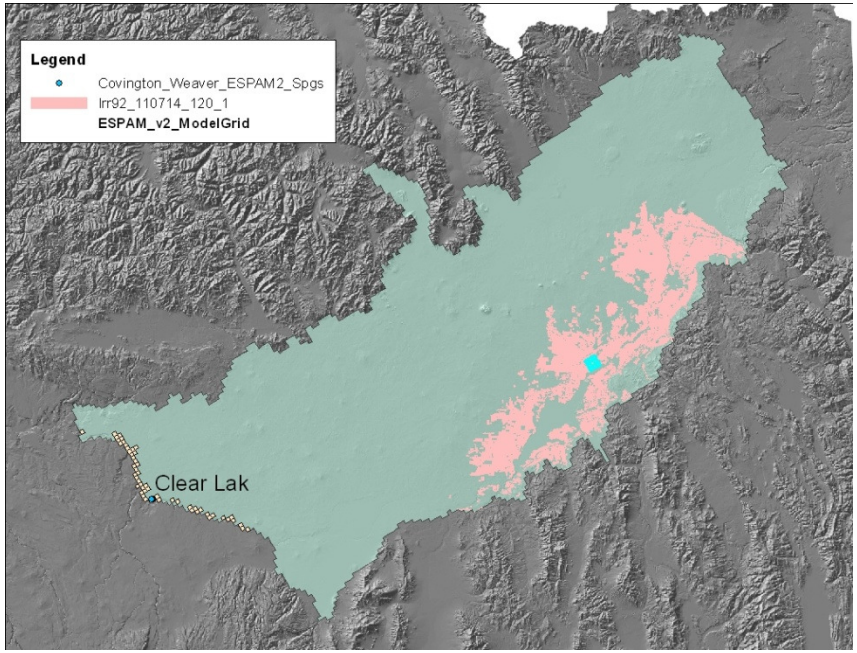
Predictive Uncertainty Test

Allan Wylie IDWR

Predictive Uncertainty



- Impact of centroid for irrigated lands within WD120 on Clear Lakes
- How tightly assumptions and calibration data constrain prediction
- WD120 +107%/-12.6%
  - WD110 +0.17%/-3.9%
  - WD130 +3.52%/-2.50
- Maximize = maximize the prediction
- Minimize = minimize the prediction

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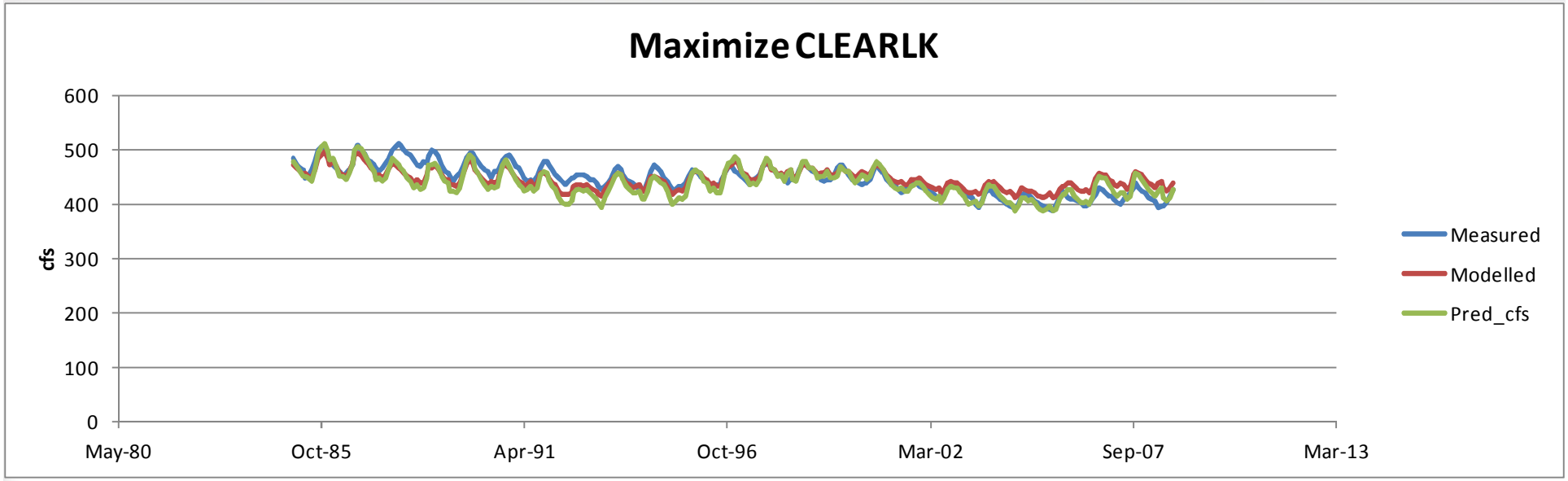
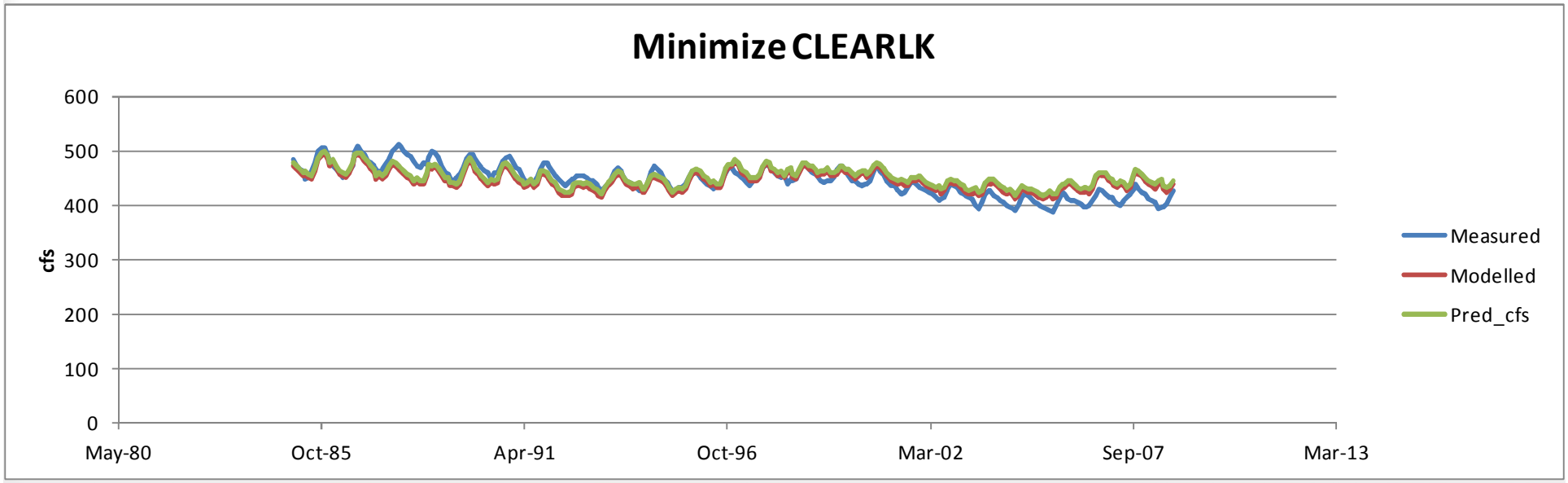




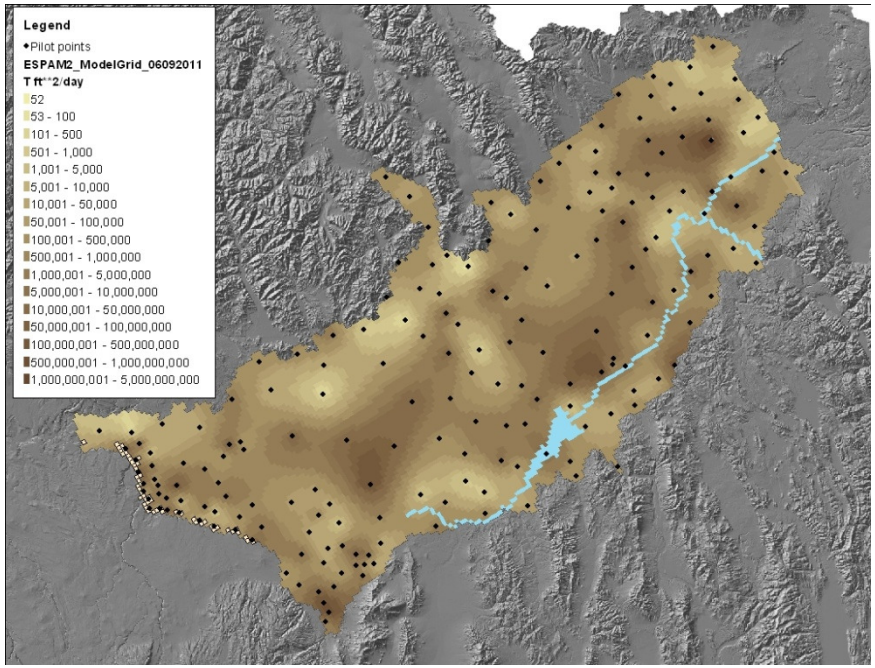
Calibration with E110712A, A B & C Springs and Return Flow Targets

- 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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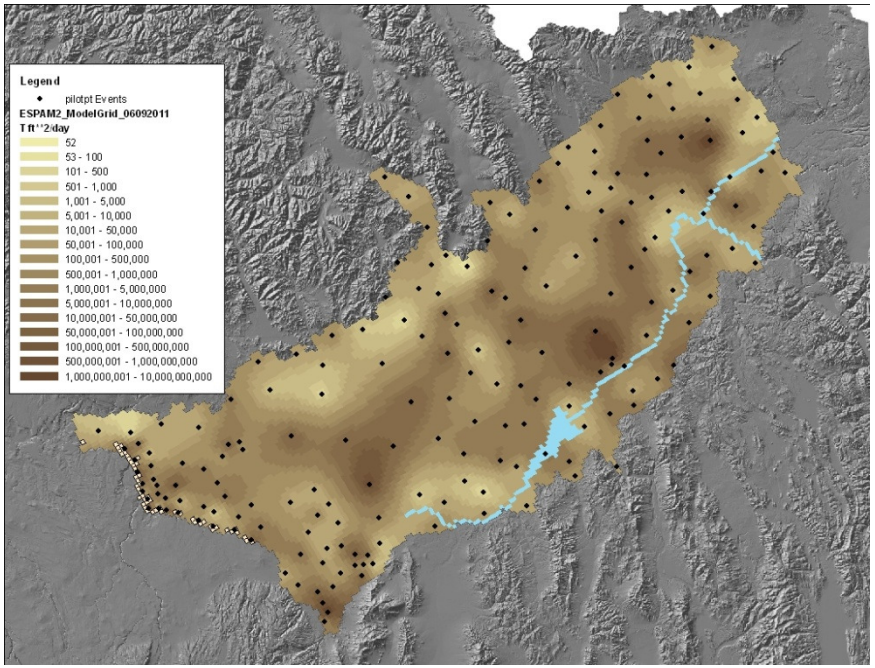

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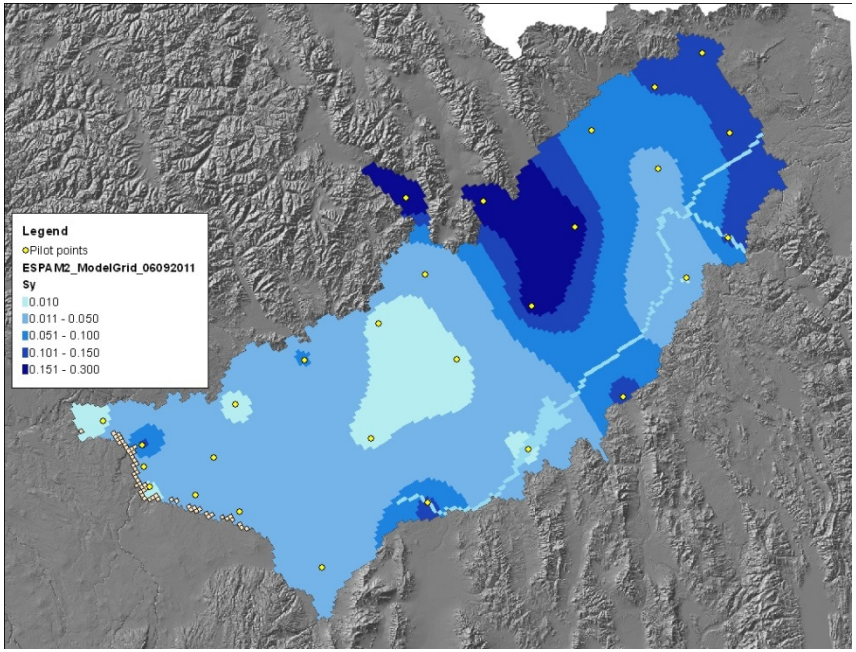

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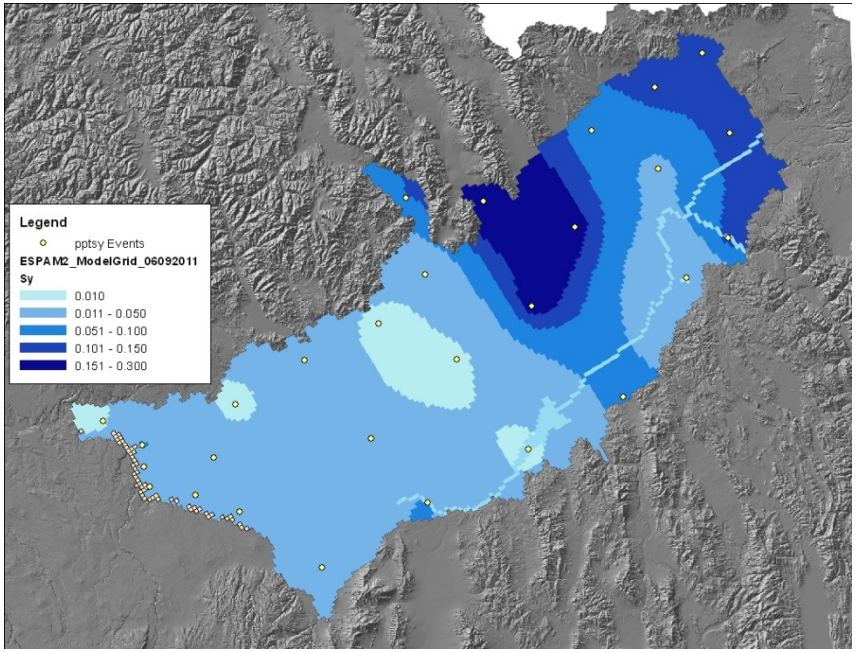

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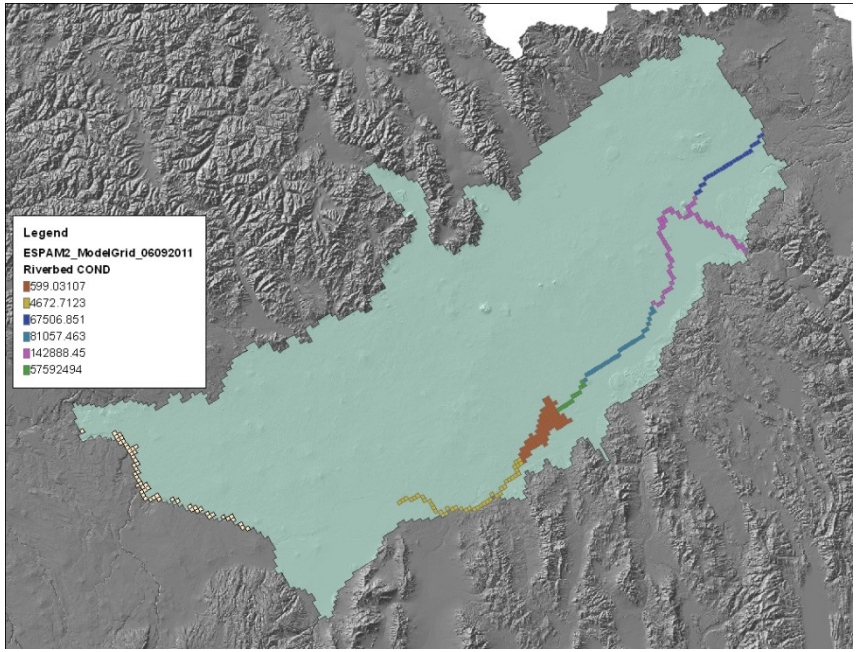

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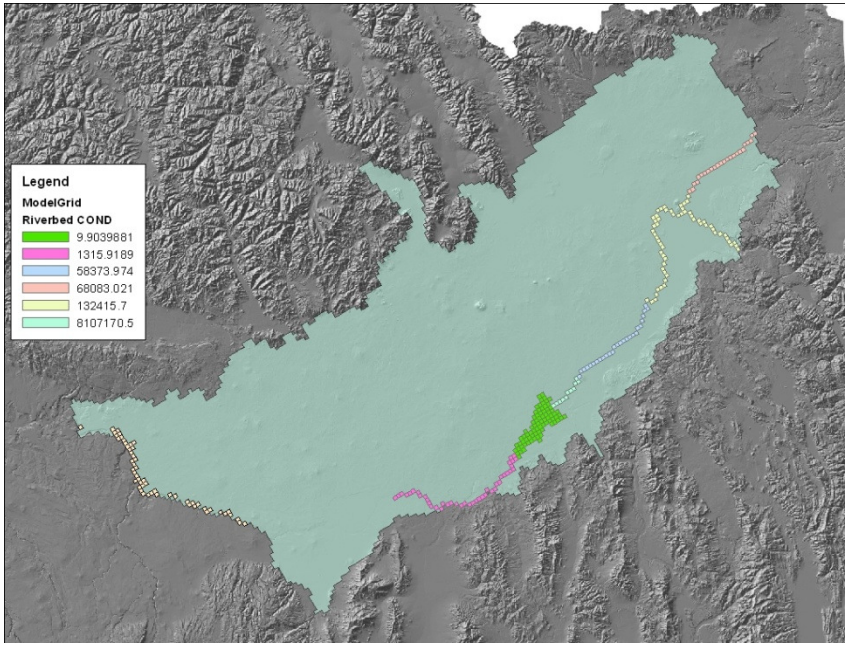

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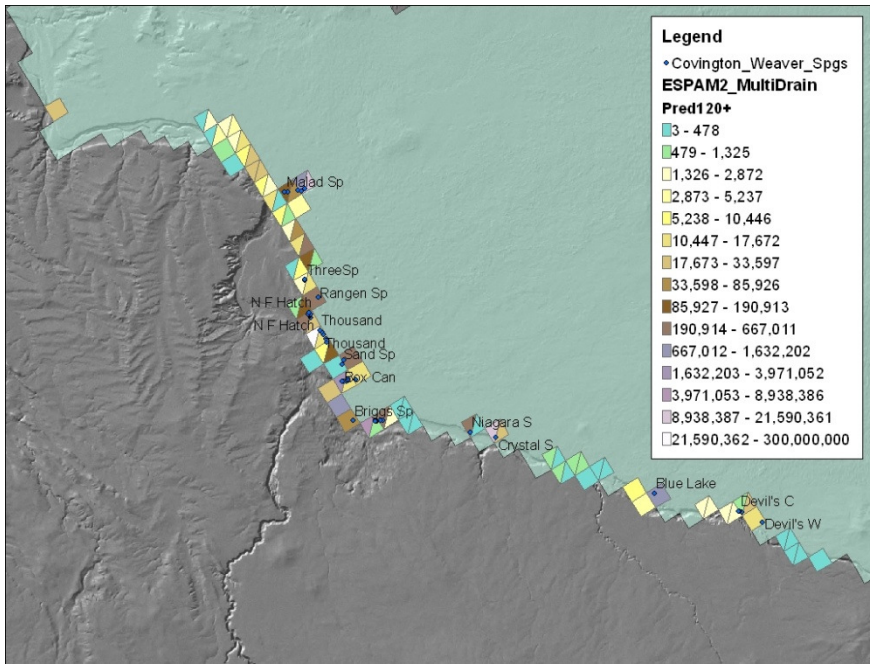

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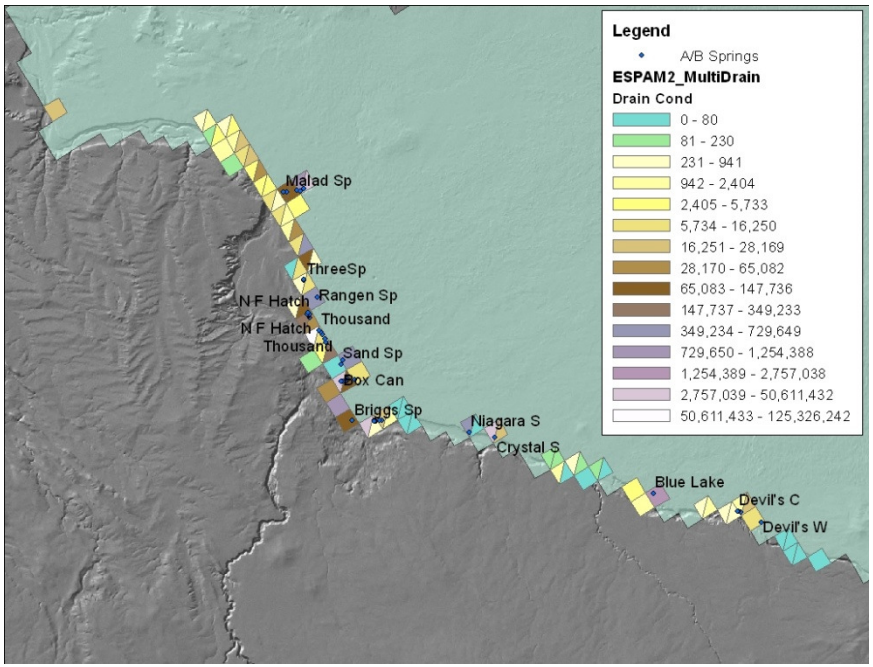

Perched River Seepage

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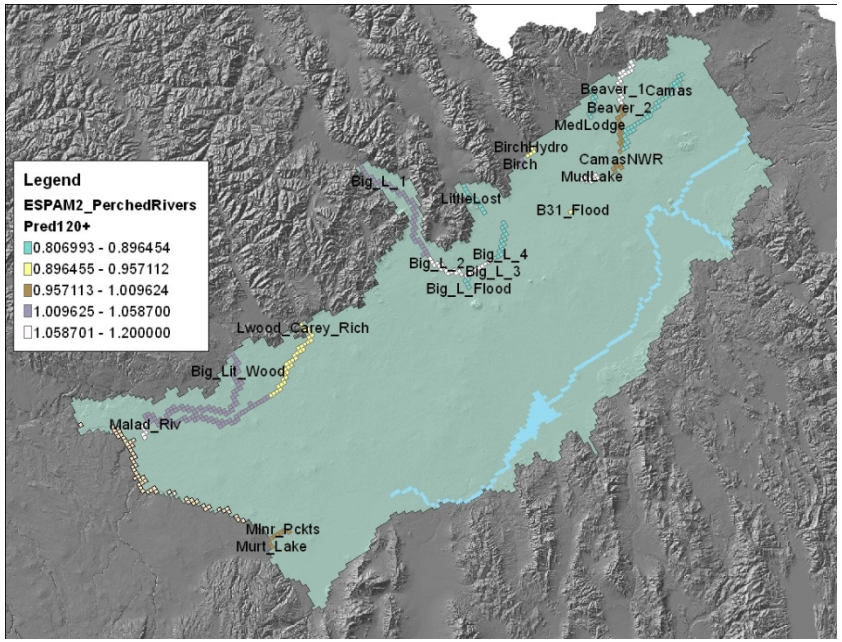

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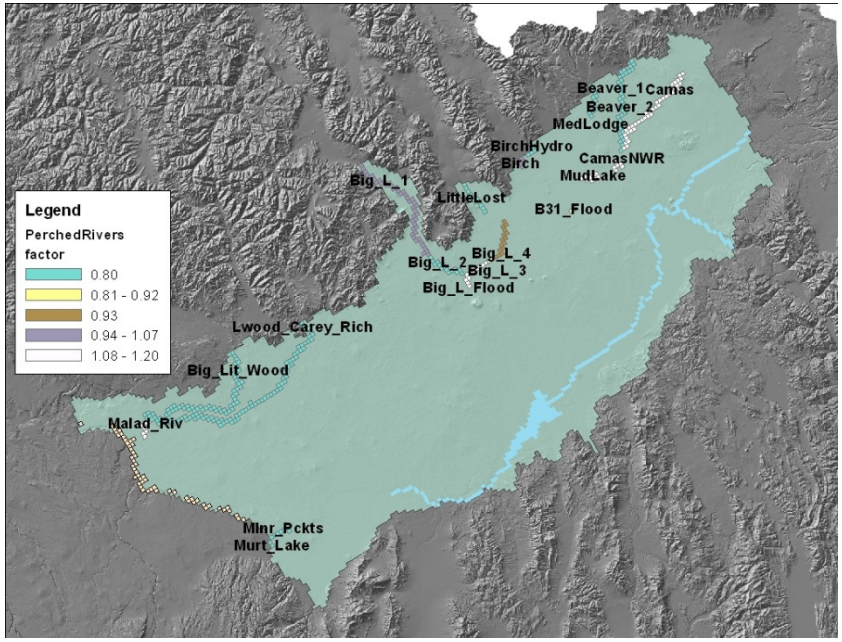

Tributary Underflow

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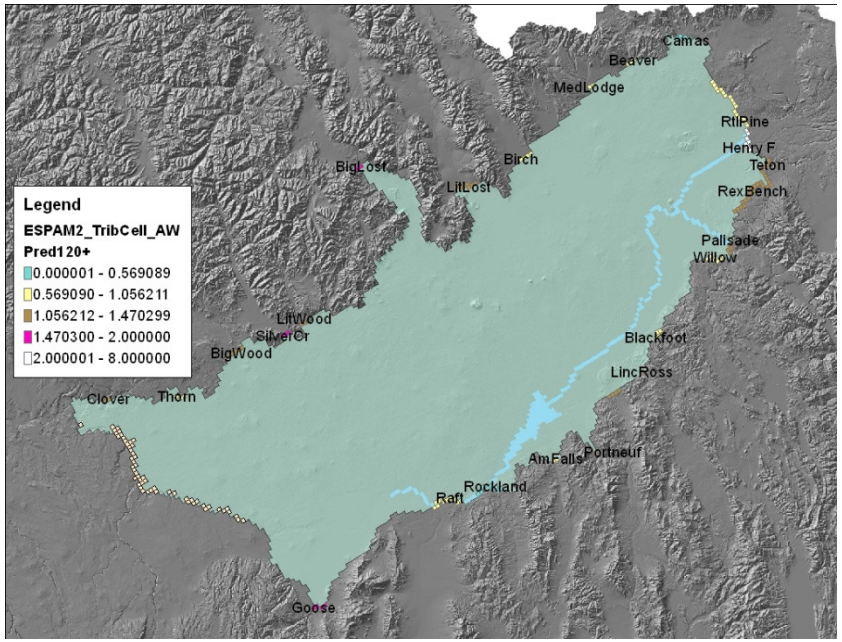

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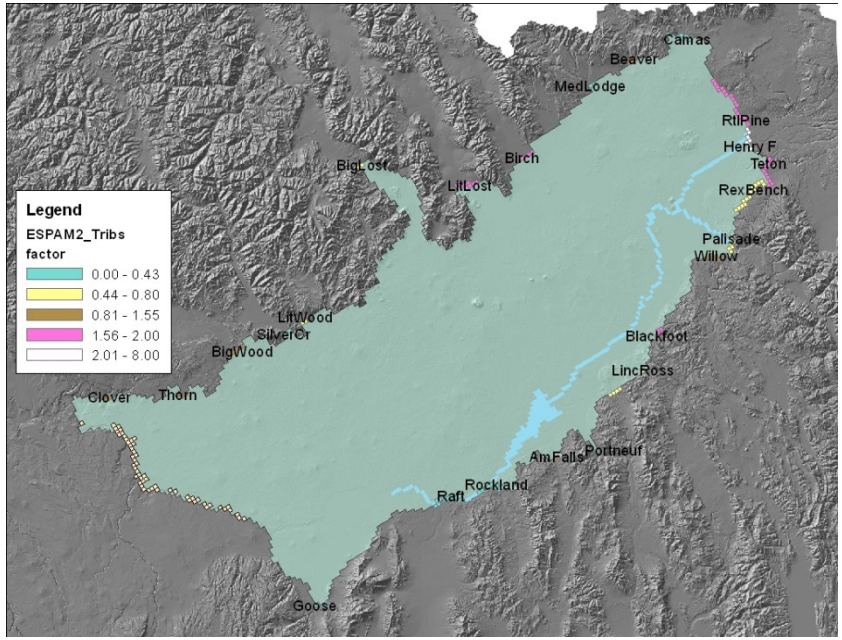

Non-irrigated Recharge

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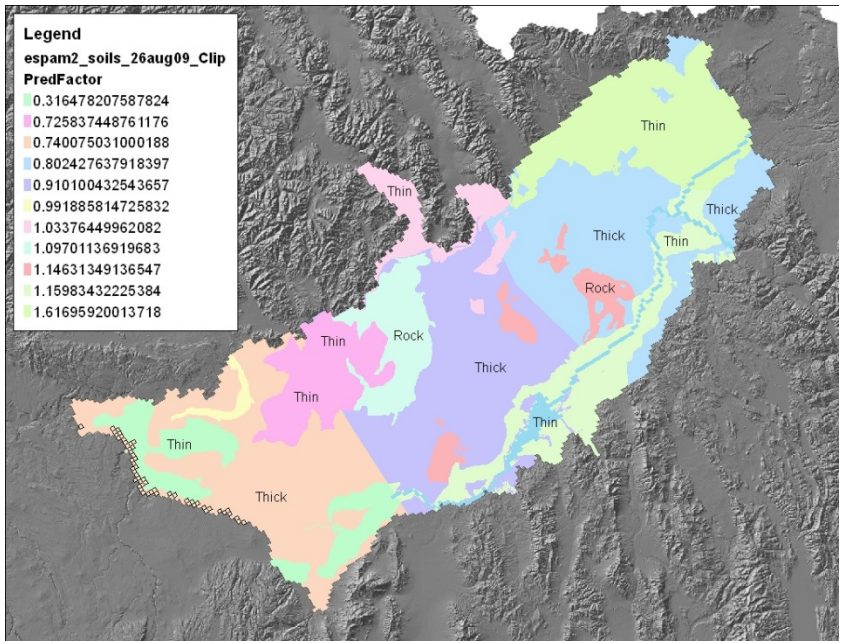

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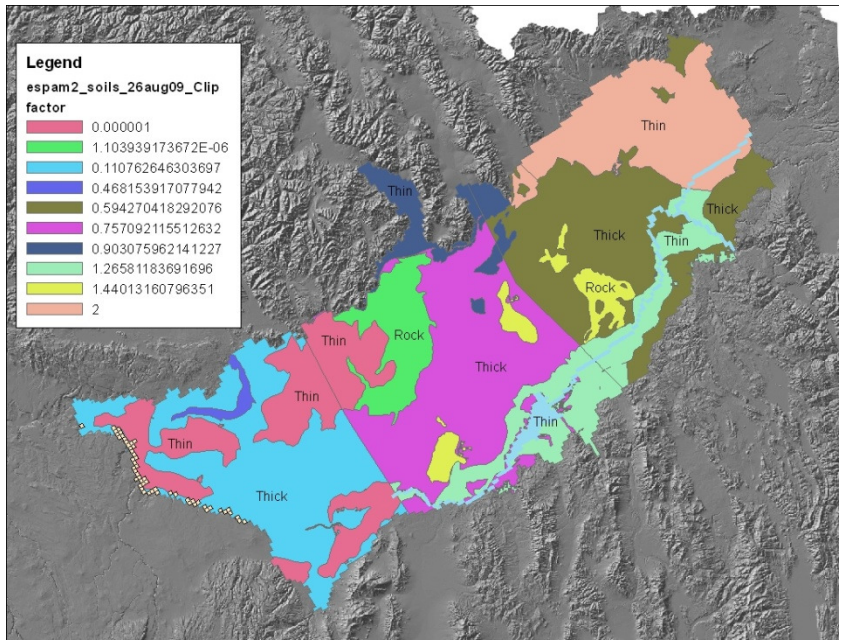

ET Surface Water Sprinkler

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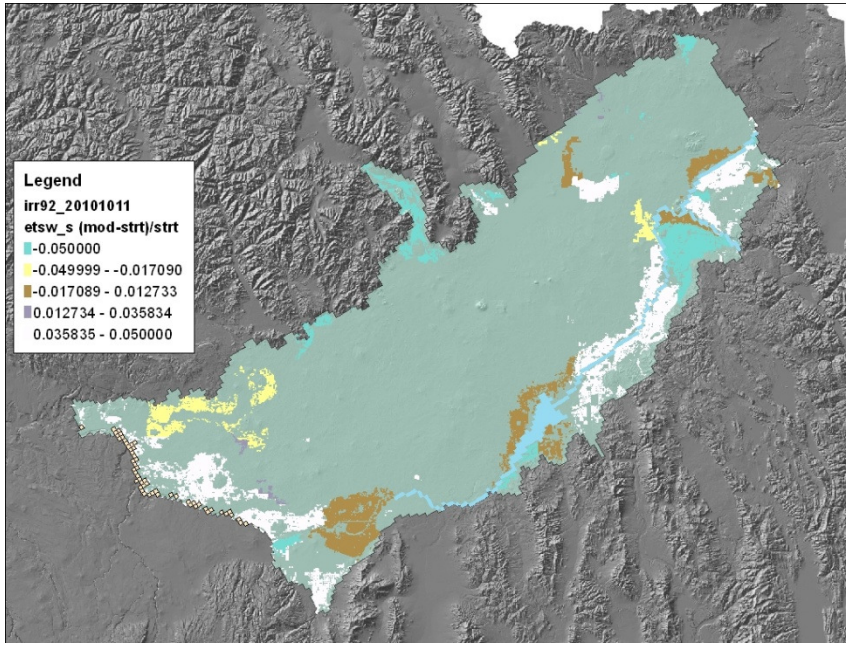

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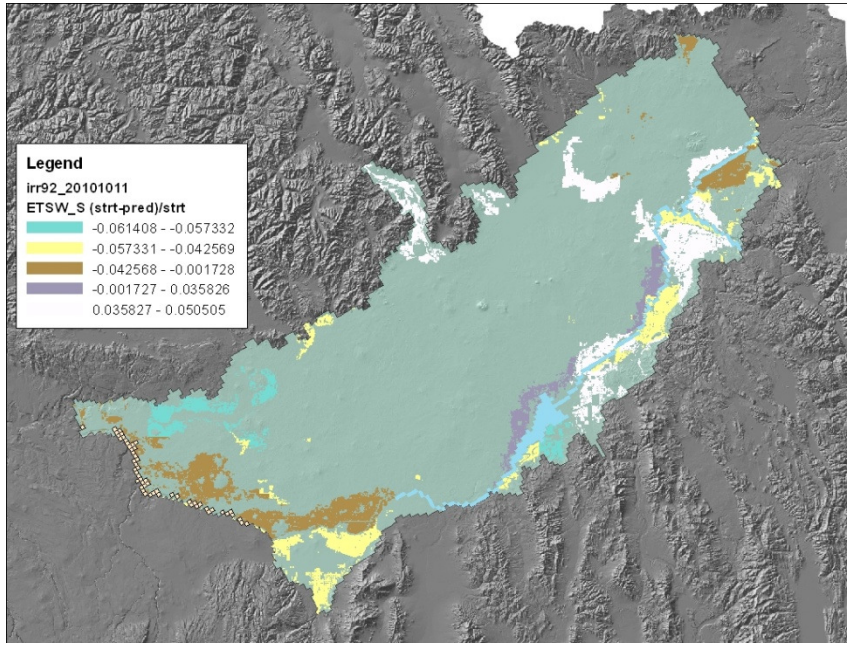

ET Surface Water Gravity

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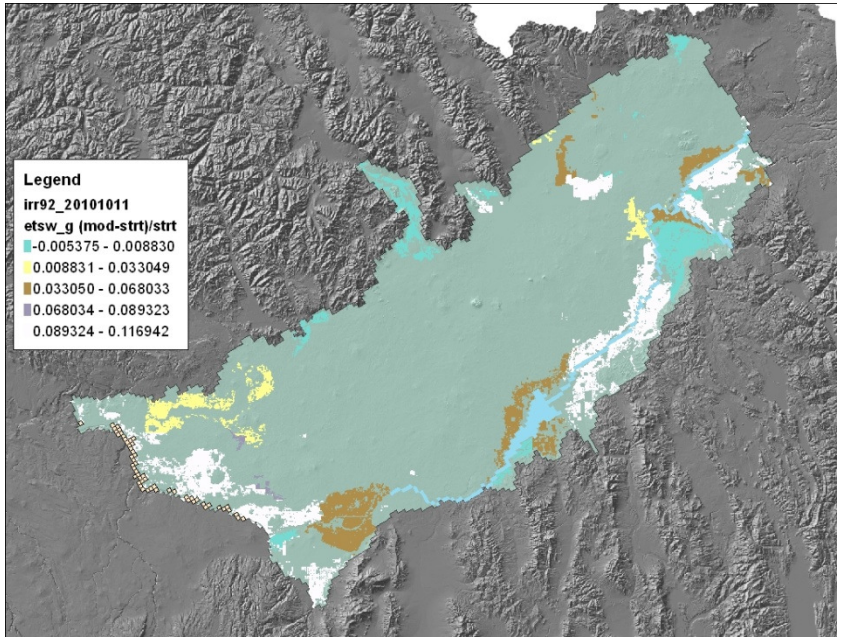

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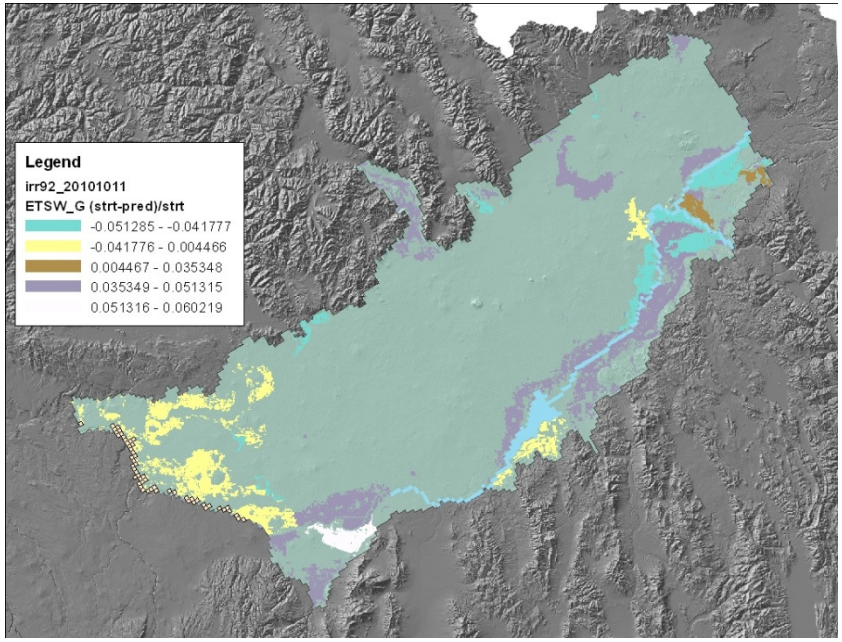

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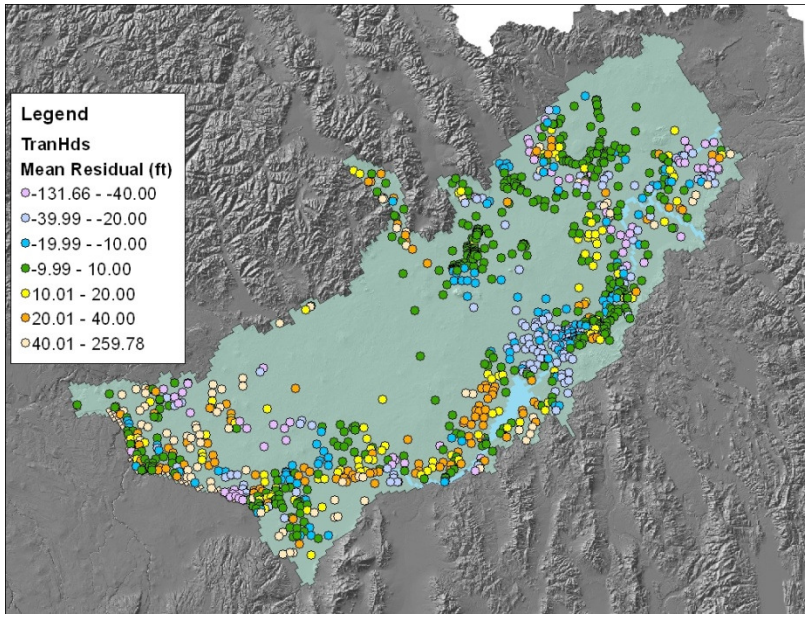
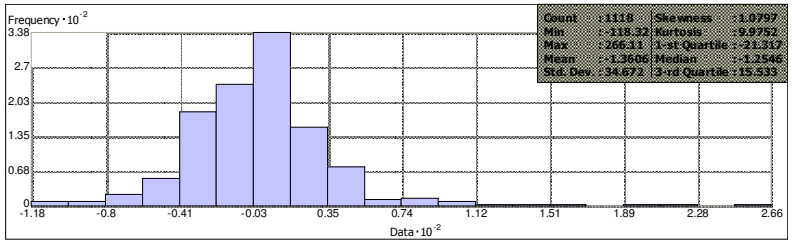


Histogram
Transformation: None



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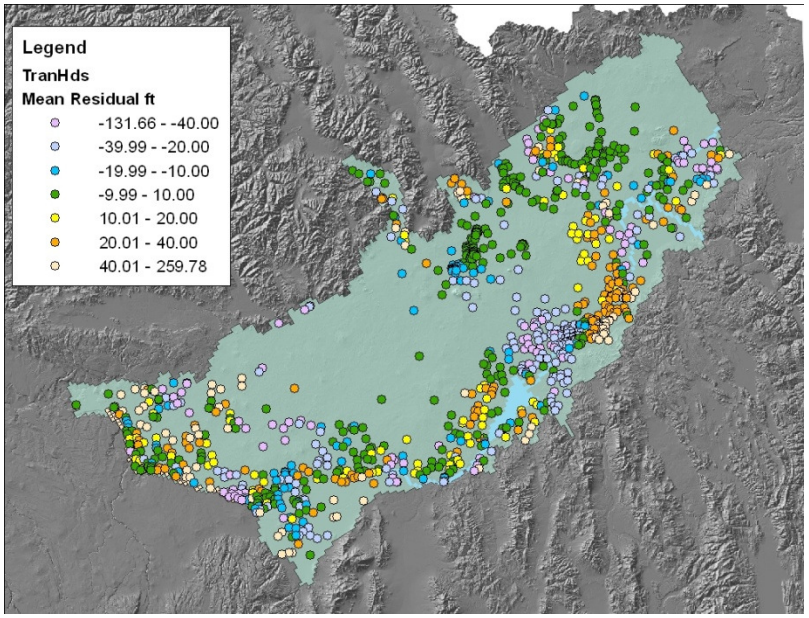

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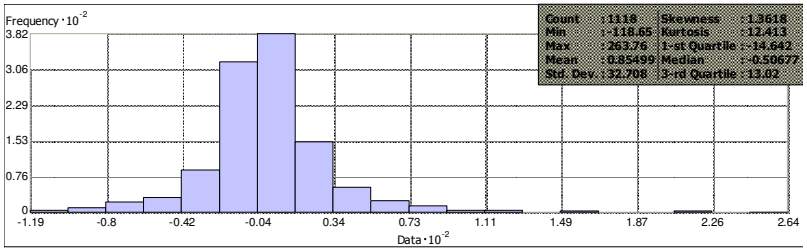

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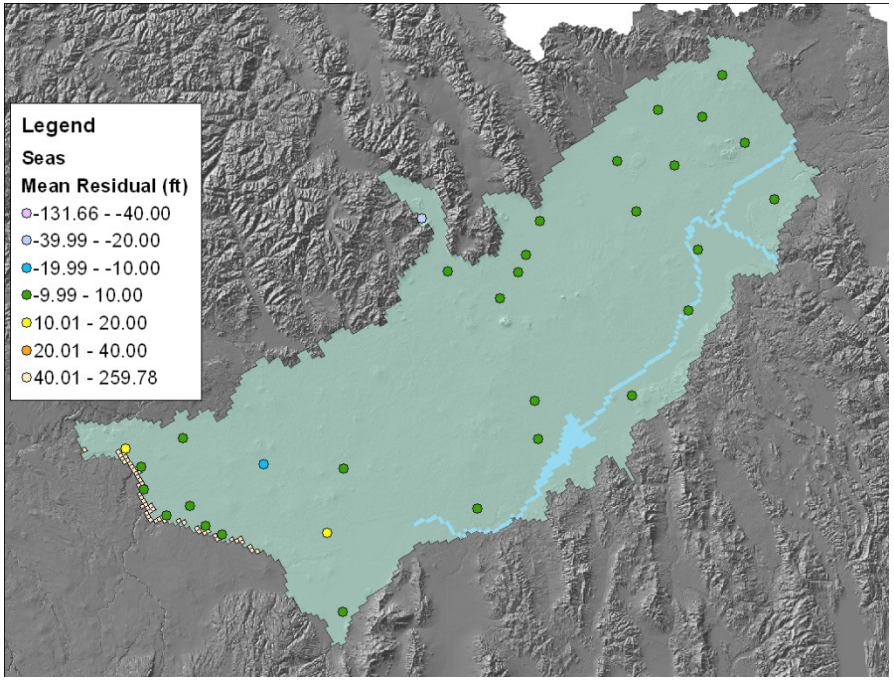

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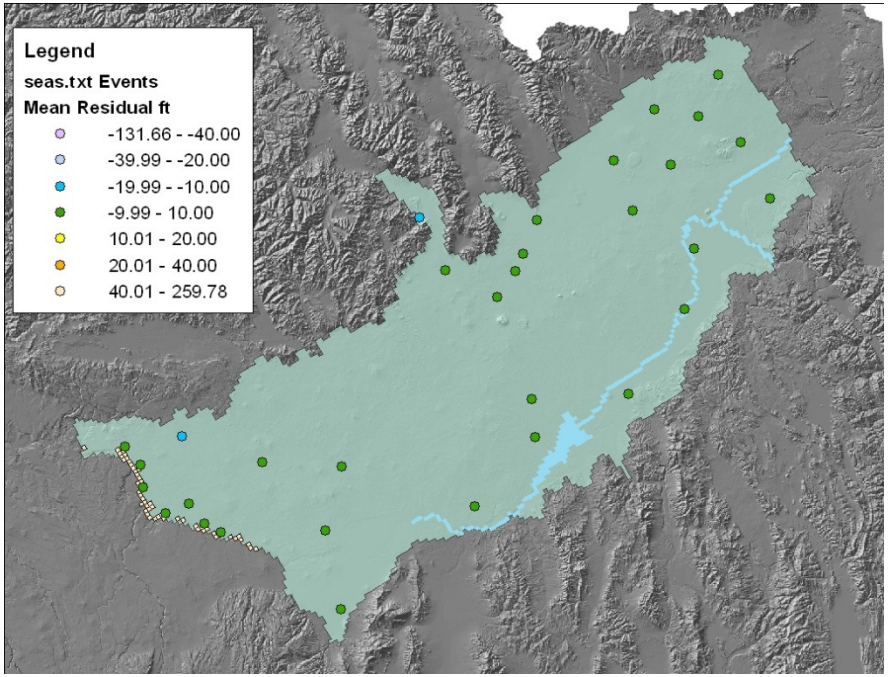
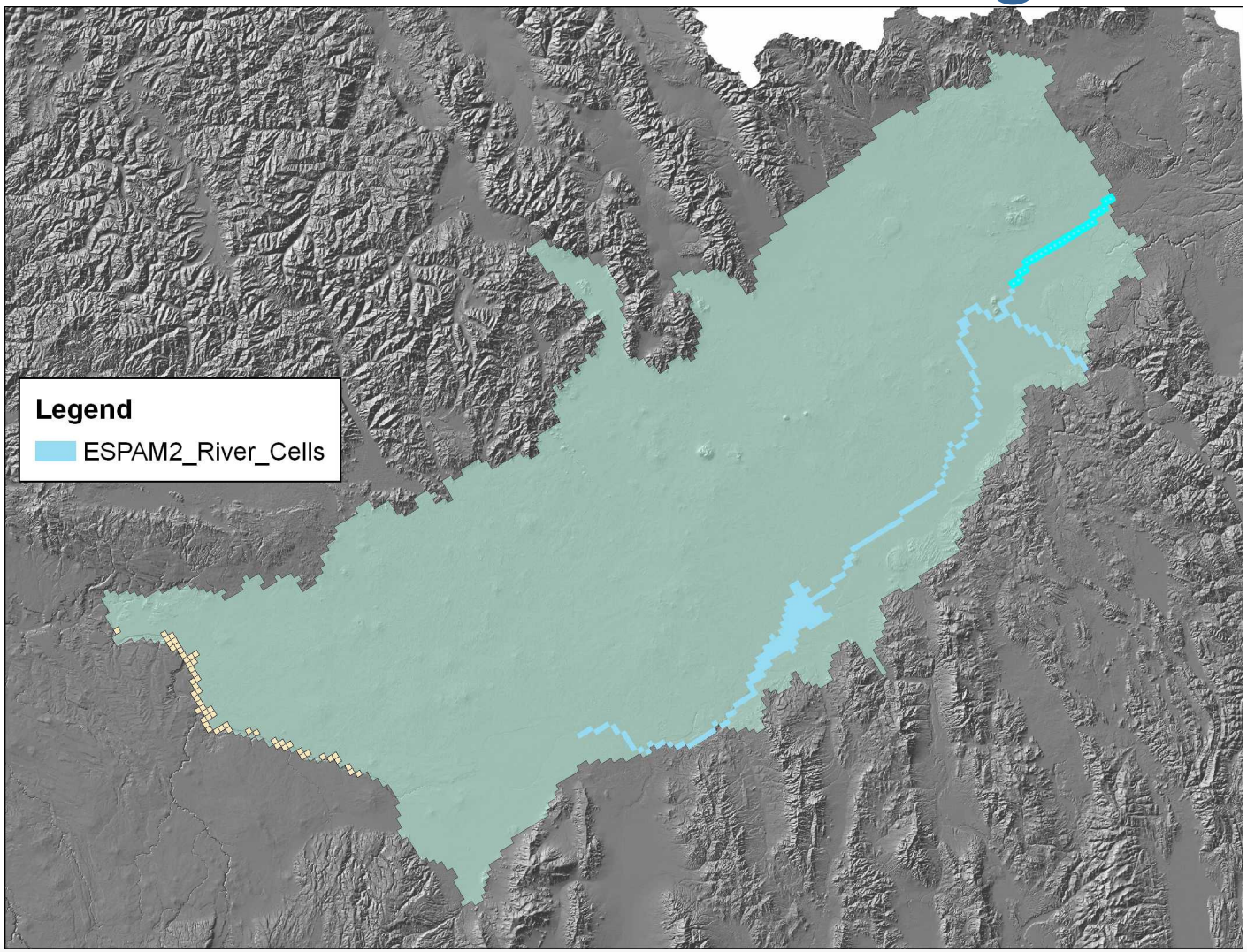
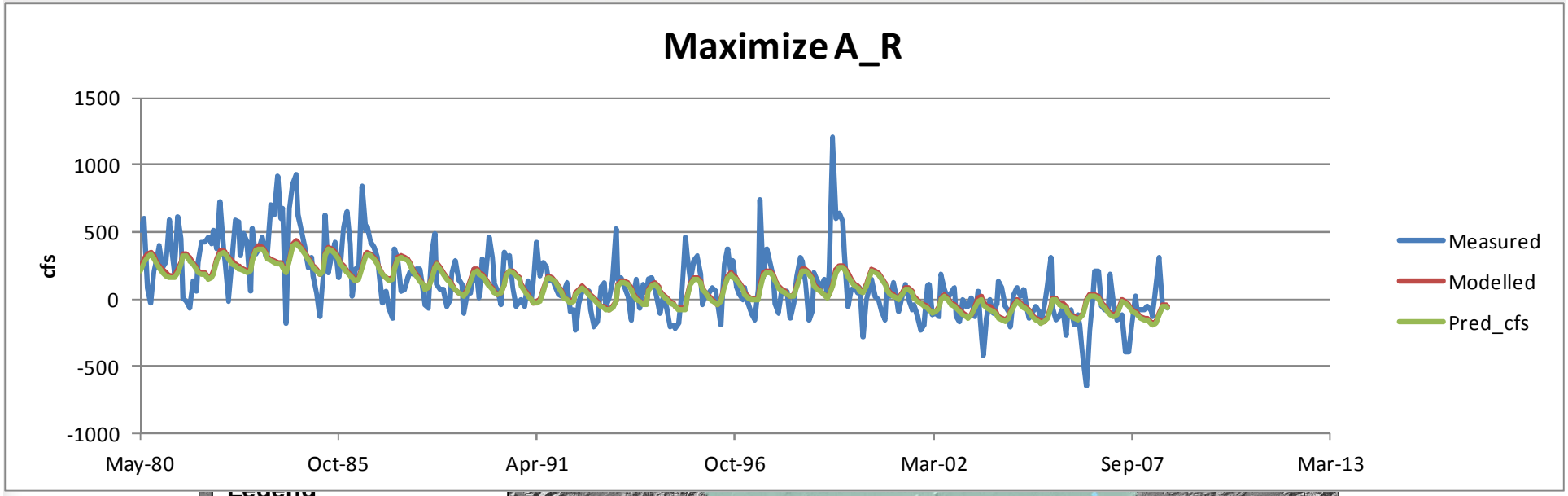


Ashton - Rexburg

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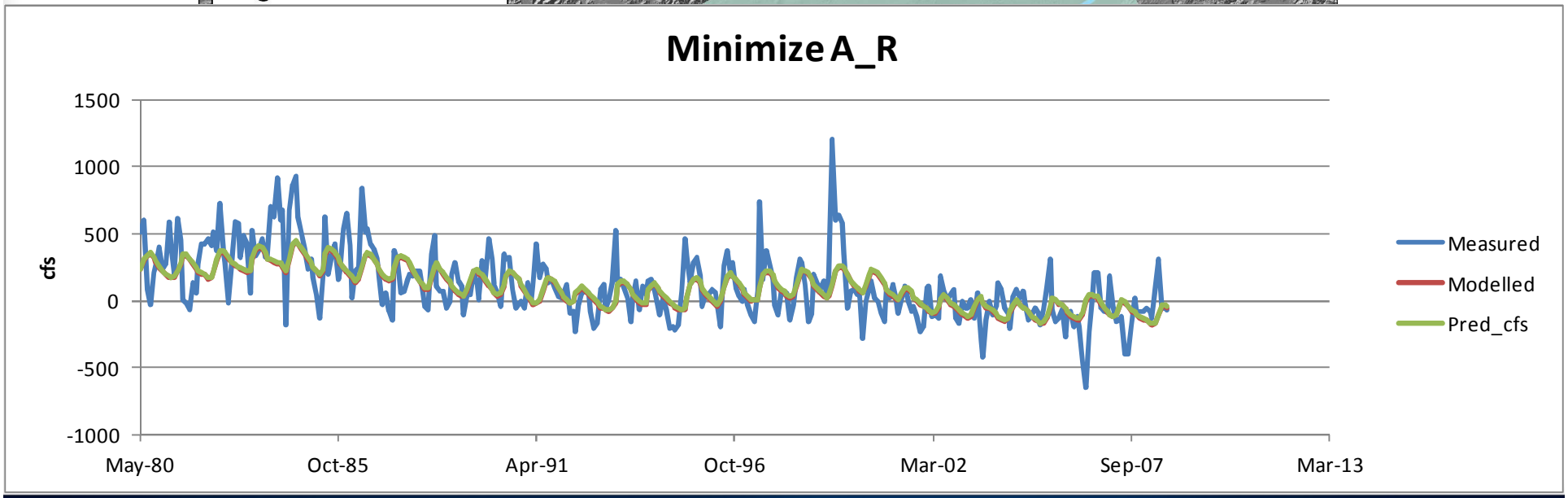
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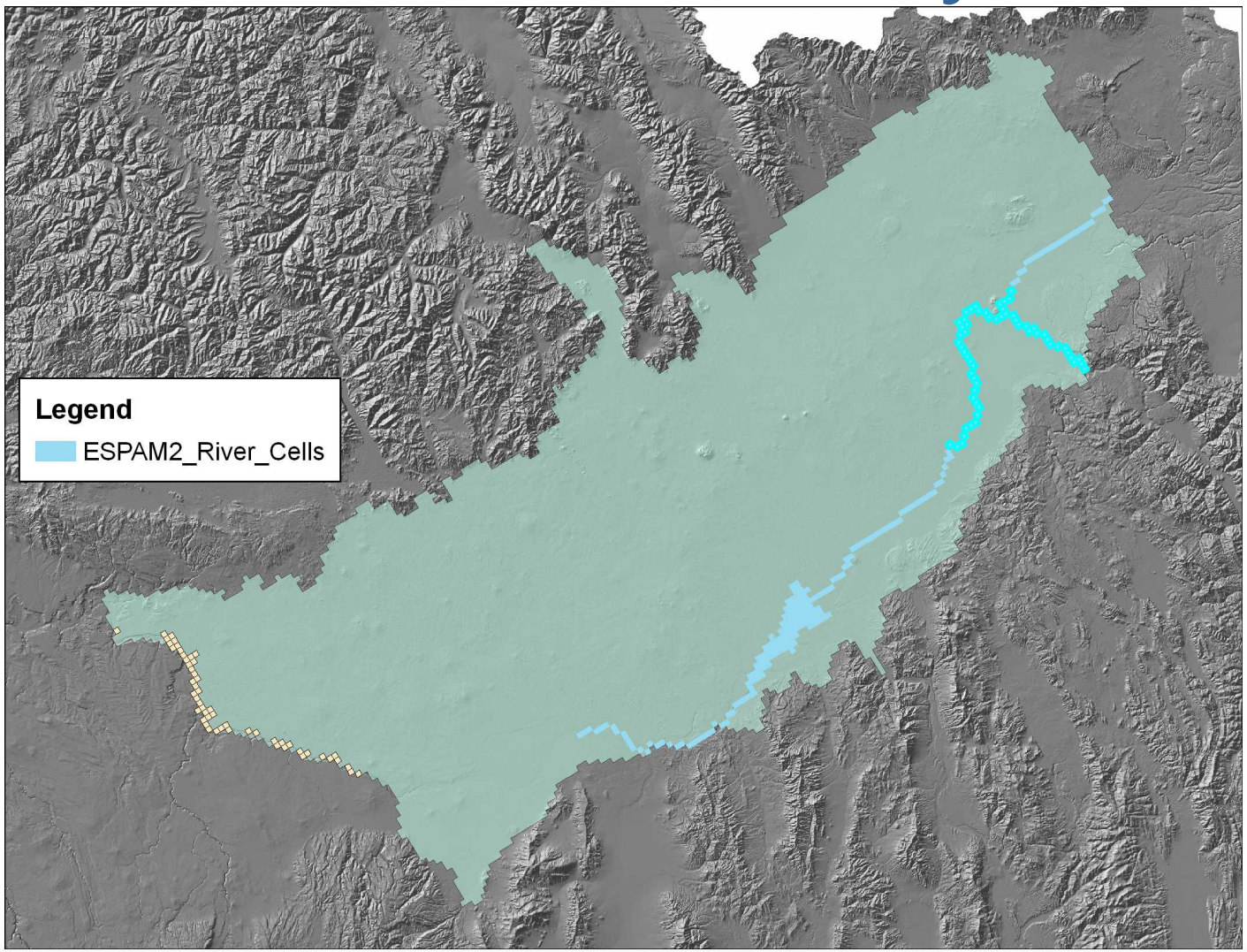
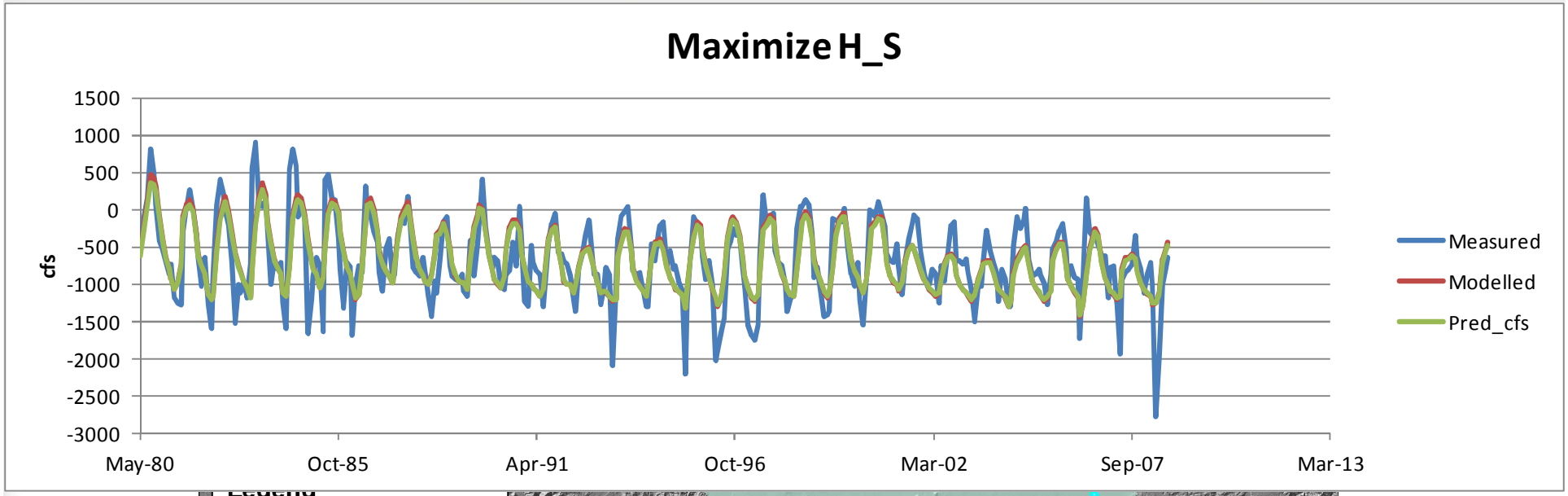
Heise - Shelley

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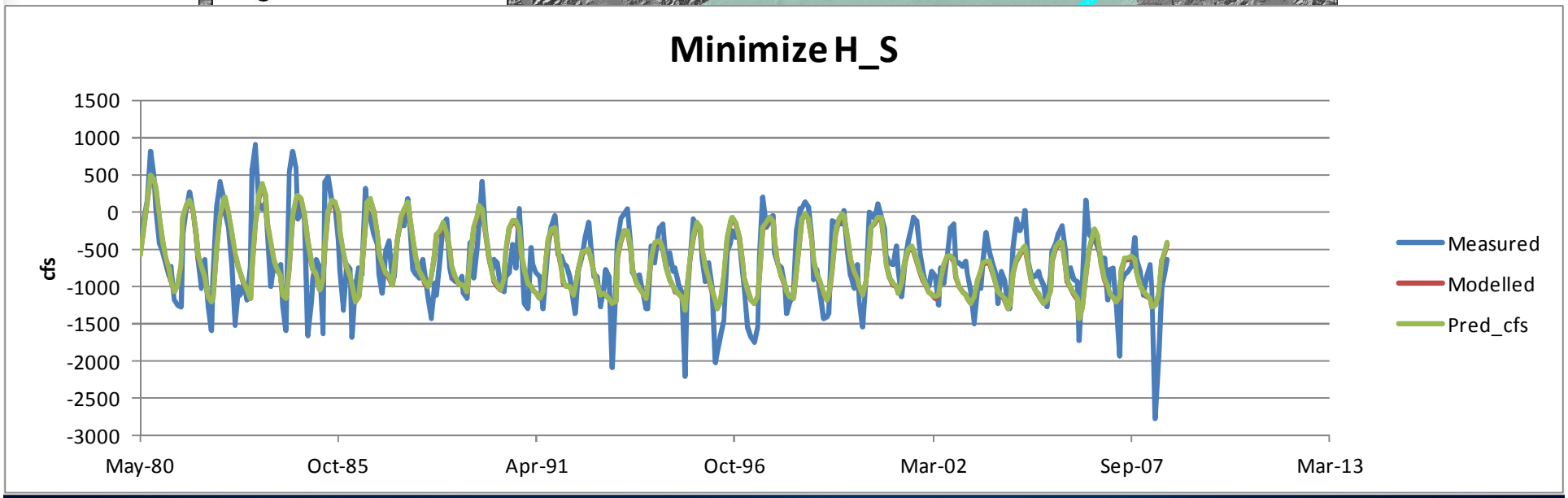
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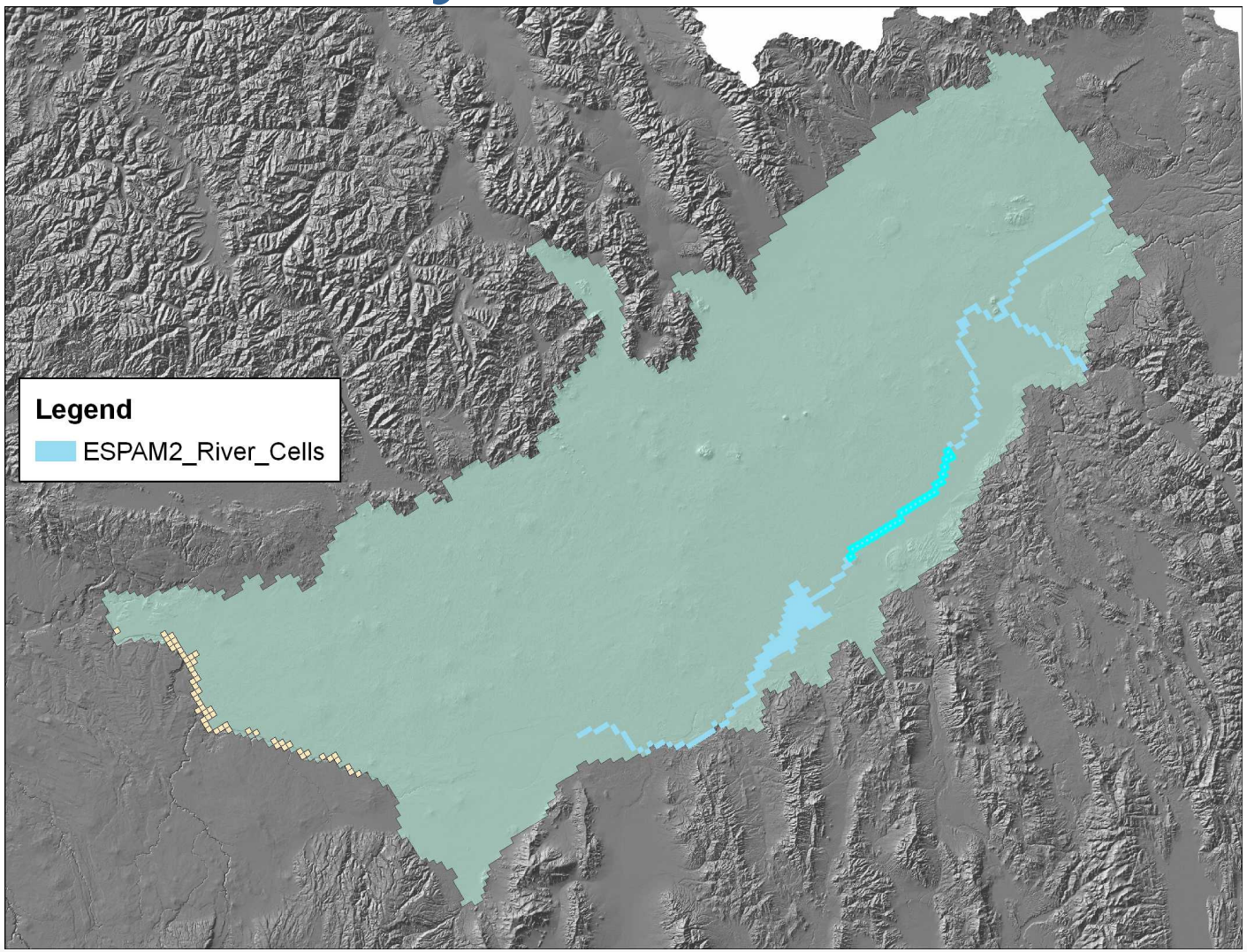
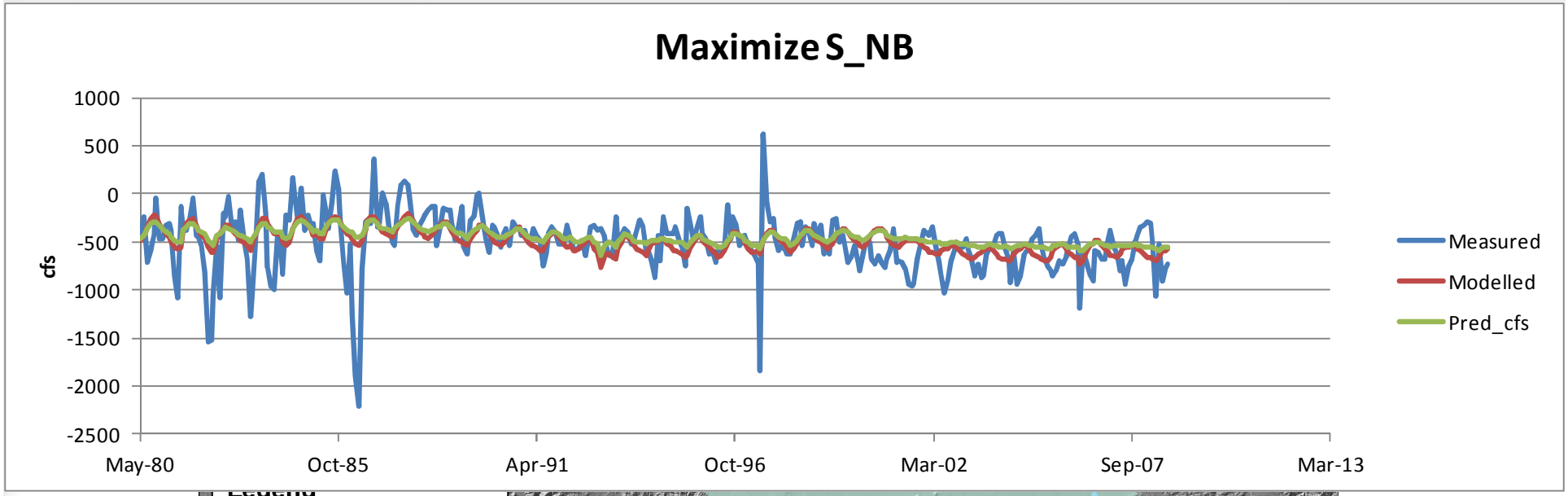
Shelley – nr Blackfoot

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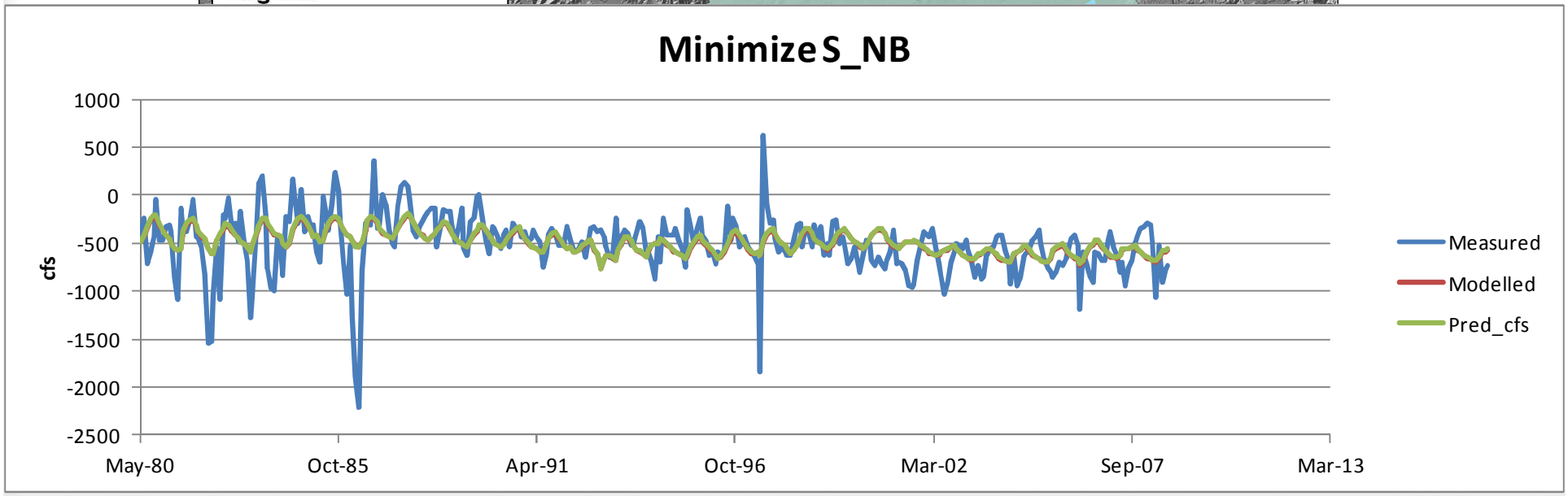
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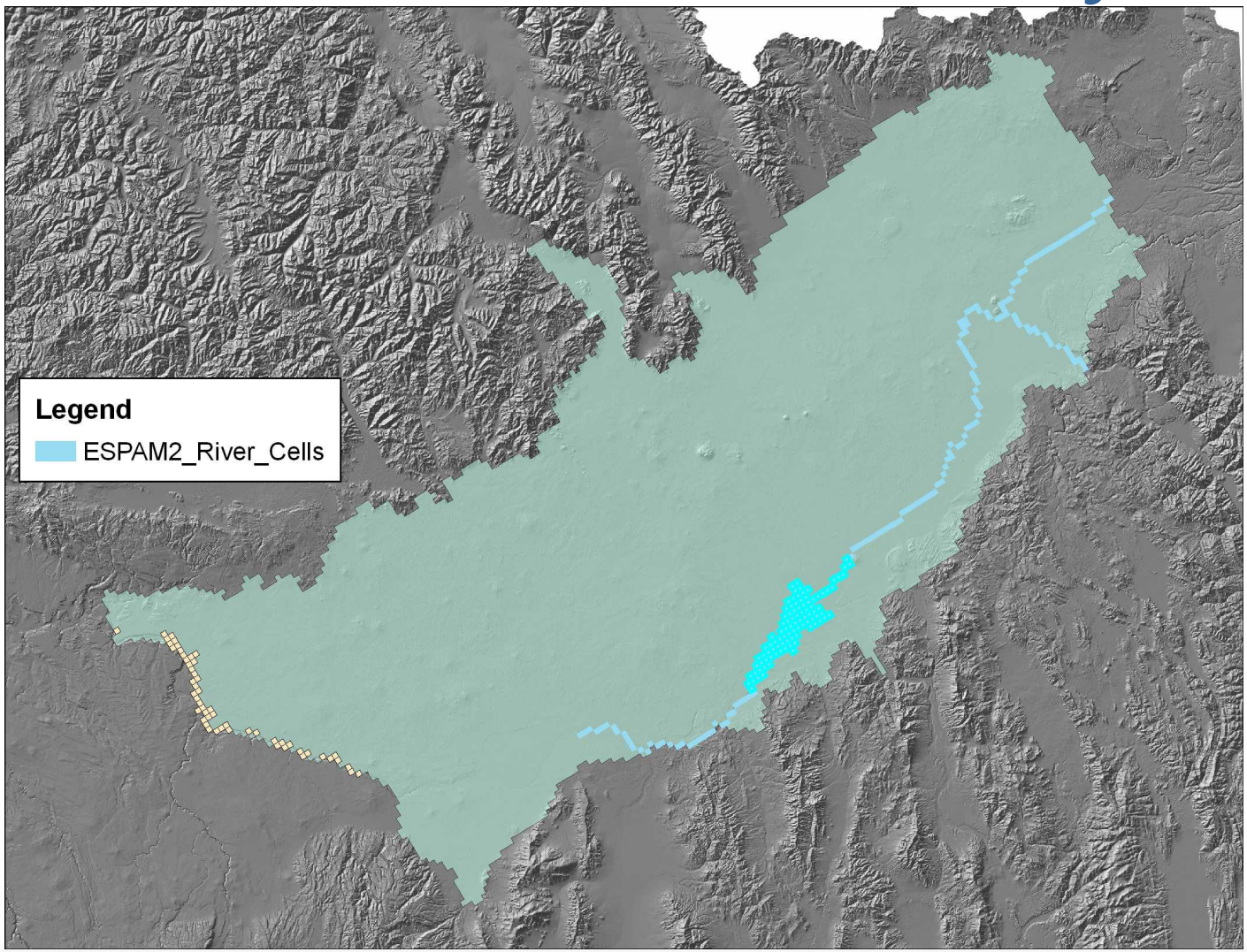
Nr Blackfoot - Neeley



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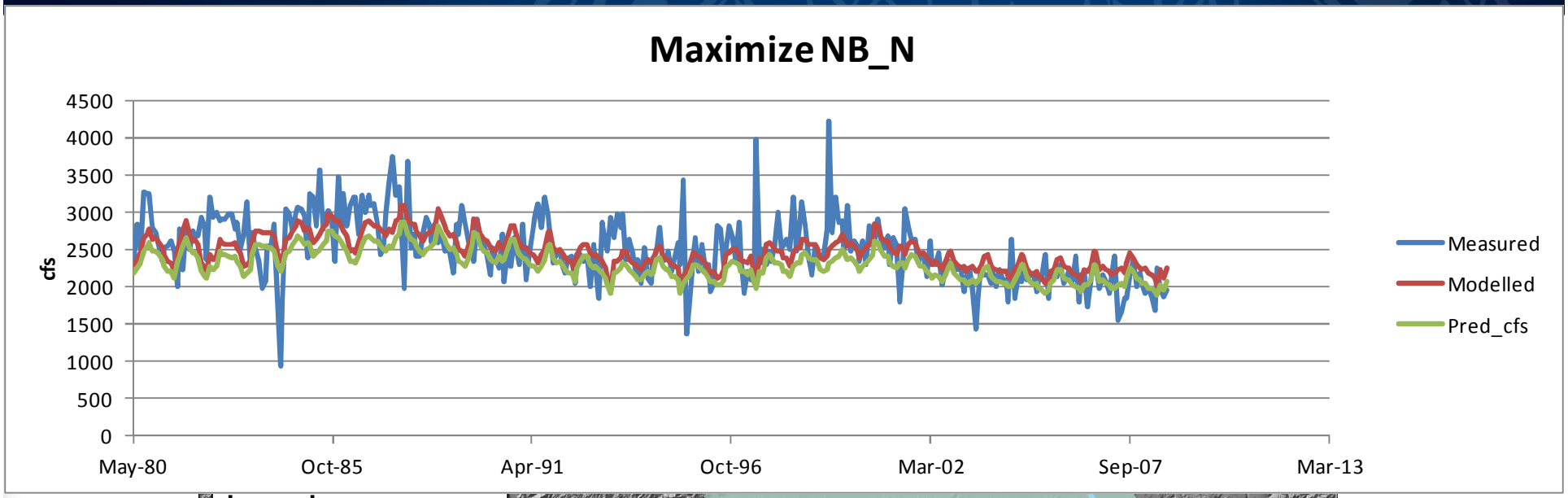

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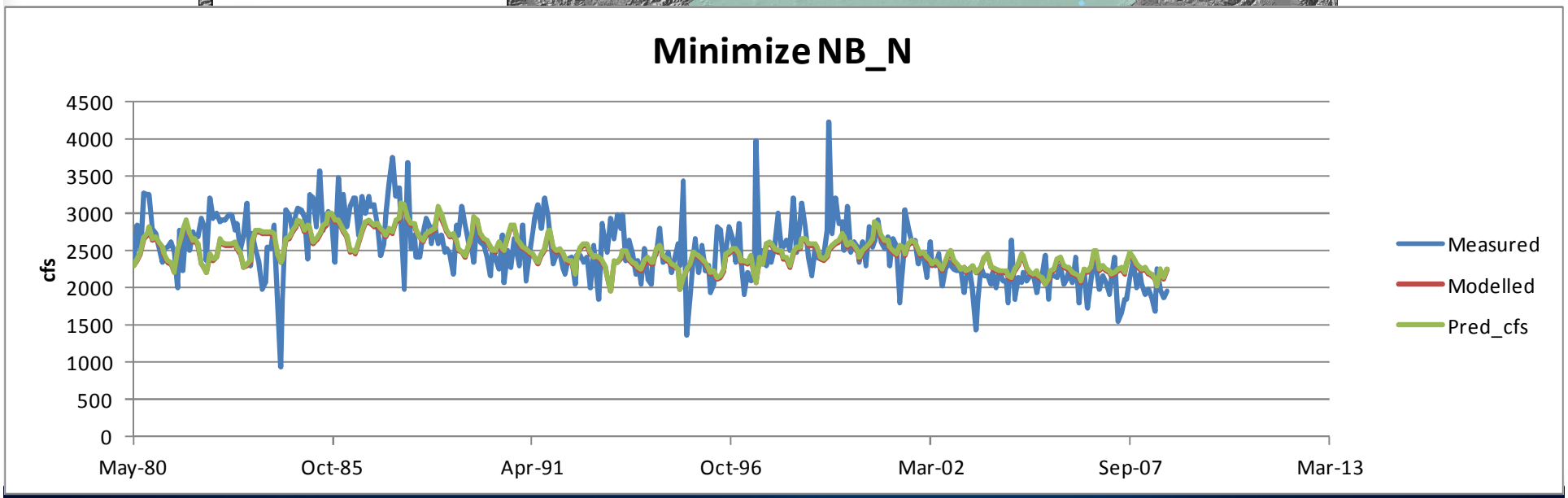

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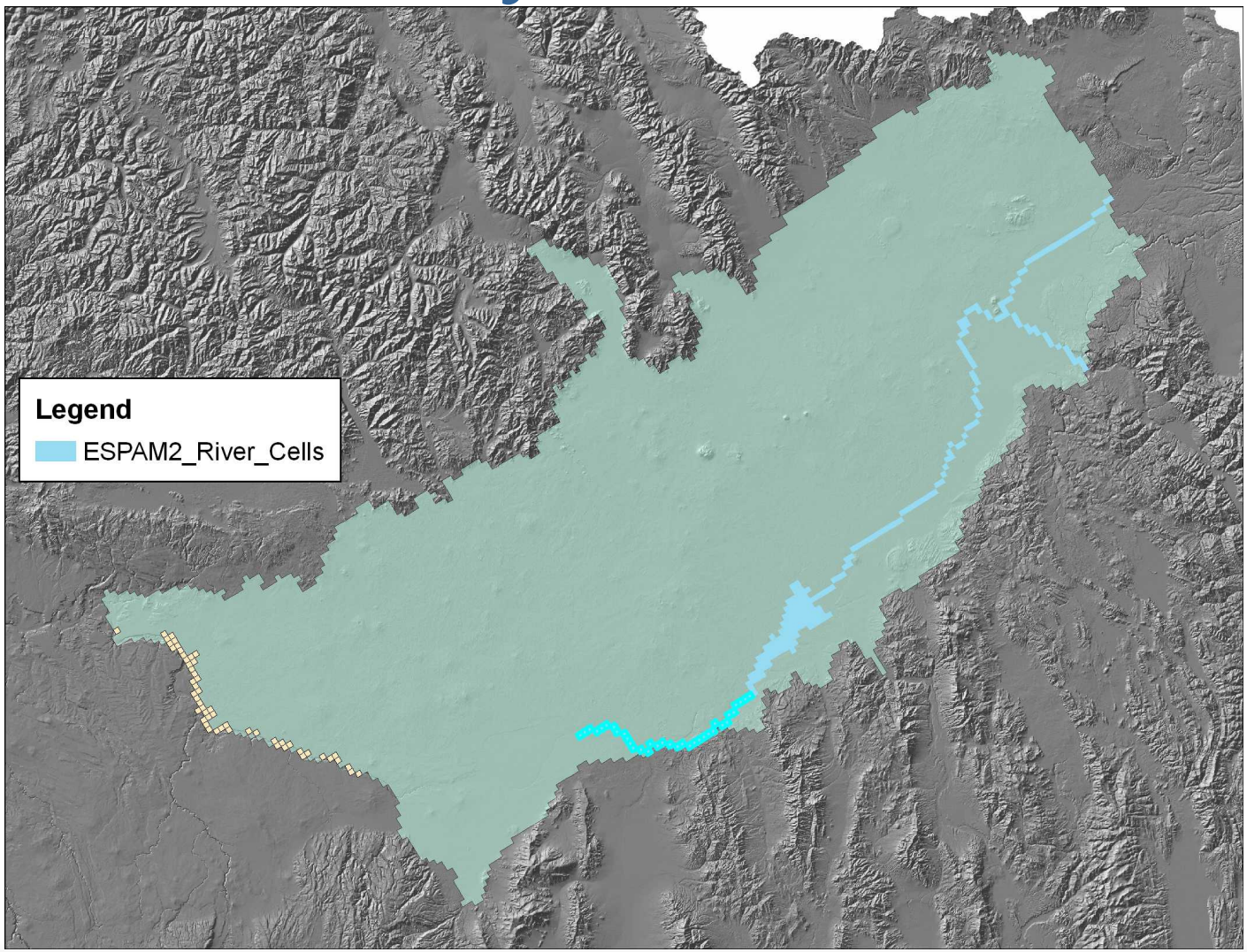

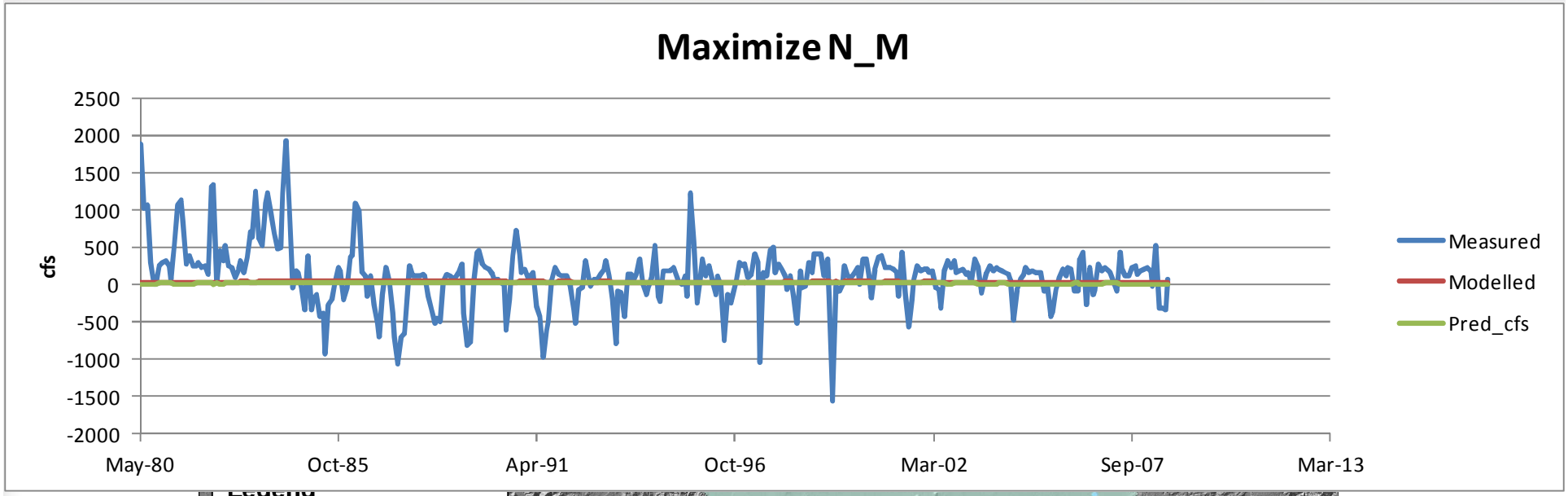
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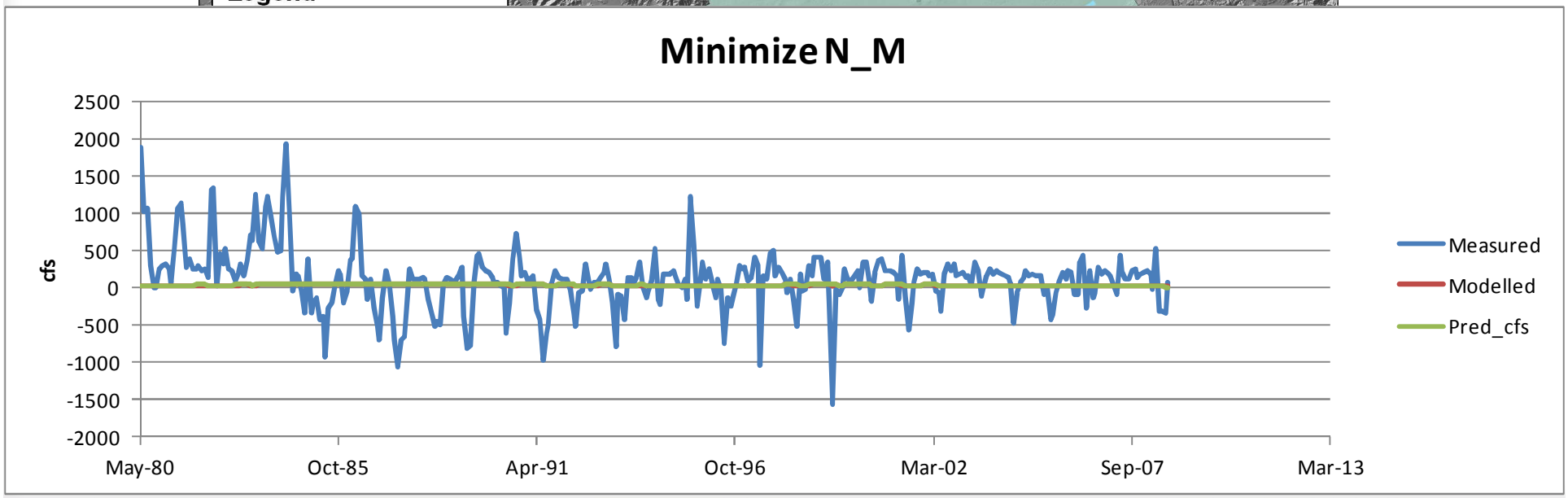
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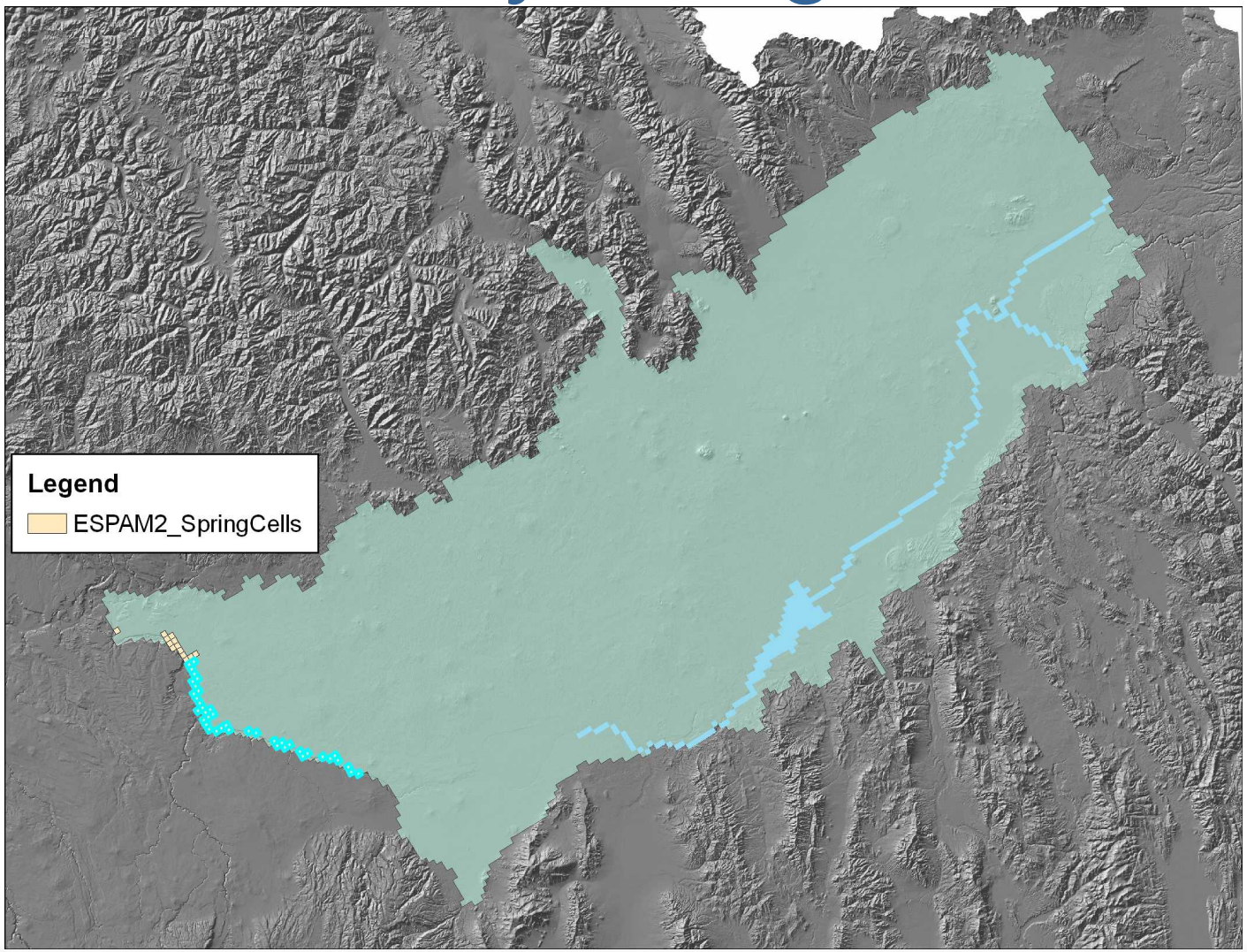
Kimberly - Hagerman



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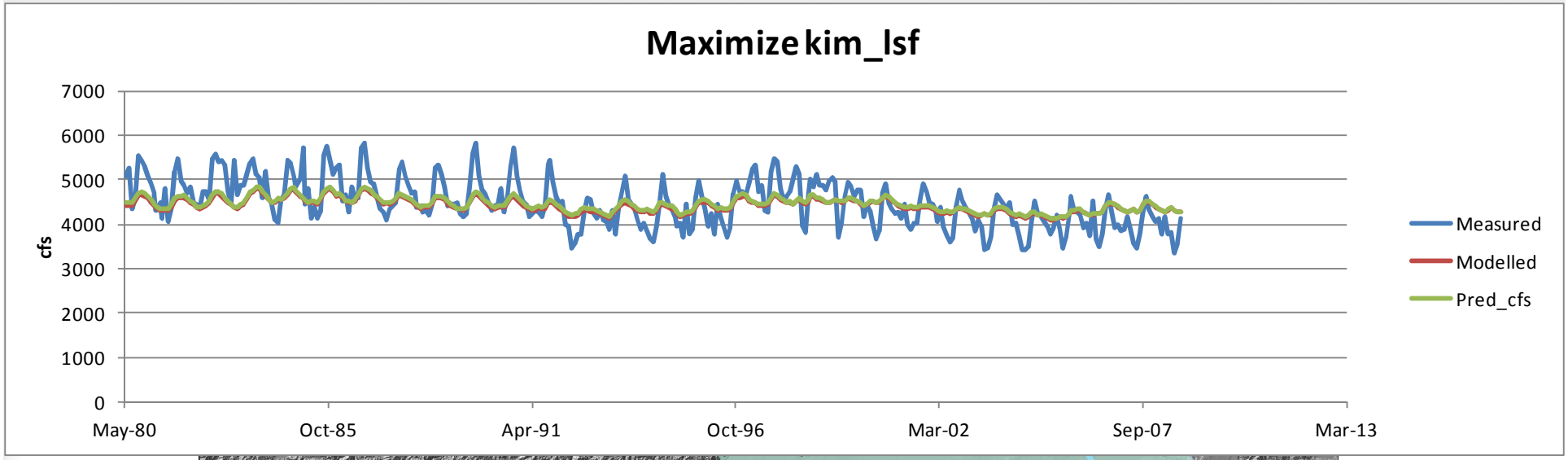
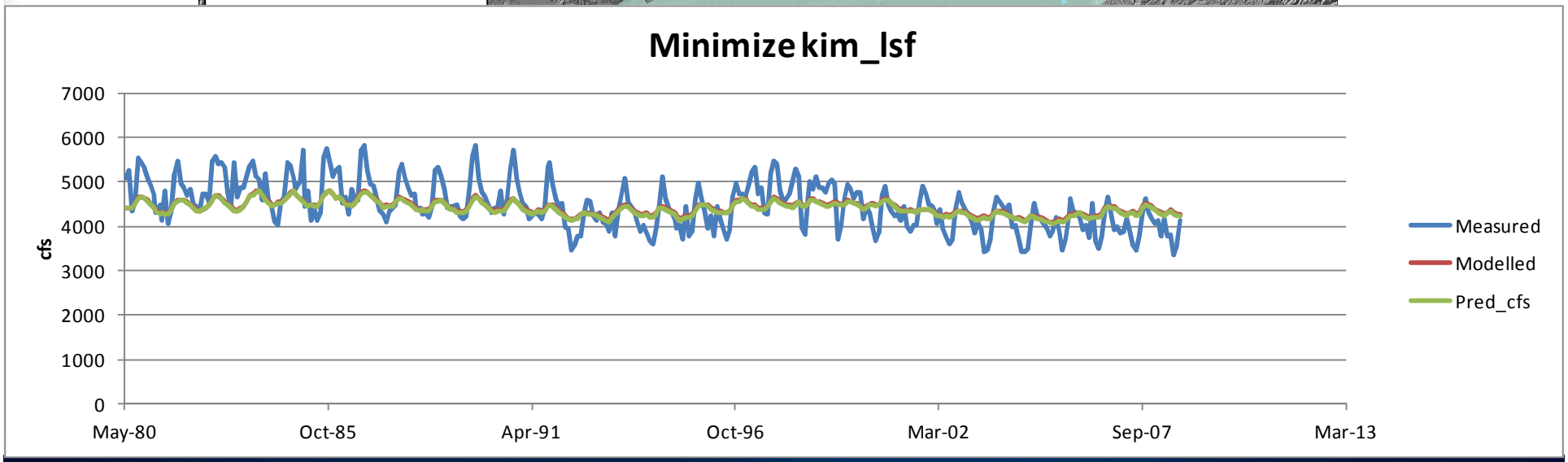
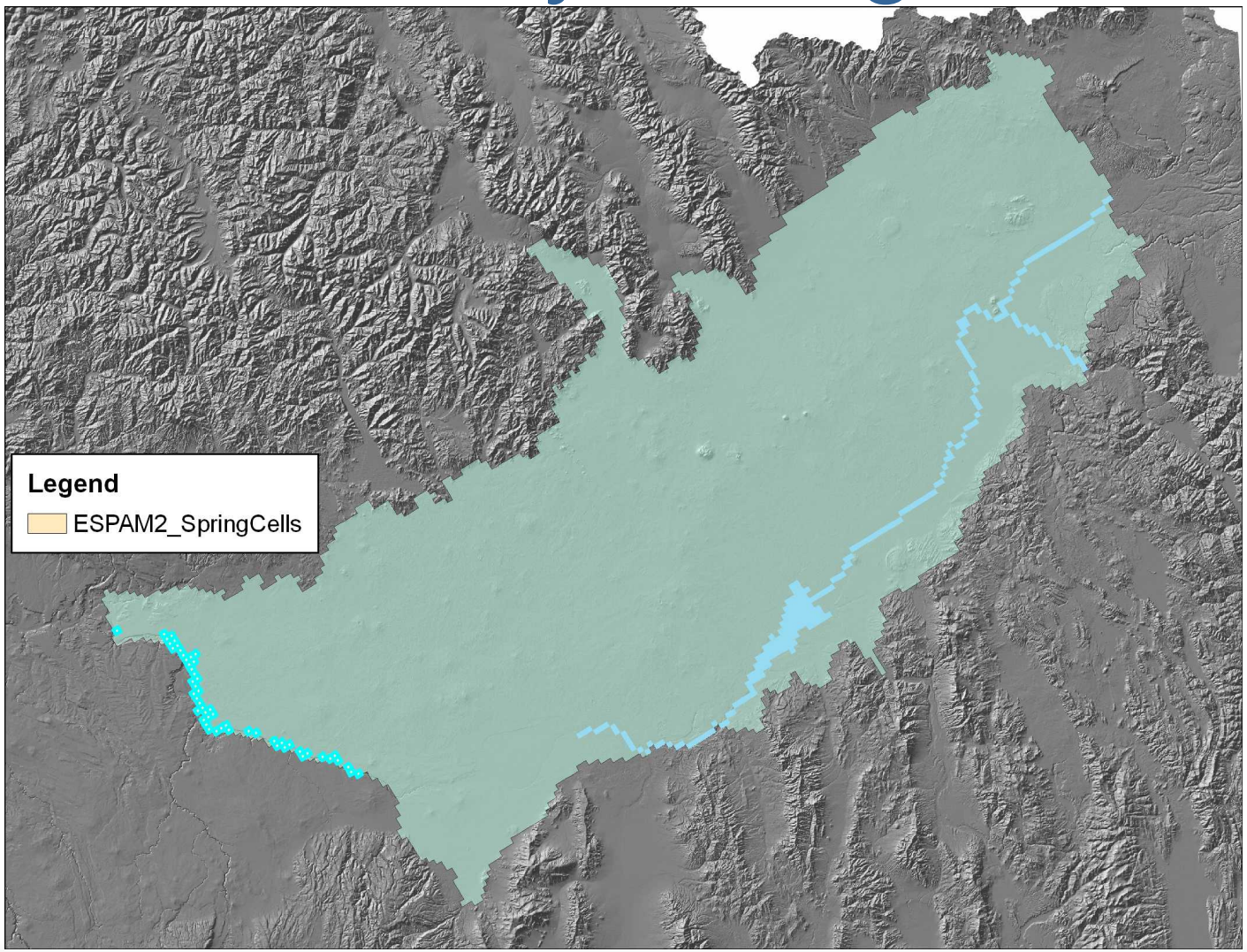




Kimberly – King Hill



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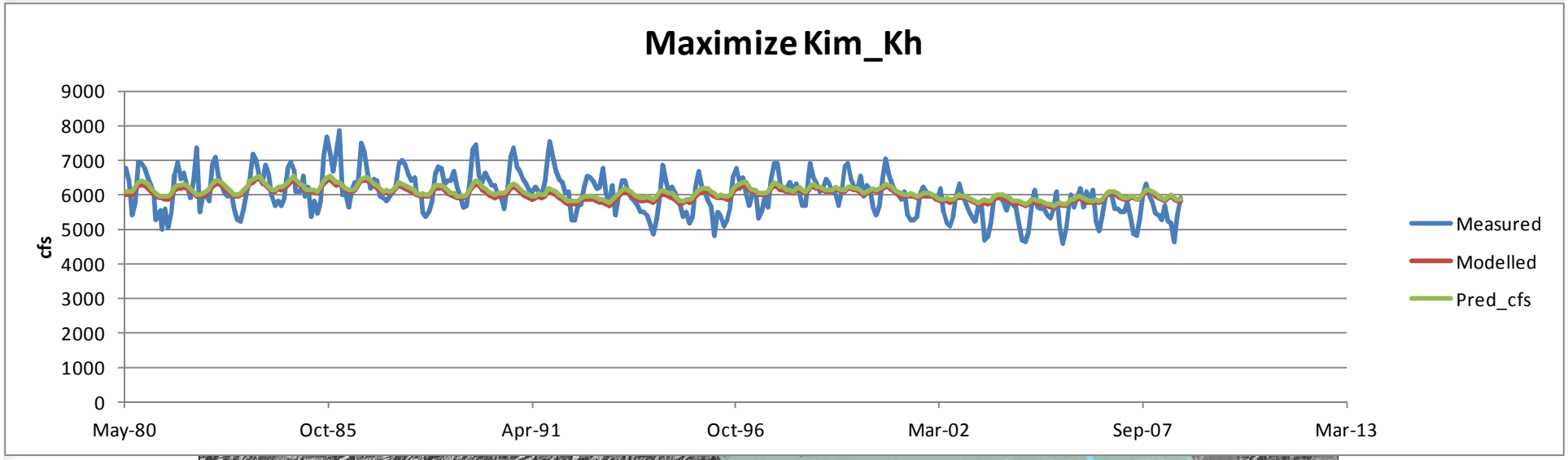
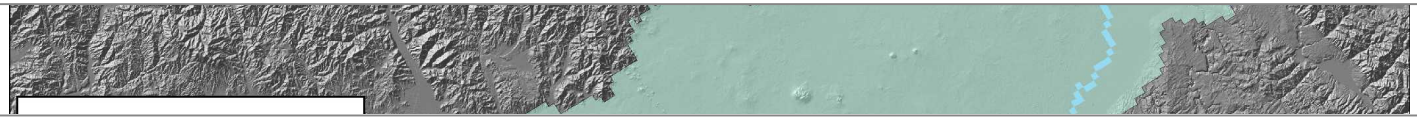
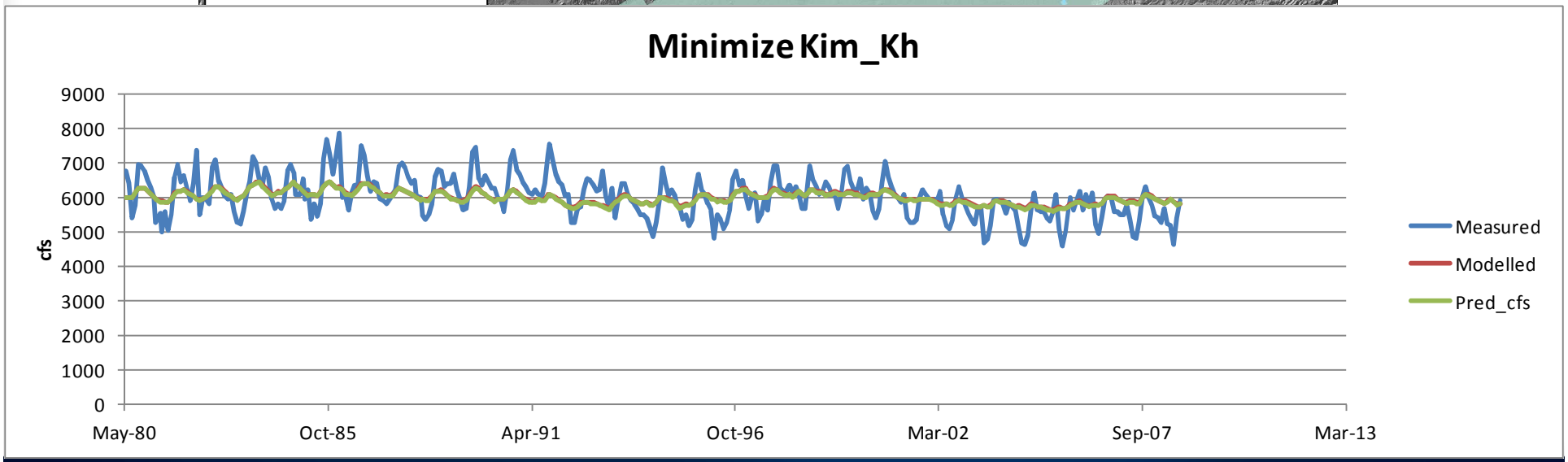
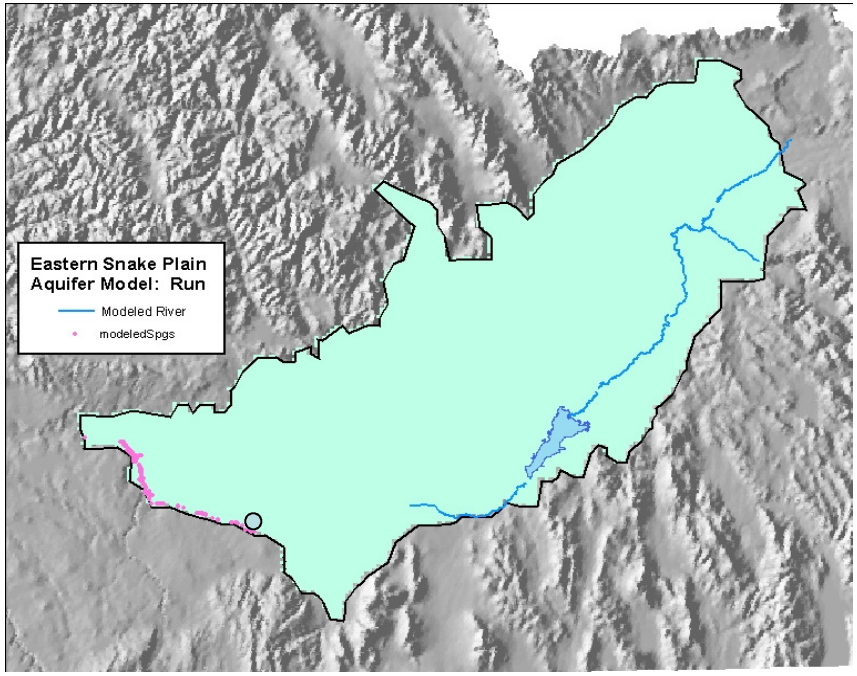


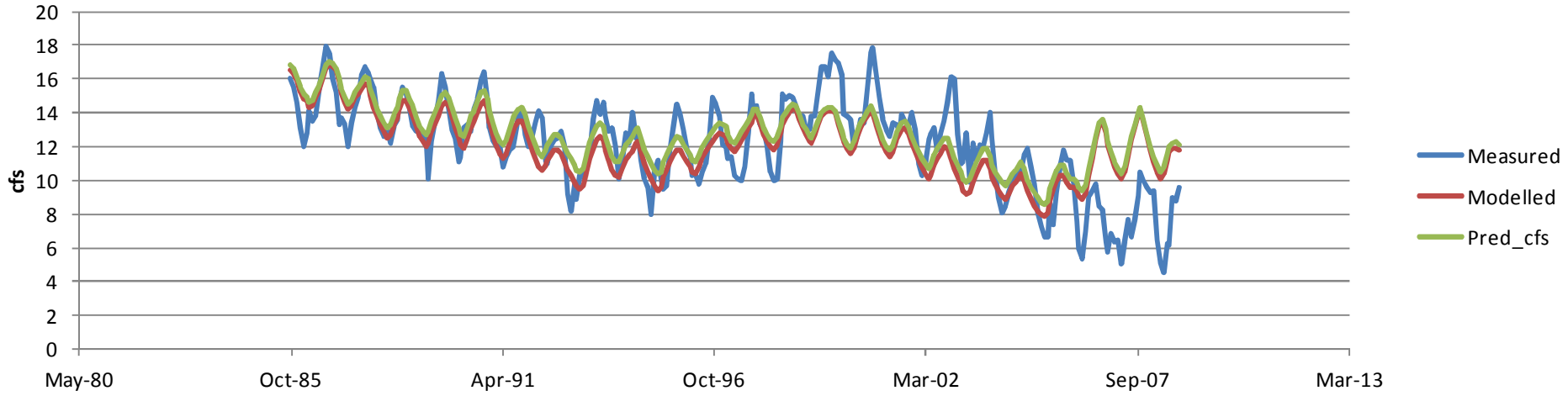




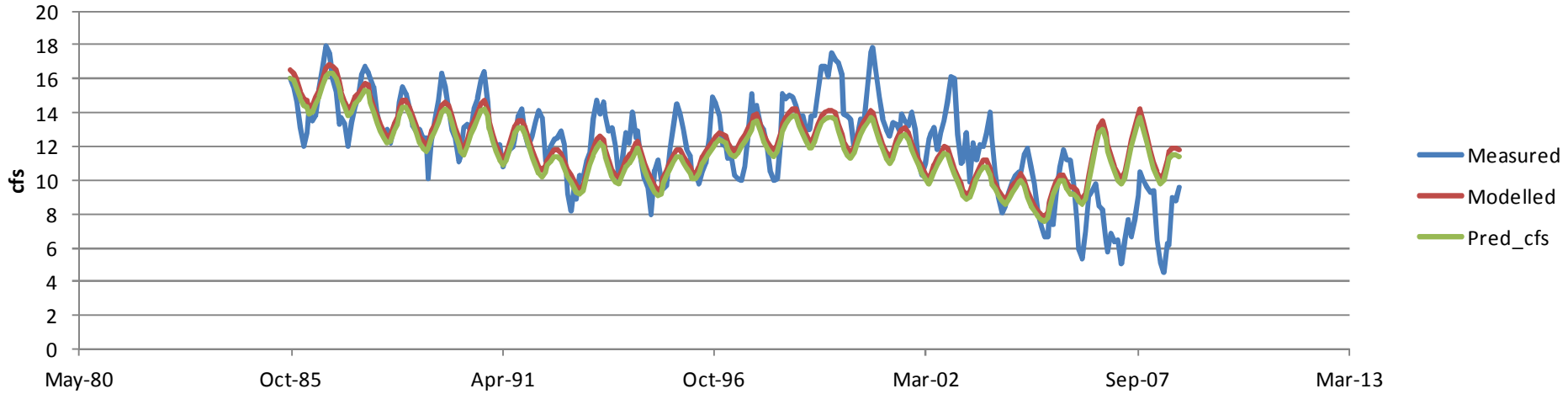


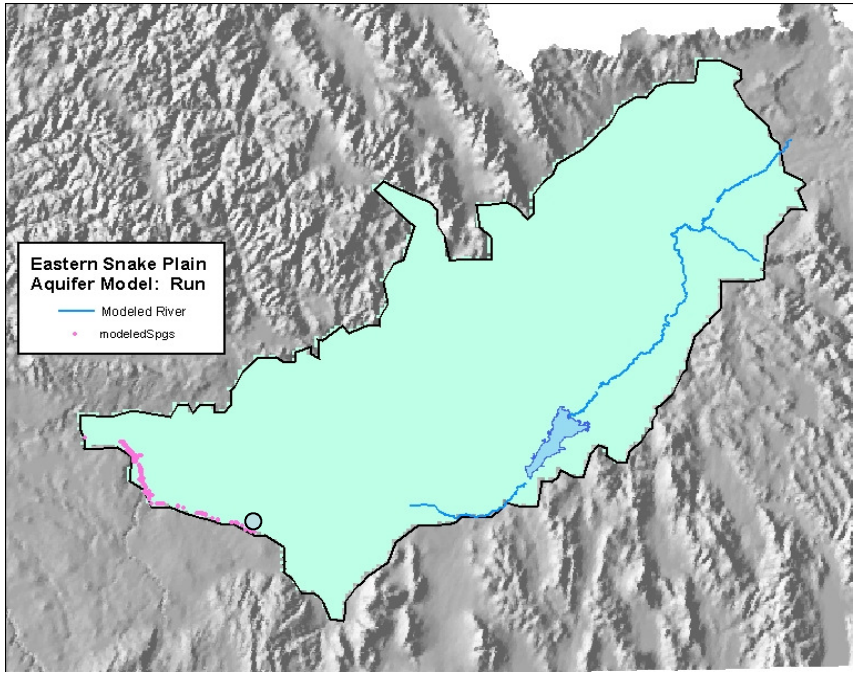
- Devils Washbowl

Maximize DEVILSWB



Minimize DEVILSWB

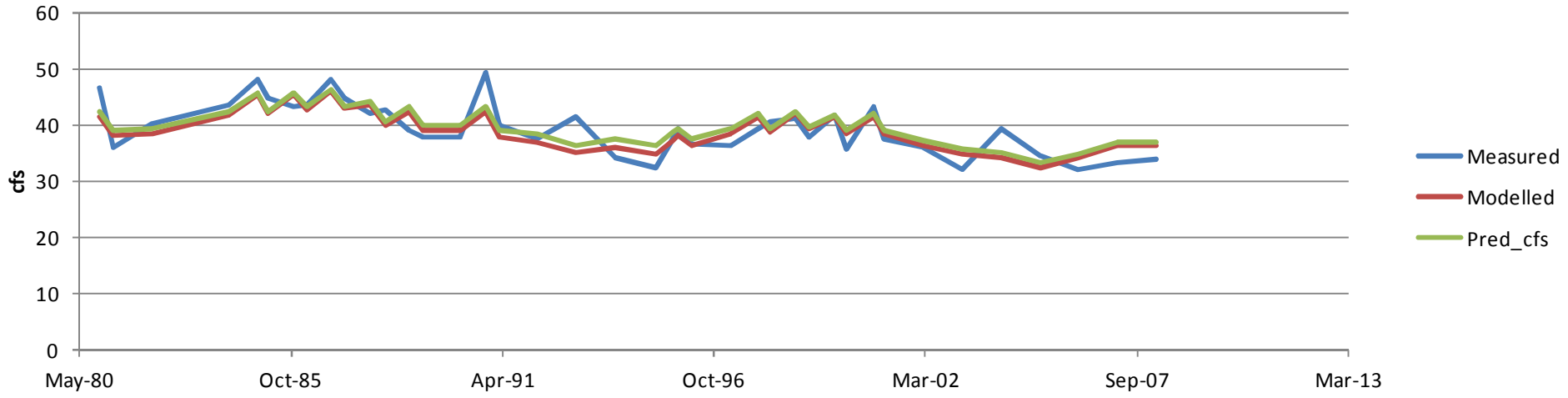




- Devils Corral

IDAHO Department of Water Resources

Maximize DEVILSC



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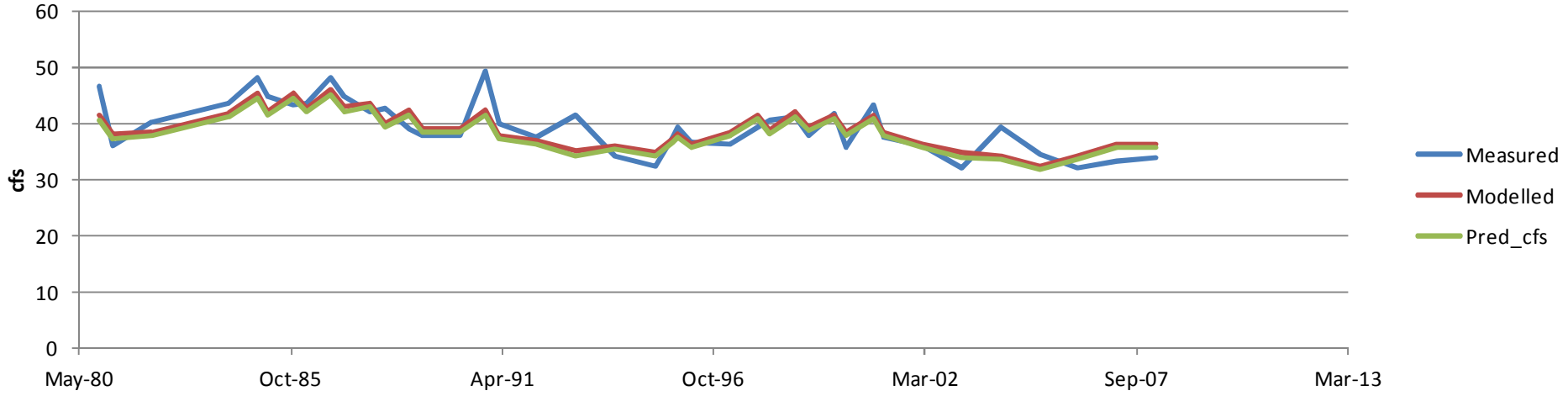
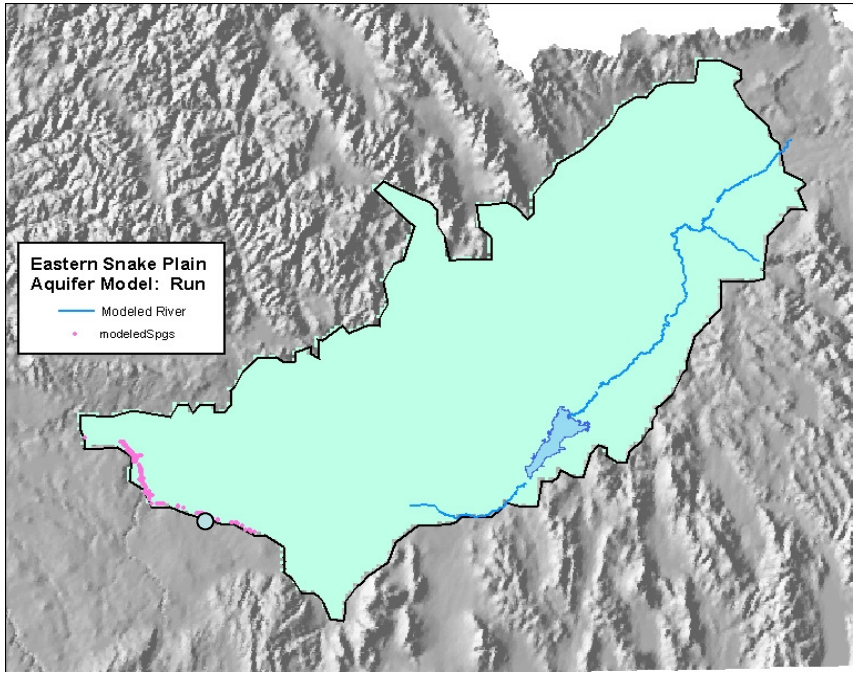
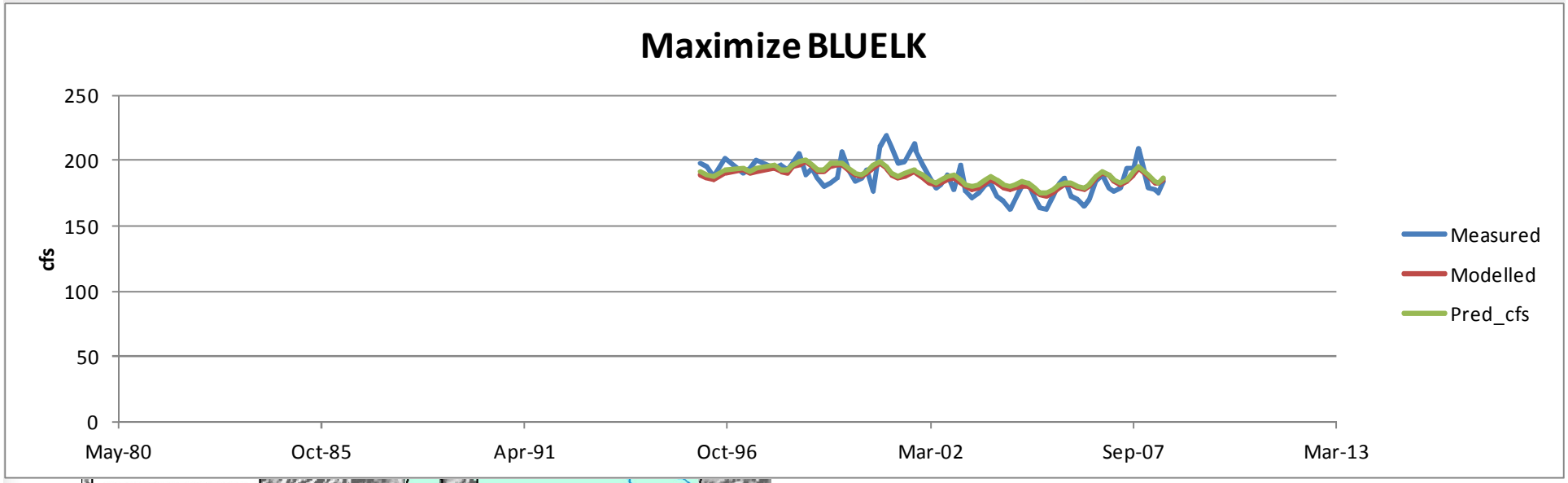
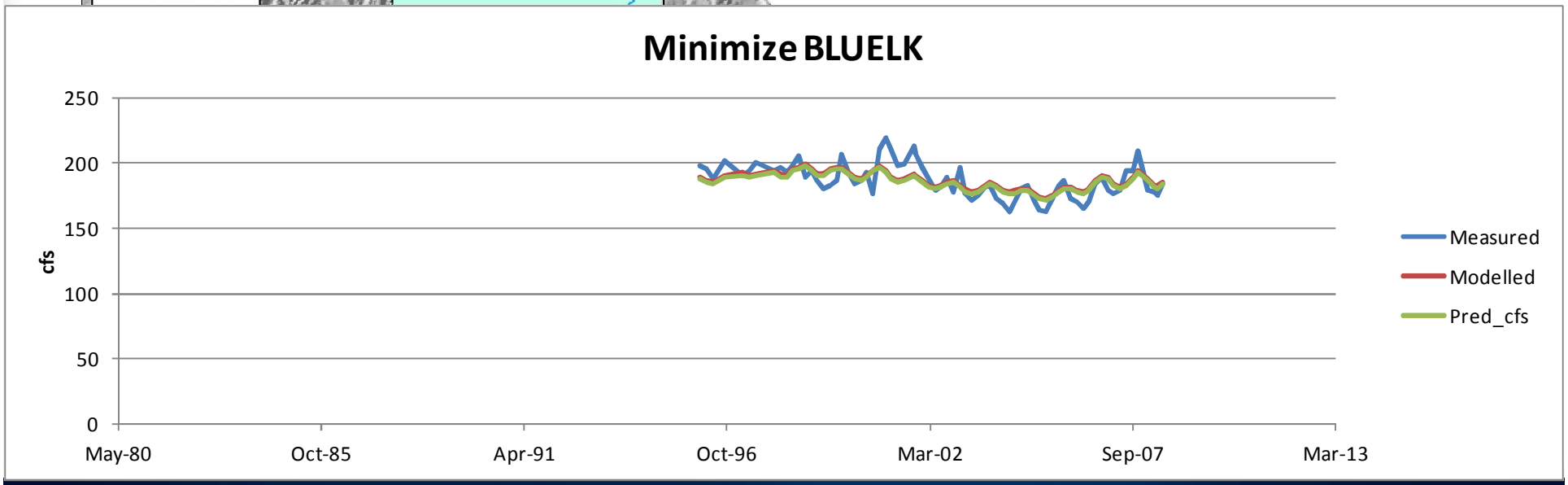


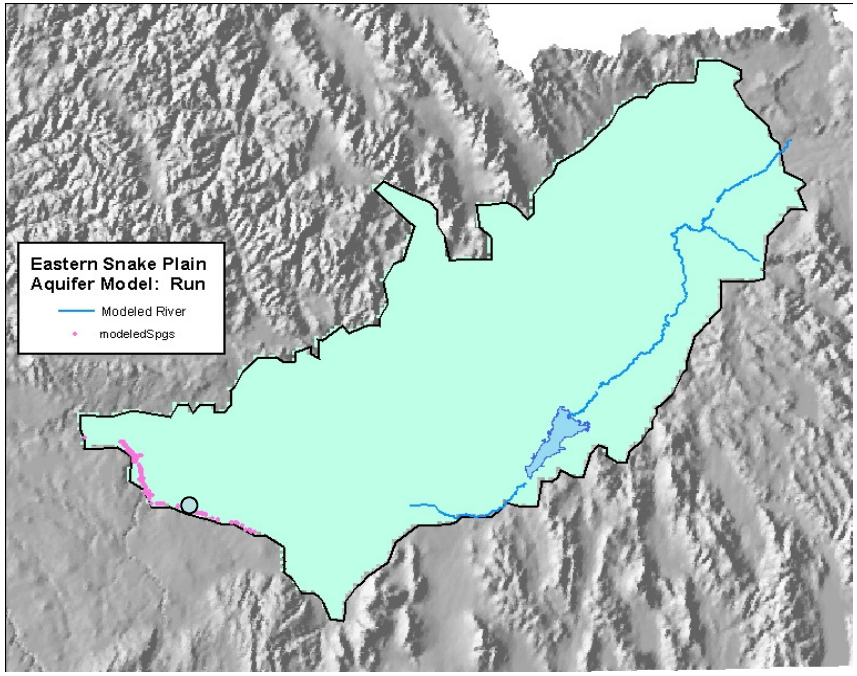

Eastern Snake Plain
Aquifer Model: Run
Modeled River
modeledSpgs

- Blue Lakes

IDAHO Department of Water Resources

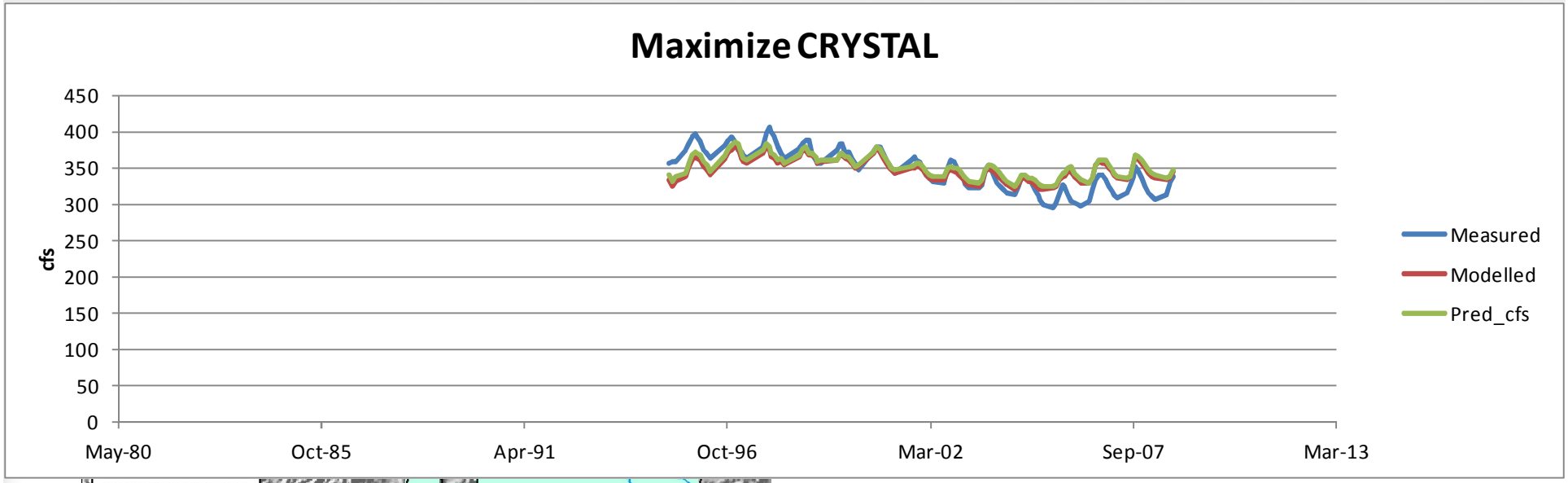


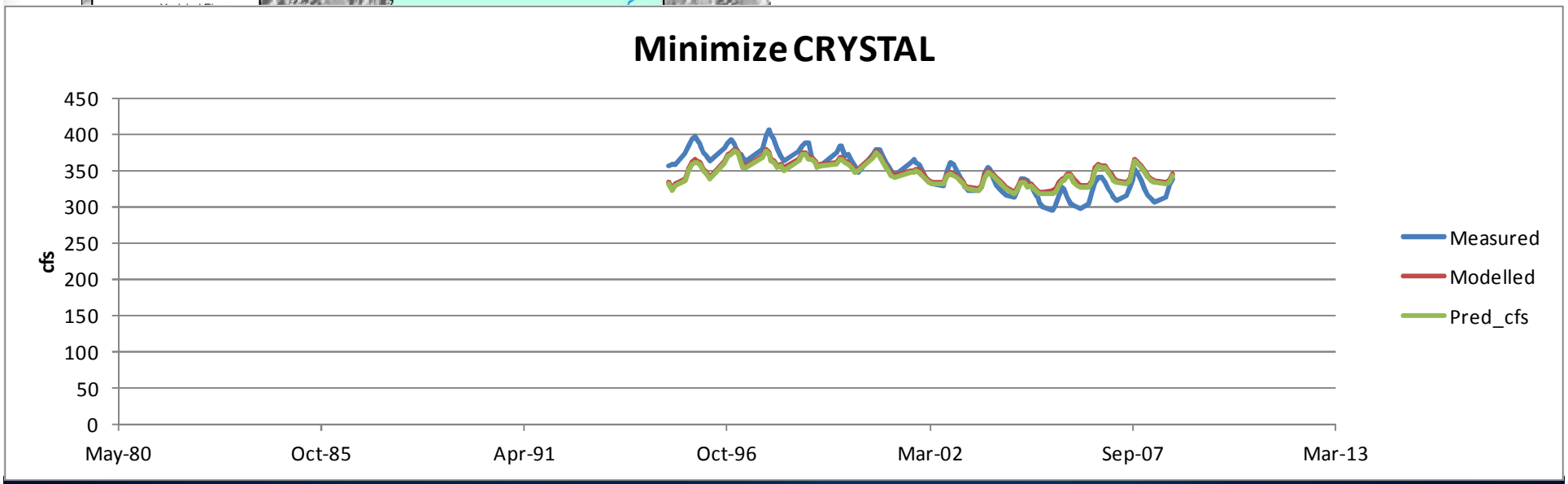


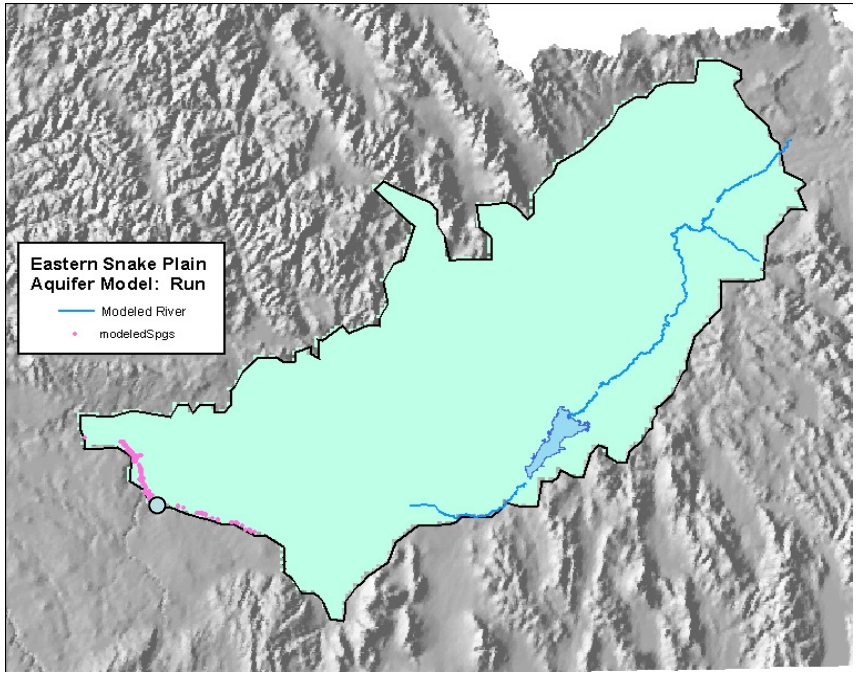


- Crystal Springs

IDAHO Department of Water Resources

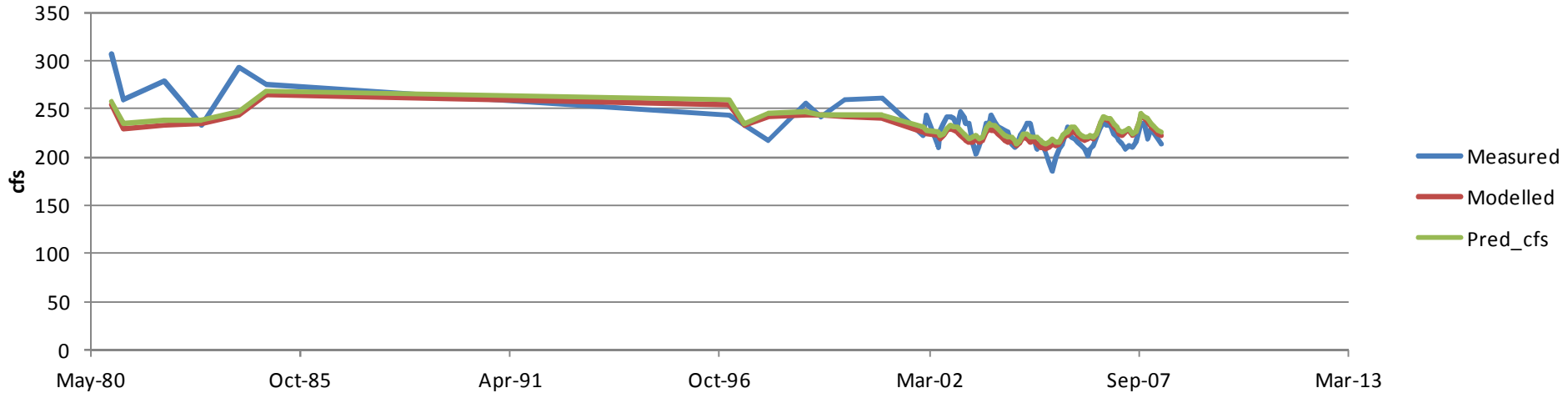





Eastern Snake Plain
Aquifer Model: Run
Modeled River
modeledSpgs

- Niagara

Maximize NIAGARA



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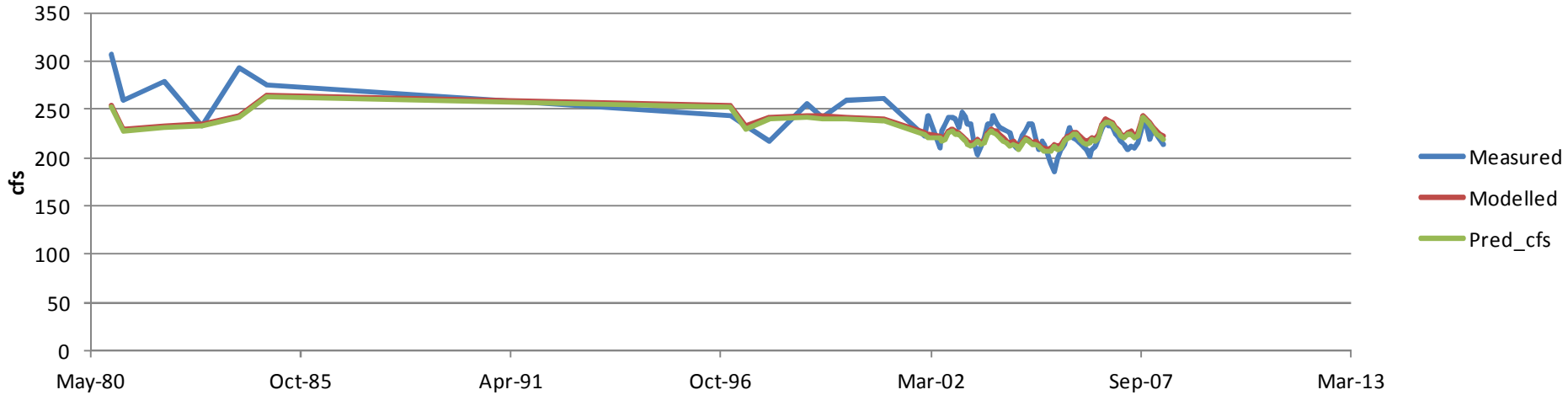
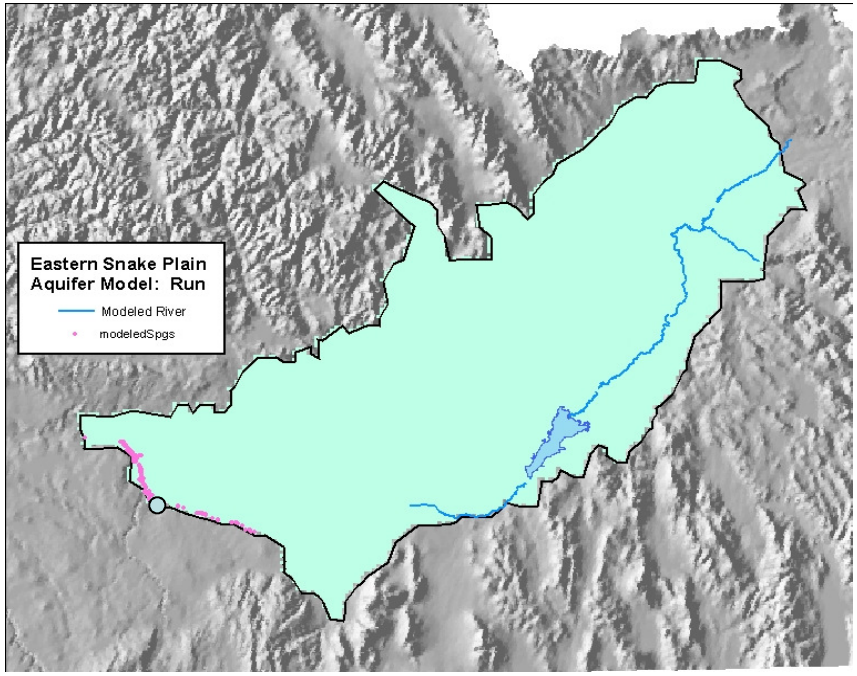
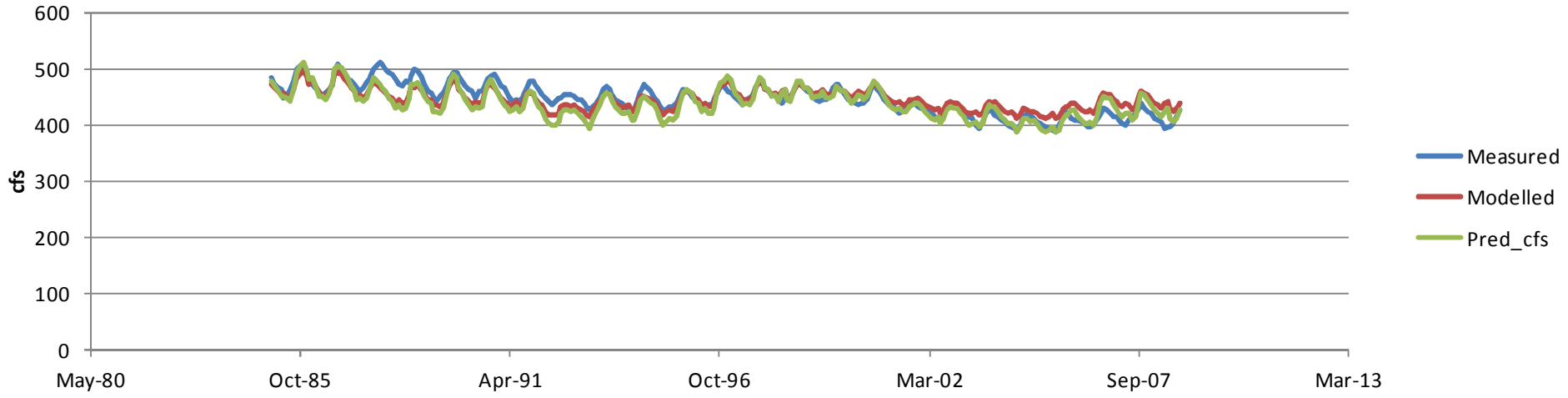



Eastern Snake Plain
Aquifer Model: Run
Modeled River
modeledSpgs

- Clear Lakes

Maximize CLEARLK



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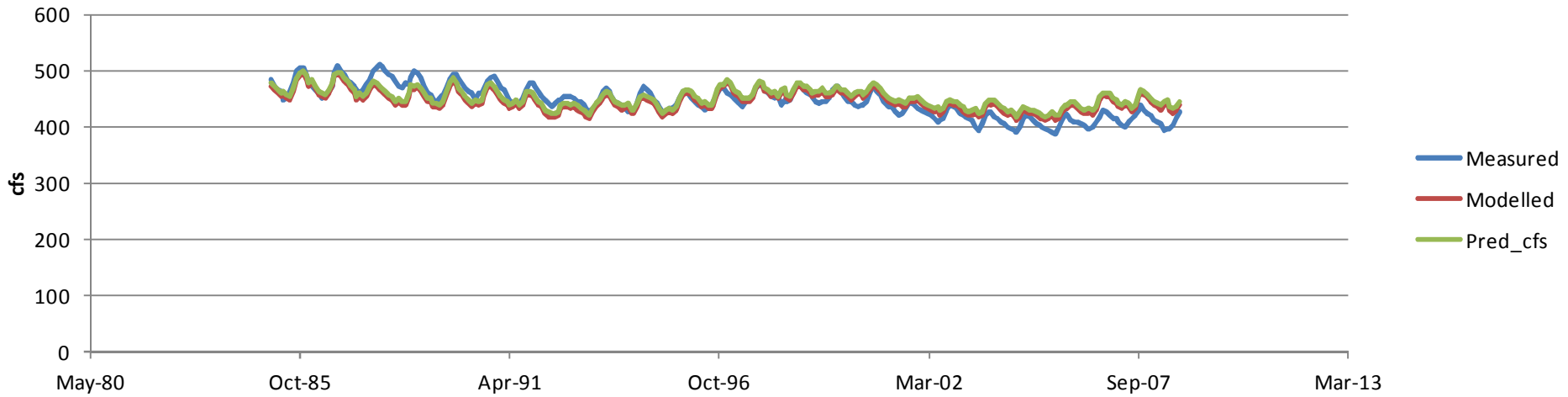

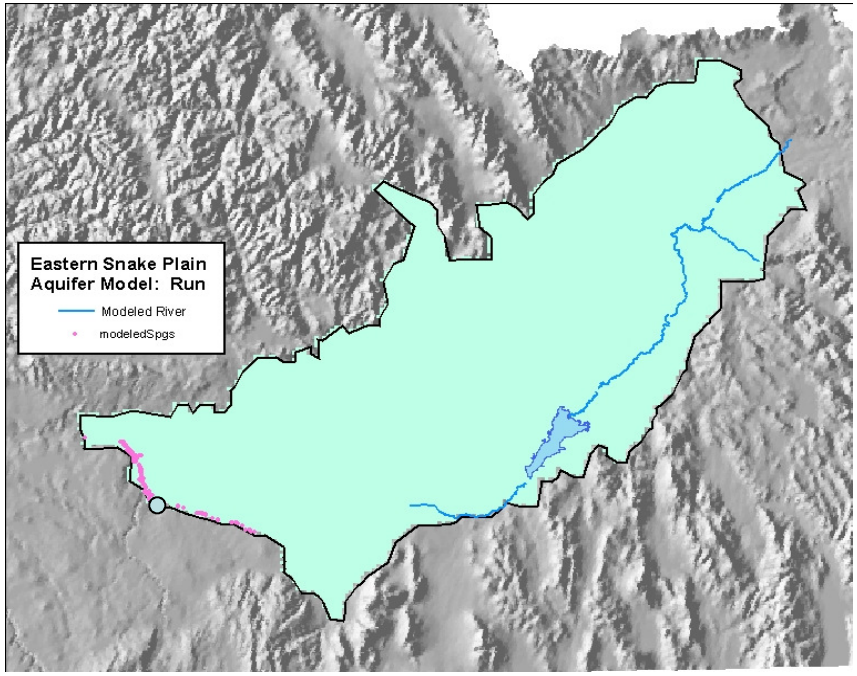

- Briggs Spring

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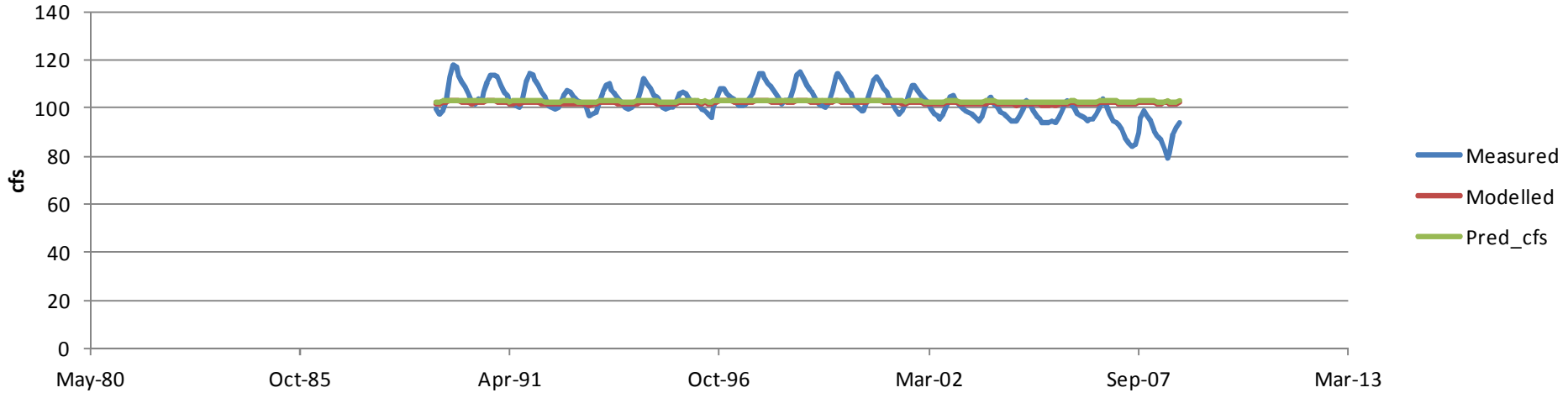
Maximize BRIGGS



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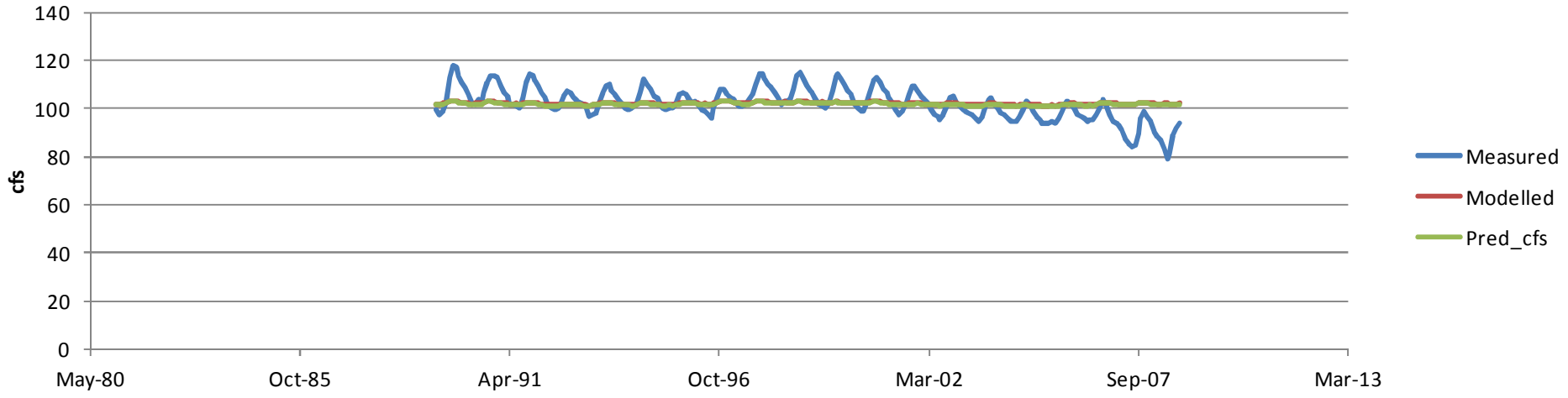
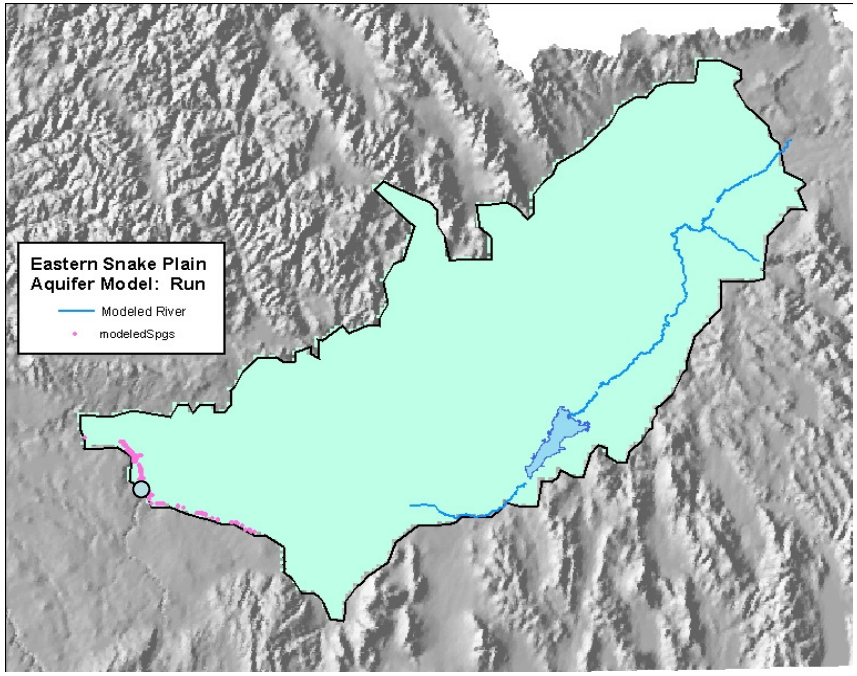
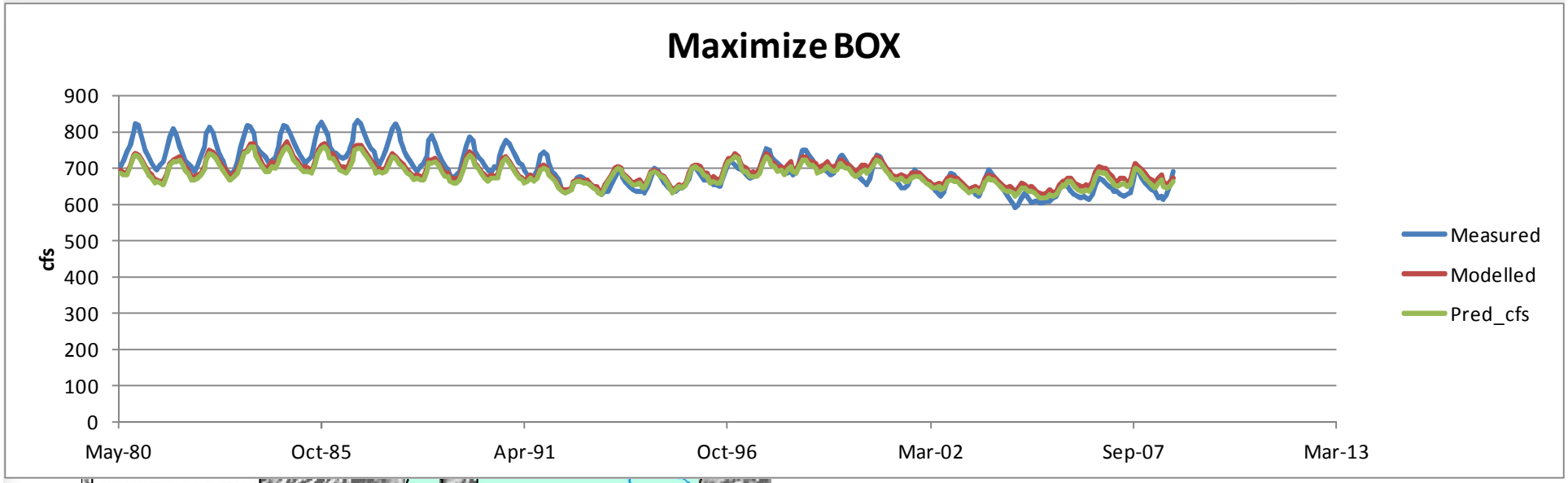




- Box Canyon Spring


Maximize BOX
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700
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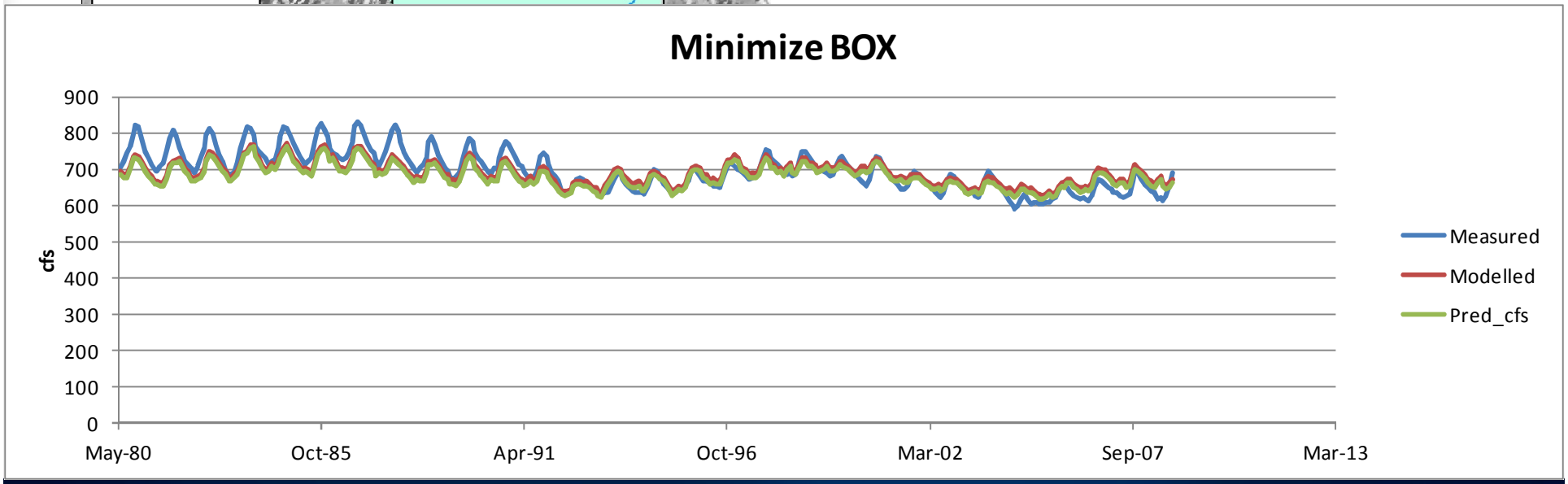
500
400
300
200
100
0
cfs
May-80
Oct-85
Apr-91
Oct-96
Mar-02
Sep-07
Mar-13
Measured
Modelled
Pred_cfs

Eastern Snake Plain
Aquifer Model: Run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Measured
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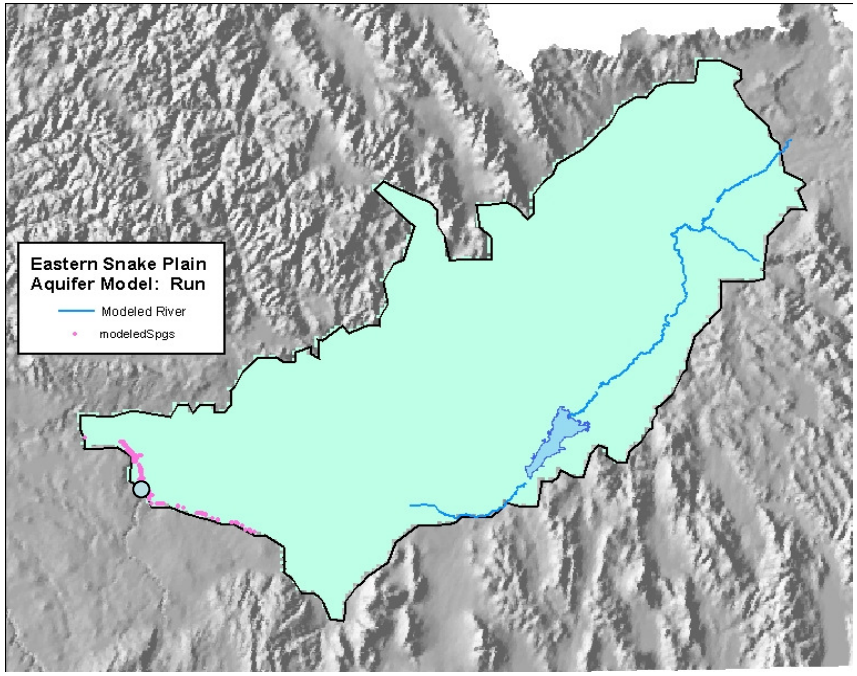
Pred_cfs



- Sand Springs

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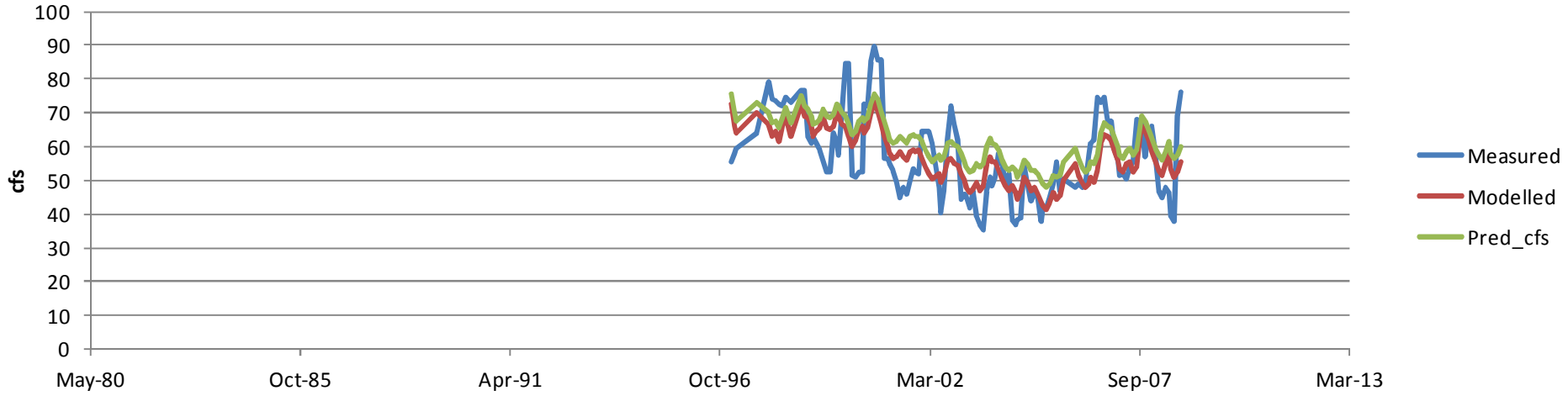
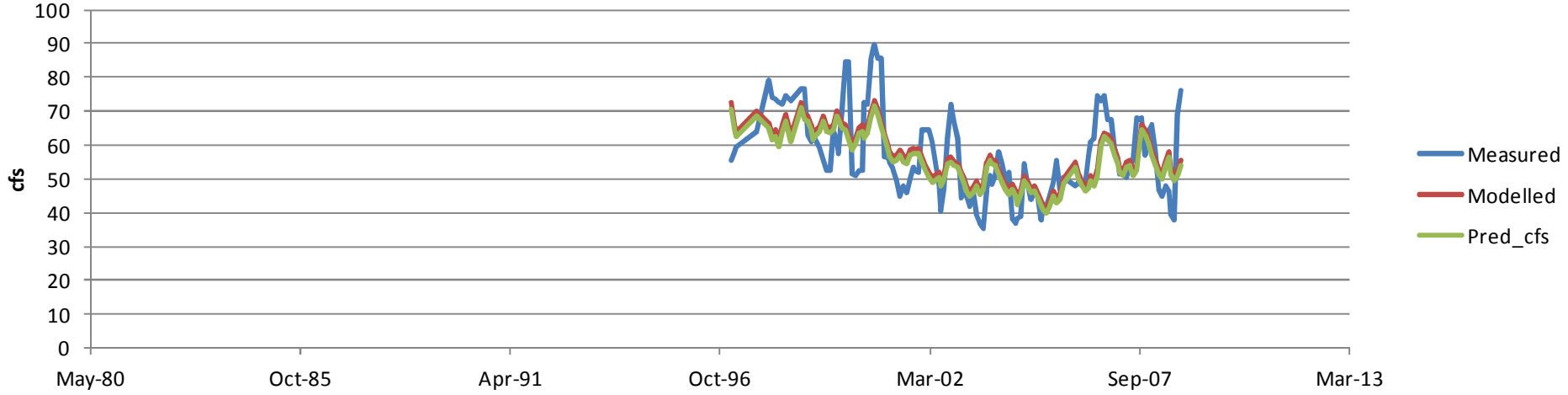
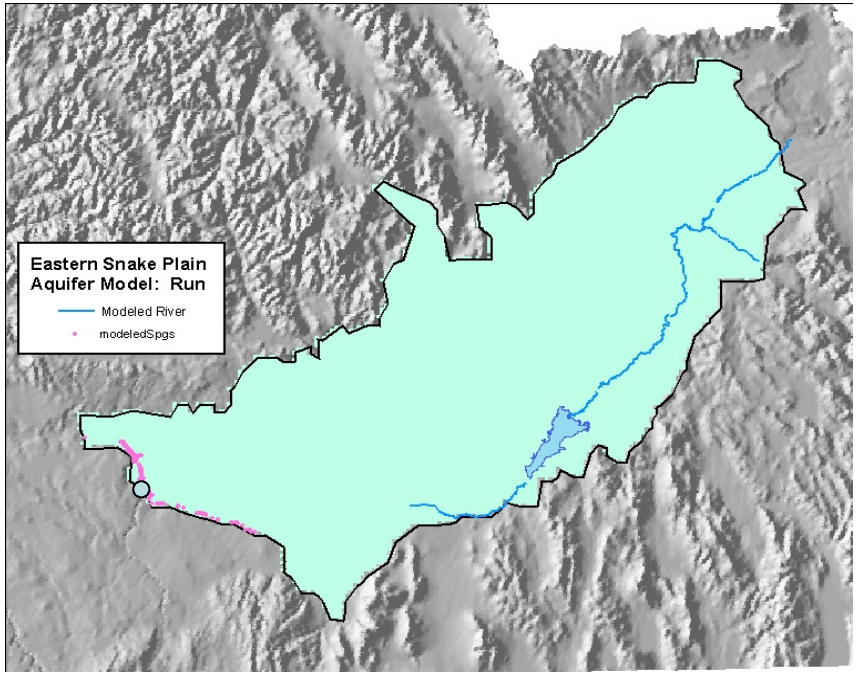
Maximize SANDSPGS

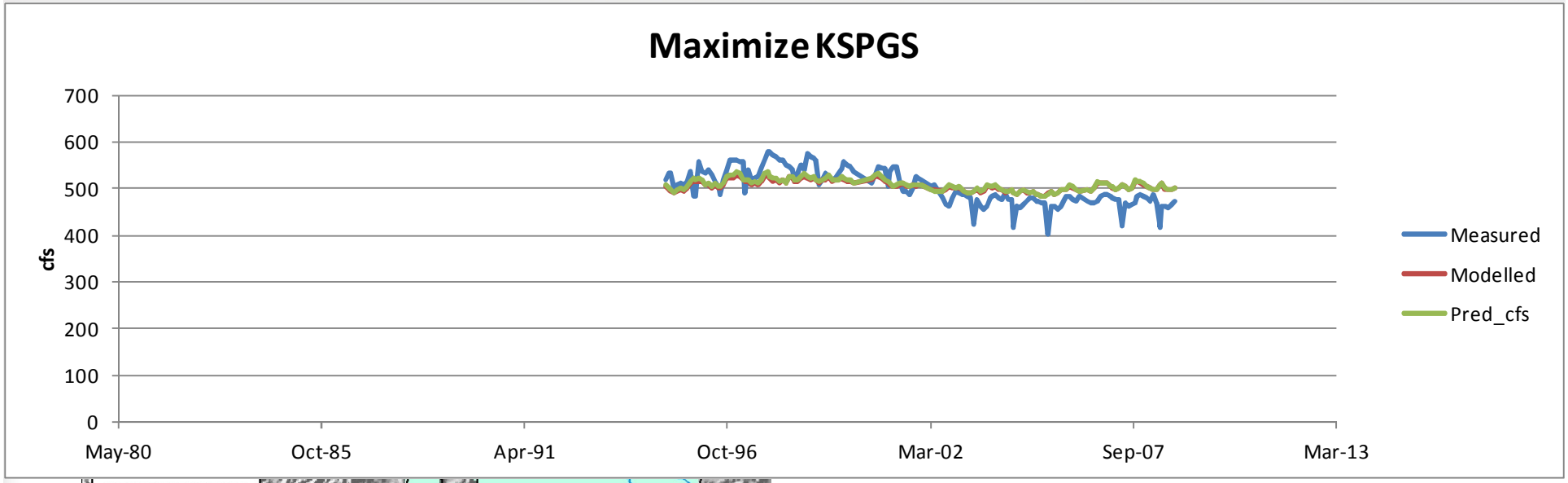


Minimize SANDSPGS





- Thousand Springs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600
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100
0
cfs
May-80
Oct-85
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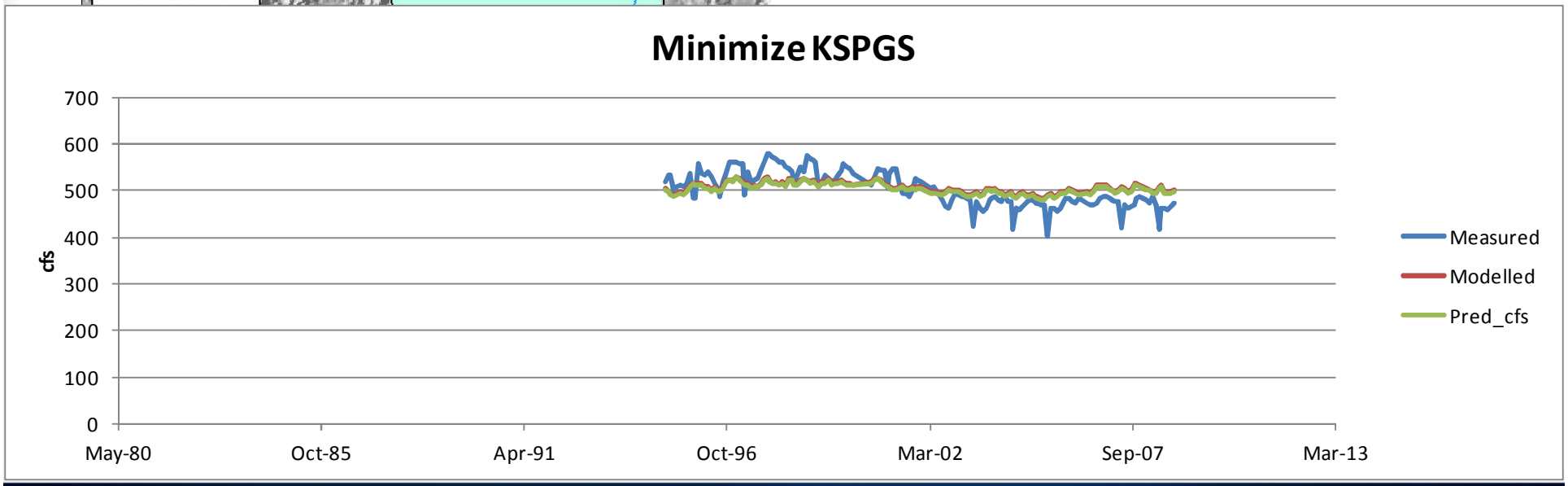
Mar-02
Sep-07
Mar-13
Measured
Modelled
Pred_cfs

Eastern Snake Plain
Aquifer Model: Run


Minimize KSPGS
700
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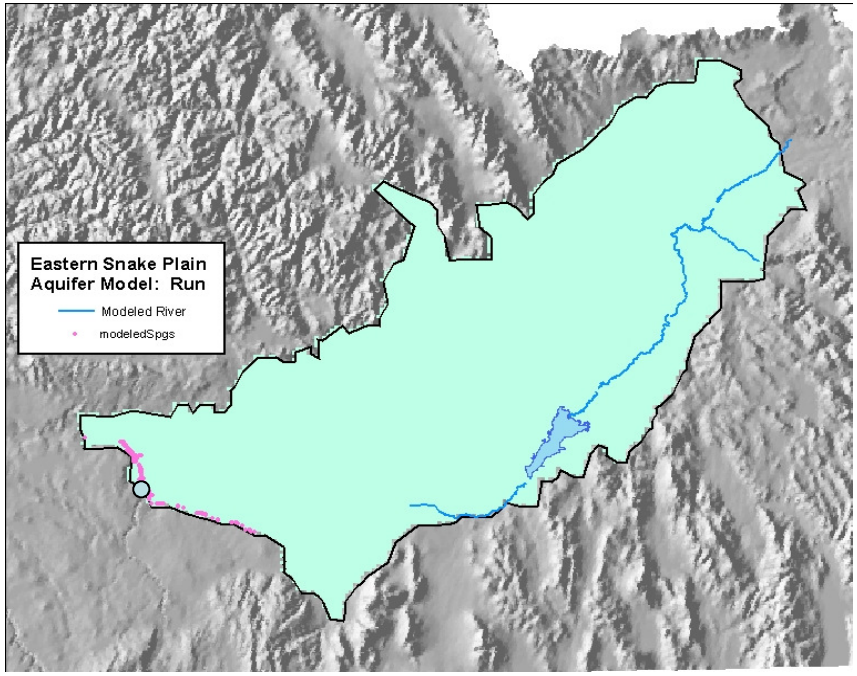
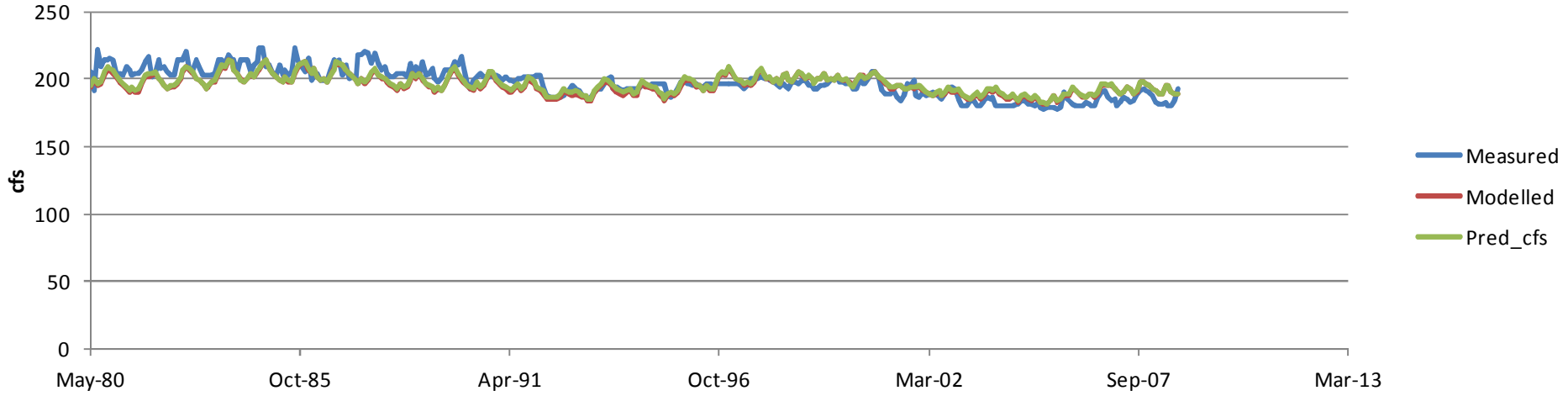
Mar-13
Measured
Modelled
Pred_cfs

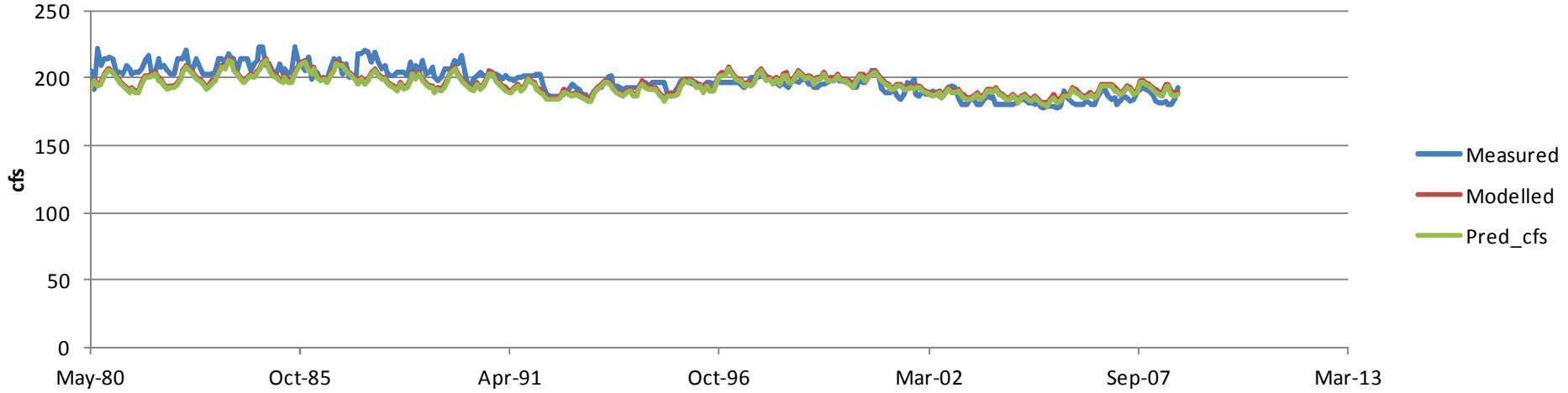


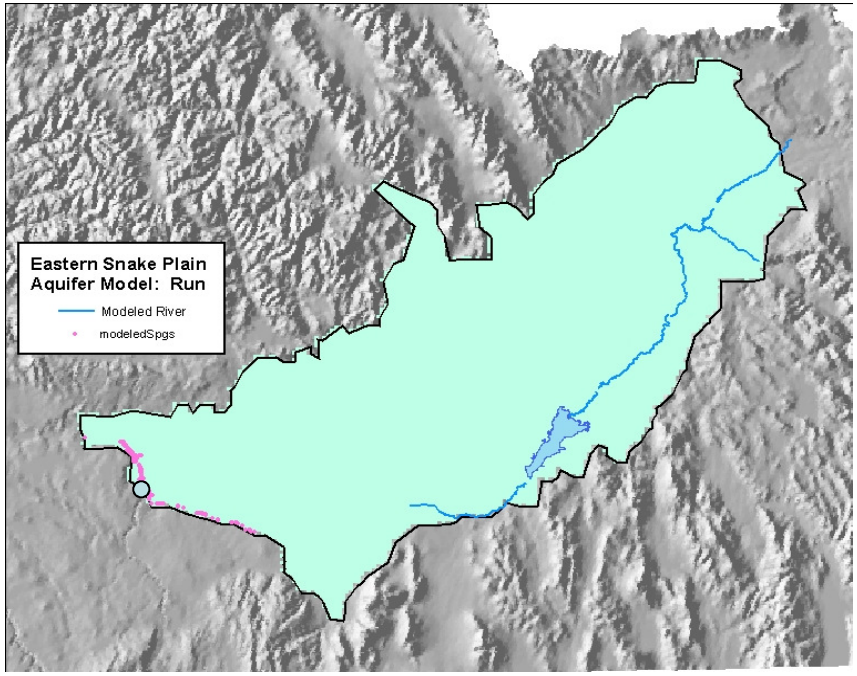
- Ntl Fish Hatchery

Maximize NFHATCH



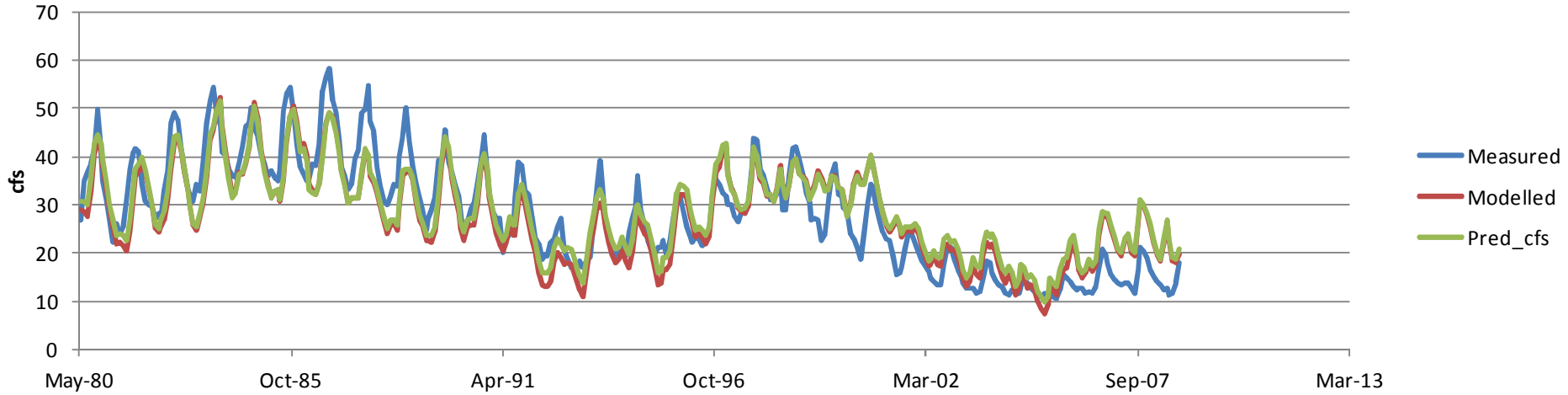
Minimize NFHATCH



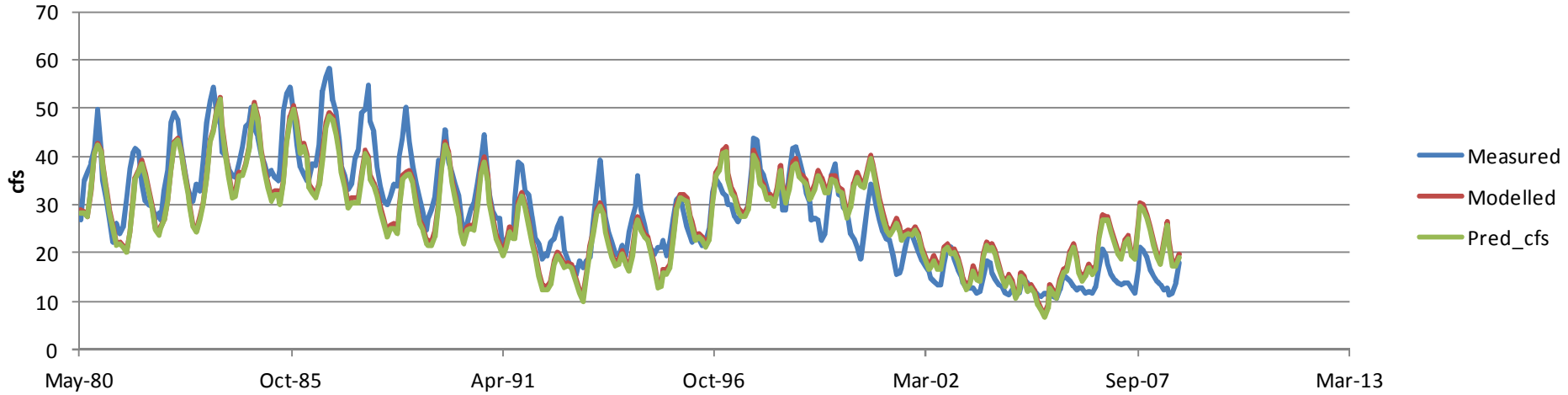


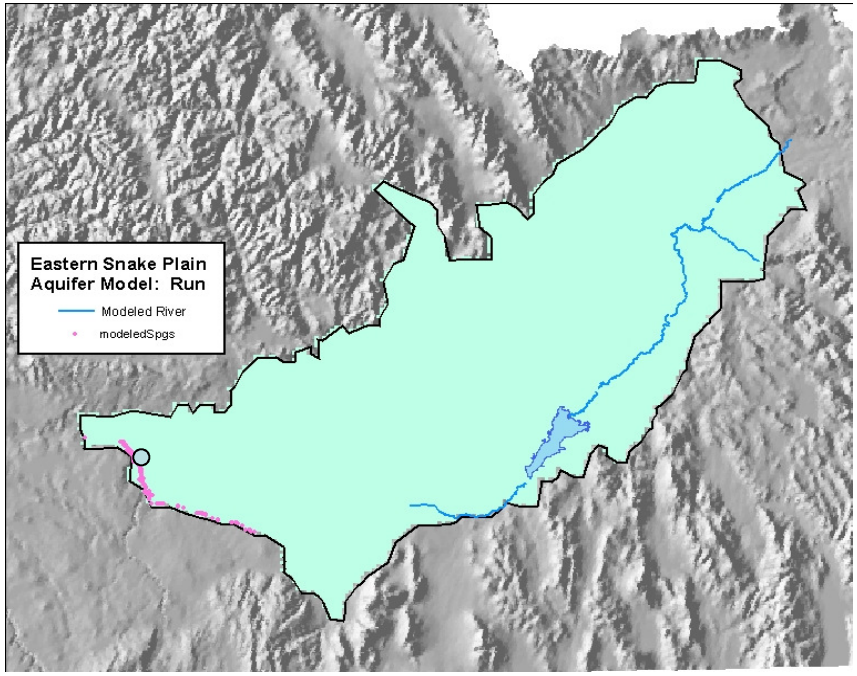
- Rangen Spring

Maximize RANGEN



Minimize RANGEN




Eastern Snake Plain
Aquifer Model: Run
Modeled River
modeledSpgs

- Malad

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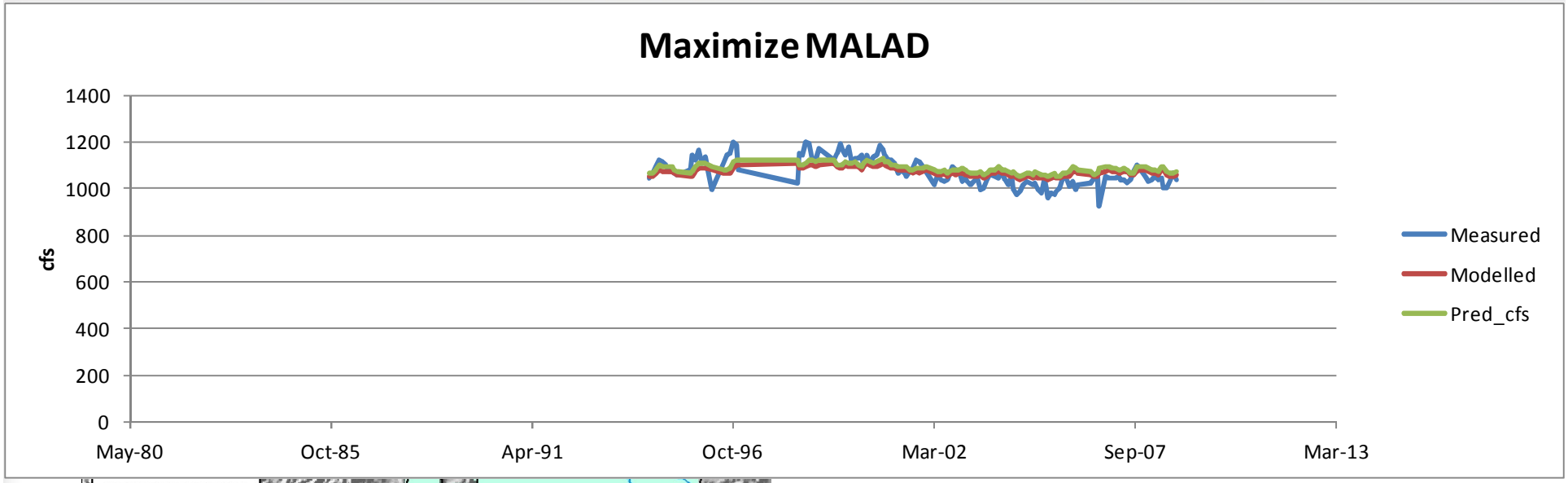
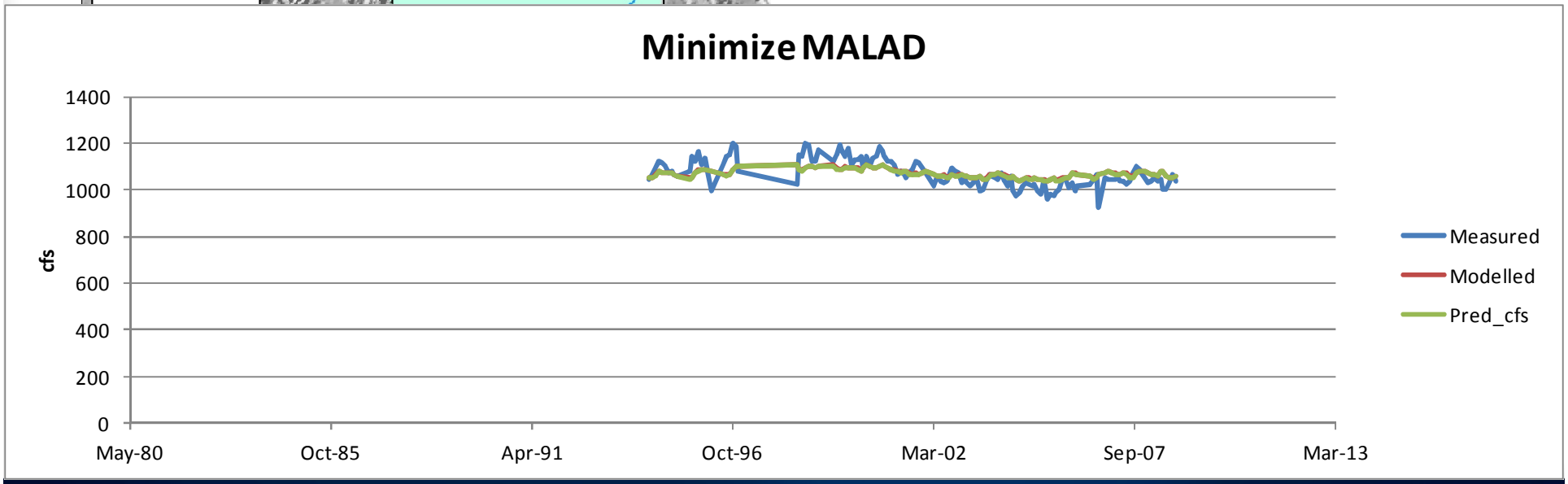
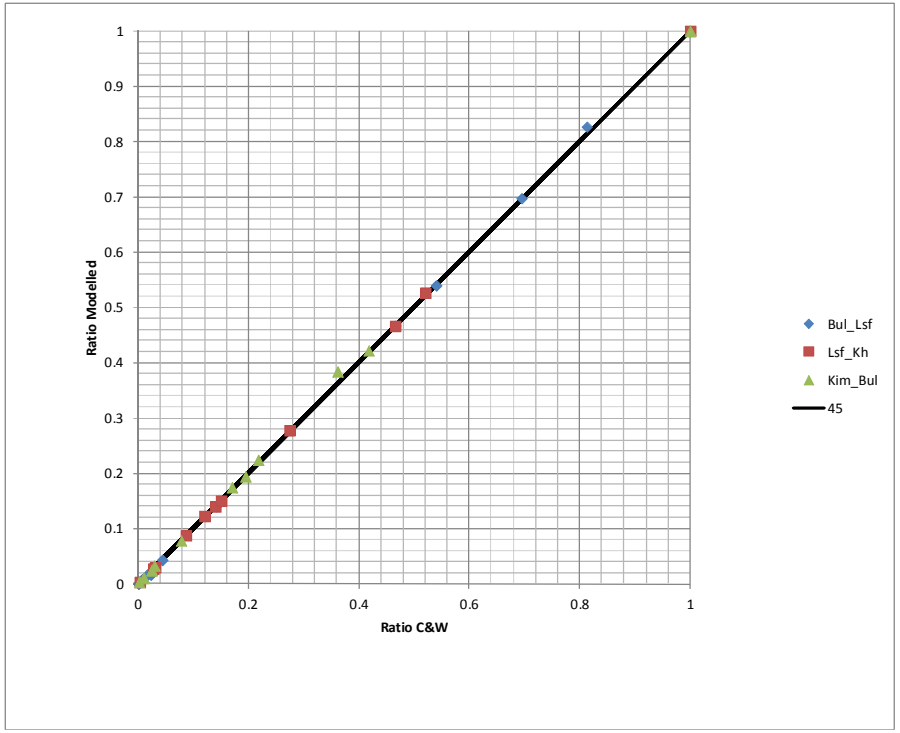




Group C Springs

Maximize



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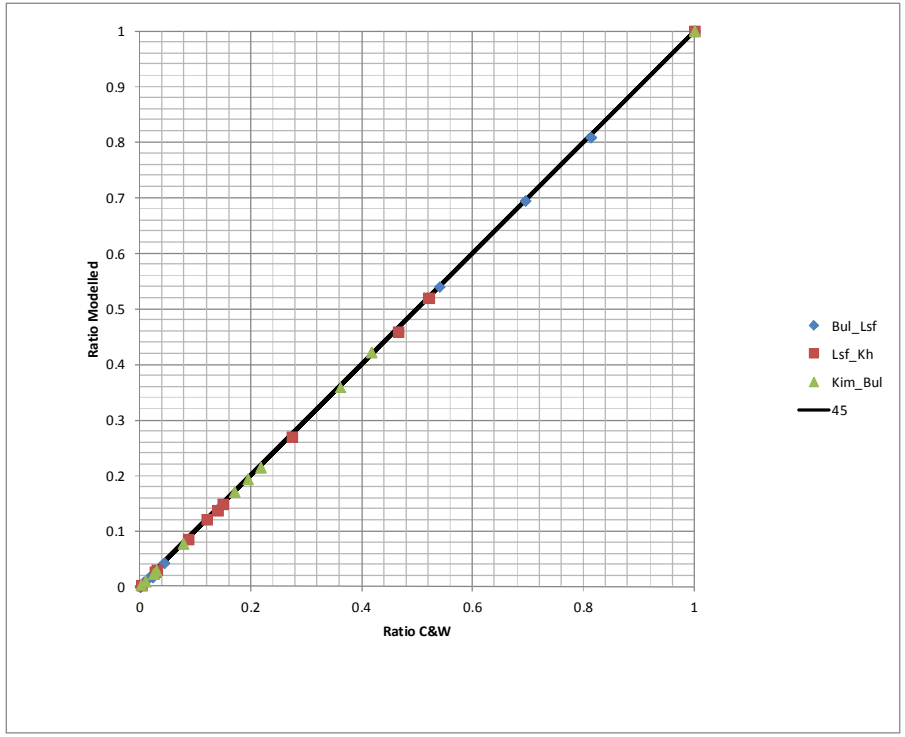

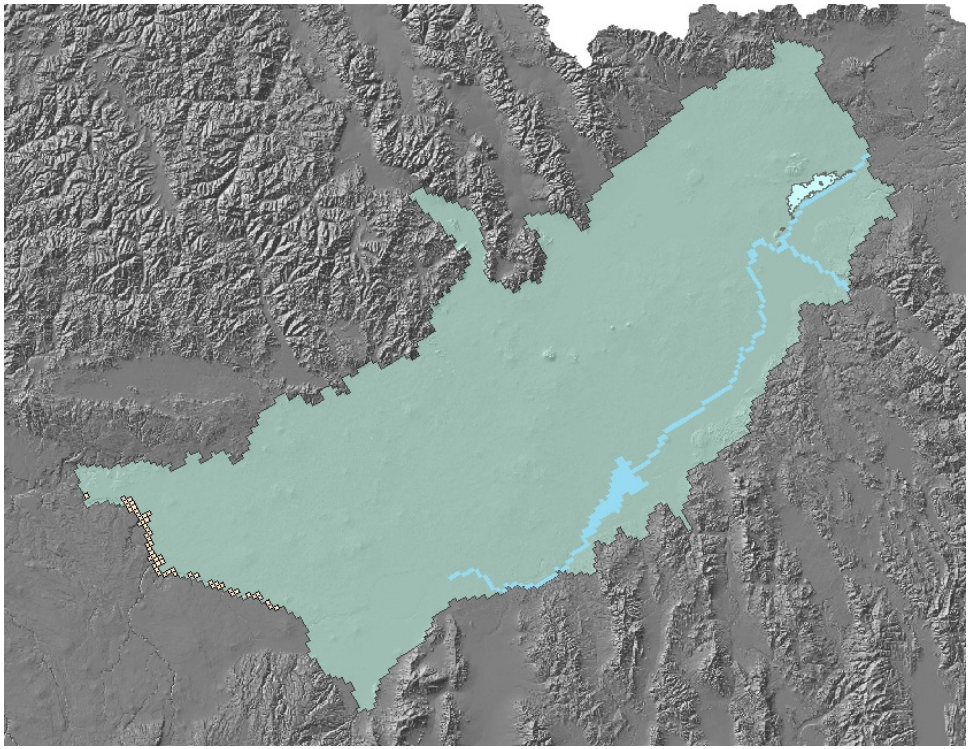

- Egin returns

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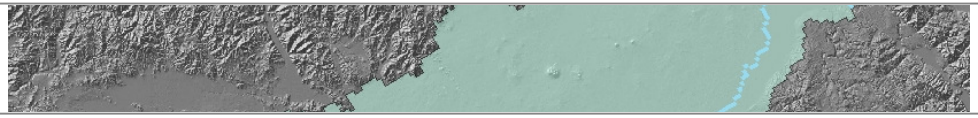

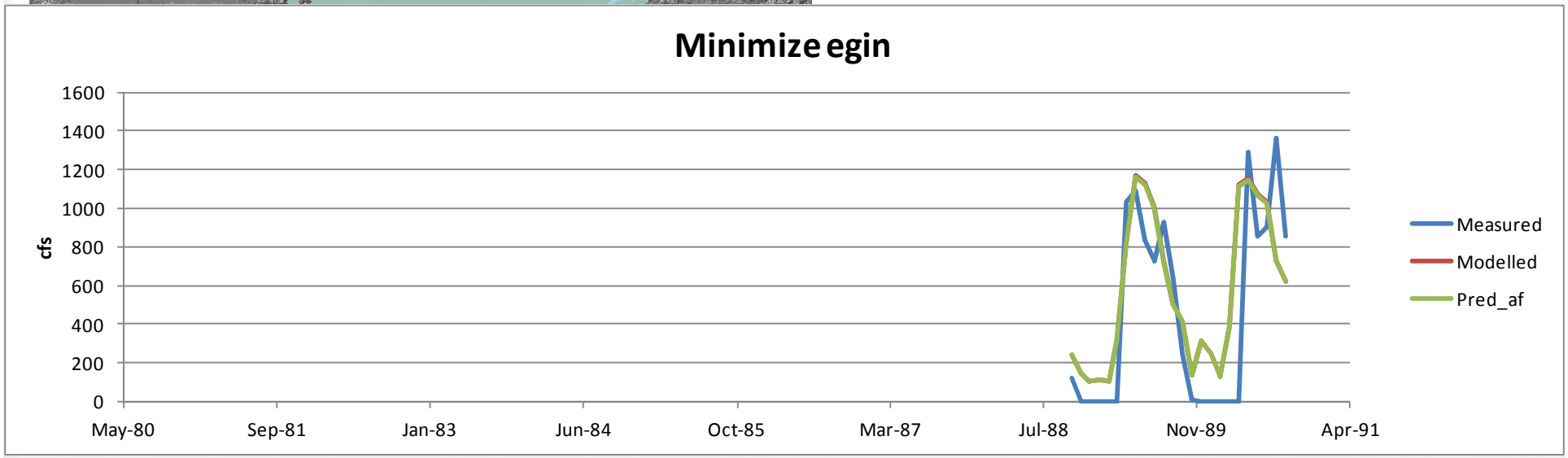

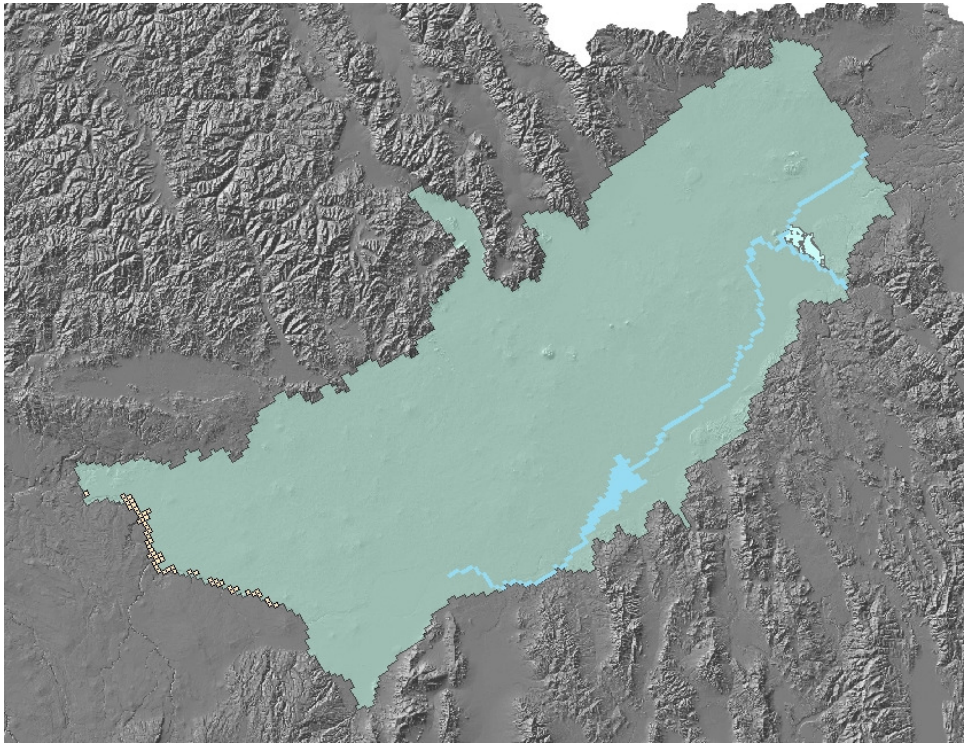

- Liberty returns

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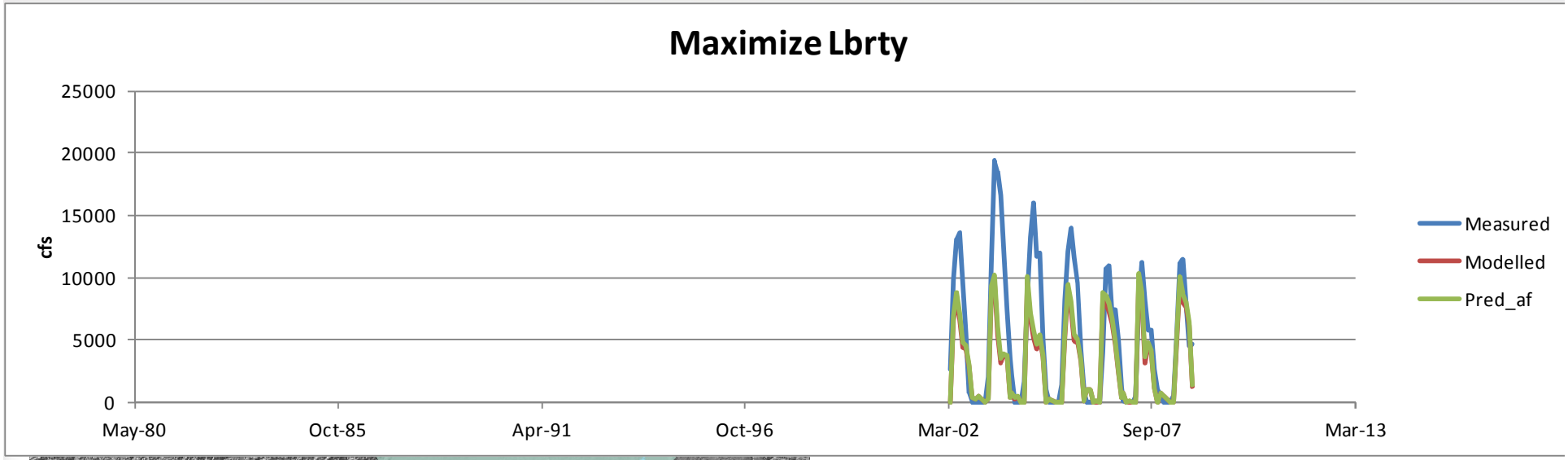

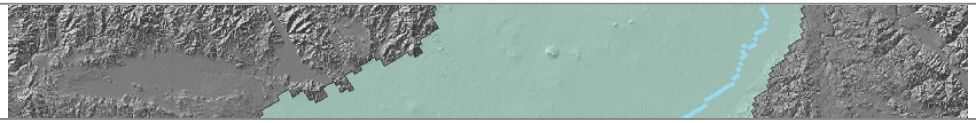

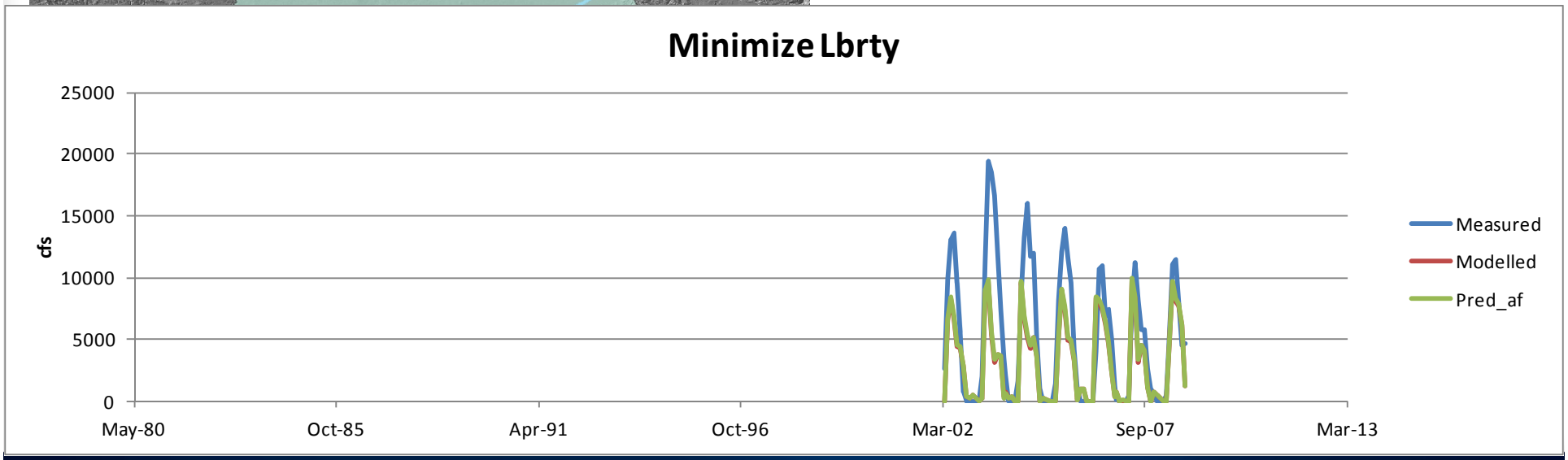

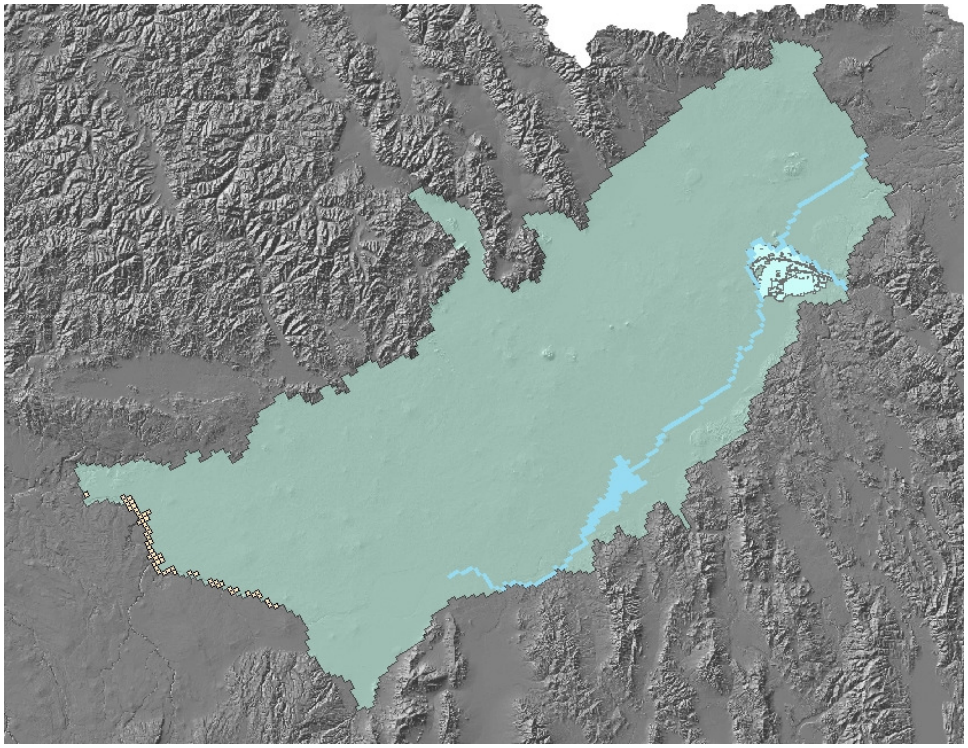

- Great Feeder Group returns

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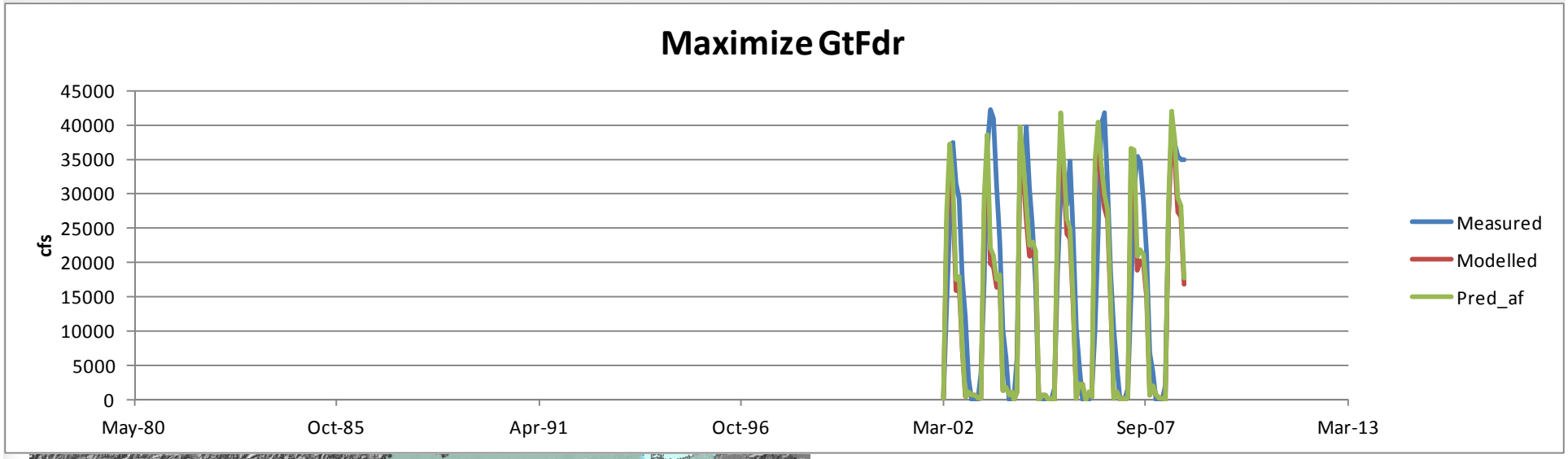

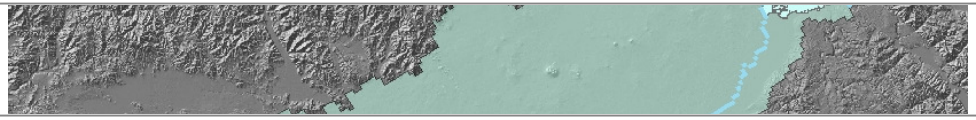

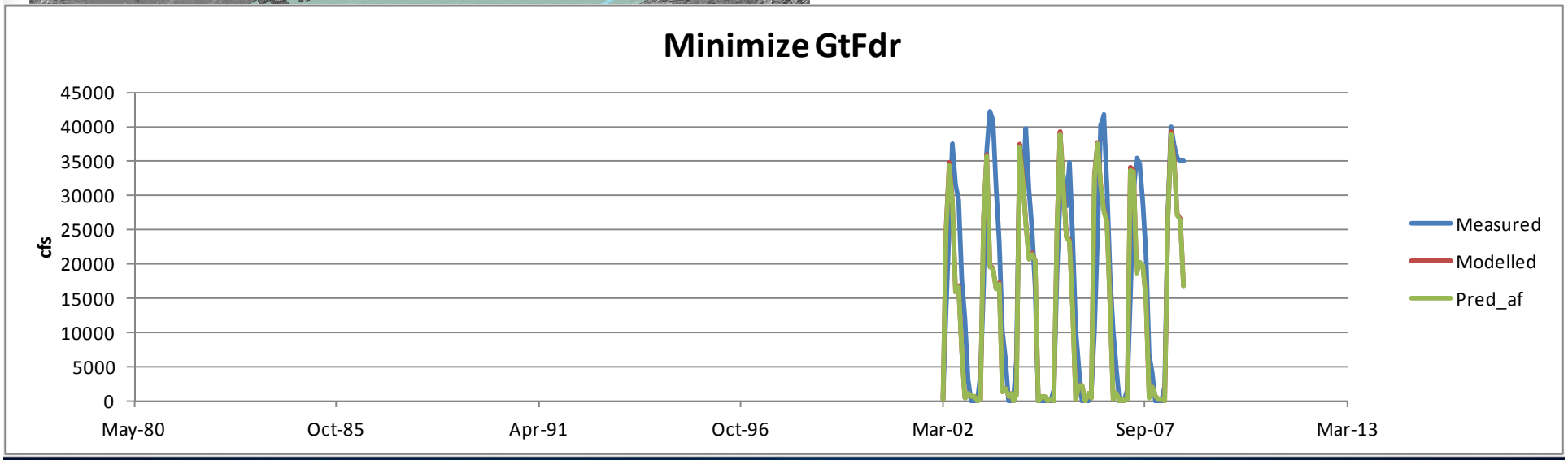

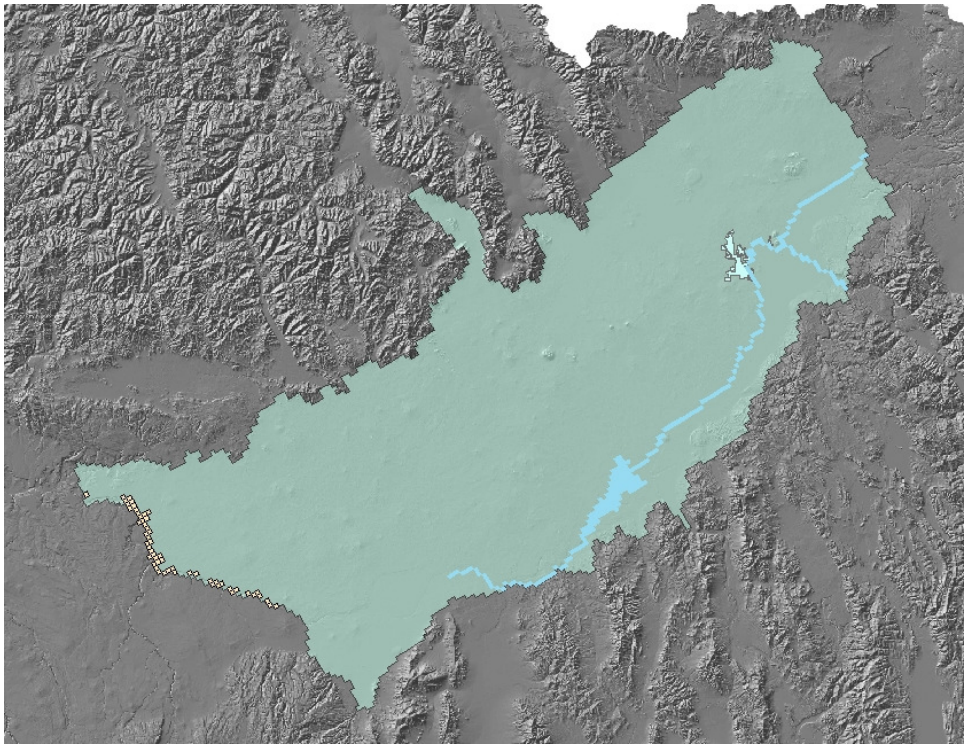

- Butte-Market Lake returns

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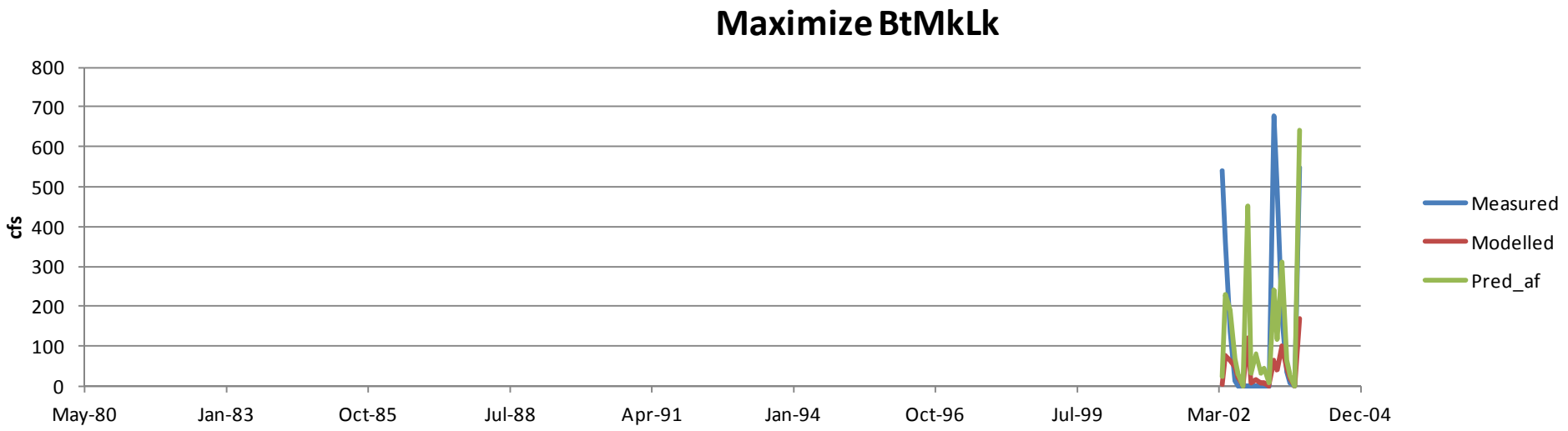

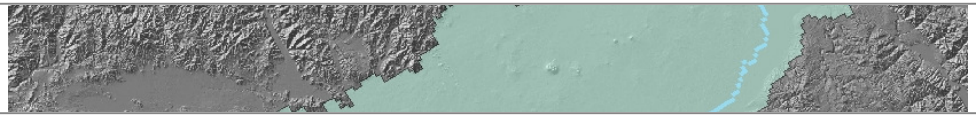

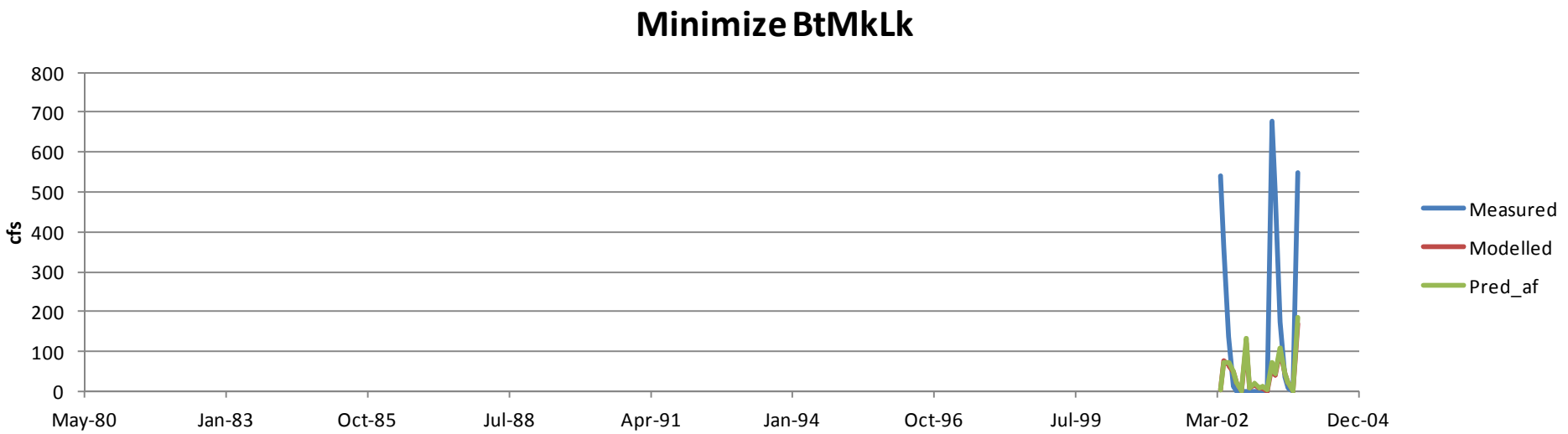

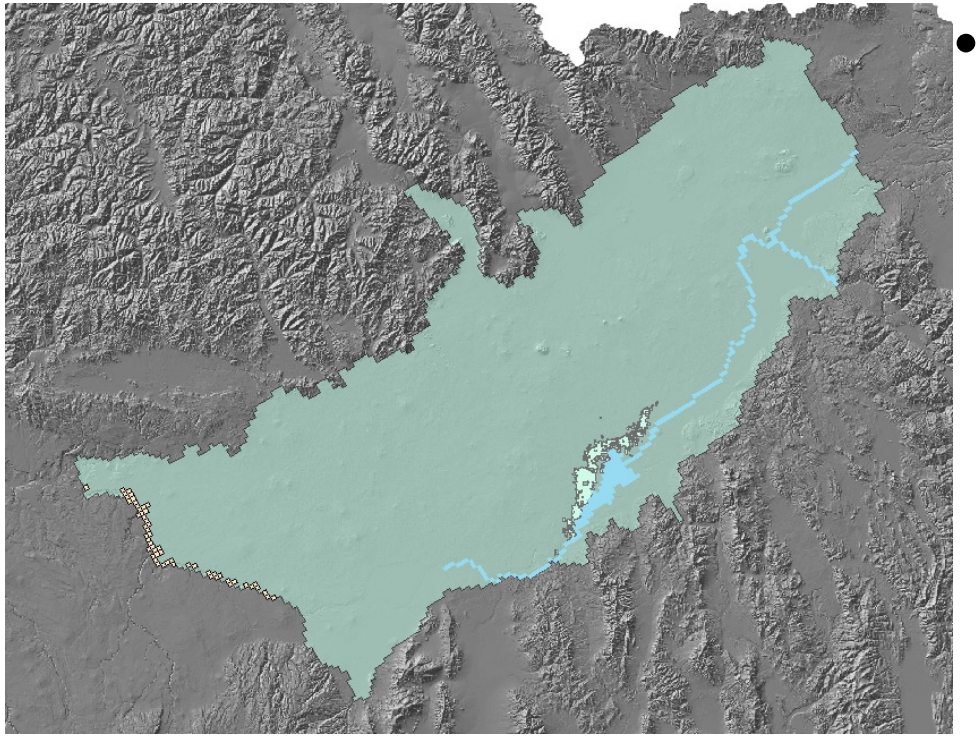

- Aberdeen-Springfield returns

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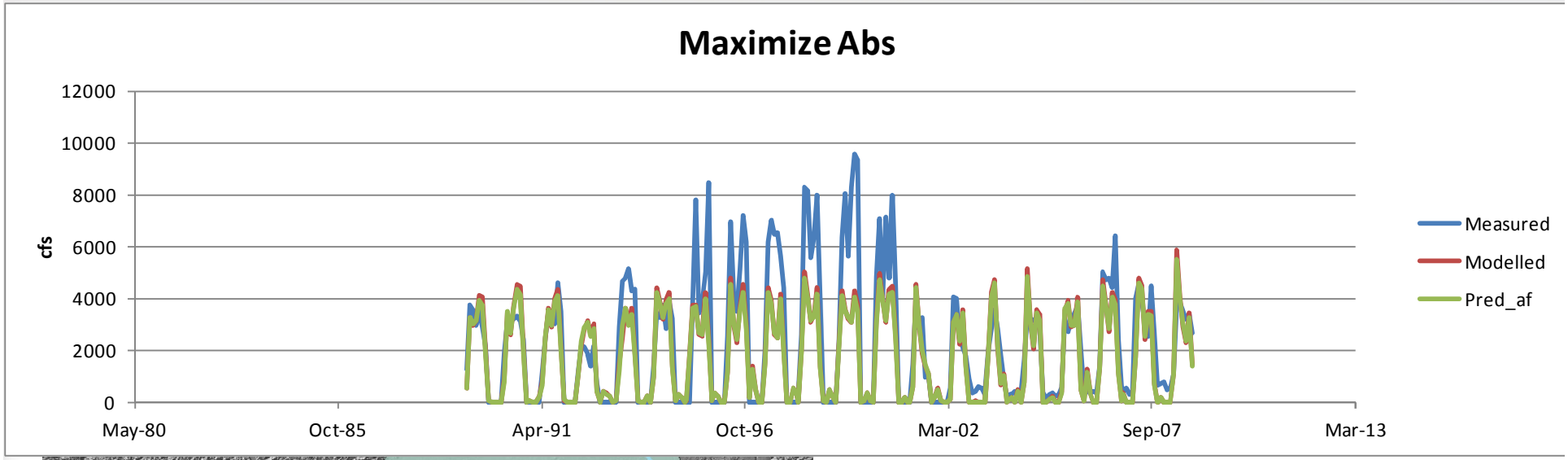
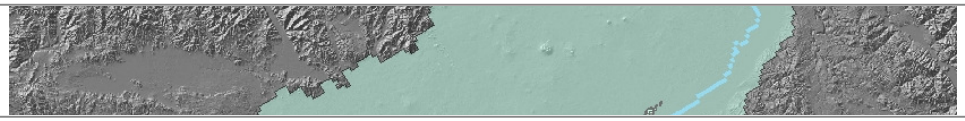
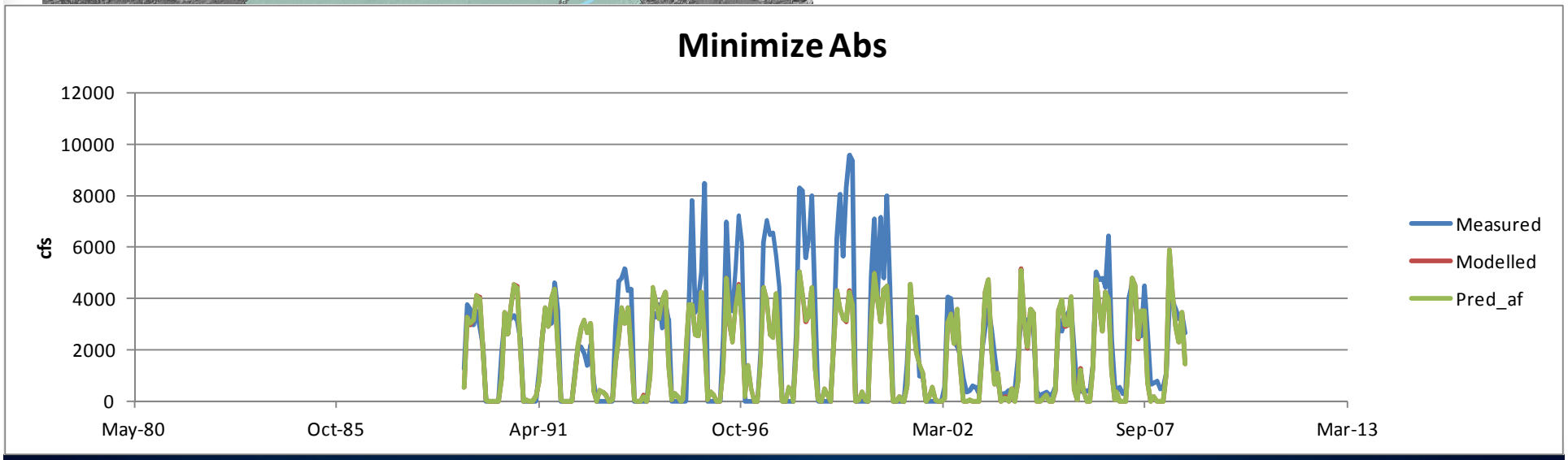
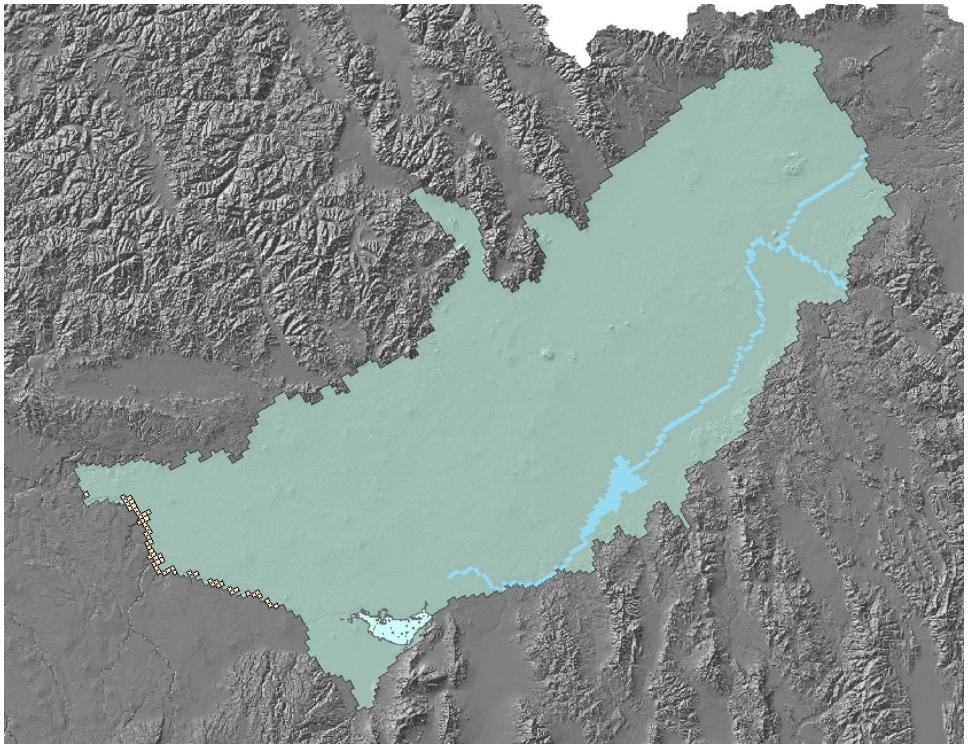
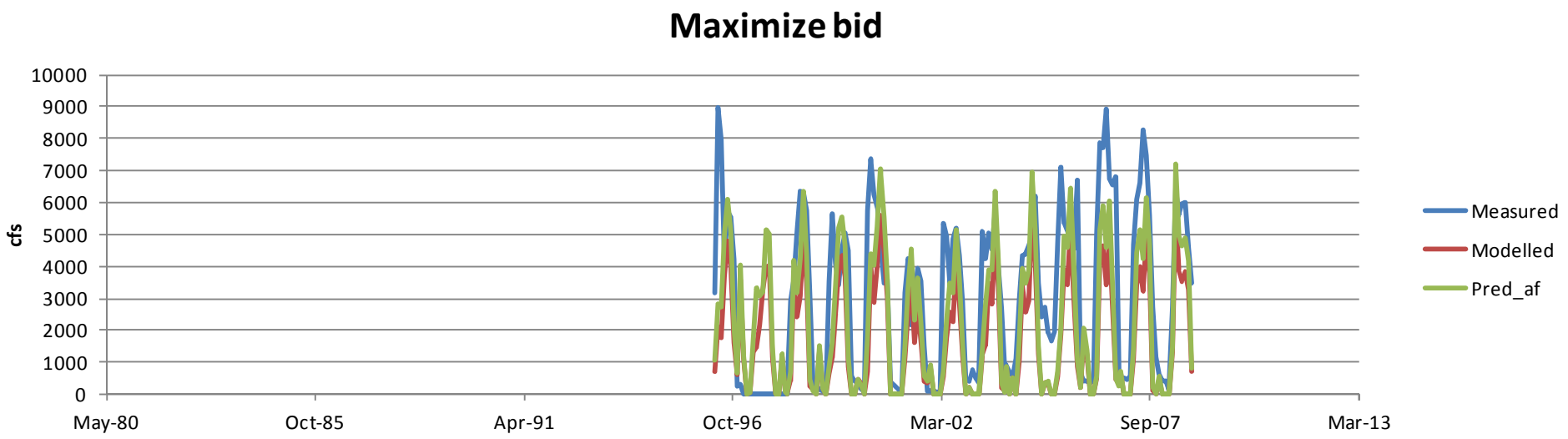








- Burley Irrigation District returns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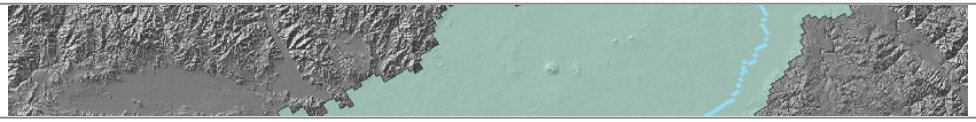
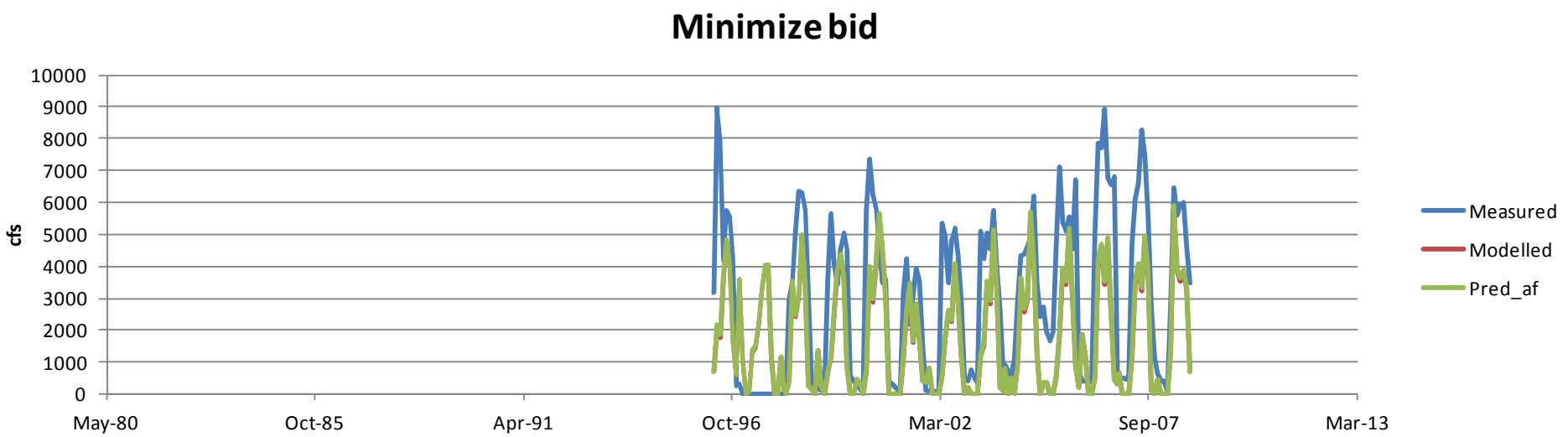
Sep-07
Mar-13
Measured
Modelled
Pred_af

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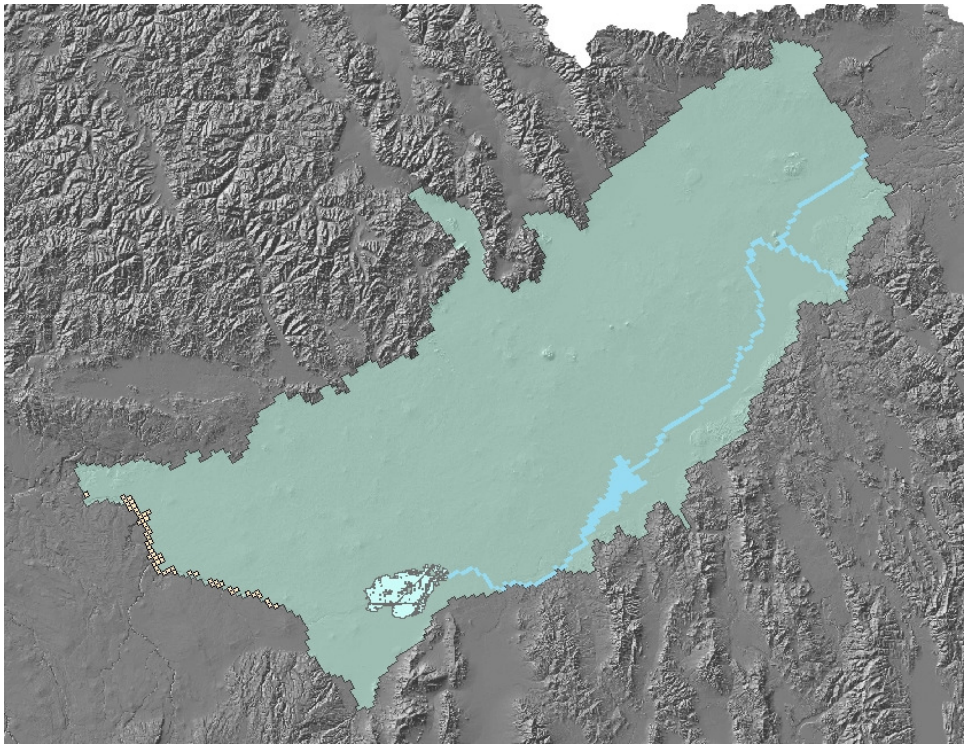
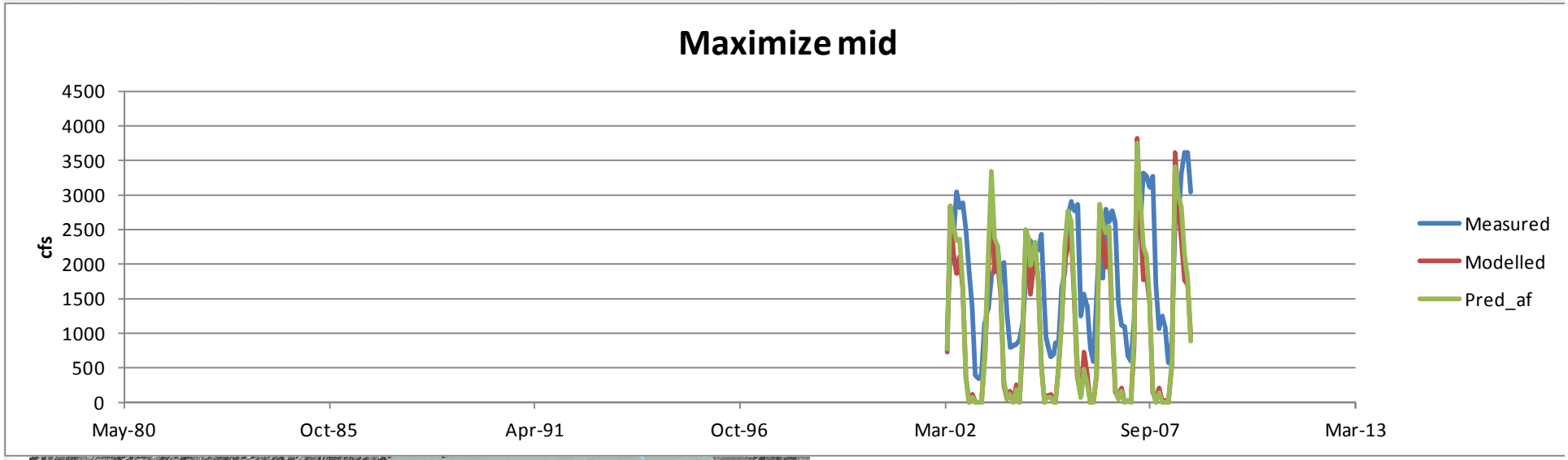


- Minidoka Irrigation District returns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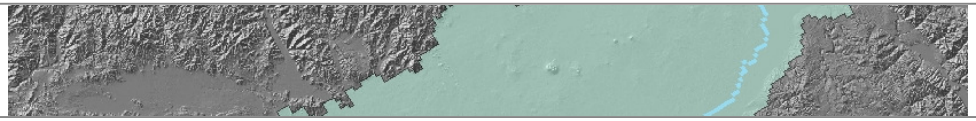

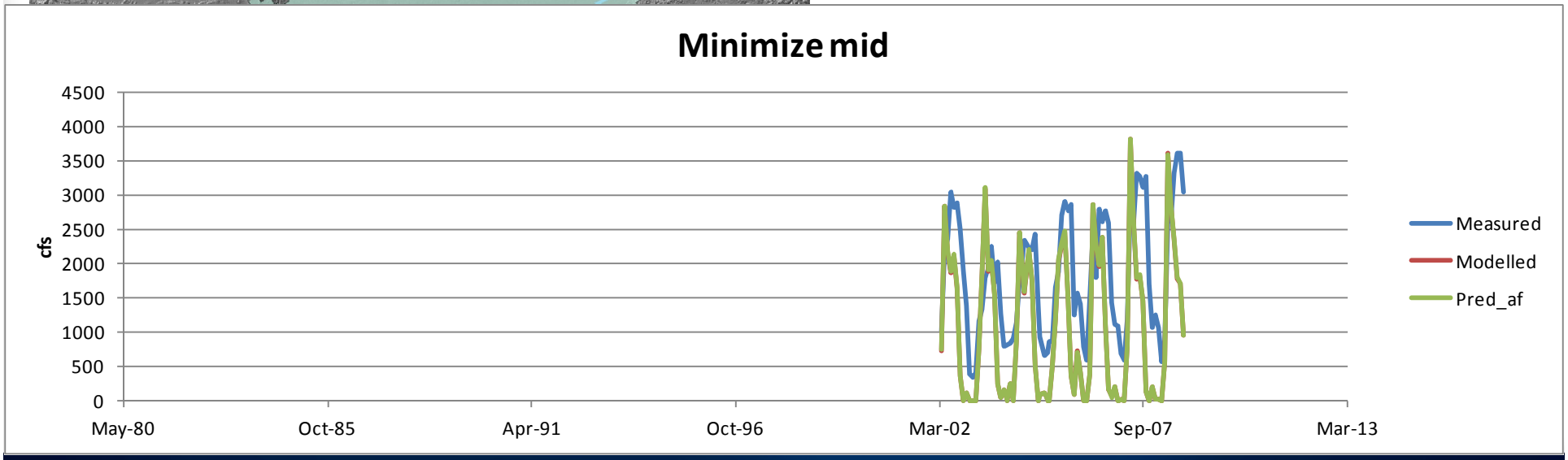
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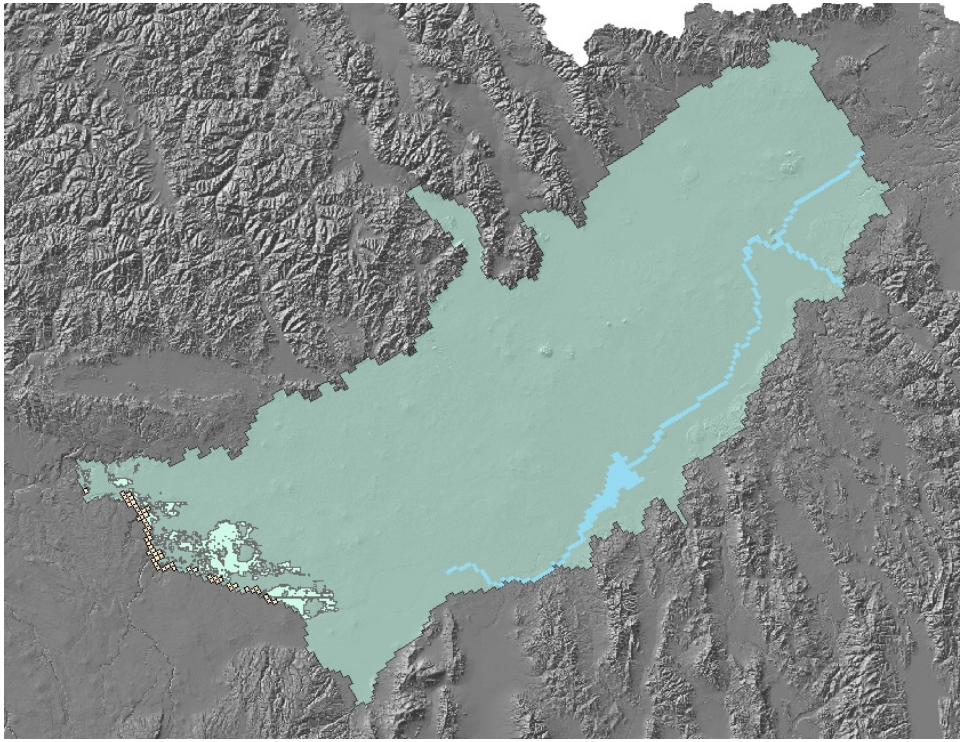

- North Side Canal Co returns

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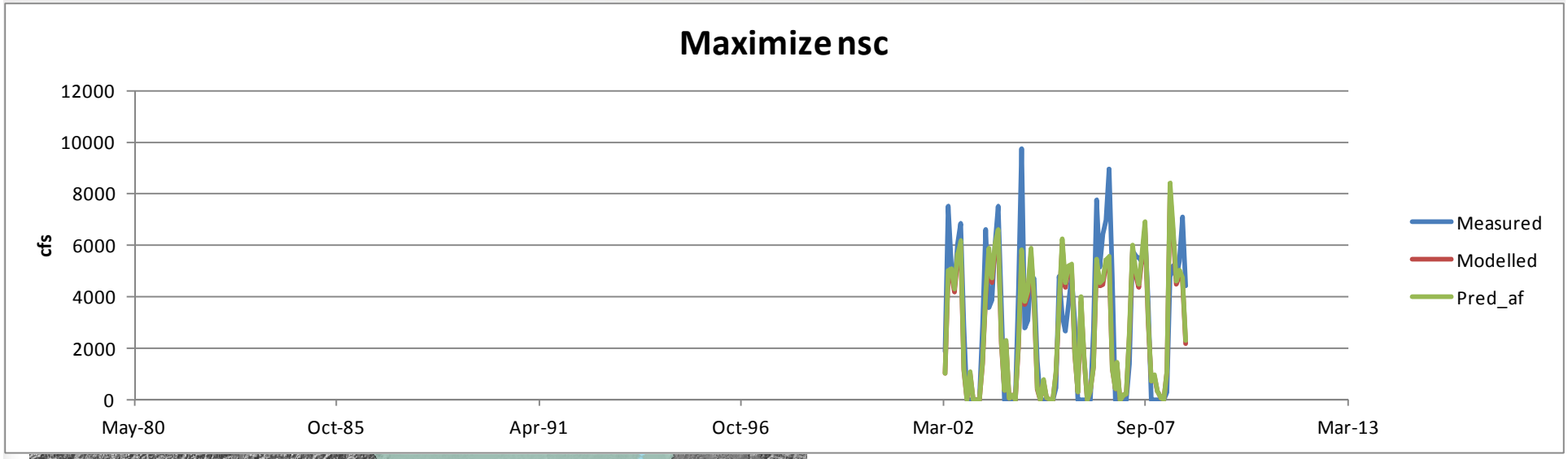

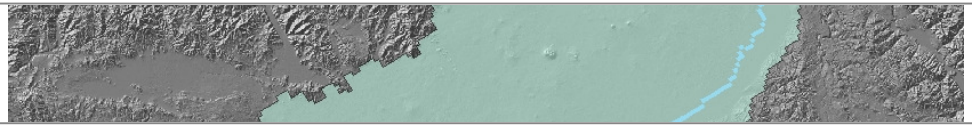

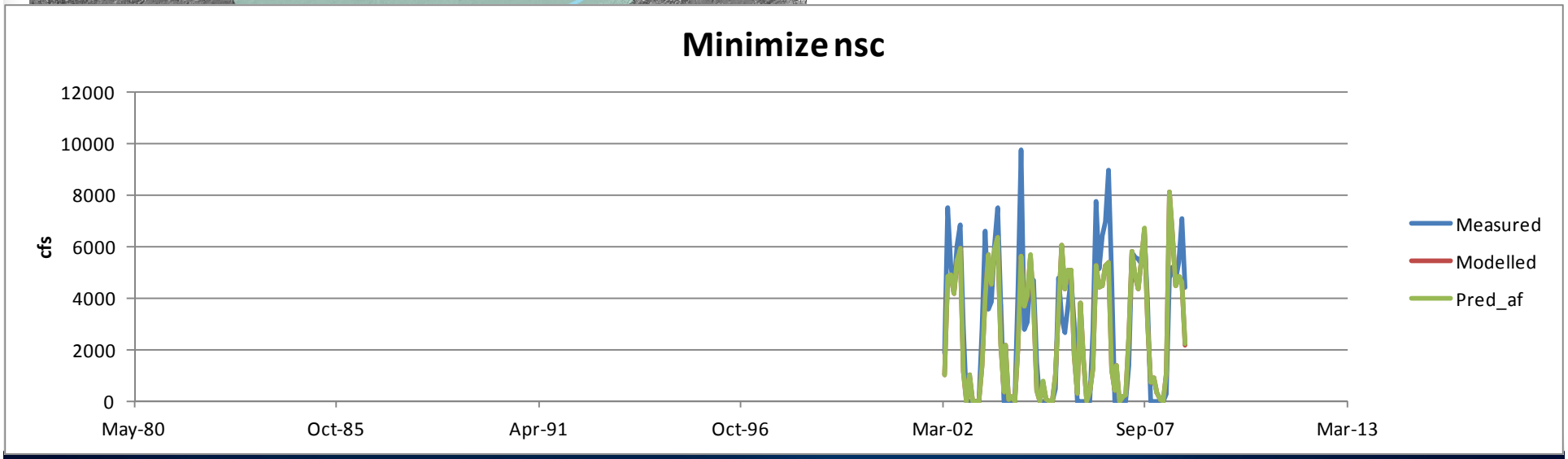

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