

Meeting Summary

Project:	Upper Platte River Drought Contingency Plan	
Subject:	Drought Task Force Meeting #4	
Date:	Tuesday, June 27, 2023	
Location:	Mid-Plains Community College – Ogallala Campus	
Attendees:	Larry Reynolds, TBNRD	Melissa Mosier, Audubon Great Plains
	Dennis Schilz, Western Irrigation District	Chuck Henkel, NPNRD Board
	Mike Drain, CNPPID	Jeff Shafer, NPPD
	Michael Ann Relka, Western Sugar Co-op	Scott Schaneman, NPNRD
	Travis Preston, NPNRD	Ryan Reisdorff, SPNRD
	Galen Wittrock, South Platte NRD	Kent O. Miller, TPNRD
	Lyndon Vogt, CPNRD	Jesse Mintken, CPNRD
	Tyler Thulin, CNPPID	Dean Edson, NARD
	Jay Richeson, CPNRD	Kyle Shepherd, CNPPID
	Mike Archer, NGPC (Online Attendee)	John Thorburn, TBNRD
	Erica Gnuse, Ducks Unlimited (Online Attendee)	Keith Koupal, NGPC (Online Attendee)
	Ryan Kelly, NeDNR	Jennifer Schellpeper, NeDNR
	Stefan Remund, NeDNR	Caitlin Kingsley, NeDNR
	Avery Dresser, NeDNR	Madeline Johnson, NeDNR
	Paul Woodward, HDR	John Engel, HDR
		Julie Molacek, HDR

The Central Platte Natural Resources District, North Platte Natural Resources District, South Platte Natural Resources District, Tri-Basin Natural Resources District, Twin Platte Natural Resources District (collectively, the Upper Platte Basin NRDs), and the Nebraska Department of Natural Resources (Department) gathered on June 27, 2023, for the fourth and final meeting of the Drought Task Force as part of the development of a Drought Contingency Plan for the Upper Platte River Basin in Nebraska.

Attendees were provided with a brief recap of previous meetings and group discussions, an overview of the drought tabletop exercise completed in May, given a high-level overview of the intended content of the Drought Plan, and were asked to provide additional feedback through an online polling activity.

Drought Planning Background

- Development of a drought contingency plan was identified as a key element in the basin-wide IMP
- Pursued and secured grant funding through BOR's WaterSMART program
- Similar to IMPs – Overarching basin-wide drought plan to support individual NRD and individual stakeholder drought plans with implementation of mitigation and response actions
- Coordination and communication is key
- Elements of the plan development process



Drought Task Force Meeting #1 Overview

- Held July 21, 2022
- Provided project background
 - Reviewed roles and responsibilities
 - BOR planning process
 - Outlined roles and responsibilities
- Conducted an initial vulnerability assessment
 - Discussed vulnerabilities to each sector
 - Identified potential impact severity
- Identified initial mitigation actions

Drought Task Force Meeting #2 Overview

- Held March 29, 2023
- Drought Monitoring
 - Discussed available tools, those in use currently, and potential applications
 - Looked at historic drought impacts to determine how monitoring could benefit
 - Discussed impact indicators by sector
- Continued vulnerabilities discussions
 - Refined list of sector vulnerabilities
 - Prioritized short-term and long-term drought vulnerabilities for each sector
- Discussed mitigation & response actions
 - Discussed what actions would be beneficial to each sector

Drought Task Force Meeting #3 Overview

- Held May 23, 2023
- Monitoring Data
 - Identified the most beneficial indicators and indices, based on feedback
 - Presented basic timeline of monitoring elements and timing

- Continued discussions on mitigation and response actions
 - Discussed recommended actions, by sector
- Completed a drought scenario tabletop exercise
 - Used the 2012 drought and the 2003-2006 drought as reference
 - Small groups talked through single and multi-year drought scenarios
 - Identified what data they're paying attention to, what coordination needs to take place, considered mitigation and response actions, and specific triggers for actions

Drought Tabletop Exercise Overview

- What did we learn?
 - Identified need/desire for better long-term forecasting options. Due to storage on the North Platte, there is some level of tolerance for 1-year drought. Tolerance declines at the 2nd/3rd/4th year. Being able to identify the approximate duration during the first year would be beneficial for management of the drought.
 - Evaluated monitoring protocols' effectiveness during simulated (historic) short- and long-term droughts
 - Evaluated effectiveness of mitigation/response actions by sector - both short and long-term
- "Forward-Looking" Monitoring
 - Challenges:
 - Reliability of indices – not all droughts are the same type, same cause, etc.
 - Variability in drought in the basin – multiple factors drive drought conditions. Similar conditions can yield different outcomes.
 - Some indices have relatively short historic record – limits verification dataset. May be good in the first year of drought, but not in additional years due to small sample size. We want to limit false positives.
 - The best option for the plan is a paired approach to monitoring.
 - EDDI (evaporative demand) – Useful for demand trends and has been effective in flash drought prediction in combination with precipitation forecasting. Good correlation for short-term/flash drought and looking ahead in February/March/April.
 - SPI (standard precip. index) – relative comparison amongst the indices' values (1 month vs. 3 month, etc.) to evaluate trends in and out of drought conditions. Published monthly or weekly – a good indicator of drought trend and momentum.
 - Have looked at El Niño/La Niña, global hydrological indices, but haven't found anything better than roughly 50% odds. Trying to find indicators for the dashboard that are better odds.
- Mitigation and Response Actions
 - Susceptibility to short/long-term drought varies based on longitude
 - Allocations/metering – timing of drought vs allocation cycle is important factor to consider

- With technology like telemetry, can see how you are doing vs allocation limits in real time
 - Variability in water sources/comingled irrigation beneficial for drought
 - Would regulation or legal changes be required?
 - Conjunctive Management
 - Surface water storage operational changes (decisions on early releases? or restrict competing uses if necessary?)
 - New projects and monitoring
 - N-CORPE-type Augmentation Pumping (look at current triggers for using existing projects)
 - Education & Public Outreach
 - Management, crop diversity, personal water conservation, etc.
 - Increased and more consistent communication on drought conditions and resources available
 - Varying crops and seed spacing
 - Plant drought tolerant cover crop early, terminate if conditions are good?
 - Public and private well interference issues
 - Plan such that domestic wells can continue to pump while irrigation pumping may be drawing down the water table; partially a function of well design (depth, e.g.)
 - Options for power plant cooling water
- During the drought tabletop exercise, participants provided some feedback on the potential effectiveness of mitigation and response actions per sector.
 - Most mitigation/response actions fell into a 'medium' category
 - Top 3 actions were: emergency hay/forage programs, comingled irrigation, irrigation scheduling and groundwater controls
 - Not everyone provided rankings for all actions (e.g., if there were items actions a participant was unfamiliar with)
 - Rankings won't necessarily be included in the plan, but it's important to include any mitigation/response items the group came up with. This inclusion will be beneficial in the future when applying for funding – having an item in the plan is a good piece of supporting evidence when applying for project funding.

Sector	Mitigation or Response Action	Effectiveness
Agriculture	Emergency Hay/Forage Programs (Response)	High
Agriculture	Comingled Irrigation (Mitigation)	High
Agriculture	Irrigation Scheduling and Groundwater Controls (Response)	High
Agriculture	Livestock Protection, Shade and Water (Response)	Medium
Agriculture	Soil and Rangeland Health (Mitigation)	Medium
Agriculture	Irrigation Efficiency (Mitigation)	Medium
Agriculture	Groundwater Recharge Projects (Mitigation)	Medium
Agriculture	Additional Surface Water Storage/Conjunctive Management (Mitigation)	Medium
Agriculture	Erosion Conservation Measures (Mitigation)	Medium
Agriculture	Crop Variety and Seed Spacing (Response)	Medium

Sector	Mitigation or Response Action	Effectiveness
Energy	Increase Availability of Cooling Water (Mitigation)	Medium
Energy	Protect Power Infrastructure from Fire Threats (Mitigation)	Medium
Energy	Improve Efficiency of Water Delivery (Mitigation)	Medium
Energy	Load and Peak Demand Management (Response)	Medium

Sector	Mitigation or Response Action	Effectiveness
Municipal/ Industrial/ Domestic (M/I/D)	Emergency/Fire Water Storage (Response)	Medium
M/I/D	Emergency Potable Water (Response)	Medium
M/I/D	Increase Groundwater Quality Monitoring (Mitigation/Response)	Medium
M/I/D	Increase Groundwater Quantity Monitoring (Mitigation/Response)	Medium
M/I/D	Water Use Restrictions (Lawn Irrigation) (Response)	Medium
M/I/D	Develop Emergency Action Plan (Mitigation)	Medium
M/I/D	Drill Deeper Production Wells/Replace Infrastructure	Low

Sector	Mitigation or Response Action	Effectiveness
Environmental	Protect Ecosystem Functions (Control Invasive Species) (Mitigation)	Medium
Environmental	Increase Riparian Buffer Zones (Mitigation)	Medium
Environmental	Improve Drought Resilient Habitats (Mitigation)	Medium
Environmental	Controlled (Prescribed) Burns (Mitigation)	Medium
Environmental	Improve Wildlife Protection (Mitigation)	Medium
Environmental	Coordinate Wildfire Suppression (Response)	Medium
Environmental	Habitat Recovery (Response)	Medium

Sector	Mitigation or Response Action	Effectiveness
Recreation	Lake Dredging and Aquatic Habitat Restoration (Mitigation)	Medium
Recreation	Watershed WQ Management (Mitigation)	Medium
Recreation	Drought Resilient Recreational Facilities (Mitigation)	Medium
Recreation	Fish and Game Regulations During Drought (Response)	Low

Sector	Mitigation or Response Action	Effectiveness
Socio-Economic	Improve Drought Resilience of Public Services (Mitigation)	Medium
Socio-Economic	Increase Air Quality Monitoring (Response)	Medium
Socio-Economic	Coordinate Disaster Relief (Response)	Medium
Socio-Economic	Coordinated Emergency Response (wildfire for example) (Response)	Medium
Socio-Economic	Access to Mental Health Resources (Mitigation)	Low
Socio-Economic	Public Outreach for Drought Education and Available Financial Assistance (Mitigation)	Low
Socio-Economic	Prepare and Train for Disease Outbreaks (Mitigation)	Low

Overview of Draft Drought Plan

The Drought Plan is anticipated to include the following sections:

- Plan Background
- Basin Description
- Vulnerability Assessment
- Monitoring Protocols
- Drought Management
 - Mitigation Measures
 - Response Actions
- Operational & Administrative Framework

Vulnerability Assessment

The vulnerability assessment section of the Drought Plan will cover the following:

- An evaluation of the risks to critical resources within a planning area and the factors contributing to those risks
- Drought impacts divided into Agriculture, Energy, Municipal & Industrial Supply, Environmental, Recreation, and Socio-Economic sectors, as well as the major impacts/vulnerabilities in each sector
- Historic impacts of short-term and long-term droughts
- Potential future vulnerabilities

Attendees reviewed previously presented drought vulnerability and impact tables and were asked if there were any vulnerabilities that hadn't been addressed. Attendees had no additional vulnerabilities to add.

Drought Monitoring

- The Drought Monitoring section of the Drought Plan will provide the following:
 - A means of measuring drought and provide framework to predict probability of drought/confirm existing drought
 - Details on indices and indicators considered for the plan
 - Evaluation of the usefulness of indices and indicators in drought monitoring, based on drought impacts
 - A look at monitoring performed by other agencies
 - Monitoring plan recommendations
- Recommended indicators and indices included in the Drought Plan need to meet multiple characteristics including a history of use in the Upper Platte Basin for at least 30 years, be widely collected throughout the basin and likely to continue to be collected and updated in a timely fashion.
- Drought monitoring recommendations are intended to complement existing drought monitoring efforts and would add additional context to NDMC drought monitoring.
 - Information would be presented as real-time (current drought conditions) and forecast (will drought develop or ease?).
- Recommendations include implementing drought severity notification categories of "Drought Watch" (noting that conditions are favorable for a drought to start) and "Drought Warning" (high confidence that a drought impact has occurred or will soon occur).

Drought Watch conditions include:

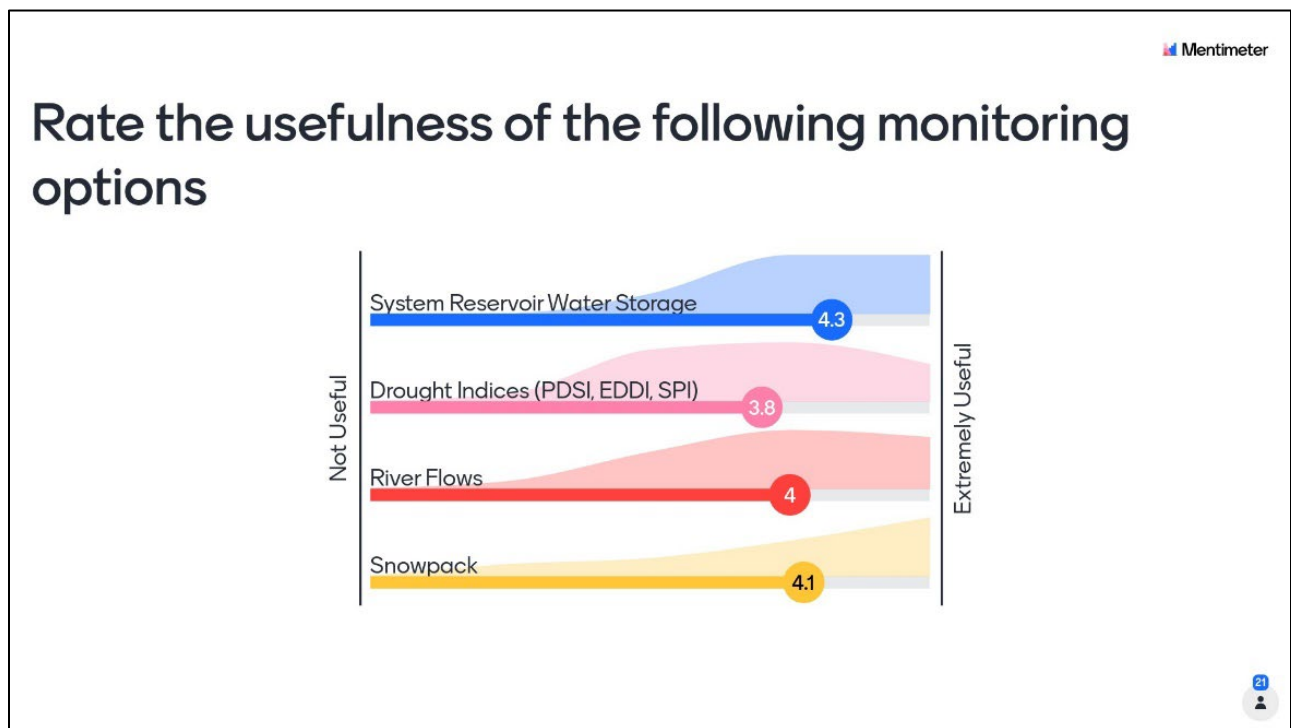
- Above normal evaporative demand
 - EDDI, 1 month > 3 month > 6 month > 12 month and at least one of these is more than +1 (above normal evaporative demand)
- On-going trend toward drought, evidence of below-average precipitation
 - SPI, 1 month < 3 month < 6 month < 12 month and at least one of these is less than 0 (on-going trend toward drought, evidence of below average precipitation)
- Potential decreased crop yields/poor pasture conditions/increased irrigation
 - SPEI -1 to 8-month is less than -1; or
 - EDDI - 1- to 8-month is more than +1

- Summer flows below normal
 - Remaining SWE in the North Platte Basin in June is less than 6-inches or less than 4-inches in the South Platte Basin.
 - Surface Water Storage – (NEED TRIGGER - storage and time)

Drought Warning conditions include:

- A likely decrease in crop yield production and higher energy demands (cooling)
 - During summer, either SPEI (1- to 3-month) is less than -1 or EDDI (1- to 3-month) is more than +1. Drought Indicators and thresholds verify by county and crop type.

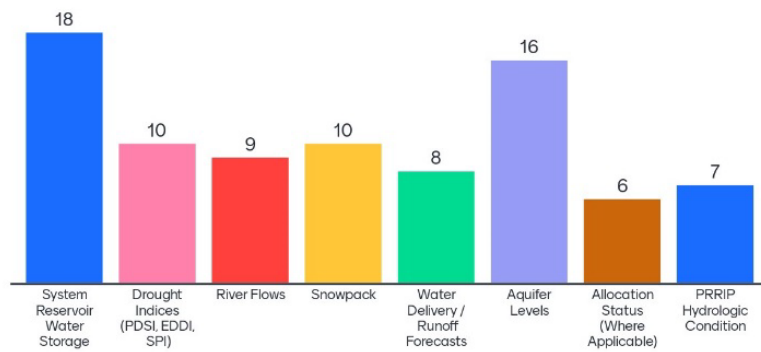
Attendees were asked to answer several questions using Mentimeter.



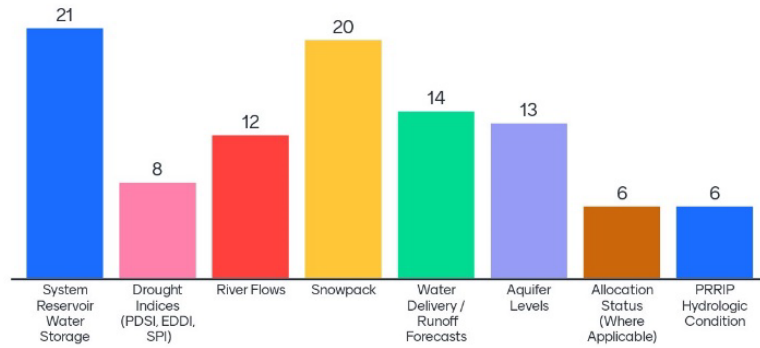
Rate the usefulness of the following monitoring options



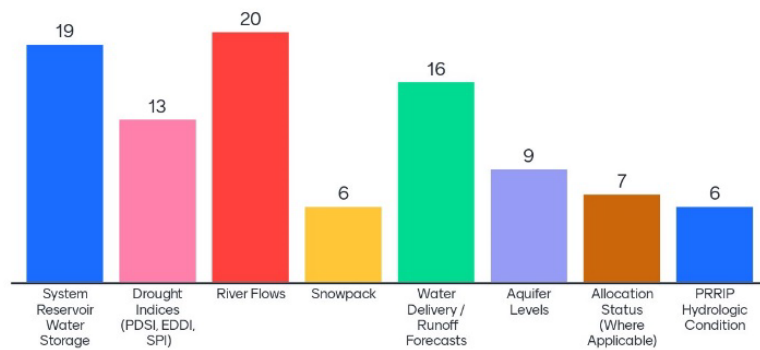
October - December, Which of these tools are you looking at?



January - April, Which of these tools are you looking at?



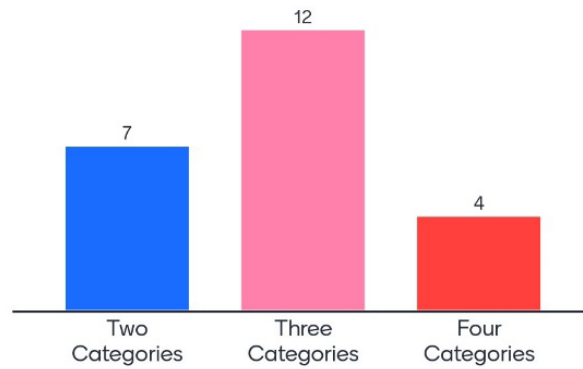
May-September, Which of these tools are you looking at?



What are some existing triggers you use with current monitoring systems? 19 Answers

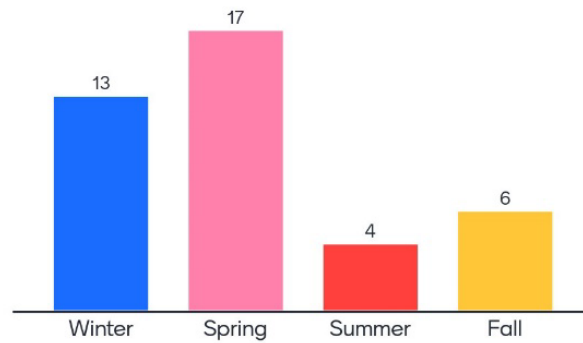
River flow snow pack	Current EA volume and release plans	Snowpack and runoff forecast is important through end of June, not only how much snowpack there is but how it comes off/melts is just as important at times.
Previous allocation use, drought monitor, aquifer levels	Snow pack, river flows, groundwater levels	Rainfall, area of coverage,
Drought indices, PRIP target flows, groundwater level changes	how full the wetlands are	Spring USBR runoff projection vs. USBR reservoir available capacity, McConaughy above or below 800 kaf in spring, South Platte June-July temperature and precip forecasts, El-Nino strength
River flows, storage levels.	Storage levels in Lake McConaughy as related to FERC license requirements.	Ground water levels. UNL drought monitor
drought indices, PRRIP target flows, system storage, river flows	capacity of McConaughy, UNL drought monitor	PRRIP targets, instream flow targets, SW user demands (call on the river)
Weather service and/or USGS river flows	Storage levels, river flows	End of Irrigation season storage use to determine if contract canals can purchase additional water.
Redo or levels. Snowpack.		

How many drought severity categories should be established?



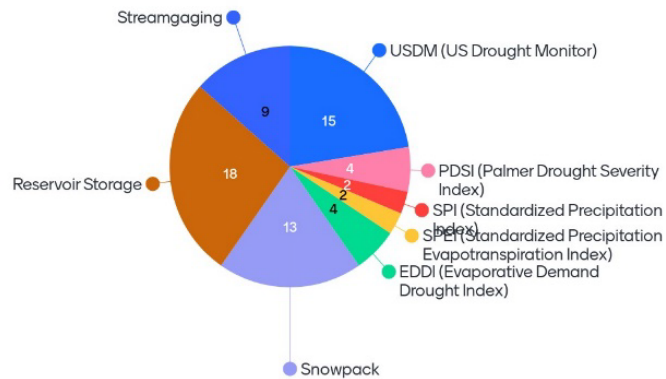
- Participants noted that an additional category of “Drought Emergency” may be beneficial
- One suggestion that outside of drought periods, it is always a ‘drought watch’ – maybe only two categories needed

What are critical time periods for making decisions



- CNPPID noted that they are making decisions in Spring/Fall (Winter/Summer is their implementation time)
- Environmental noted that Spring/Fall are critical times for bird migrations
- Agriculture noted they make decisions in the Spring

Which indicators would be most useful on a dashboard (Choose 3)



- Stakeholders overwhelmingly favored reservoir levels, flows, and snowpack to other drought indices

Mitigation Measures

Mitigation measures are implemented prior to the onset of drought conditions to help reduce potential impacts. Following Drought Task Force Meeting #3, numerous mitigation actions were

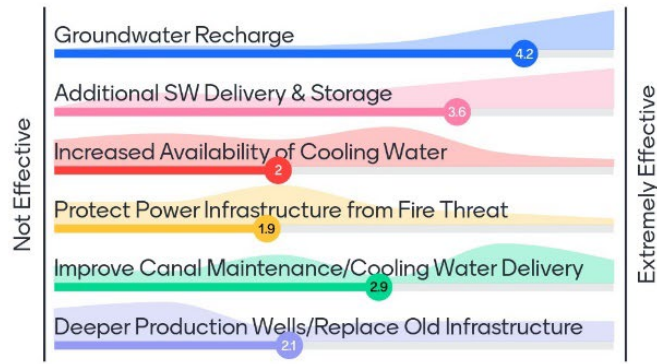
considered per sector. Each recommended mitigation measure was categorized in mitigation projects, programs, or policy.

Sector	Mitigation Action	Type
Agriculture	Groundwater Recharge Projects	Project
Agriculture	Irrigation Efficiency	Program
Agriculture	Additional Surface Water Delivery and Storage	Project
Agriculture	Erosion Conservation Measures	Program
Agriculture	Commingled Irrigation	Policy
Energy	Increase Availability of Cooling Water	Project
Energy	Protect Power Infrastructure from Fire Threats	Project
Municipal/Industrial /Domestic	Develop Emergency Action Plans for Water Shortage	Policy
Municipal/Industrial /Domestic	Drill Deeper Production Wells/Replace Older Infrastructure	Project

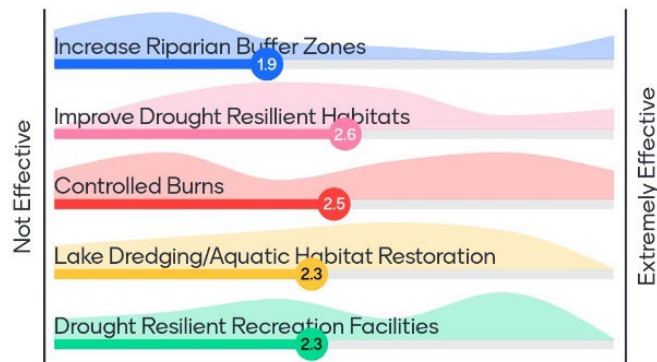
Sector	Mitigation Action	Type
Environmental	Protect Ecosystem Functions	Policy
Environmental	Increase Riparian Buffer Zones	Project
Environmental	Improve Drought Resilient Habitats	Project
Environmental	Controlled (Prescribed) Burns	Project
Environmental	Improve Wildlife Protection	Policy
Recreation	Lake Dredging and Aquatic Habitat Restoration	Project
Recreation	Watershed WQ Management	Program
Recreation	Drought Resilient Recreational Facilities	Project
Socio-Economic	Access to Mental Health Resources	Program
Socio-Economic	Public Outreach for Drought Education and Available Financial Assistance	Program
Socio-Economic	Prepare and Train for Disease Outbreaks	Program
Socio-Economic	Improve Drought Resilience of Public Services	Policy

Attendees were again asked to answer questions using Mentimeter. Graphics of the questions and responses are below.

Please rate the following mitigation PROJECTS by potential effectiveness



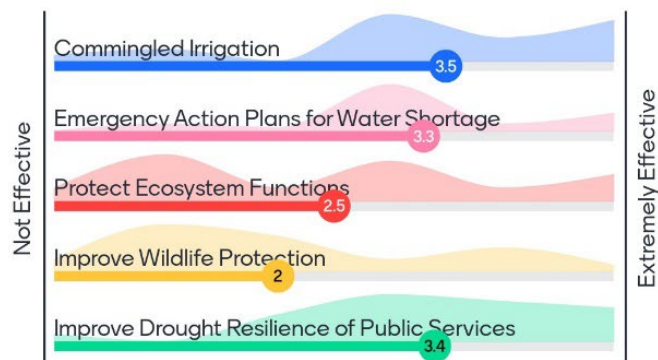
Please rate the following mitigation PROJECTS by potential effectiveness



Please rate the following mitigation PROGRAMS by potential effectiveness



Please rate the following mitigation POLICIES by potential effectiveness



Response Actions

Response actions are near-term actions triggered during specific stages of drought. They help manage the limited supply and decrease the severity of impacts. They should be implemented quickly and provide rapid benefits. Following Drought Task Force Meeting #3, numerous

response actions were considered per sector. Each recommended response action was categorized into Individual Producer with Assistance, Information/Education, Administrative/Operational, and Emergency Response.

Sector	Mitigation Action	Type
Agriculture	Crop Variety and Seed Spacing	Individual with Assistance
Agriculture	Livestock Protection, Shade, and Water	Individual with Assistance
Agriculture	Irrigation Scheduling and Groundwater Controls	Info/Education; Admin/Operational
Agriculture	Emergency Hay/Forage (FSA programs, etc.)	Individual with Assistance
Energy	Improve Efficiency of Water Delivery	Admin/Operational
Energy	Load and Peak Demand Management	Admin/Operational
Municipal/Industrial /Domestic	Increase Groundwater Quantity and Quality Monitoring	Admin/Operational
Municipal/Industrial /Domestic	Water Use Restrictions - Voluntary and Mandatory	Info/Education; Admin/Operational

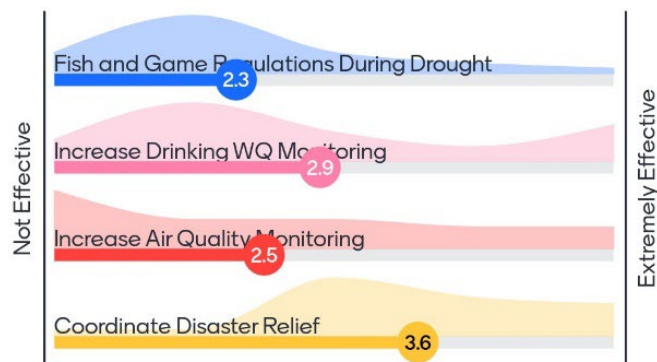
Sector	Mitigation Action	Type
Municipal/Industrial /Domestic	Emergency/Fire Water Storage and/or Access	Emergency Response
Municipal/Industrial /Domestic	Emergency Potable Water	Emergency Response
Environmental	Coordinate Wildfire Suppression	Info/Education; Emergency Response
Environmental	Habitat Recovery	Admin/Operational
Recreation	Fish and Game Regulations During Drought	Info/Education; Admin/Operational
Scio-Economic	Increase Drinking WQ Monitoring	Admin/Operational
Scio-Economic	Increase Air Quality Monitoring	Admin/Operational
Scio-Economic	Coordinate Disaster Relief	Admin/Operational
Scio-Economic	Emergency Response (Red Cross, National Guard, Volunteer Fire Districts, etc.)	Emergency Response

Attendees were again asked to answer questions using Mentimeter. Graphics of the questions and responses are below.

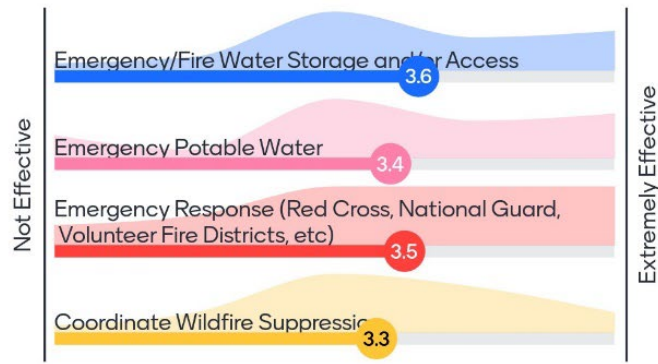
Please rate the following Admin/Operational response actions by potential effectiveness



Please rate the following Admin/Operational response actions by potential effectiveness



Please rate the following Emergency Response actions by potential effectiveness



Please rate the following Info/Education actions by potential effectiveness



Are there any mitigation/response actions that aren't currently included? **13** Answers

None	Nothing	use of conservation programs to temporarily retire marginal lands
No	Mandatory metering (can include TPNRD-type power monitoring)	No
None	improving riverine wetlands for storage, water quantity and water quality concerns	A concerted effort of educating the public and getting buy in from local authorities.
re-purpose water from one use to another uses, supplement river flows with stored gw or sw	compensation to implement conservation programs intended to reduce water usage on irrigated lands	Raise crops that dont require irrigation
Plant less water intensive crops		

Operational/Administrative Framework

Operational and administrative framework of the Drought Plan will include the following:

- Drought Dashboard website of indicators/indices
- Drought monitoring part of Platte Basin Coalition's regular meetings
 - Drought conditions report
 - Communication coordination (as needed)
 - On-going mitigation or response actions of individual entities
 - Evaluate/prioritize potential basin-wide mitigation or response actions
- Review of monitoring protocols/plan (annual review)

Dashboard Discussions

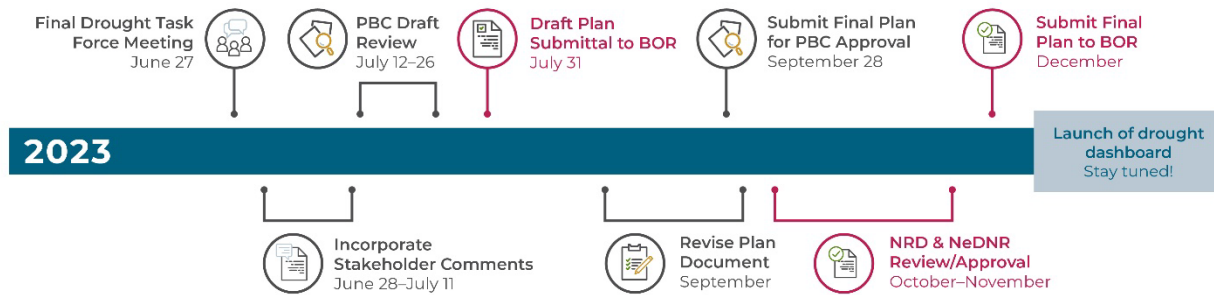
Reviewed the Lower Platte Drought Dashboard with the group – plan to eventually set up a similar dashboard for the Upper Platte Basin. This dashboard would be intended for public use.

- Items planned for the Upper Platte dashboard include North Platte River storage, EDDI, Nebraska wildfire prediction
- May want a supply/demand aspect to the dashboard; could be experiencing drought from supply issues (e.g., not enough water from upstream, not enough rainfall)
- Would also be beneficial to have different sectors/interest points separated on the dashboard (i.e., if you have interest in the Ag sector, here's what to look at)
 - Would like to be able to easily find what will impact the user's day-to-day

- Conditions can change quickly – it might be too much to have a flood monitoring component in the dashboard, but links to relevant resources might be beneficial
- Would like to include a background section on the drought plan
- USGS has several gauge cameras up – may want to include those in the dashboard
 - These were added to the Lower Platte Dashboard
- Would like to include explanations on the PDSI and other indices to educate the public
- Would like to consider including PRRIP Target Flows

Next Steps

This was the last planned meeting of the Drought Task Force, but the group may be reconvened if substantial changes are needed following reviews. In the next few months, draft content will be reviewed by the Platte Basin Coalition. The final plan submission will be at the end of 2023.



Sections will be available for review on the [website](#) as they are completed. Comments can be submitted via online comment form (<https://www.surveymonkey.com/r/UPRDCP>).