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The Platte River Decision Support System (DSS)

For Groundwater Recharge Projects

NARD Water Programs Conference

March 2, 2021

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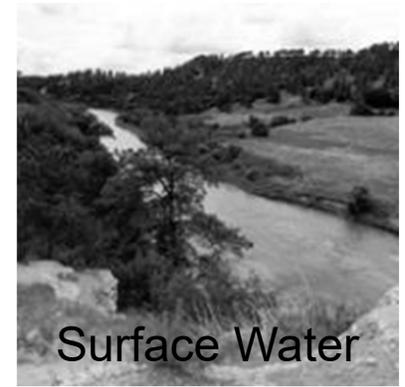




Providing the sound science and support for managing Nebraska's most precious resource



Water Planning and Integrated Management



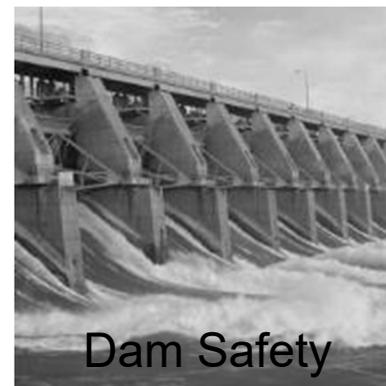
Surface Water



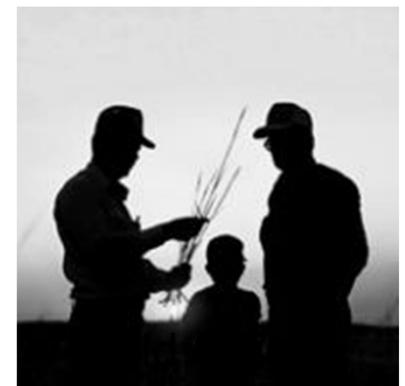
Groundwater



Floodplain Management



Dam Safety



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 Overappropriated
 - Agricultural Water Use
 - Municipal and Domestic Water Use
 - Industrial Water Use
 - IMPs & BWPs
 - Drought
 - Platte River Recovery Implementation Program
 - Instream Flows



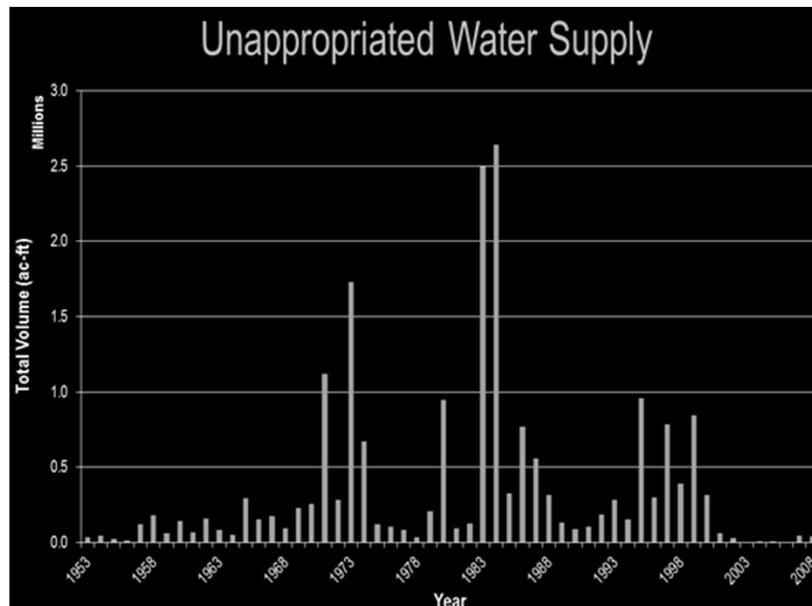
What is the DSS?

- 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:



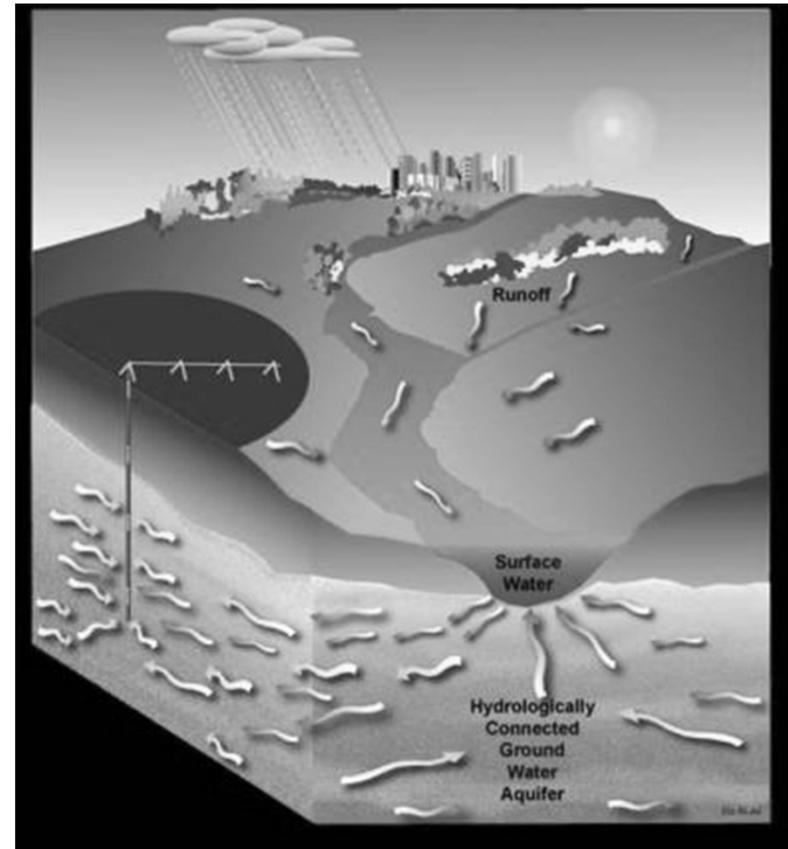
The Challenge

- To improve conditions like this:

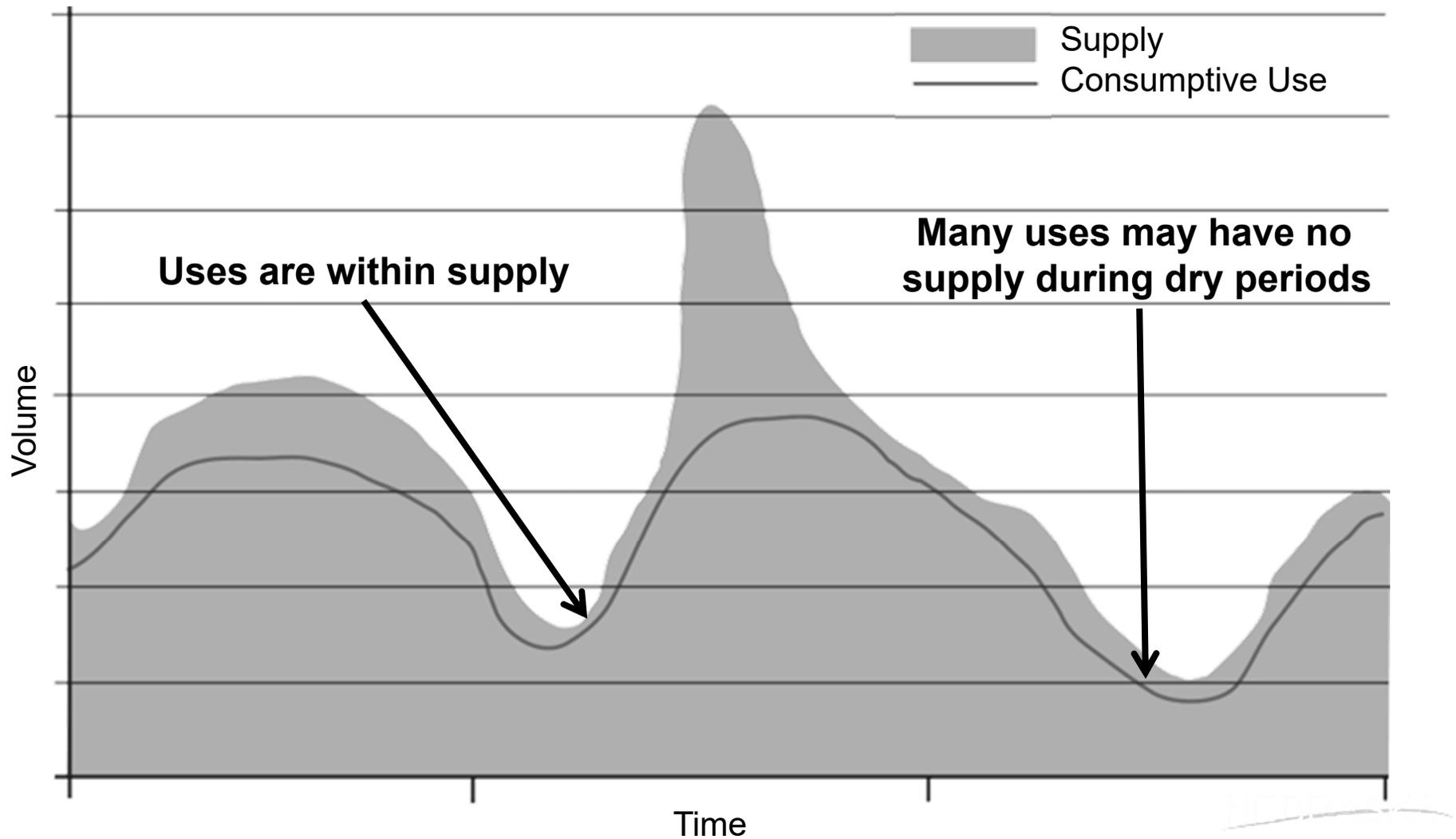


Conjunctive Management

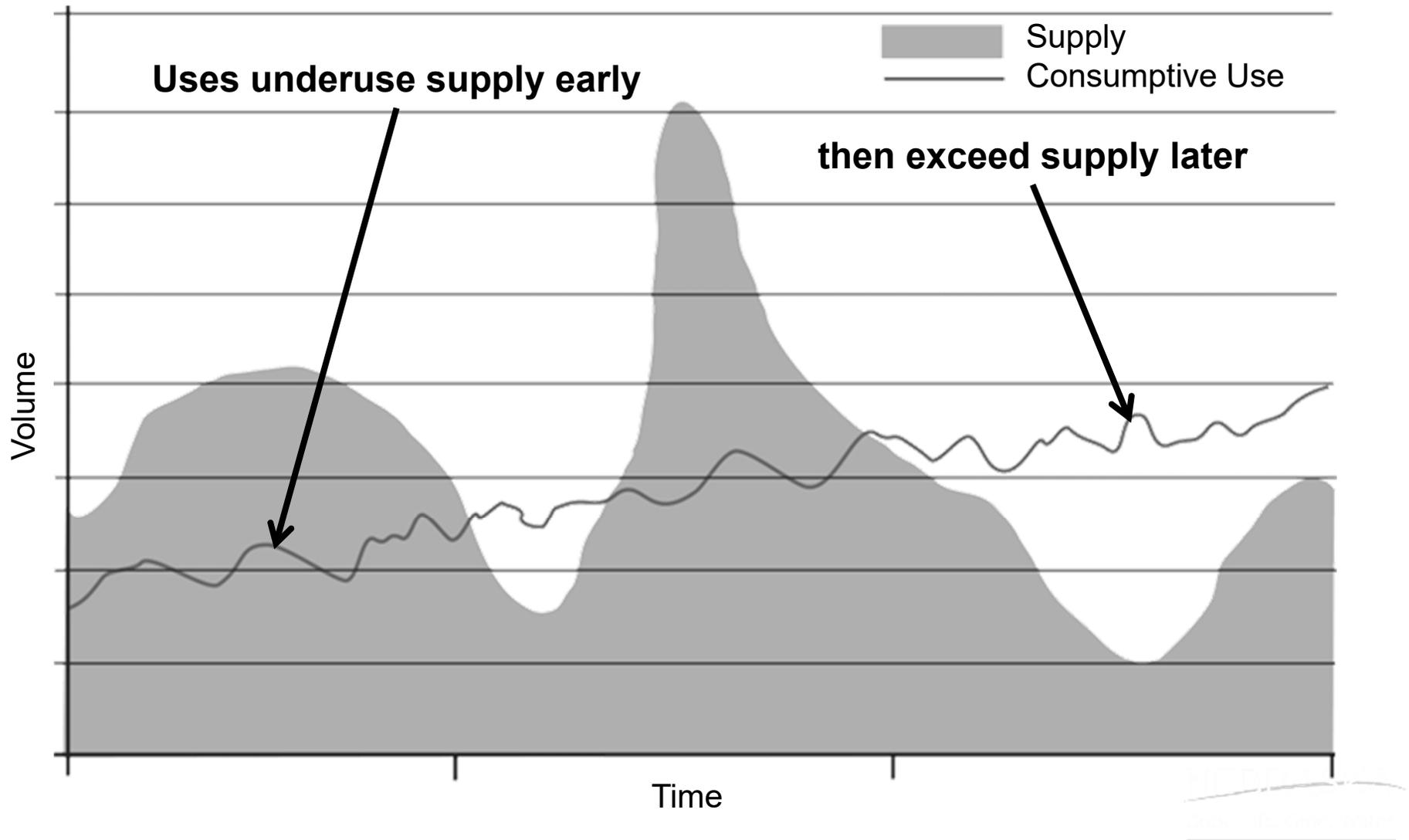
- Surface and groundwater resources are interconnected
- Decisions to improve the management of one cannot be made without properly considering the other
- Conjunctive management is accomplished by:
 - Using or storing additional surface water when it is plentiful
 - Relying more heavily on groundwater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



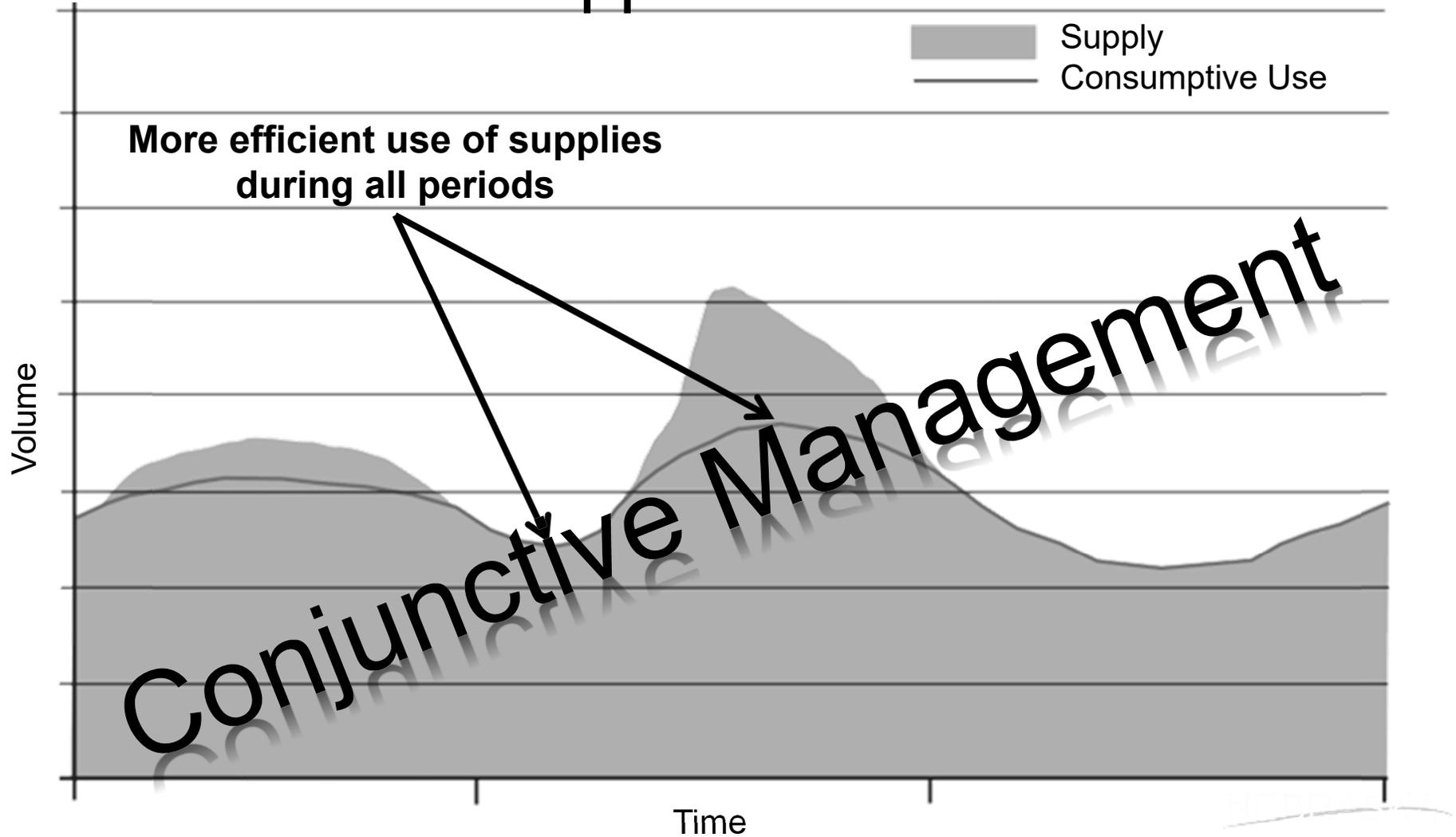
Managing/Utilizing Surface Water Supply



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



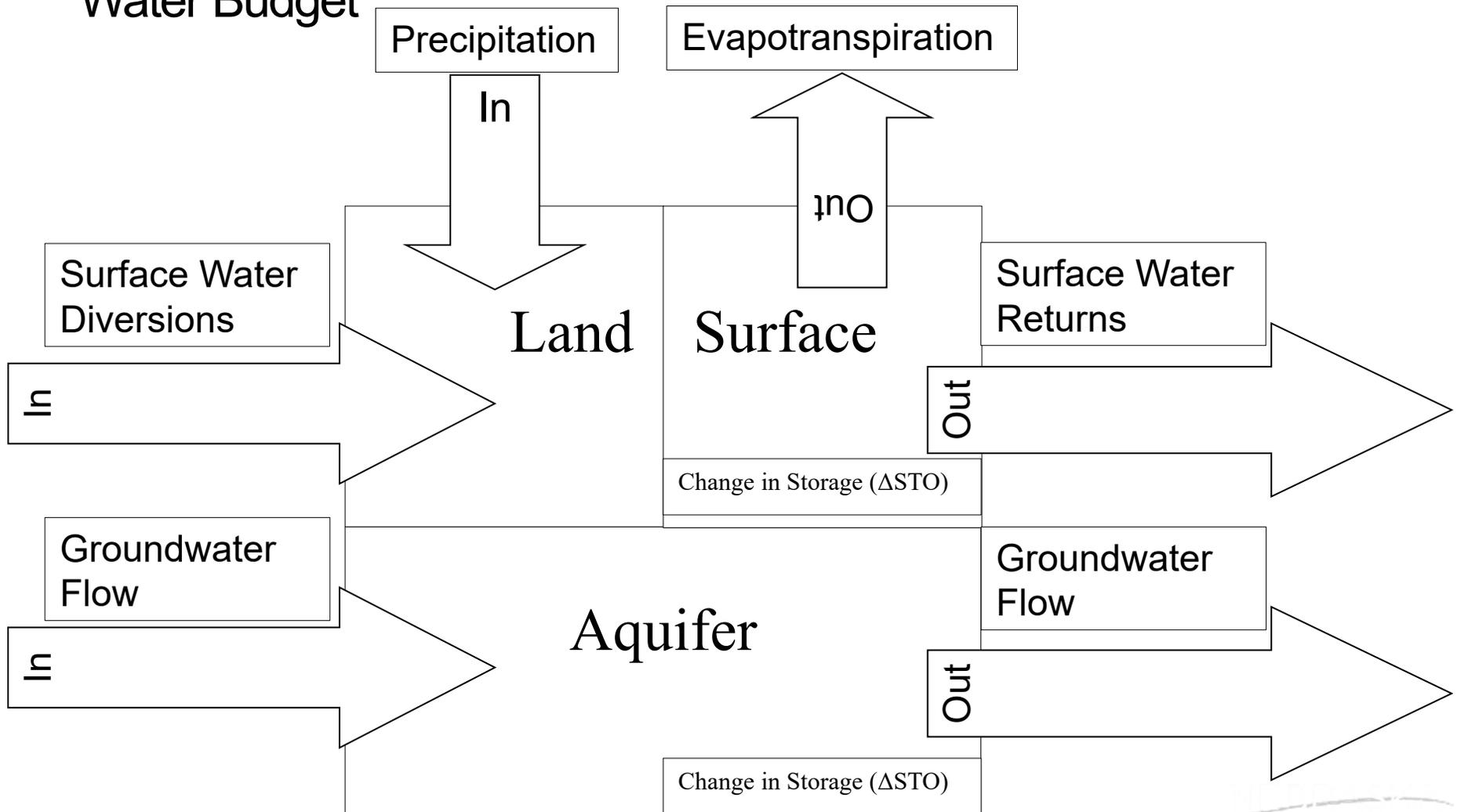
Benefits of Conjunctive Management

- 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

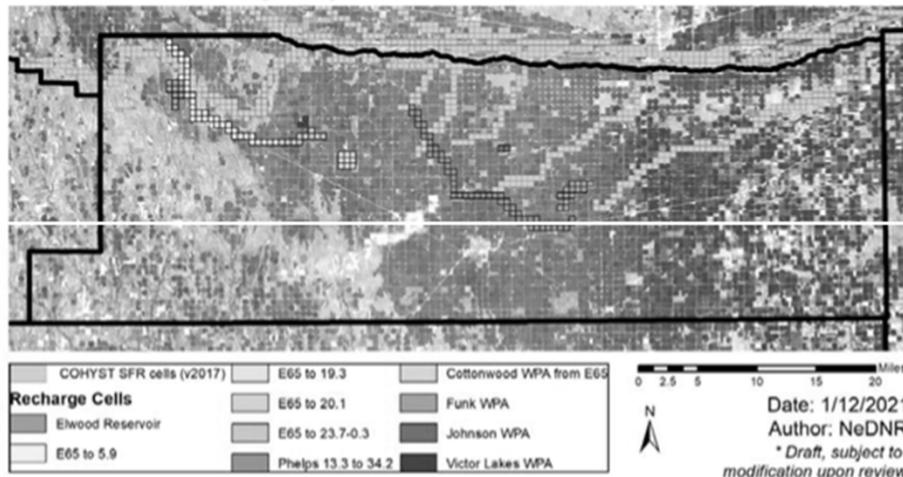


Conjunctive Management Example: Recharge Projects in the TBNRD

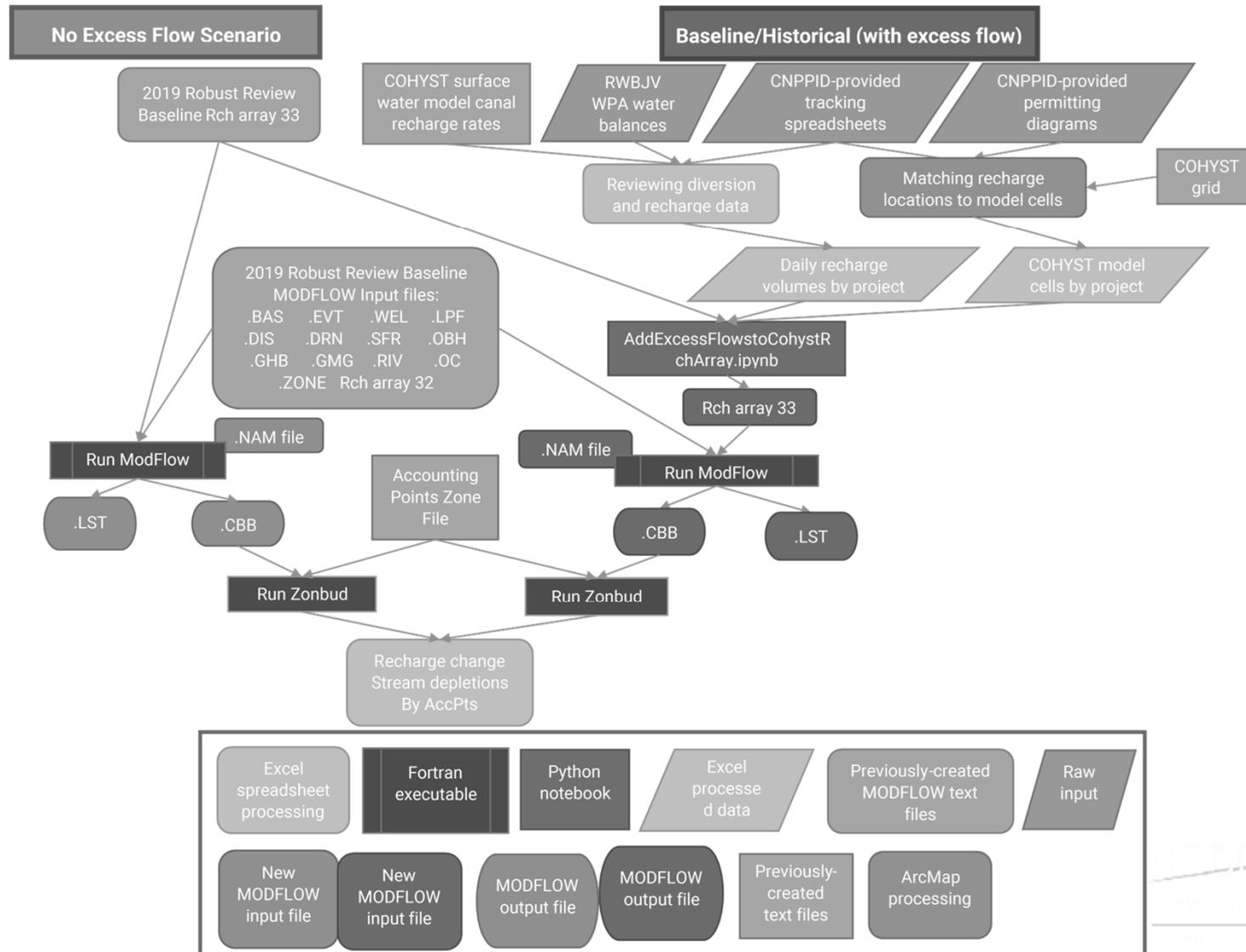
➤ Recharge 2006 to
spring 2020 ~
113,000 AF

	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	

CNPPID Recharge Projects (2014-2020) in COHYST Model Grid

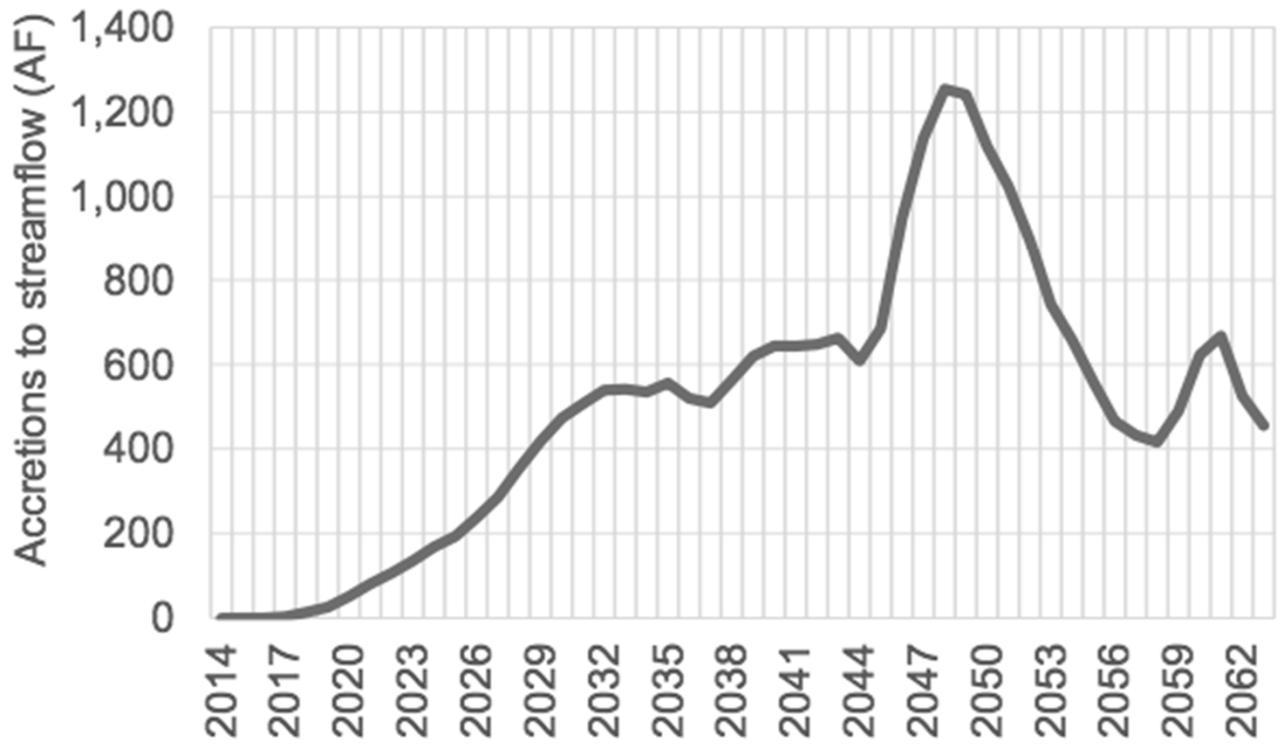


Conjunctive Management Example: Groundwater Modeling Process Workflow



Conjunctive Management Example: Groundwater Model Results

Projected streamflow impacts upstream of Elm Creek from CNPPID excess flow recharge projects contracted by TBNRD or TBNRD and NeDNR between 2014 and spring 2020



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

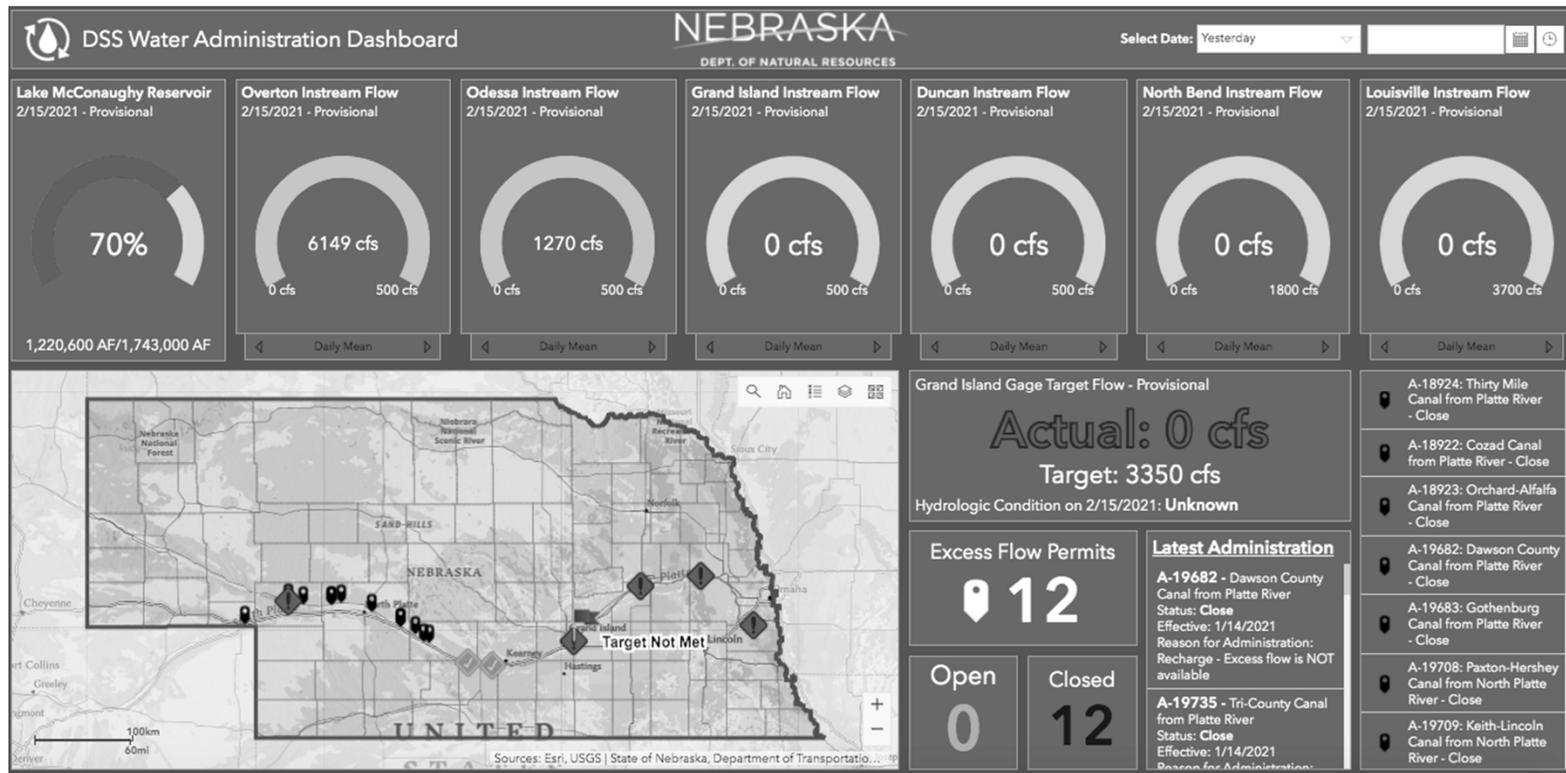
➤ DSS Key Strategies

- Attaining IMP Goals
- Streamlined processes
- Transparency



How Do We Know When There is Excess Flow?

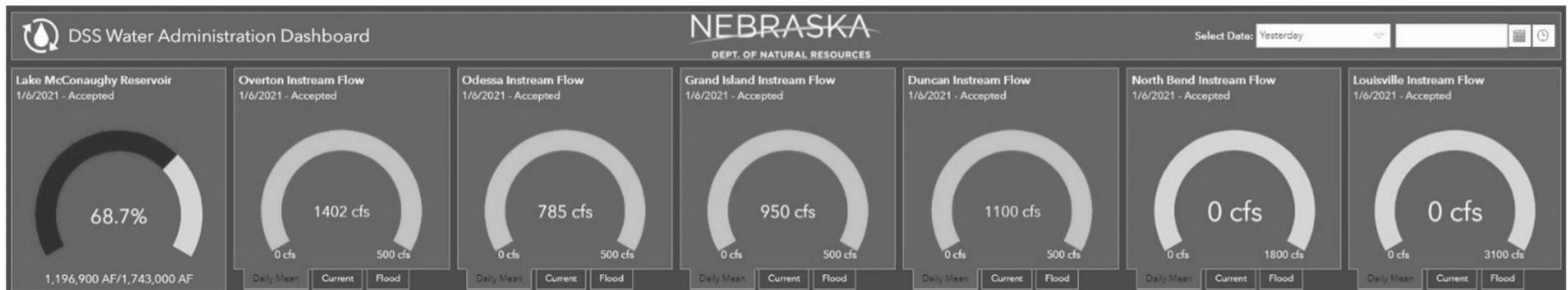
➤ The DSS dashboard: One-Stop Shop



<https://gis.ne.gov/portal/apps/experiencebuilder/experience/?id=f26a3b4a2fd1446f9ce0ce2bf0754b14>



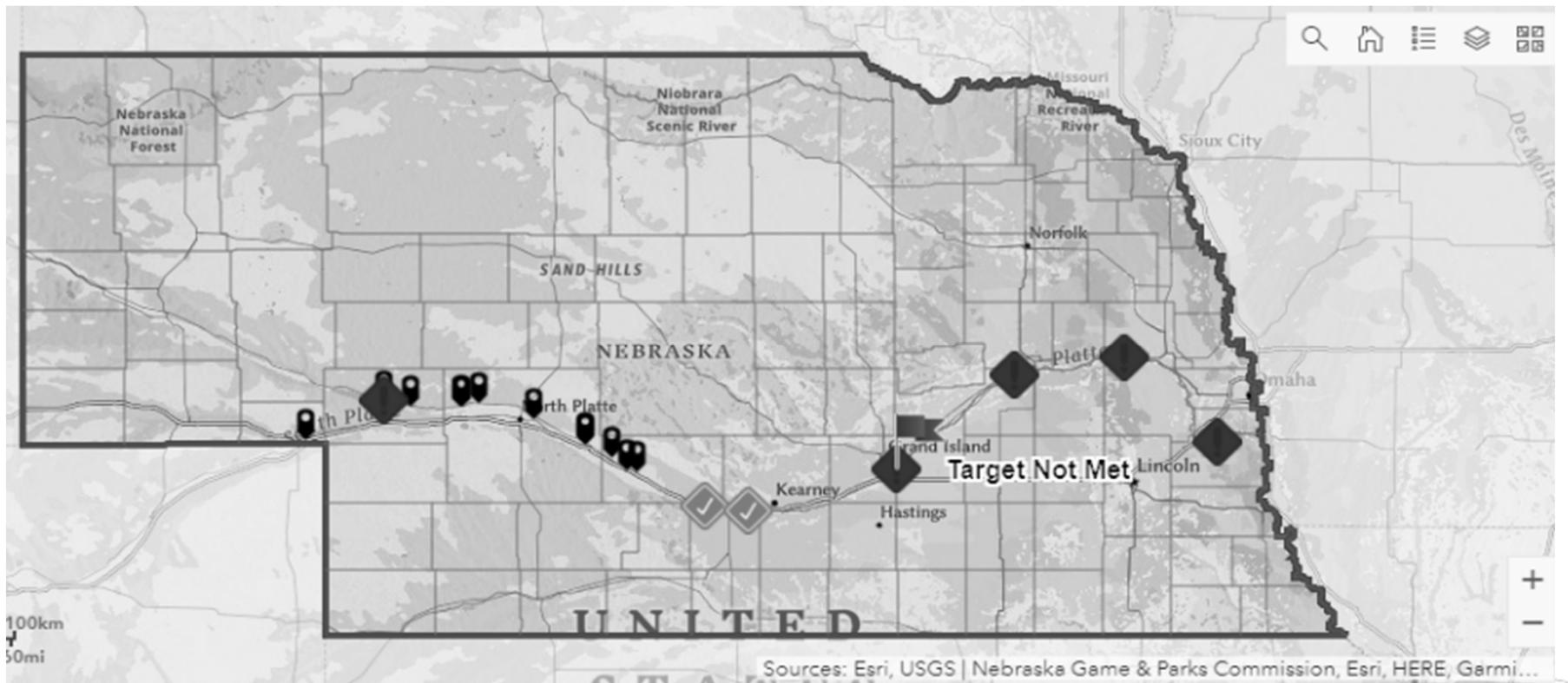
The Dashboard Gages



- 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

	A-18922: Cozad Canal from Platte River - Close
	A-18923: Orchard-Alfalfa Canal from Platte River - Close
	A-19682: Dawson County Canal from Platte River - Close
	A-19683: Gothenburg Canal from Platte River - Close
	A-19708: Paxton-Hershey Canal from North Platte River - Close
	A-19709: Keith-Lincoln Canal from North Platte River - Close

- Who can use excess flow?
- List of Canals
- Zooms to Map

The Dashboard Permit Summary



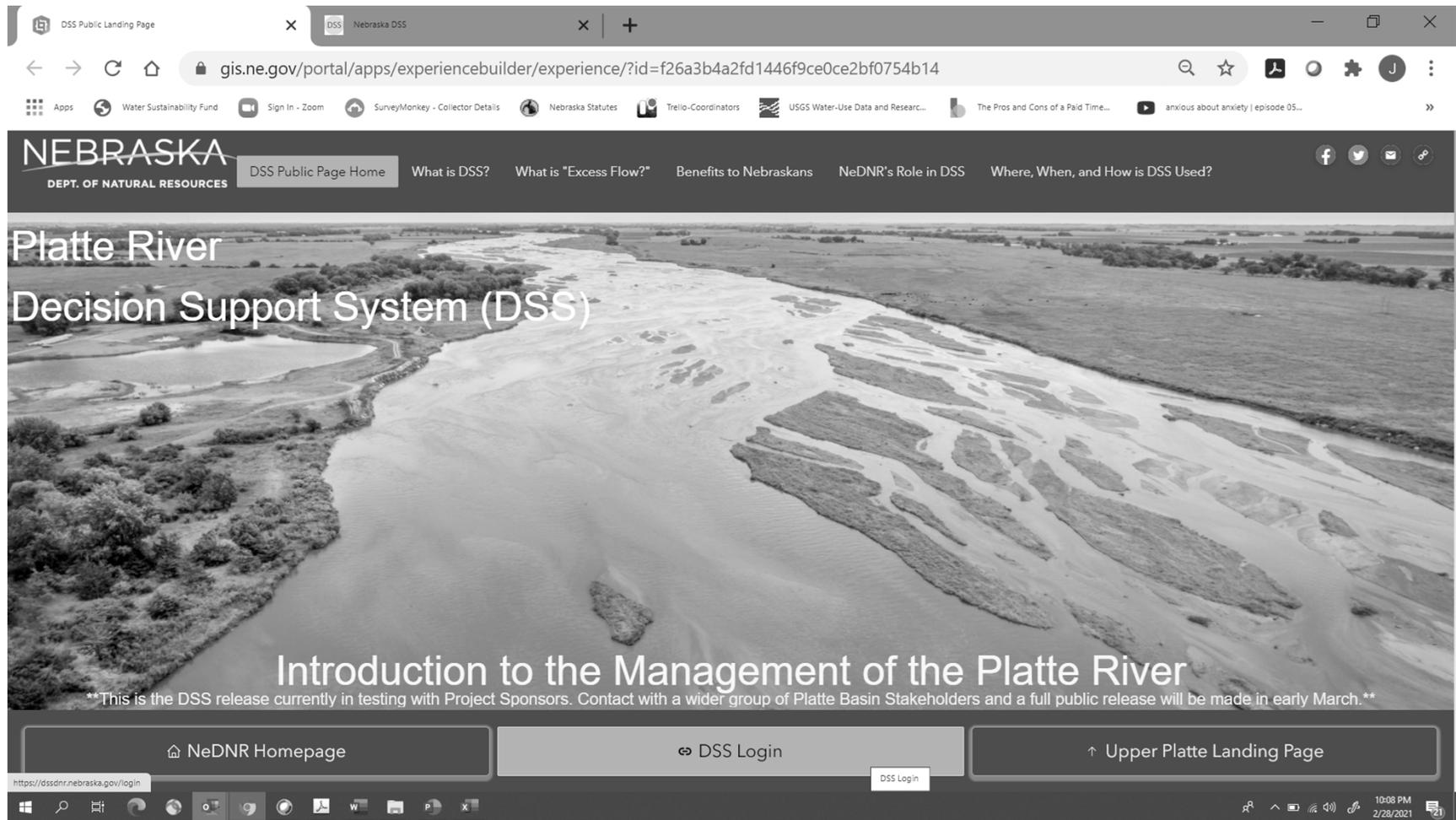
➤ Who **is** using excess flow?

➤ Summarized permit status

➤ Excess flow permits & zoom to the map



DSS Homepage & Login



The screenshot shows a web browser window displaying the Nebraska DSS Public Landing Page. The browser's address bar shows the URL: gis.ne.gov/portal/apps/experiencebuilder/experience/?id=f26a3b4a2fd1446f9ce0ce2bf0754b14. The page header features the Nebraska Department of Natural Resources logo and a navigation menu with items: "DSS Public Page Home", "What is DSS?", "What is 'Excess Flow?'", "Benefits to Nebraskans", "NeDNR's Role in DSS", and "Where, When, and How is DSS Used?". The main content area has a large background image of the Platte River with the text "Platte River Decision Support System (DSS)". Below this is the heading "Introduction to the Management of the Platte River" and a note: "**This is the DSS release currently in testing with Project Sponsors. Contact with a wider group of Platte Basin Stakeholders and a full public release will be made in early March.**". At the bottom, there are three buttons: "NeDNR Homepage", "DSS Login", and "Upper Platte Landing Page". The browser's taskbar at the bottom shows the time as 10:08 PM on 2/28/2021.

Sponsor Application Portal

DSS Id: 2

Appropriator: Demo Appropriator

Water Rights Id: Pending

Point of Diversion: Demo Diversion

Permit Type: Temporary

Annual Operating Plan Year: 2021

Variance Petition

Open



In Progress

Status



Upcoming

Petition Filing Fee Received & NeDNR Filing Review



Upcoming

Variance Petition Approval

Application / Annual Operating Plan

Open



Pending Variance Submittal

Status



Upcoming

Application Filing Fee Received & NeDNR Filing Review



Upcoming

Application Approval

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

➤ Maximize Water Benefits

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

One-Stop Shop



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When Every Drop Counts



<https://gis.ne.gov/portal/apps/experiencebuilder/experience/?id=f26a3b4a2fd1446f9ce0ce2bf0754b14>





Questions?

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THANK YOU

<https://gis.ne.gov/portal/apps/experiencebuilder/experience/?id=f26a3b4a2fd1446f9ce0ce2bf0754b14>



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