

National Hydrography Dataset Applications for Water Administration

Association of Western States
Engineers

May 25, 2011

Presentation Goals

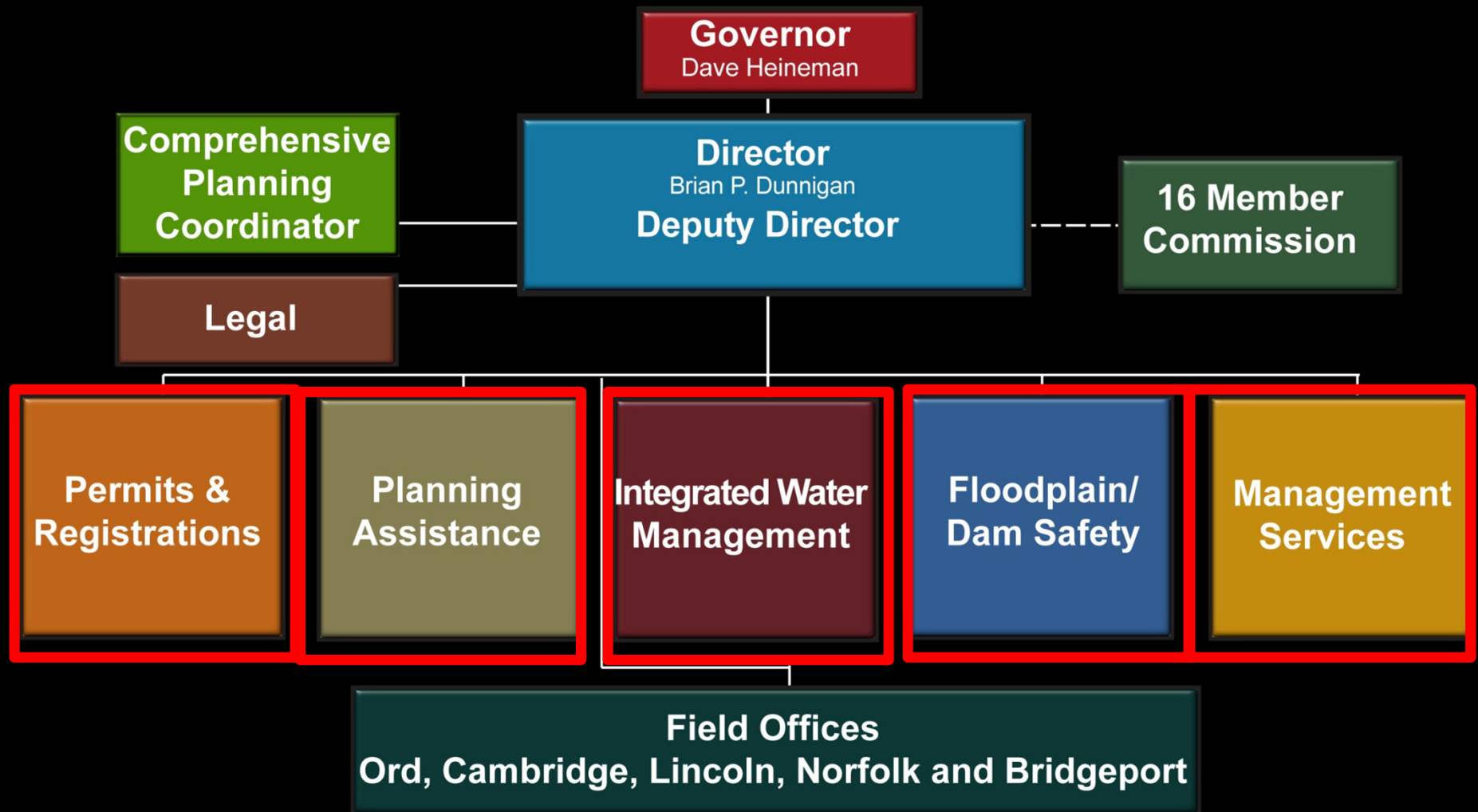
- Nebraska NHD History
- Overview of NHD
- Introduce Navigation and Addressing
- Addressing Issues
- Demos
- Trials and Tribulations
- *Caveats

Nebraska NHD History

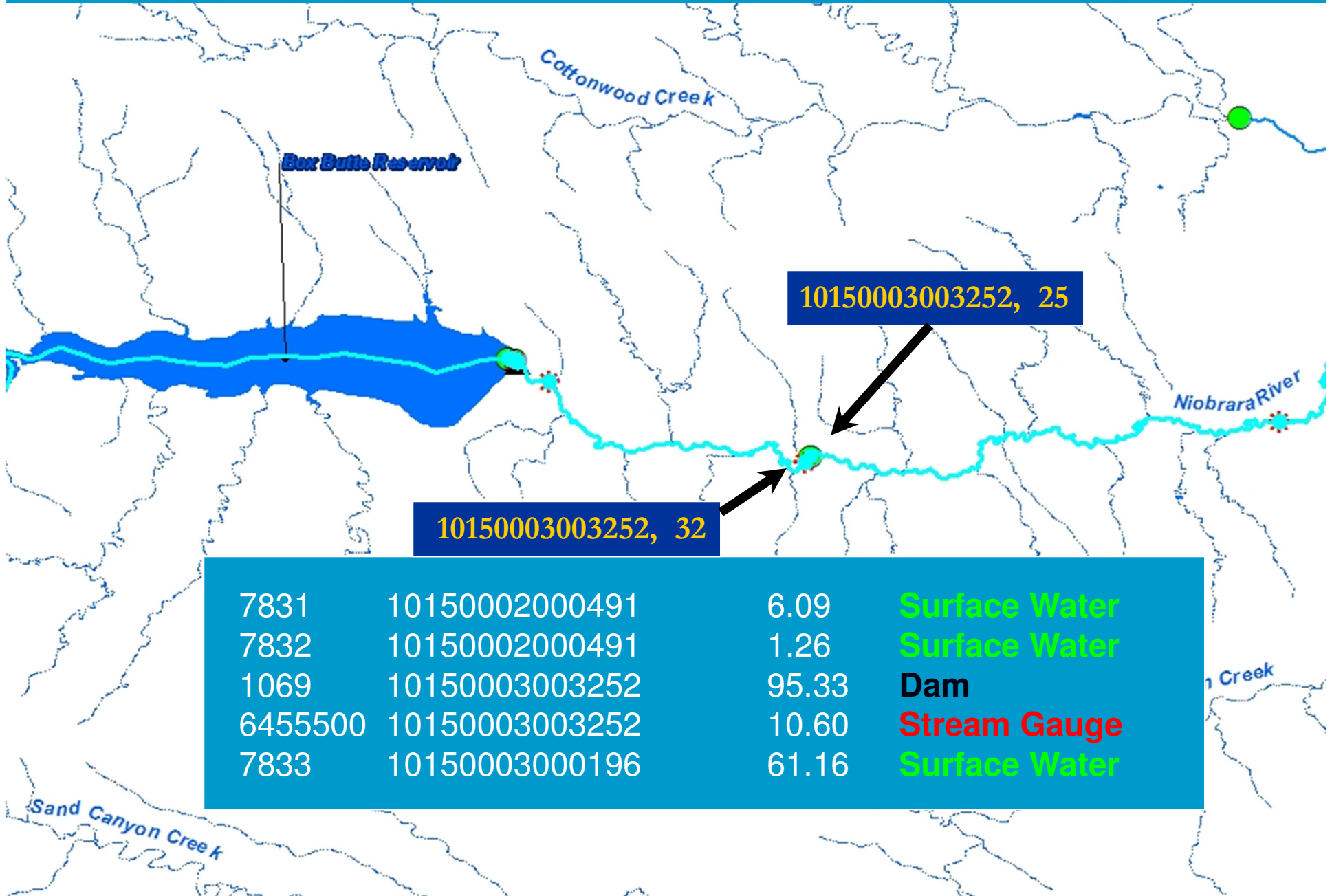
- 1999, Nebraska GIS Steering Committee
 - · Floodplain Mapping (NRC)
 - · Water Rights (DWR)
 - · Dam Safety Program (DWR)
 - · Interstate Compact Administration (NRC)
 - · Watershed Planning (NRC)
- 2000-2001 Logan Creek Pilot
- Development 2001-2006
- Maintenance 2006-ongoing
- Application development – new and ongoing

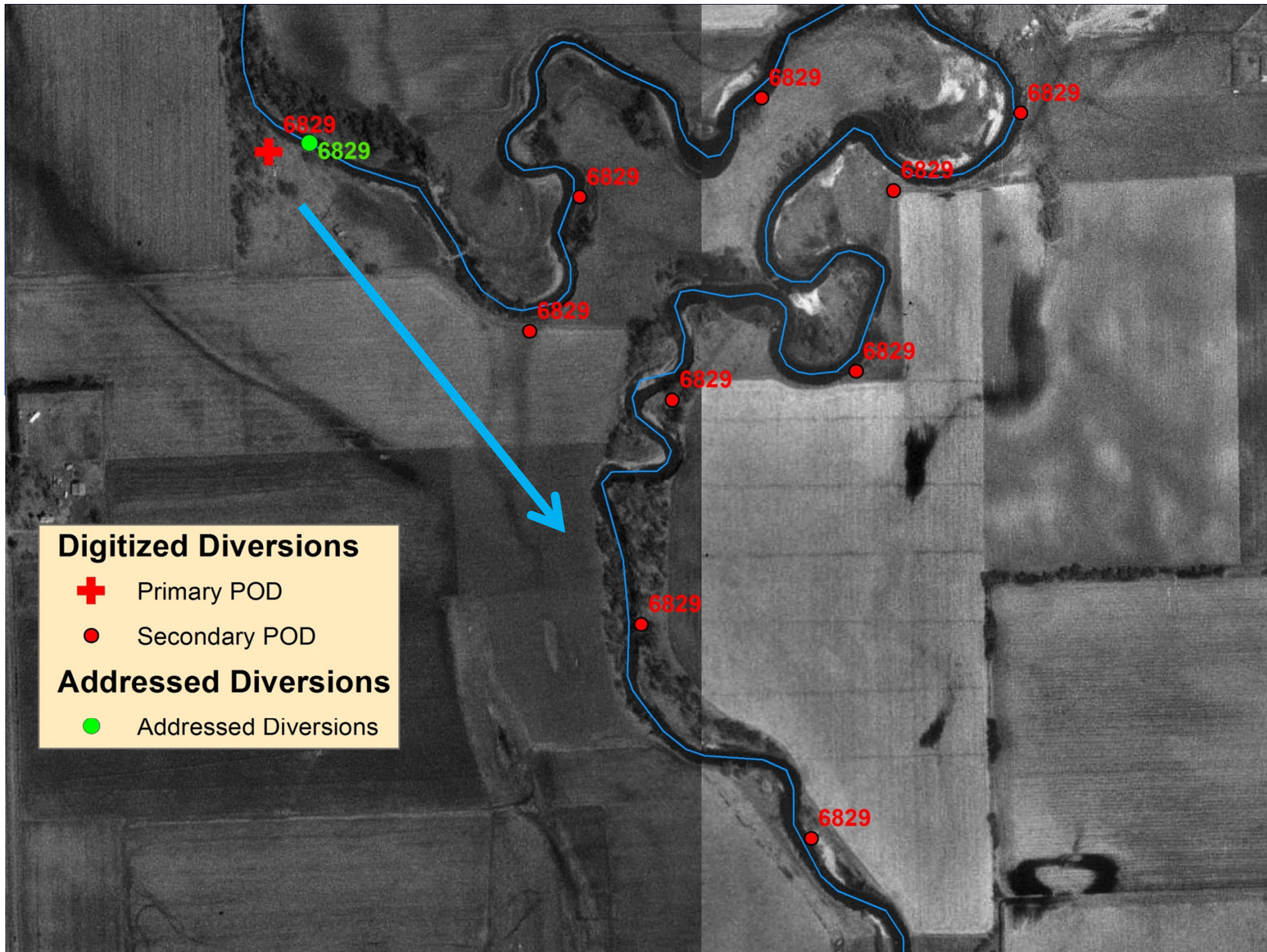


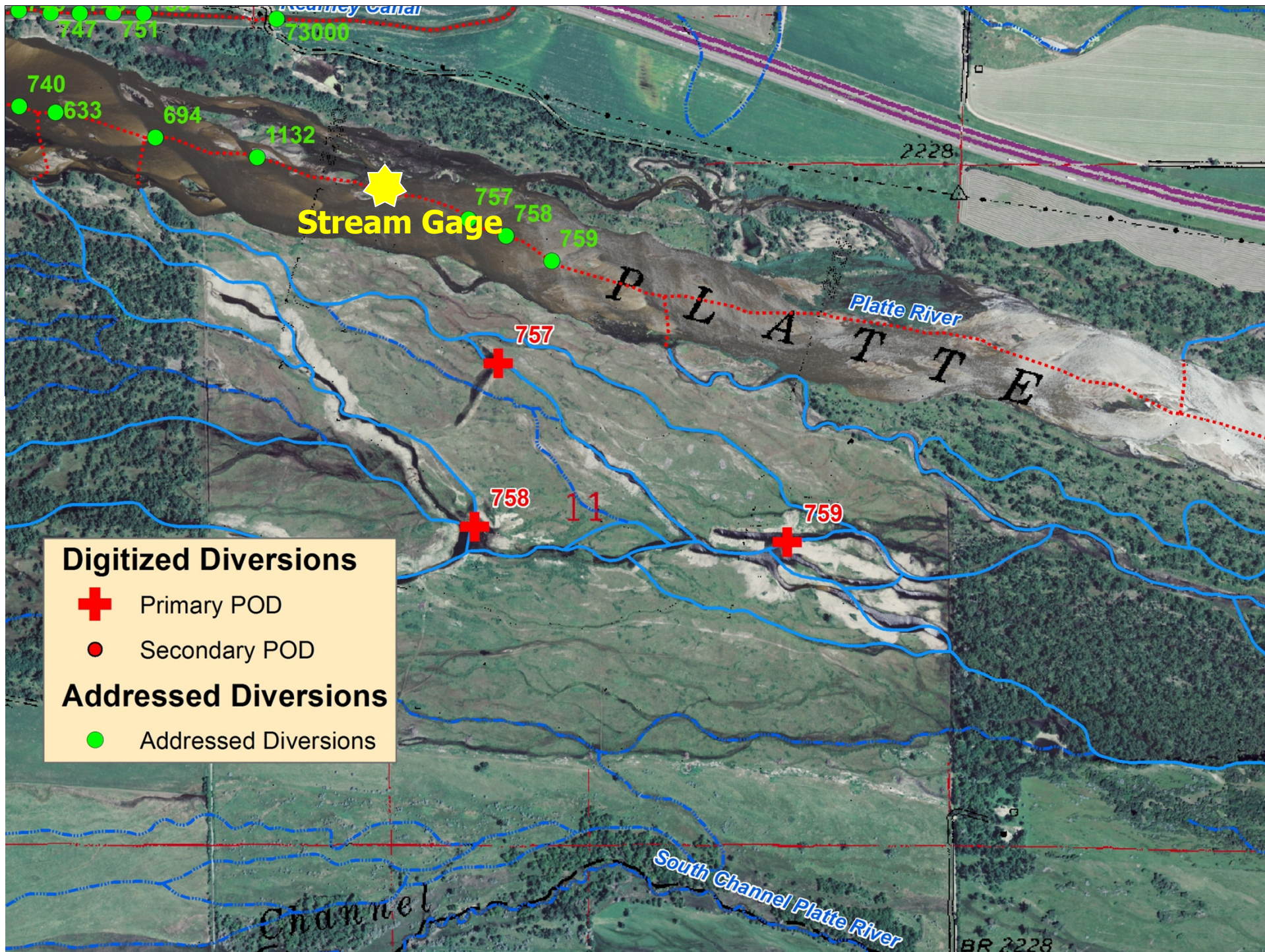
Nebraska Department of Natural Resources



NHD Supports:







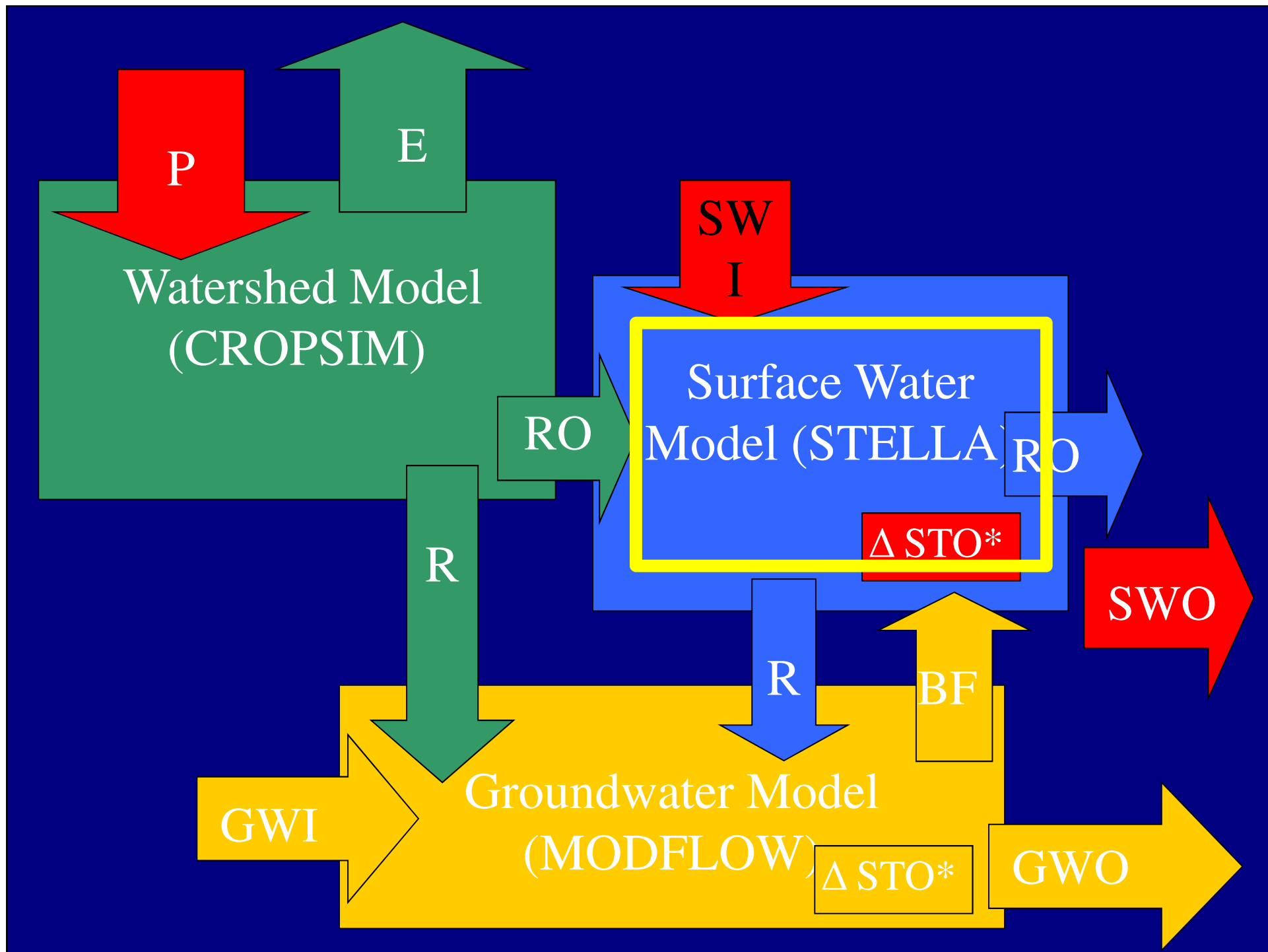
Water Administration

- Time - Doctrine of Prior Appropriation
 - ...those with earliest priority dates have the right to the use of that amount of water over others with later priority dates.
- Space - River Location
 - Downstream Order –a number that defines the relative hydrologic position of a feature (diversion) on a stream network in a downstream direction

Navigation Options:

- Geometric Network Queries
 - Water Rights Demo
- FlowTable Queries

<u>FromCOM ID</u>		<u>ToCOM ID</u>	<u>Direction</u>
1234567890		1234567891	In
1234567891		1234567892	In



NHD Surface Water Model

- Input events
- Reach gains and losses
- Withdrawals for irrigation
- Water administration
- Reservoir operations and canal returns
- Incorporate stream gauges

Model Outputs

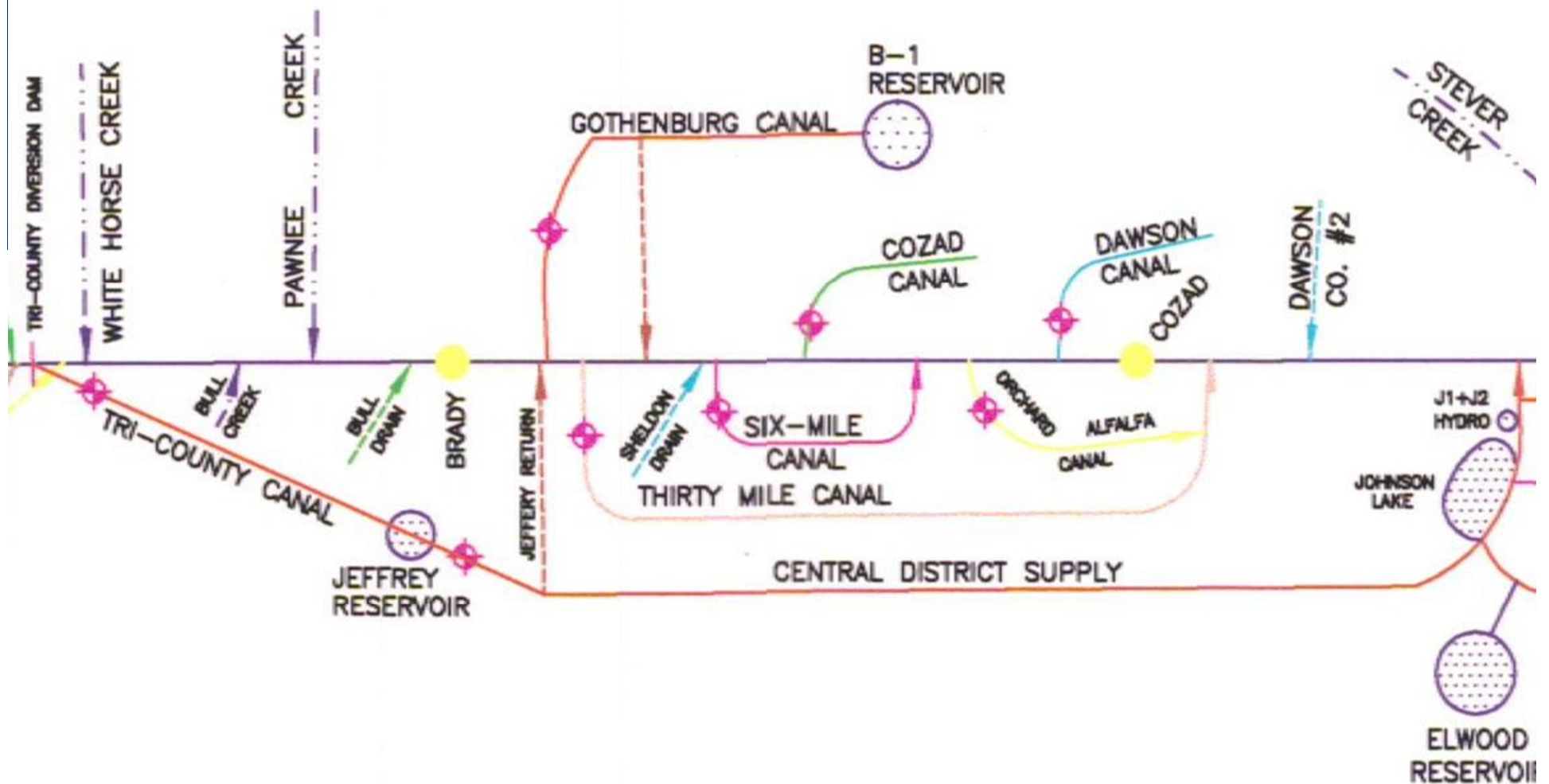
- Running account of flow by feature
- Downstream senior rights

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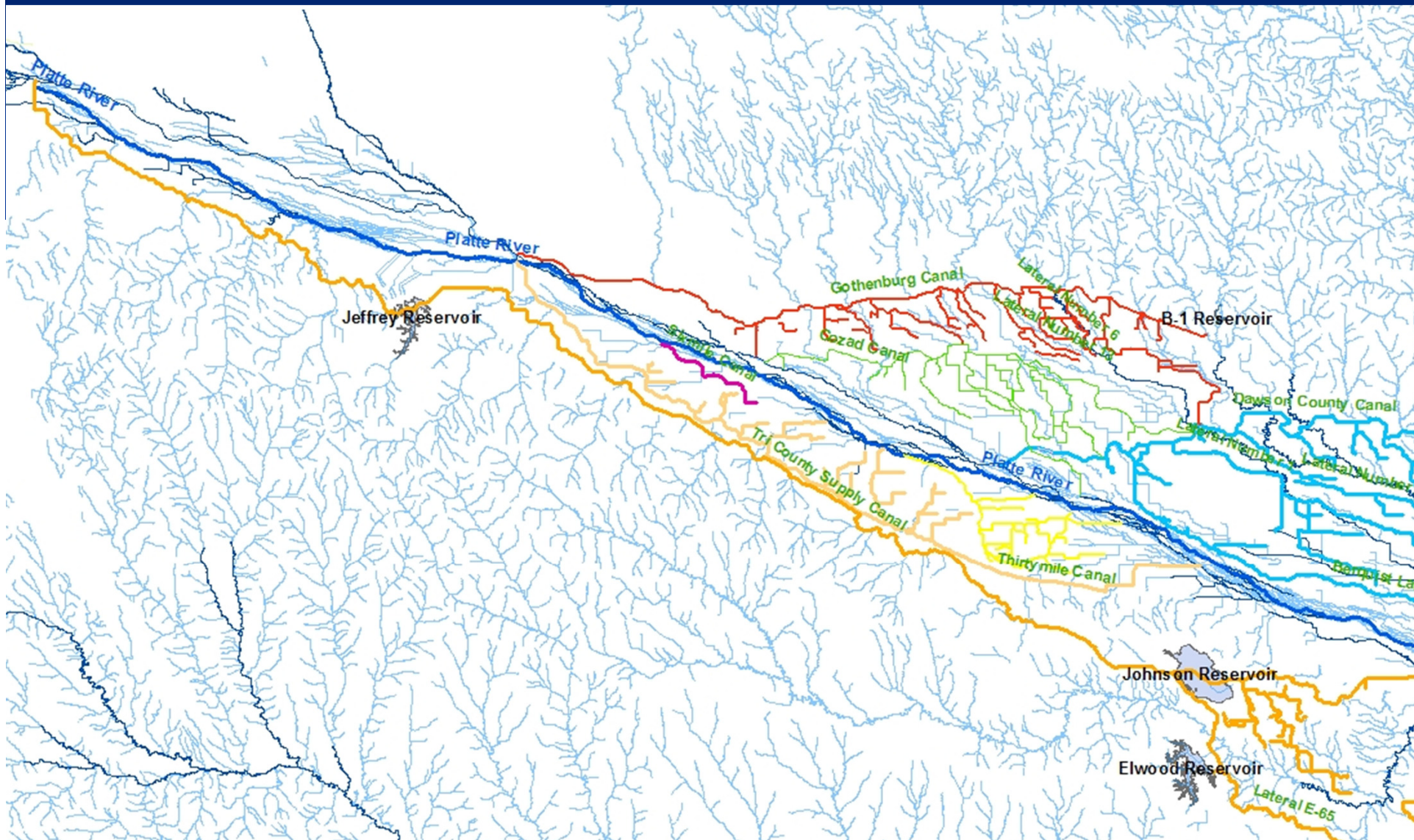
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149157536 G0 L0 B0 Total=6.04
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149157997 G0 L0 B0 Total=5.93
149159066 G0 L0 B0 Total=6.18
149159048 G0 L0 B0 Total=6.36
149159050 G0 L0 B0 Total=6.53
149159051 G0 L0 B0 Total=6.67
149159053 G0 L0 B0 Total=6.69
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149159057 G0 L0 B0 Total=7.03
149158940 G0 L0 B0 Total=7.11
149159059 G0 L0 B0 Total=7.39
149159060 G0 L0 B0 Total=7.71
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149159060 G0 L0 B0 T7.71 7832 6/24/1941 0
149153330 G3 L0 B0 Total=3.21
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149153327 G0 L-16.41 B0 T0.00 7801 7/7/1934 -1.41
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4/11/2011	7784	9.14200000149012	0	-0.16	5/31/1891	7771,7773,7774,7775,7776,7780,7781,7782
4/11/2011	7785	9.19250000149013	0	-2.31	5/31/1891	7771,7773,7774,7775,7776,7780,7781,7782,7783,7784
4/11/2011	7786	9.02200000149013	0	-1.48	5/1/1887	7771,7773,7774,7775,7776,7780,7781,7782,7783,7784,7785
4/11/2011	7787	9.02200000149013	0	-0.52	5/31/1891	7771,7773,7774,7775,7776,7780,7781,7782,7783,7784,7785,7786

PLATTE CANALS



PLATTE CANALS NHD



NHD MAINTENANCE FOR MODELLING APPLICATIONS:

- Selectively disable features
- Value Added Attributes
 - Stream level
 - Level path
 - Hydrographic sequence
 - Strahler stream order
 - Terminal path ID
 - Divergence flag
 - ...

Conclusion: NHD has the potential to facilitate water administration

- Design of the NHD supports water administration applications
- NHD accuracy and integrity is continuously improving
- Technology and experience with NHD is maturing

Contact Information:

Josh Lear

Natural Resources Planner

Nebraska Department of Natural Resources

P.O. Box 94676

Lincoln, NE 68509-4676

Phone: 402-471-3954

Email: josh.lear@nebraska.gov

Hydrologic-based Analysis and Modeling of Water-Related Data with the National Hydrography Dataset

Nebraska GIS/LIS Association Symposium

La Vista Nebraska

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