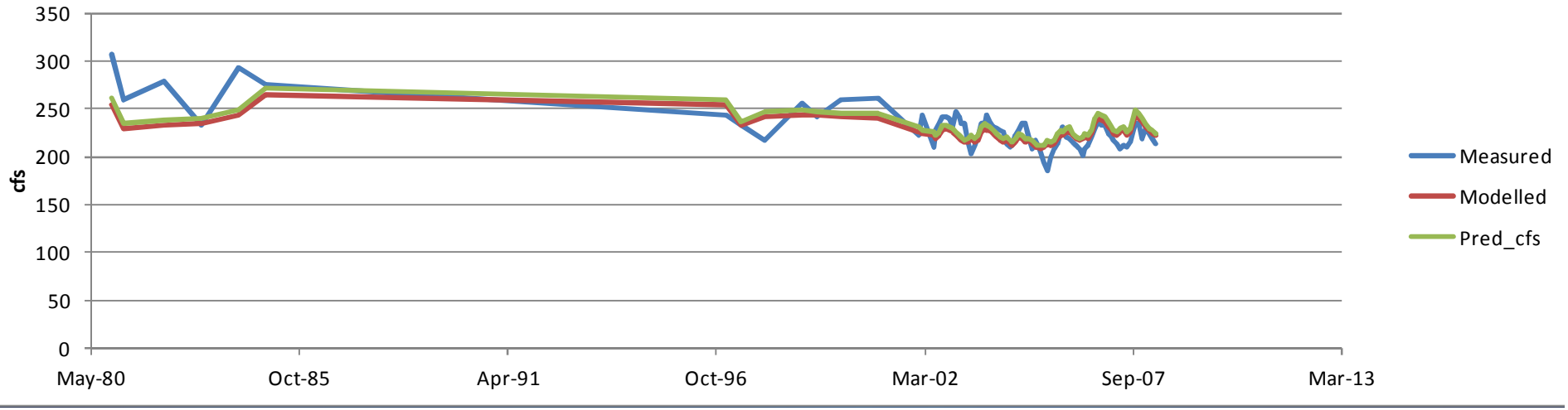
- Niagara

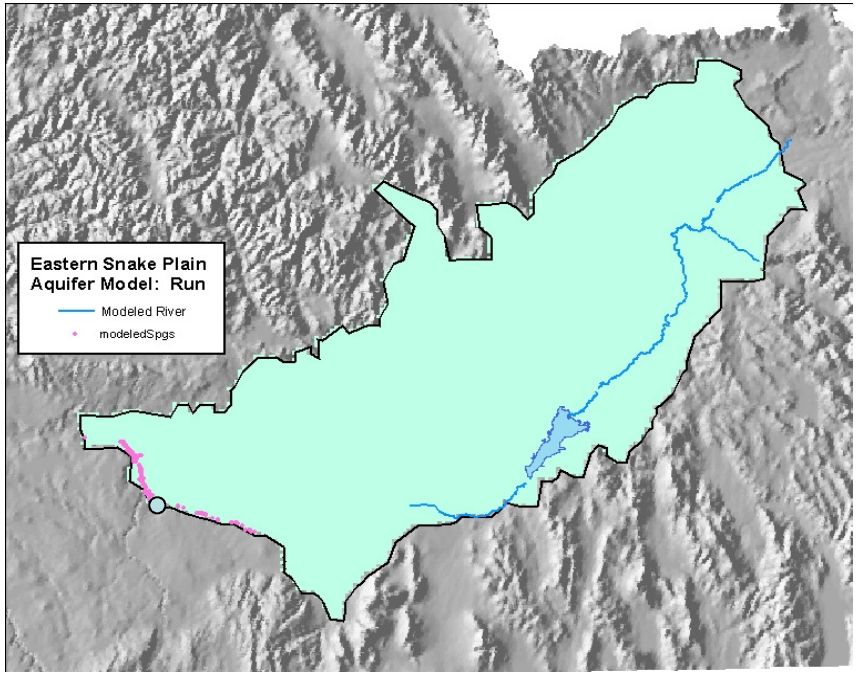
IDAHO Department of Water Resources

Maximize NIAGARA



Minimize NIAGARA

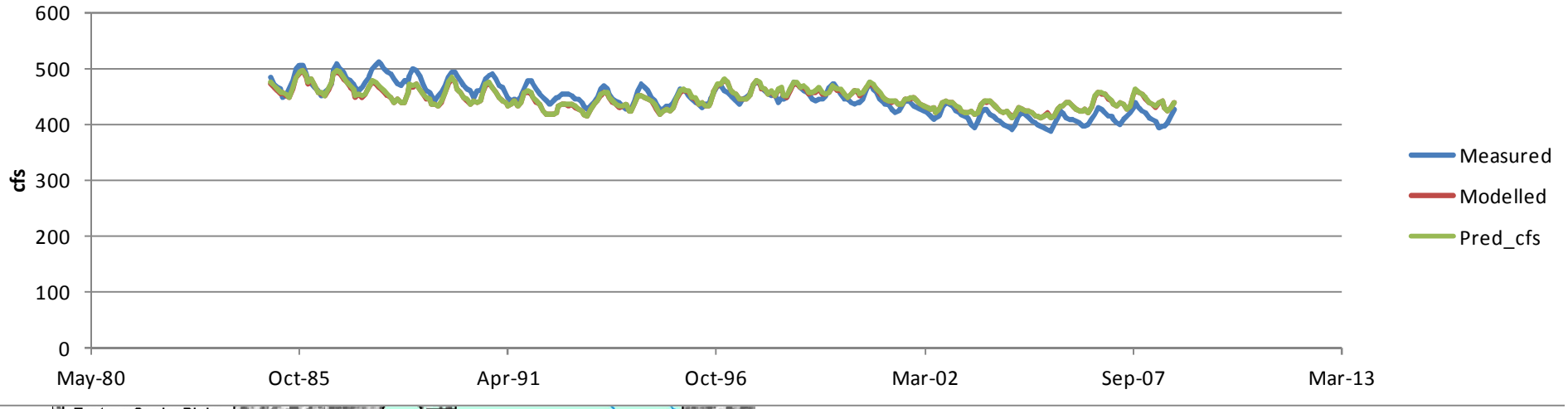



Eastern Snake Plain
Aquifer Model: Run
Modeled River
modeledSpgs

- Clear Lakes

IDAHO Department of Water Resources

Maximize CLEARLK



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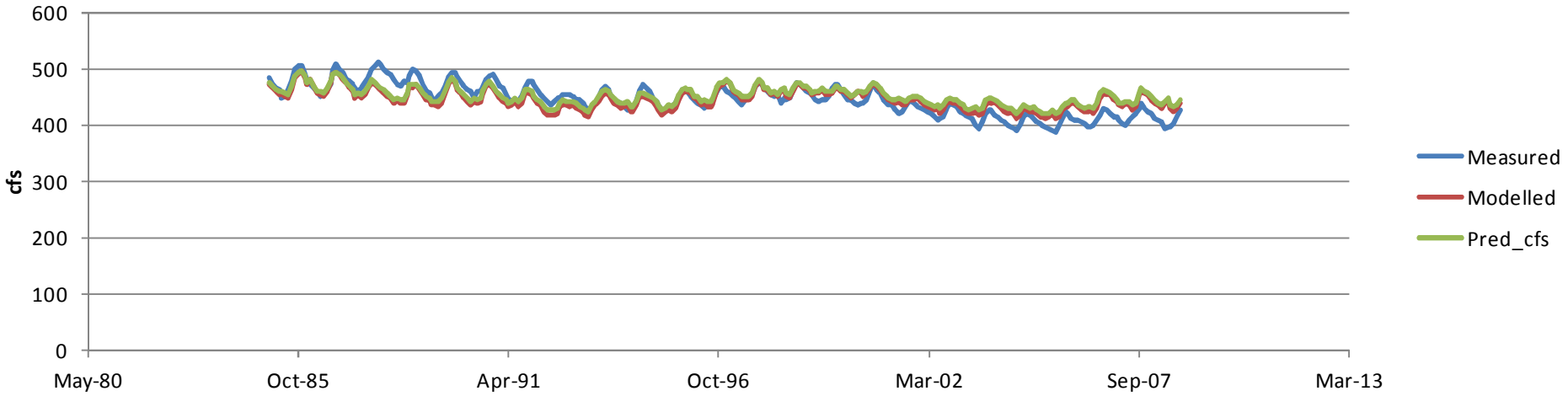
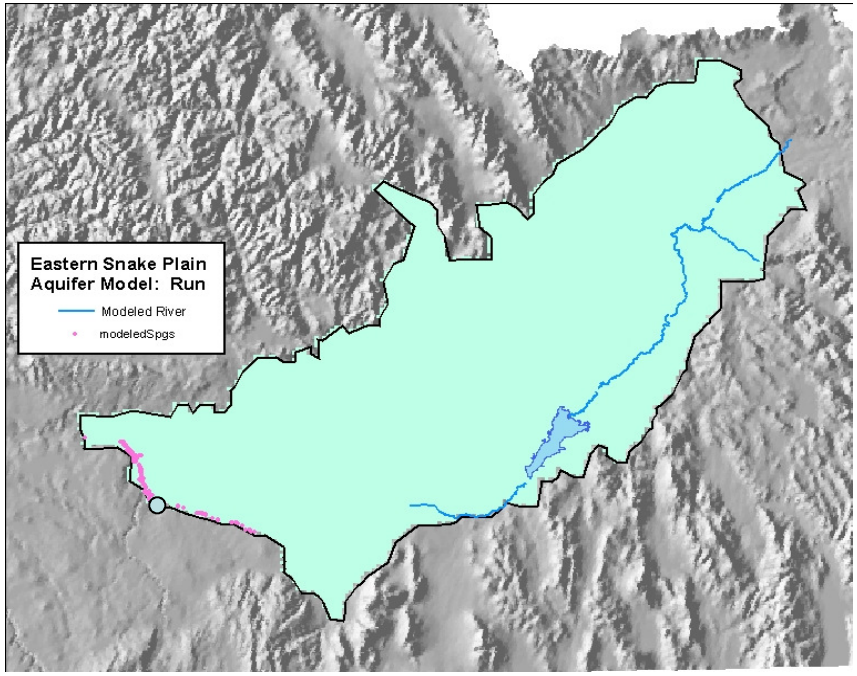
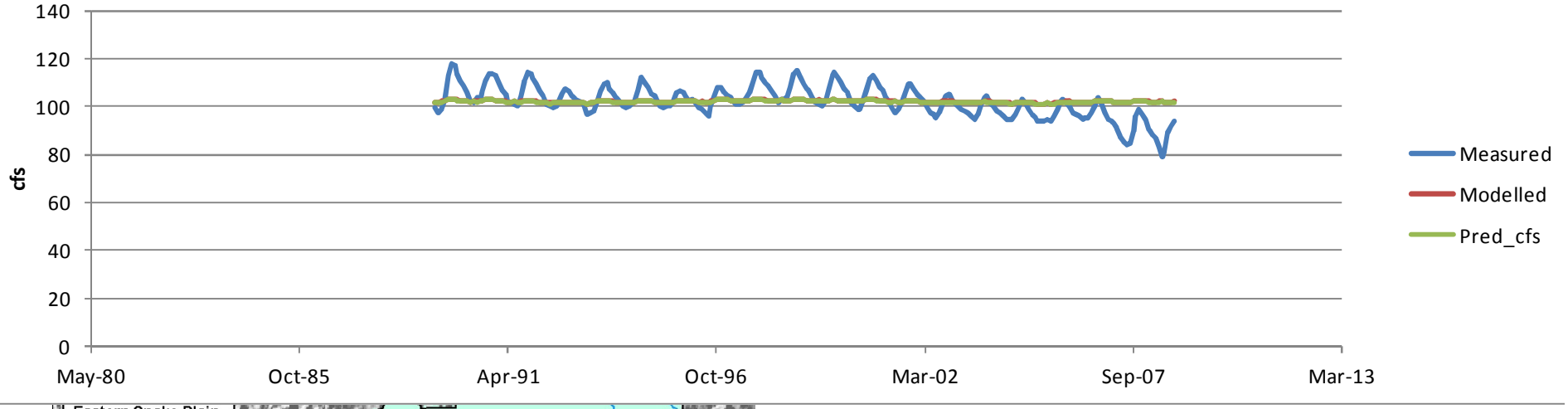




- Briggs Spring

Maximize BRIGGS



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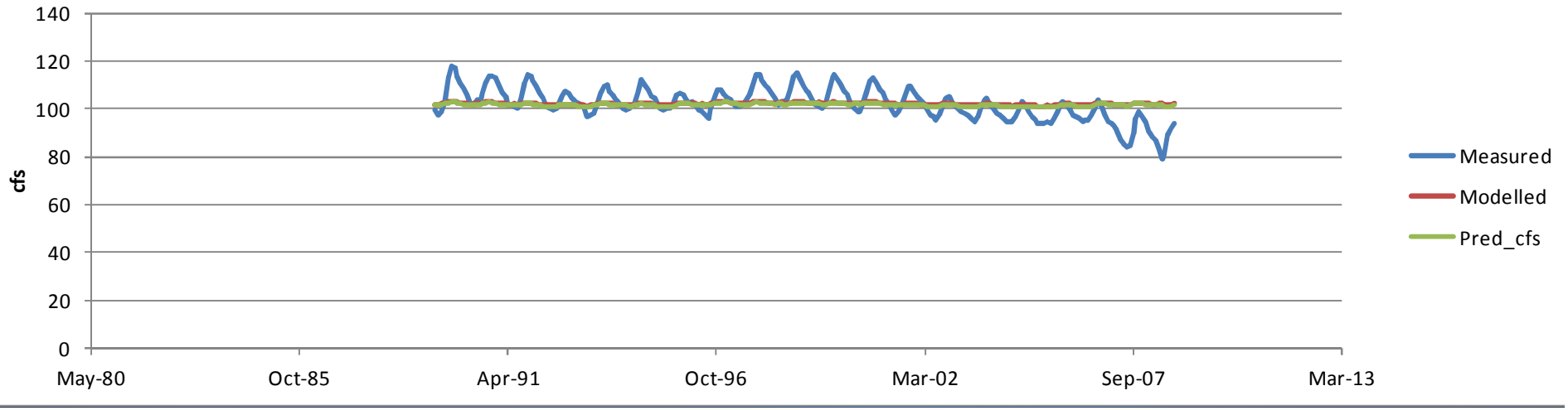
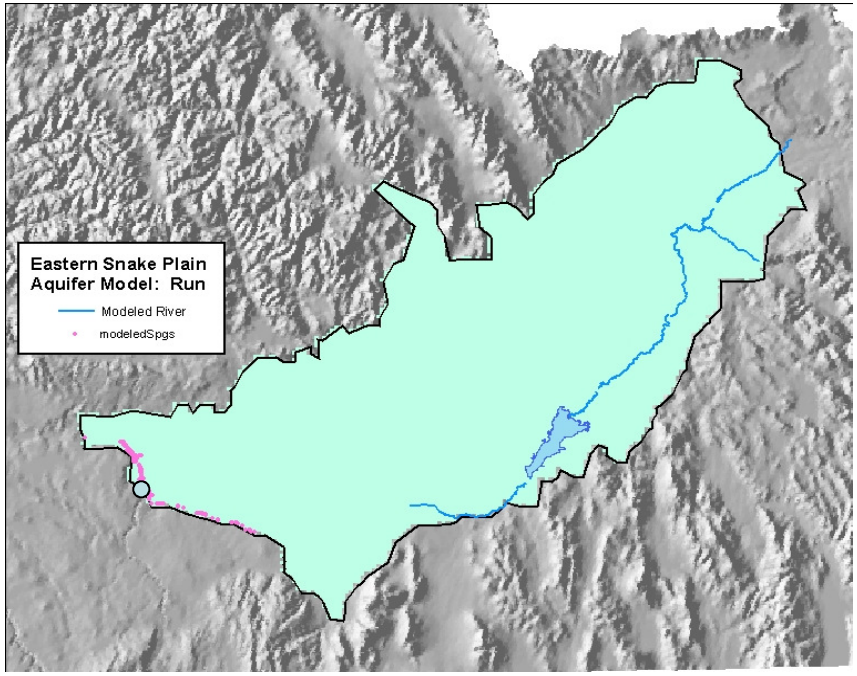
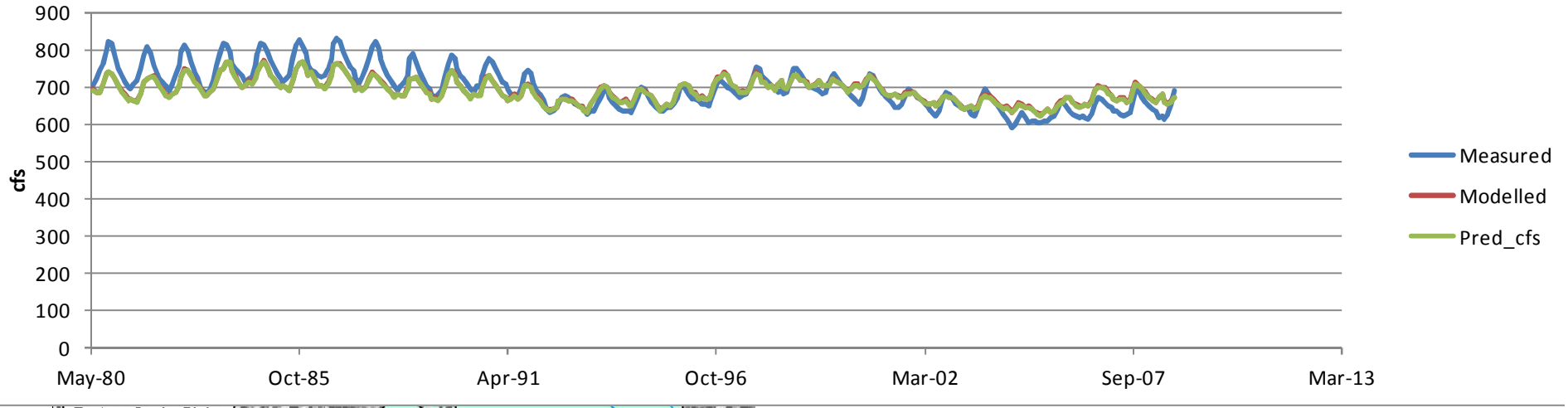




- Box Canyon Spring

IDAHO Department of Water Resources

Maximize BOX



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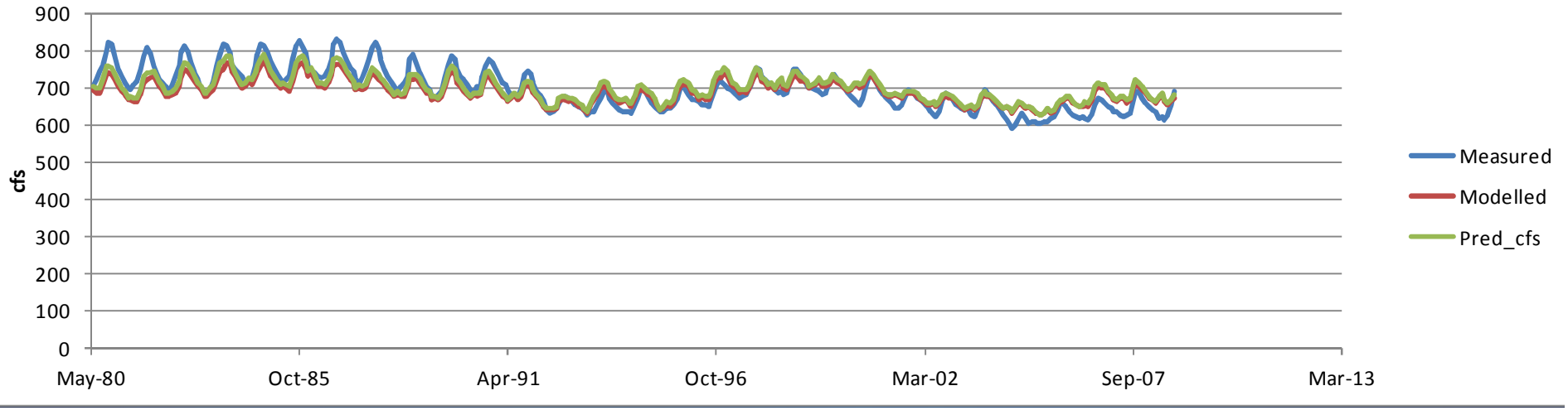
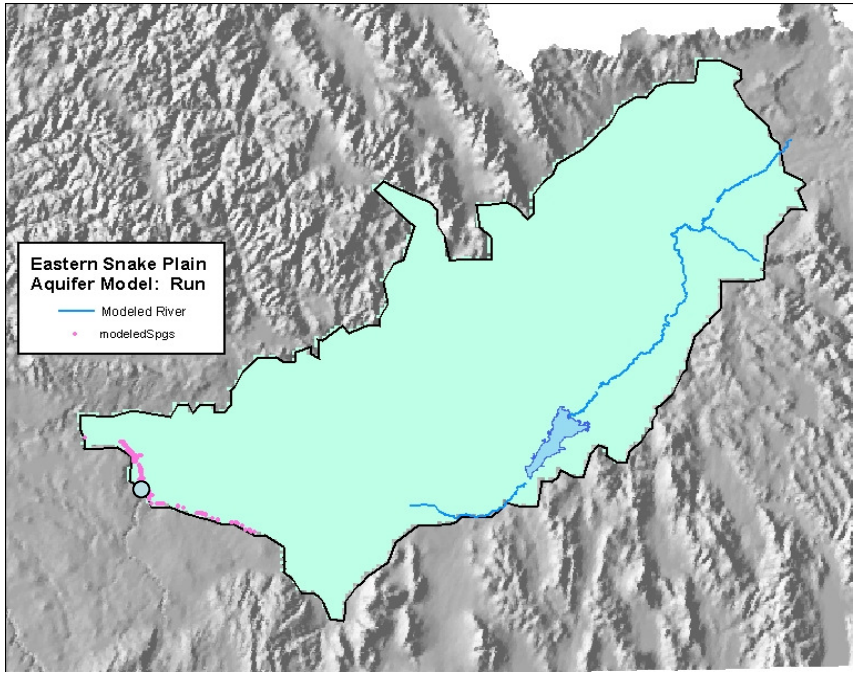
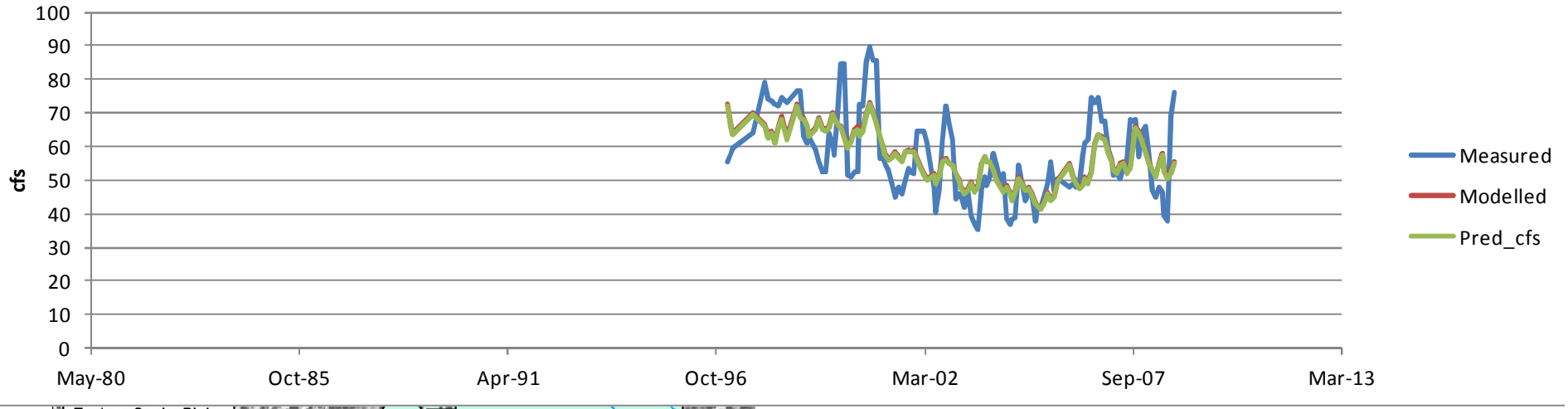


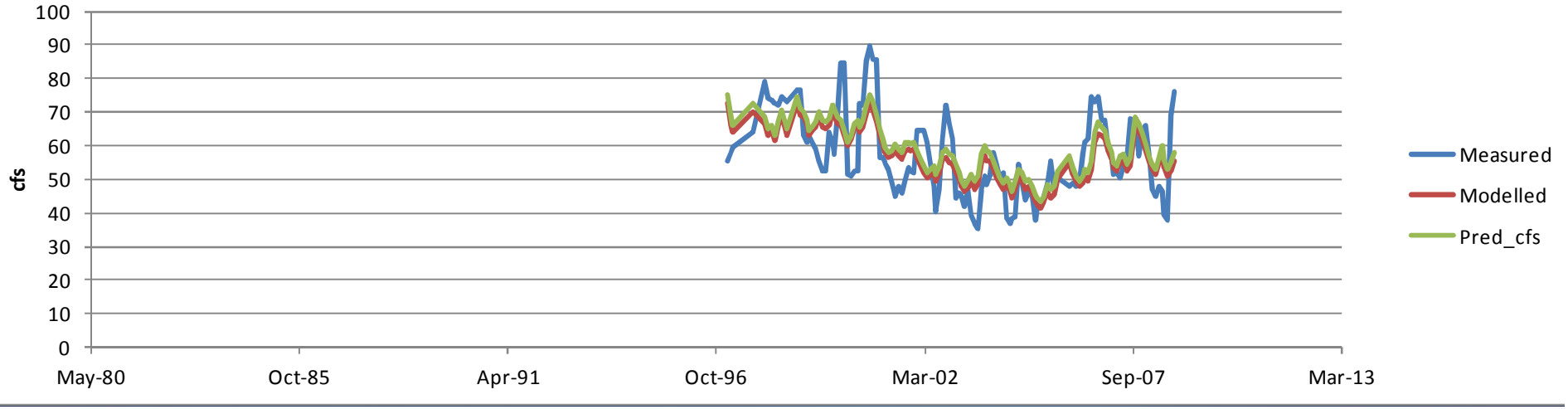


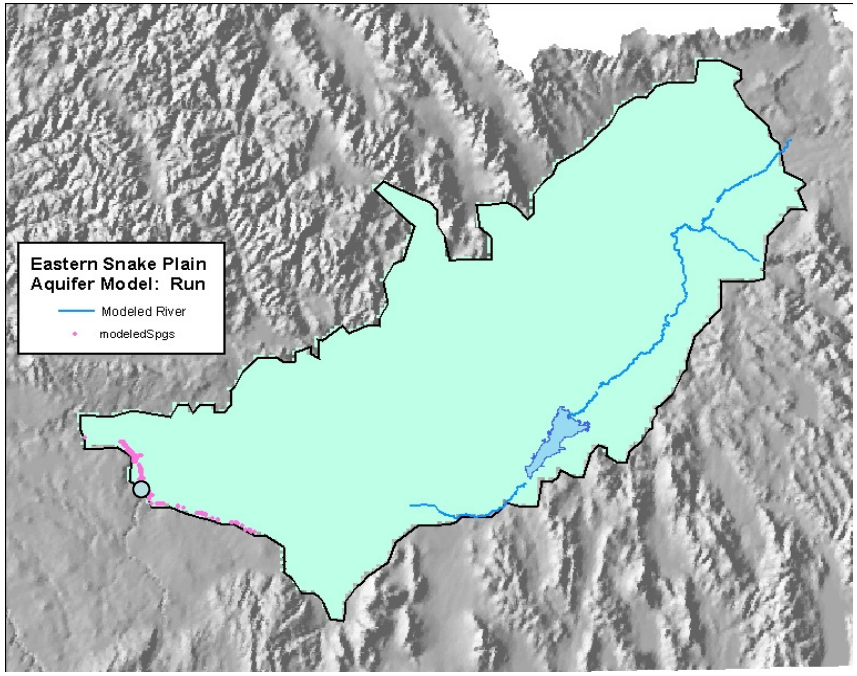
- Sand Springs

Maximize SANDSPGS



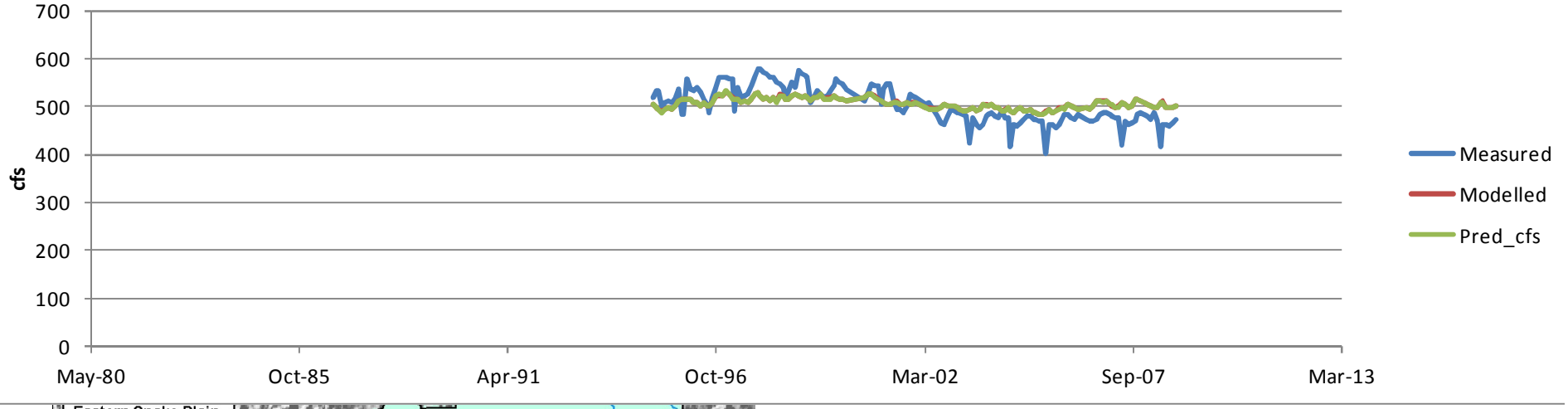
Minimize SANDSPGS



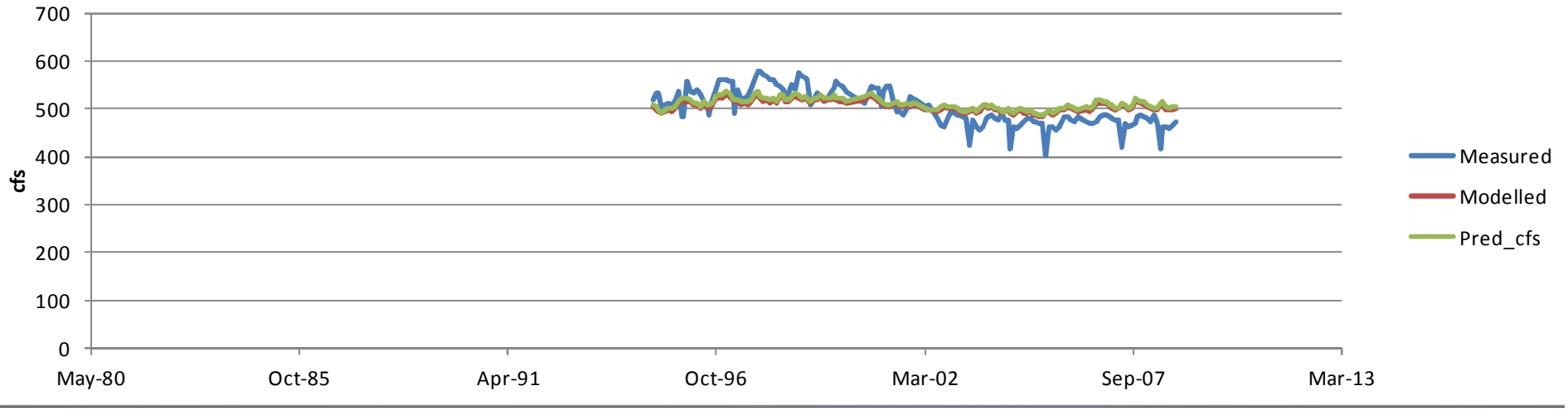


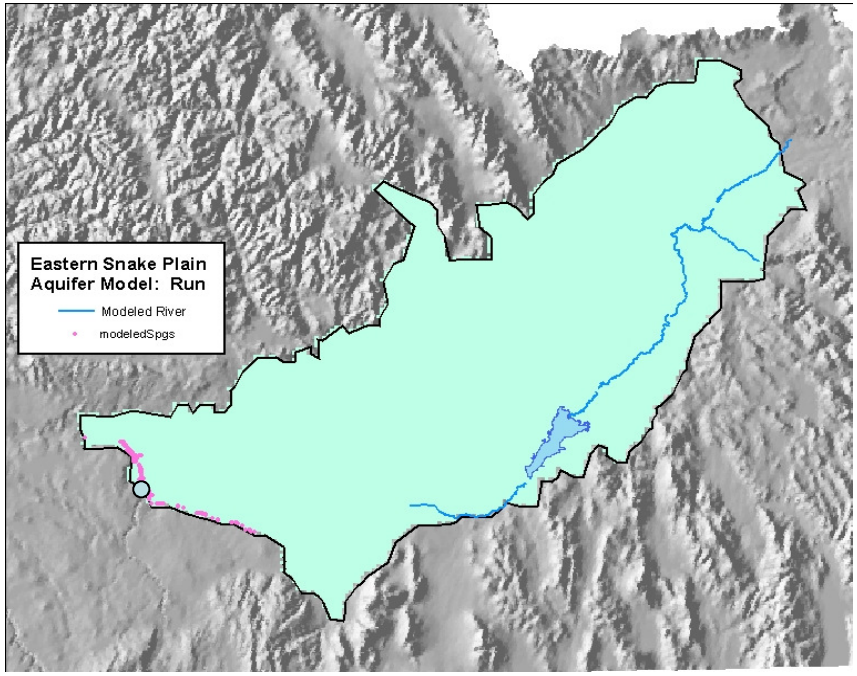
- Thousand Springs

Maximize KSPGS



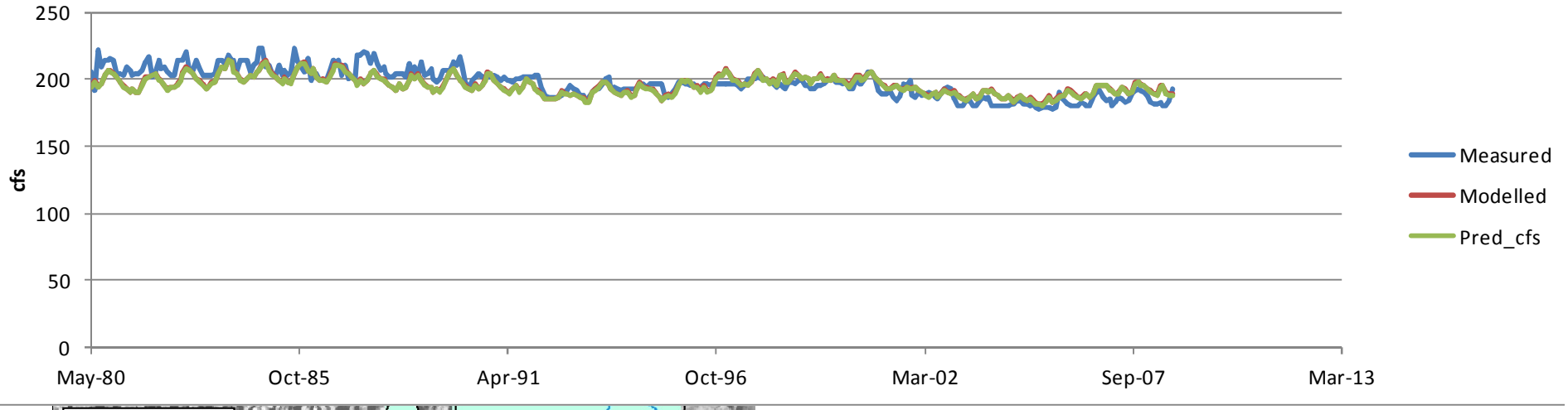
Minimize KSPGS



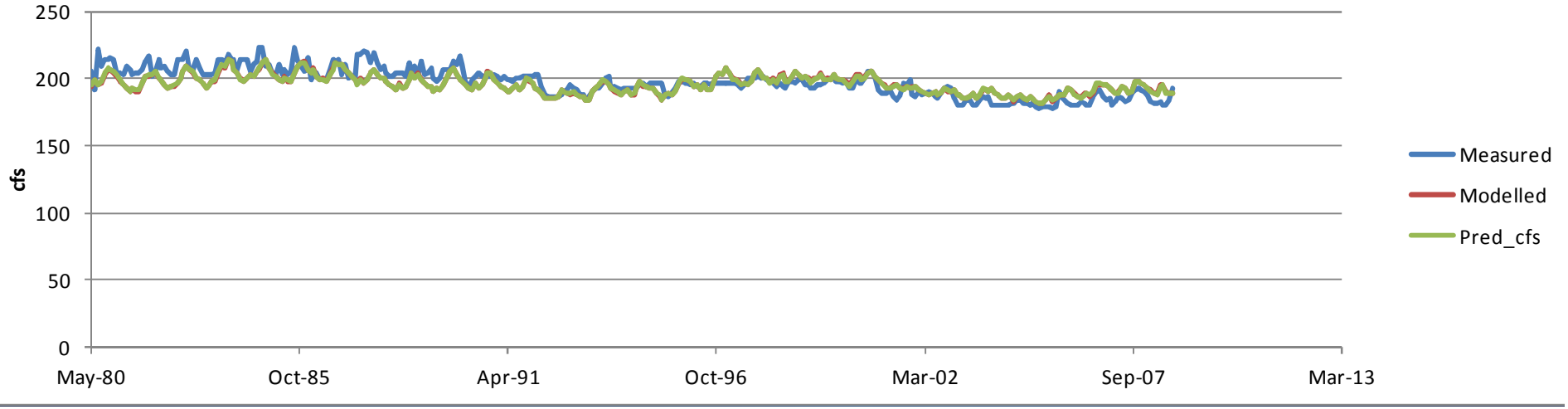


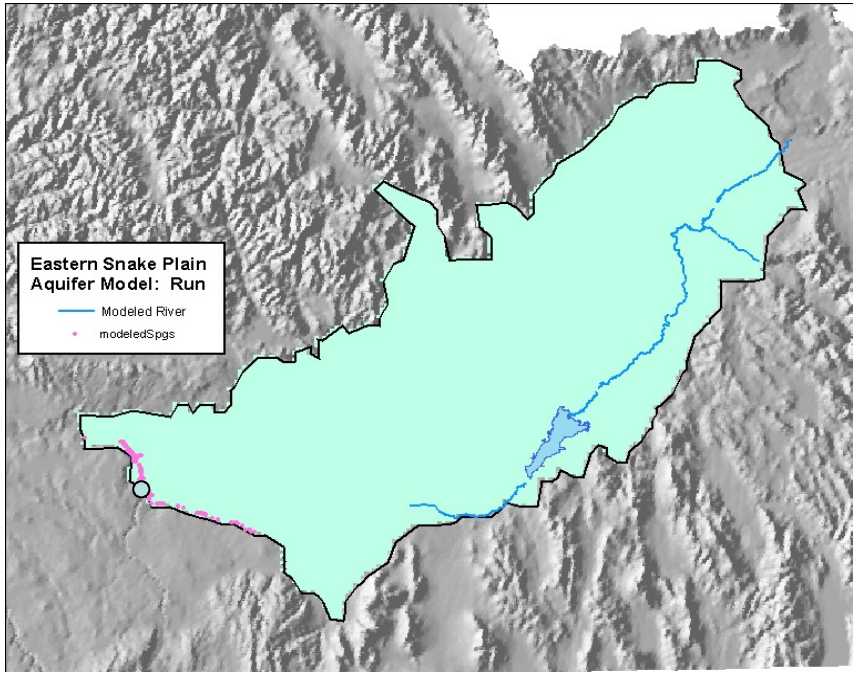
- Ntl Fish Hatchery

Maximize NFHATCH



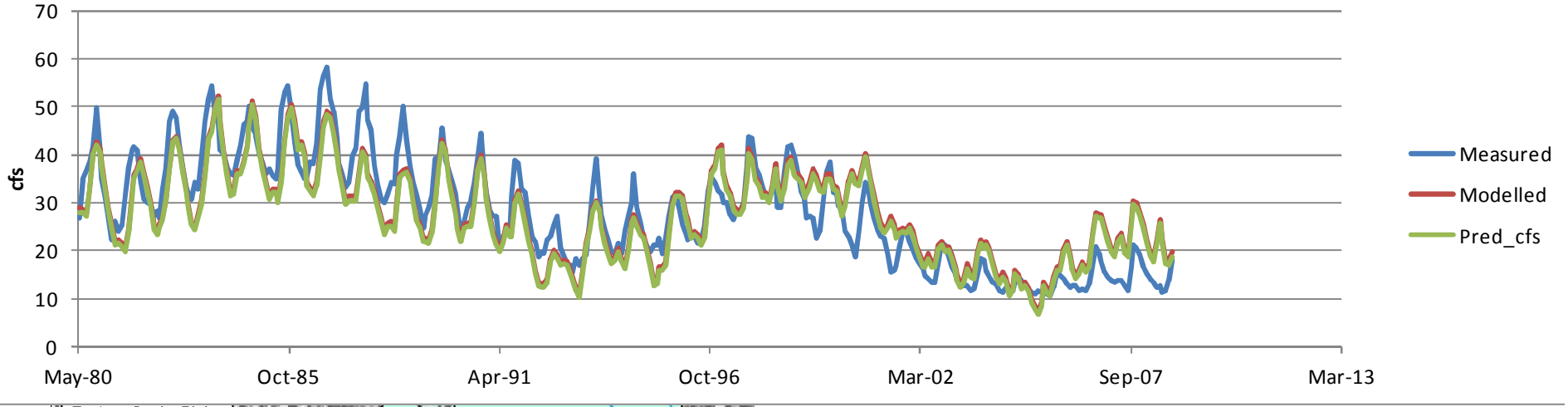
Minimize NFHATCH



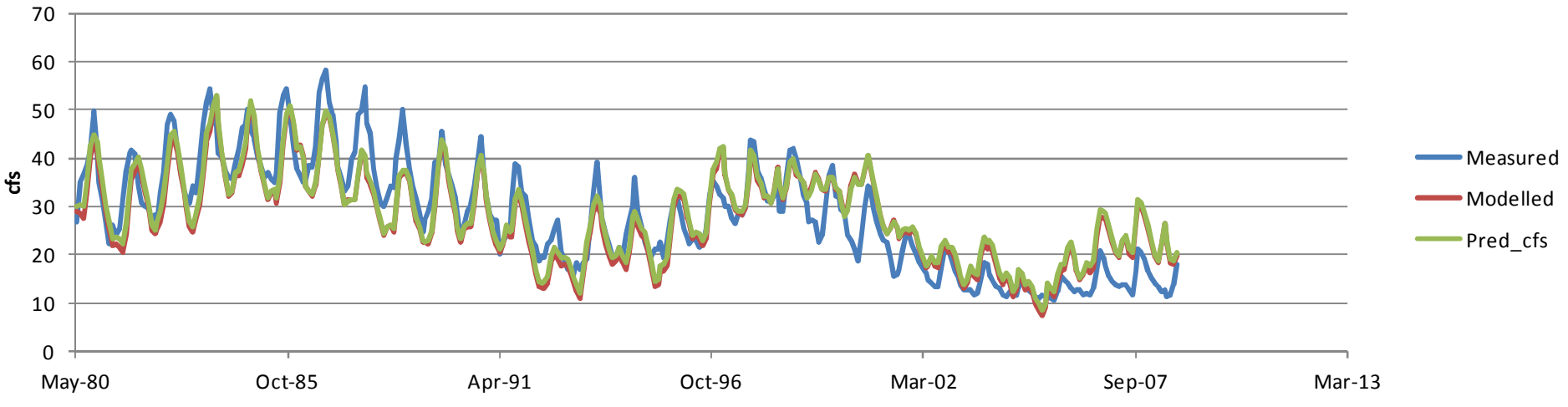


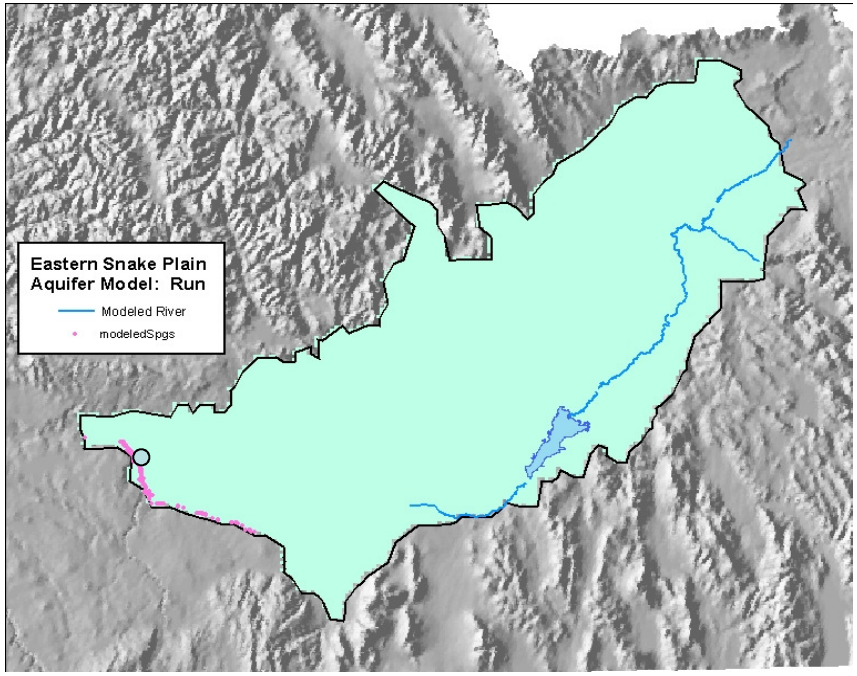
- Rangen Spring

Maximize RANGEN



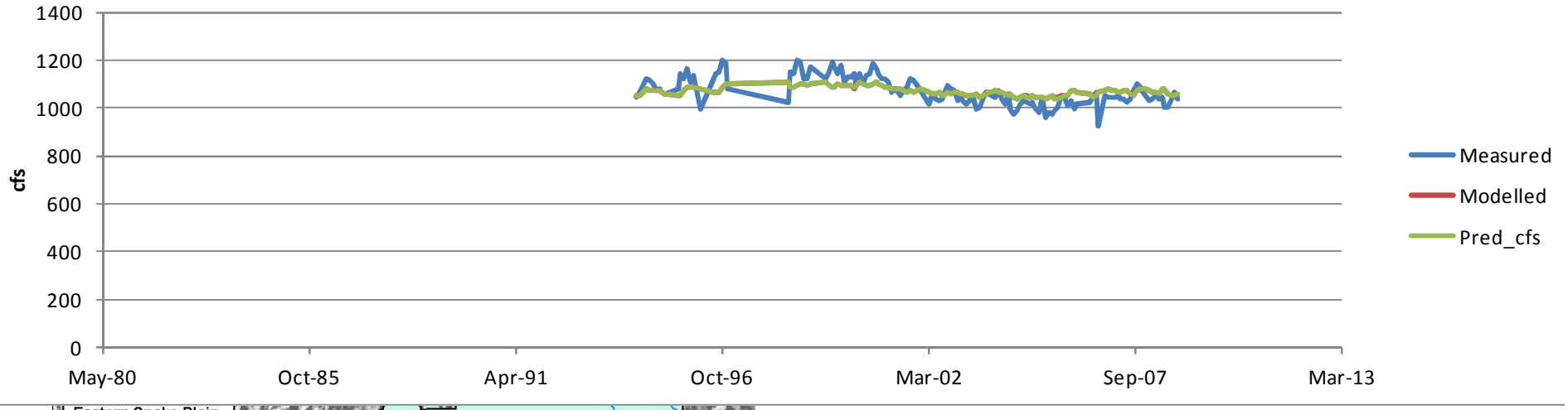
Minimize RANGEN




Eastern Snake Plain
Aquifer Model: Run
Modeled River
modeledSpgs

- Malad

Maximize MALAD



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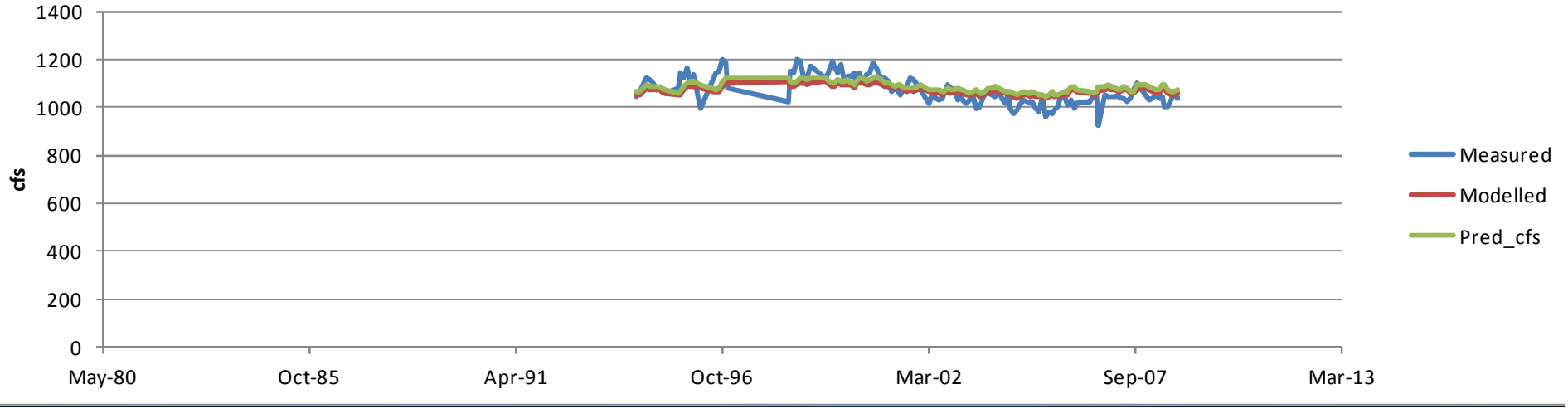
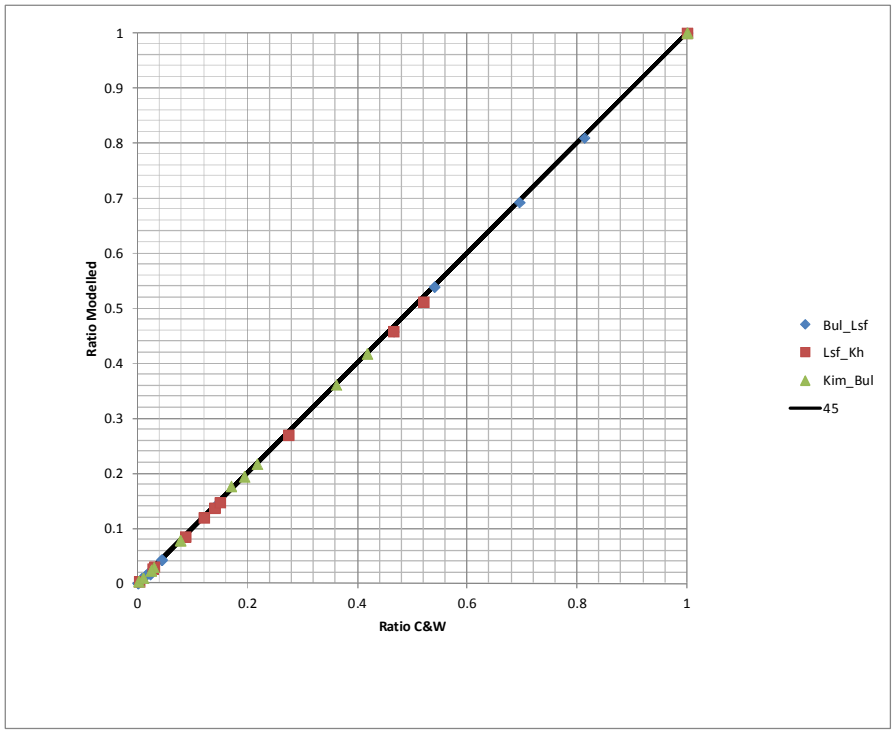
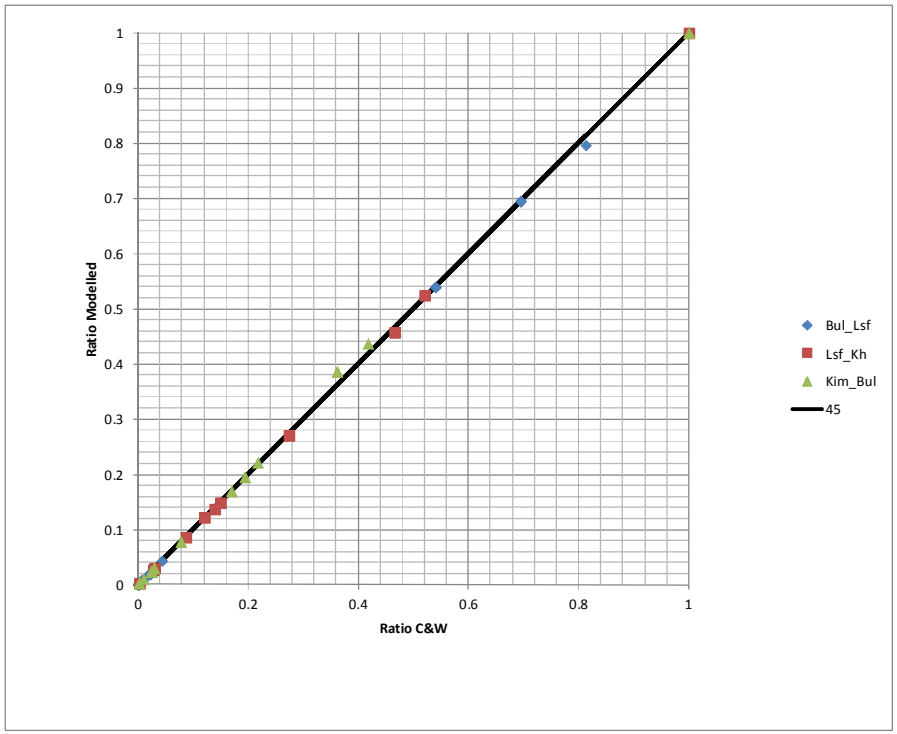


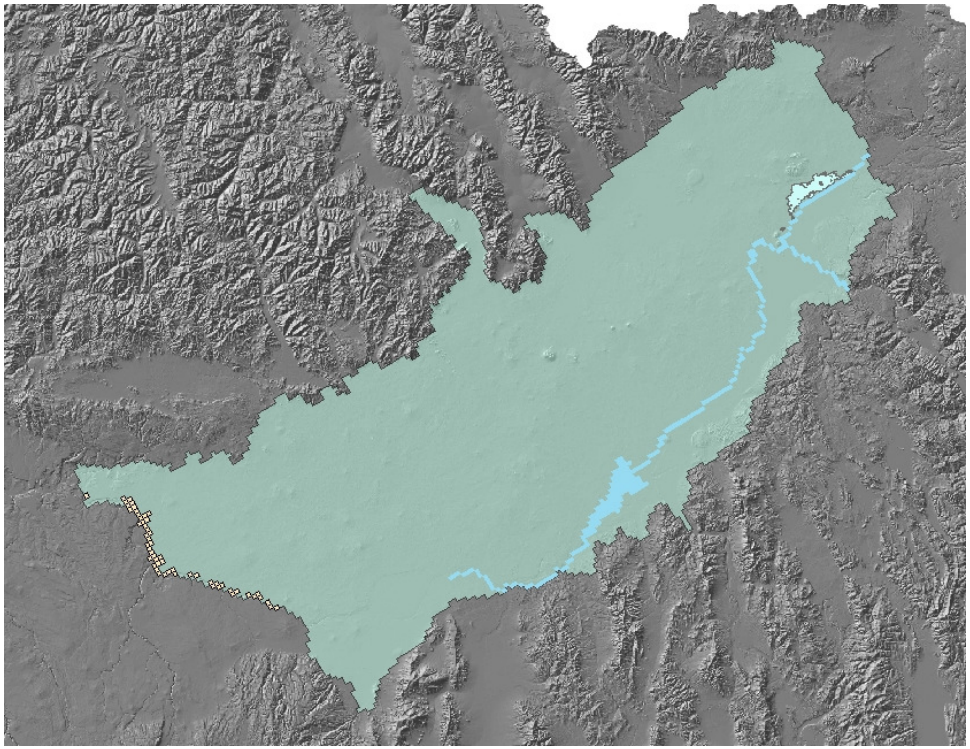
Group C Springs

Maximize



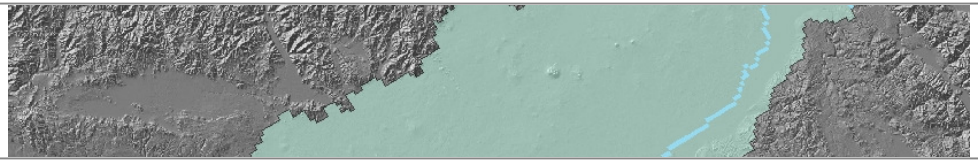
Minimize

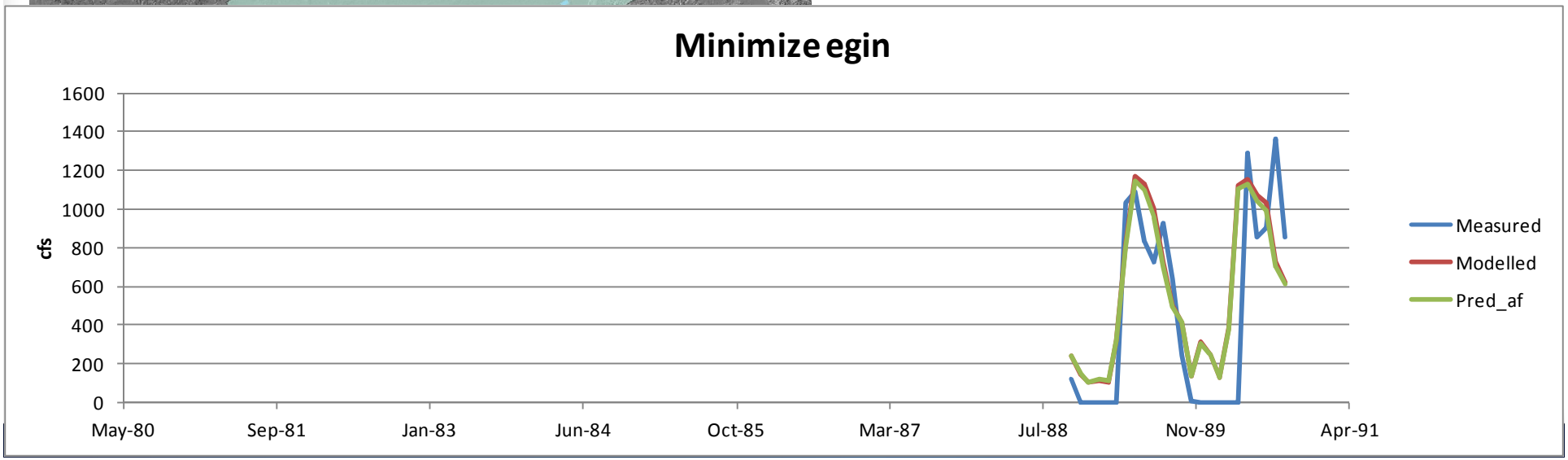


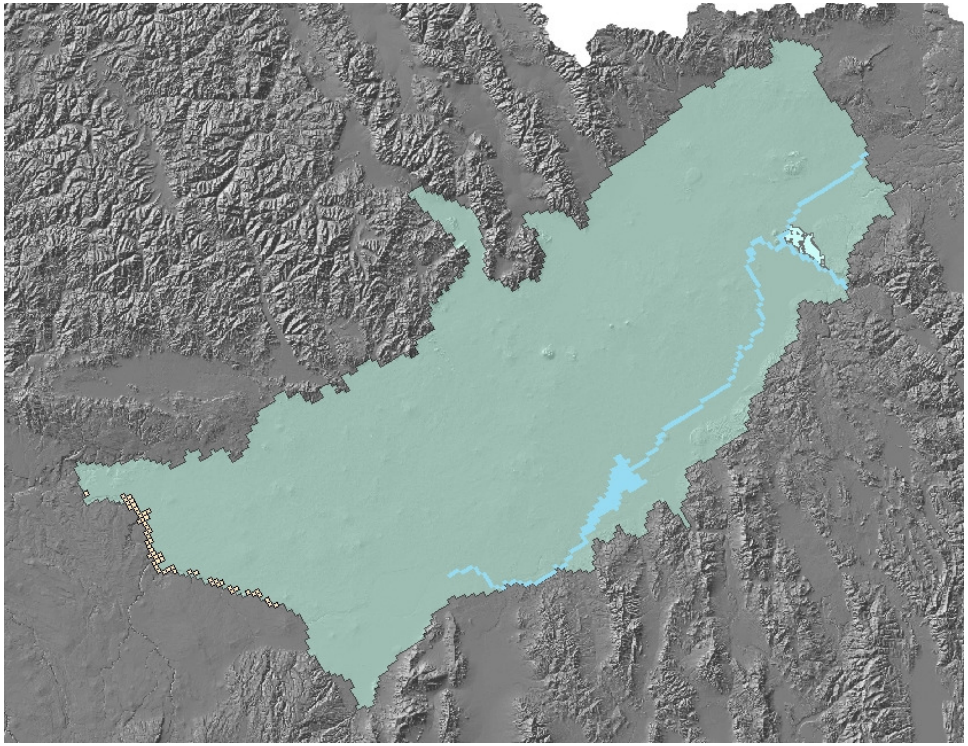


- Egin returns

IDAHO Department of Water Resources

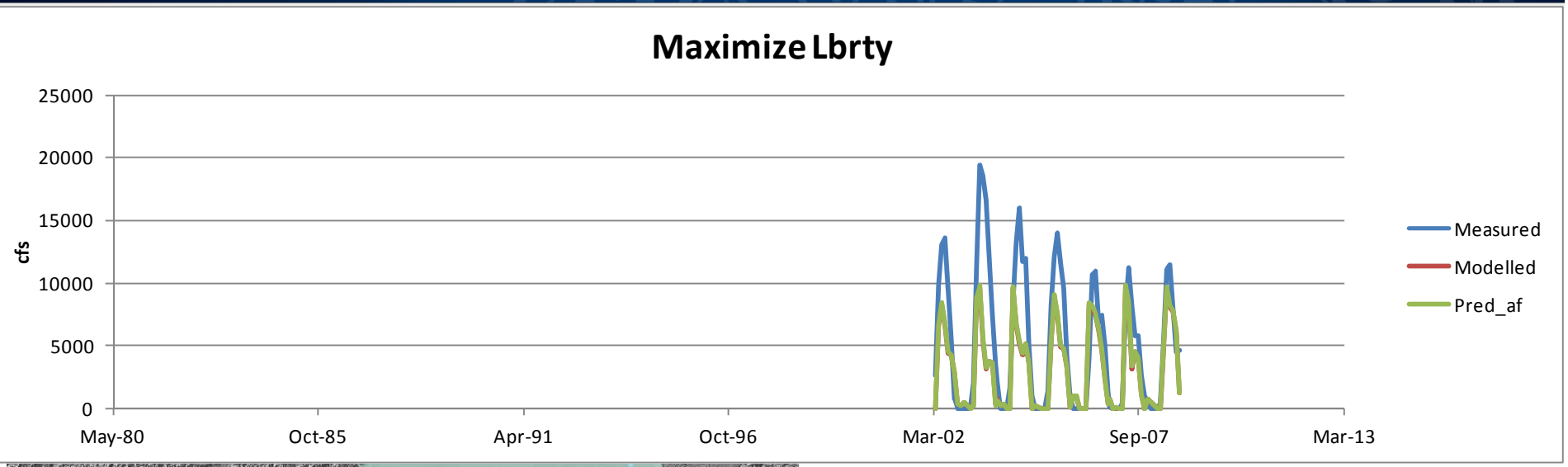


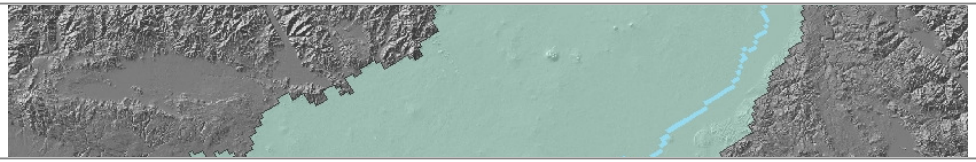


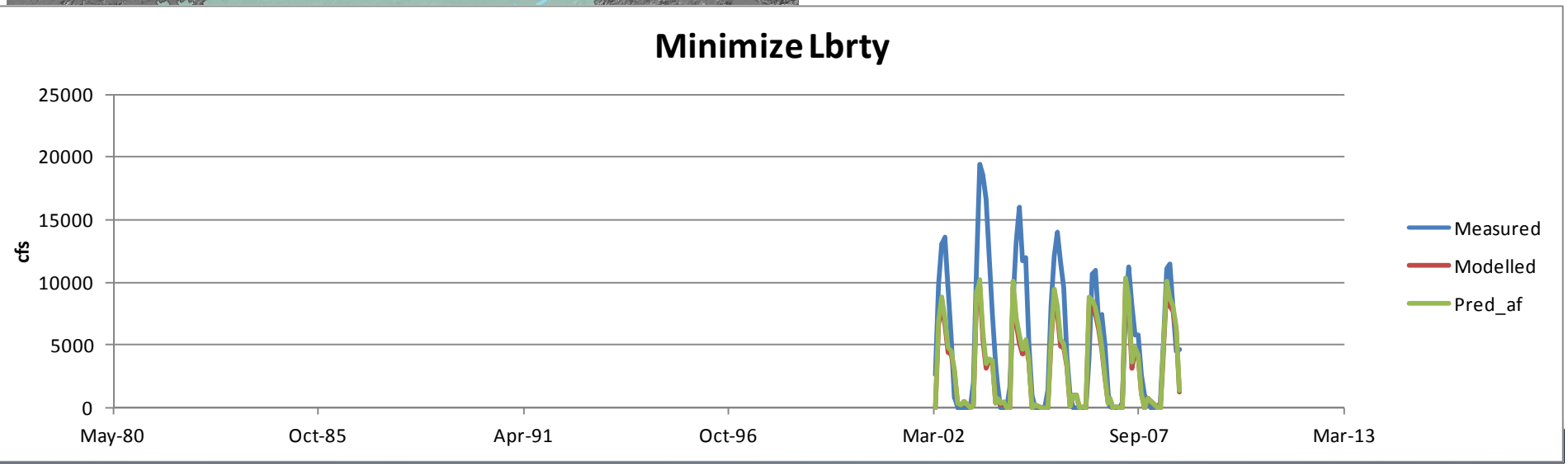


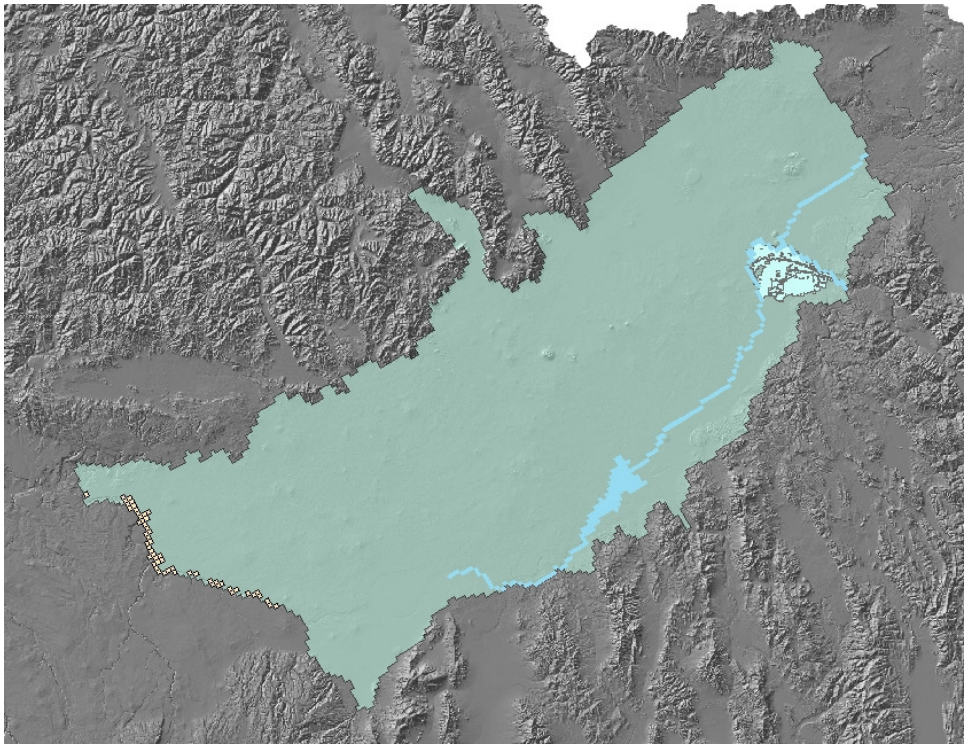
- Liberty returns

IDAHO Department of Water Resources



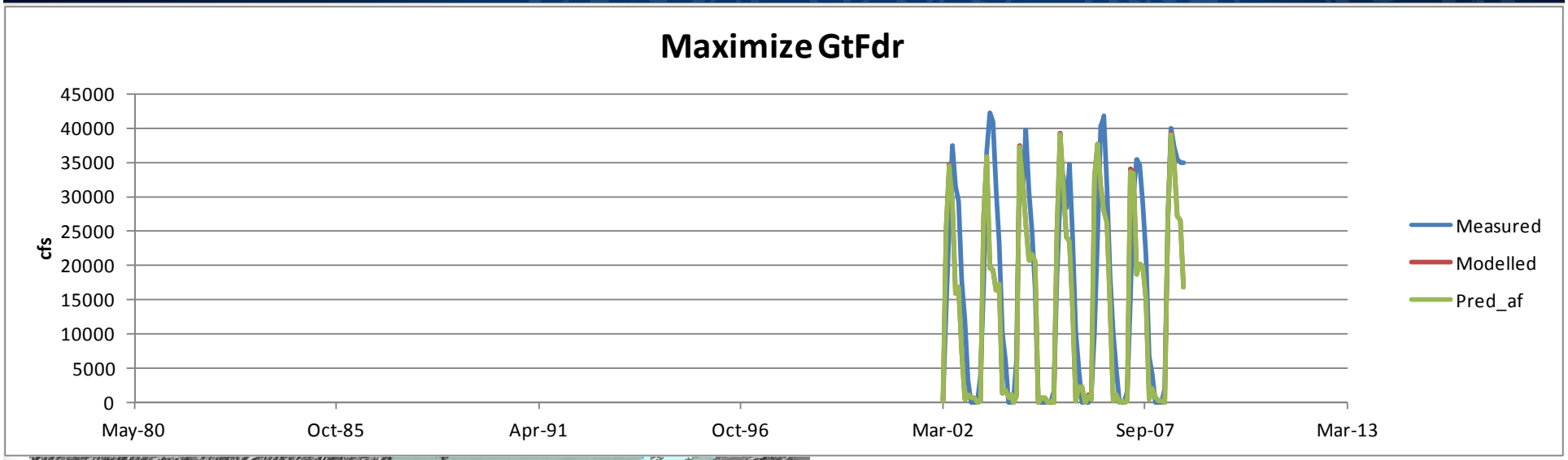


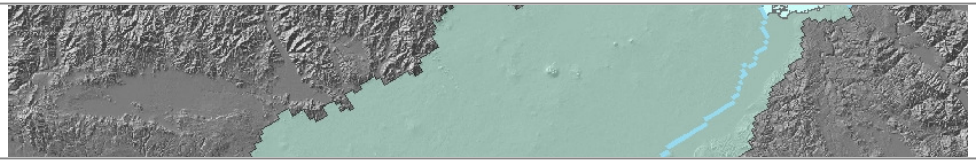


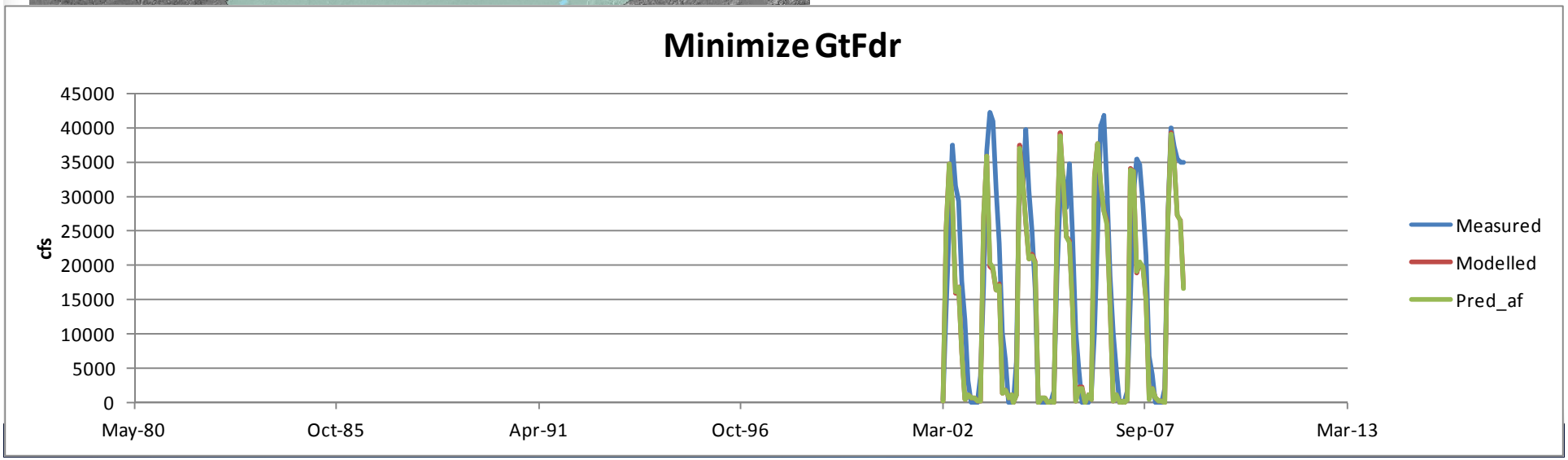


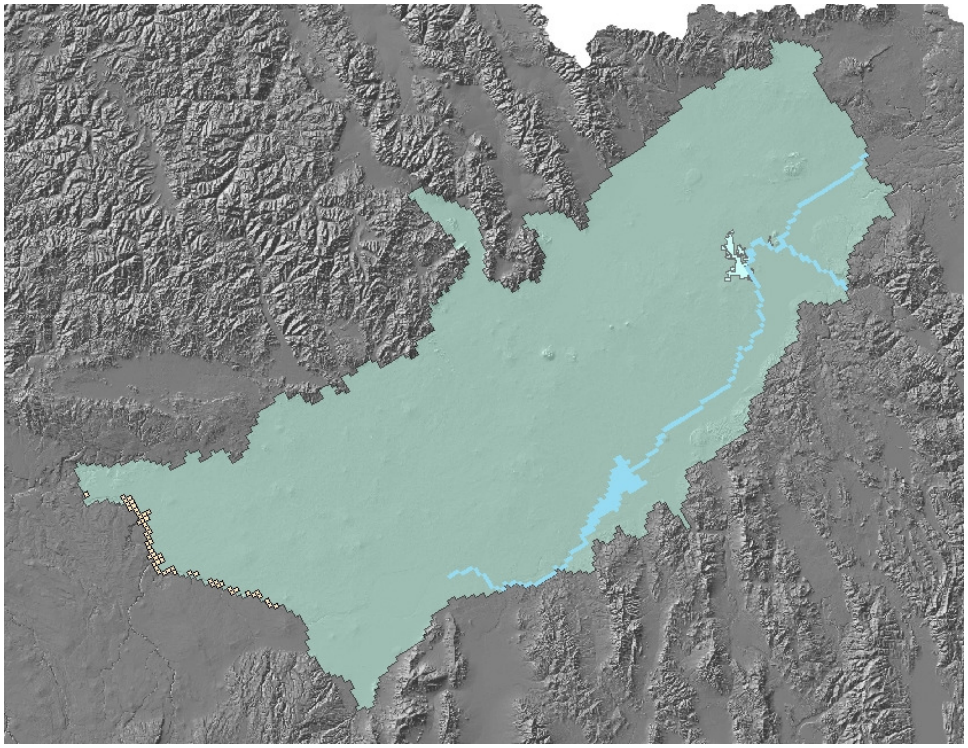
- Great Feeder Group returns

IDAHO Department of Water Resources



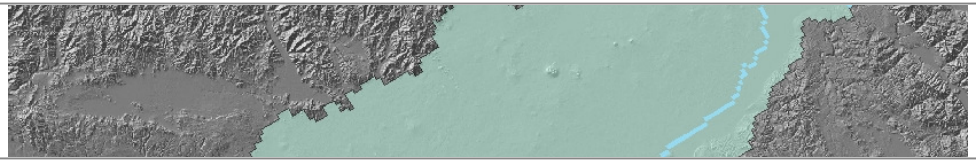


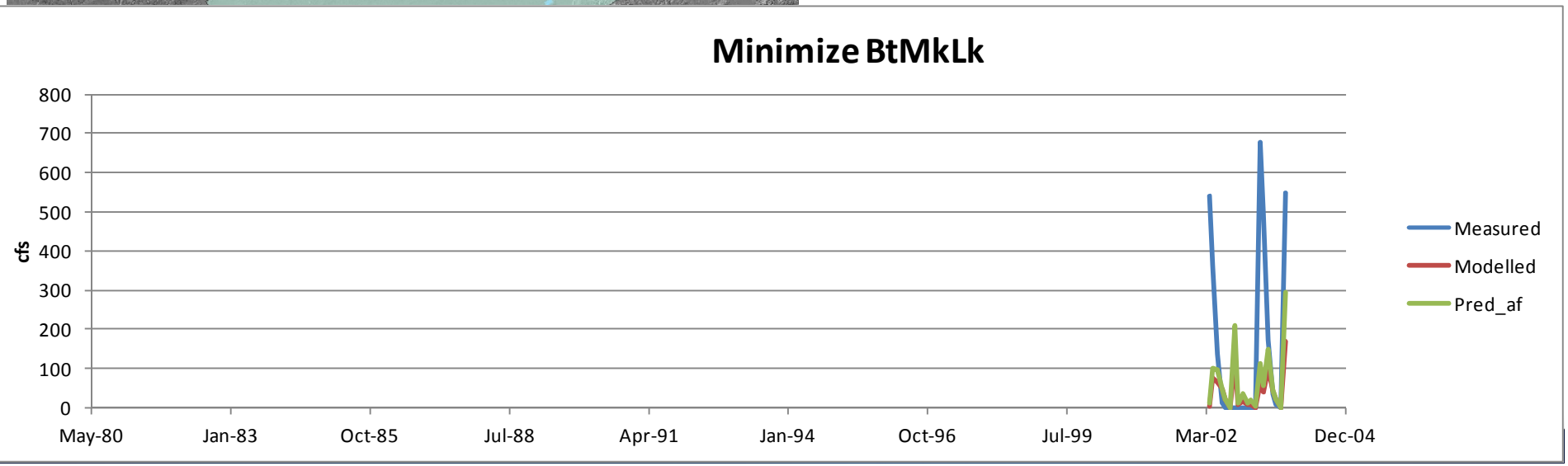


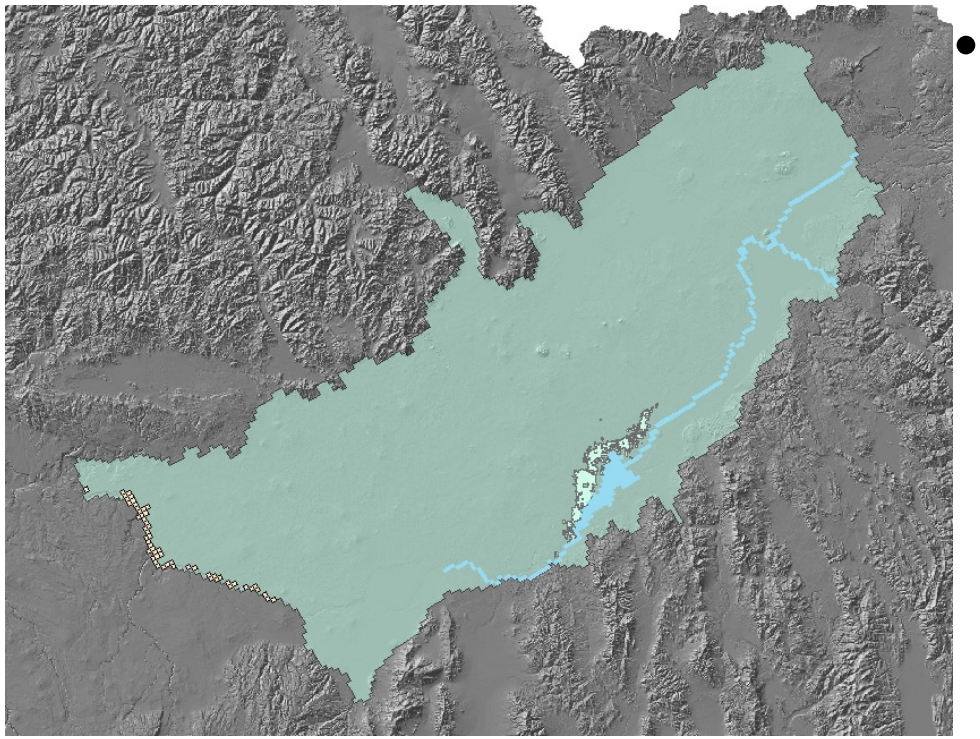


- Butte-Market Lake returns

IDAHO Department of Water Resources







- Aberdeen-Springfield returns

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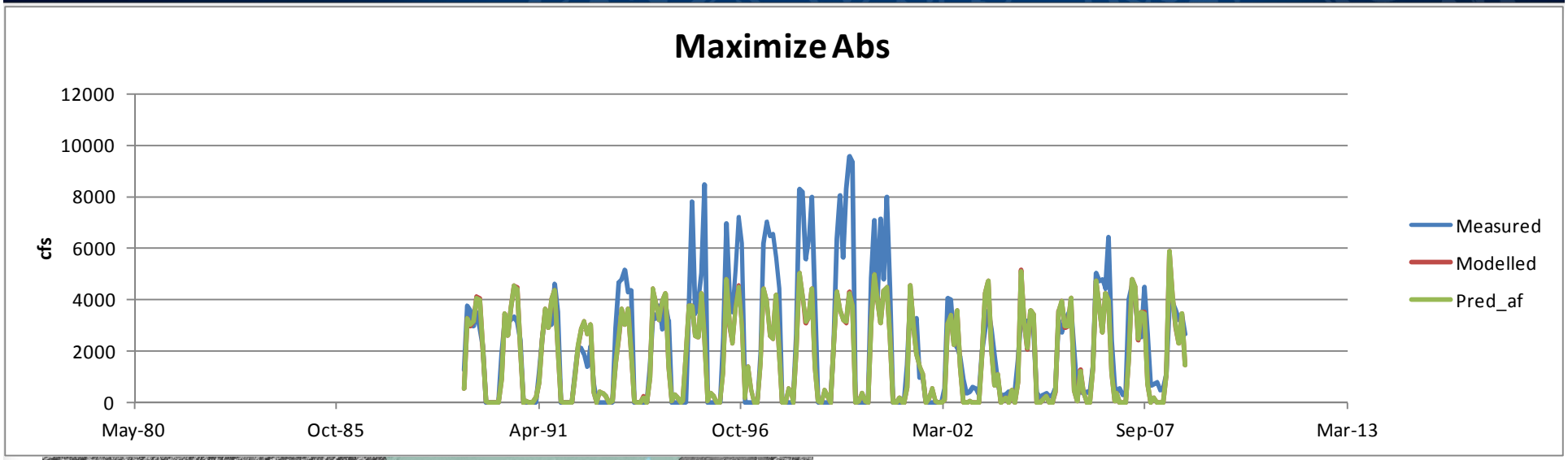

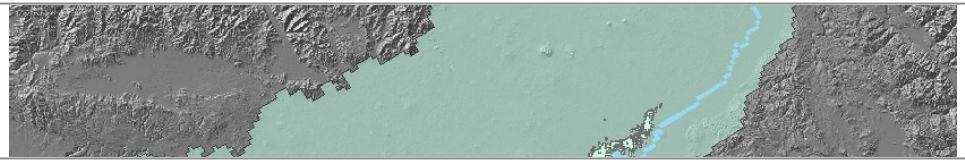

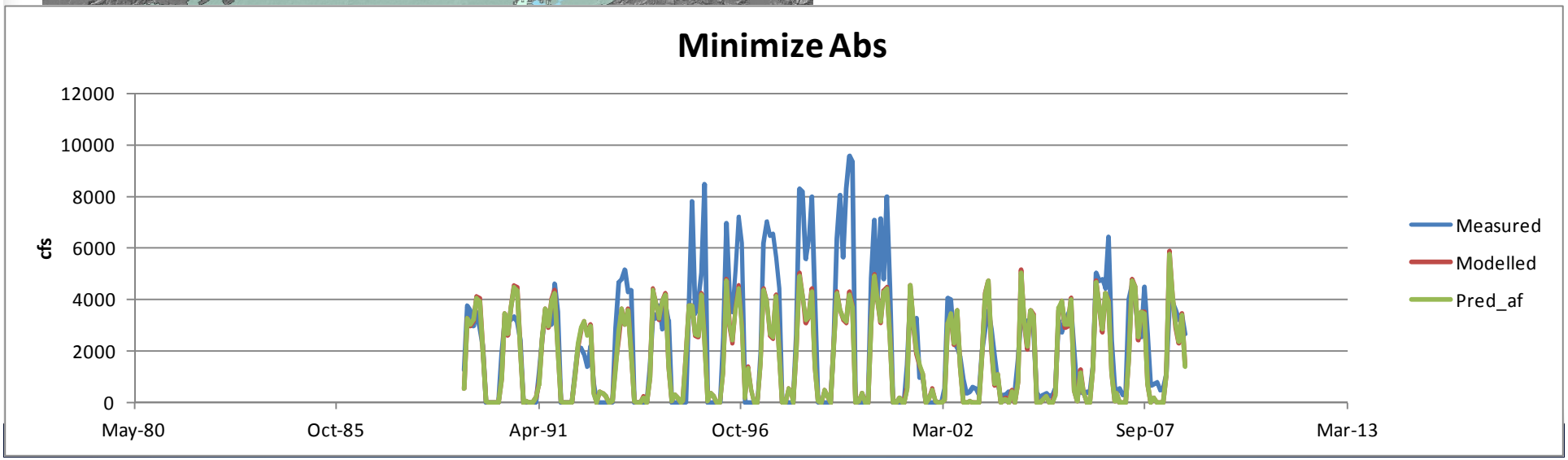

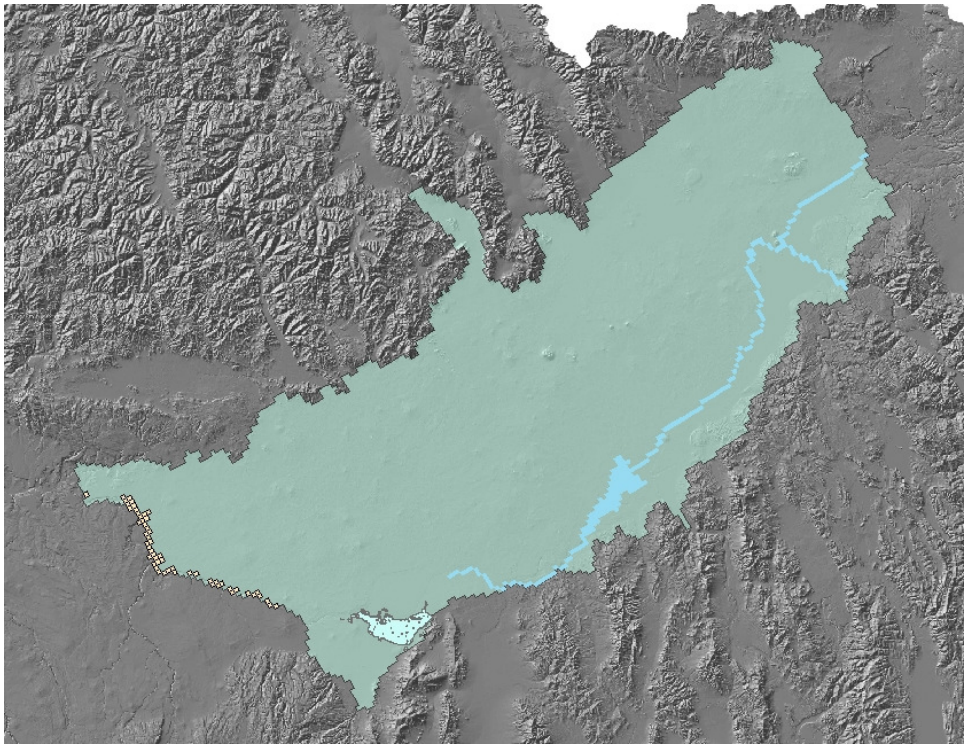

- Burley Irrigation District returns

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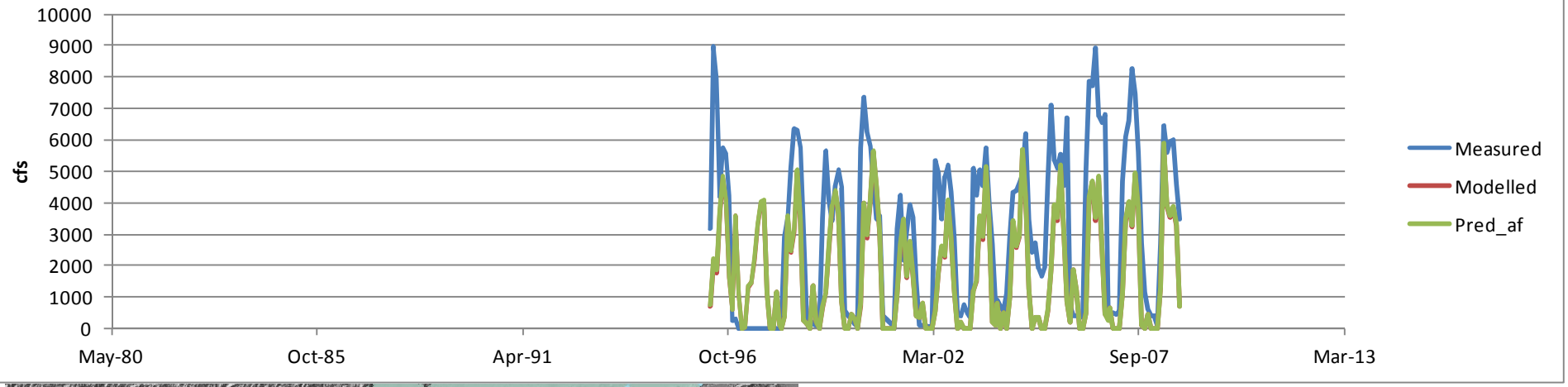
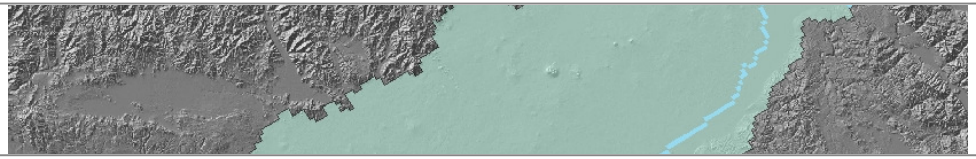
Maximize bid





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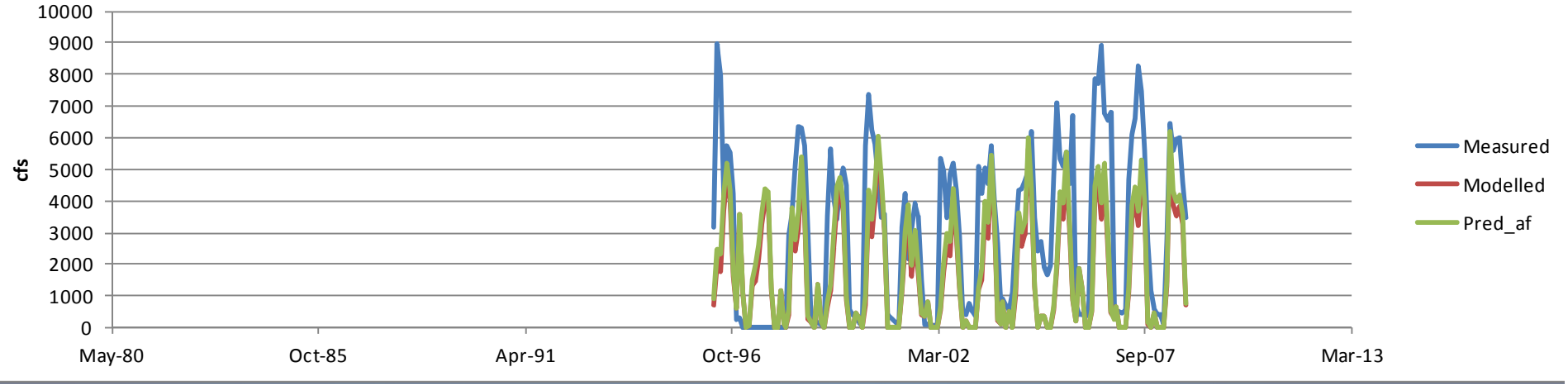

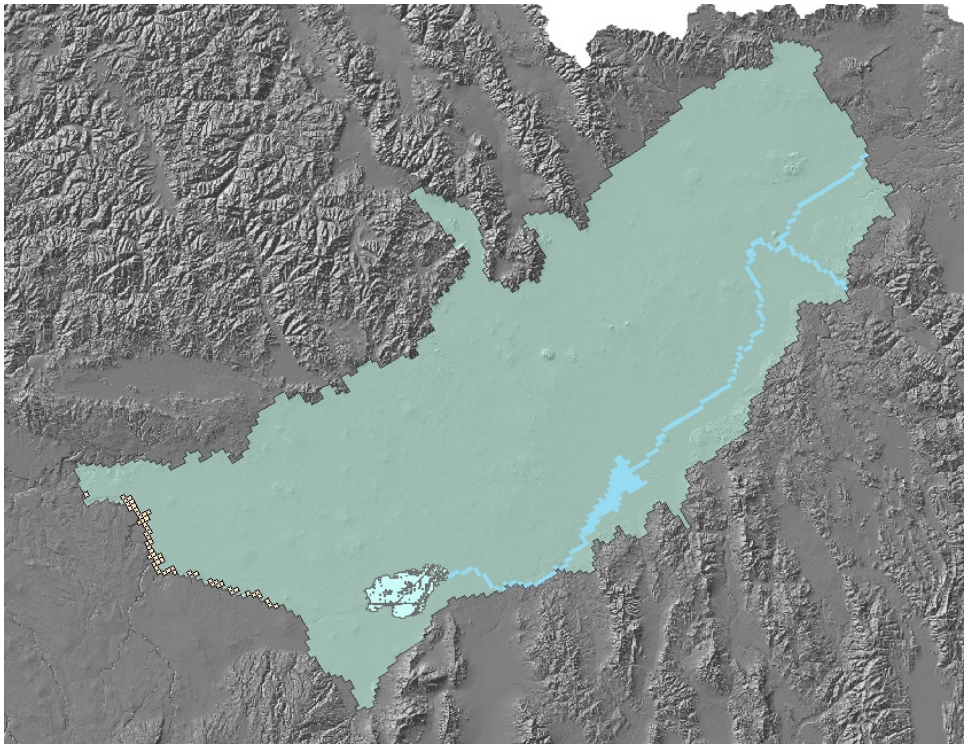

- Minidoka Irrigation District returns

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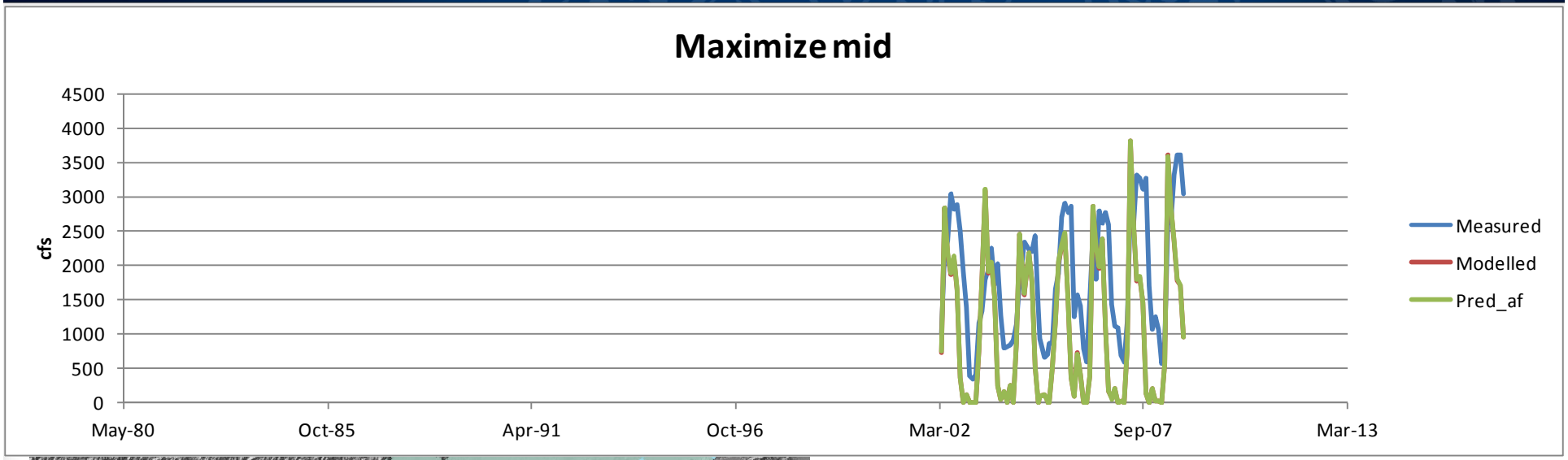

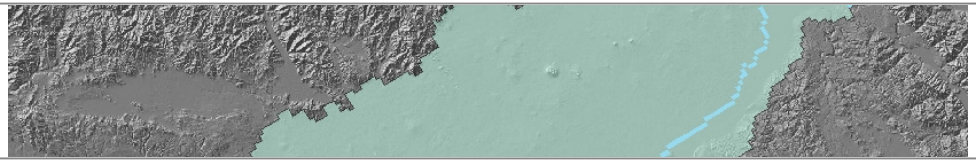

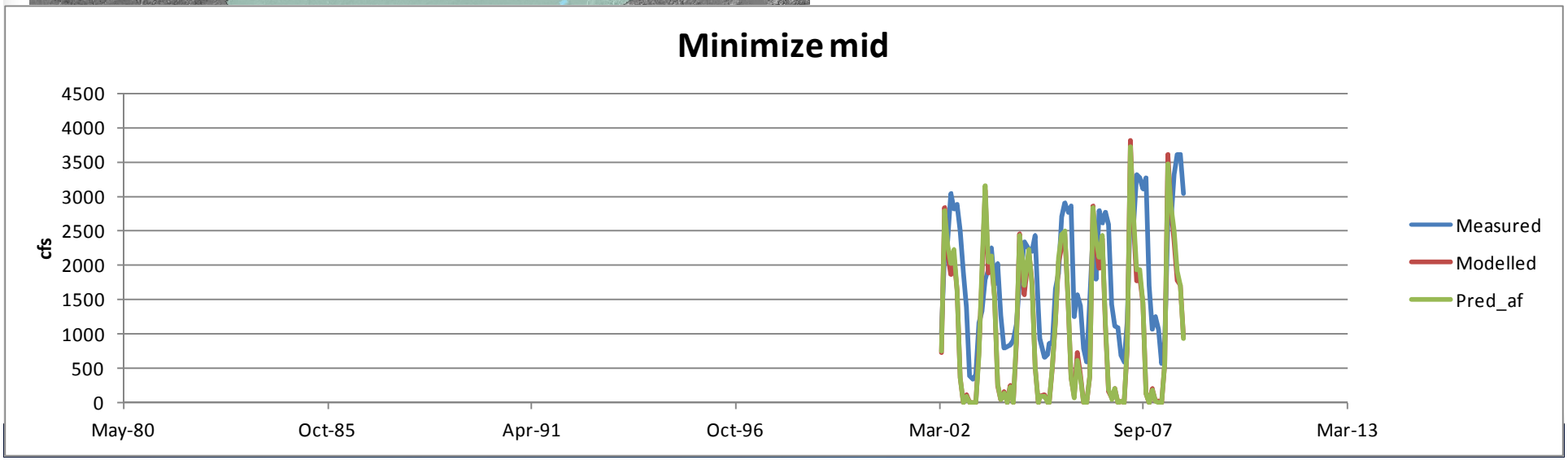

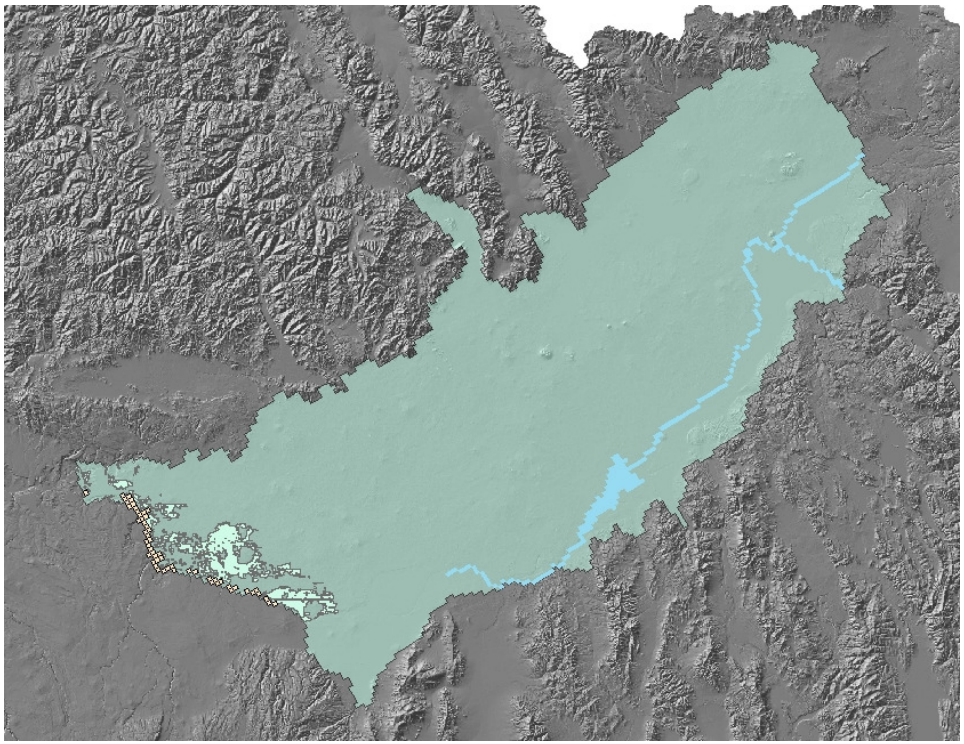

- North Side Canal Co returns

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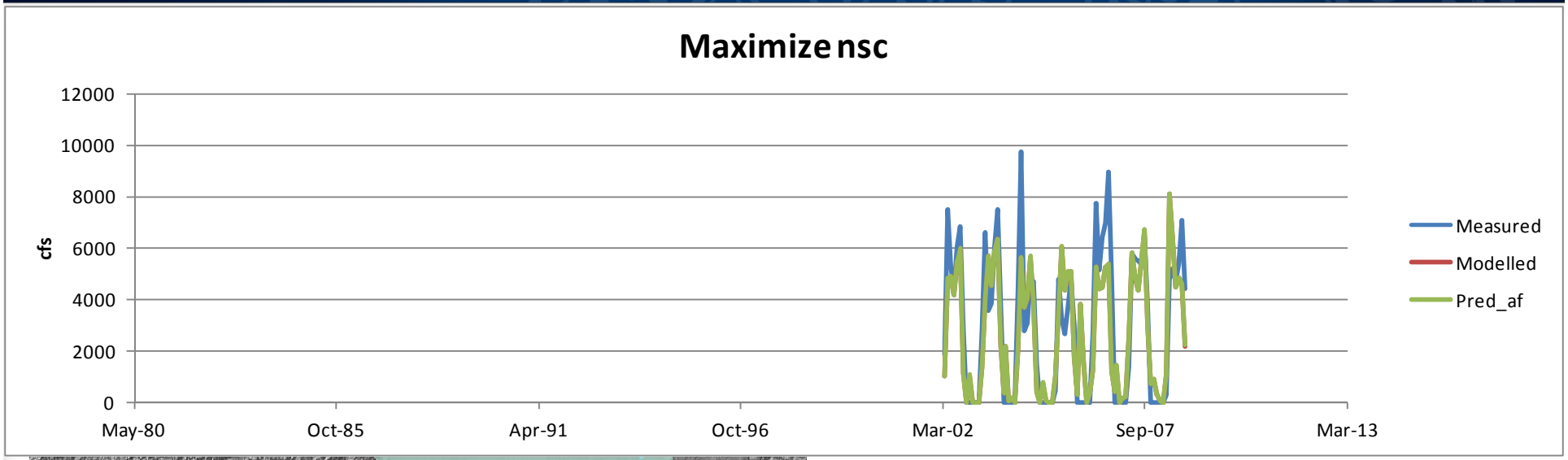

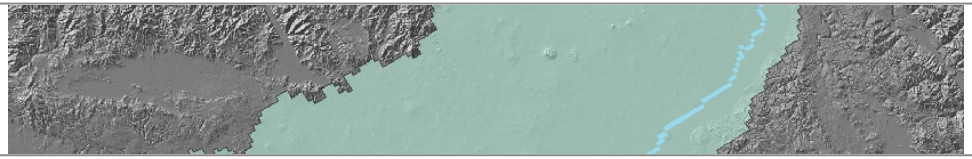

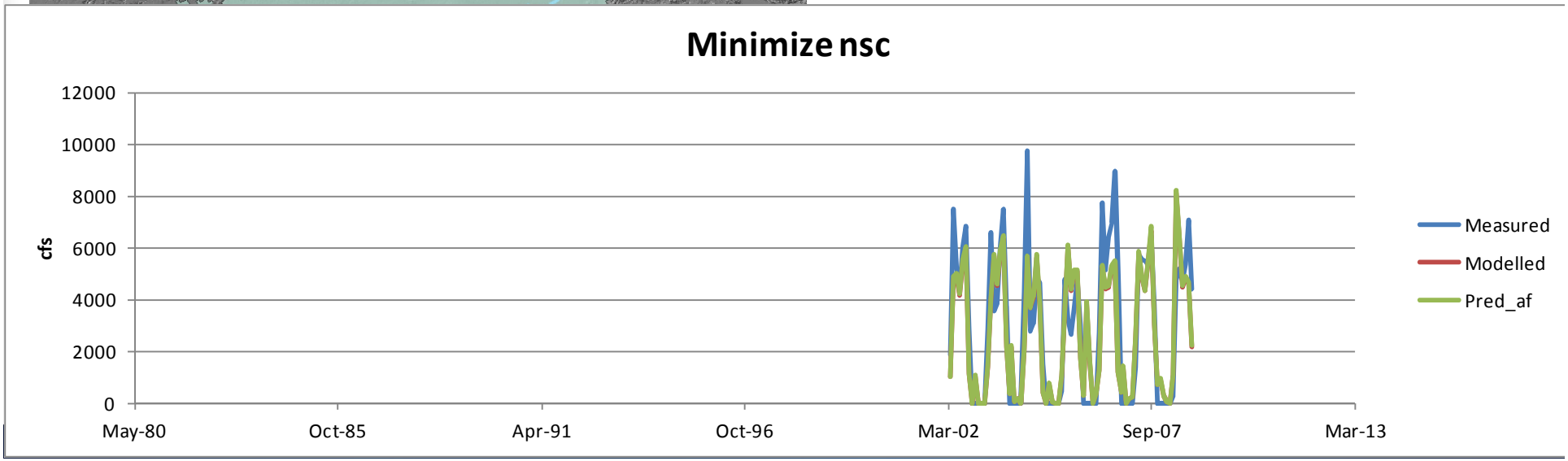

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