Groundwater Level Change Information
from the four Republican River Basin Natural Resources Districts

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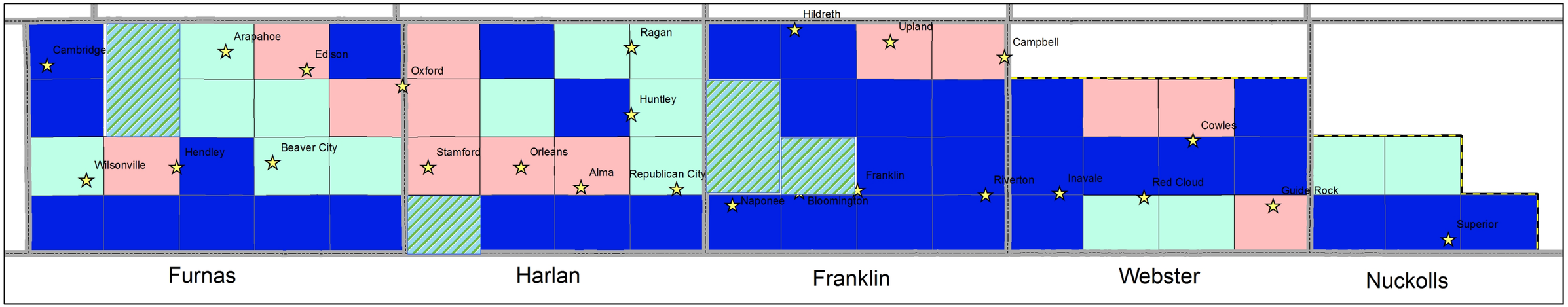
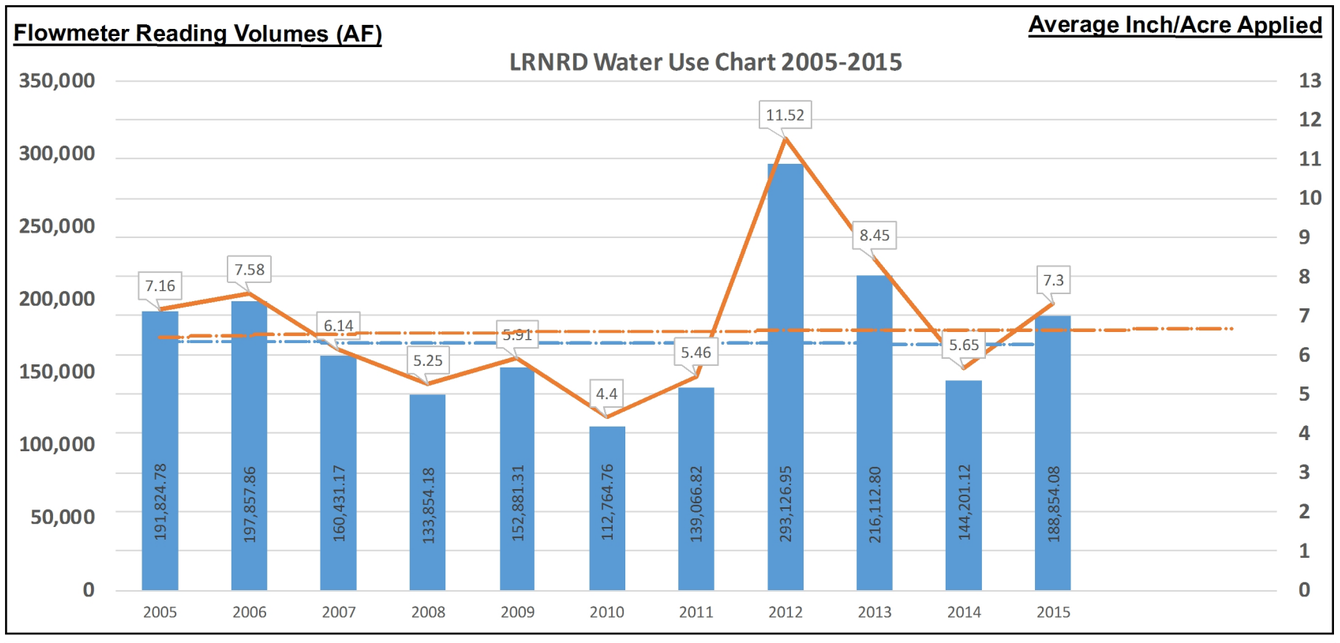
Lower Republican NRD groundwater level change information

Information about groundwater level changes in the Lower Republican NRD is shown in the map on the following page.





Note : The graph above depicts water use on "Effective Acres"

Groundwater Level Condition Change 2005 to 2015

- Decline between 0 and 2 feet
- Static between -0.5 and +0.5 feet
- Static between -0.5 and +0.5 feet (Additional data under review)
- Rise between 0.5 and 7.0 feet

Year(s)	Ave. GW Pumping / Ac Ft	Inches Per Acre on Effective Acres	Inches Per Acre on Certified Irrigated Acres
2005-2015 Average	175,543	6.69	6.48
2005-2015 Average (wo/2010 &2012)	169,453	6.45	6.26

* LRNRD 2005-2015 Average Effective Acres = 315,042 Acres*

* LRNRD 2005 - 2015 Average Certified Irrigated = 325,063 Acres*

Effective Irrigated Acres = are acres that that receive the application of water.

Certified Irrigated Acres = are the acres that can received irrigation (not all certified acres are actually irrigated).

All numbers shown are approximate until final map is produced

Lower Republican NRD
Township Average Changes
Draft - Static Water Level Measurement Changes
2005 to 2015

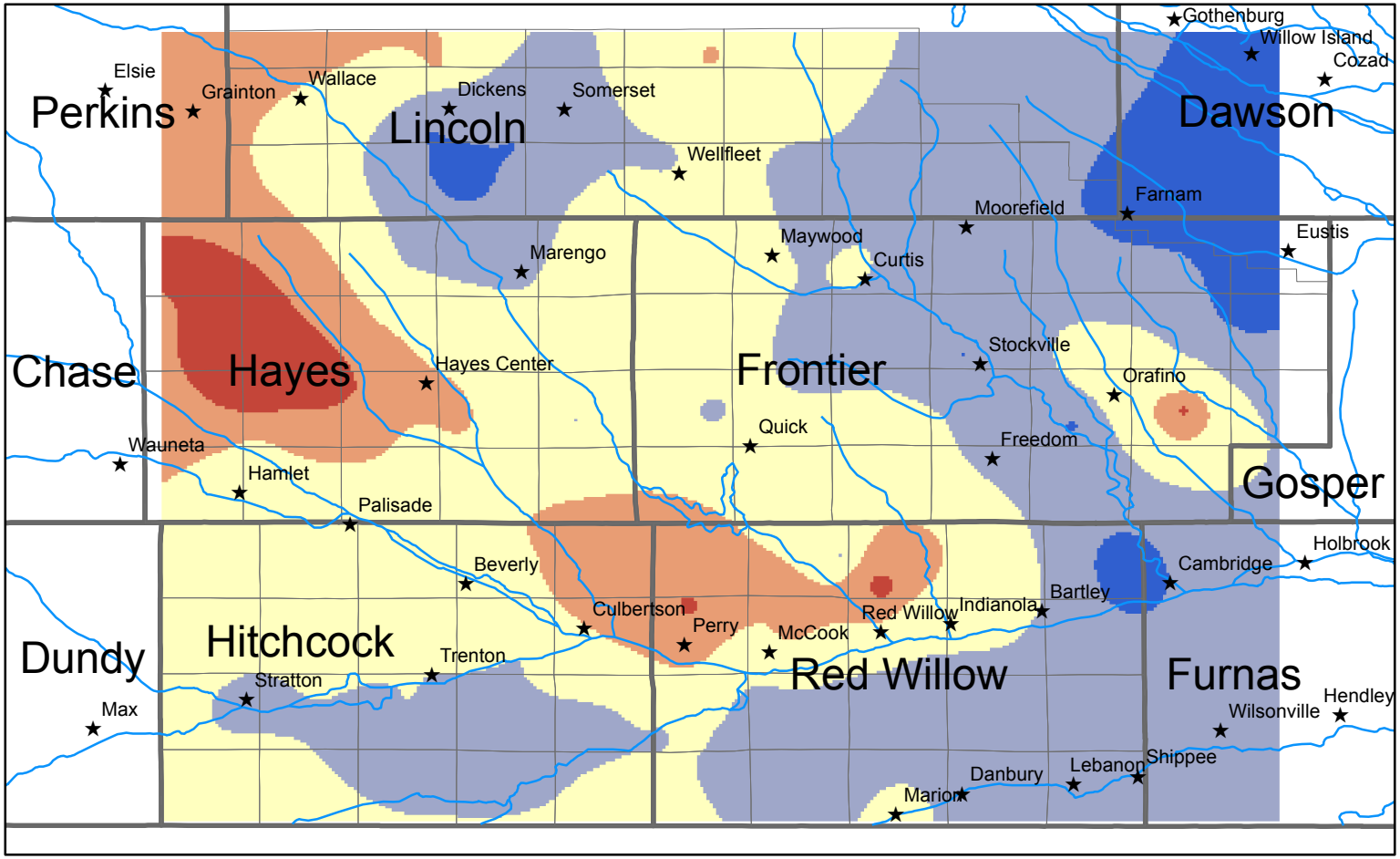
Middle Republican NRD groundwater level change information

Information about groundwater level changes in the Middle Republican NRD is shown in the map on the following page.

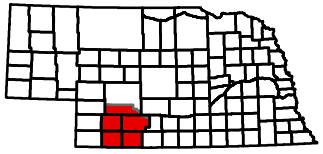
Middle Republican Natural Resource District

Static Water Level Measurement Changes

2006 - 2016



Represent Area Shown in Red



★ Cities

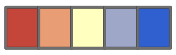
Rivers

Townships

Counties

Water Level Change

2006-2016



-7.5 - -5.0
-4.9 - -2.0
-1.9 - 1.0
1.1 - 4.0
4.1 - 7.0

Natural Resource District
Middle Republican

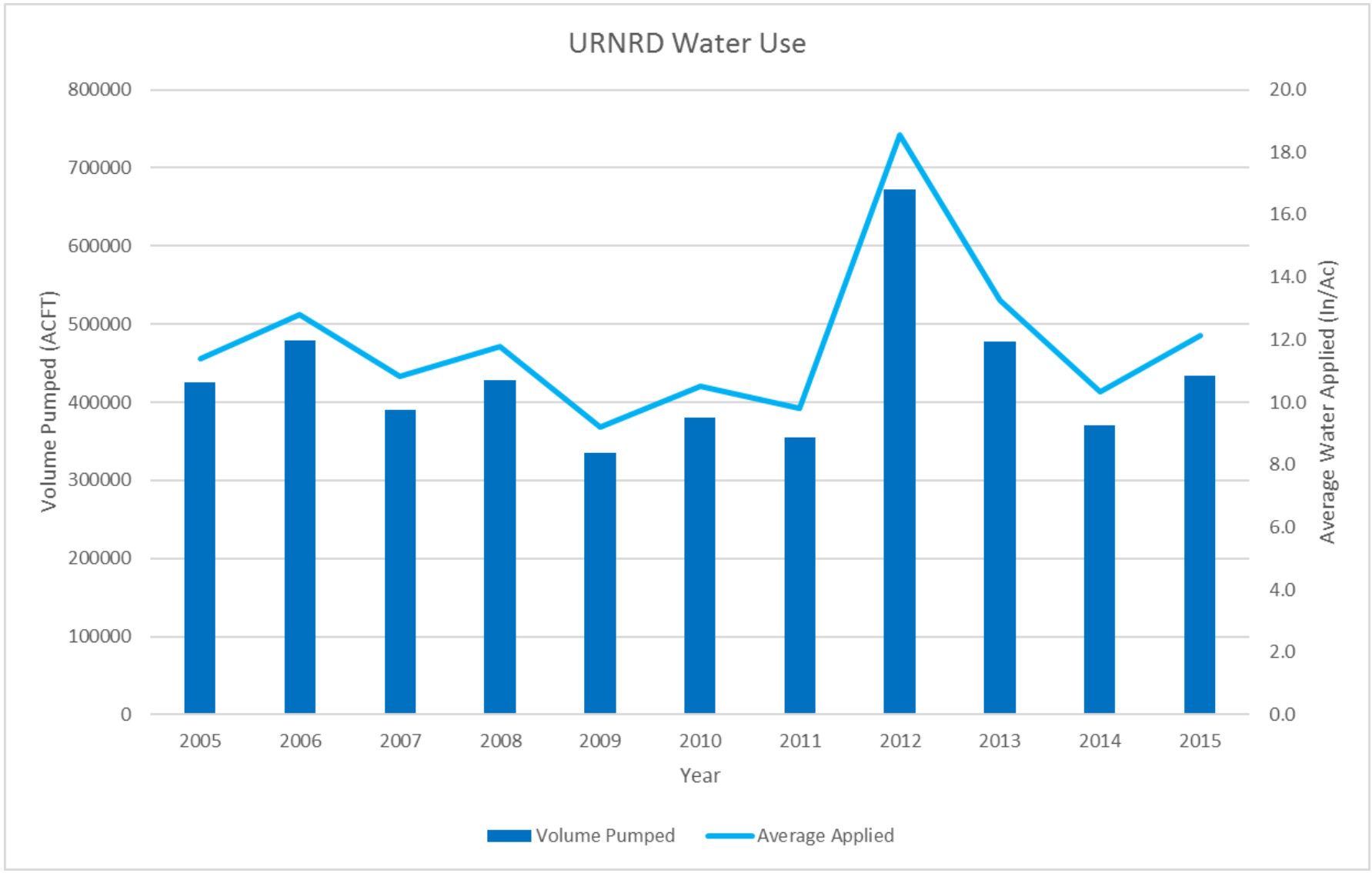
0 95 190 380 570 760
Miles

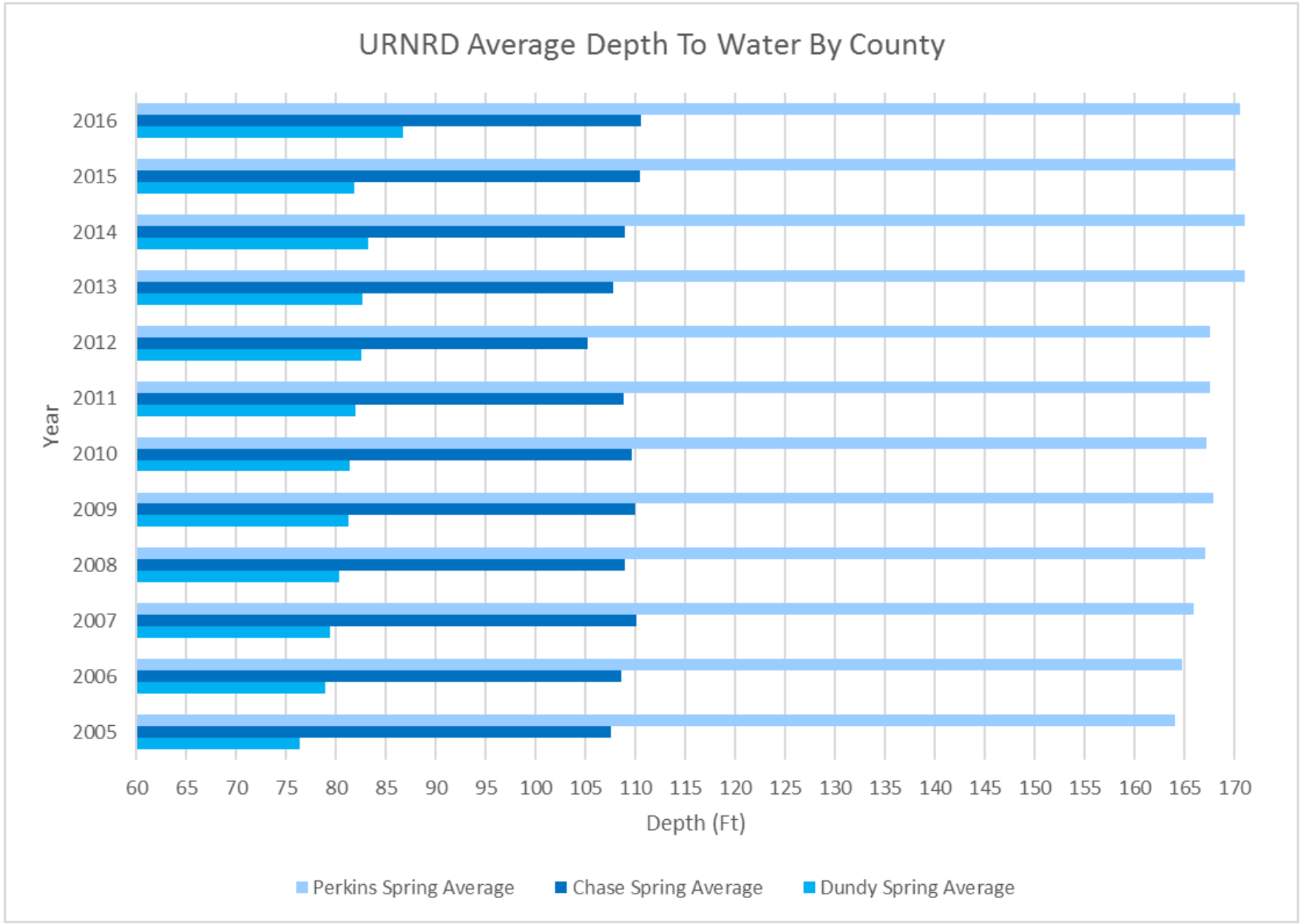
*Based on 2006-2016 Spring Static Water Measurements by MRNRD

Upper Republican NRD groundwater level change information

The average annual decline in spring static water levels within the Upper Republican NRD from 2005- 2016 was .59', which is approximately 20% less than the average annual decline from 1980, when the District's well observation program began, to 2016. The largest annual decline during the 2005-2016 period occurred during the drought of 2012. The significant decline that occurred between 2012 and 2013 offset a rise in average groundwater levels that occurred between 2009-2010 and 2011-2012. The average saturated thickness of the aquifer within the District is approximately 185'.

This information is shown in the charts on the following pages.


URNRD Water Use
800000
700000
600000
500000
400000
300000
200000
100000
0
Volume Pumped (ACFT)
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Average Water Applied (In/Ac)
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Year
Volume Pumped
Average Applied


URNRD Average Depth To Water By County
Year
2016
2015
2014
2013
2012
2011
2010
2009
2008
2007
2006
2005
60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170
Depth (Ft)
Perkins Spring Average
Chase Spring Average
Dundy Spring Average

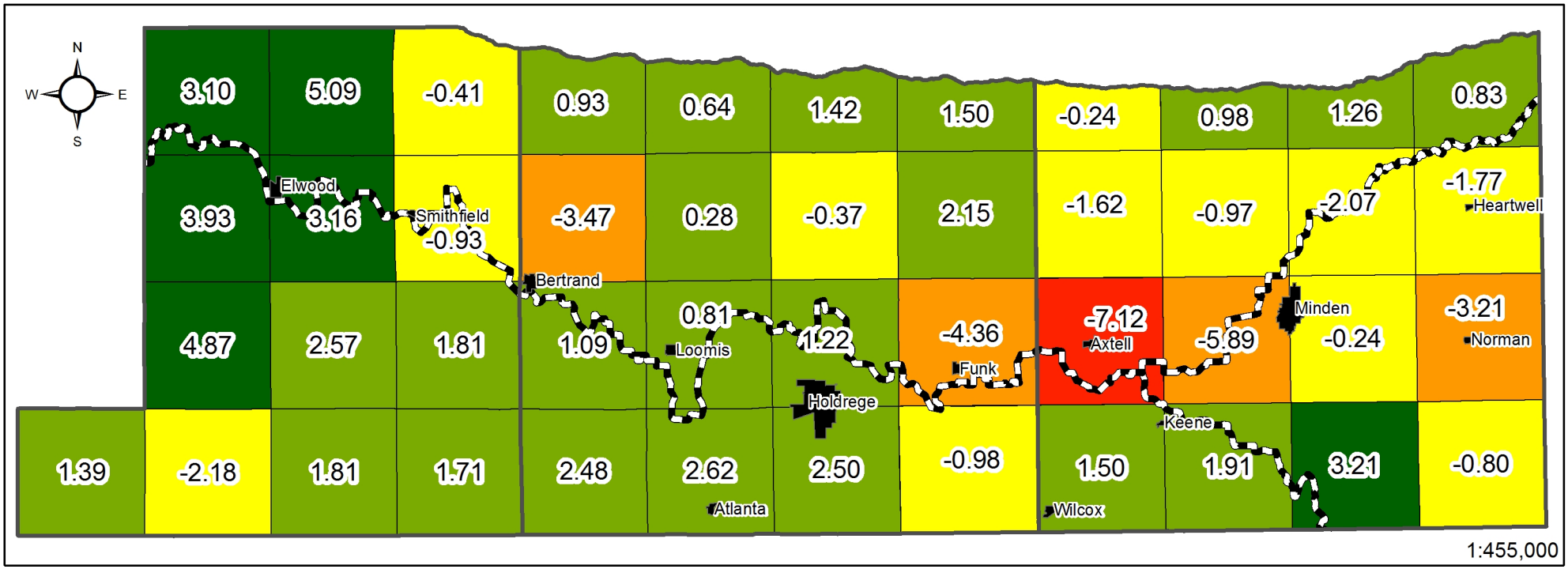
Tri-Basin NRD groundwater level change information

Tri-Basin NRD has developed a map showing spring groundwater level changes over the past ten years (2006-16). The groundwater level change map on the following page is more easily compared to a similar map produced by Lower Republican NRD than our usual maps. Our typical maps depict groundwater changes between the most recent three-year period and our 1981-85 baseline period. This is the standard that we use to determine whether regulation is needed to protect groundwater supplies from diminishment. Viewers will note that the groundwater level change map indicates declines in groundwater levels in the Funk-Axtell vicinity. These declines are NOT a particular concern to Tri-Basin NRD because a.) they indicate declines from artificially high levels, and b.) the declines result from reductions in seepage from CNPPID canal laterals converted to pipelines and general improvements in efficiency of irrigation water application by CNPPID water users. These declines have not had a notable impact on groundwater pumping capacity or efficiency.

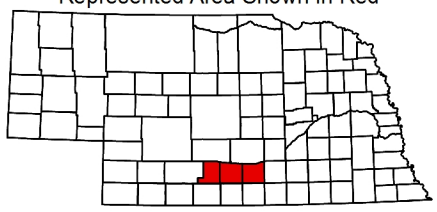
Tri-Basin NRD is also providing a spreadsheet showing groundwater pumping by irrigators in the Republican Basin in Tri-Basin NRD. This spreadsheet will be available for download from the Republican River Basin-Wide Plan website. Unlike other Republican Basin NRDs, Tri-Basin NRD relies on farmers to report water use, rather than collect flowmeter data ourselves, although TBNRD staff do "spot-check" 25% of flowmeters every year, to insure accuracy. Farmers also provide other information on their water use reports, such as: crops grown, irrigation system type, and the number of acres actually irrigated, as compared to certified irrigated acres. This data has been collected since 2005. Growing season (April through September) rainfall at Holdrege is included on some graphs for reference. Questions, comments and requests for additional information should be directed to jthorburn@tribasinnrd.org.

Tri-Basin Natural Resources District

Decadal Change in Average Static Water Level by Township*



Represented Area Shown in Red



Community

Basin Boundary

Township Boundary

County Boundary

Average Change

-9.00 - -6.00

-5.99 - -3.00

-2.99 - 0.00

0.01 - 3.00

3.01 - 6.00

*Based on 2006-2016 Spring Static Water Measurements by CNPPID & TBNRD.

Nolan Little
January 2017
Tri-Basin Natural Resources District

Tri Basin Natural Resources District