The Platte River Decision Support System (DSS)

For Groundwater Recharge Projects

NARD Water Programs Conference

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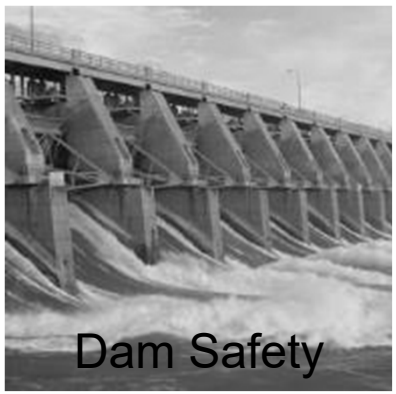
Providing the sound science and support for managing Nebraska's most precious resource



Overview

- Why a Decision Support System (DSS)?
- Excess Flow , Conjunctive Management, & Groundwater Recharge
- DSS Dashboard & Sponsor Portal

Why Do We Need a Decision Support System (DSS)?

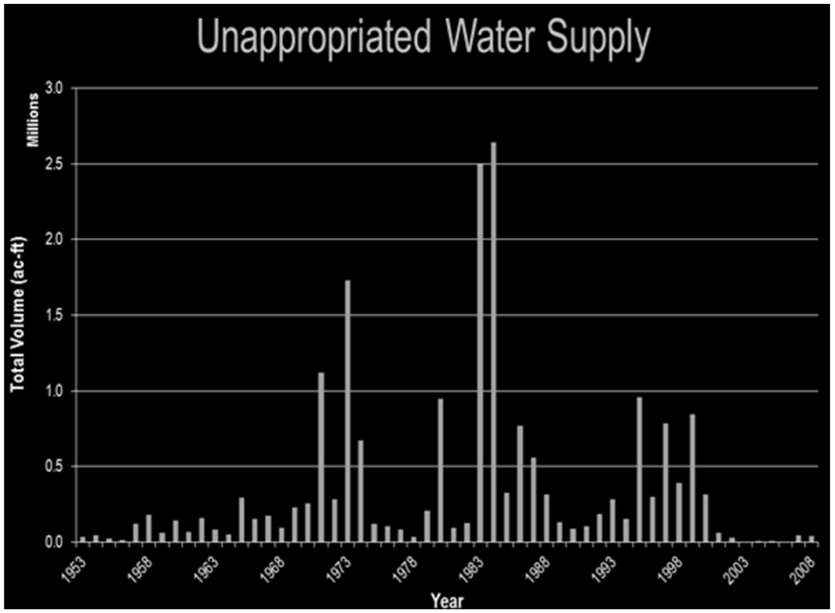
- High Demand for the Supply
  - Platte River Overappppropriated
  - Agricultural Water Use
  - Municipal and Domestic Water Use
  - Industrial Water Use
  - IMPs & BWPs
  - Drought
  - Platte River Recovery Implementation Program
  - Instream Flows

What is the DSS?

- Information to Assist with Water Management Decisions
  - Multiple Divisions at NeNDR
  - NRDs
  - Irrigation Districts
- Transparency
  - Collect and Provide Project Data
- One-Stop Shop
  - Current Water Flow Conditions
  - Online Permitting Portal
  - Current Excess Flow Projects

What is Excess Flow?

- The amount of streamflow that passes by a certain location on a river or stream that is beyond what is required to support all existing water allocations, demands, and uses at that location



The Challenge

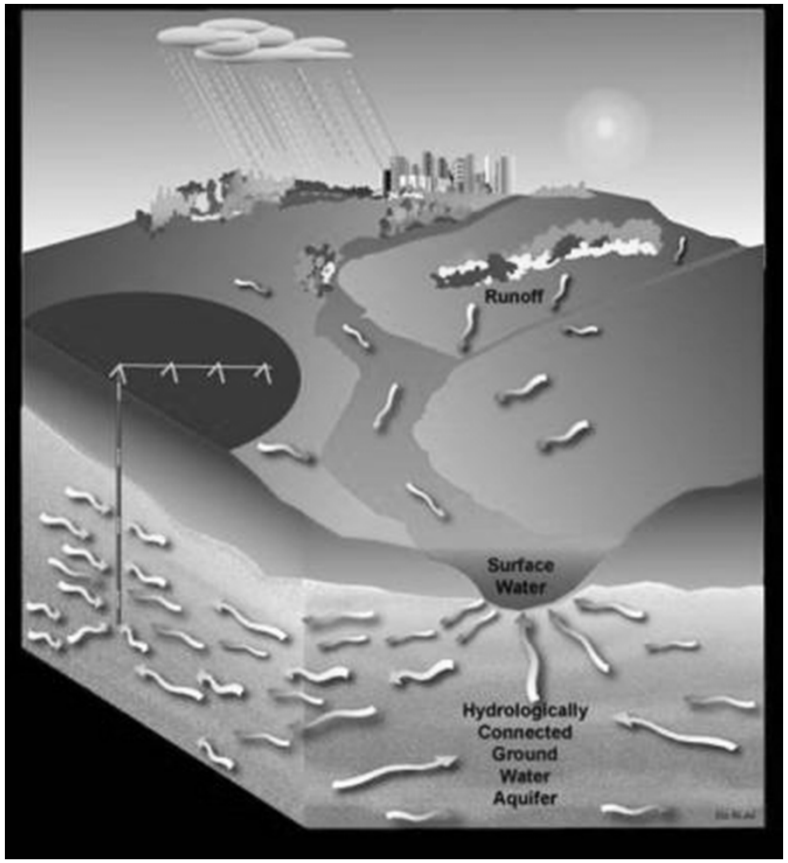
- How do we take conditions like this:

The Challenge

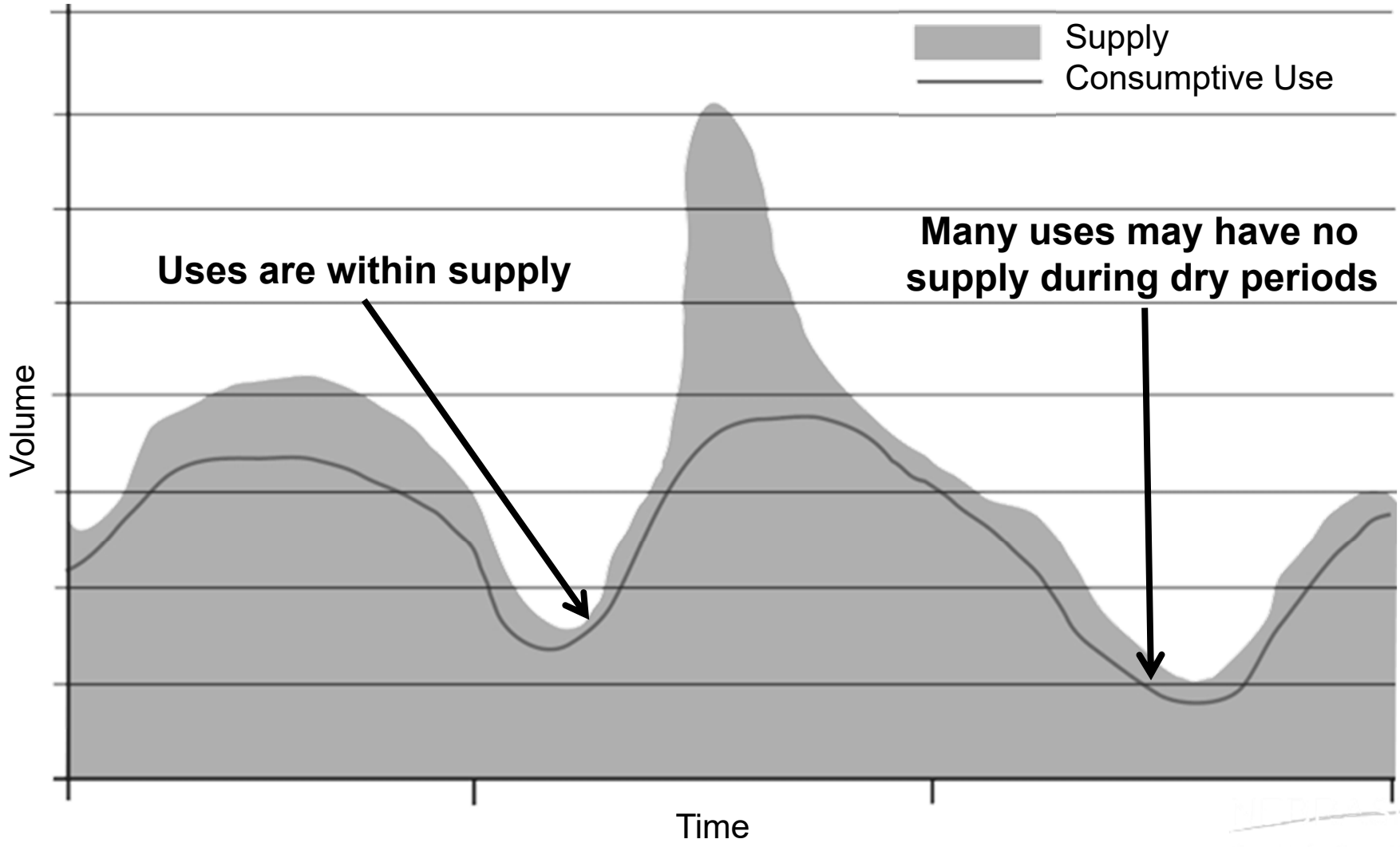
- To improve conditions like this:

Conjunctive Management

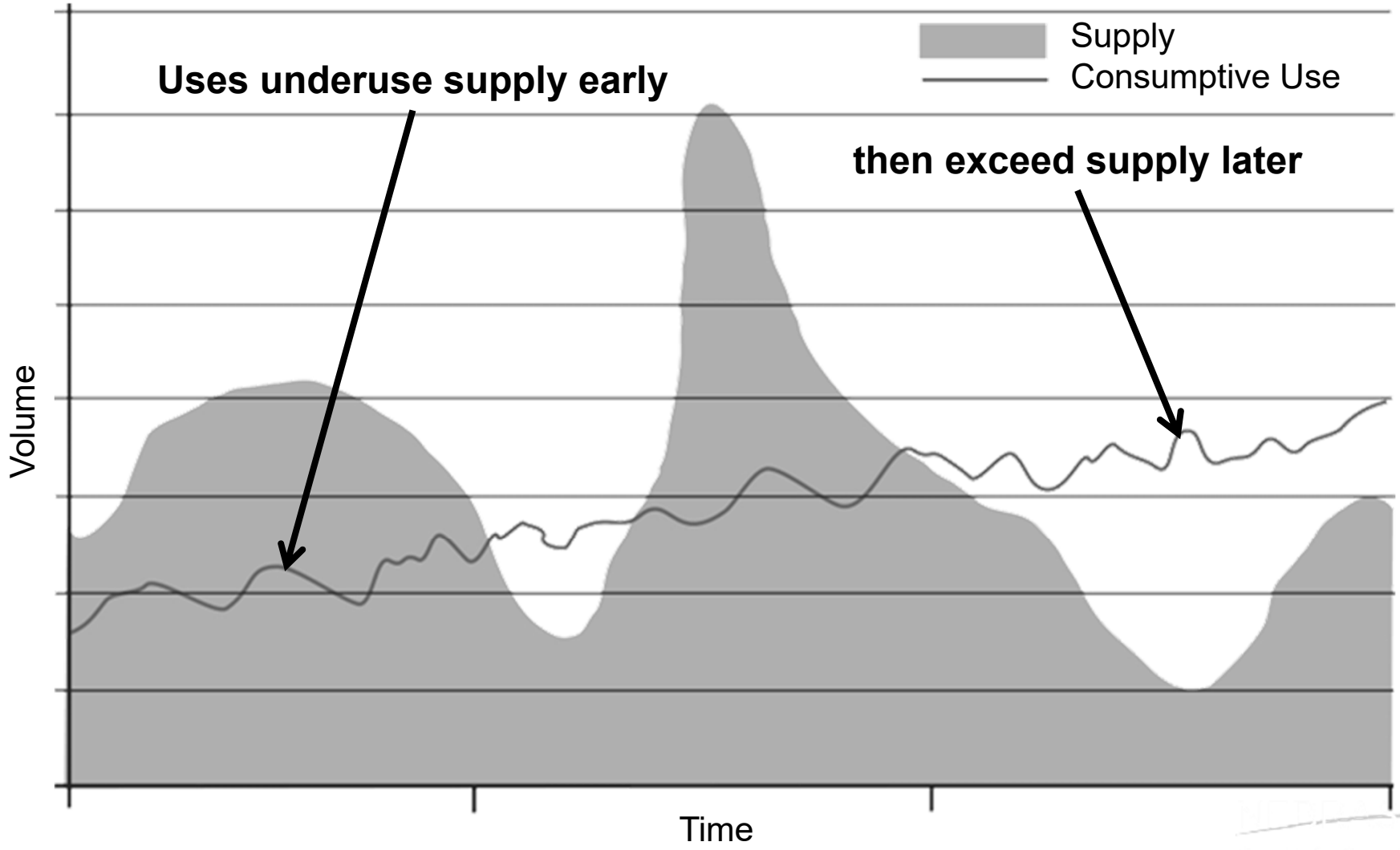
- Surface and groundwater resources are interconnected
- Decisions to improve the management of one cannot be made without properly considering the other
- Conjunctive management is accomplished by:
  - Using or storing additional surface water when it is plentiful
  - Relying more heavily on groundwater during dry periods



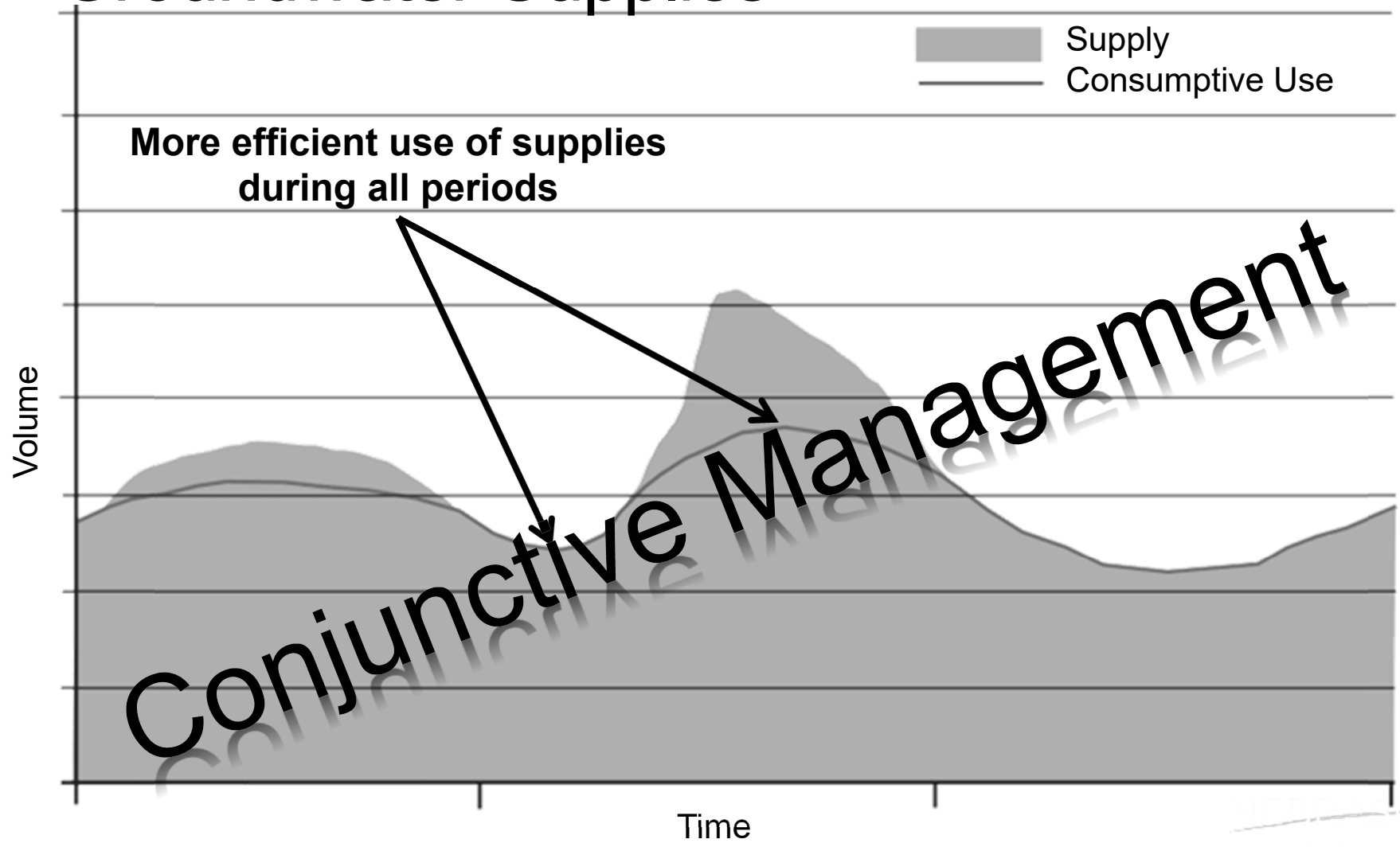
Managing/Utilizing Surface Water Supply



Managing/Utilizing Groundwater Supply



Managing/Utilizing Both Surface and Groundwater Supplies



Primary Objectives of Conjunctive Management

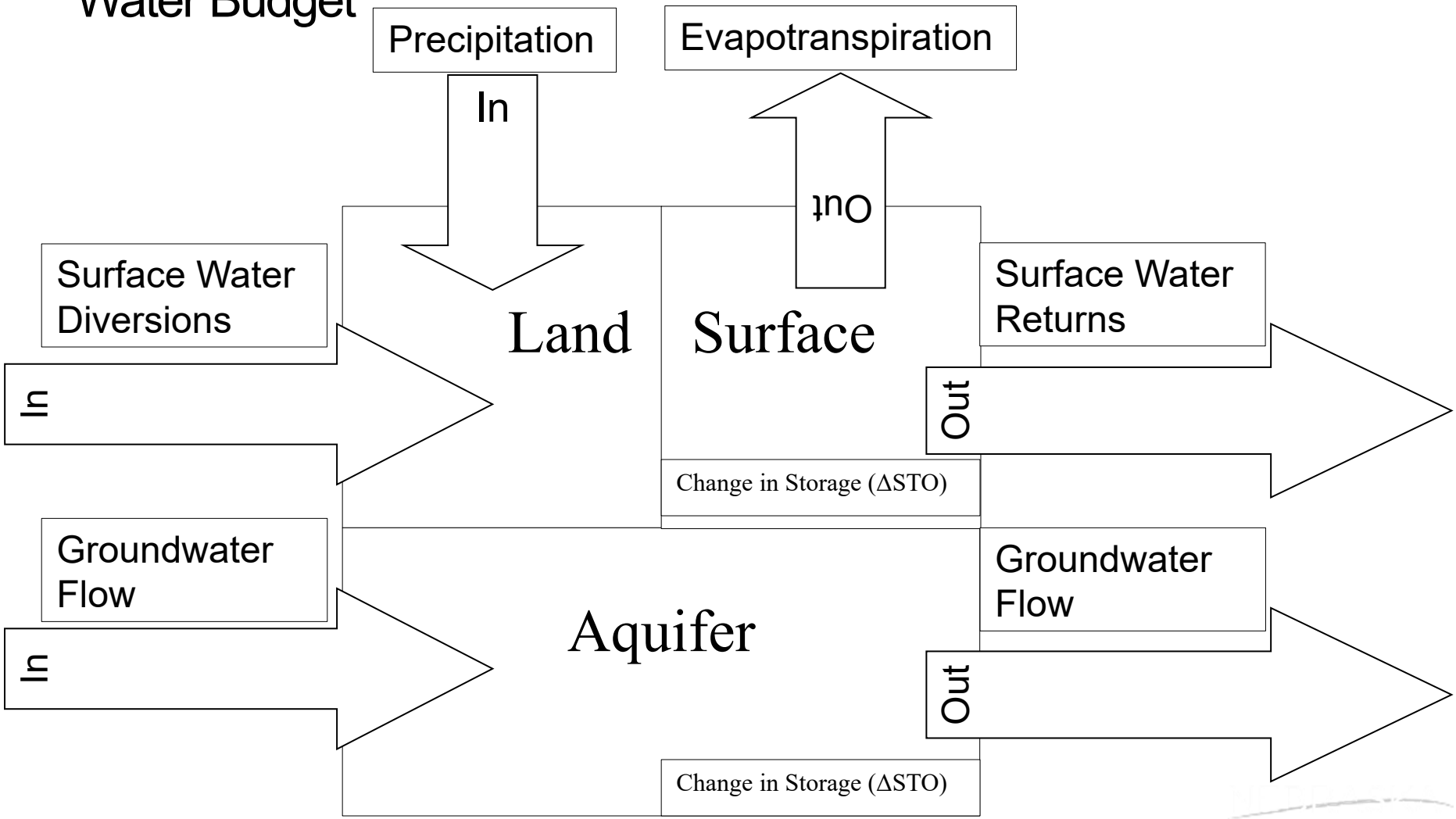
- Maximize water use
- Increase the available water supply of a region
- Improve the reliability of the supply

Benefits of Conjunctive Management

- Leverage existing infrastructure
- Use existing planning framework
- Minimize the need for regulatory actions
- Customize to local opportunities or needs
- Maintain viability of existing uses

Conjunctive Management Example:

Water Budget

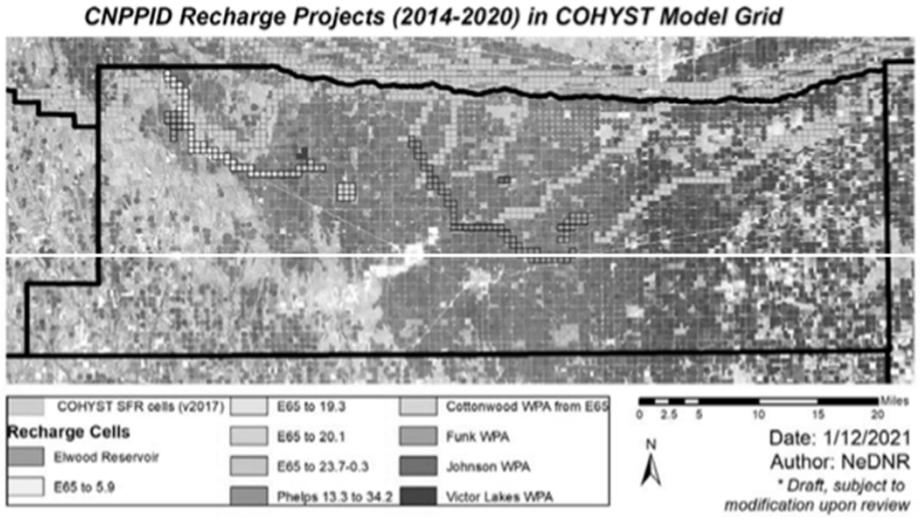


Conjunctive Management Example:

Recharge Projects in the TBNRD

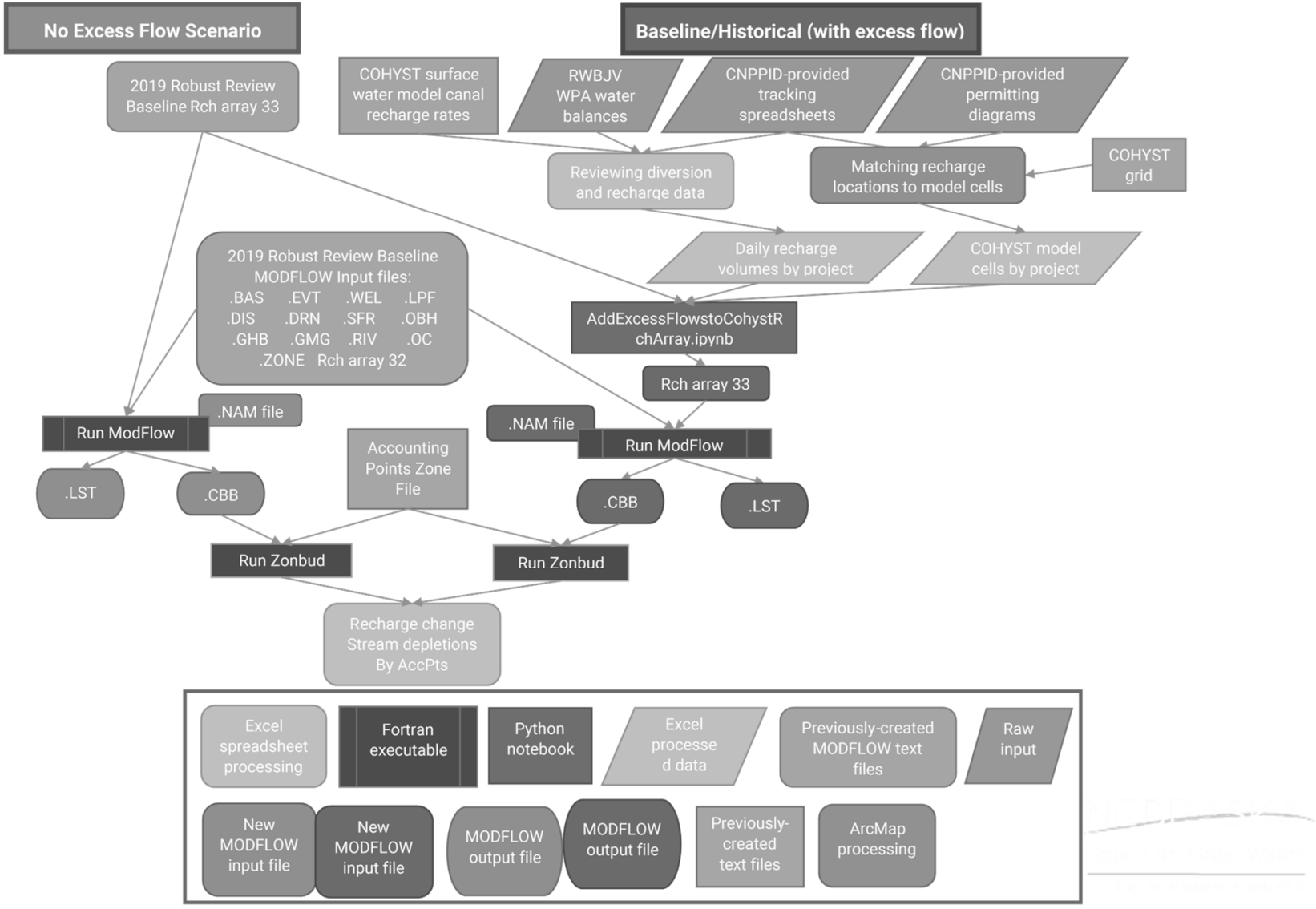
- Recharge 2006 to spring 2020 ~ 113,000 AF

	Project Recharge (AF)	Elwood	E65	Phelps	Cottonwood	Funk	Johnson	Victor
Year	2014	14,302	567	-	-	-	-	-
	2015	13,048	1,662	-	190	-	-	-
	2016	3,532	2,164	-	-	-	-	-
	2017	5,842	1,665	-	-	-	-	-
	2018	5,231	1,393	1,001	-	1,845	-	-
	2019	2,350	1,368	-	-	-	239	304
	2020	1,074	1,798	-	-	-	-	757
	2021	427	-	-	-	-	-	-
	2022	242	-	-	-	-	-	-
	Total	**46,048**	**10,617**	**1,001**	**190**	**1,845**	**239**	**1,061**



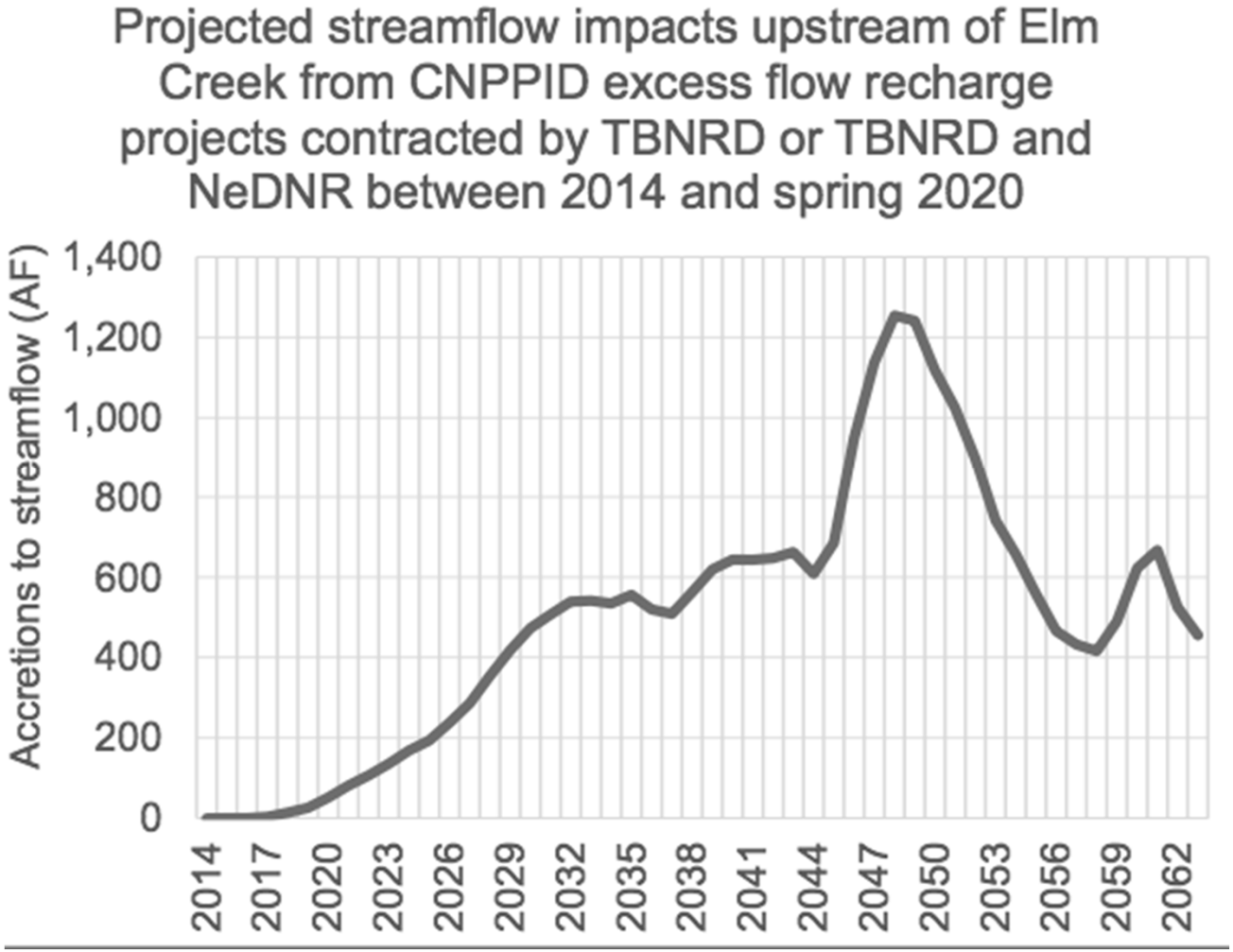
Conjunctive Management Example:

Groundwater Modeling Process Workflow



Conjunctive Management Example:

Groundwater Model Results



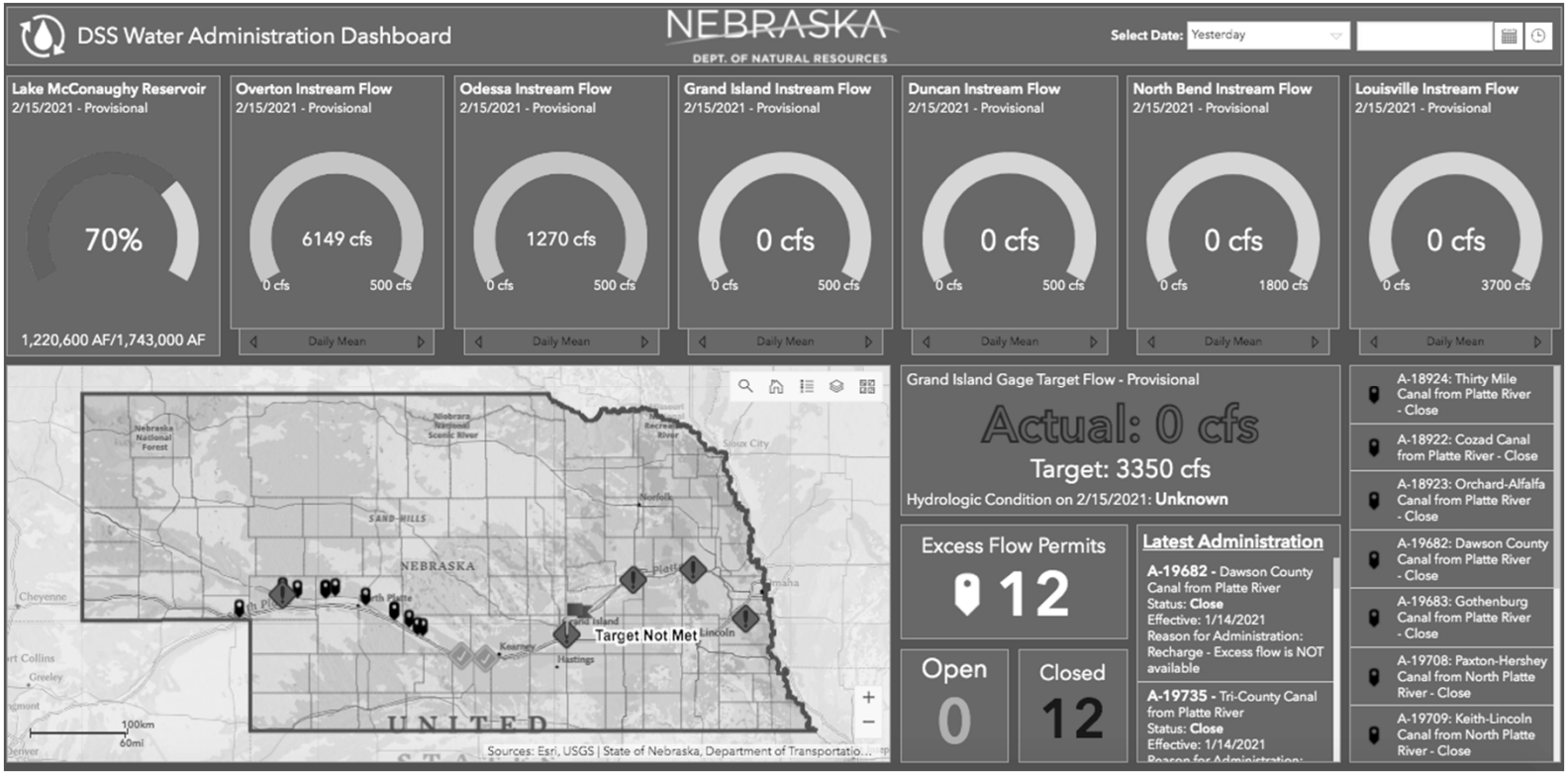
DSS & Conjunctive Management

- Groundwater Recharge Projects & Assessment of IMP Benefits
  - Requires presence and knowledge of excess flows
  - Requires permits
  - Requires water balance data
  - Requires efficiency to respond quickly
  - Requires basin-wide coordination/planning
  - Requires timely evaluation of costs and benefits

- DSS Key Strategies
  - Attaining IMP Goals
  - Streamlined processes
  - Transparency

How Do We Know When There is Excess Flow?

- The DSS dashboard: One-Stop Shop



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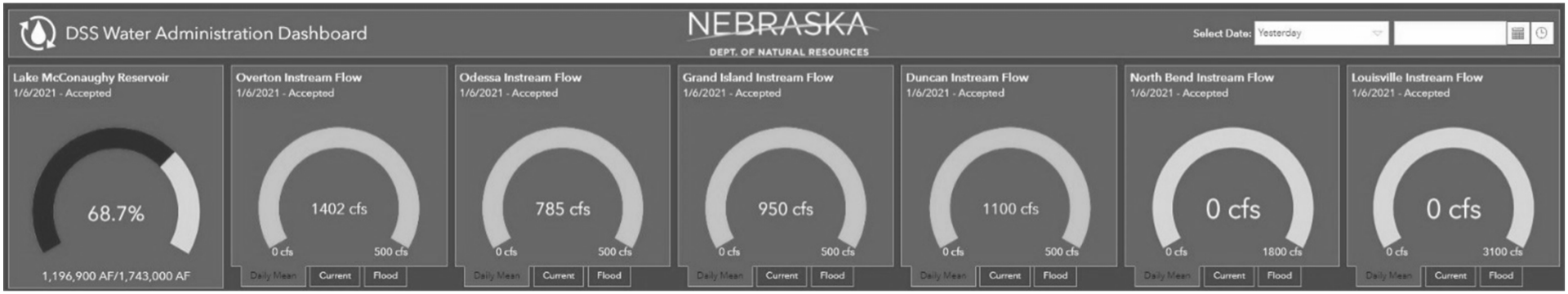
The Dashboard Gages

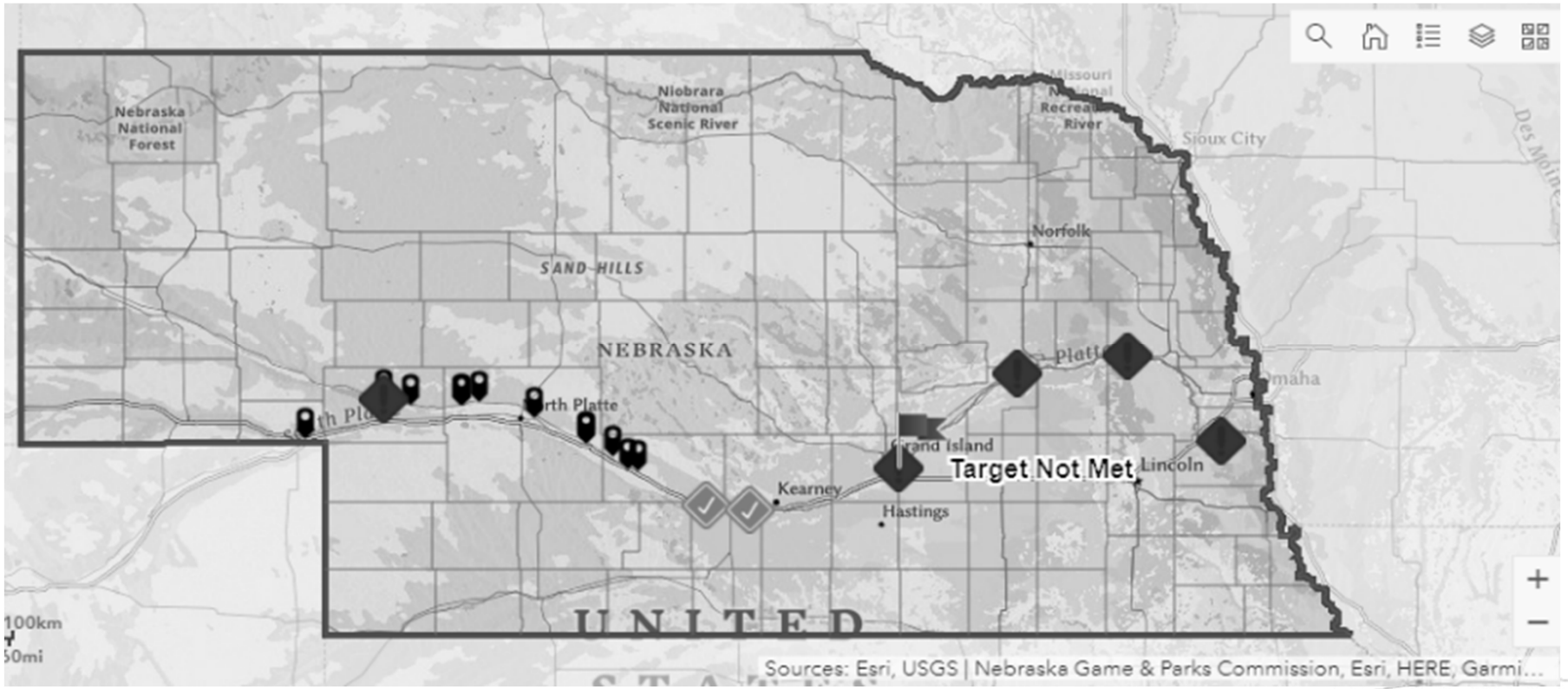


- Answering the Question – Could there be excess flow available?

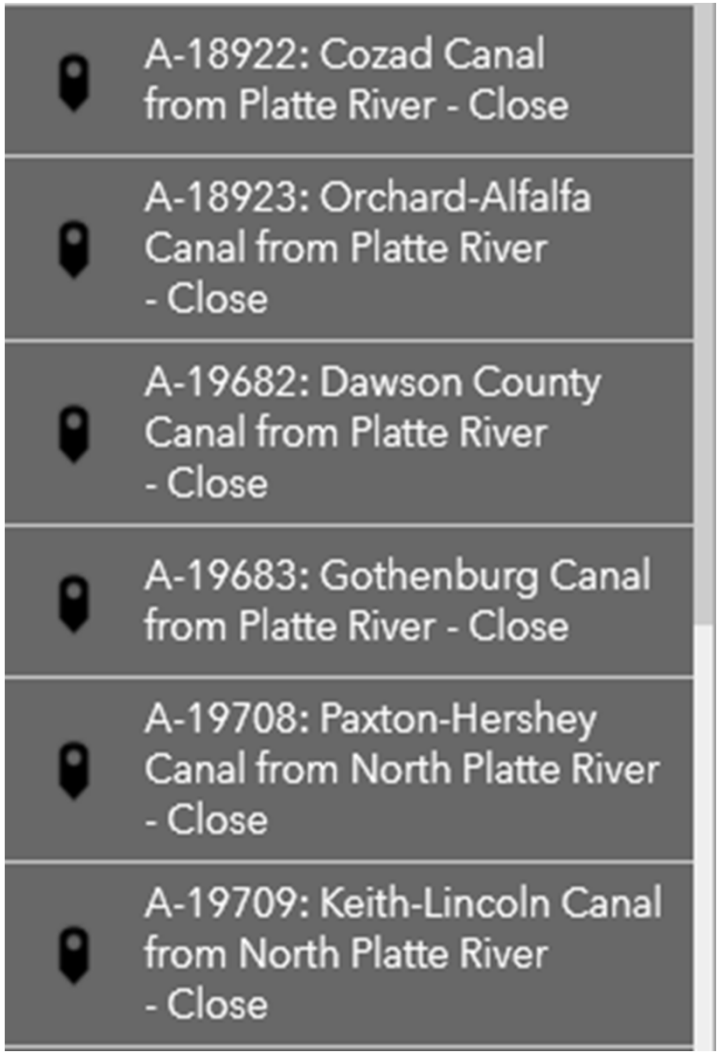
- Instream Flow Targets & Lake McConaughy Reservoir Levels

The Dashboard Map

- Where is the excess flow?
- Who is using excess flow?
- Streamgages
- Excess Flow Permits



The Dashboard Canal List

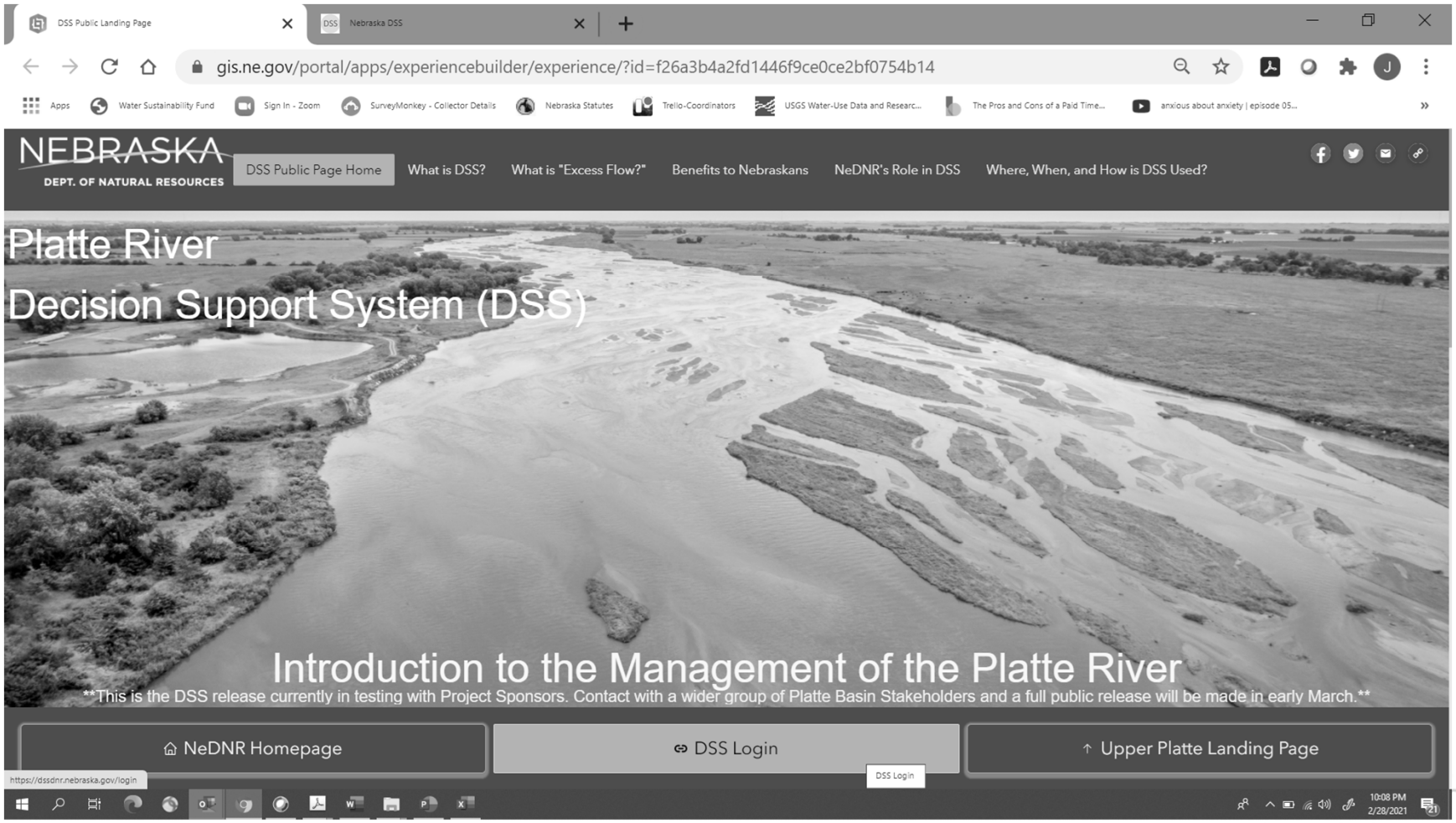


- Who **<u>can</u>** use excess flow?
- List of Canals
- Zooms to Map

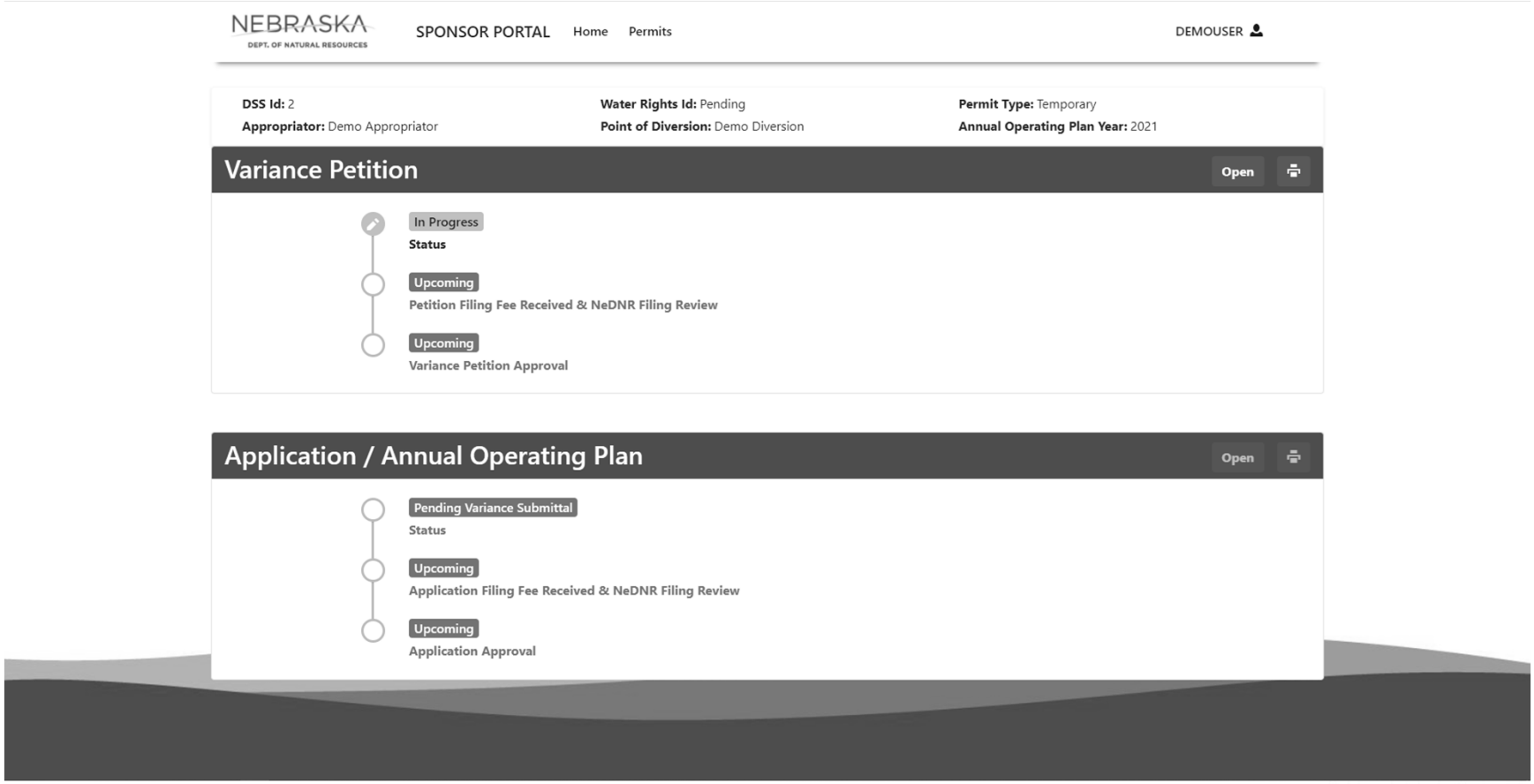
The Dashboard Permit Summary

- Who **is** using excess flow?
- Summarized permit status
- Excess flow permits & zoom to the map

DSS Homepage & Login



Sponsor Application Portal



Who Can Benefit From the DSS?

- Everyone!
- Water Managers & Water Users
  - Irrigators
  - Natural Resources Districts (NRDs)
  - Canal Districts
  - Public Power Districts
  - The Platte River Recovery Implementation Program
  - The Bureau of Reclamation
  - The U.S. Fish & Wildlife Service
  - The Audubon Society
  - The Public

NeDNR Goals for the DSS

- Transparency & Communication
  - Excess Flow availability
  - Excess Flow projects
  - Project benefits

- Efficient Process
  - Online application
  - Faster processing
  - Automatic population of data

One-Stop Shop

- Maximize Water Benefits
  - Adapt to lessons learned
  - Promote better data collection
  - Direct excess flows to most beneficial projects

When Every Drop Counts

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Questions?

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THANK YOU

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