Update on NeDNR Modeling and Technical Activities

NEBRASK

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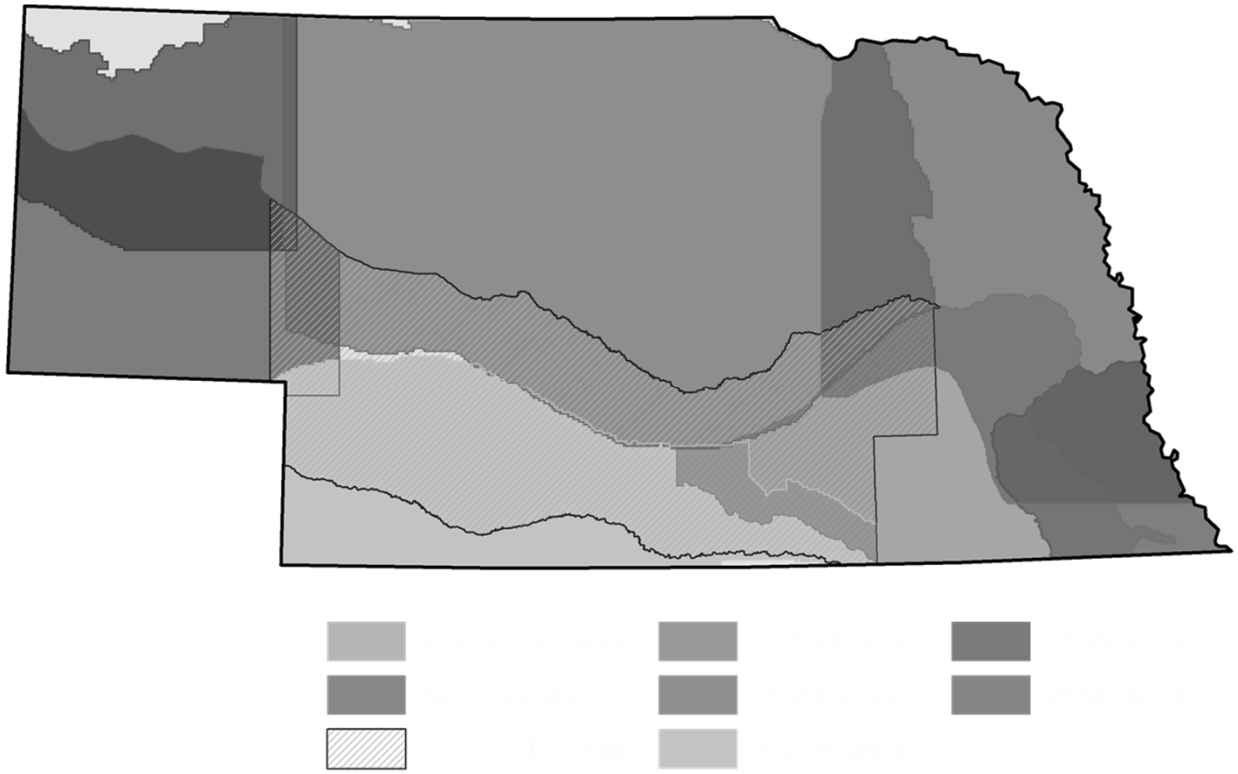
Outline

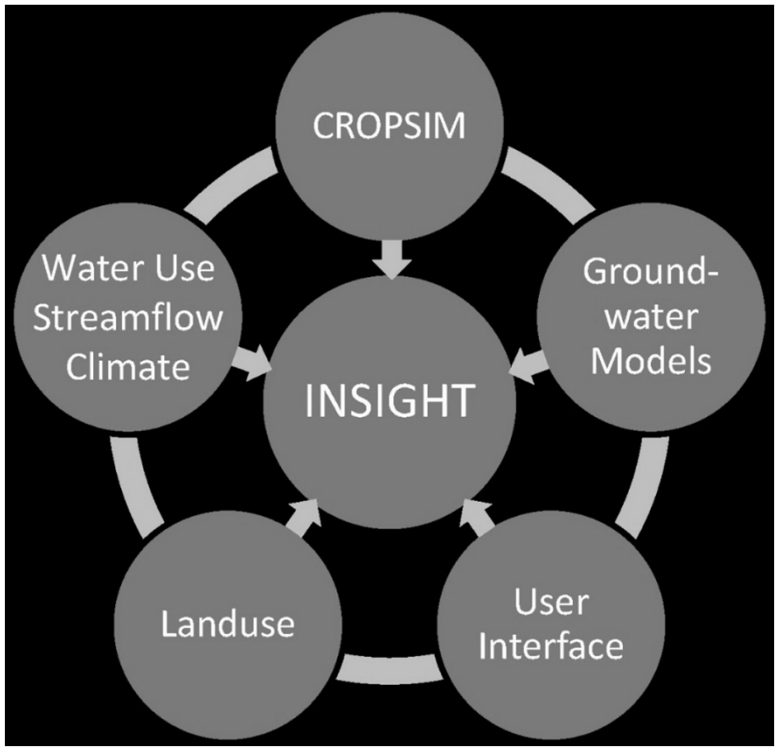
- Review current available tools, data, information
  I. Groundwater models
  II. INSIGHT and interactive maps
  III. Website, NeRain, Streamgaging
- Overview of planned activities
  - Data exchange platforms
    Groundwater models and model update efficiency
    IMP related analyses
    Decision support tools
    Education and outreach tools
- Future tools – Model Application Tool

Groundwater Models

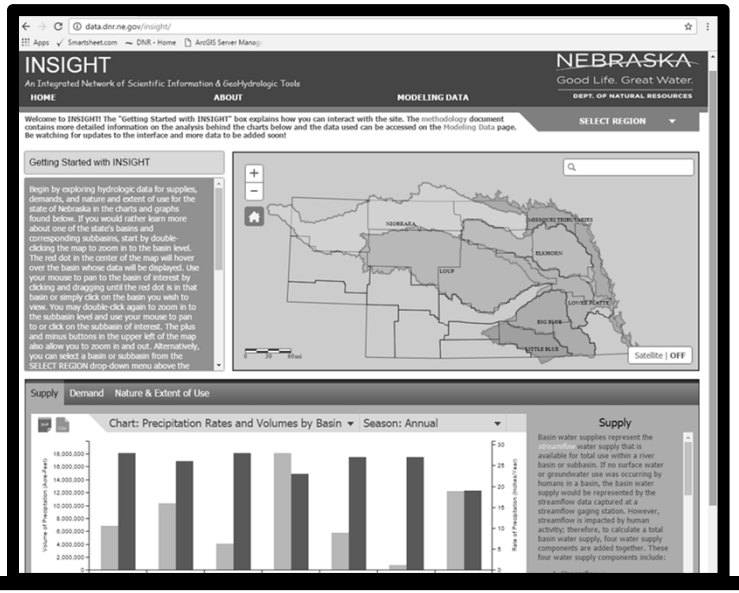


- Goal is to have statewide groundwater modeling tools

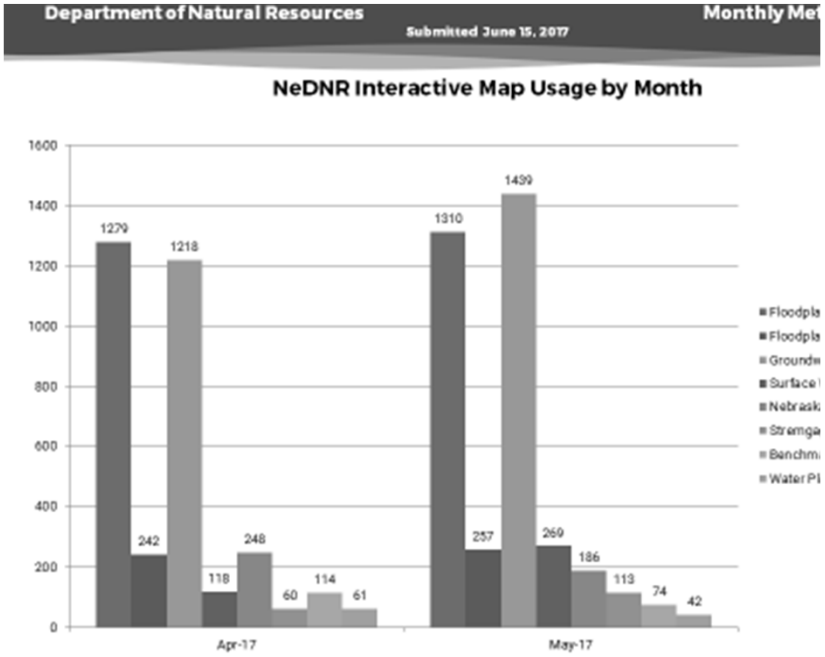
INSIGHT



- Continued enhancements
  - Data exports
  - Expansion of area covered
  - Improved documentation and explanation of variables
  - Interface updates



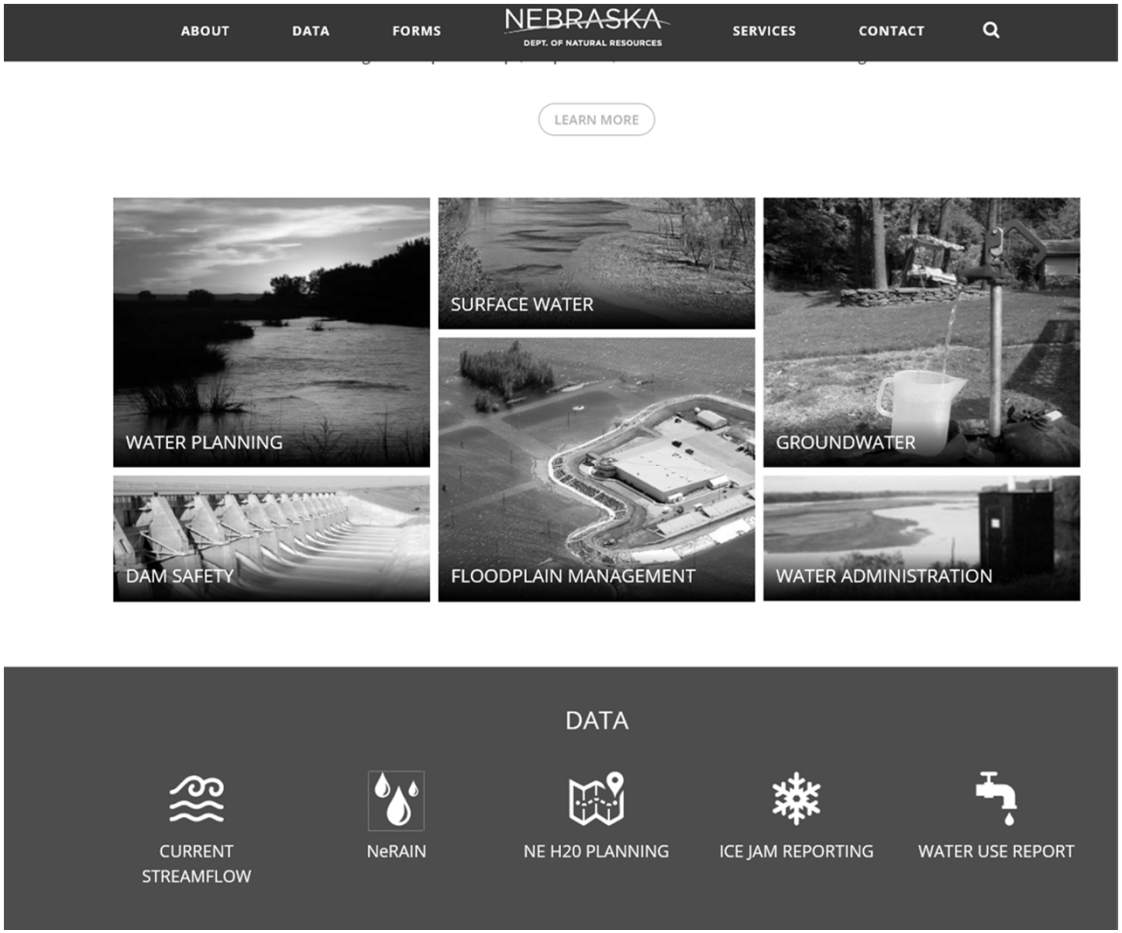
Interactive Maps



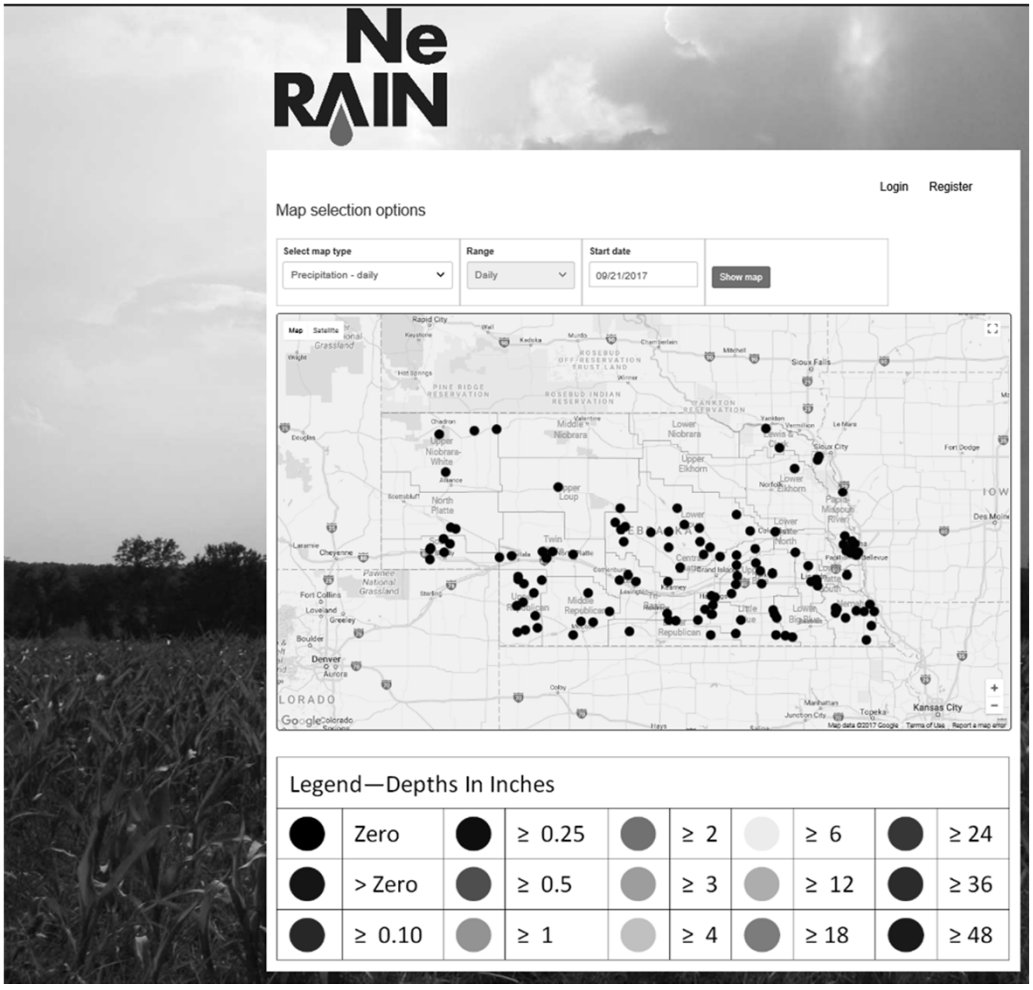
NOTE: If you need access to any of the older interactive maps, send an email using the feedback link.

Website

- New form and organization
- Approved IMPs
- Publications and Data
- Basin-wide planning efforts

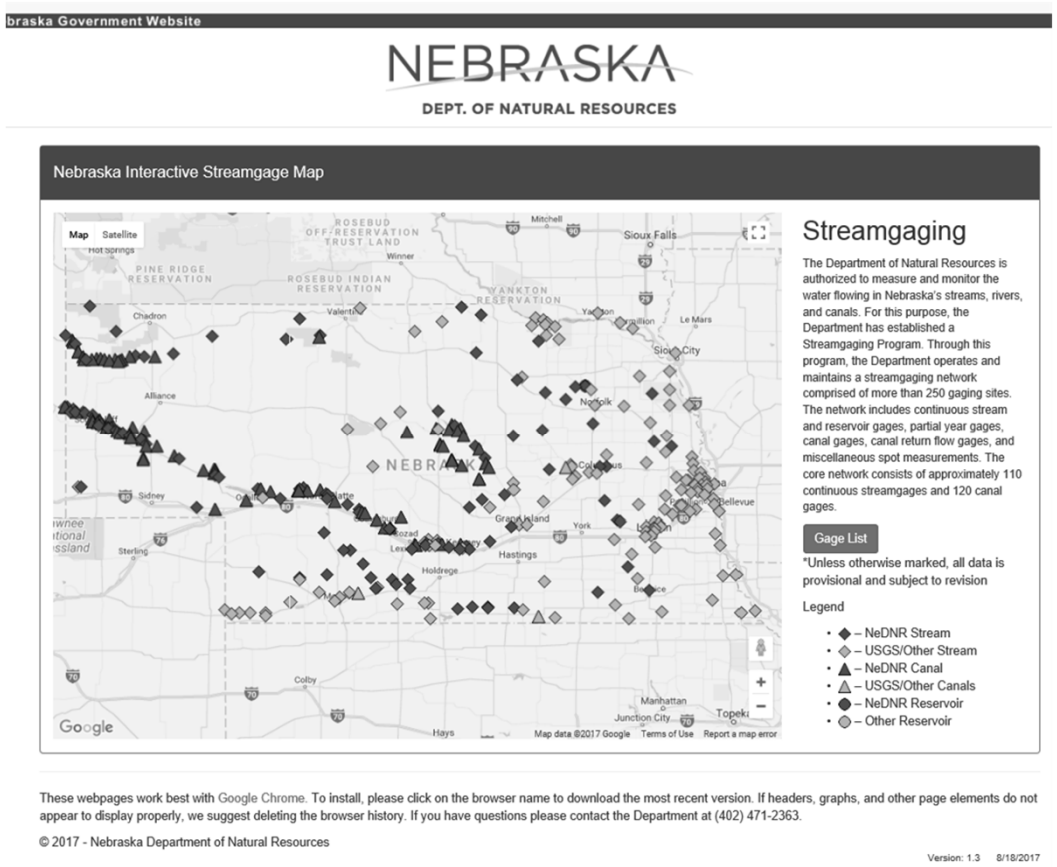


NeRain



- Needed to update programming language, for current servers and operating system
- Updated look
  - New logo, working to be tablet and mobile-friendly
- Zooming maps—using a Google map base
- Database changes: “Many to many” relationship between accounts and gauges
- Yet to come during next month: tying volunteer gauges to *normal* rainfall, new graphs

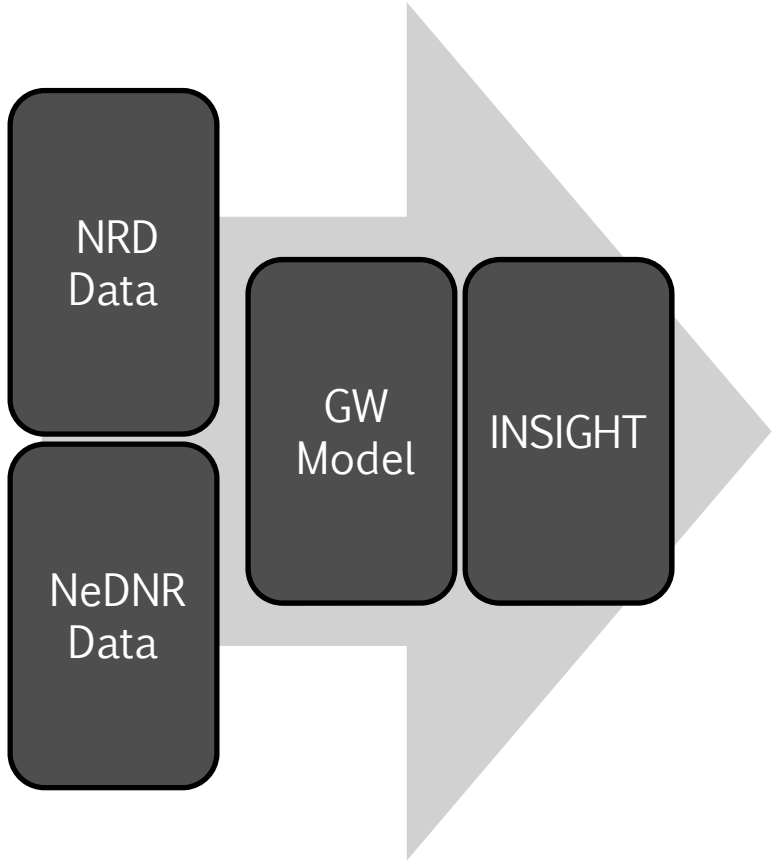
Stream Gage Data



- Interactive map
- NeDNR and other gages available
  - Real-time data
  - Daily data
  - Hydrographic reports
  - Rating curves

Future Efforts: Data Exchange Platforms

- Focus is on ensure best available data supports models and INSIGHT
- Ease IMP reporting efforts
- Reduce data translation errors
- USGS Water Smart Grant



Future Efforts: Data Exchange Platforms

- Consumptive Use and Stream Depletion Calculator

https://nednr.nebraska

Would you like to:

- Find CIR for particular location
- Calculate CU change for a land use change
- Calculate CU change for a transfer
- Enter data for IMP reporting
- Upload files for IMP reporting

https://nednr.nebraska.gov/CIR/Home/Index

Present Conditions

Section	Township	Range	Crop	Acres
10	9	17	Irrigated Corn	140

Future Conditions

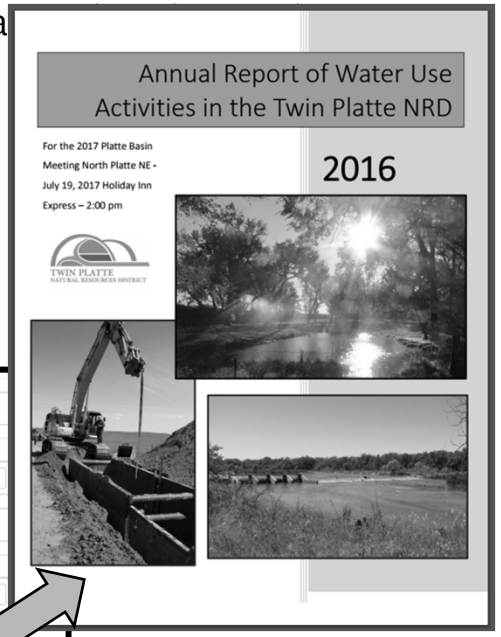
Section	Township	Range	Crop	Acres
10	9	17	Dryland Corn	140

Submit Clear

Computed CIR Offsets

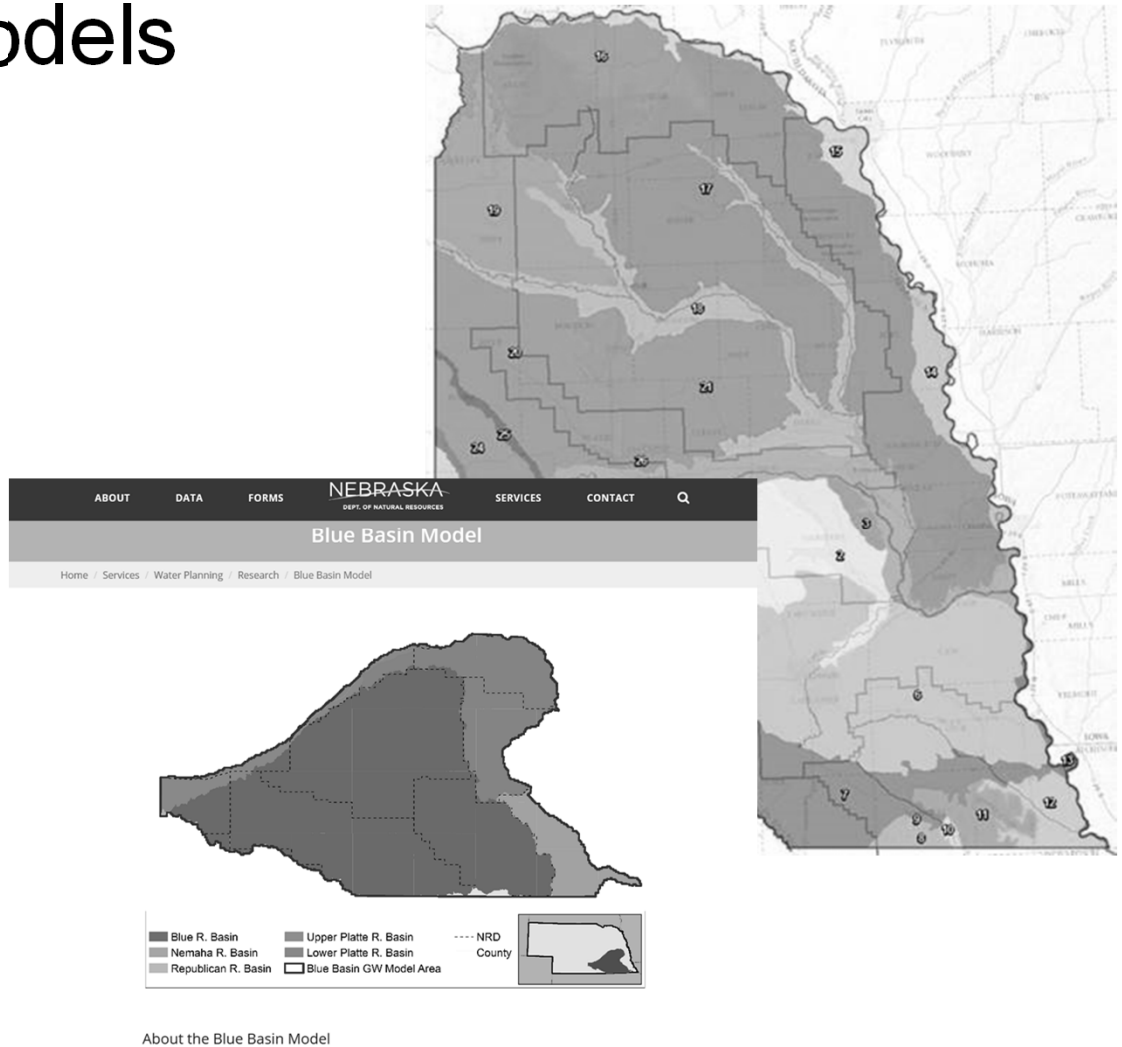
Section	Township	Range	Crop(ID)	Acres	CIR(IN)	Recharge(IN)	GW withdrawal(AF)	Stream depletion (Percent)	Estimated net depletion (AF)
Present Conditions									
10	9	17	Irrigated Corn (icrn)	140	8.95	6.6	27.42	21	5.76
Total Present Conditions				140			27.42		6
Future Conditions									
9	17	10	Dryland Corn (dcrn)	140	0	1.6	-18.67	21	-3.92
Total Future Conditions				140			-18.67		-4
Net Value (AF)						-10			

Print Results Return to Main Menu



Future Efforts: Completion of Groundwater Models

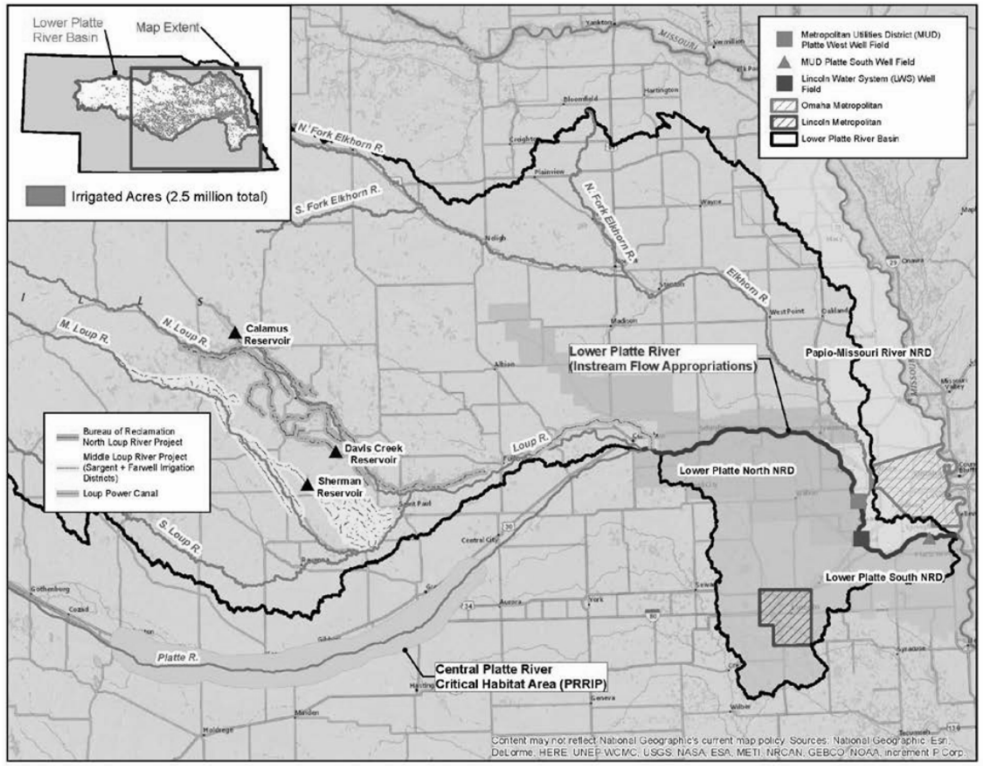
- Finalize Lower Platte Missouri Tribs Model
- Complete Nemaha Model
- Collaborate with Blue basin NRDs in developing a new Blue Basin Model



About the Blue Basin Model

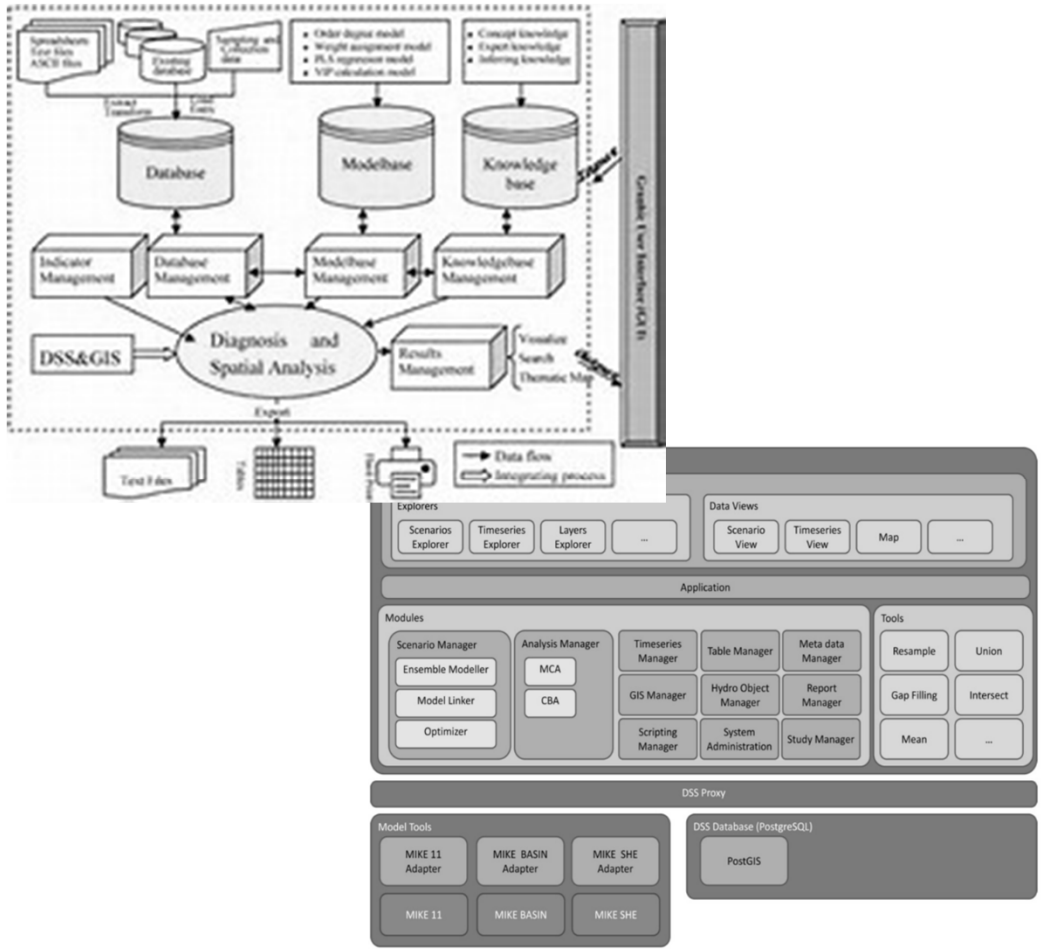
Future Efforts: IMP Related Analyses

- Upper Platte “robust review” efforts toward addressing post-1997 depletions
- Conjunctive management analyses
- Lower Platte Drought Contingency Plan analyses
- Republican River conjunctive management study (NBID system)



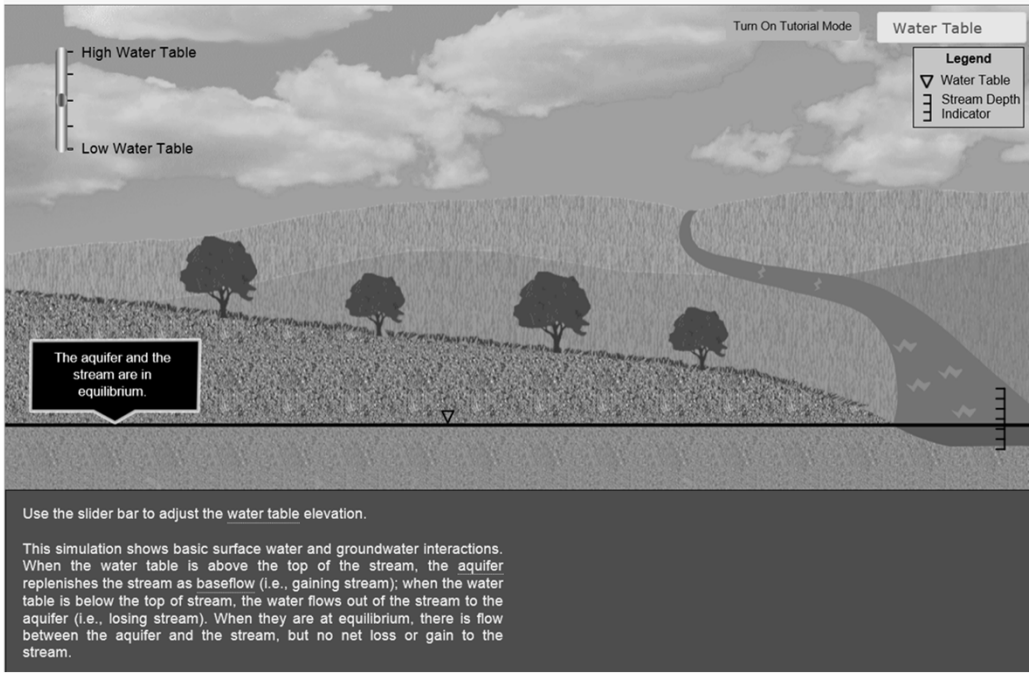
Future Efforts: Decision Support Tools

- Evaluate effects associated with NeDNR permitting (excess flows, transfers, etc.)
- Connect existing models and data in the Platte Basin
- Goal to identify most optimal outcomes
- Currently finalizing work plan and scope



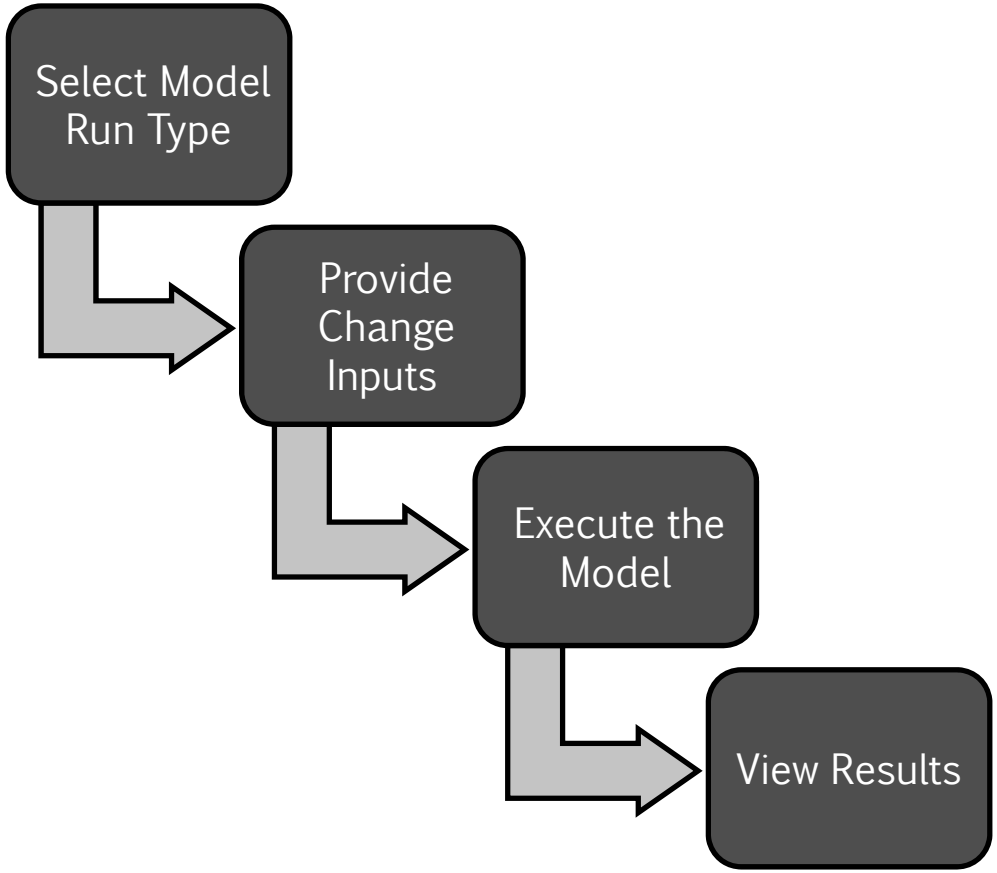
Future Efforts: Education and Outreach

- Tools to describe groundwater depletions
- Tools to create greater transparency on surface water data
- INSIGHT overview

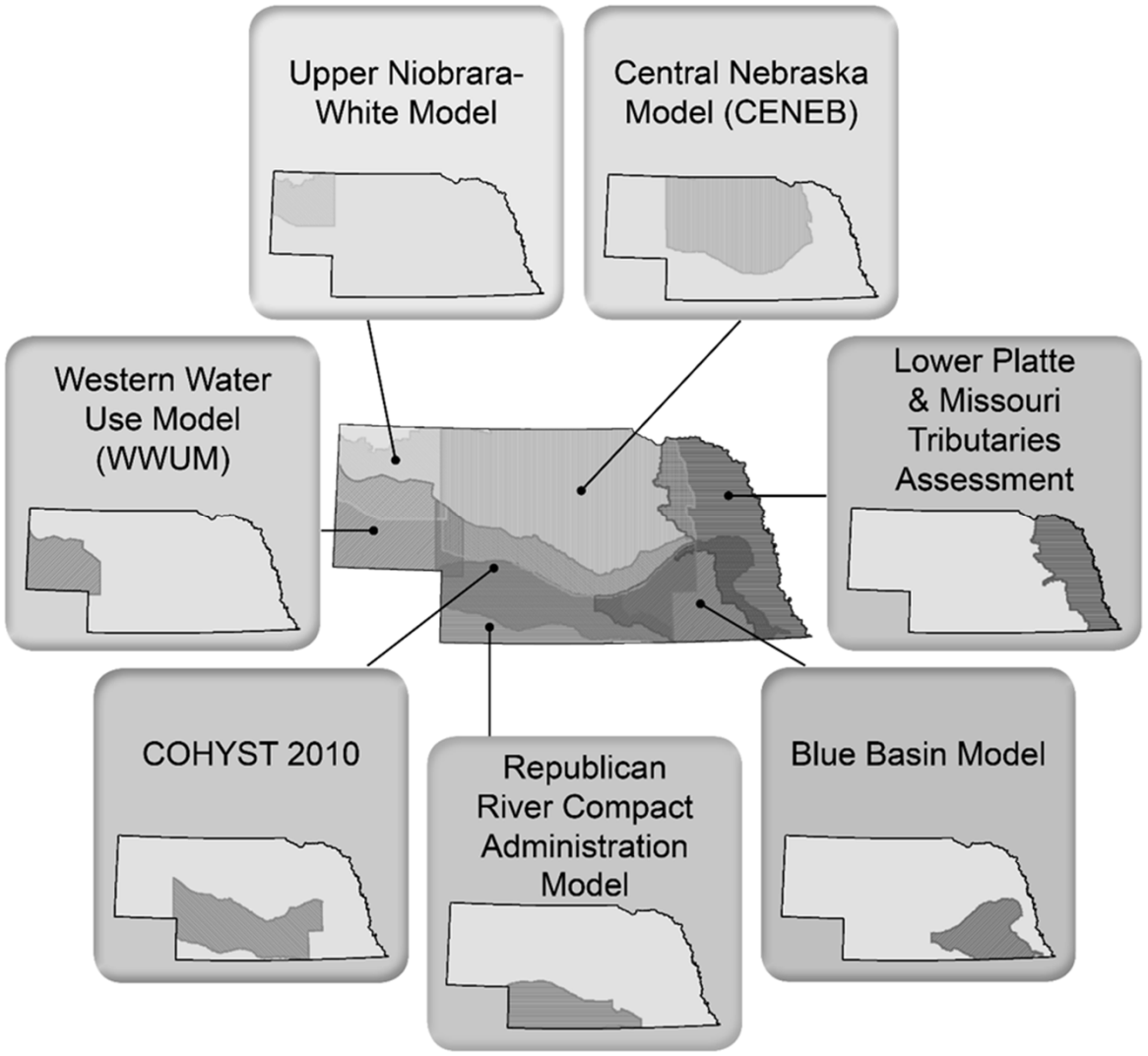


Future Efforts: Tools to Utilize Existing Groundwater Models

- GUI for model analysis (land use change, recharge, pumping)
- Improve access to watershed model results
- View results at the county, NRD, or watershed level



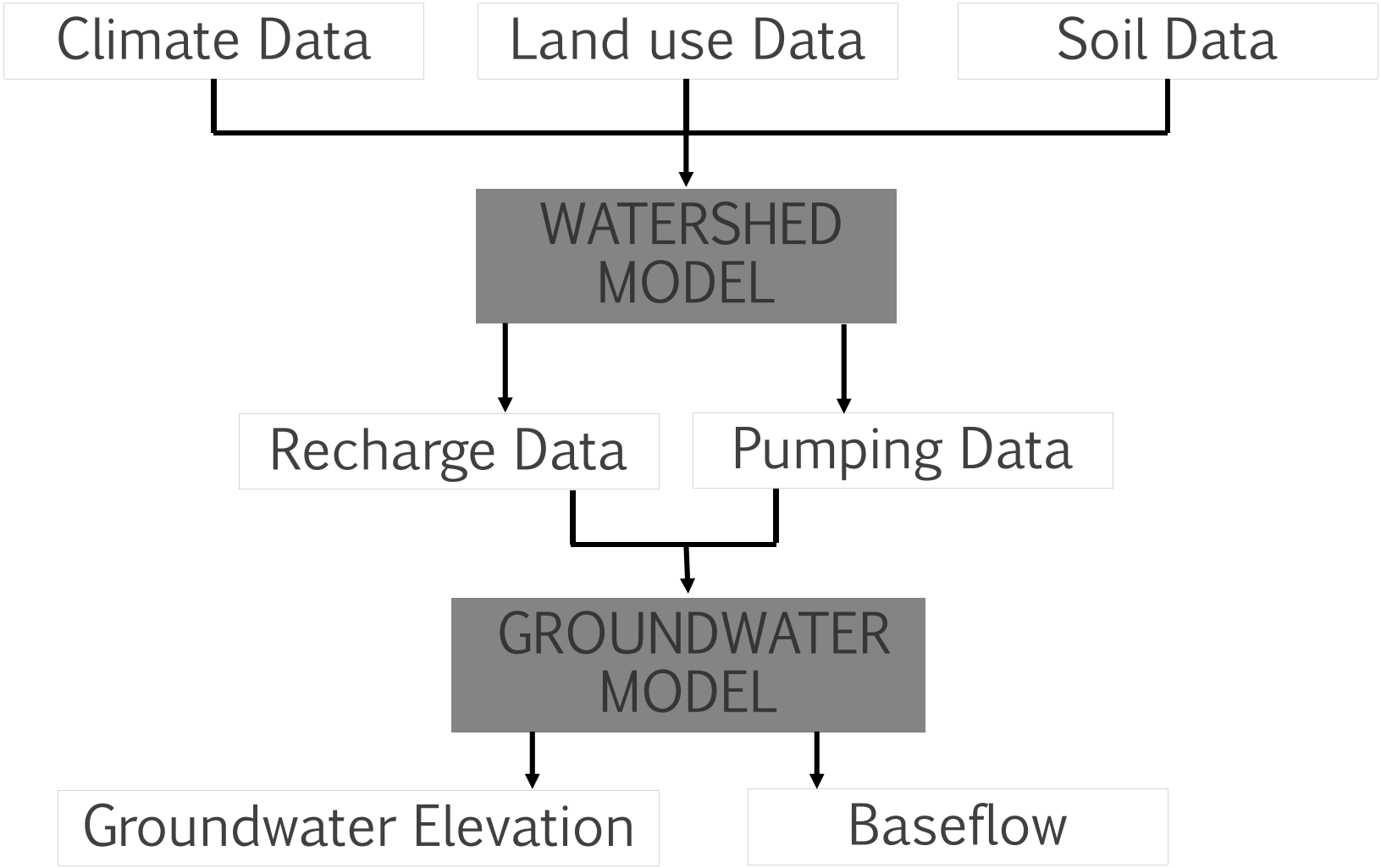
Model Application Tool



Model Application Tool

- Hydrologic models have been constructed and calibrated
- Examples of current model uses :
  - Hydrologically Connected Area Analysis
  - Fully Appropriated Basin Analysis
  - Water Supply and Demand Calculation
- Existing models can be a helpful tool to NRDs
  - Land use, and Irrigation type change analysis
  - Canal recharge analysis
  - Drought scenario analysis
- Need for tools supporting model analysis in a robust manner
- The Department's effort - Model Application Tool

Model Application Tool



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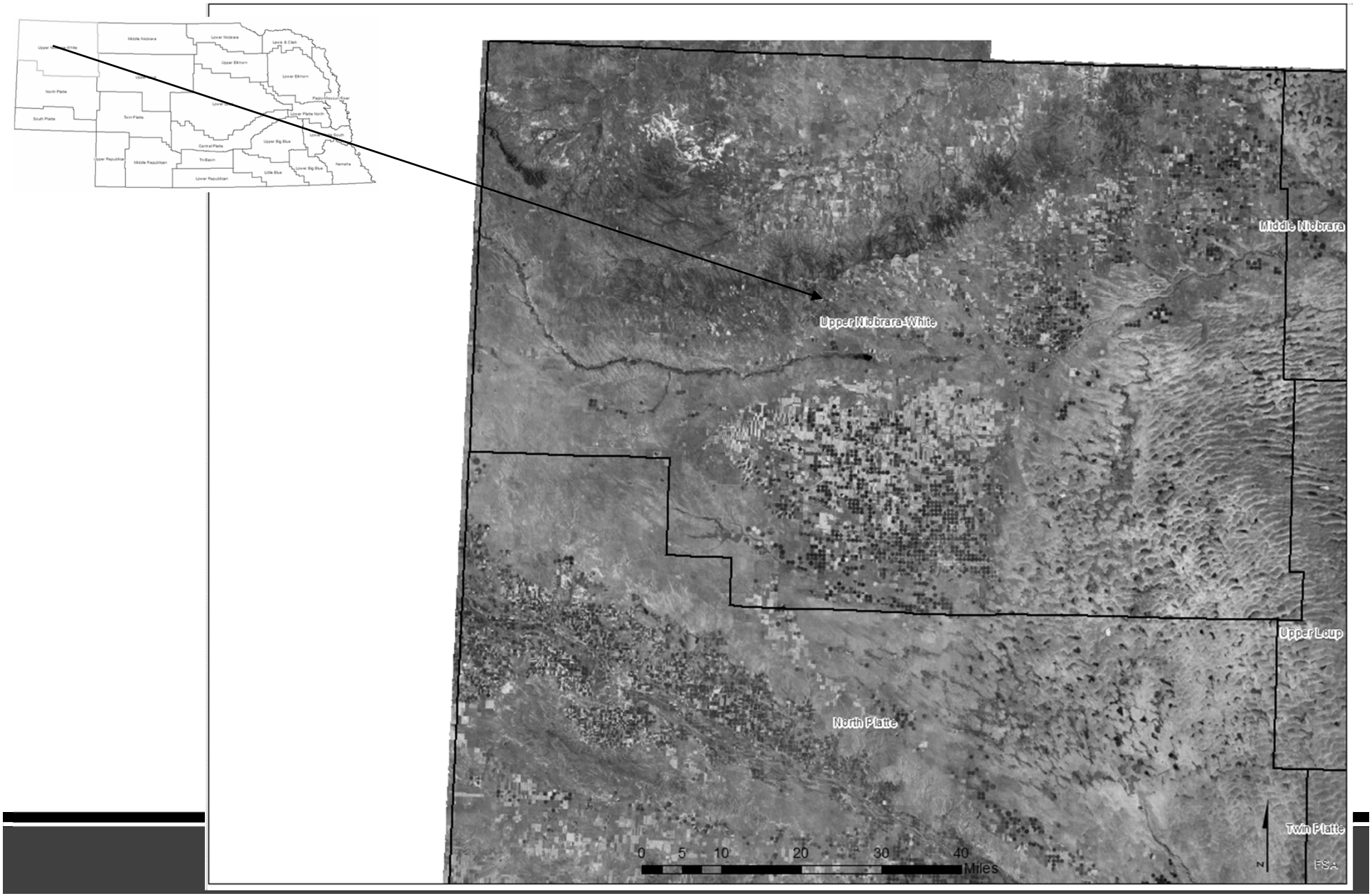

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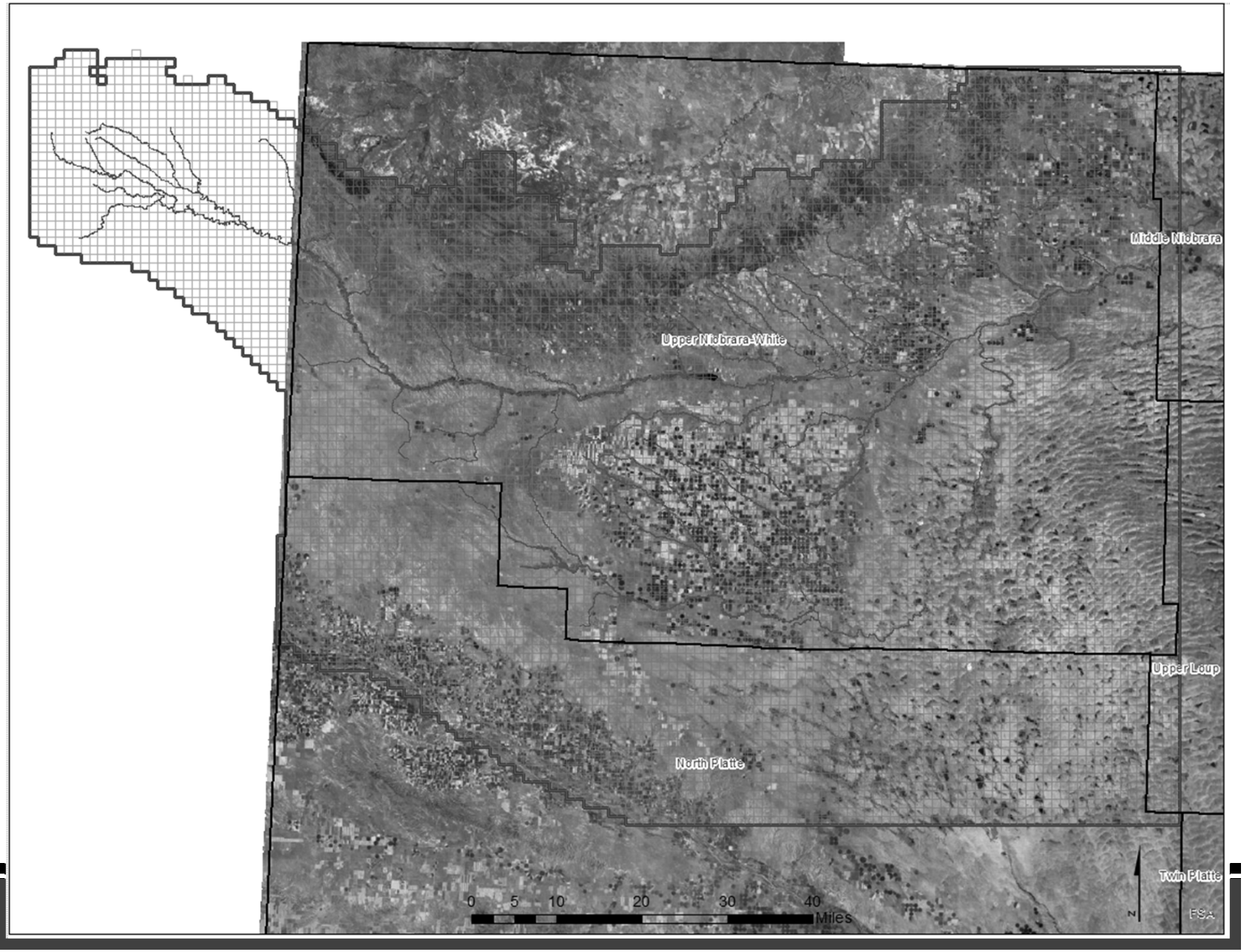

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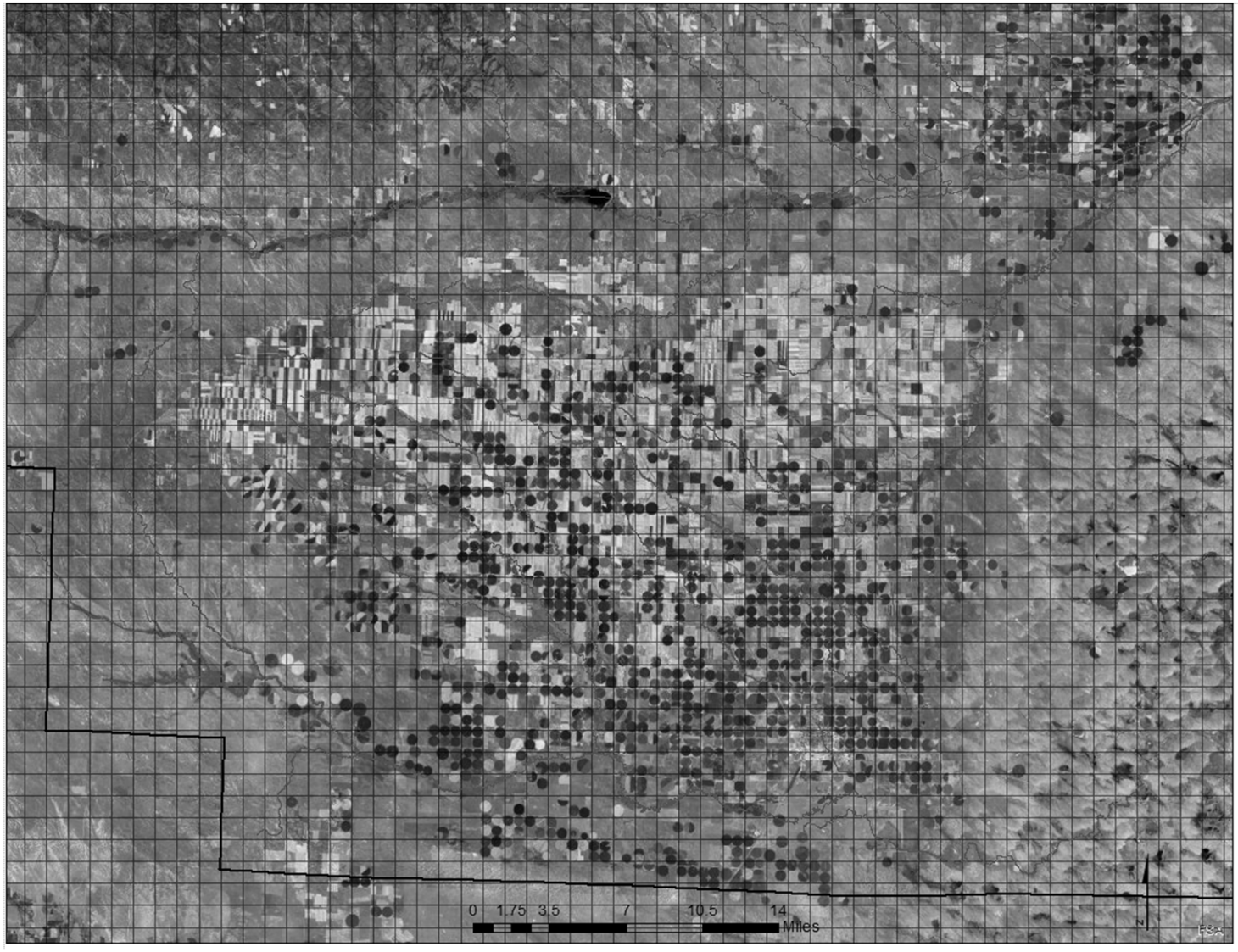

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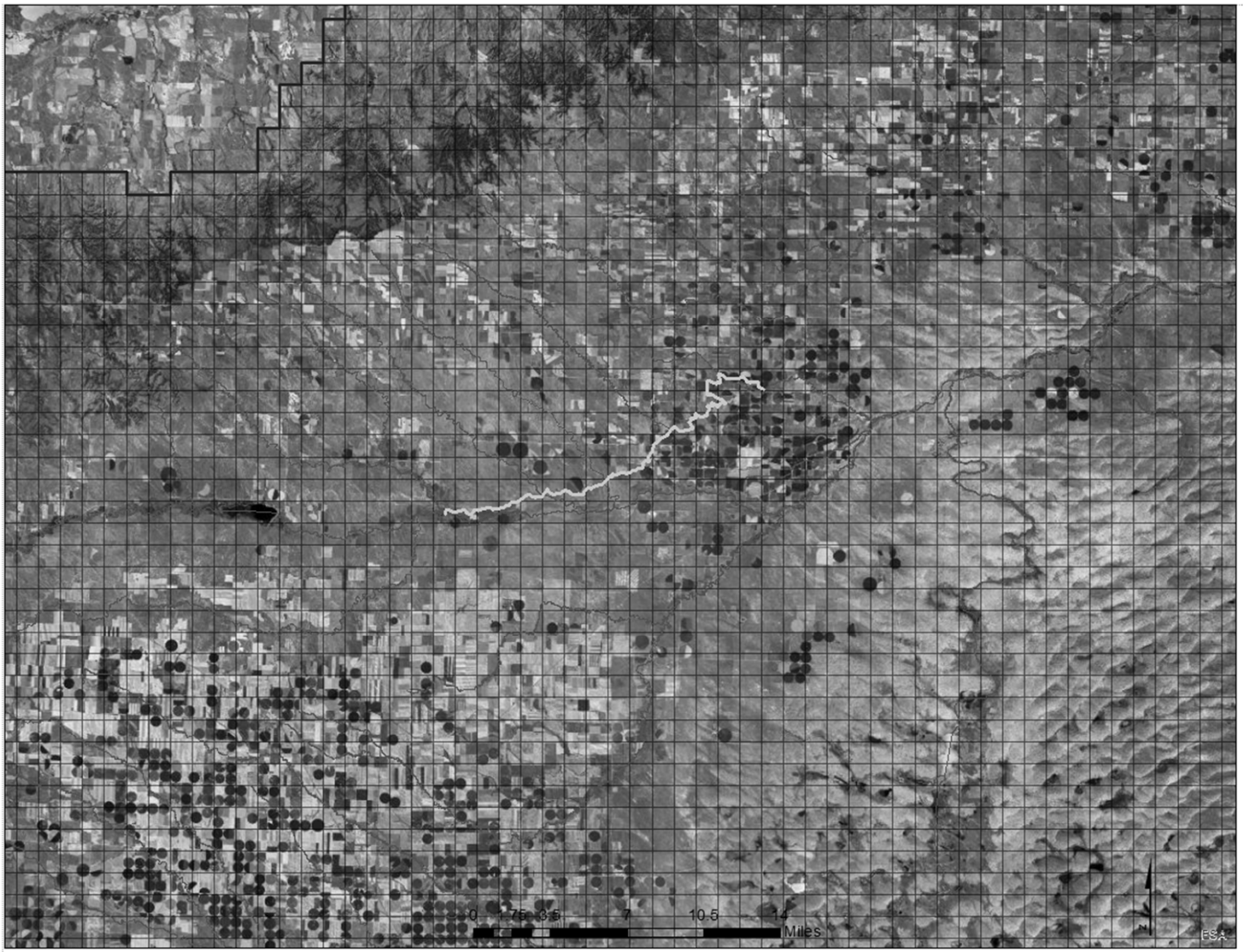

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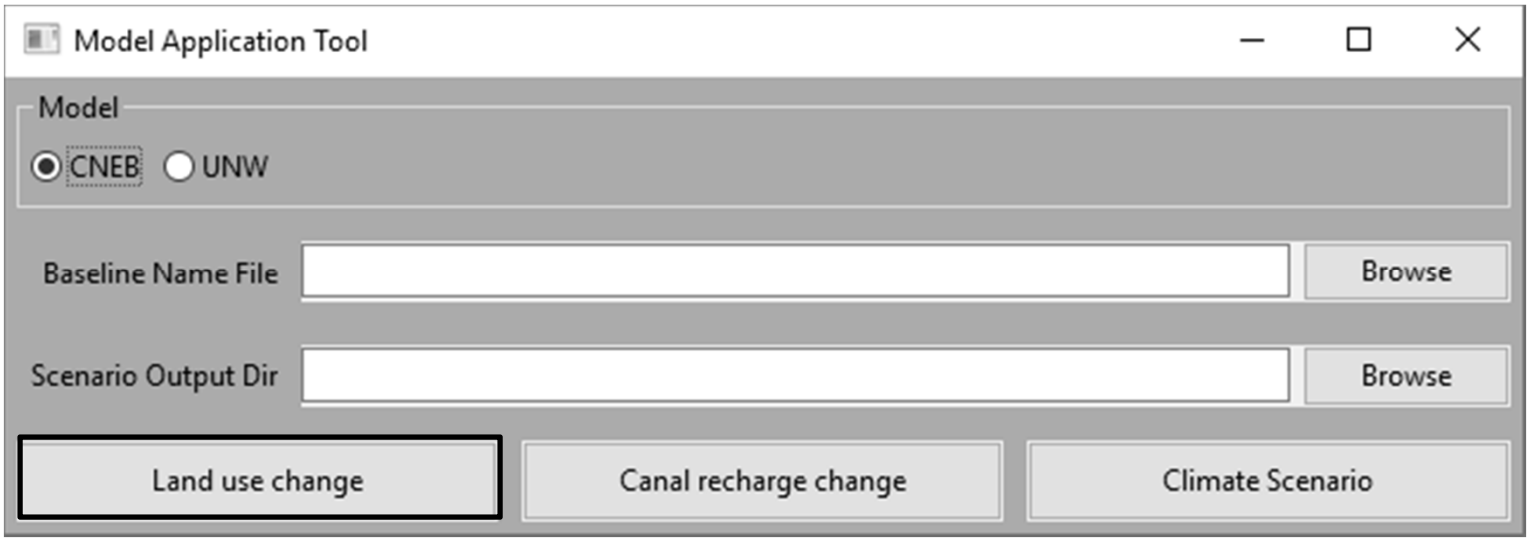

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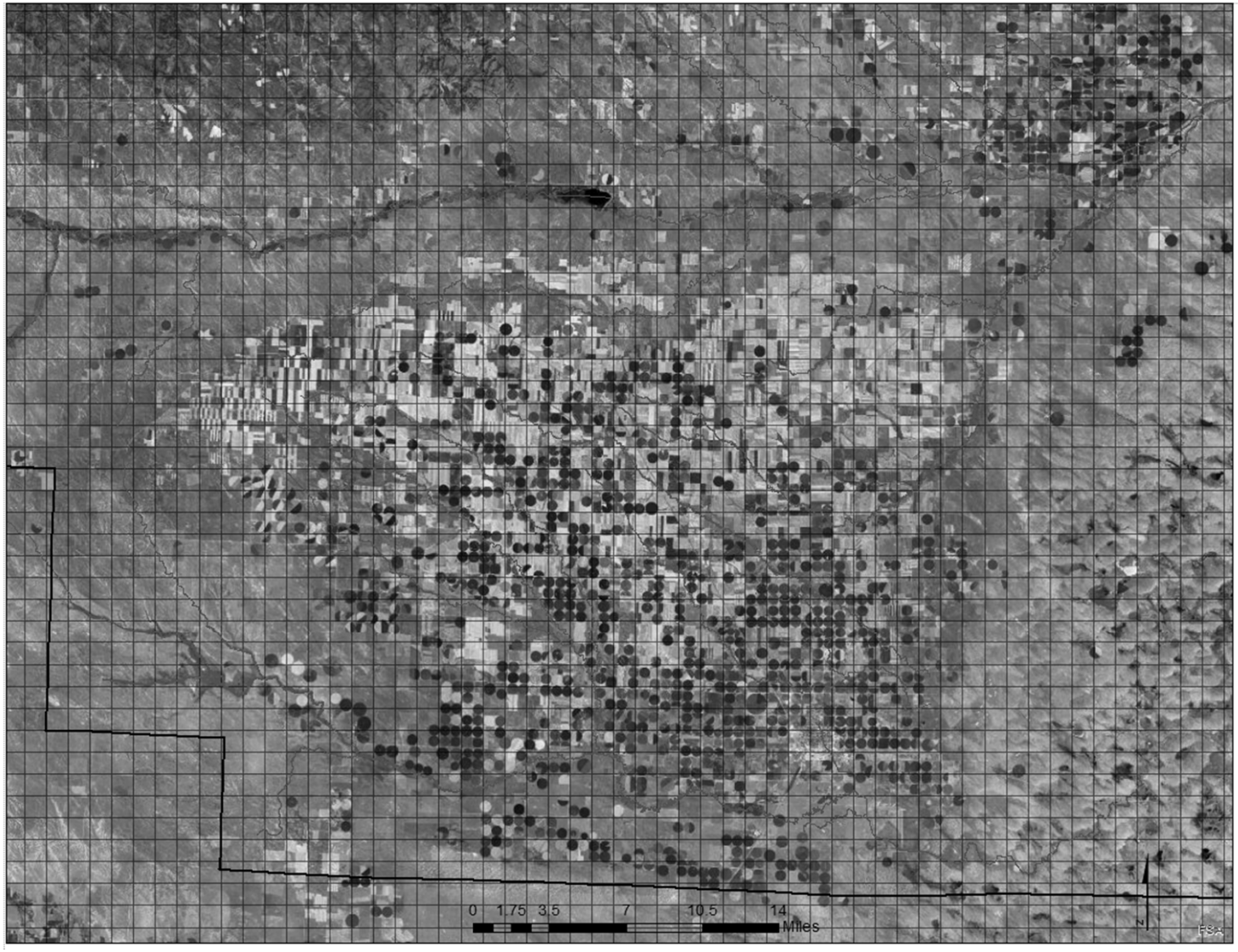

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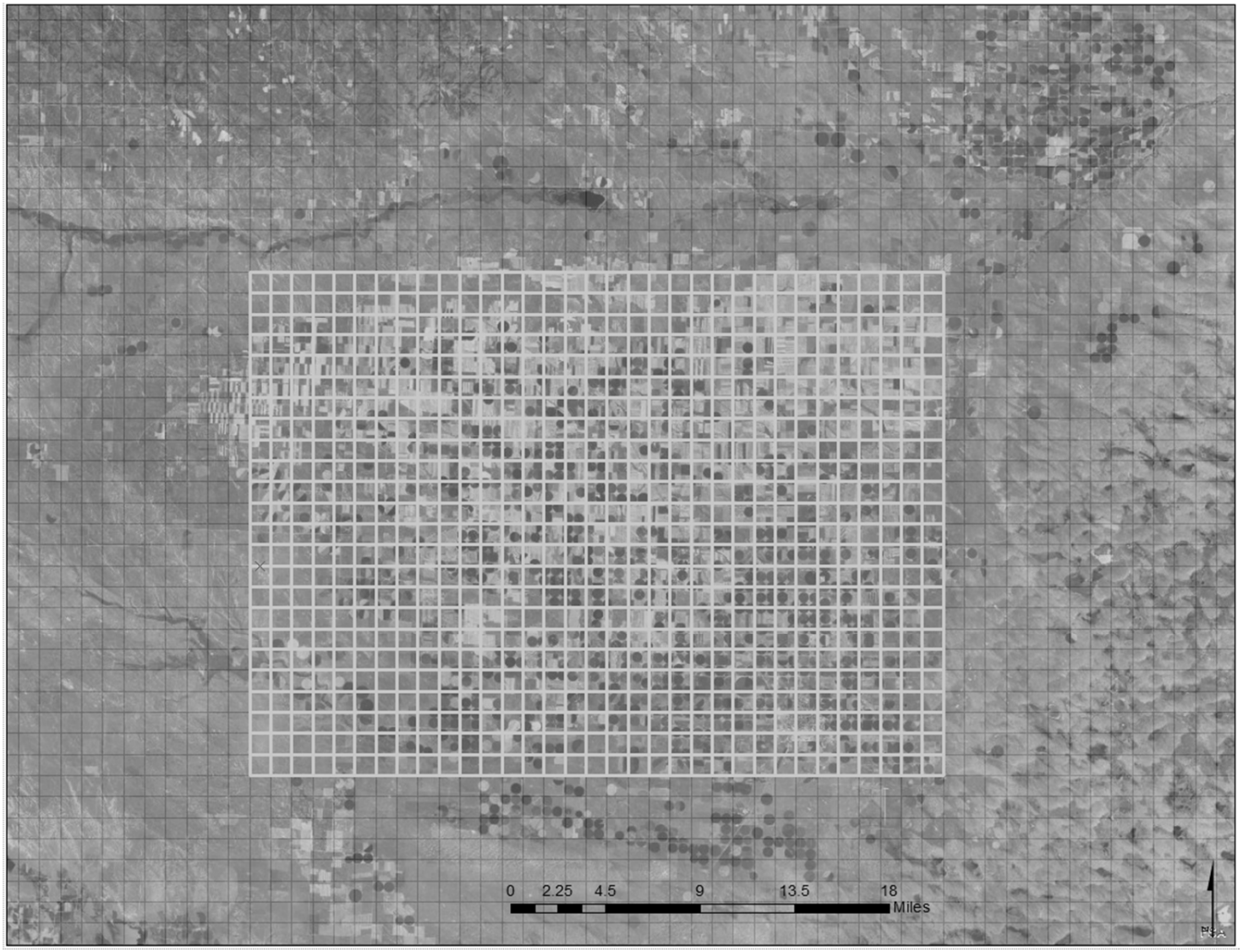

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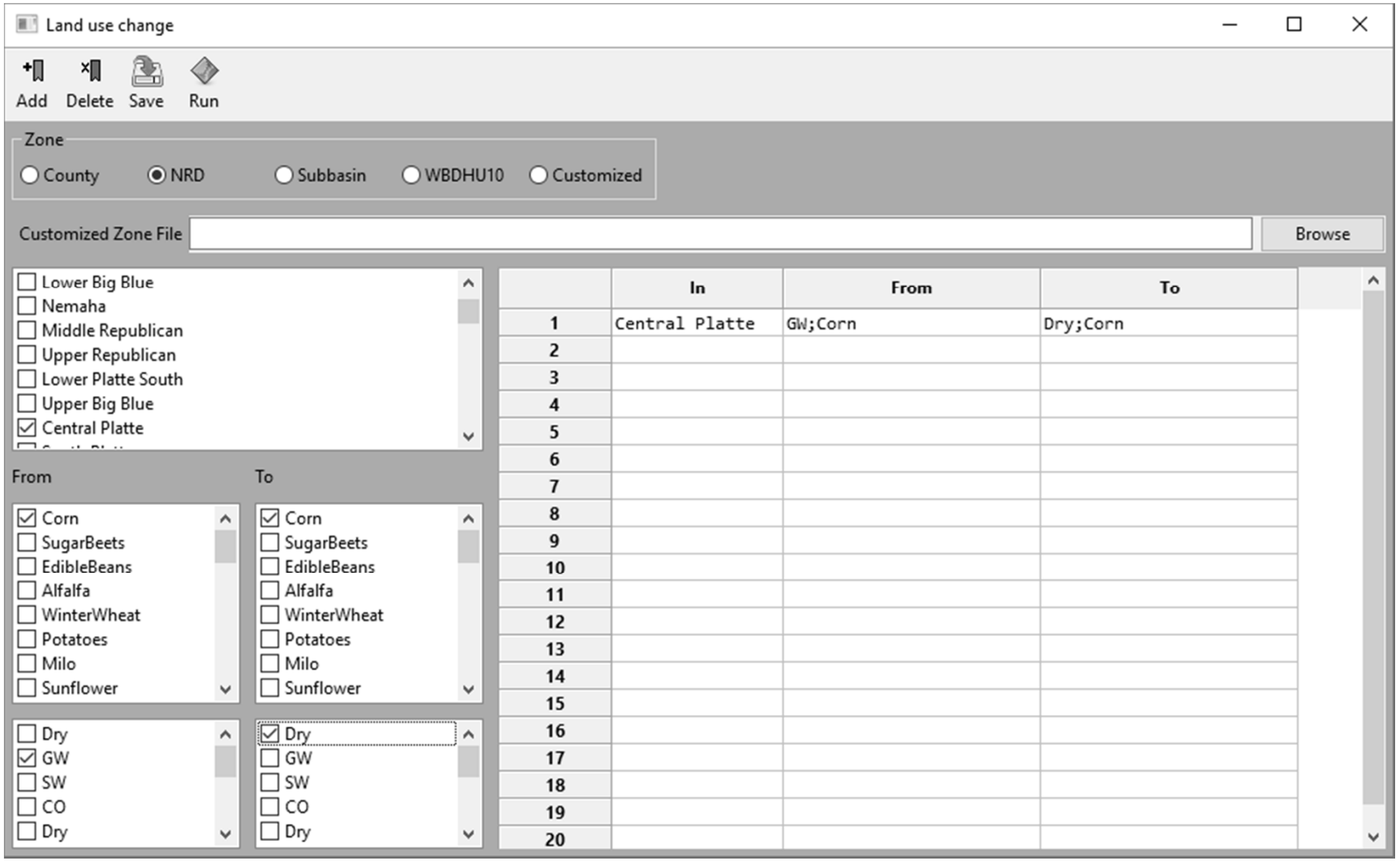

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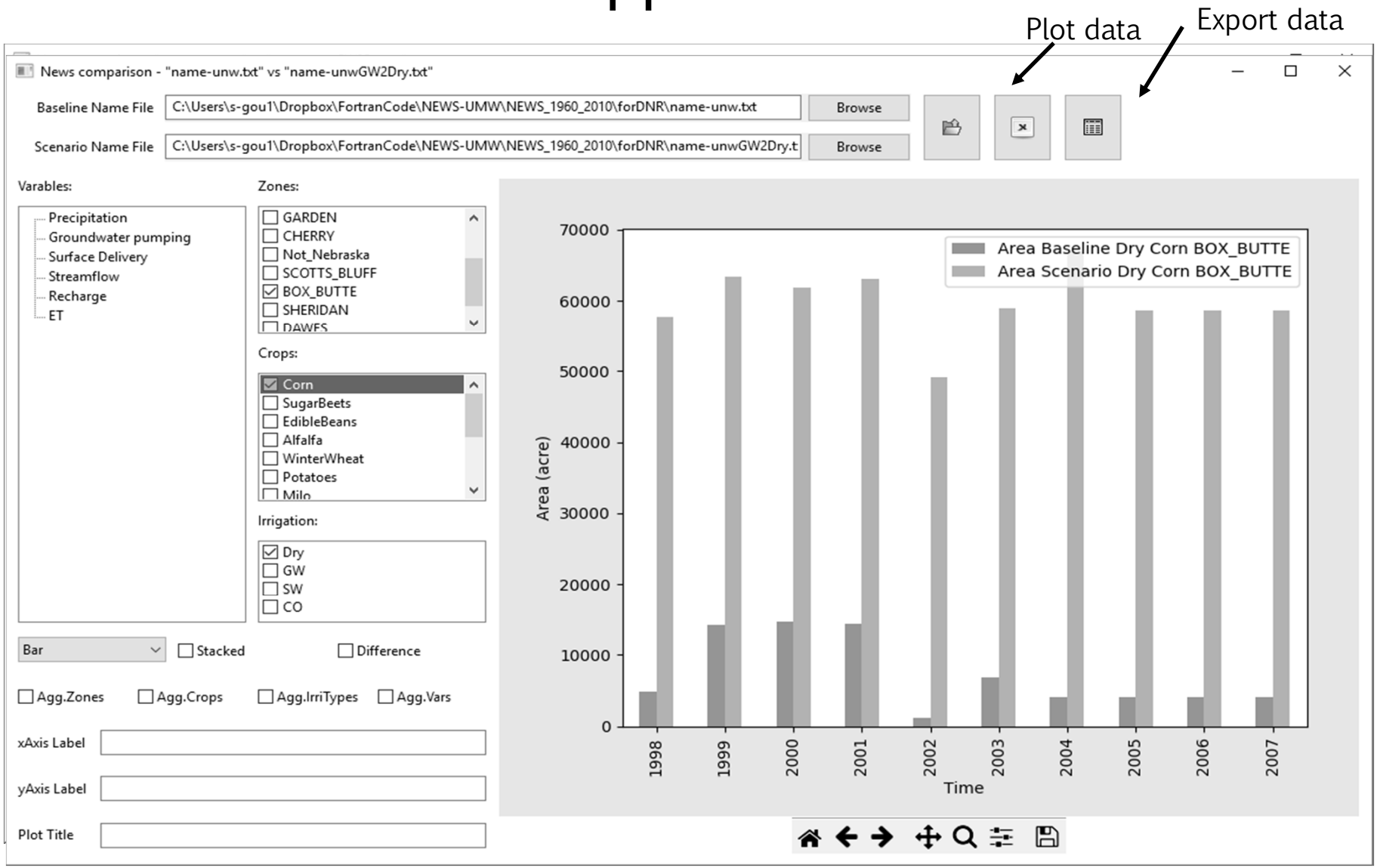

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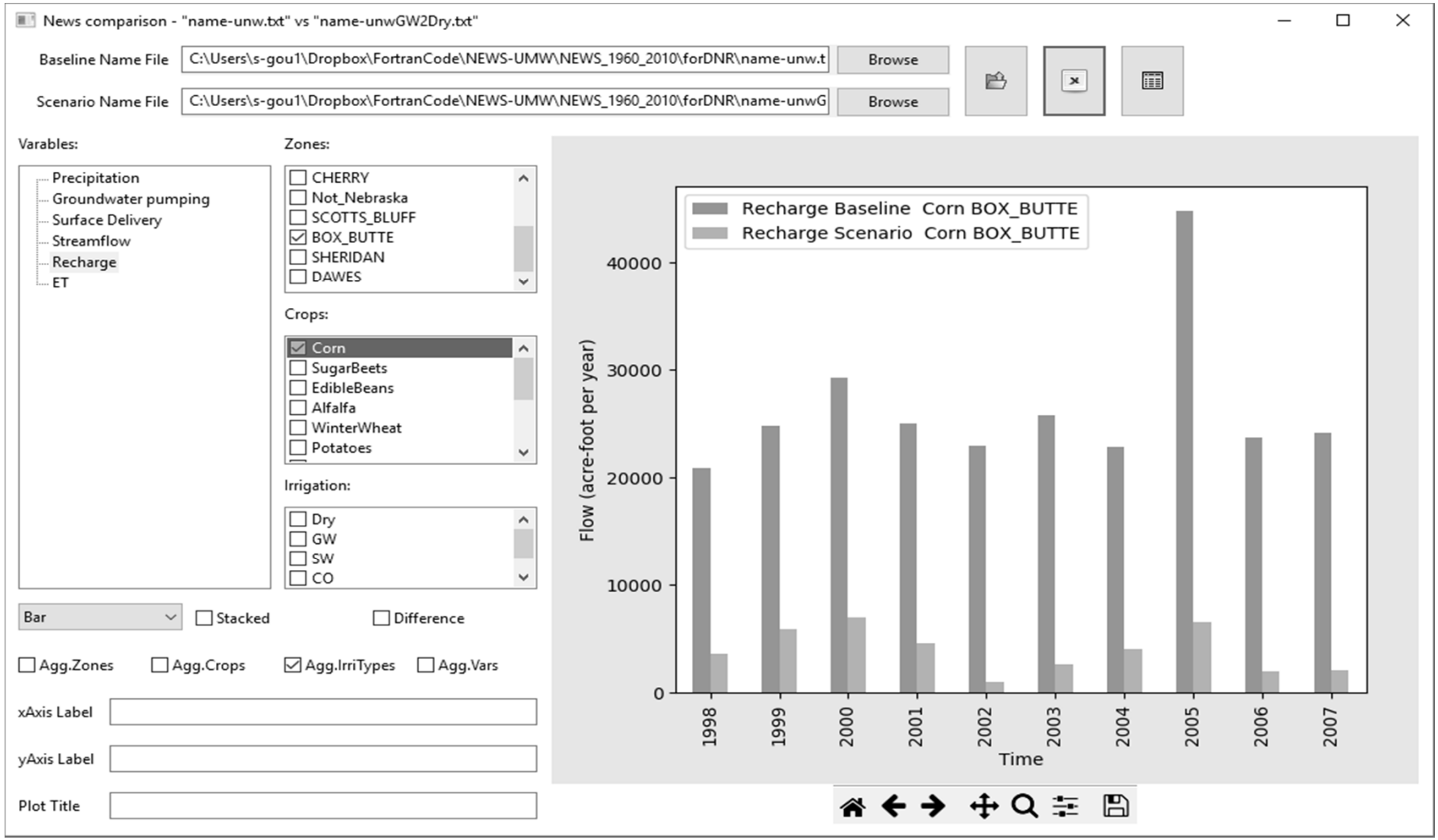

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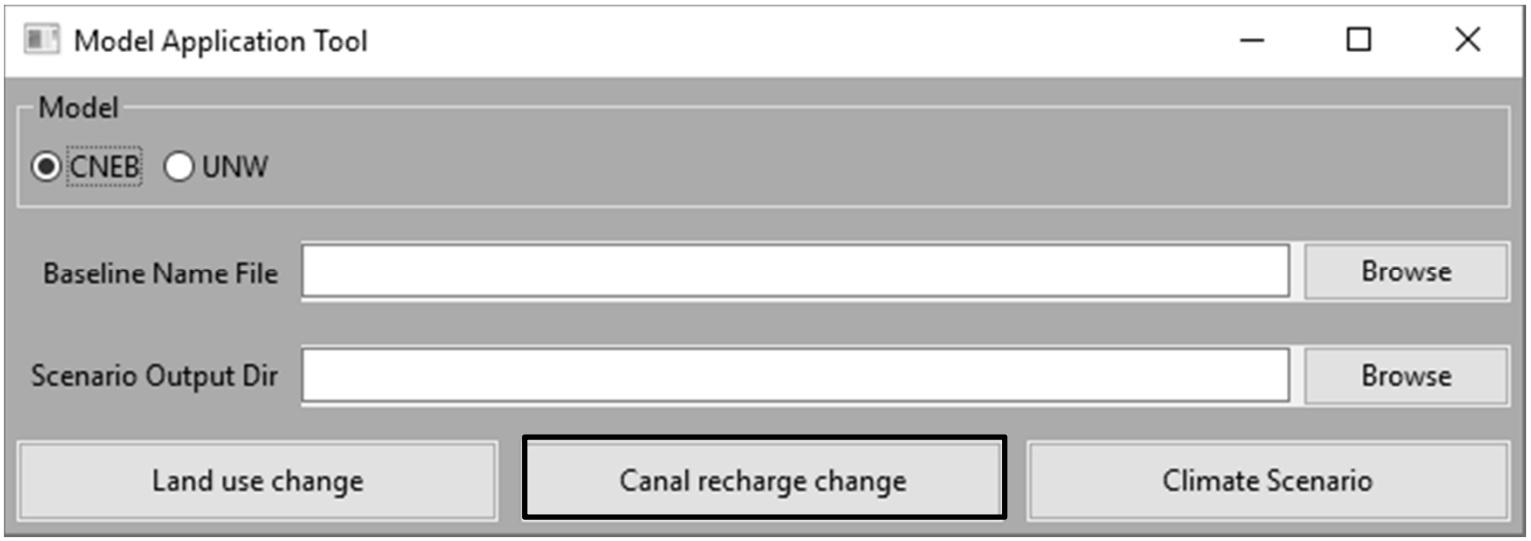

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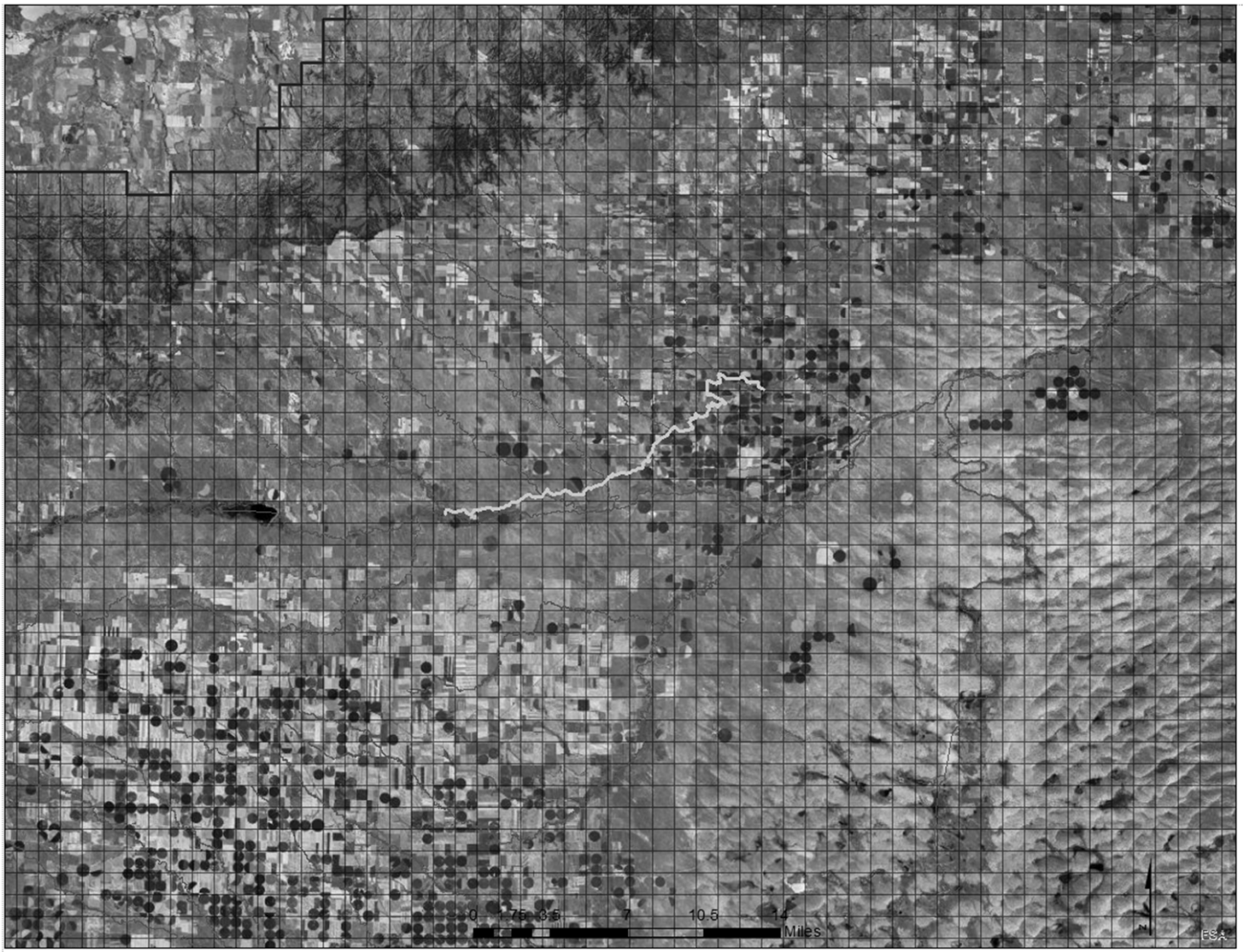

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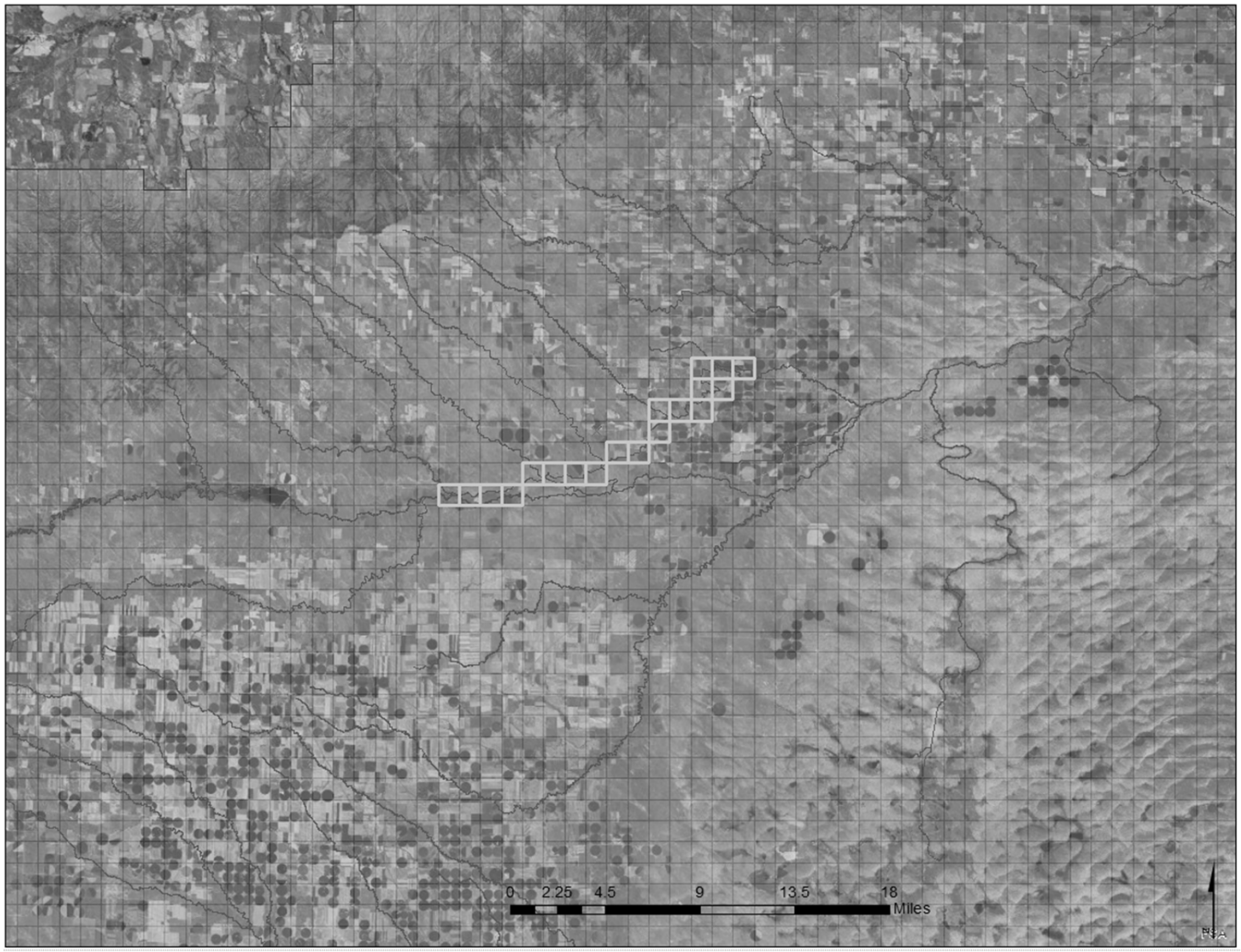

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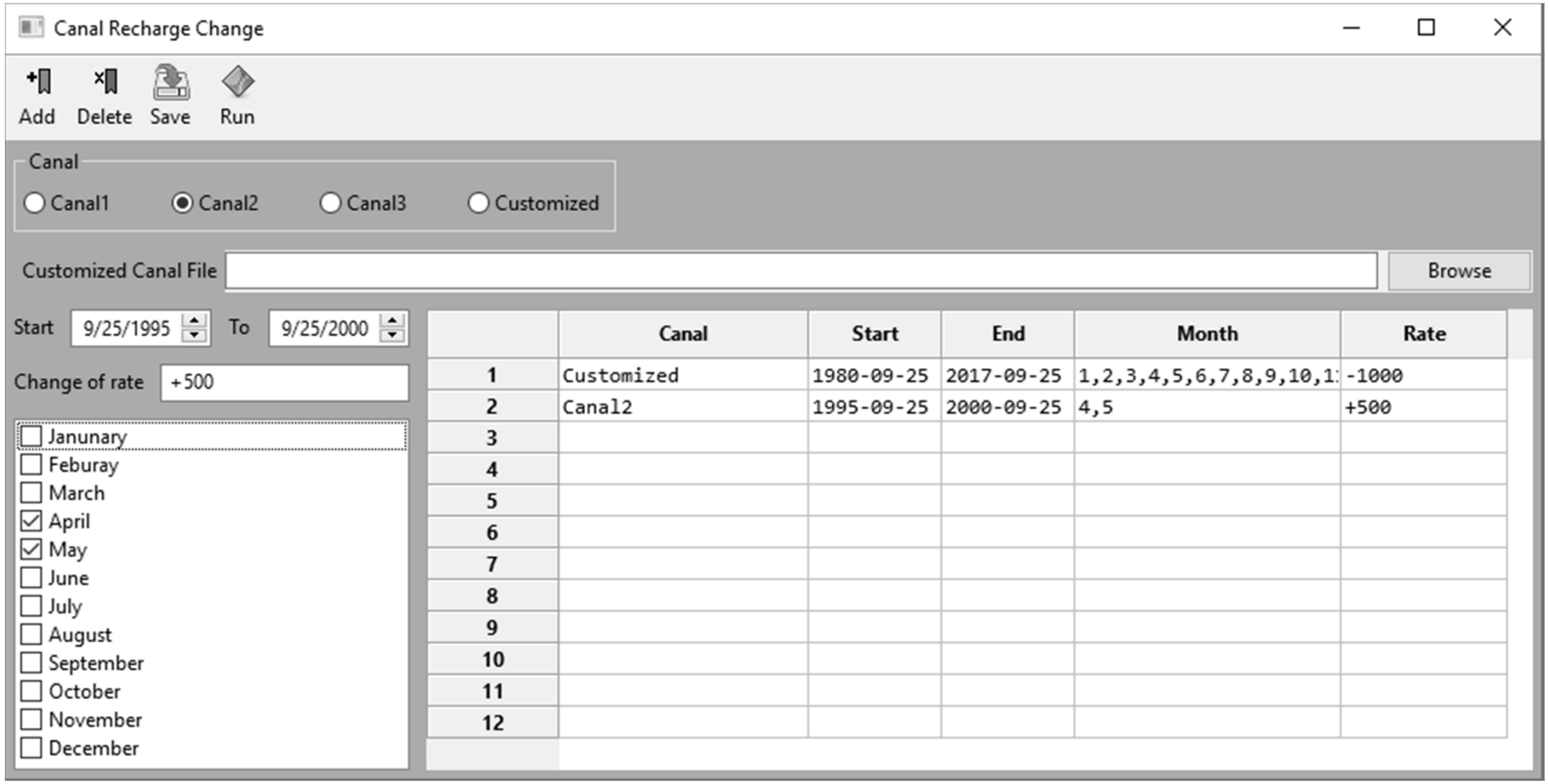

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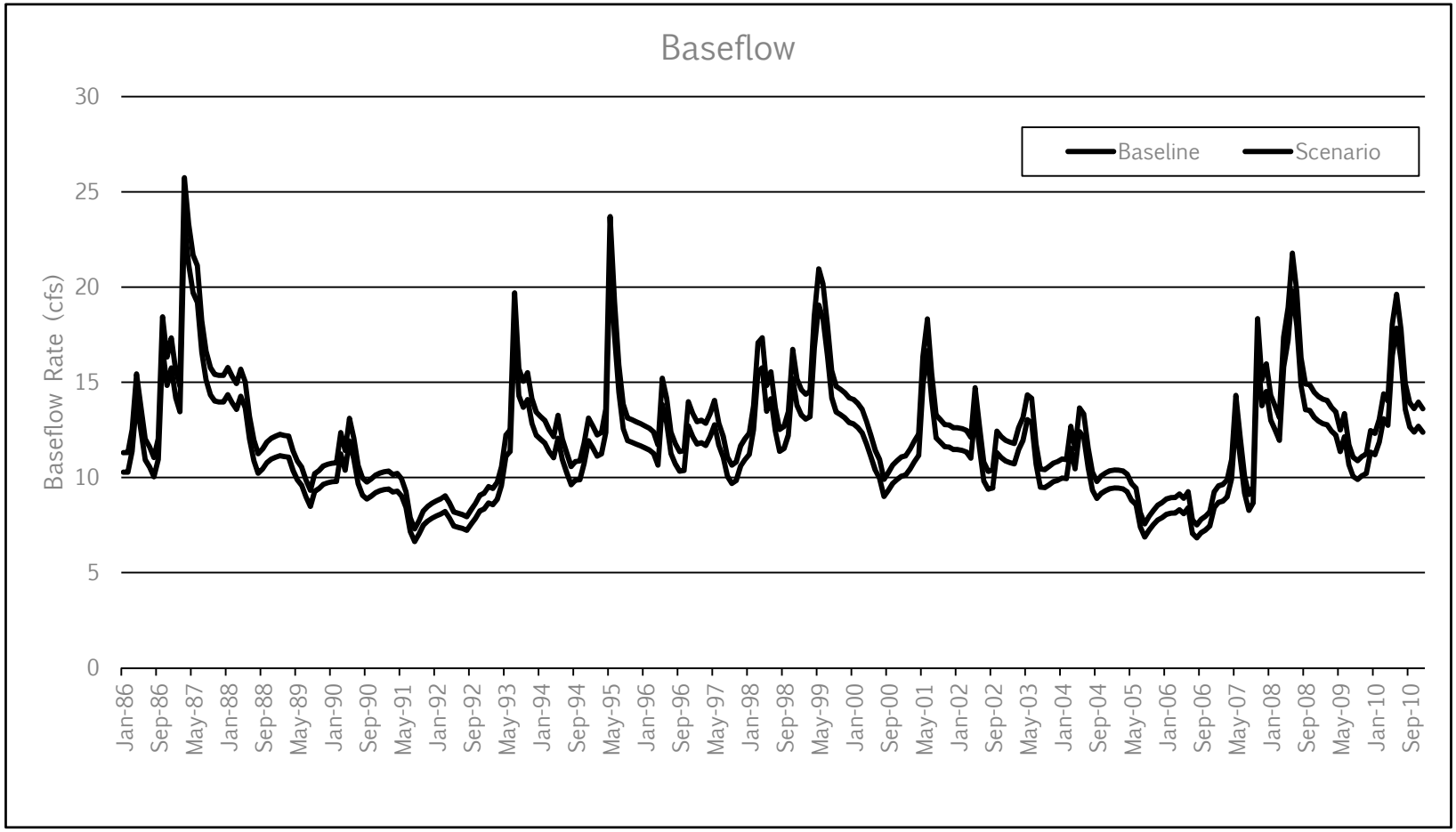

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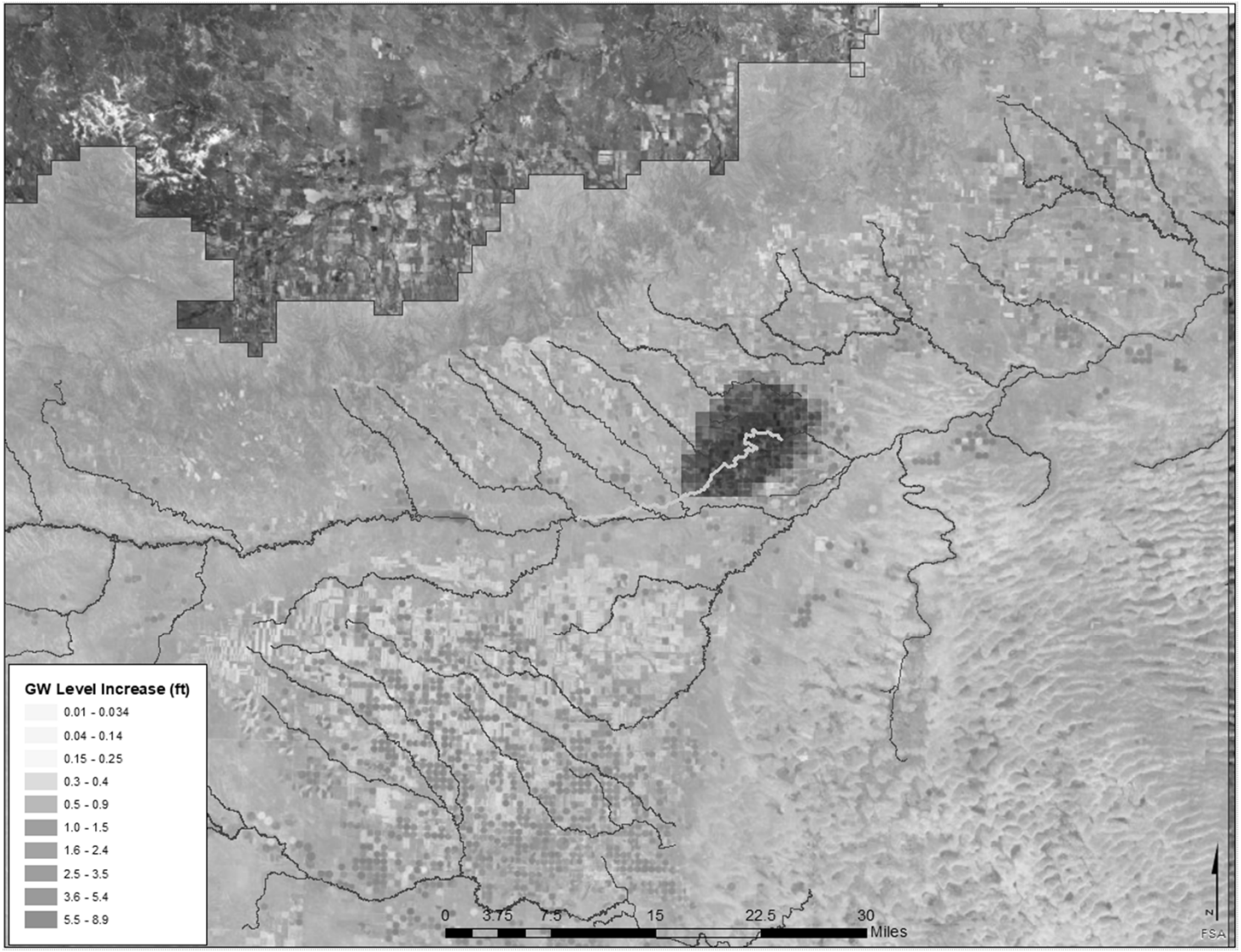

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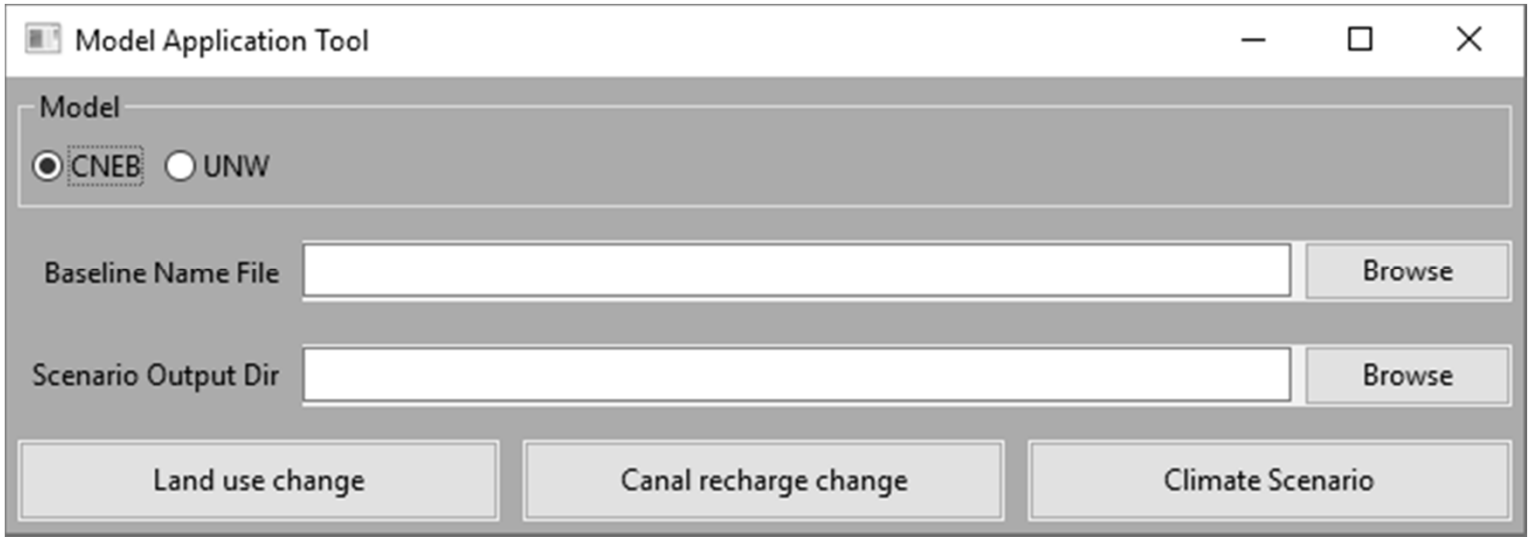

- Model Application Tool developed as per need of the Department and NRDs
- Model Application Tool will be shared to NRDs for their use
- Tool can be customized based on NRD's needs
- Please let us know any suggestions we could incorporate in Model Application Tool

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