

Tri-Basin NRD Water Management Regulation Triggers and Integrated Water Management Plan Compliance Tests



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2/16/22, Revised 9/30/22, 6/23/23

Introduction: Tri-Basin NRD manages groundwater in Gosper, Phelps, and Kearney counties for multiple purposes: to protect groundwater supplies from diminishment (groundwater quantity management), to protect groundwater from contamination (groundwater quality management) and to protect streamflows from diminishment (integrated water management). The Tri-Basin NRD board of directors has set triggers for initiation of additional levels of regulation, referred to as “phases”, for groundwater quantity and groundwater quality management. Compliance standards for integrated water management plans (IMPs) are negotiated between the NRD and the state Department of Natural Resources. Following is a list of triggers and compliance standards, along with the status of those portions of the NRD covered by them.

Groundwater Quantity Management (see Figure One page 7):

- Phase One (district-wide since 2004)
- Phase Two (May and Grant Townships in Kearney County, Elk Creek Township in Gosper County)
 - Trigger for Platte and Republican basins: a three-year rolling average of spring groundwater level measurements in a township drops below 1981-85 average groundwater levels
 - Trigger for Little Blue Basin: a three-year rolling average of spring groundwater level measurements in a township drops more than five feet below 1981-85 average groundwater levels
- Phase Three (Union (2008) Township in Gosper County)
 - Trigger for Platte and Republican Basins; groundwater levels do not recover to at or above 1981-85 average levels after at least three years in Phase 2

- Trigger for Little Blue Basin: a three-year rolling average of spring Groundwater levels have declined to the point that they are ten percent less than the baseline saturated thickness established by the Board of Directors for a township or the Little Blue Basin portion of a township (see Figure One and Table One below).

Figure One- Tri-Basin NRD Groundwater Levels

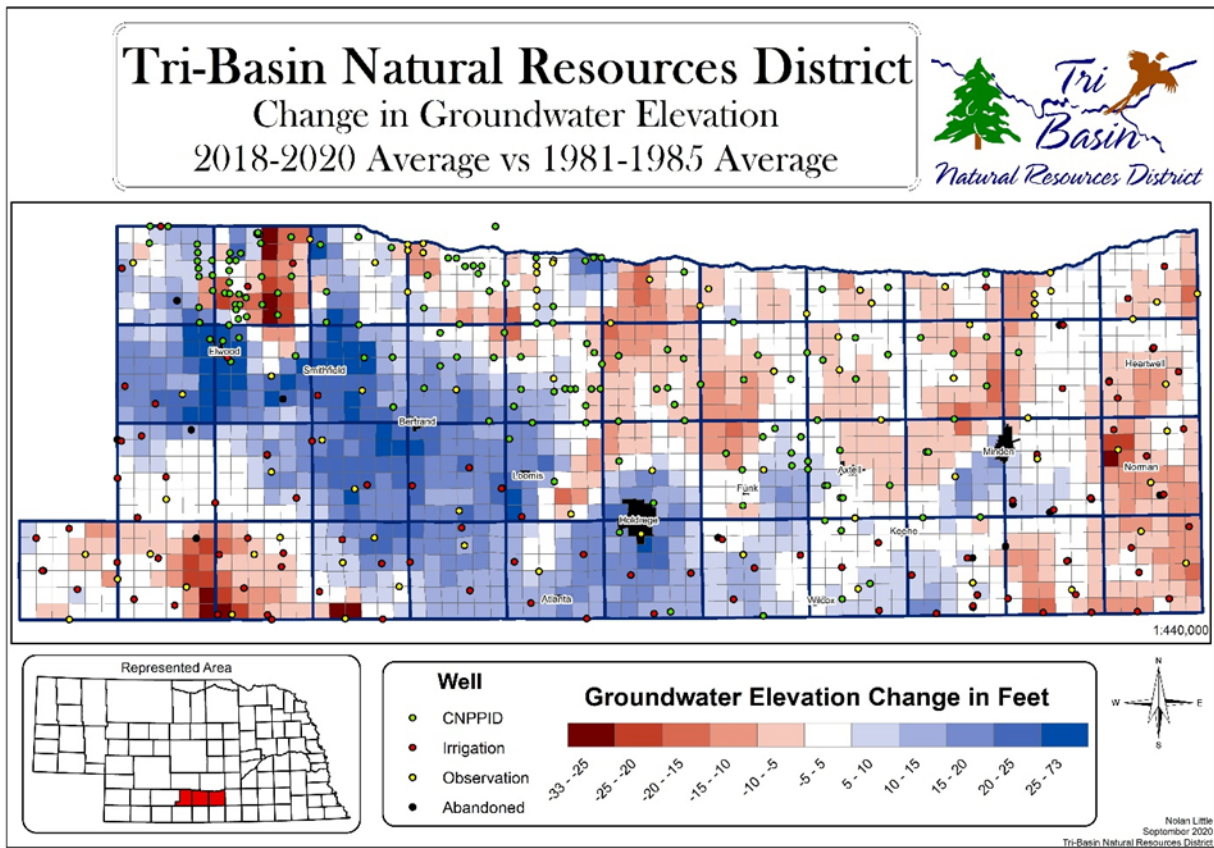


Table One- Little Blue Basin Saturated Thickness Triggers

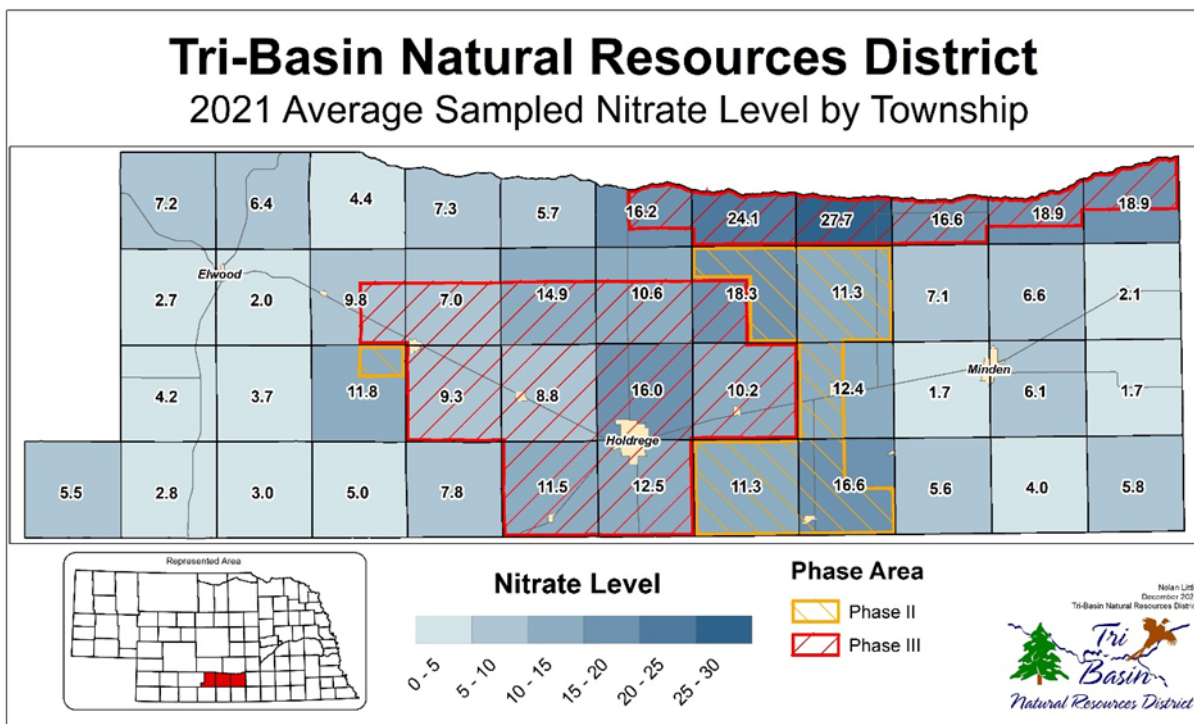
Township/Unit Name	Number of Wells Used For Average	Average Pre-1986 Saturated Thickness (feet)	2021 Static Water Level in relation to Phase 2 Trigger	2021 Static Water Level in relation to Phase 3 Trigger
Grant (T5N R13W)	49	102.75'	+1.08'	+6.36'
May (T6N R13W)	14	138.92'	-3.39'	+5.51'
Eaton (T7N R13W)	18	129.16'	+0.02'	+7.92'
Lowell (T8N R13W)	1	107.00'	N/A	N/A
Cosmo (T5N R14W)	29	109.00'	+10.01'	+15.91'
Lincoln (T6N R14W)	28	107.75'	+9.99'	+15.69'
Liberty (T7N R14W)	8	137.50'	+1.38'	+10.08'
Sherman (T5N R15W)	10	133.10'	+6.91'	+15.21'
Hayes (T6N R15W)	17	151.29'	N/A	N/A
Logan (T7N R15W)	0	N/A	N/A	N/A
Mirage (T6N R16W)	3	166.33'	N/A	N/A
West of HWY 10*	30	146.73'		
Liberty/Eaton Twps.*	26	131.73'	+1.39'	+9.56'

*Tri-Basin NRD groundwater quantity management rules state that groundwater will be managed on a township-by-township basis. Combining some Little Blue Basin townships for management purposes has been proposed but not yet approved by the Tri-Basin NRD board of directors.

Groundwater Quality Management (see Figure Two below):

- Phase One (district-wide since 1991)
- Phase Two (portions of five townships in Gosper, Phelps, and Kearney counties)
 - Any Township where average Groundwater nitrate content is above 9.0 ppm. If average groundwater nitrate levels drop below nine ppm, the township returns to Phase One regulations.
- Phase Three (all or part of 17 townships in Gosper, Phelps, and Kearney counties)
 - Phase II Areas will be declared Phase III Areas fifteen years after they are designated Phase II Areas, unless NRD water sampling indicates that the average Groundwater nitrate content in those Townships have declined by at least one ppm during the preceding four consecutive years.

Figure Two-Tri-Basin NRD Groundwater Quality



Integrated Water Management Planning (IMP): (Tri-Basin’s integrated water management plans are specific to each river basin.)

Platte Basin IMP:

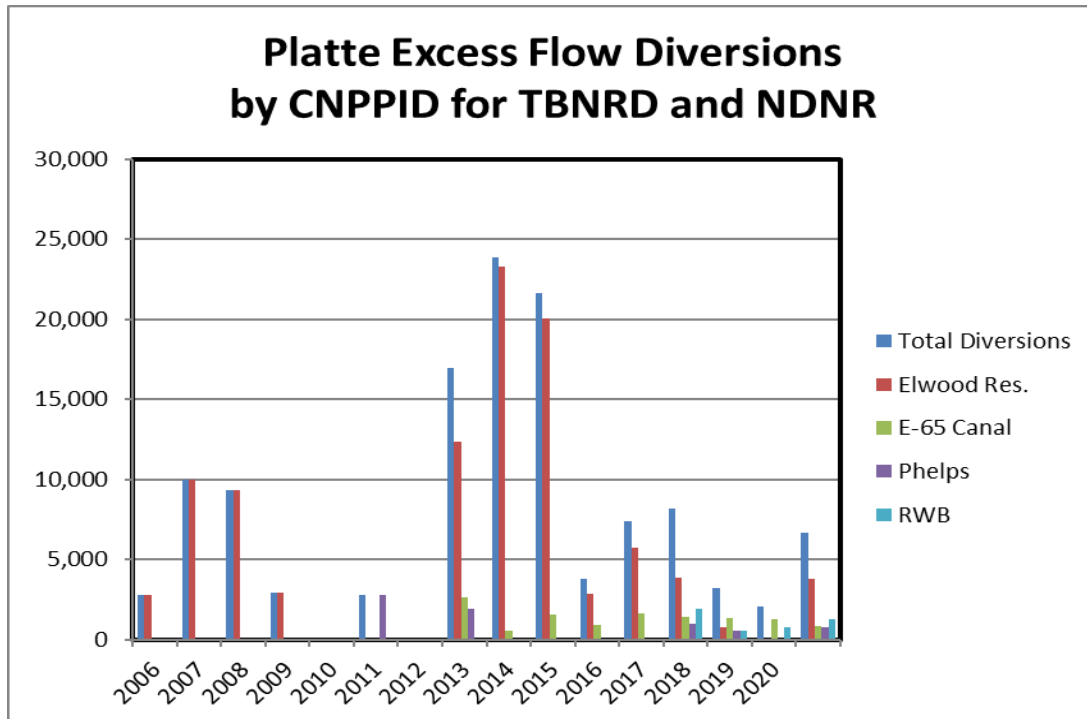
- Compliance test for IMP: Tri-Basin NRD will offset depletions to the Platte River and its tributaries caused by pumping from wells permitted after July 1, 1997. The district is also expected to make progress toward eliminating impacts of depletions to the Platte River and its tributaries caused by pumping from all wells within the Platte Basin portion of the district.
- Compliance mechanism: There are four primary mechanisms that NRDs can use to reduce the impact of depletions on streamflows. These options are 1) reduce groundwater pumping, 2) reduce groundwater-irrigated acres, 3) reduce diversions of surface water for irrigation, or 4) re-time excess streamflows so that water is added to streams when flows are below target levels. Tri-Basin NRD has focused on option 4 (*see Figure Three page 8*). Tri-Basin has worked in cooperation with CNPPID and NDNR since 2006 to divert excess flows. Our cumulative diversions (2006-2022) total 121,526 acre-feet, or about 7600 acre-feet per year.
- During droughts, Tri-Basin NRD can supplement diversions with groundwater pumping to augment streamflows. Tri-Basin NRD has two augmentation wells, both located in Kearney County. The NRD is cooperating with the Platte River Recovery Implementation Program to construct an augmentation wellfield, consisting of eight wells, in northwest Phelps County.
- Offset targets: Tri-Basin has offset targets for both the overappropriated (upstream of HWY. 183) and fully appropriated (downstream of HWY. 183) portions of the Platte basin within the district. These targets change over time (*see Table Two below*).

Table Two- TBNRD accretion targets for the Platte River Upstream of Elm Creek and between Elm Creek and Chapman for short-term planning purposes based on 2019 Robust Review trend lines.

TBNRD Short-Term Targets (AF)		
Year	Upstream of Elm Creek	Elm Creek to Chapman
2019	2,100	2,100
2020	2,100	2,100
2021	2,000	2,100
2022	2,000	2,100
2023	2,000	2,200
2024	1,900	2,200
2025	1,900	2,200
2026	1,800	2,300
2027	1,800	2,300
2028	1,800	2,300
2029	1,700	2,400

- Compliance status: Tri-Basin NRD is in compliance with the requirement to offset depletions from all-post 7/1/1997 wells. We are also reducing impacts of depletions from all Platte Basin wells in the district. The NRD’s offset programs will be reviewed every five years. The next review in 2023.

Figure Three-Platte Excess Flow Diversions



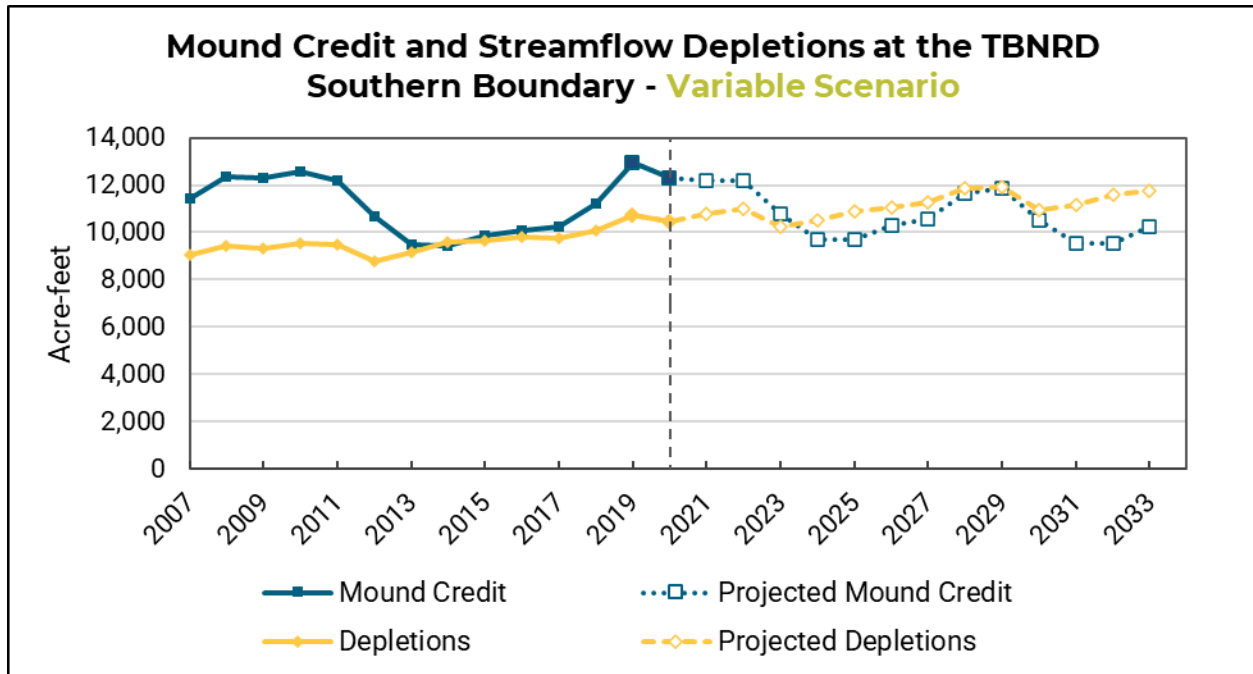
Republican Basin IMP:

- Compliance test for IMP: Tri-Basin NRD has two compliance tests in the Republican Basin. They are: 1) maintain groundwater levels in the Republican Basin at or above 1981-85 levels, and 2) Insure that “imported water” contributions to the Republican basin from the Platte within Tri-Basin NRD exceed consumption of imported water within Tri-Basin NRD (see *Figure Four page 8*)
- Compliance Mechanism: As in the Platte Basin, there are four primary mechanisms that NRDs can use to reduce the impact of depletions on streamflows. These options are: 1) reduce groundwater pumping, 2) reduce groundwater-irrigated acres, 3) reduce diversions of surface water for irrigation, or 4) re-time excess streamflows so that water is added to streams when flows are below target levels. Since there is very little surface water irrigation in the Republican Basin within Tri-Basin NRD, option 3 would not be effective, unless we paid surface water irrigators in another part of the basin to reduce diversions. Tri-Basin NRD has focused on option 4 (see *Figure Three*)

page 7). Diversions of excess Platte flows can increase imported water into the Republican River basin, if groundwater recharge occurs near the divide between the two basins. Elwood Reservoir, E-65 Canal and Victor Lakes are all close to the basin groundwater divide. During droughts, Tri-Basin NRD can supplement diversions with groundwater pumping to augment streamflows. Tri-Basin NRD has one augmentation well, located in Gosper County.

- Offset Target: Tri-Basin NRD has two compliance targets in the Republican basin portion of the NRD. They are: 1) to maintain groundwater levels at or above 1981-85 average levels (*see Figure One page 7*) and 2) maintain imported water contributions to the Republican Basin within Tri-Basin NRD at or above imported water consumption within the Republican Basin within the district (*see Figure Four page 9*).
- Compliance status: Tri-Basin NRD is in compliance with both the Republican Basin IMP requirements, as of 2021. Even though groundwater levels are below 1981-85 average springtime levels in one township in Gosper County, Tri-Basin is enforcing our groundwater quantity management rules to correct this deficiency. Imported water contributions also exceed consumption of imported water as of 2020. NDNR modeling projections, under both variable climate and extreme drought scenarios, indicate that consumption of imported water could exceed imported water contributions within a few years. If that happens, Tri-Basin will need to take additional actions to remain in compliance. Such actions could include diverting Platte excess flows directly to the Republican Basin via the Platte-Republican Diversion project (if a water right is approved), drilling additional streamflow augmentation wells, or limiting irrigation water pumping via allocation.

Figure Four- Imported Water Consumption versus Imported Water Contributions within Tri-Basin NRD



Little Blue Basin Voluntary IMP:

- Compliance test for IMP: Since our Little Blue Basin IMP is voluntary, because the basin isn't fully appropriated, there isn't a compliance "requirement." We entered into the voluntary IMP process in the hope that, by working in a cooperative, coordinated way with Little Blue NRD and NDNR, we could improve groundwater management within the Little Blue Basin overall. A voluntary IMP also qualifies the NRD for Water Sustainability funding for basin water projects. We maintain compliance with the IMP by continuing to limit development of additional irrigated land in the Little Blue Basin
- Compliance Mechanism: As long as we continue to limit irrigated acres and report groundwater pumping and irrigated acre data annually to NDNR, we are in compliance with our Little Blue VIMP.
- Offset Target: None.
- Compliance Status: Tri-Basin NRD is in compliance with our Little Blue VIMP.

