Seventh Annual Report for the Republican River Basin-Wide Plan

Data and Progress Updates, 2024

Presented at the Annual Meeting

November 20, 2025

Jointly prepared by
Upper Republican Natural Resources District
Middle Republican Natural Resources District
Lower Republican Natural Resources District
Tri-Basin Natural Resources District
&
Nebraska Department of Water, Energy, and Environment

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Introduction

The *Republican River Basin-Wide Plan* (basin-wide plan) was developed by Nebraska Department of Water, Energy, and Environment (DWEE)[1] – formerly known as the Nebraska Department of Natural Resources - and Upper Republican, Middle Republican, Lower Republican, and Tri-Basin Natural Resources Districts (NRDs), in consultation and collaboration with a Stakeholder Advisory Committee. The time frame to implement the basin-wide plan is approximately 25 years, spanning from the effective date of the basin-wide plan (March 1, 2019) to April 17, 2044, which is 30 years after the operative date of LB 1098 (2014), as specified in *Neb. Rev. Stat.* § 46-755.

Action Item 3.2.2 of the basin-wide plan specifies that DWEE and the NRDs will annually exchange reports containing data and information about water supplies and uses in the Republican River Basin, management activities, and progress toward the goals and objectives of the basin-wide plan. This report contains the data and information about plan implementation progress for the 2024 calendar year, to be exchanged by DWEE and the NRDs at the following year's annual meeting.

[1] 2025 Neb. Laws, LB 317, passed on May 6, 2025, provides that on or after July 1, 2025, the Department of Natural Resources shall be merged into the Department of Environment and Energy, which shall be renamed the Department of Water, Energy, and Environment and that the Director of Natural Resources shall be renamed the Chief Water Officer of the Department of Water, Energy, and Environment and shall retain authorities previously prescribed for the administration of duties of the Department of Natural Resources, except as otherwise provided by law.

Water Supplies, Uses, and Management Actions in the Basin

In accordance with the requirements of *Neb. Rev. Stat.* §§ 46-755 (5)(a) and 46-755 (5)(b), the basin-wide plan contains a monitoring plan, which includes a process to gather and evaluate data, information, and methodologies to increase understanding of the surface water and hydrologically connected groundwater system within the basin and to test the validity of the conclusions, information, and assumptions upon which the plan is based.

One component of the monitoring plan is a list of data on water supplies and uses in the Republican River Basin that will be reported annually by basin NRDs and DWEE (Table 3.1 of the basin-wide plan). As stated in the basin-wide plan's Monitoring section, it will take time for DWEE and the NRDs to prepare each category of data for distribution; some of the listed data are readily available within existing data sets, while others will take significantly longer for methodology development. As a result, DWEE and the NRDs will gradually increase the number of data items that will be reported on each year as they are able. In addition, as also noted in the plan, the list of data reported is subject to change as data needs and resources change over time.

Water Supplies

The Republican River Basin is located at the intersection of Nebraska, Colorado, and Kansas (Table 1 and Figure 1). The Republican River Compact (Compact), administered by the Republican River Compact Administration (RRCA) is an interstate agreement that allocates consumption of the waters of the Republican River Basin among the three states. Unless otherwise indicated, the data reported in the DWEE section of this report are from the RRCA's approved accounting data Nebraska provided to Colorado and Kansas as part of the RRCA's annual data exchange, or calculations using the RRCA groundwater model.

Table 1. Area of Nebraska, Kansas, and Colorado within the Republican River Basin (United States Geological Survey (USGS) Hydrologic Unit Code: 102500).

State	Republican River Basin Area (mi^2)
Colorado	7,816
Kansas	7,551
Nebraska	9,546

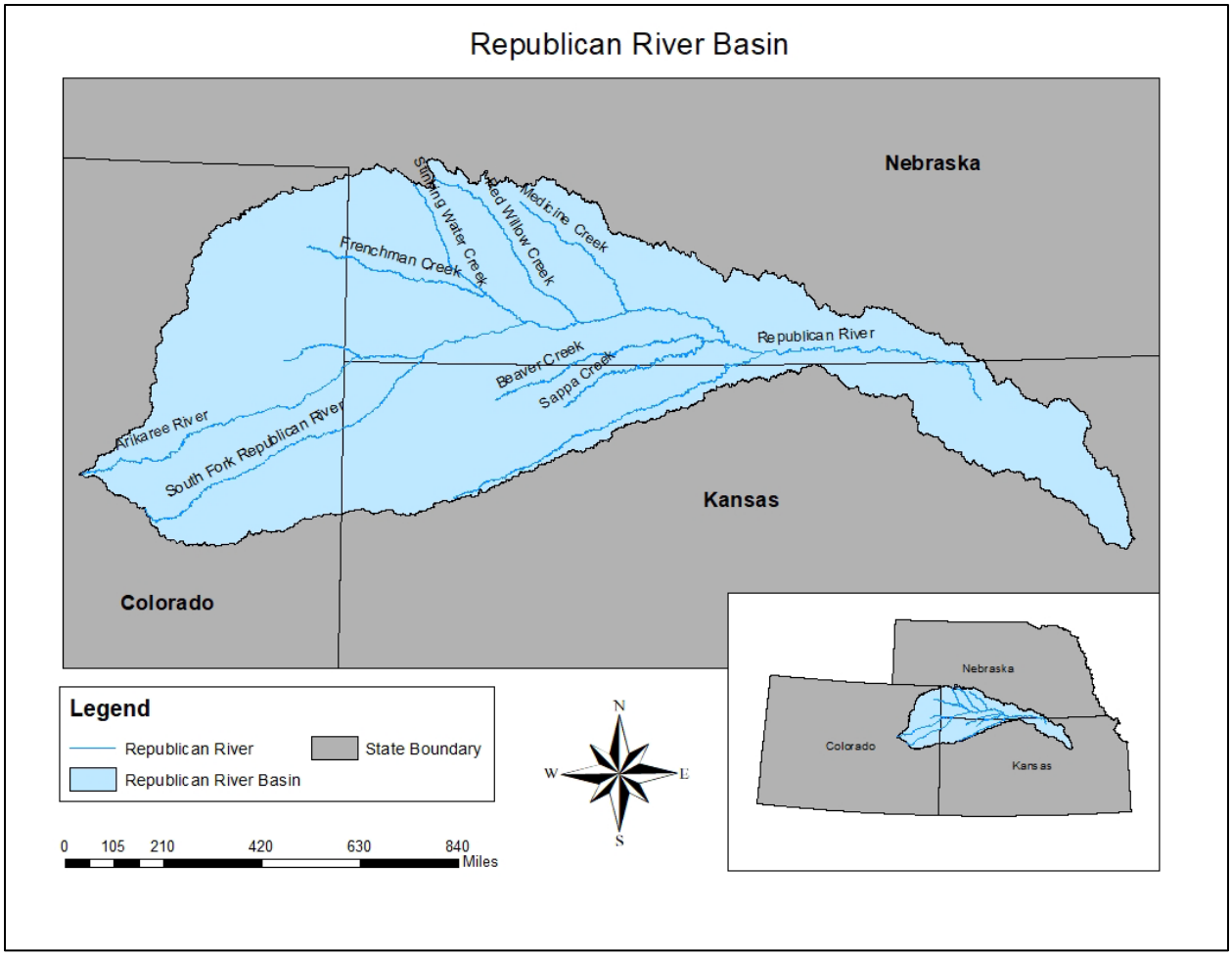

Figure 1. Extent of Republican River Basin within Nebraska, Kansas, and Colorado (USGS Hydrologic Unit Code: 102500).

Precipitation

Annual precipitation data used in RRCA analyses is measured at National Weather Service cooperative stations across the Republican River Basin in Nebraska, quality-controlled, and filled in with PRISM (Parameter-Elevation Regressions on Independent Slopes Model) data by the RRCA, as necessary. In 2024, annual precipitation data used in RRCA analyses ranged from 13.39 inches to 28.38 inches. Figure 2 displays 2024 precipitation data at each of the cooperative stations used by the RRCA; additional stations outside of Nebraska and the basin are used by the RRCA to interpolate precipitation across the whole RRCA model area, which extends beyond the basin boundary.

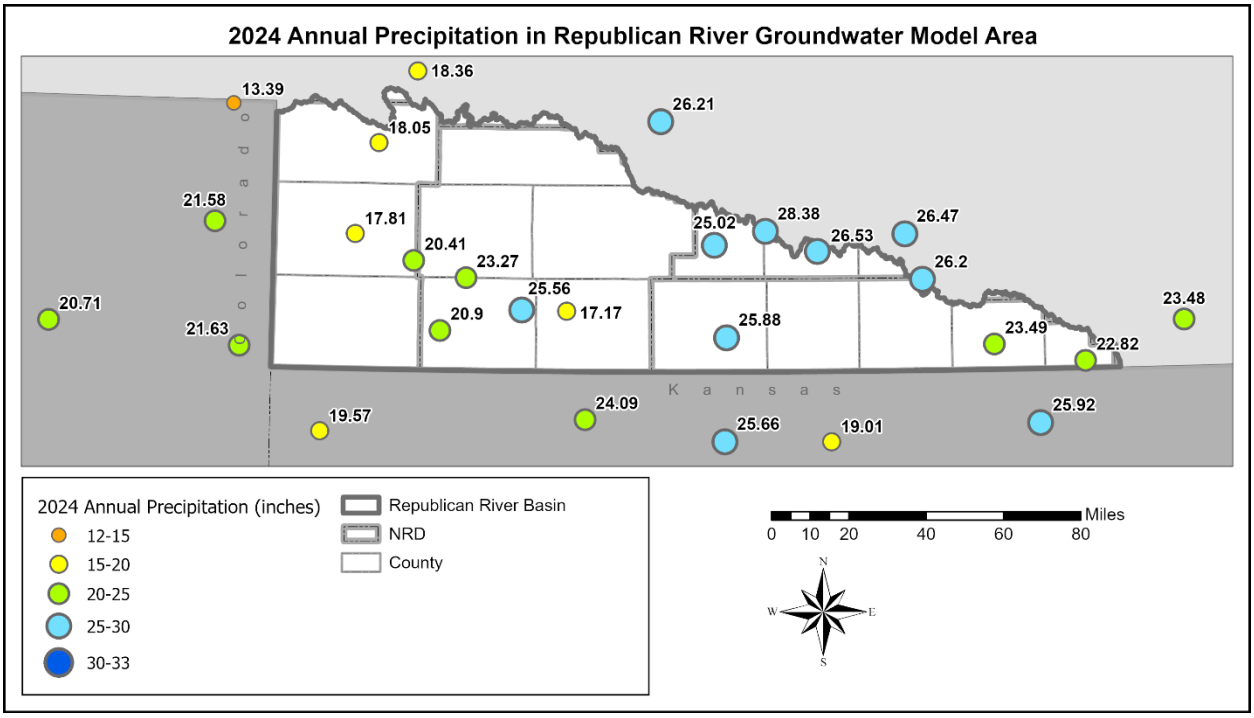

Figure 2. 2024 annual precipitation in inches from National Weather Service cooperative stations, as used in RRCA groundwater model processing.

Streamflow

Under the Republican River Compact, allocations within each Republican River subbasin include the streamflow at the downstream end of the subbasin. Subbasin streamflow is measured for the Compact by 13 USGS streamgages and one DWEE streamgage (Figure 3 and Table 2). The most downstream streamgages in Nebraska are on the Main Stem of the Republican River at Guide Rock and Hardy. Table 2 presents the total amount of water in acre-feet measured past each of the streamgages in 2024. For more details and to obtain continuous stream and reservoir, partial year, canal, canal return flow, and miscellaneous spot measurement data from over 250 gaging sites visit the DWEE website: *https://nednr.nebraska.gov/RealTime/*.

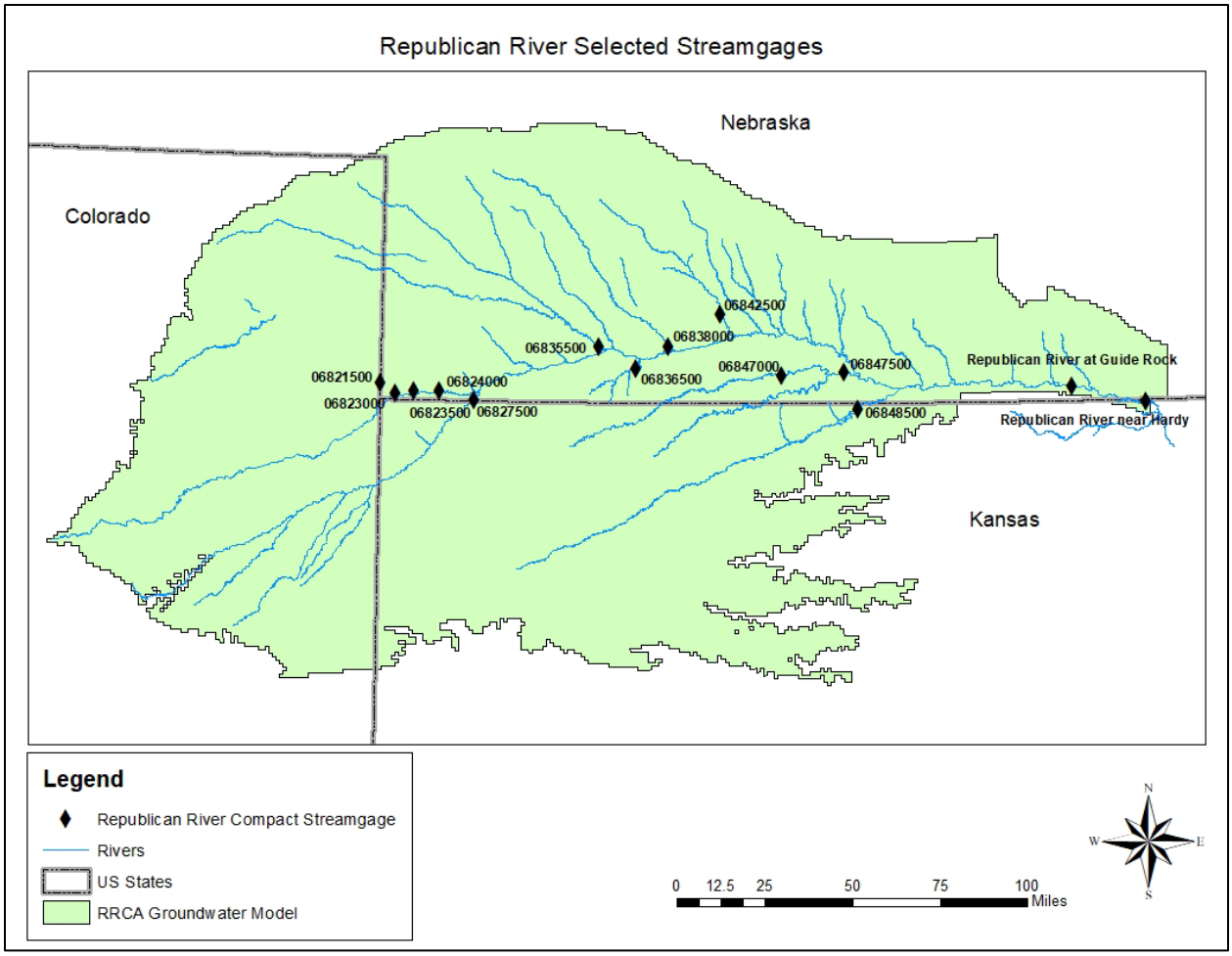

Figure 3. Location of subbasin streamgages within the Republican River Basin.

Table 2. Annual streamflow volumes in acre-feet from Republican River subbasin streamgages used in the Republican River Compact accounting.

Streamgage	2024 Streamflow (Acre-feet)
USGS 06823000 - North Fork of the Republican River at Colorado-Nebraska State Line	23,138
USGS 06821500 - Arikaree River at Haigler	1,283
USGS 06823500 - Buffalo Creek near Haigler	1,452
USGS 06824000 - Rock Creek at Parks	3,384
USGS 06827500 - South Fork Republican River near Benkelman	7
USGS 06835500 - Frenchman Creek at Culbertson	19,036
USGS 06836500 - Driftwood Creek near McCook	1,740
USGS 06838000 - Red Willow Creek near Red Willow	3,620
DWEE 06842500 - Medicine Creek below Harry Strunk Lake	23,536
USGS 06847000 - Beaver Creek near Beaver City	519
USGS 06847500 - Sappa Creek near Stamford	8,215
USGS 06848500 - Prairie Dog Creek near Woodruff, Kansas	7,586
USGS 06853020 - Republican River at Guide Rock	30,975
USGS 06853500 - Republican River near Hardy	53,546

Groundwater

The locations of wells used to monitor groundwater levels for all basin NRDs in the District are shown in Figure 4. Groundwater level data are provided to DWEE by each NRD as part of the analysis of Measurable Hydrologic Objective (MHO) C for the basin-wide plan. Groundwater level data are available from the NRDs upon request.

Groundwater level data are provided to DWEE by basin NRDs as part of the analysis of MHO C for the basin-wide plan. A summary of the analysis is in the *First Five-Year Technical Analysis for the Republican River Basin-Wide Plan: Results and Plan Progress Updates, 2019-2022* report which was submitted to the legislature on February 29, 2024, and is available for download on the basin-wide plan website, *https://rrbwp.nebraska.gov*.

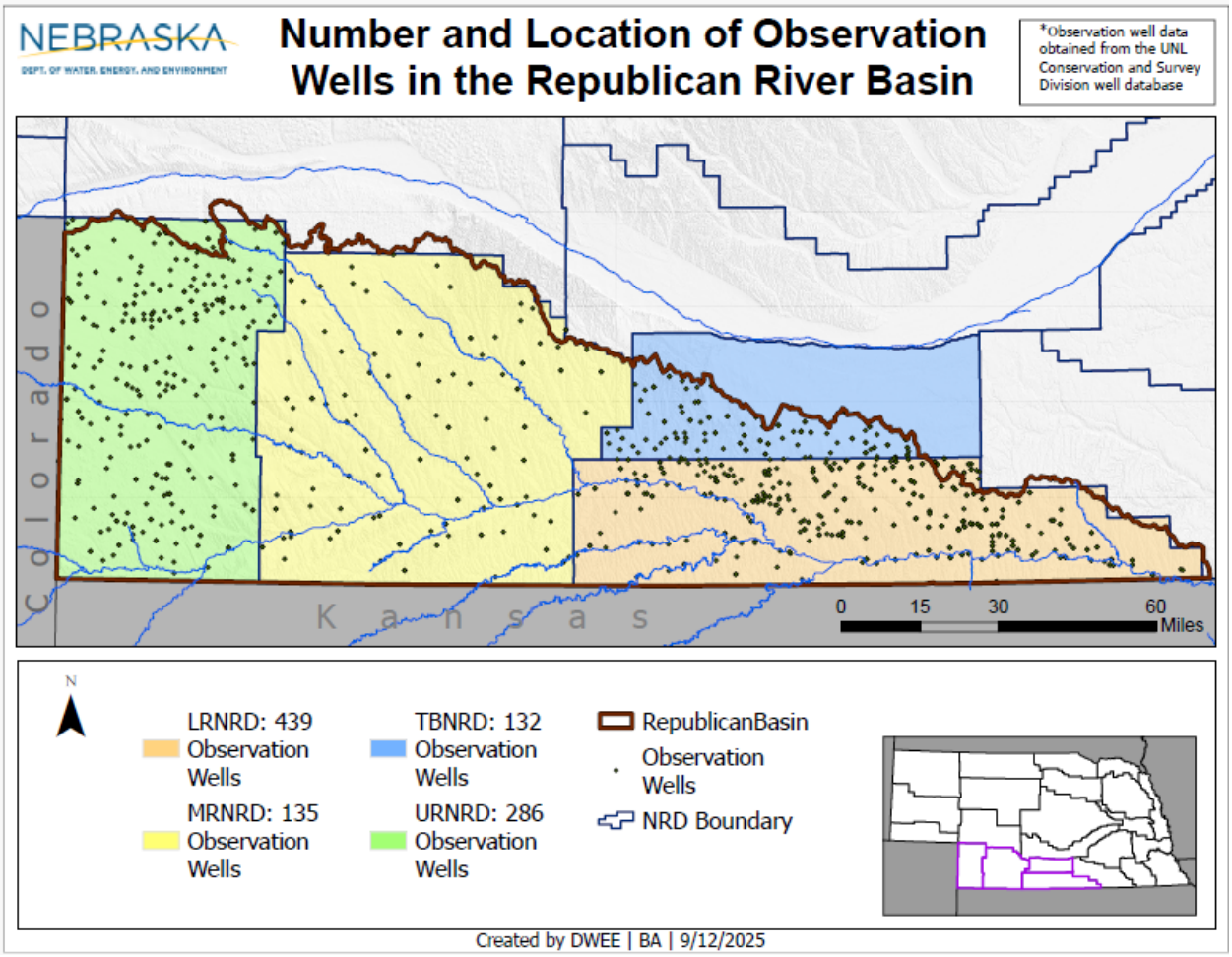

Figure 4. Location and number of groundwater observation wells within the Republican River Basin, by NRD, according to the University of Nebraska-Lincoln (UNL) Conservation and Survey Division well database.

Reservoir Storage and Evaporation

Federal Reservoir Storage

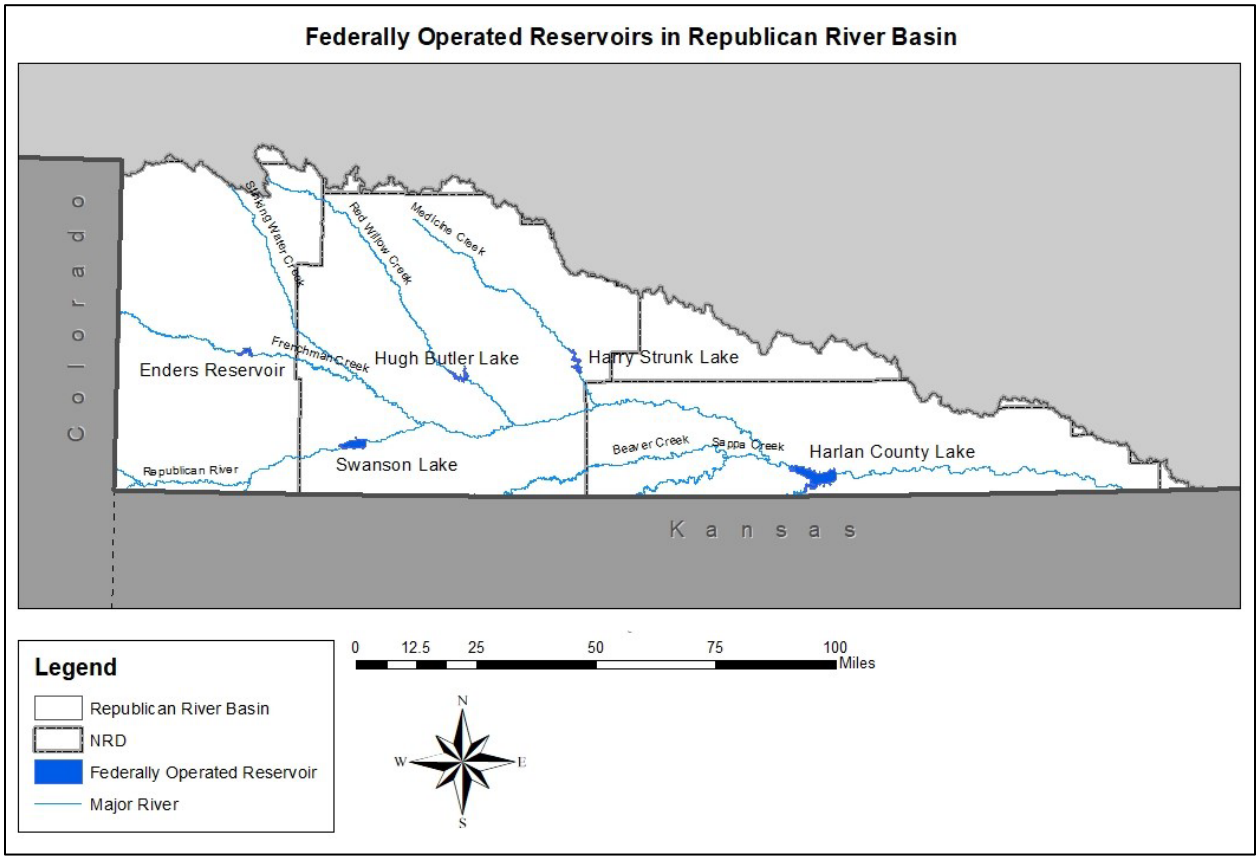

Figure 5. Location of federal reservoirs located in Nebraska portion of the Republican River Basin.

There are five federally operated reservoirs within the Republican River Basin in Nebraska: Enders Reservoir on Frenchman Creek, Hugh Butler Reservoir on Red Willow Creek, Harry Strunk Reservoir on Medicine Creek, and Swanson Lake and Harlan County Lake on the Republican River (Figure 5). Annual end of year storage volumes for 2024 for each Republican River Basin reservoir in Nebraska are shown in Figure 6. Storage data were obtained from the USBR, which are available on the agency's automated data system HydroMet at https://www.usbr.gov/gp/hydromet/.

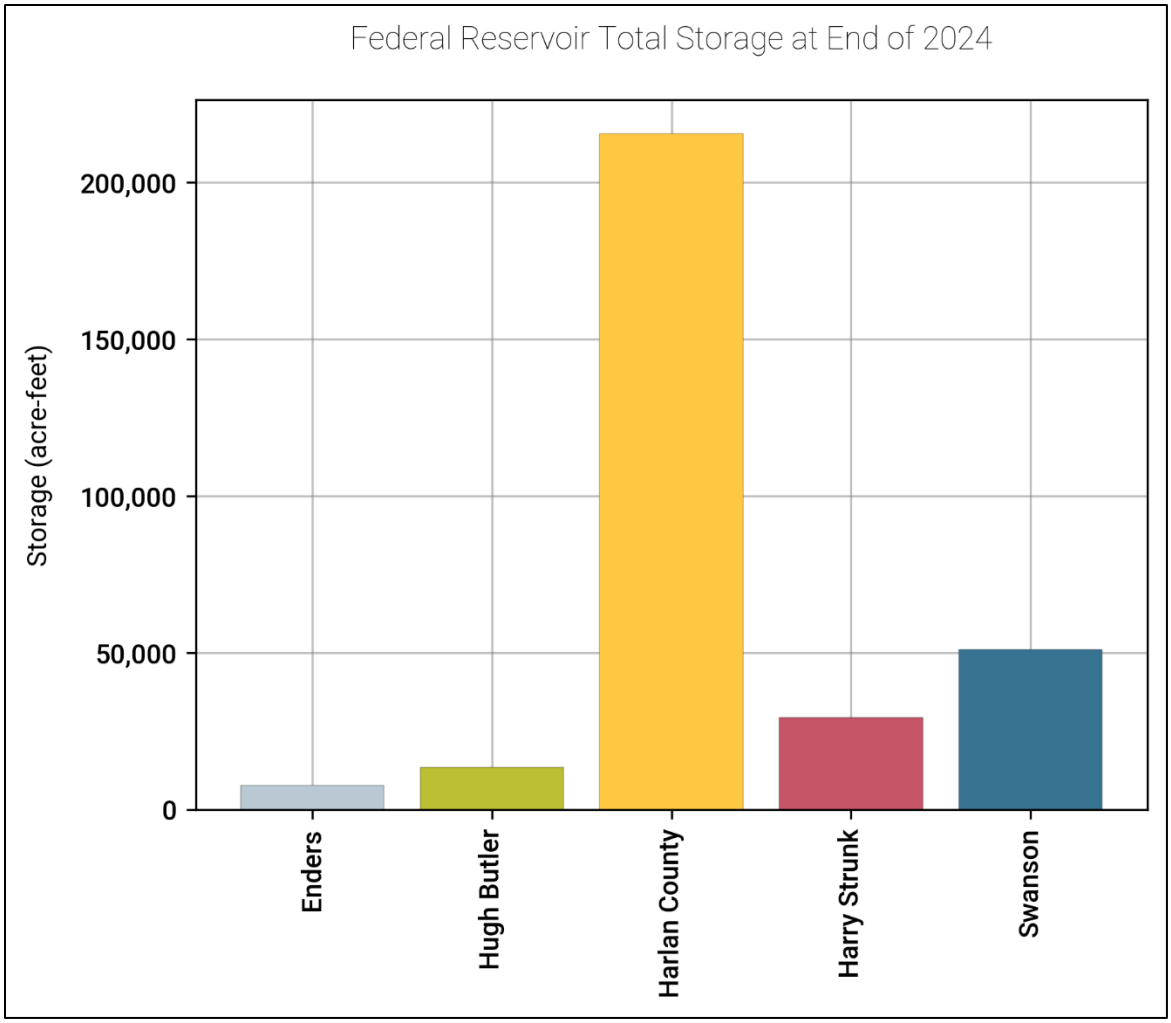

Figure 6. 2024 end-of-year reservoir contents for the federally operated reservoirs within the Republican River Basin in Nebraska: Enders Reservoir on Frenchman Creek, Hugh Butler Reservoir on Red Willow Creek, Harry Strunk Reservoir on Medicine Creek, and Swanson Lake and Harlan County Lake on the Republican River.

Reservoir Evaporation

Net evaporation from Republican River Basin reservoirs in Nebraska in 2024 was 30,620 acre-feet from the five federal reservoirs and 1,923 acre-feet from non-federal reservoirs. Federal and non-federal reservoir evaporation are beneficial consumptive uses of surface water. For the RRCA, federal and non-federal reservoir CBCU are calculated as net evaporation, which is evaporation from the reservoir minus precipitation directly intercepted by the reservoir. Non-federal reservoirs are those that are not owned or operated by the federal government.

Water Use

Irrigated Acres

For the Republican River Compact Administration Groundwater Model, Nebraska currently reports irrigated acres as one of the following:

1. Groundwater-only irrigated acres.
2. Surface water-only irrigated acres or surface water and groundwater (commingled) irrigated acres.

Acres irrigated with groundwater are reported with metered pumping annually by basin NRDs to DWEE or are estimated for the portions of the RRCA model area that are in NRDs without metered pumping. Acres irrigated with surface water and commingled water are flagged annually based on use from a primary database developed from water right information. Annual irrigated acres within the RRCA model from 2024 have been divided into the two reporting methods and groundwater acres have been delineated by the NRD that the model cells primarily overlay, resulting in totals differing from the NRDs' reported effective acres (Figure 7). The groundwater-irrigated acres shown in Figure 7 for Tri-Basin NRD include acres that are in the Platte, Little Blue, and Republican River Basins because all of Tri-Basin NRD is included in the RRCA groundwater model area.

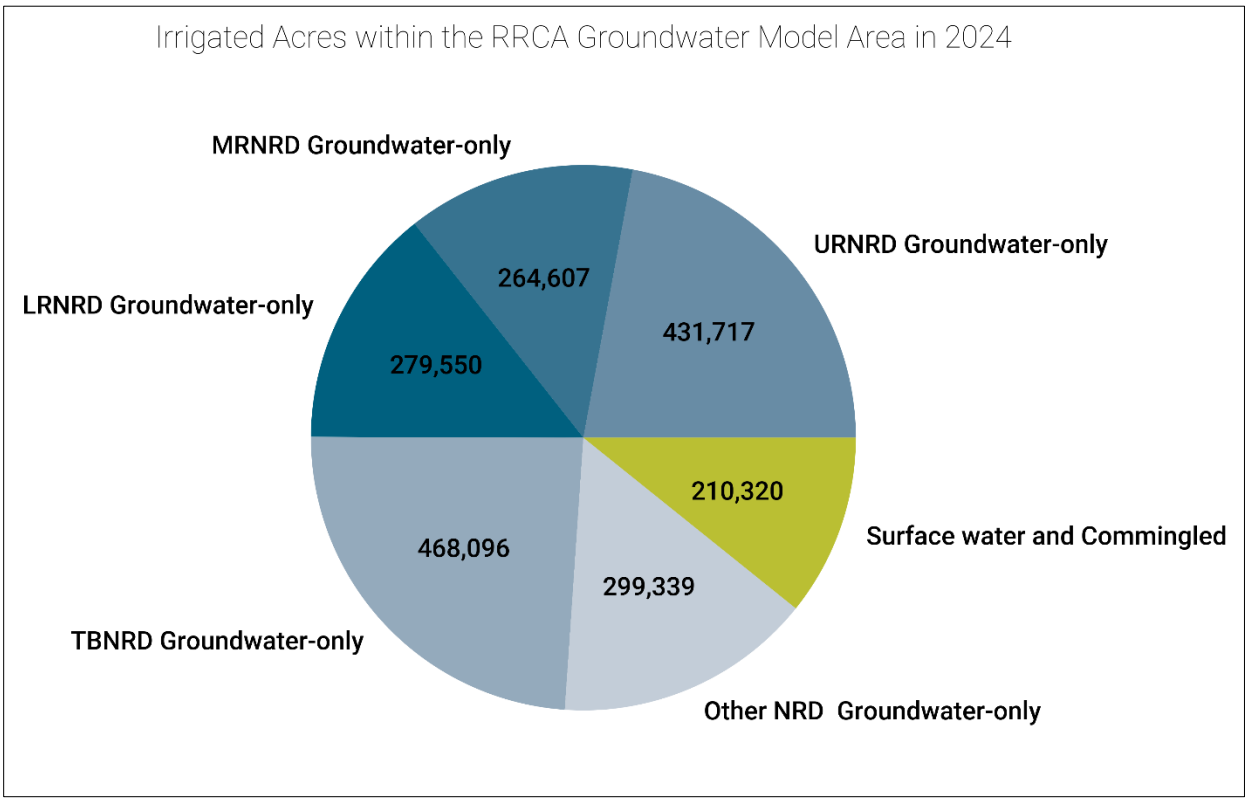

Figure 7. Acres irrigated by surface water and commingled, or acres irrigated by only groundwater within the RRCA Groundwater Model Area in 2024.

Allocation and Computed Beneficial Consumptive Use (CBCU)

Under the Republican River Compact, the total water supply and how much of the total supply each state is entitled to beneficially use is referred to as "allocation." The allocations are calculated from the water supply of the basin if it had been undepleted by the activities of man. Each state is allotted a fixed percentage of the undepleted water supply in each of the Republican River subbasins to obtain the states' allocations. The calculated uses of the water supplies are referred to as "Computed Beneficial Consumptive Use" (CBCU). The CBCU in the Republican River Basin includes direct surface water uses, such as reservoir evaporation and consumption of diverted water, and withdrawal or interception of streamflow by groundwater pumping (groundwater depletions to streamflow). Groundwater pumping can have a lagged effect on streamflow. The RRCA groundwater model considers the effects of pumping since early well development in the 1940s, therefore, the groundwater consumptive use of streamflow in each year is impacted by pumping in that year and all previous years. Table 3 presents total CBCU in Colorado, total CBCU in Kansas, and the breakdown of total CBCU as surface water or groundwater CBCU from Nebraska.

Nebraska groundwater CBCU are presented for the effects of pumping from each NRD's portion of the basin separately (Upper Republican, Middle Republican, Lower Republican, and Tri-Basin NRDs) and all other NRDs within the model area collectively (Other NRD) in Table 3. Each NRD's groundwater CBCU is equivalent to the net depletions to streamflow due to groundwater pumping within that NRD.

Table 3. Annual total CBCU by Kansas and Colorado and annual Nebraska total surface water CBCU and division of groundwater CBCU (i.e., net depletions to streamflow) by each NRD. The sum of Nebraska CBCU presented in this table may vary slightly from the statewide CBCU in Nebraska's Compact compliance tables due to rounding.

2024 CBCU (acre-feet)	
Colorado	33,750
Kansas	68,340
Nebraska Surface Water	59,836
Lower Republican NRD Groundwater	48,354
Middle Republican NRD Groundwater	54,640
Upper Republican NRD Groundwater	73,980
Tri-Basin NRD Groundwater	12,753
Other NRD Groundwater	2,783

Surface Water Municipal and Industrial CBCU

During the reporting year, there were no new permitted municipal uses of surface water in the Republican River Basin. DWEE issued two industrial permits; each permit was for less than 10 acre-feet. According to DWEE records, neither permit was used during 2024. For more information on surface water permitting, visit DWEE's Surface Water Permitting and Data website at: *https://dnr.nebraska.gov/surface-water*.

Annual Groundwater Use for Irrigation

Annual groundwater use for irrigation in the Republican Basin NRDs, for 2024, is summarized in. This summary includes (1) the total number of certified acres within the district (for purposes of this report, certified acres are those on which the NRD allows irrigation with groundwater); (2) the total number of effective acres within the district (for the purposes of this report, effective acres are acres where groundwater irrigation was possible (i.e., certified acres minus acres enrolled in a conservation program prohibiting irrigation); (3) the total volume of groundwater pumped for irrigation within the district; and (4) the average depth of water applied for irrigation on effective acres within the district.

Table 4. Annual groundwater use for irrigation in the Republican River Basin NRDs, 2024. The difference between certified and effective acres is described in the body of the report.

NRD	Certified Acres	Effective Acres	Volume Pumped (acre-feet)	Average Depth (inches/effective acre)
URNRD	429,868	429,868	431,788	12.06
MRNRD	298,110.85	285,620.25	205,884.60	8.65
LRNRD	319,043.97	309,671.28	181,373.19	7.03
TBNRD	189,951.15	188,325.15	121,731.14	8.27

Management Actions

Current Groundwater Allocations

The following section includes Republican River Basin NRD allocations and related rules for allocation periods including 2024. In this context, an allocation is a regulatory measure that stipulates the amount of water available to be used for irrigation.

Current Allocations and Related Rules for Upper Republican NRD

Table 5. Summary of current allocation for groundwater irrigation use in Upper Republican NRD, 2023–2027 allocation period.

Total Allocation	62.5 Inches/Acre/5 Years
Annual or Base Allocation	Allocation is over 5 Years
Maximum Annual Use	62.5 Inches/Acre
Carry over amount that can be used in the following allocation period	7.5 Inches/Acre (Max)
Hard Cap	None
Pooling allowed?	Yes
How are the allocations affected by surface water use?	Allocations are not affected by surface water use. Irrigators may use their full groundwater allocation, regardless of any surface water use.
Special allocations for designated groundwater management areas? Or subbasins?	None
Rapid Response Area Allocations?	Rapid Response Area allocations will not be needed unless augmentation projects are insufficient to meet Republican River Compact obligations. Rapid Response Area allocations would depend upon projected Compact shortfalls.
Penalty for exceeding allocation	For every inch of excess use, 2 inches of allocation lost for next allocation period.
Penalty for exceeding carry over	2 inches carry-over deducted for every inch of carry-over used above 7.5 inches

Current Allocations and Related Rules for Middle Republican NRD

Table 6. Summary of current allocation for groundwater irrigation use in Middle Republican NRD, 2023–2027 allocation period.

Total Allocation	60 Inches/Acre/5 Years
Annual or Base Allocation	12 Inches/Acre/Year
Maximum Annual Use	60 Inches/Acre (15 Inches/Acre in a Compact Call Year)
Carry over amount that can be used in the following allocation period	12 Inches/Acre (Max)
Hard Cap	15 Inches/Acre/Year
Pooling allowed?	Yes
How are the allocations affected by surface water use?	Allocations are not affected by surface water use. Irrigators may use their full groundwater allocation, regardless of any surface water use.
Special allocations for designated groundwater management areas? Or subbasins?	None
Rapid Response Area Allocations?	None
Allocation adjustment based on overuse	See explanation below*

***Middle Republican NRD Penalty for exceeding allocation:**

1.1 Allocation adjustments based on overuse, irrigation and acres

1.1.1 If an Owner or Operator has exceeded the Owner or Operator's base Groundwater Allocation, the Groundwater Allocation for the next Groundwater Allocation period shall be reduced by the number of acre inches, by which said Groundwater Allocation was exceeded in the prior period. Plus, an adjustment of one (1) inch for every inch over the first three (3) inches and two (2) inches or every inch over three (3) inches of overuse will be applied. These allocation adjustments will be on top of what the producer has already used.

1.1.2 Overuse of the adjusted base allocation during a Compact Call Year shall result in a reduction of two (2) inches for every inch over the first three (3) inches and three (3) inches for every inch over three (3) inches of overuse will be applied. This adjustment will result in a correction to the remaining Groundwater Allocation following the Compact Call Year. This adjustment shall be in addition to the adjustments made by Rule 1.9.1 if the Compact Call Year is the last year of a Groundwater Allocation Period. These allocation adjustments will be on top of what the producer has already used.

Current Allocations and Related Rules for Lower Republican NRD

Table 7. Summary of current allocations for groundwater irrigation use in Lower Republican NRD, 2023–2027 allocation period.

Total Allocation	45 Inches/Acre/5 Years
Annual or Base Allocation	9 Inches/Acre/Year
Maximum Annual Use	45 Inches/Acre (13 Inches/Acre in a Compact Call Year)
Carry over amount that can be used in the following allocation period	9 Inches/Acre (Max)
Hard Cap	13 Inches/Acre/Year (in a Compact Call Year)
Pooling allowed?	Yes
How are the allocations affected by surface water use?	Allocations are not affected by surface water use. Irrigators may use their full groundwater allocation, regardless of any surface water use.
Special allocations for designated groundwater management areas? Or subbasins?	None
Rapid Response Area Allocations?	See explanation below**
Penalty for exceeding allocation	See penalty explanation below***
Penalty for exceeding carry over	See penalty explanation below***

****Lower Republican NRD Rapid Response Area Allocations:**

During Non-Compact Call years, the Rapid Response Area has the same Allocation as the rest of the District. During a Compact Call Year, the Allocation shall be set at the maximum allowable that would not cause the District's depletions to streamflow to exceed the District's allowable Ground Water depletions after taking into consideration other actions and controls that the District would implement. As set forth in the IMP, DWEE will perform all calculations relating to the District's forecasted allowable Ground Water depletions, forecasted depletions, and potential yield from implementing actions and controls.

*****Lower Republican NRD Rule 3-2 Penalties:**

3-2.1. Unless otherwise provided, imposition of penalties shall be at the discretion of the Board and may include, but are not limited to:

(a) A reduction (in whole or in part) of a Person's Allocation of Ground Water;

(b) A reduction (in whole or in part) of a Person's Certified Irrigated Acres; and

(c) Decommissioning of Water Wells.

3-2.2. Where penalties are enumerated in the Rules and Regulations, the Board may impose additional penalties, up to and including a permanent forfeiture of Certified Irrigated Acres, and/or a permanent forfeiture of all future Allocations, under the following circumstances: (1) previous violations of any Rule or Regulation, (2) multiple violations of these Rules and Regulations, (3) engaging in willful and wanton misconduct, or (4) certification by the record owner to the District of the non-irrigation status of certain Certified Irrigated Acres in order to opt-out of an Occupation Tax levied by the District, which status is later found to be false in whole or in part.

3-2.3. Any Person who violates a cease and desist order issued by the District pursuant to *Neb. Rev. Stat.* § 46-707(h) may be subject to a civil penalty assessed pursuant to *Neb. Rev. Stat.* § 46-745.

Current Allocations and Related Rules for Tri-Basin NRD

Table 8. Summary of current allocations for groundwater irrigation use in the Tri-Basin NRD, 2023-2025 allocation period.

Total Allocation	27 Inches/Acre/3 Years
Annual or Base Allocation	9 Inches/Acre/Year
Maximum Annual Use	27 Inches/Acre
Carry over amount that can be used in the following allocation period	9 Inches/Acre (Max)
Hard Cap	None
Pooling allowed?	Yes
How are the allocations affected by surface water use?	Allocations are not affected by surface water use. Irrigators may use their full groundwater allocation, regardless of any surface water use.
Special allocations for designated groundwater management areas? Or subbasins?	Allocation only required in Phase 3 groundwater quantity management areas. Current Phase 3 area is Township 5 North, Range 22 West (Union Twp.) in Gosper County.
Rapid Response Area Allocations?	None
Penalty for exceeding allocation	1.5 times the overuse amount
Penalty for exceeding carry over	1.5 times the overuse amount

Curtailment of Groundwater Pumping for Compact Compliance

Under the Integrated Management Plans (IMPs) jointly developed by Upper, Middle, and Lower Republican NRDs and DWEE, curtailment of groundwater pumping in areas called "Rapid Response Areas" may be required by the NRDs if necessary for compliance with Nebraska's obligations under the Compact. Table 9 summarizes curtailment of groundwater pumping for Compact Compliance for 2024. Tri-Basin NRD does not have a Rapid Response Area.

Table 9. Curtailment of Groundwater Pumping for Compact Compliance in 2024 by UR, MR, and LRNRDs

NRD	Curtailment of Groundwater Pumping for Compact Compliance in 2024
URNRD	No curtailment of groundwater pumping for compliance occurred
MRNRD	No curtailment of groundwater pumping for compliance occurred
LRNRD	No curtailment of groundwater pumping for compliance occurred

Conservation and Irrigation Decertification Programs

Basin NRDs and DWEE have made significant investments in the Basin by funding and implementing voluntary projects that work to accomplish the goals and objectives of the Republican Basin-Wide plan and each NRD's IMP. These projects are funded through cost-share agreements utilizing the basin NRDs' local funds and the State of Nebraska's Water Resource Cash Fund (WRCF) administered by DWEE. Whenever possible, basin NRDs and DWEE leverage their local and state match with Federal funding through programs such as the United States Bureau of Reclamation (USBR) WaterSMART grants. Project details and progress made during 2024 are reported throughout this report.

All Basin NRDs participate in voluntary programs which recruit landowners to temporarily or permanently decertify irrigated acres to reduce surface and groundwater pumping in the basin. These efforts are funded by the Conservation Reserve Enhancement Program (CREP), Environmental Quality Incentives Program (EQIP), and cost share agreements between the NRD funds and DWEEs WRCF. Table 10 summarizes the number of acres enrolled in CREP, EQIP, TBNRD's WCIP and LRNRD's in-house programs in 2024.

Tri-Basin NRD's Water Conservation Incentive Program (WCIP), jointly funded by WRCF, is intended to address two natural resources management issues: ensuring sustainability of groundwater supplies and protecting streamflows from diminishment due to groundwater pumping through water conservation efforts. The goal of this voluntary program is to reduce groundwater pumping and increase irrigation water use efficiency in the district. For more information on the WCIP program, visit the program page on Tri-Basin's website.

Table 10. Acres within Upper Republican, Middle Republican, Lower Republican, and Tri-Basin NRDs that will no longer be irrigated due to enrollment in a permanent or temporary decertification program. During 2024, decertification programs in effect in the basin included CREP, EQIP NRD decertification programs partially funded by WRCF, and the WCIP (in TBNRD only). *CREP data are as of September 30, 2024.

NRD	Acres Enrolled in CREP*	Acres Enrolled in EQIP Other Decertification Programs	Acres Enrolled in WCIP (TBNRD only)
URNRD	8,248	N/A	N/A
MRNRD	14,087	N/A	N/A
LRNRD	6,565	3,721.43	N/A
TBNRD	1,626	N/A	472.89

URNRD and MRNRD engage participating landowners in the voluntary permanent decertification of their irrigated acres for the purpose of long-term reduction in groundwater and surface water pumping for irrigation. These efforts are jointly funded by cost share agreements between basin NRDs and DWEE through the WRCF. The number of acres Upper Republican and Middle Republican NRDs enrolled in decertification programs since 2019 and in 2024 are summarized in Table 11.

Table 11. Acres within Upper Republican and Middle Republican NRDs enrolled in voluntary permanent decertification programs at least partially funded by the Nebraska Water Resources Conservation Fund (WRCF). In the Upper Republican NRD, some acres are also enrolled in CREP and will be permanently decertified when the associated CREP contract expires.

URNRD	Groundwater Acres	Surface Water Acres	Comingled Acres
Total Decertified (2024)	0	0	0
Total Decertified (2019-2024)	3378	0	70.9
MRNRD	Groundwater Acres	Surface Water Acres	Comingled Acres
Total Decertified (2024)	0	20.8	60
Total Decertified (2019-2024)	524	124.5	60

Surface Water Administration for Compact Compliance

Under the IMPs jointly developed by DWEE and Upper Republican, Middle Republican, and Lower Republican NRDs, DWEE may administer and regulate surface water, if necessary, to ensure compliance with Nebraska's obligations under the Compact during Compact Call Years. Compact Call Years are years in which DWEE's analysis following the forecast procedures contained in the IMPs for Upper Republican, Middle Republican, and Lower Republican NRDs indicate the potential for noncompliance with the Compact if sufficient management actions are not taken. While 2024 was a Compact Call Year, no water administration for Compact compliance occurred in 2024.

A summary of the collaboration between basin NRDs and Irrigation Districts, DWEE, and USBR to carry out voluntary management actions in 2024, to ensure Compact compliance and reduce the need for additional reductions in use, can be found under Objective 2.2.1 on page 42.

Surface water is also administered under the Water-Short Year provisions of the Final Settlement Stipulation (FSS) for the Compact. This type of water administration is triggered automatically under the terms of the FSS: whenever the projected or actual irrigation supply available in Harlan County Lake is less than 130,000 acre-feet and water is needed for direct diversion at Guide Rock, Nebraska must close appropriations downstream of Harlan County Lake that are junior to February 26, 1948. Because this type of water administration is triggered automatically, it is not considered a management action for the purposes of evaluating the basin-wide plan's MHO E.

Qualitative Evaluation of Net Effect of Management Actions for Compact Compliance

Basin NRDs and DWEE annually engage in actions that have positive effects on water supplies in the basin by reducing consumptive use of water, which assists the State in maintaining Compact compliance in future years. These actions include voluntary temporary or permanent irrigation decertification and water conservation programs (Table 10 and Table 11), and basin NRD allocations on groundwater usage located in the "Current Groundwater Allocations" portion of this section.

As described in the previous subsection, "Surface Water Administration for Compact Compliance," and in Table 9, neither surface water administration for the purpose of reducing surface water use nor curtailment of groundwater pumping for Compact compliance was not required, and therefore did not occur, in 2024.

Additionally, the progress summary for Action Item 1.1.2 (page 35) reported no management actions were necessary as offsets in 2024.

Augmentation Pumping

This section contains a summary of pumping data for the augmentation projects in the basin.

DWEE annually evaluates the net impacts of augmentation pumping for the Nebraska Cooperative Republican Platte Enhancement project (N-CORPE) and Rock Creek Augmentation projects, to fulfill a requirement of the IMPs jointly developed by DWEE and Upper Republican, Middle Republican, and Lower Republican NRDs. The IMPs state that "…(DWEE) will annually evaluate whether offsets are necessary to mitigate new net depletions resulting from augmentation pumping or other management actions." The most recent analysis is available in the report *Net Impacts Analysis for the Republican River Basin* (November 20, 2025), which is available on DWEE's website (*https://dwee.nebraska.gov/*), determined no offsets were necessary in 2024 as there were no new net depletions due to augmentation pumping or management actions.

N-CORPE and Rock Creek Augmentation Projects

Figure 8. The South Discharge Pipeline of NCORPE on Medicine Creek; courtesy of N-CORPE

The N-CORPE Augmentation Project is operated through an interlocal cooperative agreement formed in 2012 by Upper Republican NRD, Middle Republican NRD, Lower Republican NRD, and Twin Platte NRD. The Rock Creek augmentation project is operated by Upper Republican NRD. A summary of N-CORPE and Rock Creek pumping for 2024 is provided in Table 12. No augmentation pumping for Compact compliance occurred in 2024. The pumping that did occur in 2024 was due to maintenance pumping and Twin Platte NRD N-CORPE augmentation pumping for the Upper Platte River Basin.

Table 12. Summary of N-CORPE and Rock Creek Augmentation Project pumping in 2024. The "Days Pumped for Compact Compliance" column indicates the number of days the project was pumped to augment streamflow for Republican River Compact compliance purposes. The "Tot al Pumped Volume" column provides the volume of water pumped in that year for all other purposes, including augmentation for the Upper Platte Basin and maintenance pumping.

Augmentation Project	Days Pumped for RRCA Compact Compliance in 2024	Volume Pumped for RRCA Compact Compliance in 2024 (acre-feet)	Total Pumped Volume in 2024 (acre-feet)
N-CORPE	0	0	2869.98
Rock Creek	0	0	60.12

Turkey Creek Augmentation Well

The Turkey Creek augmentation well is operated by Tri-Basin NRD as part of the NRD's Republican Basin Streamflow Augmentation Project. Since construction was completed in 2016, this well has not been operated for augmentation purposes.

Figure 9. Headwaters of Turkey Creek, Gosper County; courtesy of Tri-Basin NRD.

Progress toward Goals, Objectives, and Action Items

Progress toward the basin-wide plan's goals, objectives, and action items is described below, in two subsections. The "Management Activities" subsection summarizes progress toward the plan's goals, objectives, and action items. The "Assessment of Measurable Hydrologic Objectives (MHOs)" subsection contains the results of the MHO assessments used to evaluate overall plan progress.Management Activities

Under *Neb. Rev. Stat.* § 46-755 (4), the basin-wide plan was required to include a timeline of up to 30 years after April 17, 2014, to meet the plan's goals and objectives. The basin-wide plan took effect on March 1, 2019. This section summarizes progress toward the basin-wide plan's goals, objectives, and action items during the 2024 calendar year, first as a visual snapshot of overall plan progress (beginning on page 28) followed by summaries describing progress on individual action items (beginning on page 35).

Two icons are displayed beside each action item in both the visual progress snapshot and the progress summaries. One symbol indicates when the action item is to be completed, according to the implementation schedule in the basin-wide plan. The other symbol indicates progress made on that action item during 2024. Figure 10 is a key describing the meanings of the symbols used throughout the "Management Activities" section.

Republican River Basin-Wide Plan Progress Summary Key

Symbols indicating when action item is to be completed, per plan schedule

When Appropriate	Annually	Annually When Appropriate	By This Year	Every Five Years
				
To be completed when beneficial, feasible, and economically viable; at DWEE and NRDs' discretion	To be completed every year	To be completed in every year that the triggering circumstances described in the plan occur	To be completed by a certain year; likely can be "completed indefinitely"	To be completed every five years, either corresponding with the five-year analysis or in the following year, as specified in the basin-wide plan

Symbols indicating progress during report year

Completed Indefinitely	Completed	Ongoing Progress	Not Completed	Not Achieved	Not Applicable This Year
					N/A
Task is complete, no further work expected	Recurring task completed during report year	Work on this action item is ongoing, generally progressing	Not completed as planned during report year	Not achieved during report year	Did not need to be completed during report year

Figure 10. Key to symbols used throughout the "Management Activities" section. The report year for this report is 2024.

Progress Snapshot

This section contains a snapshot of overall progress on the basin-wide plan's goals and objectives. Visual summaries of progress on each goal can be found in the following locations:

- Goal 1 visual summary: Table 13, beginning on page 28;
- Goal 2 visual summary: Table 14, beginning on page 30;
- Goal 3 visual summary: Table 15, beginning on page 33; and
- Goal 4 visual summary: Table 16, beginning on page 34.

Each of these four tables spans multiple pages.

Table 13. Visual summary of progress on Goal 1 during 2024. The "Time-Frame" column indicates the expected timeframe for each action item, as indicated in the basin-wide plan. The "Action Taken" column refers to whether the action item was worked on in 2024, and the "Progress" column contains more information about progress during 2024. For details about the progress on each action item, see the page number indicated in the rightmost column.

Action Item	Description	Time Frame	Action Taken	Progress	Page
Goal 1	**Maintain Nebraska's compliance with the Republican River Compact and applicable laws**				
Obj. 1.1	**Coordinate basin-wide management actions with Compact compliance efforts and adherence to state laws**				
1.1.1	*Review each basin-wide plan management action prior to implementation to ensure it does not negatively impact efforts to achieve Compact compliance in the most efficient and cost-effective way practicable while adhering to state laws.*		Yes		35
1.1.2	*Implement appropriate offsets for any basin-wide plan action that would exceed Nebraska's allocation under the Compact*		No	**N/A**	35
Obj. 1.2	**Understand effects of management actions for compact compliance on water supplies for State's water users**				
1.2.1	*Qualitatively evaluate the net effect on water supplies of any management actions that are taken for Compact compliance*		Yes		36
Obj. 1.3	**Assess progress toward meeting the goals and objectives of the Plan, and share the results of this assessment with the Public and the Nebraska Legislature**				
1.3.1	*Within five years after the adoption of this Plan, and every five years thereafter, conduct a technical analysis of the actions taken to determine the progress toward meeting the goals and objectives of the Plan*		No	**N/A**	36

Symbol Legend – See Figure 10 on page 27

Action Item	Description	Time Frame	Action Taken	Progress	Page
1.3.2	*Evaluate progress toward each of the Plan's measurable hydrologic objectives at the intermediate dates specified in the Plan for each one.*				
MHO A:	*Maintain each NRD's net groundwater depletions to streamflow within its portion of Nebraska's allowable groundwater depletions to streamflow. A summary MHOA evaluation and explanation of Nebraska's continued compliance with the Compact can be found on page 60.*	ANNUAL	Yes		37
MHO B:	*Limit groundwater depletions to streamflow to a relatively constant level over the long-term both across the basin as a whole and within each NRD*	5	No	**N/A**	37
MHO C:	*Ensure there is always enough groundwater for all groundwater uses within the timeframe of this plan, either by stabilizing groundwater levels or managing declining groundwater levels*	5	No	**N/A**	37
MHO D:	*Continue existing and initiate new actions that reduce the need for special regulations in the Rapid Response Area for Compact compliance*	ANNUAL	Yes		38
MHO E:	*Continue existing and initiate new actions that reduce the need for administration of surface water use for Compact compliance*	ANNUAL	Yes		38
1.3.3	*Following each five-year technical analysis (Action Item 1.3.1), share the results of the analysis and any recommended Plan modifications with the public*	5	No	**N/A**	38
1.3.4	*Following each five-year technical analysis (Action Item 1.3.1) and any resulting modifications to the Plan, submit a report to the Legislature of the results of the analysis and progress made under the Plan*	5	Yes		38

Symbol Legend – See Figure 10 on page 27

Table 14. Visual summary of progress on Goal 2 during 2024. The "Time-Frame" column indicates the expected timeframe for each action item, as indicated in the basin-wide plan. The "Action Taken" column refers to whether the action item was worked on in 2024, and the "Progress" column contains more information about progress during 2024. For details about the progress on each action item, see the page number indicated in the rightmost column.

Action Item	Description	Time Frame	Action Taken	Progress	Page
Goal 2	**Maximize Nebraska's efficient and beneficial consumptive use of its water, increase certainty for long-range planning of water supplies to reduce the need for regulatory actions, and increase collaborative efforts among water management entities and stakeholders across the Basin**				
Obj. 2.1	**Understand potential impacts of actions and establish standard procedure for projects**				
2.1.1	*For each planned new water management project in the Plan, evaluate hydrologic and regulatory feasibility and potential economic and environmental impacts*		Yes		43
2.1.2	*For each project evaluated in accordance with Action Item 2.1.1 in a given year, include a summary of the evaluation in the annual report of that year's activities*		Yes		43
2.1.3	*For projects that are feasible and beneficial, apply for necessary permits, establish new or utilize existing infrastructure, then begin operations*		Yes		42
Obj. 2.2	**Improve the efficiency of use, availability, and reliability of water supplies for current irrigators**				
2.2.1	*Work with irrigation districts and individual groundwater and surface water irrigators to improve the efficiency of the Basin's surface water delivery systems and irrigation water use, when it is both feasible and beneficial to Nebraska's Compact accounting balance*		Yes		42
2.2.2	*Participate in projects to improve the reliability, availability, and sustainability of water supplies in the Basin, which may include but are not limited to* • *Voluntary reduction of irrigated acres (temporary or permanent)* • *Interbasin transfers* • *Conjunctive management projects such as aquifer recharge or streamflow augmentation*		Yes		44
Obj. 2.3	**Provide opportunities for collaboration among Basin's water users**				
2.3.1	*Hold an annual public meeting to discuss Plan implementation and exchange information about the Basin*		Yes		46

Symbol Legend – See Figure 10 on page 27

Action Item	Description	Time Frame	Action Taken	Progress	Page
2.3.2	*Work cooperatively to investigate and address conflicts between water users resulting from implementation of this Plan by following the procedures for addressing conflicts that are outlined in this Plan*		No	**N/A**	46
Obj. 2.4	**Promote conservation programs available to the water users in the Basin**				
2.4.1	*Work together to identify, investigate, and discuss existing and potential new water conservation programs*		Yes		46
2.4.2	*Collaborate to promote conservation program opportunities to the Basin's water users*		Yes		46
Obj. 2.5	**Understand how management activities of independent decision-makers affect water supplies**				
2.5.1	*Study the effects of conservation practices on streamflow, if feasible*		Yes		47
2.5.2	*As part of each five-year technical analysis, analyze the future impacts to streamflow of past pumping to determine the lag time of these residual impacts*		No	**N/A**	47
2.5.3	*Examine and attempt to estimate the quantity of all inputs and outputs affecting the water supply balance in a small watershed, and consider using the results of this pilot study to create water use and land use guidelines for producers and other land managers, incentivize participation in recommended practices, and determine the value of completing similar studies across the Basin*		Yes		48
Obj. 2.6	**Evaluate the feasibility and potential outcomes of establishing water markets in the Basin**				
2.6.1	*Cooperate in determining the feasibility of water markets in the Basin*		No		49
2.6.2	*Following the water markets feasibility analysis (Action Item 2.6.1), test conclusions through implementation of a water market program in a pilot area, if feasible*		No		49
Obj. 2.7	**Support the NRDs in management of allocations for irrigation purposes and surface water irrigation districts in management of the allotment of their water supply**				
2.7.1	*Periodically evaluate, as part of each five-year technical analysis, the impact of the groundwater allocation and surface water allotment systems as a whole*		No	**N/A**	50

Symbol Legend – See Figure 10 on page 27

Action Item	Description	Time Frame	Action Taken	Progress	Page
2.7.2	*As needed, based on the evaluation described in Action Item 2.7.1, recommend changes or improvements to the groundwater allocation and/or surface water allotment systems*	5	No	**N/A**	51
Obj. 2.8	**Conserve water for future use during a drought**				
2.8.1	*Organize and participate in a Basin-wide drought planning exercise*	'23	No	★	51
2.8.2	*Following the drought planning exercise (Action Item 2.8.1) evaluate whether to recommend any changes to the IMPs or this Plan related to conservation of water for future use during a drought*	'24	No	★	52

Symbol Legend – See Figure 10 on page 27

Table 15. Visual summary of progress on Goal 3 during 2024. The "Time-Frame" column indicates the expected timeframe for each action item, as indicated in the basin-wide plan. The "Action Taken" column refers to whether the action item was worked on in 2024, and the "Progress" column contains more information about progress during 2024. For details about the progress on each action item, see the page number indicated in the rightmost column.

Action Item	Description	Time Frame	Action Taken	Progress	Page
Goal 3	**Positive public relations, including information sharing, within and outside the Basin**				
Obj. 3.1	**Improve information sharing with decision-makers and public about solutions within the Basin**				
3.1.1	*Use existing resources to share information about Basin progress and activities with outside entities*		Yes		52
3.1.2	*Educate civic leaders and the public on implementation efforts within the Basin*		Yes		52
3.1.3	*Educate civic leaders and the public about the policies and institutional infrastructure that contribute to the development and implementation of solutions*		Yes		54
3.1.4	*Propose and support changes to laws, policies, and rules that would incentivize reduced water consumption*		No	**N/A**	54
Obj. 3.2	**Improve information sharing with water users who are reliant on the Basin's water supplies**				
3.2.1	*Share data and information related to the Republican River Compact with the public in an easily accessible, user-friendly format*		Yes		55
3.2.2	*Annually prepare and exchange reports containing data and information about water supplies and uses in the Basin, and make these reports publicly known*		Yes		55
3.2.3	*Regularly communicate with the Plan's former Stakeholder Advisory Committee about implementation progress and potential Plan revisions*		Yes		56
3.2.4	*Encourage and support water users to share information about their management practice improvements with other water users and the public*		Yes		56

Symbol Legend – See Figure 10 on page 27

Table 16. Visual summary of progress on Goal 4 during 2024. The "Time-Frame" column indicates the expected timeframe for each action item, as indicated in the basin-wide plan. The "Action Taken" column refers to whether the action item was worked on in 2024, and the "Progress" column contains more information about progress during 2024. For details about the progress on each action item, see the page number indicated in the rightmost column.

Action Item	Description	Time Frame	Action Taken	Progress	Page
Goal 4	**When possible, pursue projects that not only benefit water supplies and uses, but also create benefits for fish, wildlife, recreation and conveyance within the Republican River Basin**				
Obj. 4.1	**Protect and enhance fish and wildlife habitat and recreational opportunities**				
4.1.1	*Partner with wildlife-focused organizations on projects that benefit the organizations' habitat and wildlife interests while also helping to fulfill other goals of the Plan*		Yes		58
4.1.2	*Promote public recreation on the river, when doing so can also help to fulfill other goals of the Plan*		Yes		58
4.1.3	*Cooperate in projects to assess and restore riparian wetlands while also helping to fulfill other goals of the Plan*		Yes		58
Obj. 4.2	**Where feasible and beneficial, reduce the effects of undesirable vegetation on water conveyance**				
4.2.1	*Cooperate in removing undesirable vegetation impacting water conveyance and managing reinfestation*		Yes		59

Symbol Legend – See Figure 10 on page 27

Progress Summaries

This section contains descriptions summarizing 2024 progress on each action item. For actions marked as not applicable ("N/A") the summaries include explanations of why progress did not need to be taken on those action items in 2024. For a copy of any reference materials mentioned in these summaries, please contact DWEE or one of the Republican Basin NRDs.

Goal 1	**Maintain Nebraska's compliance with the Republican River Compact and applicable laws**
Obj. 1.1	**Coordinate basin-wide plan management actions with Nebraska's Compact compliance efforts and adherence to applicable state laws**

1.1.1 *Review each basin-wide plan management action prior to implementation to ensure it does not negatively impact efforts to achieve Compact compliance in the most efficient and cost-effective way practicable while adhering to state laws.*

In 2024, all basin-wide plan management actions were reviewed in accordance with Action Item 1.1.1. Basin NRDs and DWEE do not expect any 2024 basin-wide plan management actions to negatively impact efforts to achieve Compact compliance in the most efficient and cost-effective way under state law.

Based on our review of the potential future basin-wide plan management actions outlined in the basin-wide plan, we do not expect any will negatively impact Compact compliance efforts or adherence to state laws. As new management actions are proposed, we will thoroughly analyze them at that time.

1.1.2 *Implement appropriate offsets for any basin-wide plan action that would exceed Nebraska's allocation under the Compact*

N/A

For this action item, the basin-wide plan defines offsets as actions that either reduce water use or increase water supply for the purpose of staying within Nebraska's Compact allocation. Nebraska complied with the Compact in 2024 without the need for any offsets by DWEE or basin NRDs. Because no offsets were necessary, this action item is not applicable for 2024.

In years when offsets are required, the volume of water that each NRD needs to make up through management actions is determined through procedures described in the *Monitoring & Studies Technical Memorandum for the URNRD, MRNRD, and LRNRD IMPs (effective 9/27/2021)*, which is available on DWEE's website (*https://dwee.nebraska.gov/*). The IMPs for Upper Republican, Middle Republican, and Lower Republican NRDs require each district's computed beneficial consumptive water use to remain within its share of Nebraska's Compact allocation. The IMP for the Republican Basin portions of Tri-Basin NRD states that the district will incrementally achieve and sustain a hydrologically balanced condition so that, in combination with imported water contributions from the Platte Basin, streamflow augmentation, and other management actions, Tri-Basin NRD

Symbol Legend – See Figure 10 on page 27

water users will not cause a net depletion to streamflow. Through implementation of the IMPs, DWEE and basin NRDs will take any necessary offsetting actions to ensure that Nebraska remains in compliance with the Compact.

Obj. 1.2 Understand the effects of management actions for Compact compliance on water supplies for Nebraska's water users

1.2.1 *Qualitatively evaluate the net effect on water supplies of any management actions that are taken for Compact compliance*

The current year's qualitative evaluation of the net effect of 2024 management actions for Compact compliance on water supplies can be found in the "Qualitative Evaluation of Net Effect of Management Actions for Compact Compliance" section of his report.

All basin NRDs participate in and annually report progress of their efforts to positively affect basin water supplies, including the temporary and permanent irrigation decertification and water conservation programs and allocations on groundwater usage summarized in the "Management Actions" section of this report. Actions taken during full water supply have a residual effect during subsequent years. For example, crop-rotation along with no-till farming maintains moisture in the ground and reduces evaporation.

Neither NCORPE nor Rock Creek Augmentation Project were used for Compact compliance in 2024. This nonuse reduces or eliminates future offsets that may be required for streamflow depletions caused by project pumping that exceeded historical irrigation pumping on the project property.

Upon evaluation of the net effect on water supplies for management actions that have been taken for Compact compliance, the Basin NRDs and DWEE believe the actions taken have been effective and helped keep the state of Nebraska in compliance.

Obj. 1.3 Assess progress toward meeting the goals and objectives of the Plan, and share the results of this assessment with the Public and the Nebraska Legislature

1.3.1 *Within five years after the adoption of this Plan, and every five years thereafter, conduct a technical analysis of the actions taken to determine the progress toward meeting the goals and objectives of the Plan*

N/A

DWEE and basin NRDs completed the first five-year technical analysis in 2023. Results of this analysis were presented at the fifth annual meeting to review progress on the basin-wide plan, which took place in November 2023. The report was submitted to the legislature on February 29, 2024, and is available for download on the basin-wide plan website, *https://rrbwp.nebraska.gov .*

Symbol Legend – See Figure 10 on page 27

1.3.2 *Evaluate progress toward each of the Plan's measurable hydrologic objectives at the intermediate dates specified in the Plan for each one.*

MHO A: *Maintain each NRD's net groundwater depletions to streamflow within its portion of Nebraska's allowable groundwater depletions to streamflow.*

A summary of the current year's (2024) MHO A evaluation and explanation of Nebraska's continued compliance with the Compact can be found can be found under "MHO A Evaluation" on page 60.

MHO B: *Limit groundwater depletions to streamflow to a relatively constant level over the long-term both across the basin as a whole and within each NRD*

N/A

An assessment of MHO B was completed in 2023 as a subset of the five-year technical analysis, and the results were presented at the fifth annual meeting to review progress on the basin-wide plan, which took place in November 2023. The analysis methods and results can be found in the *First Five-Year Technical Analysis for the Republican River Basin-Wide Plan: Results and Plan Progress Updates, 2019-2022* report which was submitted to the legislature on February 29, 2024, and is available for download on the basin-wide plan website, *https://rrbwp.nebraska.gov* . The next five-year technical analysis will be completed in 2028.

MHO C: *Ensure there is always enough groundwater for all groundwater uses within the timeframe of this plan, either by stabilizing groundwater levels or managing declining groundwater levels*

N/A

The first screening phase of the MHO C analysis (Phase I) was completed in 2023 as a subset of the five-year technical analysis, and the results were presented at the fifth annual meeting to review progress on the basin-wide plan, which took place in November 2023. The analysis methods and results can be found in the *First Five-Year Technical Analysis for the Republican River Basin-Wide Plan: Results and Plan Progress Updates, 2019-2022* report which was submitted to the legislature on February 29, 2024, and is available for download on the basin-wide plan website, *https://rrbwp.nebraska.gov.*

In Phase I, spring groundwater levels of basin wells were statistically analyzed using the Mann-Kendall Trend Test to identify any areas containing wells with groundwater levels declining at such a rate that there will not be enough groundwater available for all groundwater uses within the timeframe of the Plan. Wells identified in Phase I as having a decreasing trend in average spring groundwater levels will be further analyzed in Phase II and III to determine if the NRDs will need to implement additional management actions. As described in the Plan, Phase II and III will be conducted in upcoming years.

The next five-year technical analysis will be completed in 2028.

Symbol Legend – See Figure 10 on page 27

MHO D: *Continue existing and initiate new actions that reduce the need for special regulations in the Rapid Response Area for Compact compliance*

MHO D assesses whether groundwater pumping within the Rapid Response Area of Upper Republican, Middle Republican, or Lower Republican NRD was curtailed to ensure Compact compliance during the previous year. There is no Rapid Response Area designated within Tri-Basin NRD.

The current year's evaluation of MHO D can be found under "MHO D Evaluation" on page 64 of this report.

Basin NRDs and DWEE have undertaken many projects that reduce the potential future need for special regulations in the Rapid Response Area for Compact compliance. Examples of new and existing projects can be found in this report, within the summaries of progress on other plan action items.

MHO E: *Continue existing and initiate new actions that reduce the need for administration of surface water use for Compact compliance*

MHO E assesses whether surface water administration occurred to reduce surface water use during the previous year to ensure Compact compliance. Note that any administration that is automatically triggered under terms of the FSS is not evaluated as part of MHO E.

The current year's evaluation of MHO E can be found under "MHO E Evaluation" on page 65 of this report.

DWEE and basin NRDs have undertaken many projects that reduce the potential future need for surface water administration for Compact compliance. Examples are included in this report, within the summaries of progress on other plan action items.

1.3.3 *Following each five-year technical analysis (Action Item 1.3.1), share the results of the analysis and any recommended Plan modifications with the public*

N/A

The first five-year technical analysis was conducted in 2023. Results of the analysis were shared with the public at the fifth annual meeting to review progress on the basin-wide plan, which took place in November 2023. No modifications to the Plan were proposed by DWEE or basin NRDs after consideration of the analysis results.

1.3.4 *Following each five-year technical analysis (Action Item 1.3.1) and any resulting modifications to the Plan, submit a report to the Legislature of the results of the analysis and progress made under the Plan*

A report entitled *First Five-Year Technical Analysis for the Republican River Basin-Wide Plan: Results and Plan Progress Updates, 2019-2022* which includes descriptions of analysis methods and results was completed in 2023 and submitted to the legislature on February 29, 2024. This report is available for download on the basin-wide plan website, *https://rrbwp.nebraska.gov*.

Symbol Legend – See Figure 10 on page 27

Goal 2	**Maximize Nebraska's efficient and beneficial consumptive use of its water, increase certainty for long-range planning of water supplies to reduce the need for regulatory actions, and increase collaborative efforts among water management entities and stakeholders across the Basin**
Obj. 2.1	**Understand the feasibility and potential impacts of Plan actions and establish a standard procedure for projects**

2.1.1 and 2.1.2

For each planned new water management project in the Plan, evaluate hydrologic and regulatory feasibility and potential economic and environmental impacts

For each project evaluated in accordance with Action Item 2.1.1 in a given year, include a summary of the evaluation in the annual report of that year's activities

Upper Republican NRD utilized a newly developed groundwater model of the URNRD to evaluate hydrologic impacts of proposed water-use relocations. The information was used conjunctively with regulations designed to prevent such transfers from causing an increase in groundwater use. The model was not used for evaluation of any new water projects in the Plan. The groundwater model was used in several instances where landowners proposed relocating irrigation pumping from one field to another. The model estimated short, mid and long-term effects the relocations would have on groundwater availability, both by increased pumping at the new location and elimination of pumping in the old, in all areas of the district where the model indicated impacts would occur.

Lower Republican NRD utilizes a model to evaluate proposed water management projects. The NRD is evaluating proposed locations for potential water storage and streamflow augmentation. Lower Republican NRD received funding through the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Watershed and Flood Prevention Operations Program (WFPO) and hired a consultant to further evaluate the proposed sites for water storage, streamflow augmentation, and other beneficial uses. The WFPO grant for two of the proposed sites will be completed by December 2025.

Symbol Legend – See Figure 10 on page 27

Figure 11.Construction of Flag Creek augmentation project

In 2023, Lower Republican NRD signed a contract with DWEE to develop an augmentation project on Flag Creek (Figure 11). Work on the project started in 2024. A summary of the project and progress on the Flag Creek Augmentation Project is provided in Table 17.

Table 17. LRNRD Flag Creek Augmentation Project summary for 2024

Project Name	Project Description	2024 Progress
LRNRD Flag Creek Augmentation	Develop an augmentation project for LRNRD	Two augmentation wells were installed, and pump and conveyance tests were completed in February 2024. Results and the introduction of a regional submodel were presented to DWEE in September 2024.

All basin NRDs have contracts with DWEE to provide producers with cost-share funding to install remotely monitored groundwater well meters – often referred to as telemetry meters. These telemetry meters allow close to real-time monitoring of water use by both producers and the NRDs. Providing producers with access to their water use in real time can assist them in irrigating more efficiently. The telemetry meters also reduce the NRD's manpower and traveling costs by reducing the need to read meters in person.

Some of the basin NRDs and DWEE to provide producers with cost-share funding for soil moisture sensors. The goal of this practice is to reduce overall water use by providing producers with information on their soil moisture, which allows them to irrigate more efficiently. Funding sources for these projects include NRCS, USBR's WaterSMART grants, NRD funds and WRCF. A summary of the contracts and progress during 2024 for telemetry meters and soil moisture probes is provided in Table 18.

Symbol Legend – See Figure 10 on page 27

Table 18. Telemetry and Soil Moisture Probe Project Summaries for 2024

Telemetry and Soil Moisture Probe Projects		
NRD	**Project Description**	**2024 Progress**
TBNRD Telemetry Meters and Soil Moisture Probe Cost Share	Install telemetry meters and provide cost share for soil moisture probes.	Six telemetry meters were installed, and three soil moisture probe cost share agreements were signed with landowners.
LRNRD Telemetry Meters Phase I	Installed 1,057 telemetry meters throughout the district in areas with high streamflow depletions.	Approximately 525 new flow meters were installed, which puts the district at approximately 50% of project completion.
URNRD Telemetry Meters and Soil Moisture Probe Cost Share	Installed 2,000 telemetry meters throughout the district. The entire district will have telemetry meters upon completion of this project.	102 probes were purchased under the program and are being used on approximately 13,200 acres. 689 automated meters were purchased for installation in late 2024/early 2025.
MRNRD Telemetry and Soil Moisture Cost Share	MRNRD has 2 active WRCF contracts with the DWEE to install telemetry meters. Under the first WRCF contract, the District prioritized installation of telemetry meters in the quick response area and the western portion of the district, where groundwater levels are declining. The District also partnered with NRCS, and received an NRCS WaterSMART grant, to provide landowners cost share for telemetry soil moisture probes. The second WRCF contract expanded the installation of telemetry meters to the rest of the district and continued the soil moisture probe cost share program. The entire district will be covered by telemetry meters upon completion of both contracts.	Under the first contract, MRNRD installed 250 meters, covering approximately 20,000 acres and are expected to provide an annual savings of approximately 2,000 acre-feet of groundwater consumptive use. NRCS has not yet provided updated numbers for how many soil moisture probes were installed in 2024. Under the second contract, approximately 1000 meters were installed with about 25% of those meters also having soil moisture probes installed. The 1,000 meters covered approximately 80,000 acres and are expected to provide an annual savings of 4,000 acre-feet of groundwater consumptive use.

Symbol Legend – See Figure 10 on page 27

2.1.3 *For projects that are feasible and beneficial, apply for necessary permits, establish new or utilize existing infrastructure, then begin operations*

For future projects that are feasible and beneficial, basin NRDs will apply for necessary permits, establish new or utilize existing infrastructure, and then begin operations.

In 2020, Tri-Basin and Lower Republican NRDs resubmitted their application (permit number A-19594) for a water right to divert excess flows from the Platte River for delivery to a diversion that would send water down Turkey Creek, a tributary of the Republican River. DWEE conducted a hearing in May 2024 to take public comment on the water right application submitted by Tri-Basin and Lower Republican NRDs. Evaluation of the permit application by DWEE is ongoing. All ongoing and future projects will be developed in compliance with local, state, and federal permitting requirements.

Lower Republican NRD will apply for all necessary permits, including the National Environmental Policy Act (NEPA)to analyze all relevant project components. when the evaluation process for WFPO projects described under Action Item 2.1.2 is complete and the proposed locations for projects transition to the construction phase. New infrastructure is also part of the planning process.

Obj. 2.2 **Improve the efficiency of use, availability, and reliability of water supplies for current irrigators**

2.2.1 *Work with irrigation districts and individual groundwater and surface water irrigators to improve the efficiency of the Basin's surface water delivery systems and irrigation water use, when it is both feasible and beneficial to Nebraska's Compact accounting balance*

Upper Republican NRD, Middle Republican NRD, Lower Republican NRD, and DWEE each made progress on this action item in 2024.

Prior to the start of the 2024 irrigation season, basin NRDs and irrigation districts, DWEE, and USBR collaborated to carry out voluntary actions to move 5,451 acre-feet of water to the Kansas Bostwick Irrigation District's (KBID) Harlan County Lake (HCL) account. These actions resulted in the compliance tests outlined in Tables 5A – 5E of the RRCA Accounting Procedures not being applied in 2024, ensuring Compact compliance and reduced the need for additional reductions in use,

Middle Republican continued to support Frenchman Cambridge Irrigation District (FCID)on their efficiency efforts. The District also has an ongoing project with the Frenchman Valley Irrigation District (FVID) to conduct recharge through their surface delivery system and, when necessary, uses the water for Compact compliance. MRNRD provided water through these agreements towards the voluntary actions summarized above.

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Lower Republican NRD has an agreement with the Nebraska Bostwick Irrigation District (NBID) that establishes water savings through the placement of automated gates.

Upper Republican NRD incentivized farmers' use of telemetry-enabled soil moisture probes to eliminate unneccesary irrigation applications throughout the district by providing cost share using district and state funds. Irrigators who submitted a request were provided up-to-date water usage data and their remaining allocation from telemetry-equipped flow meters (Figure 12) that have been installed in the District. A summary of this project and progress made in 2024 can be found in Table 18.

Figure 12. Two different mounting systems for Upper Republican NRD telemetry project.

In 2021, DWEE signed a contract with NBID to provide matching funds for a large scale WaterSMART Grant from the USBR. As part of the project planning, LRNRD and DWEE provided letters of support for the WaterSMART Grant. When the project is operational, it will save approximately 3,500 to 4,000 acre-feet of water from being released from Harlan County Reservoir per year. A summary of the project details and progress made during 2024 is provided in Table 19.

Table 19. NBID Superior Canal Delivery Efficiency Improvement Project summary for 2024

Project Name	Project Description	2024 Progress
NBID Superior Canal Delivery Efficiency Improvement Project	Adding high efficiency diversions to Superior Canal to enhance storage in Harlan County Lake.	Progress was made on project design and acquiring easements.

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2.2.2 *Participate in projects to improve the reliability, availability, and sustainability of water supplies in the Basin, which may include but are not limited to:*

- *Voluntary reduction of irrigated acres (temporary or permanent)*
- *Interbasin transfers*
- *Conjunctive management projects such as aquifer recharge or streamflow augmentation*

All four basin NRDs participate in CREP, which provides federal funding for the temporary removal of environmentally sensitive land from production. The purpose of the program is to improve water quality and quantity and create or restore wildlife habitat by converting irrigated cropland to non-irrigated habitat. Summaries of acres enrolled in CREP within each NRD can be found in Table 10.

Upper Republican NRD operates three weather and evapotranspiration stations in the district to improve irrigation scheduling and eliminate unnecessary irrigation applications. Daily evapotranspiration rates are estimated using weather data collected at the sites and evapotranspiration rates for all crop types and growth stages of each crop are provided to farmers via the district's website.

Middle and Upper Republican NRDs have voluntary programs to permanently decertify irrigation rights or appropriations on cropland. This program is funded by Middle and Upper Republican NRDs and DWEE. A summary of the projects and progress made during 2024 is provided in Table 11.

Lower Republican and Tri-Basin NRD resubmitted an application to DWEE for an interbasin transfer permit to divert excess flows from the Platte Basin to the Republican Basin as the Platte to Republican Basin High Flow Diversion (PRD) project (permit number A-19594). As filed, it was proposed to always be junior in priority to existing and future Platte River water uses. DWEE conducted a hearing in May 2024 to take public comment on the water right application submitted by Tri-Basin and Lower Republican NRDs. Evaluation of the permit application by DWEE is ongoing. Permitting aspects of this project are described under action item 2.1.3.

Lower Republican NRD has agreements with NBID to use water stored in Harlan County Lake for Compact compliance. The stored water is a result of water savings derived from automated gate installations, which received a million dollars from Lower Republican NRD. In addition, the district has provided support for NBID's Superior Canal project. Details of NBID's Superior Canal project and progress made in 2024 can be found in Table 19.

Upper, Middle, and Lower Republican NRDs continue to support the N-CORPE Augmentation Project.

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Figure 13.Prescribed burn on Platte-Republican Diversion land, April 20, 2020, courtesy of Tri-Basin NRD.

Upper Republican, Middle Republican, and Tri-Basin NRDs were awarded funding through the American Rescue Plan Act (ARPA) for water system efficiency improvements (Table 20).

Additional potential conjunctive management projects the basin NRDs and DWEE were involved in with the basin's irrigation districts are described under action item 2.2.1.

Table 20. Summary of ARPA-funded projects for 2024

Project Name	Project Description	2024 Progress
TBNRD Data Loggers	Install 16 real-time data-transmitting transducers on dedicated observation wells.	Contract was finalized at the end of 2024. Progress will be reported out in 2025.
MRNRD Data Loggers	Install 6 water level transducers on dedicated observation wells.	Contract was finalized at the end of 2024. Progress will be reported out in 2025.
URNRD Data Loggers	Replace continuous groundwater monitoring equipment and supporting software at 15 sites.	Contract was finalized at the end of 2024. Progress will be reported out in 2025.

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Obj. 2.3 Provide opportunities for collaboration among Basin's water users

2.3.1 *Hold an annual public meeting to discuss Plan implementation and exchange information about the Basin*

The first basin-wide plan annual meeting was held in February 2020, which was within the first year of plan implementation.

The second through sixth basin-wide plan annual meetings were held in November of each year (2020-2024), as required by the Republican Basin-Wide Plan and IMPs for Upper Republican, Middle Republican, and Lower Republican NRDs. The main purpose of these meetings is to present to the public progress by basin NRDs and DWEE on Plan implementation in the Basin in the previous year.

2.3.2 *Work cooperatively to investigate and address conflicts between water users resulting from implementation of this Plan by following the procedures for addressing conflicts that are outlined in this Plan*

N/A

Basin NRDs and DWEE intend to work cooperatively to investigate and address conflicts between water users resulting from implementation of the Basin-Wide Plan by following the procedures for addressing conflicts that are outlined in the Plan. In 2024, no conflicts resulting from implementation of the basin-wide plan were brought to the attention of DWEE or basin NRDs to address. Since the Basin-Wide Plans effective date in 2019, no conflicts have been brought to DWEE and basin NRDs to address.

Obj. 2.4 Promote conservation programs available to the water users in the Basin

2.4.1 *Work together to identify, investigate, and discuss existing and potential new water conservation programs*

2.4.2 *Collaborate to promote conservation program opportunities to the Basin's water users*

Basin NRDs and DWEE are open to opportunities to collaborate with neighboring NRDs, state and federal government agencies and constituents on programs and projects that promote and incentivize water conservation. Each basin NRDs is actively involved in CREP (Table 10). Additionally, basin NRDs participate in the Southwest Weed Management District (SWMD), and Lower Republican NRD is an active member of Twin Valley Weed Management Area (TVWMA). SWMD and TVWMA have removed invasive species in stream corridors that consume water and impede stream flow.

Upper Republican NRD worked with area farmers and soil moisture probe dealers to educate them on the benefits of using soil moisture probes and cost share program available to them. The NRD also worked with University of Nebraska-Lincoln researchers on collection of evapotranspiration data that is expected to eventually produce an online tool and app that will allow irrigators to get timely evapotranspiration data and forecasts

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to better time their irrigation applications. Details of the NRD's soil moisture cost share program is provided in Table 18.

Lower Republican NRD has internally discussed looking into future partnerships with the NRCS that would include conservation opportunities.

Obj. 2.5 Understand how various water management activities of independent decision-makers affect water supplies

2.5.1 *Study the effects of conservation practices on streamflow, if feasible*

This action item is to be completed by 2028, when and if funding and staff resources allow. DWEE and basin NRDs have some analytical tools available to them to assist with studies of the effects of conservation practices on streamflow, as described below.

Upper Republican NRD continued to be an active participant in the Southwest Weed Management District's efforts to identify areas where grant funds could be used to eradicate non-desirable vegetation that negatively impacts stream flow.

Lower Republican NRD will study the effects of conservation practices on streamflow through the Lower Republican NRD Management Action Opportunity (MAO) model. The RRCA model is run to determine the quantitative effect of a proposed land use change through the MAO model.

Tri-Basin NRD has the most extensive groundwater level monitoring network in Nebraska. Groundwater level data is critical to accurately determining impacts of groundwater pumping on streamflows. Data are shared with state and federal agencies and made available to the public.

A literature review of the effects of select water and soil conservation practices on streamflow was completed as a supplemental report to the *First Five-Year Technical Analysis for the Republican River Basin-Wide Plan: Results and Plan Progress Updates, 2019-2022* report. The literature review is available for download on the basin-wide plan website, *https://rrbwp.nebraska.gov*.

DWEE uses the RRCA model to estimate stream depletions resulting from groundwater pumping, stream accretions resulting from recharge projects, and other parameters.

2.5.2 *As part of each five-year technical analysis, analyze the future impacts to streamflow of past pumping to determine the lag time of these residual impacts*

N/A

An analysis of the future impacts to streamflow of past pumping was completed in 2023 as a subset of the first five-year technical analysis, and the results were presented at the fifth annual meeting to review progress on the basin-wide plan, which took place in November 2023. Results of this analysis suggest that estimated groundwater depletions

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from historical groundwater pumping would continue through the end of the timeframe for implementation of the basin-wide plan (2044) even if pumping were to have completely ceased beginning in 2022. Further details on the analysis methods and results can be found in the *First Five-Year Technical Analysis for the Republican River Basin-Wide Plan: Results and Plan Progress Updates, 2019-2022* report which was submitted to the legislature on February 29, 2024, and is available for download on the basin-wide plan website, *https://rrbwp.nebraska.gov*.

2.5.3 *Examine and attempt to estimate the quantity of all inputs and outputs affecting the water supply balance in a small watershed, and consider using the results of this pilot study to create water use and land use guidelines for producers and other land managers, incentivize participation in recommended practices, and determine the value of completing similar studies across the Basin*

This action item is to be completed by 2028.

Upper Republican NRD continued to collaborate with the Nebraska Water Balance Alliance and the University of Nebraska's Daugherty Water for Food Global Institute to quantify all inputs and outputs within the HUC-12 watershed in Perkins County. Expected outcomes of the project include gaining a better understanding of recharge rates that would help inform water management decisions.

In 2021, Middle Republican NRD received a Water Sustainability Grant to use airborne electromagnetic (AEM) technology to model water supply balance in the whole irrigated portion of Middle Republican NRD (Figure 14). In 2024 the AEM flights were completed on all the irrigated land in the MRNRD. Data analysis will be completed in 2025. Expected outcome of the project is determining methods to balance uses that assist the NRD and water users in ensuring sustainable GW levels.

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Figure 14. Helicopter collecting AEM data in Middle Republican NRD.

Lower Republican NRD will examine the effort required to complete action item 2.5.3 in the coming years. The NRD plans to attempt to estimate the quantity of all inputs and outputs affecting the water supply balance in a small watershed, will consider using the results of this pilot study to create water use and land use guidelines for producers and other land managers, incentivize participation in recommended practices, and determine the value of completing similar studies across the Basin.

Obj. 2.6 Evaluate the feasibility and potential outcomes of establishing water markets in the Basin

2.6.1 *Cooperate in determining the feasibility of water markets in the Basin* '23

This action item was completed in 2023; it was a collaboration between basin NRDs, DWEE, and UNL. The report by DWEE, which includes the report on survey results by the UNL Public Policy Center, is available on the basin-wide plan website *https://rrbwp.nebraska.gov*.

2.6.2 *Following the water markets feasibility analysis (Action Item 2.6.1), test conclusions through implementation of a water market program in a pilot area, if feasible* '28

After conducting the basin-wide water market feasibility analysis described above, DWEE and basin NRDs do not plan on conducting a water market pilot program. Such a program

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was determined to be infeasible due to the statutory and Compact compliance barriers, such as limitations on transferring water rights, and limited interest from Basin stakeholders as determined via the interest survey. In addition, it was determined that smaller, local water markets already existed where there was demand.

Obj. 2.7	**Support the NRDs in management of allocations for irrigation purposes and surface water irrigation districts in management of the allotment of their water supply**

2.7.1 *Periodically evaluate, as part of each five-year technical analysis, the impact of the groundwater allocation and surface water allotment systems as a whole*

N/A

DWEE and basin NRDs evaluated the impact of the groundwater allocation and surface water allotment systems for the first five-year technical analysis in 2023. Results of this evaluation can be found in the *First Five-Year Technical Analysis for the Republican River Basin-Wide Plan: Results and Plan Progress Updates, 2019-2022* report which was submitted to the legislature on February 29, 2024, and is available for download on the basin-wide plan website, *https://rrbwp.nebraska.gov*.

Basin NRDs individually review pumping and allocations on a regular basis to comply with the IMPs and groundwater management plans while balancing the allocations so as not to restrict the economic vitality of the NRD or the region, as is consistent with the mission of the *Republican River Basin-Wide Plan*.

Upper Republican NRD used its groundwater model internally to determine the long-term impacts on groundwater levels caused by different allocation scenarios.

Although the Republican River Basin Wide Plan requires a five-year periodic evaluation for the technical analysis to determine the impact of the groundwater allocation, Lower Republican NRD always reviews pumping and allocations to comply with the Integrated Management Plan (IMP) while balancing the allocations so that it does not restrict the economic vitality of the NRD or the region, which is consistent with the mission of the *Republican River Basin-Wide Plan*. Lower Republican NRD does not have authority to manage surface water irrigation district allotments, but does support the irrigation districts, their sponsors, and their sponsors' partners in evaluating additional storage of flood water.

Tri-Basin NRD has only one township in the Republican Basin that is subject to allocation. This allocation was imposed to protect groundwater levels in the local area from diminishment. The allocation requirement is tied to local groundwater levels. If a three-year average of groundwater levels rises above the 1981–1985

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average springtime levels for that township, the allocation will be suspended. The other three NRDs have allocations district-wide.

2.7.2 *As needed, based on the evaluation described in Action Item 2.7.1, recommend changes or improvements to the groundwater allocation and/or surface water allotment systems*

N/A

At this time, no changes are recommended to either system. Both allow for efficient utilization of the existing water supply, and appropriate mechanisms are in place to ensure continued protection of existing water uses and administration of water rights as necessary to maintain Compact compliance.

No recommendations were made in Upper Republican NRD as a new allocation period began in 2023.

Lower Republican NRD and DWEE would support the irrigation districts, their sponsors, and their sponsors' partners in evaluating additional storage of flood water within existing facilities that could be reserved for irrigation supply, aquatic habitat, and recreation. Lower Republican NRD supports NBID and the USBR's effort to develop a lake level management plan with the United States Army Corps of Engineers (USACE). The USACE Kansas City District reservoirs have this implemented. For example, the lake level management plan at Lovewell Reservoir supports the operation of KBID.

Obj. 2.8 **Conserve water for future use during a drought**

2.8.1 *Organize and participate in a Basin-wide drought planning exercise*

The Basin-wide drought planning exercise took place in May 2022 and the drought planning exercise report was completed in 2023. All basin NRDs and DWEE participated in the drought planning exercise and generation of the resulting report. Details about the drought planning exercise outcomes are found in the *Report on the Republican River Basin Drought Planning Exercise* (November 15, 2023), which is available for download on the basin-wide plan website, *https://rrbwp.nebraska.gov*.

Lower Republican NRD believes that reserving flood water for irrigation use within existing structures would be beneficial for water supplies during drought periods. Many reservoirs in the USACE Kansas City District have lake management plans that allow additional water to be held back above conservation pools. Additionally, regulatory changes that allow for the modification or change in a reservoir operating plan allowing flood water retention above current levels would conserve water for future use.

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2.8.2 *Following the drought planning exercise (Action Item 2.8.1) evaluate whether to recommend any changes to the IMPs or this Plan related to conservation of water for future use during a drought*

Based on feedback from the drought exercise stakeholders, basin NRDs and DWEE determined a drought plan for the basin is needed. Development of a basin drought plan and dashboard began in 2024. The plan and dashboard are expected to be completed in 2026. Components of the drought planning efforts will include a communication plan, a drought dashboard, and a list of projects and initiatives to prevent or minimize damage caused by drought. It is unknown whether that effort will lead to changes in the IMPs or Basin-wide Plan.

Goal 3	**Positive public relations, including information sharing, within and outside the Basin**
Obj. 3.1	**Improve information sharing with decision-makers and public about solutions within the Basin**

3.1.1 *Use existing resources to share information about Basin progress and activities with outside entities*


Basin NRDs and DWEE use existing information dissemination resources such as newsletters, radio programs, public meetings, websites, social media, and education/outreach events. Some of these resources were used in 2024 to share information about Basin progress and activities with outside entities. Examples are described under Action Item 3.1.2 and 3.1.3.

Upper Republican NRD regularly used the district website and media outlets, including newspapers to inform the public of district programs, regulations and news affecting irrigators and residents.

Efforts by LRNRD to use existing resources to share information about Basin progress and activities with outside entities have included the LRNRD website along with participation in the Basin-wide plan annual meeting. The district conducted seven public meetings across the district where constituents were updated on the plans progress.

3.1.2 *Educate civic leaders and the public on implementation efforts within the Basin*


DWEE and basin NRDs participated in education and outreach about plan implementation efforts in 2024. The basin-wide plan identifies examples of potential outreach topics related to this objective such as efficiency improvements, the NRDs' allocation systems and resulting successes, other management activities and successes, factors that have contributed to streamflow reduction in the Basin, variations in groundwater management that reflect natural wet/dry cycles, realistic expectations for outcomes of projects and policy changes. The

following paragraphs provide specific examples of 2024 education and outreach activities related to implementation efforts within the basin.

DWEE hosts a website about the Republican River Basin-Wide Plan, *http://rrbwp.nebraska.gov*. The website is a tool for conveying information about basin-wide plan implementation and includes background information about the plan and plan implementation resources such as data, annual meeting materials, and annual reports. Plan development meeting materials are also available on the website. DWEE plans to update the website when staff and other resources are available.

University of Nebraska officials and researchers, as well as state and local officials, were informed of district programs, in particular rules and regulations in the district regarding water use.

Middle Republican NRD initiated a Podcast (Nebraska on Tap) to educate district staff and the general public on not only implementation efforts in the basin but all things of interest. District staff attended and had a booth at the McCook Farm and Ranch Show.

Lower Republican NRD co-hosts the South-Central Nebraska Water Conference with Tri-Basin NRD, Central Nebraska Public Power and Irrigation District, UNL, and USDA-NRCS to inform the public on the happenings of the water world within South Central Nebraska. This conference includes presentations on irrigation management and basin water supply conditions. The conference typically draws more than 100 local farmers and basin residents. DWEE hosted a booth at the conference in 2024.

Lower Republican NRD conducted seven public meetings across the district where constituents were updated on plan progress, and the district held public meetings, called "Coffee with the NRD" throughout the district. Tri-Basin NRD also promotes its programs and policies through radio features on KRVN and promotes the NRD with a booth at county fairs and farm shows.

All basin NRDs produce newsletters for the public containing information about their activities, including water management activities in the Republican Basin. Lower Republican NRD also provides articles and radio publications on a regular basis to keep constituents informed.

Each fall, DWEE publishes an annual report to the Governor and Legislature, titled Annual Report and Plan of Work for the State Water Planning and Review Process. The report includes a section summarizing activities in the Republican River Basin for the prior fiscal year, as well as a four-year work projection for the basin. The report is available on DWEE's website, *https://dnr.nebraska.gov*. DWEE also annually submits a report to the Legislature each fall summarizing WRCF expenditures and accomplishments. Many of the projects described in the report are in the Republican River Basin.

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3.1.3 *Educate civic leaders and the public about the policies and institutional infrastructure that contribute to the development and implementation of solutions*

DWEE and basin NRDs participated in education and outreach about policies and institutional infrastructure in 2024. The basin-wide plan identifies some examples of potential outreach topics related to this objective as correlative groundwater rights; integrated management plans; the *Republican River Basin-Wide Plan*; the Republican River Compact; other aspects of Nebraska's surface water and groundwater statutes; and other NRD rules, regulations, and plans. The following paragraphs provide specific examples of 2024 education and outreach activities related to the policies and institutional infrastructure that contribute to the development and implementation of solutions.

Basin NRDs and DWEE communicate with their legislative representatives and other state senators, as needed. Additionally, basin NRDs take turns hosting a basin focused banquet each January at the annual NARD Legislative Conference. The banquet is attended by state senators representing districts in the Republican Basin, DWEE as well as NRD staff and board members.

Basin NRDs and DWEE work to educate civic leaders and the public about the policies and institutional infrastructure that contribute to the development and implementation of solutions, through public outreach such as articles, conferences, radio news briefs, and public meetings. All basin NRDs produce newsletters for the public containing information about their activities, some of which included articles about policies and institutional infrastructure in 2024. DWEE produces a monthly podcast that is available on multiple platforms, and Legislative Bill 962, which established integrated water management planning in Nebraska, was the focus of the July 2024 episode.

DWEE and colleagues from Kansas and Colorado maintain a website with information about the Republican River Compact (*http://republicanriver.org/*), which includes background information about the RRCA, annual reports, and other RRCA meeting materials. Upper Republican NRD website is updated with Compact developments and provides a layman's explanation of the Compact and compliance efforts. Both Upper Republican NRD and DWEE's websites include links to the Compact, the FSS, and other important Compact-related documents.

DWEE and basin NRDs also addressed these topics in 2024 at some of the other outreach events described under action item 3.1.2.

3.1.4 *Propose and support changes to laws, policies, and rules that would incentivize reduced water consumption*

N/A

In 2024 there were no proposed changes to laws, policies, and rules that would incentivize reduced water consumption within the Basin. DWEE and basin NRDs are committed to evaluating all proposals that offer incentives to reduce groundwater use, with the intention of

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supporting any changes that do not reduce the economic vitality of the region in accordance with the mission of the Basin-Wide Plan.

Upper Republican NRD worked with U.S. Bureau of Reclamation officials to help create and extend an exception to the Build America, Buy America Act (BABA) so that automated meters predominantly made overseas and have the potential to reduce water usage could be purchased using federal WaterSMART funds.

Obj. 3.2 Improve information sharing with water users who are reliant on the Basin's water supplies

3.2.1 *Share data and information related to the Republican River Compact with the public in an easily accessible, user-friendly format*

All basin NRDs and DWEE exchange water use and groundwater level data annually for RRCA accounting purposes. RRCA annual reports and final RRCA accounting data are available at *http://republicanriver.org/*, and RRCA groundwater model information is available at the RRCA's data site, *https://www.republicanrivercompact.org/*. Information about the Republican River Compact is also available on DWEE's website and Upper Republican NRD's website. Resources available on Upper Republican NRD's website include the Compact itself, the 2002 Compact compliance settlement agreement, Compact accounting and reporting requirements, the 2015 U.S. Supreme Court ruling on Compact compliance, and information about projects designed to maintain Compact compliance. Some RRCA data are also available on DWEE's INSIGHT (Integrated Network of Scientific Information & GeoHydrologic Tools) website (*http://nednr.nebraska.gov/INSIGHT/*).

Middle Republican NRD shared data and information related to the Compact during a NRCS local work group meeting.

The basin NRDs and DWEE have worked to make some data from the RRCA annual accounting and groundwater model more easily accessible and user-friendly by including data from these sources each year in the basin-wide plan annual report. DWEE continues to work to improve the availability and format of RRCA data on this website. The basin NRDs and DWEE began developing a basin drought dashboard to assist basin water users, other stakeholders and partners as well as the public in understanding the status of a Compact Call Year and management actions taken to ensure compact compliance. Additional details on drought planning efforts can be found in Action Item 2.8.2 on page 52.

3.2.2 *Annually prepare and exchange reports containing data and information about water supplies and uses in the Basin, and make these reports publicly accessible*

All basin NRDs and DWEE share data and information about water supplies and uses in the basin as part of the annual report for the basin-wide plan. This information is shared with the public at the basin-wide plan's annual meeting and through the *Republican River Basin-Wide Plan* website (*http://rrbwp.nebraska.gov*). the basin NRDs and DWEE publish the annual report in conjunction with the Basin-Wide Plan annual meeting that is held in November of each

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year. Reports are presented at the annual meetings and then published on the basin-wide plan website.

Lower Republican NRD also supports gathering information such as groundwater measurements with the United States Geological Survey and Nebraska Conservation and Survey Division. Information is publicized in annual reports. Lower Republican NRD further provides relevant water balance information at the South-Central Nebraska Water Conference.

Tri-Basin NRD and DWEE also exchange information about water supplies and uses annually in fulfillment of the IMP for the Republican Basin portion of Tri-Basin NRD. These reports can be downloaded from the DWEE website (*https://dnr.nebraska.gov*).

3.2.3 *Regularly communicate with the Plan's former Stakeholder Advisory Committee about implementation progress and potential Plan revisions*

All basin NRDs and DWEE work to keep the Stakeholder Advisory Committee members who participated in the Basin-Wide Planning process and Stakeholders who participated in the Drought Planning Exercise informed about implementation progress and potential plan revisions. This information is primarily shared at the annual meeting for the basin-wide plan.

Information about plan implementation is also shared via email through a GovDelivery contact list for people interested in receiving updates about the basin-wide plan. All stakeholders from the plan development process were added to the list when it was created. One stakeholder who participated in the Basin-Wide Planning process does not have an email account, so printed copies of updates posted to the GovDelivery list are mailed to that individual.

Fifth generation IMPs for Upper, Middle, and Lower Republican NRDs became effective on September 27, 2021. Significant changes to the IMPs included an update to the in-state accounting equation used to assess NRD compliance, changes related to the Basin-Wide Plan (including a new goal), and updates related to changes in RRCA procedures.

At the time this report was published, Tri-Basin NRD and DWEE are working on updating Tri-Basin NRD's IMP for those portions of Tri-Basin NRD located within the Republican River Basin.

Notification about the Basin-wide Plan annual meetings is provided on the basin NRDs' and DWEE's websites, as well as the basin-wide plan website.

3.2.4 *Encourage and support water users to share information about their management practice improvements with other water users and the public*

All basin NRDs and DWEE encourage and support water users to share information about their management practice improvements with other water users and the public. In 2024, Upper Republican NRD, Middle Republican NRD and Lower Republican NRD provided annual water usage data to UNL from wells within the District. UNL aggregates the data and shares it

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with neighboring landowners so they understand how their water usage compares to usage in the immediate area.

Information sharing about water user management practice improvements is a standing agenda item for the basin-wide plan annual meeting.

Basin NRDs and DWEE support and participate in UNL's Testing Ag Performance Solutions (TAPS) program. This annual competition provides teams from all over the state an opportunity to learn from each other about irrigation water management practices and other aspects of crop production. A substantial portion of past TAPS award winners has been from the Republican River Basin. All basin NRDs have had district representation on TAPS teams who've won or placed in the top three of various categories across multiple TAPS competitions. A summary of Republican River Basin TAPS teams and winning TAPS teams from 2017 through 2024 is provided in Table 21. Summary of Republican River Basin TAPS teams and Winning TAPS teams from 2017 through 2024.

Table 21. Summary of Republican River Basin TAPS teams and Winning TAPS teams from 2017 through 2024.

TAPS Teams by NRD	Number of Teams	Number of Winning Teams
TBNRD	22	7
URNRD	13	5
MRNRD	63	16
LRNRD	32	5
Basin (NRD not specified)	2	1

Goal 4	**When possible, pursue projects that not only benefit water supplies and uses, but also create benefits for fish, wildlife, recreation and conveyance within the Republican River Basin**
Obj. 4.1	**Where feasible and beneficial, protect and enhance fish and wildlife habitat and public outdoor recreational opportunities**

4.1.1 *Partner with wildlife-focused organizations on projects that benefit the organizations' habitat and wildlife interests while also helping to fulfill other goals of this Plan*

Basin NRDs continued to partner with wildlife-focused organizations on projects to benefit habitat and wildlife interests in the Basin in 2024. Upper, Middle, and Lower Republican NRDs conducted efforts through the N-CORPE Augmentation Project (N-CORPE) including public outreach, habitat improvement, and funding opportunities for improvements. N-CORPE partnered with UNL on a bat study and wildlife occupancy study. Basin NRDs also conduct tours of the N-CORPE property.

N-CORPE has a partnership with the Nebraska Game and Parks Commission (NGPC) that allows N-CORPE to access grant funds to implement practices that the Commission believes aids wildlife on the property and benefits the N-CORPE project. In addition, N-CORPE partners with NGPC for wildfire suppression and with UNL for wildfire suppression and training.

"Planting for Pheasants Forever" plantings are provided by Middle Republican NRD, and the District also participates in the NRCS Regional Conservation Partnership Program (RCPP) Nebraska Forest Service Project.

Lower Republican NRD continues to support NGPC through the lease of office space and provides cost sharing on corners for wildlife.

Basin NRDs also provide support to the Twin Valley Weed Management and Southwest Weed Management Districts for the removal of invasive vegetation throughout the Basin, as described under Action Items 4.1.3 and 4.2.1.

4.1.2 *Promote public recreation on the river, when doing so can also help to fulfill other goals of the Plan*

In 2024, N-CORPE partnered with NGPC, the North Platte Visitor Bureau, and UNL to provide opportunities for wildlife viewing, public walk-in hunting, hiking trails, biking trails, horse trails, and an annual bat survey. In addition, N-CORPE partnered with NRCS to provide offroad training and conservation tours.

4.1.3 *Cooperate in projects to assess and restore riparian wetlands while also helping to fulfill other goals of the Plan*

Basin NRDs provide financial support to weed management districts for the removal of invasive vegetation and noxious weeds throughout the Basin, including for restoration of riparian wetlands. Upper Republican NRD and Middle Republican NRD financially support the Southwest Weed Management District, and Upper Republican NRD is a board member

Symbol Legend – See Figure 10 on page 27

of the Southwest Weed Management District and actively engaged in selection of projects to clear riparian areas of undesirable vegetation. Lower Republican NRD financially supports the Twin Valley Weed Management District. Basin NRDs have also worked with the weed management districts on projects across the basin to restore riparian areas, providing funding and time toward the projects.

Through Lower Republican NRD's financial support of the Twin Valley Weed Management district which eradicates invasive and noxious weeds along the Republican River, both native and desirable species are provided restoration opportunity to succeed as riparian wetlands rather than forested, shrubbed, or palustrine wetlands.

Obj. 4.2 **Where feasible and beneficial, reduce the effects of undesirable vegetation on water conveyance**

4.2.1 *Cooperate in removing undesirable vegetation impacting water conveyance and managing reinfestation*

As described under Action Item 4.1.3, basin NRDs provide financial support to the Southwest and Twin Valley Weed management districts for the removal of invasive vegetation and noxious weeds throughout the Basin. Upper Republican NRD has a representative on the board of the Southwest Weed Management District and is actively engaged in selection of projects to remove undesirable vegetation to improve streamflow. Lower Republican NRD financially supports the Twin Valley Weed Management district which eradicates invasive and noxious weeds in the Republican River Basin.

Symbol Legend – See Figure 10 on page 27

Assessment of Measurable Hydrologic Objectives (MHOs)

Under *Neb. Rev. Stat.* § 46-755 (4)(b), this basin-wide plan is required to include measurable hydrologic objectives (MHOs) to ensure that reasonable progress is being made toward achieving the goals and objectives of the plan. The basin-wide plan includes five MHOs, which are each evaluated either annually or every five years, as specified in the basin-wide plan. The MHOs and their assessment schedules are summarized in Table 22. Results of the MHO evaluations are described beginning on page 60.

In the table summarizing the results of each MHO, possible results of the assessment are described, including whether the results indicate that further discussion is required or not. If a result indicates that discussion of next steps is required, this means that DWEE and basin NRDs will discuss the test results and determine what actions will be taken to achieve the MHO in the future, as described in the basin-wide plan.

Table 22. Measurable Hydrologic Objectives (MHOs) agreed to during plan development and adoption. During plan implementation, each MHO is to be evaluated either annually or every 5 years, as specified in the basin-wide plan.

Measurable Hydrologic Objective (MHO)	Evaluation Frequency
MHO A: Maintain each NRD's net groundwater depletions to streamflow within its portion of Nebraska's allowable groundwater depletions to streamflow	Annually
MHO B: Limit groundwater depletions to streamflow to a relatively constant level over the long-term both across the basin as a whole and within each NRD	Every 5 years, beginning in 2023
MHO C: Ensure there is always enough groundwater for all groundwater uses within the timeframe of this plan, either by stabilizing groundwater levels or managing declining groundwater levels	Every 5 years, beginning in 2023
MHO D: Continue existing and initiate new actions that reduce the need for special regulations in the Rapid Response Area for Compact compliance	Annually
MHO E: Continue existing and initiate new actions that reduce the need for administration of surface water use for Compact compliance	Annually

MHO A Evaluation

MHO A Assessment Criteria

MHO A is to maintain each NRD's net groundwater depletions to streamflow within its portion of Nebraska's allowable depletions to streamflow. For the purposes of MHO A, "net groundwater depletions to streamflow" includes augmentation and other management actions.

The basin-wide plan defines the MHO A assessment as follows: for the previous Compact averaging period (2 or 5 years, as determined by Compact accounting procedures), has each NRD's net groundwater depletions to streamflow for the RRCA model area remained within its portion of Nebraska's allowable

groundwater depletions to streamflow, as specified in the IMPs? This MHO is being achieved if the answer to that question is yes for each NRD. The results of this assessment are described in the next subsection.

The MHO A assessment as described above applies only to Upper Republican, Middle Republican, and Lower Republican NRDs, because these are the three NRDs that receive a portion of Nebraska's allowable groundwater depletions to streamflow as defined and under the terms of their IMPs. The equivalent test from the IMP for the Republican Basin portion of Tri-Basin NRD is the hydrologically balanced assessment. This analysis evaluates whether Tri-Basin NRD's depletions from groundwater pumping exceeded accretions from the imported water supply credit caused by seepage from Platte River canals within in the district, when calculated on a three-year rolling average basis. The results from that analysis are included below.

MHO A Evaluation Results for 2024

Allowable groundwater depletions to streamflow for each NRD are defined in the *Monitoring & Studies Technical Memorandum for the URNRD, MRNRD, and LRNRD IMPs*. Each NRD's groundwater depletions to streamflow are calculated using the RRCA groundwater model. NRD's net depletions are the sum of groundwater depletions and the impacts to Nebraska's Compact balance from management actions taken.

Altogether, the difference between an NRD's allowable groundwater depletions to streamflow and the NRD's groundwater net depletions to streamflow is equivalent to the average of the NRD's annual balances over the appropriate averaging period where an annual balance is calculated as:

> *(Nebraska Allocation + Nebraska Credits – $SWCBCU_{NE}$ – Other NRD CBCU – All NRD Management Actions) * NRD's Applicable Baseline Depletion Percentage – NRD GwCBCU + NRD Management Actions*

Based on the Compact accounting procedures, the averaging period applicable to 2024 is the five-year averaging. The results of the five-year average evaluation for MHO A for 2024 for each NRD are shown in Table 23. Two-year averaging was not evaluated this year as part of MHO A because, under RRCA Accounting Procedures, two-year averaging does not apply for 2024.

Table 23. MHO A evaluation results for 2024, with five-year averaging. Positive values indicate that allowable groundwater depletions to streamflow exceeded actual groundwater net depletions to streamflow. The five-year averaging period for MHO A is evaluated based on the average of the evaluation year (2024) and the previous four years, in conformance with RRCA Accounting Procedures.

Difference between allowable depletions and actual groundwater net depletions (acre-feet)			
Year	**Lower Republican NRD**	**Middle Republican NRD**	**Upper Republican NRD**
2020	14,844	28,487	26,335
2021	2,229	12,180	12,577
2022	-6,947	2,063	-7,059

Difference between allowable depletions and actual groundwater net depletions (acre-feet)			
Year	**Lower Republican NRD**	**Middle Republican NRD**	**Upper Republican NRD**
2023	-9,364	-2,802	-5,702
2024	-8,489	-2,687	-4,807
5-year average (2020–2024)	**-1,546**	**7,448**	**4,269**
5-year average positive?	**No**	**Yes**	**Yes**

Results of MHO A evaluation for each NRD are described below in Table 24. MHO A is being achieved for Upper Republican and Middle Republican NRDs. However, MHO A is not being achieved in 2024 for Lower Republican NRD.

It is important to note the State of Nebraska is in full compliance with the Compact as MHO A evaluates the difference between each NRDs allowable groundwater depletions and actual groundwater net depletions. One NRD's depletions exceeding their allowable depletions does not put Nebraska out of compliance with the Compact and is not a requirement for Compact compliance.

The BWP states that if basin NRDs and DWEE determine that one or more of the MHOs is not being achieved, they will determine what actions to take to achieve the MHO in the future. DWEE and Lower Republican NRD have discussed the District not achieving MHO A in 2024. Additionally, conversations continue between the basin NRDs and DWEE on what actions can be taken to achieve MHO A in the future.

Table 24. Summary of MHO A results for 2024.

Key to Possible Test Results	 MHO is being achieved. NRD's actual depletions were within its allowable depletions. No further discussion is needed.  MHO is not being achieved. NRD's actual depletions exceeded its allowable depletions. Discussion of next steps is required.		
NRD	**Upper Republican**	**Middle Republican**	**Lower Republican**
NRD's Results for 2024			

Tri-Basin NRD Hydrologically Balanced Assessment Results for 2024

The hydrologically balanced assessment from the IMP for the Republican Basin portion of Tri-Basin NRD evaluates whether Tri-Basin NRD's depletions from groundwater pumping and accretions from the imported water supply credit are hydrologically balanced when calculated on a three-year rolling average basis. This assessment is performed by DWEE each fall, following finalization of RRCA data for the prior calendar year.

Hydrologically balanced assessment results for 2024 are summarized in Table 25. The analysis and results are explained below the summary table.

Table 25. Summary of results of hydrologically balanced assessment for Tri-Basin NRD for 2024.

Key to Possible Test Results	 In compliance with IMP. On a three-year rolling average basis, depletions from groundwater pumping did not exceed accretions from the mound. Also, sufficient management actions were taken in 2024 to offset net depletions from previous year's test, if any. No further discussion is needed.  Caution. On a three-year rolling average basis, depletions from groundwater pumping exceeded accretions from the mound. Under the terms of the IMP, management actions are required to maintain a hydrologically balanced condition. Discussion of next steps is required.  Insufficient management actions were taken in 2024 to offset net depletions from previous year's assessment. Discussion of next steps is required.
Tri-Basin NRD's Results for 2024	

Full details of the hydrologically balanced assessment for 2024 are included in DWEE's report for the IMP for the Republican Basin portion of Tri-Basin NRD, titled *2025 Annual Report of* 2024 *Data by the Nebraska Department of Water, Energy, and Environment to Meet the Requirements of the Integrated Management Plan for Those Portions of the Tri-Basin Natural Resources District within the Republican River Basin.* The three-year average net effect is positive for 2024 (Figure 15), meaning that mound accretions exceeded groundwater depletions from pumping on a three-year average basis; therefore, no offsets are required in the future as a result of the 2024 test. In addition, no management actions were required to be taken by Tri-Basin NRD in 2024 to offset the results of a previous year's test.

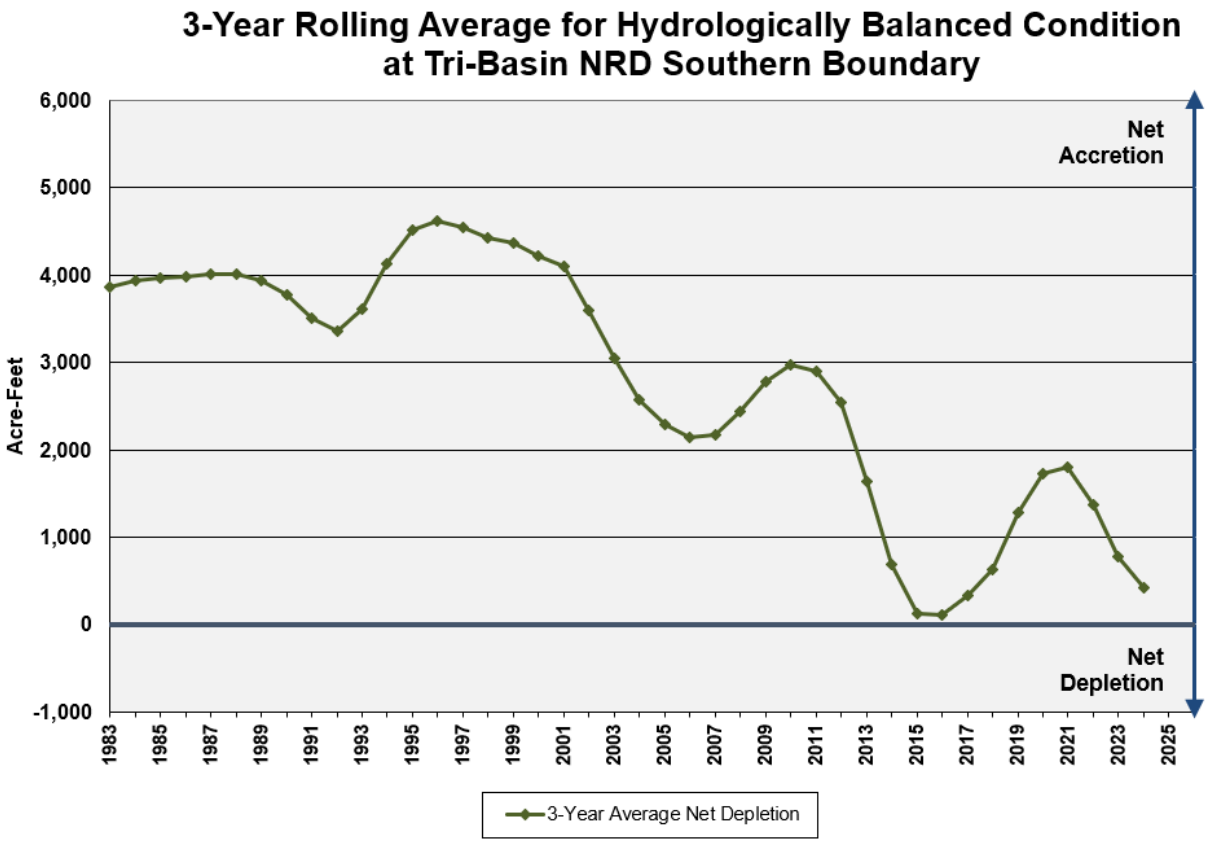

Figure 15. Rolling three-year average net effect to baseflow as the total of modeled values of streamflow depletion and mound accretions, using the August 2020 RRCA Accounting Procedures and the RRCA groundwater model.

MHO B Evaluation

MHO B is evaluated every five years as part of the basin-wide plan's five-year technical review. No MHO B evaluation is required for 2024. The next five-year technical analysis will be completed in 2028.

MHO C Evaluation

MHO C is evaluated every five years as part of the basin-wide plan's five-year technical review. No MHO C evaluation is required for 2024. The next five-year technical analysis will be completed in 2028.

For additional information about the next phase of evaluation for MHO C, see the text in this report under Action Item 1.3.2, *MHO C* on page 37.

MHO D Evaluation

MHO D Assessment Criteria

MHO D is to continue existing and initiate new actions that reduce the need for special regulations in the Rapid Response Area for Compact compliance.

The basin-wide plan defines the MHO D assessment as follows: during the previous year, has groundwater pumping within the Rapid Response Area of any NRD been curtailed to ensure Compact compliance? This MHO is being achieved if the answer to that question is no for each NRD. The results of this assessment are described in the next subsection.

Note that this assessment only applies to Upper Republican, Middle Republican, and Lower Republican NRDs. The IMPs for those NRDs state that in Compact Call Years, if management actions taken by the NRD are insufficient to ensure compliance, the NRD will implement additional ground water controls and regulations to make up for any expected shortfall, which will include curtailment of groundwater pumping within the Rapid Response Area (10 Percent/5-Year Area) of the NRD. The purpose of this MHO is to ascertain whether such curtailment occurred.

MHO D Evaluation Results for 2024

MHO D evaluation results are summarized in Table 26. For 2024, MHO D is being achieved for Upper Republican, Middle Republican, and Lower Republican NRDs, as none of the NRDs curtailed pumping within the Rapid Response Area in 2024 to ensure Compact Compliance.

Table 26. Summary of MHO D results for 2024.

Key to Possible Test Results	 MHO is being achieved. NRD did not curtail groundwater pumping within the Rapid Response Area to ensure Compact compliance. No further discussion needed.  MHO is not being achieved. NRD curtailed groundwater pumping within the Rapid Response Area to ensure Compact Compliance. Discussion of next steps is required.		
NRD	**Upper Republican**	**Middle Republican**	**Lower Republican**
NRD's Results for 2024			

MHO E Evaluation

MHO E Assessment Criteria

MHO E is to continue existing and initiate new actions that reduce the need for administration of surface water use for Compact compliance.

The basin-wide plan defines the MHO E assessment as follows: During the previous year, has surface water use within the basin been administered to reduce surface water use to ensure Compact compliance? This MHO is being achieved if the answer to that question is no. The results of this assessment are described in the next subsection.

Note that for the purposes of MHO E, only surface water administration that occurs to fulfill Nebraska's Compact obligations as described in the IMPs for Upper Republican, Middle Republican, and Lower Republican NRDs is included. Surface water administration that is required by the terms of the FSS is excluded from MHO E. For more information, see "section of this report on page 23.

MHO E Evaluation Results for 2024

MHO E evaluation results are summarized in Table 27. For 2024, MHO E is being achieved, as surface water use within the basin has not been administered to reduce surface water use for Compact Compliance. For further details, see "Surface Water Use for Compact Compliance" section of this report.

A summary of the collaboration between basin NRDs and Irrigation Districts, DWEE, and USBR to carry out voluntary management actions in 2024, to ensure Compact compliance and reduce the need for additional reductions in use, can be found under Objective 2.2.1 on 42.

Table 27. Summary of MHO E results for 2024.

Key to Possible Test Results	MHO is being achieved. DWEE did not administer surface water to ensure Compact compliance, except as required under the FSS. No further discussion needed. MHO is not being achieved. DWEE administered surface water to ensure Compact Compliance. Discussion of next steps is required.
Results for 2024	

Figure 16. Republican River, photo courtesy of Tri-Basin NRD.