

Nebraska's Integrated Water Management Planning Process



Presented to the
Water Resources Advisory Panel
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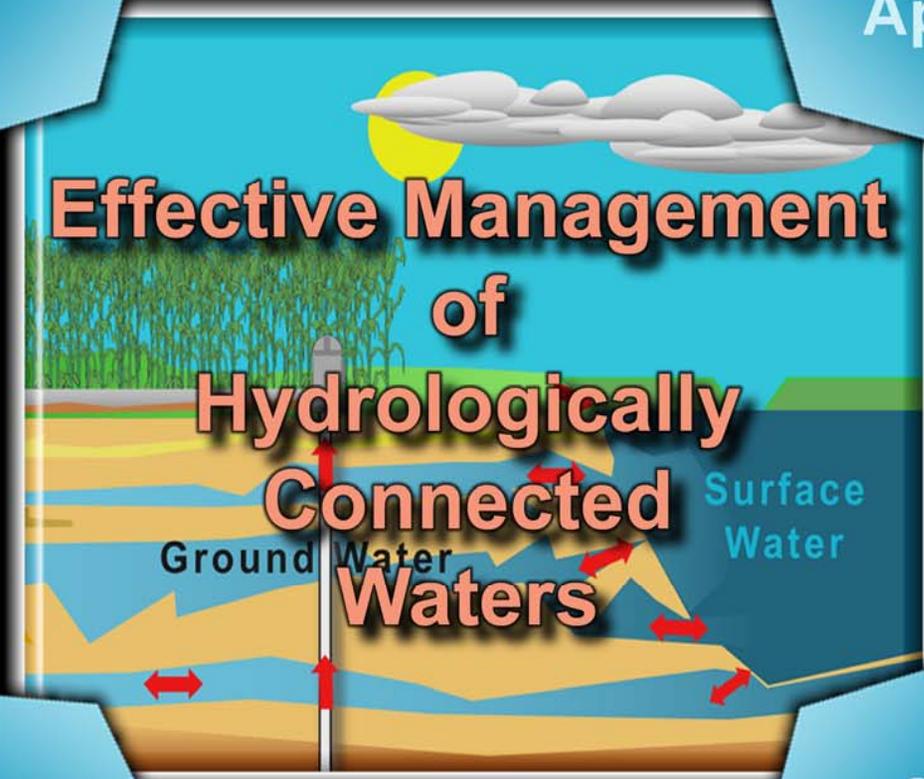
**Ground Water
Correlative
Rights**

**Surface Water
Prior
Appropriations**

**Effective Management
of
Hydrologically
Connected
Waters**

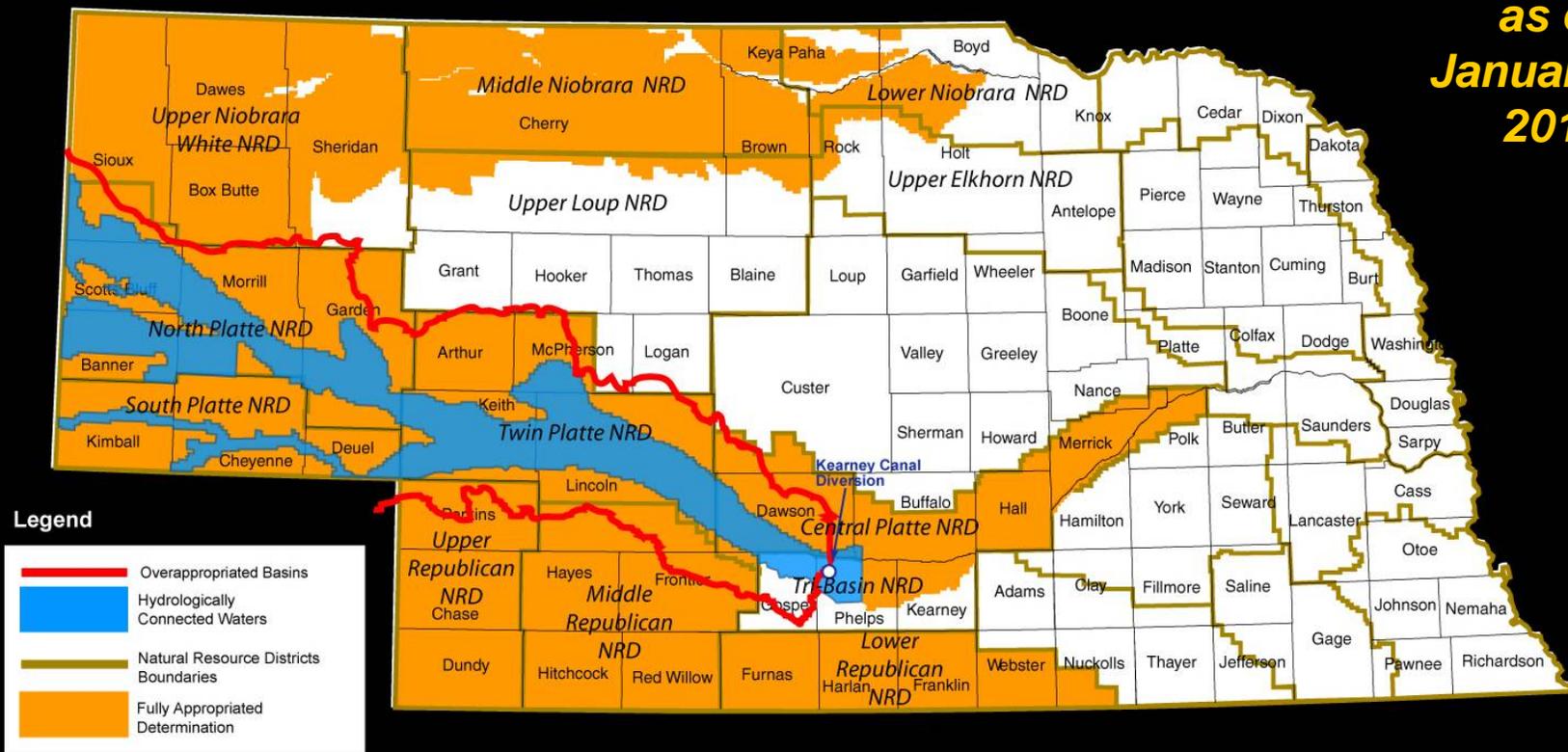
**Ground Water
Regulated by
NRDs**

**Surface Water
Regulated by
DNR**



Fully and Overappropriated Areas

as of
January
2010



Status of IMPs

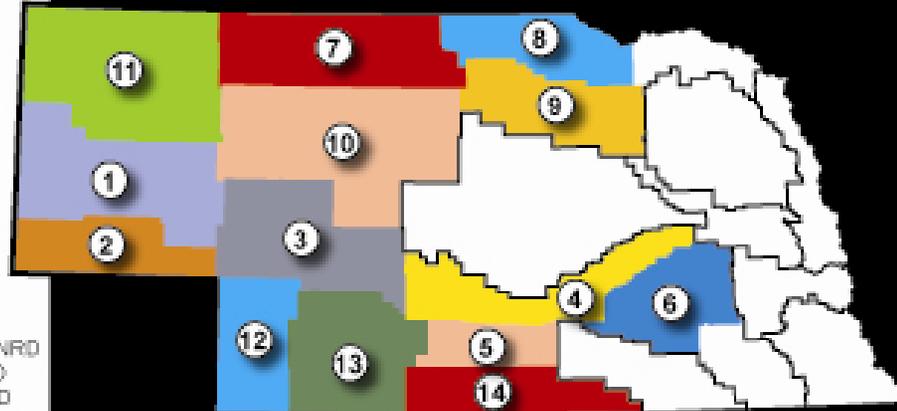
■ 14 NRDs are fully or overappropriated.

■ **Nine** have completed IMPs.

■ **Five** are in the process of developing IMPs.

natural resources districts

1. North Platte NRD
2. South Platte NRD
3. Twin Platte NRD
4. Central Platte NRD
5. Tri-Basin NRD
6. Upper Big Blue NRD
7. Middle Niobrara NRD
8. Lower Niobrara NRD
9. Upper Elkhorn NRD
10. Upper Loup NRD
11. Upper Niobrara White NRD
12. Upper Republican NRD
13. Middle Republican NRD
14. Lower Republican NRD



Integrated Management: Looking Ahead

- **The Annual Evaluation:** what it does and does not indicate.
- **Integrated Management Planning:** What it entails when no externalities are considered.
- **Monitoring:** A critical component of every successful IMP.
- **Technical Studies:** Developing and utilizing the best science to make sound management decisions.



Annual Evaluation and Report

- The Department reports annually on its evaluation of the expected **long-term availability** of hydrologically connected water supplies.
- Proactive approach in preventing conflicts between surface water and groundwater users (canary in the coal mine).

What is a Fully Appropriated Basin?

(As determined through the Department's Annual Evaluation)

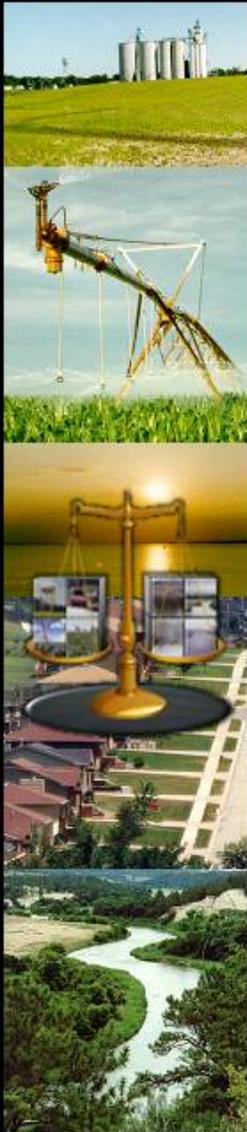
- Water supply is **inadequate to satisfy junior surface water appropriations for irrigation.**
- A fully appropriated determination **does not** necessarily mean that supplies and uses are out of balance.
- If not addressed through a planning process, conflicts will likely result between water users in the future.



Why is Integrated Management Necessary?

- Integrated management is the process of **jointly** (NRDs and the Department) identifying the appropriate path forward to soundly manage the groundwater and surface water supplies as a **single resource**.





A key goal of an IMP is to...

Sustain a balance between basin supplies and uses...

...to sustain the **economic** viability and **environmental** and **social** health, safety, and welfare of the basin...

...for both the near and long term.

Integrated Management Plans are Required to Include:

- Clear goals and objectives with a purpose of sustaining or reaching a sustainable balance between water uses and water supplies (near term and long term).
- A map of the area subject to the IMP.
- At least one groundwater control and one surface water control.
- **A monitoring plan.**



Surface Water and Groundwater Controls



- Are consistent with the goals and objectives of the IMP.
- **Ensure** state compliance with federal and state laws and interstate compacts and agreements. Compliance is a driving force for IMPs in areas where there are laws and/or compacts and agreements that regulate water use.
- **Protect** groundwater users dependent on stream recharge and surface water appropriators existing at the time of the preliminary determination from depletions caused by uses begun after the preliminary determination.

Ensuring State Compliance vs. Protecting Existing Users

Republican

- Moratoriums
- Allocations
- Reductions in use

Niobrara

- Manage growth
- Track water uses
- Ability to treat users after a determination differently than those that were in place before determination.

Ensuring State Compliance vs. Protecting Existing Users

**A “FULLY APPROPRIATED BASIN” MAY NOT
ALWAYS BE FULLY APPROPRIATED**

IMP Process Requires Consultation

(Local input to determine most appropriate path forward)

- Irrigation and reclamation districts, mutual irrigation and canal companies
- Public power and irrigation districts
- Municipalities
- Other stakeholders deemed appropriate by NRD or DNR





Integrated Management Plans **Are Not** Required to Include

- Restrictions on current users (allocations, reduced irrigated acres, etc).
- Moratoriums on new uses.
- Restrictions on municipal and industrial development.

Monitoring Components of an IMP

- Developing the necessary tools (studies, models, etc.).
- Determining the impacts of users on the water supply (both within NRD and at a basin scale).
- Continuing to ensure that local priorities are represented.
- Evaluating the long-term effectiveness of the IMP.

Technical Study Support for IMPs

- What are the future impacts of current levels of development?
- What are the water supplies and how variable are those supplies?
- What are the demands on water supplies? (both current and future projections)
- What, if any, excess water supplies exist?
- What are the economic costs of the various uses of water?

Technical Support for IMPs

- What are the future impacts of current levels of development?
 - Groundwater models to evaluate lag impacts
 - Further refinement of groundwater model inputs (i.e.ET, recharge, etc.)
 - Refined techniques for mapping the spatial distribution of land uses



Technical Support for IMPs (cont.)

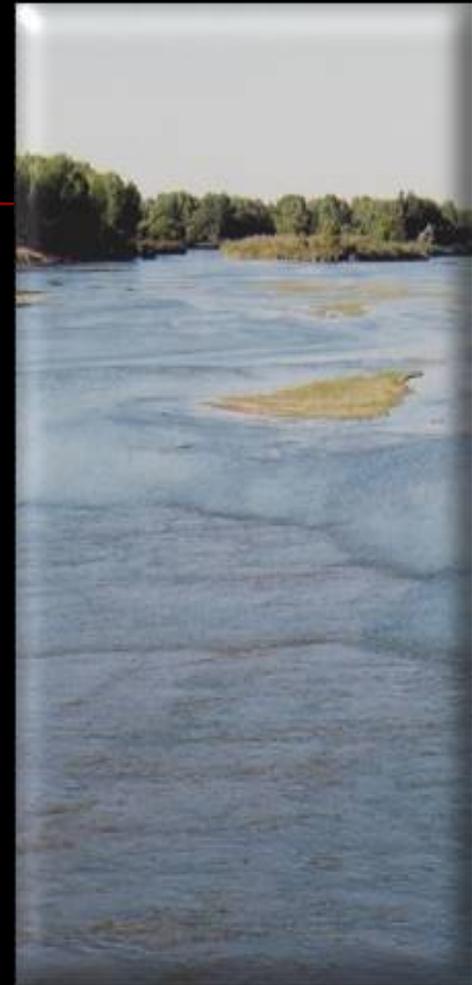
- What are the water supplies and how variable are those supplies?
 - Temporal variability of supplies (both annual and intra-annual)
 - Impacts of land use changes on water budgets
 - Increased understanding of the components of streamflow supplies (runoff/baseflow)

Technical Support for IMPs (cont.)

- What are the demands on water supplies? (both current and future projections)
 - Estimation of pumping requirements for irrigation
 - Establishment of municipal and industrial baseline uses
 - Evaluation of instream needs
 - Projection of supplies desired to sustain growth

Technical Support for IMPs (cont.)

- What, if any, excess water supplies exist?
 - Hydrologic studies of water supplies (i.e. flow duration curves, sub-basin supplies, timing)
 - Refined understanding of demands on streamflow
 - Evaluation of existing infrastructure for retiming, conjunctive management, etc.



Technical Support for IMPs (cont.)

- What are the economic costs of various uses of water?
 - Evaluation of socioeconomic values of water
 - Evaluation of cost/benefits of various management strategies
 - Evaluation of no action alternatives

Summary

- IMPs must ensure compliance with federal and state laws and interstate compacts and agreements (e.g. Republican River).
- IMPs developed in areas where such externalities do not exist may be much more flexible (wider range of management options).
- Goal is to strive toward a balance between supply and use, both near term and long term (manage effectively with local and basin-wide priorities in mind).
- Monitoring management activities with sound science is critical to the success of any IMP (ensure management activities are effective).

Thank you

Questions?



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