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# 2018 GROUND WATER QUALITY MONITORING REPORT

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South Platte Natural Resources District



JANUARY 3, 2019  
REPORTED BY CHRIS KAISER

This report summarizes the 2018 ground water quality monitoring program for the South Platte Natural Resources District.

The SPNRD has completed its thirtieth year of monitoring nitrates in the District. Of the 181 network wells, 163 were sampled at least once this year. This breaks down to 52 of 55 domestic wells, 68 out of 80 irrigation wells, 38 out of 38 dedicated monitoring wells, and five out of eight municipal wells. The municipal nitrate information is collected by the city of Sidney and they allow the NRD to use their data for this report. Some irrigation wells were unable to be sampled for the following reasons: enrolled in temporary deferment, EQIP practices, crop rotations, or the well is no longer being used. Some irrigation wells were not used very often, or not used at all throughout the last year.

There are 61 monitoring wells established on the tablelands that are not considered in the network. The wells in Kimball and all Cheyenne county wells have been sampled within the last few years. The tableland wells in Deuel County will be sampled in 2019.

Quality Assurance/Quality Control (QA/QC) measures were followed during nitrate sampling. The primary method used for QA/QC was duplicate sampling. One duplicate was taken for every ten samples. The relative percent difference (RPD) was determined from the two duplicate samples. An average of this percent is then calculated for all the RPD's. This year's average was 1.11%. According to Ward Laboratories, the most precise data will fall within the 0-10% range.

Attached in this report is a map indicating the current SPNRD ground water quality management subareas and the management area phase those subareas are in.

Items to take into consideration when reviewing the following information obtained in this report:

- This is the first consecutive year that the South Platte Valley GWQMA has been over the 80% MCL trigger.
- The Sidney GWQMA is in a phase II management control (three consecutive years over the 80% MCL trigger). Producers in this area are required abide by the District's Nitrogen Reporting Program. This is the second consecutive year that this subarea has been over the 95% MCL trigger.
- Nitrate levels have been steadily rising in Kimball, Cheyenne, and certain areas in Deuel County. The Deuel County Lodgepole Valley GWQMA was the only subarea where nitrates, over time, have been decreasing.

# SPNRD Ground Water Quality Subareas

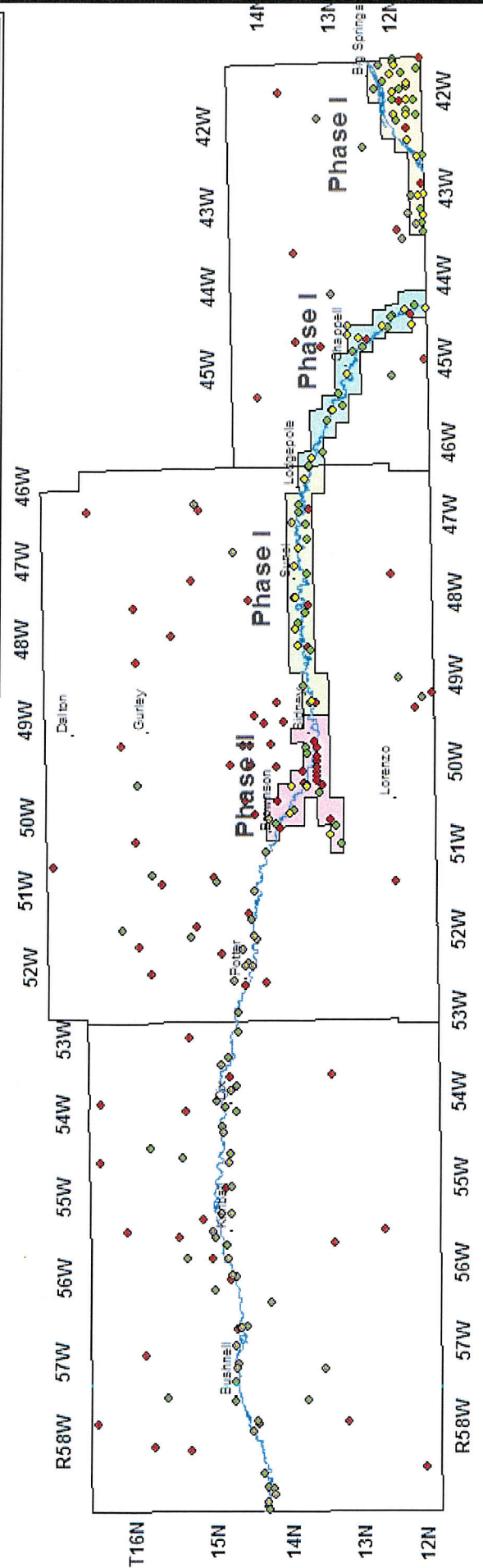


**Subareas**

- Sidney GWMA PHASE II
- East Lodgepole Valley GWMA (Cheyenne County) PHASE I
- Lodgepole Valley GWMA (Deuel County) PHASE I
- South Platte Valley GWMA PHASE I

**Well Type**

- Domestic
- Irrigation
- Monitoring



### NITRATE AVERAGES FOR TARGET AREAS OF THE DISTRICT

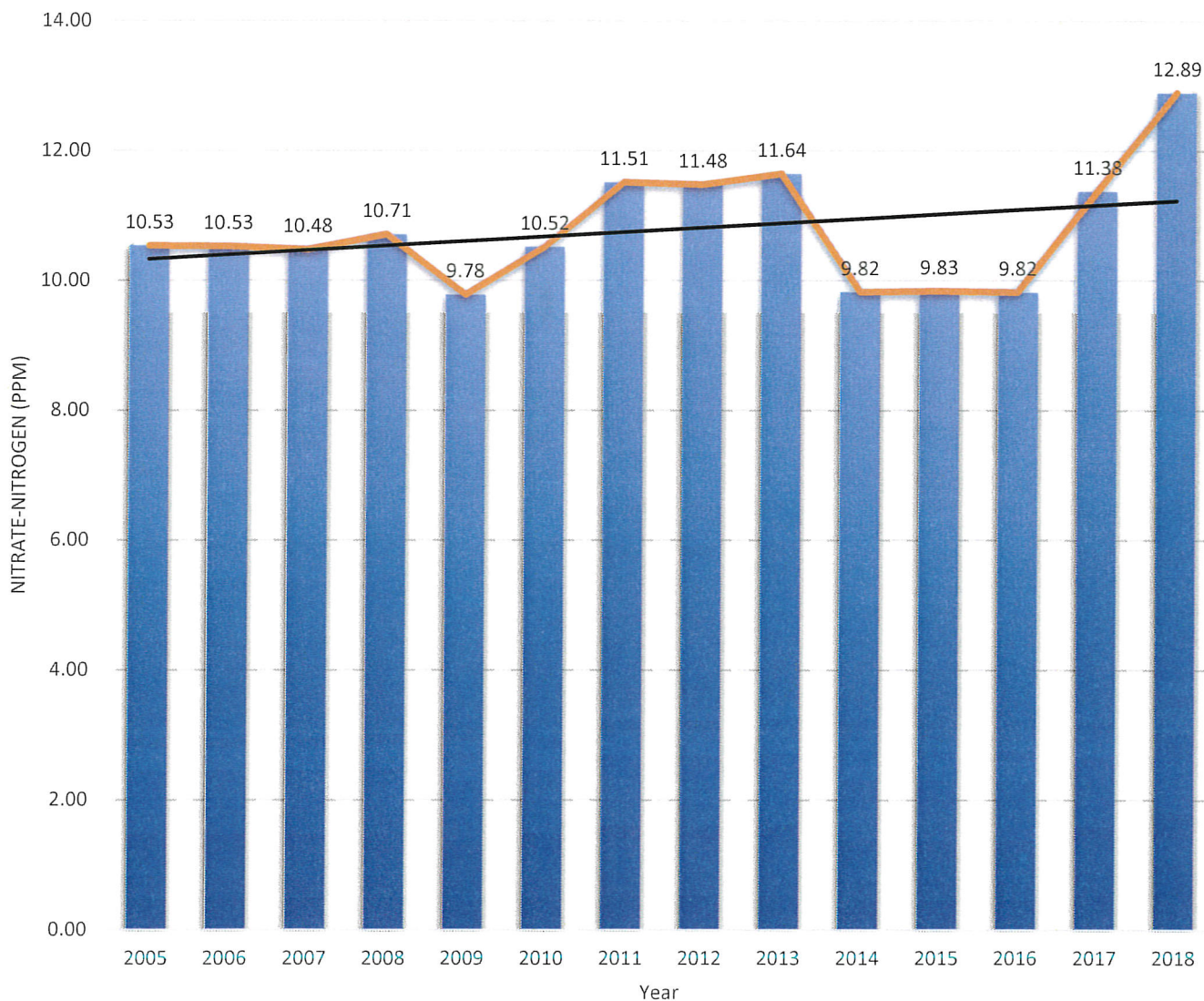
<b>Target Area</b>	2010	2011	2012	2013	2014	2015	2016	2017	2018
City of Sidney Municipal Wells	10.52	11.51	11.48	11.64	9.82	9.83	9.82	11.38	12.89
Sidney Draw Trigger Monitoring Wells	10.21	10.31	9.76	10.22	9.88	10.53	10.49	11.10	11.74
Sidney GWMA Network Wells	3.39	4.63	4.10	4.55	4.61	4.72	6.91	7.05	8.04
<b>Composite Average SGWMA (Phase II)</b>	<b>7.95</b>	<b>9.02</b>	<b>8.70</b>	<b>9.03</b>	<b>8.01</b>	<b>8.40</b>	<b>8.97</b>	<b>9.77</b>	<b>10.55</b>
East Lodgepole Valley GWMA Network Wells	7.37	8.29	7.92	7.42	6.31	7.34	7.56	7.44	6.99
East Lodgepole Valley Monitoring Wells	8.6	9.8	10.61	9.99	8.56	7.45	8.65	8.67	10.03
<b>Composite Average East Lodgepole Valley GWMA (Phase I)</b>	<b>7.65</b>	<b>8.61</b>	<b>8.43</b>	<b>7.88</b>	<b>7.74</b>	<b>7.36</b>	<b>7.79</b>	<b>7.97</b>	<b>7.75</b>
West Lodgepole Valley Cheyenne County	4.46	5.18	4.59	3.90	3.71	3.43	4.13	5.07	4.16
South Platte Valley GWMA Network Wells	8.4	8.25	8.40	8.63	8.97	8.75	9.79	8.50	9.29
South Platte Valley Monitoring Wells	4.92	4.32	4.87	5.90	5.32	4.73	4.42	3.90	3.82
<b>*Composite Average South Platte Valley GWMA (Phase I)</b>	<b>7.71</b>	<b>7.49</b>	<b>7.70</b>	<b>8.02</b>	<b>8.21</b>	<b>7.89</b>	<b>8.64</b>	<b>7.55</b>	<b>8.20</b>
Lodgepole Valley (DC) GWMA Network Wells	5.88	6.01	7.01	5.69	6.16	6.36	7.73	6.90	7.21
Lodgepole Valley (DC) Monitoring Wells	5.56	4.78	5.41	5.73	5.23	4.90	3.88	3.10	3.03
<b>Composite Average Lodgepole Valley GWMA Deuel County (Phase I)</b>	<b>5.8</b>	<b>5.73</b>	<b>6.68</b>	<b>5.70</b>	<b>5.93</b>	<b>6.00</b>	<b>6.70</b>	<b>5.73</b>	<b>6.01</b>
Lodgepole Valley (KC) Network Wells	4.85	5.52	5.66	4.56	5.16	4.61	6.13	6.37	5.99
Lodgepole Valley (KC) Monitoring Wells	5.94	5.17	6.37	6.63	6.27	5.71	6.68	7.55	6.38
<b>Composite Average Lodgepole Valley KC</b>	<b>4.88</b>	<b>5.04</b>	<b>5.21</b>	<b>5.42</b>	<b>4.84</b>	<b>5.18</b>	<b>6.26</b>	<b>6.61</b>	<b>6.07</b>



### City of Sidney Municipal Nitrate-Nitrogen Levels

Well ID	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
SMW-1	12.80	13.37	12.60	12.75	11.80	12.47	13.75	13.63	13.85	10.42	10.85	11.87	13.95	14.26
SMW-2	12.98	12.90	12.17	12.25	11.10	12.07	13.65	13.50	13.90	11.49	11.53	12.10	14.29	14.36
SMW-3	13.38	13.20	13.93	13.57	12.77	13.10	14.00	14.20	14.70	11.44	11.60	10.51	14.30	16.16
SMW-4	8.08	7.75	7.60	8.10	7.63	8.23	8.90	8.53	8.75	8.23	8.11	7.30		
SMW-6	13.28	14.33	13.80	14.35	12.77	12.60	14.05	14.17	14.10	12.03	12.15	10.50	7.49	
SMW-7	8.68	8.45	8.23	8.67	8.03	10.13	11.25	10.80	10.35	9.06	8.35	9.90		
SMW-8	6.83	6.65	6.88	7.15	6.60	7.63	8.00	7.87	7.80	7.11	7.49	8.19	8.66	8.57
SMW-9	8.28	7.58	8.60	8.83	7.53	7.90	8.50	9.13	9.70	8.78	8.58	8.15	9.56	11.12
<b>AVG</b>	<b>10.53</b>	<b>10.53</b>	<b>10.48</b>	<b>10.71</b>	<b>9.78</b>	<b>10.52</b>	<b>11.51</b>	<b>11.48</b>	<b>11.64</b>	<b>9.82</b>	<b>9.83</b>	<b>9.82</b>	<b>11.38</b>	<b>12.89</b>

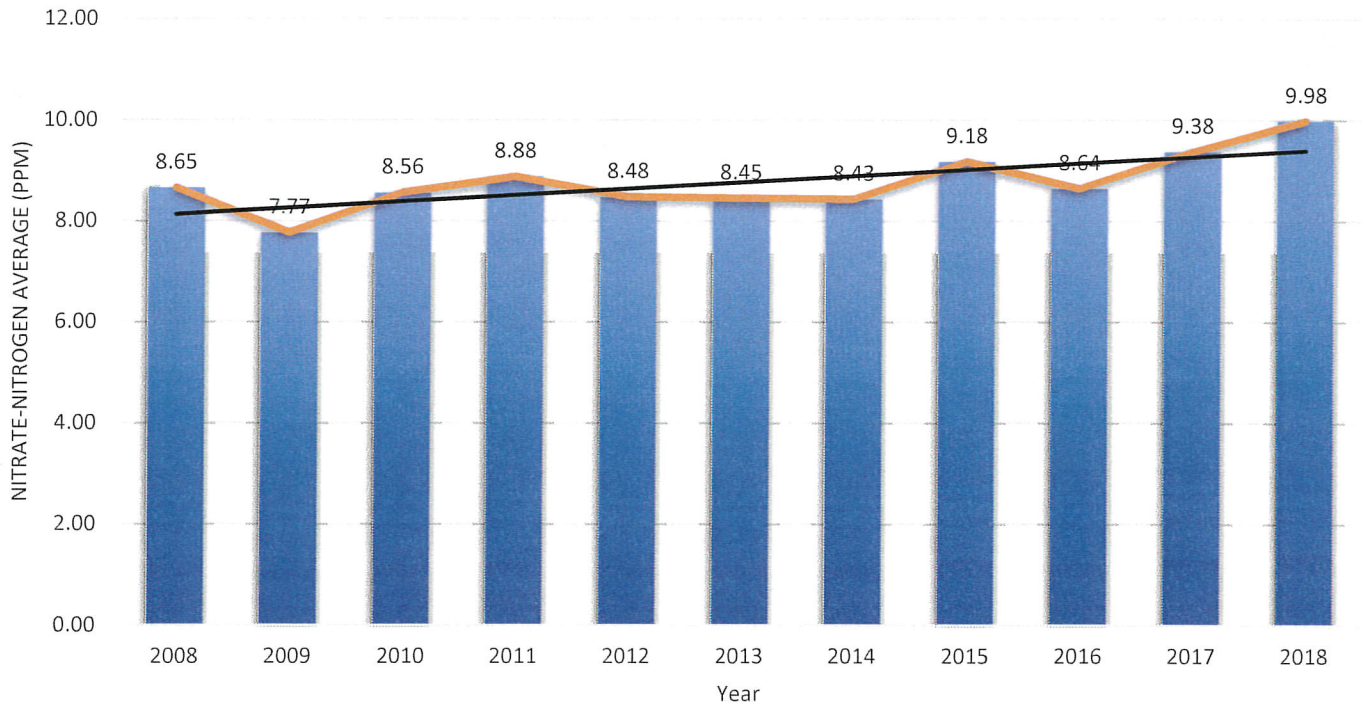
### SIDNEY MUNICIPAL NITRATE-NITROGEN AVERAGES



### Sidney Draw Monitoring Wells

Well ID	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
SD-1	8.43	8.03	8.96	7.90	7.30	7.50	8.11	7.70	9.80	8.10	9.30
SD-10	12.45	11.48	11.90	11.87	9.50	10.30	9.90	10.07	10.05	10.80	10.20
SD-12-D	13.17	11.10	12.13	12.20	12.09	12.52	12.30	12.60	11.20	12.10	12.80
SD-12-S	13.77	11.85	13.07	13.40	13.25	13.47	13.10	14.10	10.40	15.00	17.10
SD-15	3.60	4.22	5.60	6.93	7.37	3.87	5.18	5.50	3.95	4.10	4.10
SD-16	3.26	1.95	2.08	1.70	1.80	1.77	1.80	1.90	1.63	1.70	1.60
SD-2	4.95	4.15	5.78	7.97	6.00	6.95	6.80	11.30	10.65	8.10	7.70
SD-3	5.40	5.10	5.53	4.80	6.10	4.90	5.20	5.05	7.33	8.90	7.90
SD-4	7.18	6.92	7.92	7.37	8.00	8.60	8.24	8.95	11.35	12.40	13.70
SD-6	9.97	9.36	10.03	10.45	9.90	10.40	10.23	11.55	10.53	11.40	12.50
SD-7-D	10.20	8.94	9.07	9.65	9.32	9.30	8.74	9.50	9.30	8.80	9.50
SD-7-S	11.48	10.10	10.63	12.30	11.08	11.83	11.60	11.90	7.50	11.10	13.40
<b>AVG</b>	<b>8.65</b>	<b>7.77</b>	<b>8.56</b>	<b>8.88</b>	<b>8.48</b>	<b>8.45</b>	<b>8.43</b>	<b>9.18</b>	<b>8.64</b>	<b>9.38</b>	<b>9.98</b>

### Sidney Draw Monitoring Wells



### Wells Included in Triggers

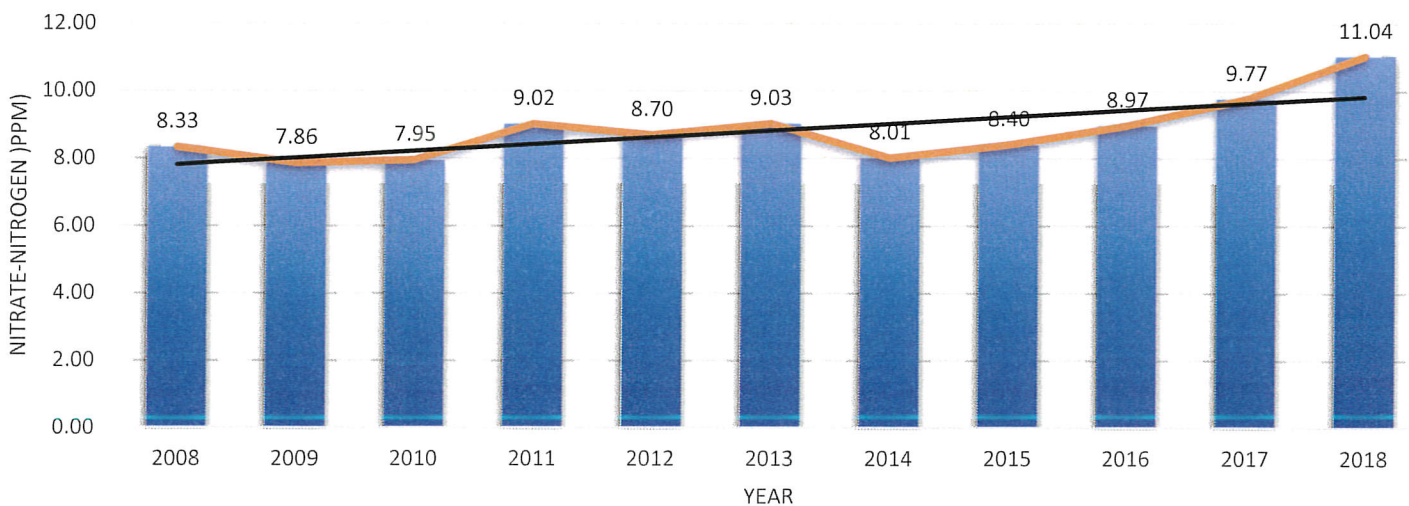
Well ID	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
SD-10	12.45	11.48	11.90	11.87	9.50	10.30	9.90	10.07	10.05	10.80	10.20
SD-12-D	13.17	11.10	12.13	12.20	12.09	12.52	12.30	12.60	11.20	12.10	12.80
SD-4	7.18	6.92	7.92	7.37	8.00	8.60	8.24	8.95	11.35	12.40	13.70
SD-6	9.97	9.36	10.03	10.45	9.90	10.40	10.23	11.55	10.53	11.40	12.50
SD-7-D	10.20	8.94	9.07	9.65	9.32	9.30	8.74	9.50	9.30	8.80	9.50
<b>AVG</b>	<b>10.59</b>	<b>9.56</b>	<b>10.21</b>	<b>10.31</b>	<b>9.76</b>	<b>10.22</b>	<b>9.88</b>	<b>10.53</b>	<b>10.49</b>	<b>11.10</b>	<b>11.74</b>



## Sidney Ground Water Management Composite Averages

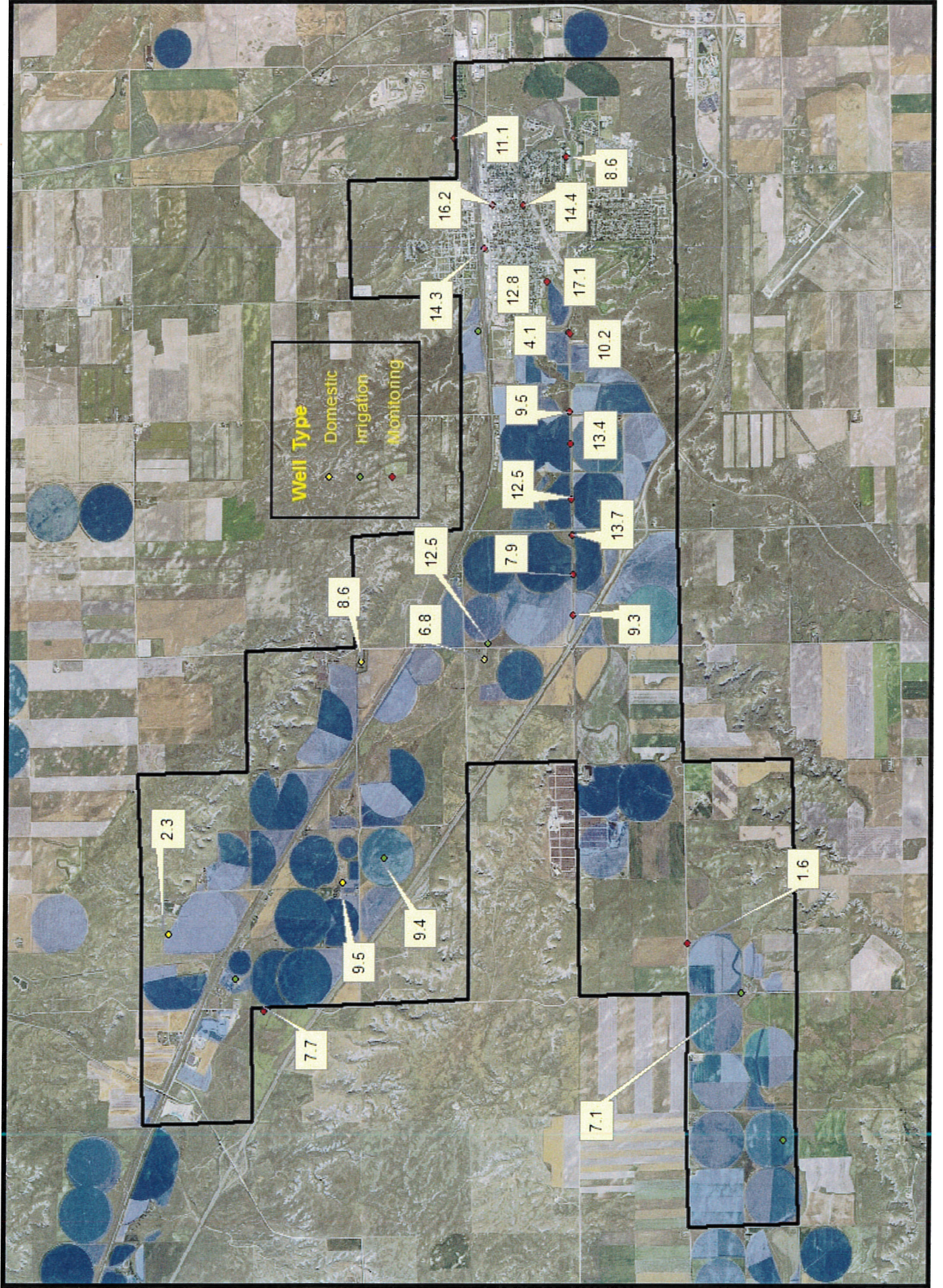
Owner Name	Well ID	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Chris Schilz	D068	1.05	1.70	1.15	6.20	1.00	2.95	0.95	8.40	7.05	8.15	6.85
Elizabeth Beyer	D060	1.20	4.65	1.35	1.35	1.10	1.55	1.20	1.05	0.95	1.70	2.30
Sharon Travis	D058	3.75	4.35	4.43	5.00	6.90	5.95	7.40	5.45	6.45	6.60	9.50
Wanda Rezac	D069	4.55	5.30	5.55	5.30	5.70	5.15	5.95	5.30	10.05	6.65	8.65
Chad Hrbek	I061		2.60			4.40	3.80	3.40	3.80			
Clem Schumacker	I063	3.90		1.90						5.40		
Dinklage Feed Yards	I067			4.05	4.01		7.90				9.50	12.50
John Hinrichs	I070	8.30										
Phil Grabowski	I064	5.50	5.50	5.30	5.90	5.50		4.50	4.30	8.40		7.10
Vern Beyer	I059	8.10	7.05					8.90		10.10	9.70	9.40
City of Sidney	SMW-1	12.75	11.80	12.47	13.75	13.63	13.85	10.42	10.85	11.87	13.95	14.26
	SMW-2	12.25	11.10	12.07	13.65	13.50	13.90	11.49	11.53	12.10	14.29	14.36
	SMW-3	13.57	12.77	13.10	14.00	14.20	14.70	11.44	11.60	10.51	14.30	16.16
	SMW-4	8.10	7.63	8.23	8.90	8.53	8.75	8.23	8.11	7.30		
	SMW-6	14.35	12.77	12.60	14.05	14.17	14.10	12.03	12.15	10.50	7.49	
	SMW-7	8.67	8.03	10.13	11.25	10.80	10.35	9.06	8.35	9.90		
	SMW-8	7.15	6.60	7.63	8.00	7.87	7.80	7.11	7.49	8.19	8.66	8.57
	SMW-9	8.83	7.53	7.90	8.50	9.13	9.70	8.78	8.58	8.15	9.56	11.12
	SPNRD	SD-10	12.45	11.48	11.90	11.87	9.50	10.30	9.90	10.07	10.05	10.80
	SD-12-D	13.17	11.10	12.13	12.20	12.09	12.52	12.30	12.60	11.20	12.10	12.80
	SD-4	7.18	6.92	7.92	7.37	8.00	8.60	8.24	8.95	11.35	12.40	13.70
	SD-6	9.97	9.36	10.03	10.45	9.90	10.40	10.23	11.55	10.53	11.40	12.50
	SD-7-D	10.20	8.94	9.07	9.65	9.32	9.30	8.74	9.50	9.30	8.80	9.50
<b>Average</b>		<b>8.33</b>	<b>7.86</b>	<b>7.95</b>	<b>9.02</b>	<b>8.70</b>	<b>9.03</b>	<b>8.01</b>	<b>8.40</b>	<b>8.97</b>	<b>9.77</b>	<b>10.55</b>

## SGWMA Composite Averages



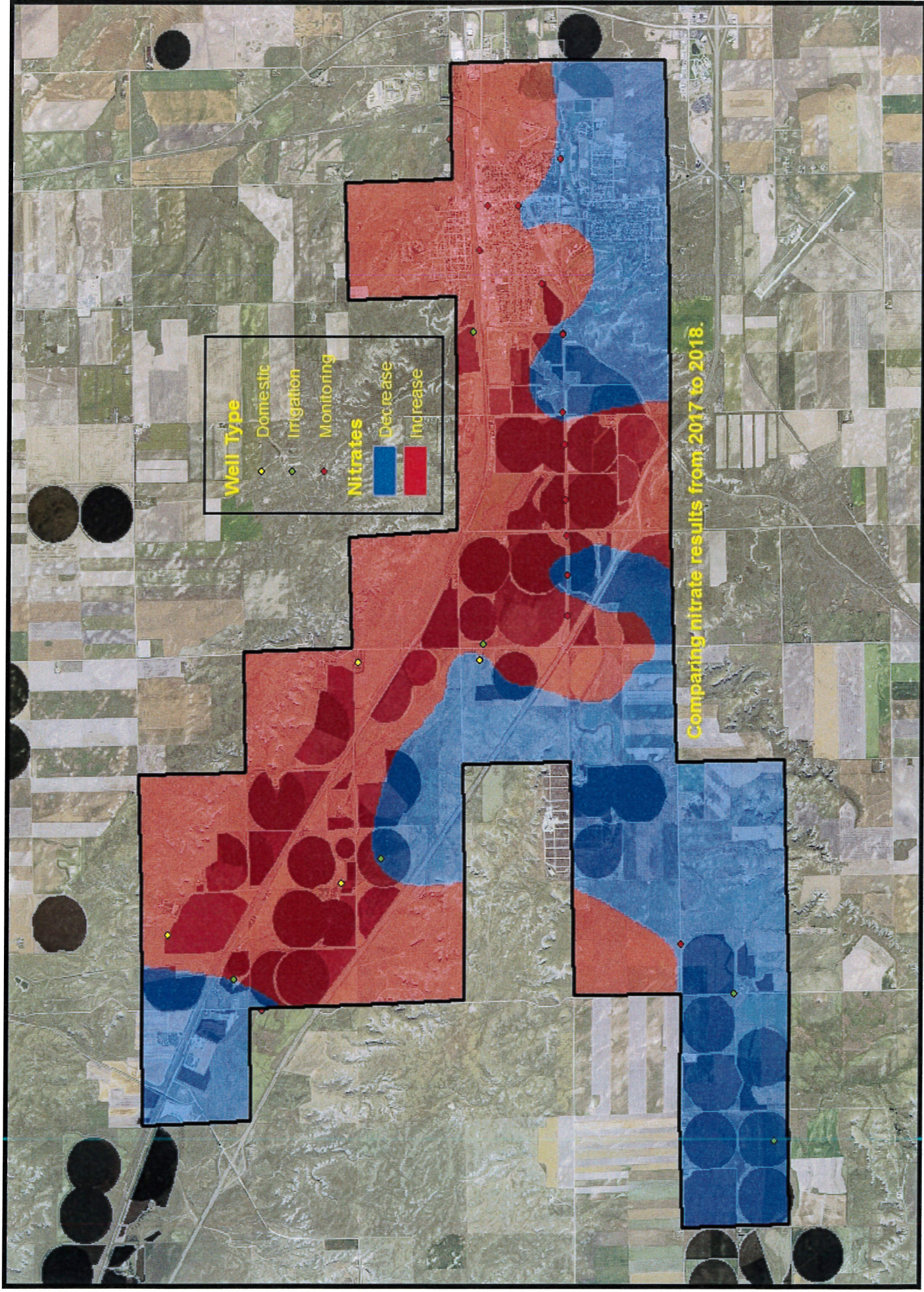


# Sidney Ground Water Management Area





# Sidney Ground Water Management Area

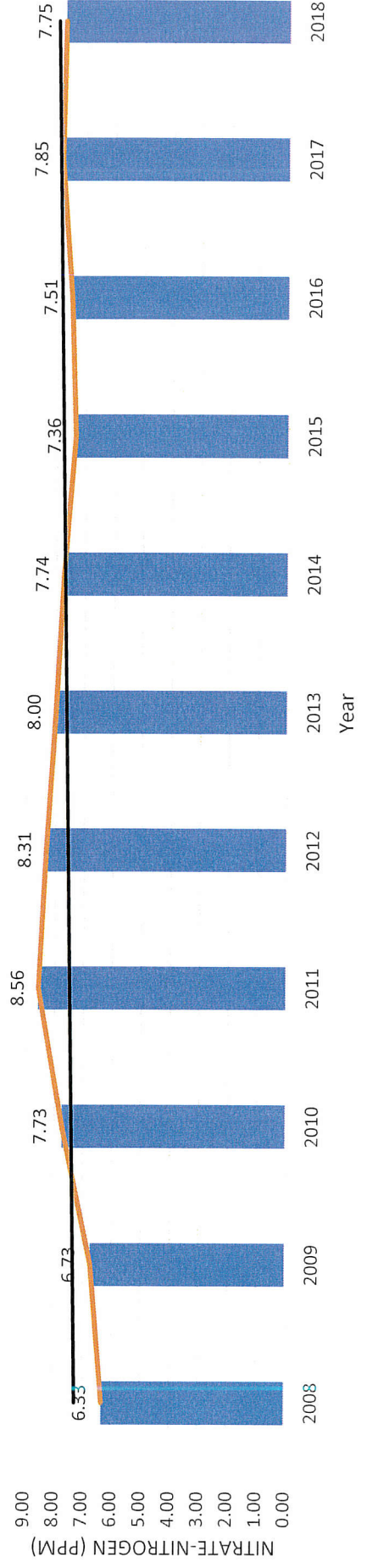


Comparing nitrate results from 2017 to 2018.



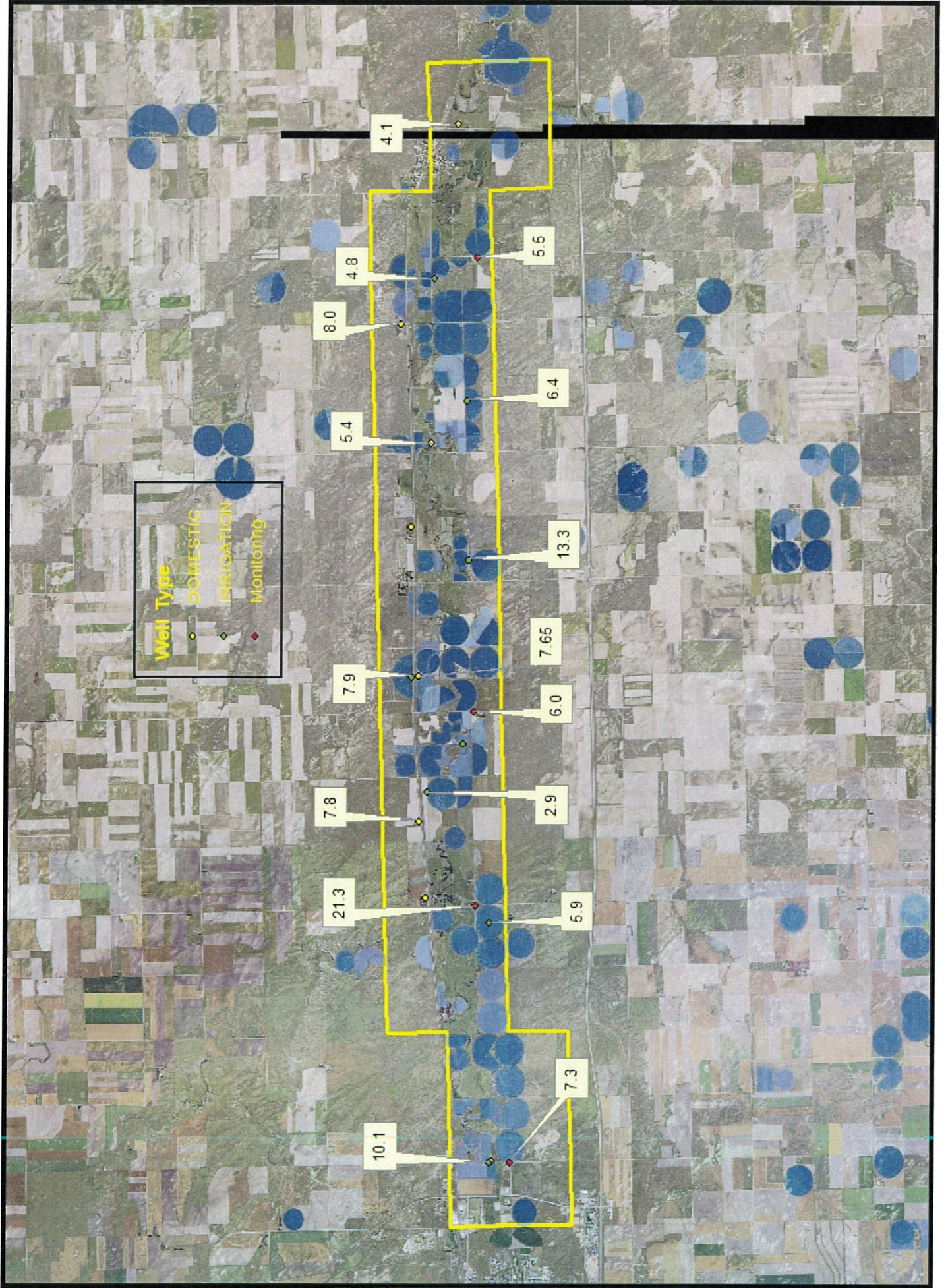
## East Lodgepole Valley Management Area

Owner Name	Well ID	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
B & Dk-Lawn	D152	7.30	7.70	6.80	7.40	6.90	6.10	8.00	7.40	7.80	7.20	
Dave Johnson	D151	7.35	7.85	15.25	13.00	7.80	7.70	8.80	8.23	7.45	7.75	7.35
Don Sharman	D153	4.80	5.70	5.70	6.35	5.40	4.90	4.55	4.50	4.40	6.43	5.40
Doyle Misegadis	D150	5.00	5.85	5.75	6.80	7.10	6.90	8.55	8.20	7.45	7.95	7.80
Gene White	D082	10.70	12.45	8.25	12.80	13.55	13.25	14.55	10.75	13.60	11.30	10.10
Jim From	D154	5.30	5.90	12.80	8.95	6.80	6.40	8.50	8.50	8.10	8.40	8.00
Scott Hendrickson	D146	3.85	4.35	4.35	4.20	4.00	3.40	4.20	4.00	4.05	4.50	4.05
Tom Krueger	D147	4.60	4.40	4.90	6.70	7.40	6.65	6.00			7.50	
Darrell Sharman	I157	8.50	7.70	11.20	15.50	13.10	11.10	12.60	13.45	9.30	13.60	13.30
Don Soucie	I087	6.30	5.90	7.10	10.70	11.30	11.40	9.45	7.30	6.80	4.30	4.80
Glassburn Farms	I130	4.20				7.30	6.30	6.30	6.90	6.60	6.20	
Miller Wheat Farms	I151	6.40	5.80	3.70	4.27	6.90	6.30	5.70	5.15	9.00		7.90
Randy Faessler	I148	2.90	4.20	5.50	4.76	5.45	6.80	5.20	5.00	6.50	6.70	5.90
Ron Hadeen	I085	5.95		7.90		6.80	7.30	7.20	7.70	6.00	6.20	6.40
Rosalie Kielian	I083	11.90	10.60	9.70	9.21	10.00	12.80		10.20			
St. George Ranch Inc	I156	3.20	2.00	3.60	4.20	4.00	2.80	3.20	2.70	3.50	3.40	2.90
SPNRD	E-1			10.15	5.80	5.65	5.10	4.94	3.30	4.10	4.30	5.50
	E-2			7.80	5.85	14.05	6.85	6.50	6.00	5.80	5.40	6.00
	E-3	9.17	10.13	8.60	20.15	16.10	20.95	15.23	14.30	19.10	23.40	21.30
	E-4	6.45	7.12	7.85	7.40	6.65	7.07	7.60	6.20	5.60	6.85	7.30
<b>Average</b>		<b>6.33</b>	<b>6.73</b>	<b>7.73</b>	<b>8.56</b>	<b>8.31</b>	<b>8.00</b>	<b>7.74</b>	<b>7.36</b>	<b>7.51</b>	<b>7.85</b>	<b>7.75</b>





# East Lodgepole Valley Subarea Map

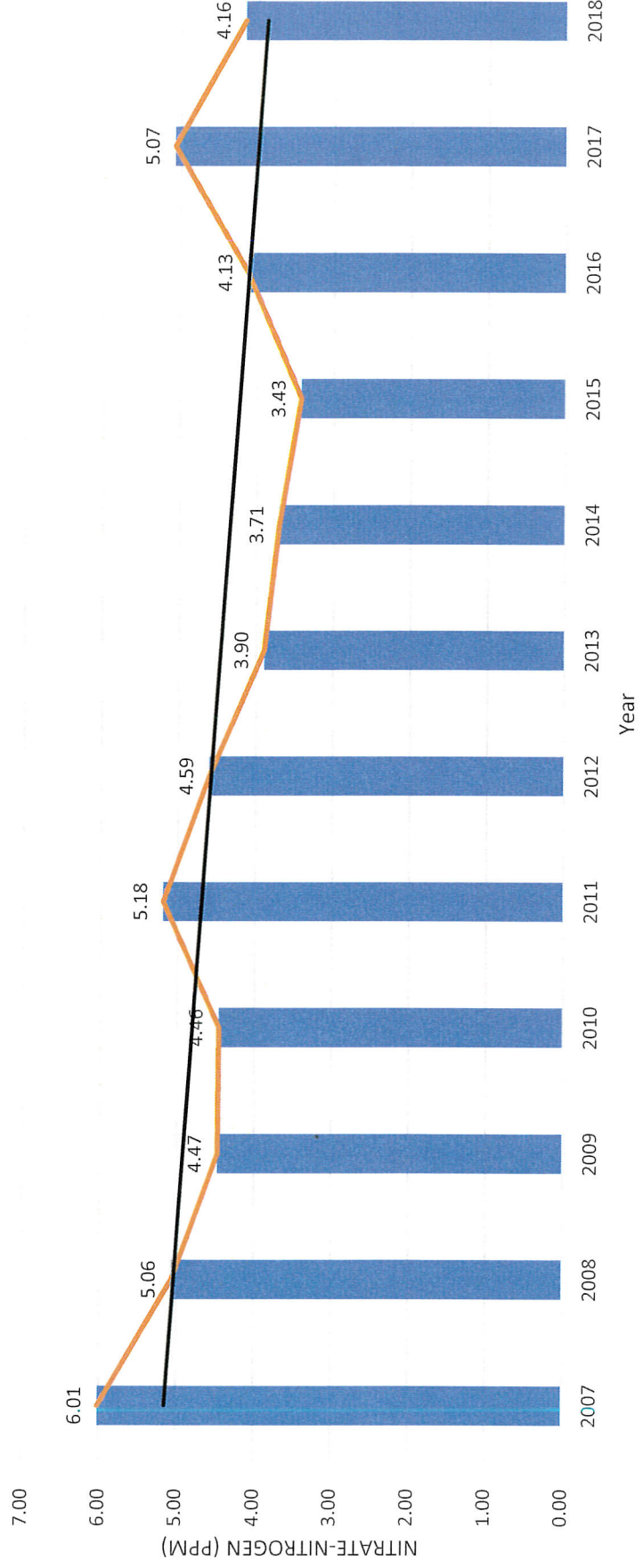




## Cheyenne County West Lodgepole Valley

Owner Name	Well ID	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Cliff Farms Inc.	D051	19.70	14.05	9.40	10.75	9.90	13.00	10.25	7.70	5.13	6.20	6.80	6.90
Elmer Jung	D048	5.00	2.90	4.75	4.40	4.20	4.10	3.60	3.50	3.25	3.35	3.90	4.50
Kenneth Cook	D056	1.80	1.60	1.53	1.80	1.60	1.40	1.37	1.35	1.30	1.27	1.97	1.70
Maury Horst Roland R.	D049	9.00	10.40	8.35	6.85	15.10	4.55	4.20	6.47	7.55	8.10	14.90	6.70
Madden	D053	1.50	1.45	1.70	1.55	1.40	1.70	1.55	1.45	1.35	1.20	1.70	1.60
Brad Hicks	I047		2.90	4.10			7.30	3.90	3.70		7.00	5.90	6.30
Robert Hostetler	I055	3.80			4.20	3.95	3.20	3.60	3.00				
Russ McMillen	I057	1.30	2.00	1.80	1.10	1.00	1.30	1.60	1.20	1.30	1.40	0.80	0.90
Russell Nielsen	I050	5.17	5.06	4.10	5.00	4.30	4.80	5.00	5.00	4.10	4.50	4.60	4.70
<b>Average</b>		<b>6.01</b>	<b>5.06</b>	<b>4.47</b>	<b>4.46</b>	<b>5.18</b>	<b>4.59</b>	<b>3.90</b>	<b>3.71</b>	<b>3.43</b>	<b>4.13</b>	<b>5.07</b>	<b>4.16</b>

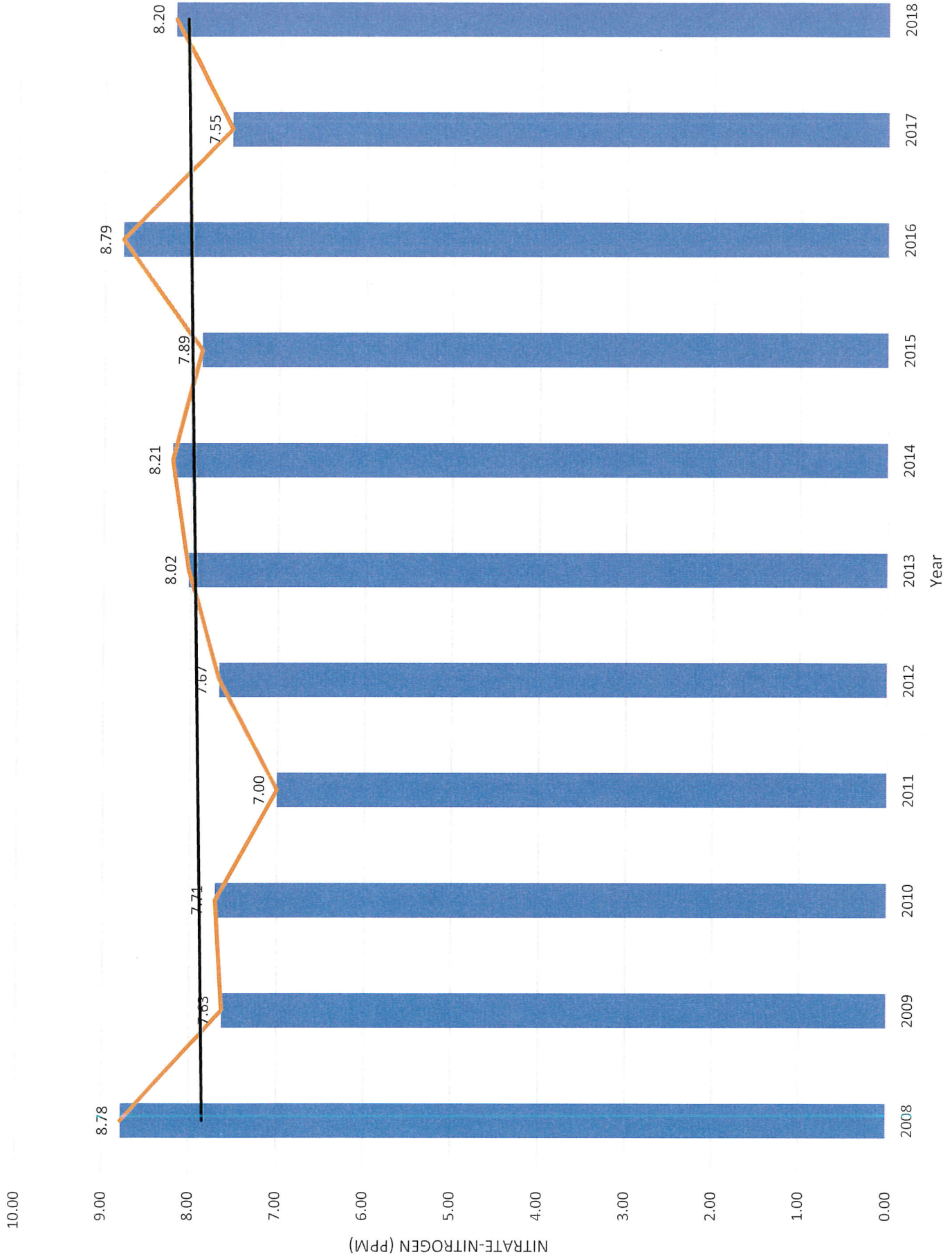
Cheyenne County West Lodgepole Valley



## South Platte Valley Groundwater Management Area

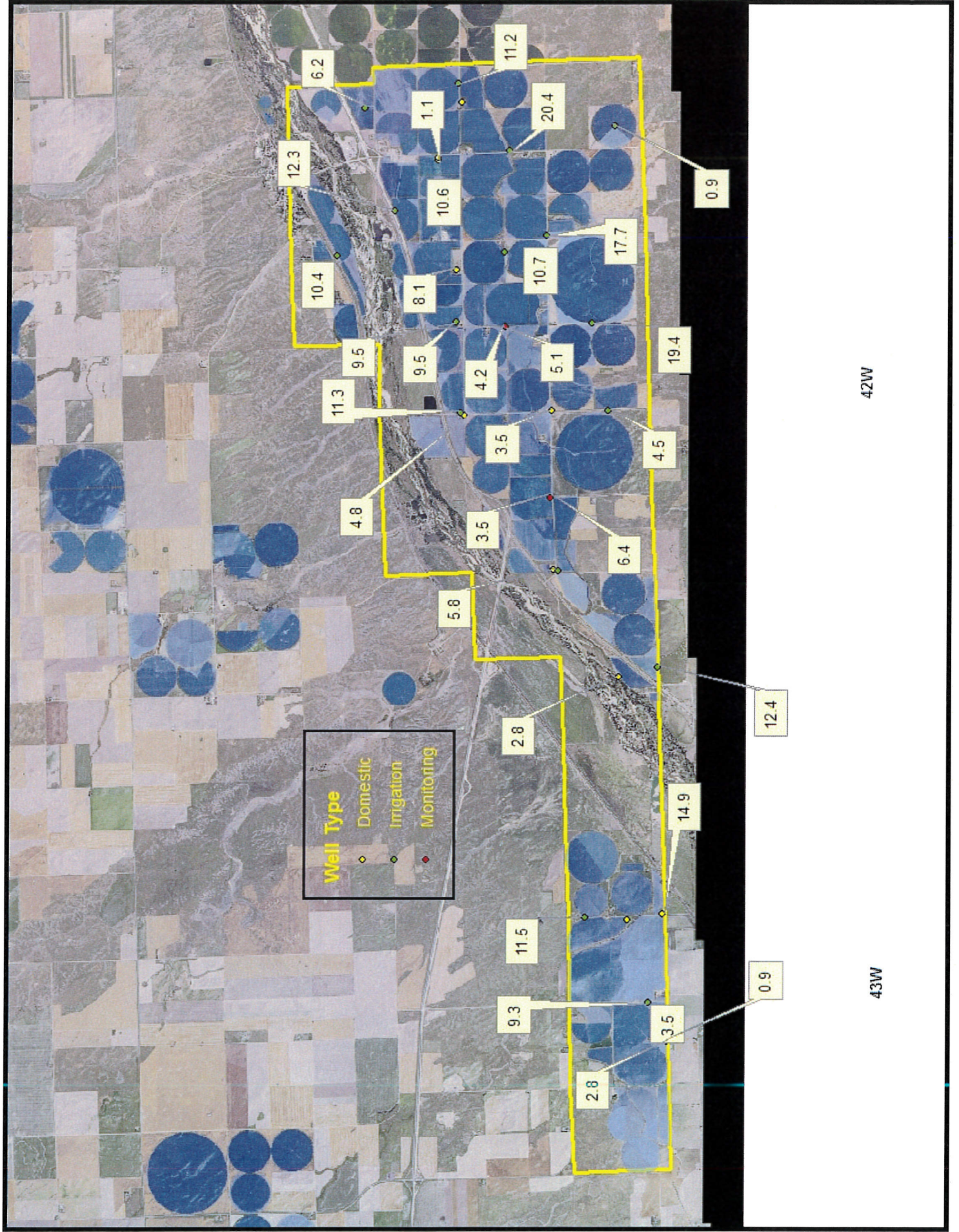
Owner Name	Well ID	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Delbert Harris	D078	3.20	3.10	3.05	3.20	4.40	4.20	4.20		3.80		5.80
Heath Tree	D077	4.45	3.45	3.50	4.00	4.10	5.10	4.60	5.95		4.70	4.85
Ira Orth	D110	16.70	18.15	13.55		5.55	10.50	15.70	16.10	15.60	12.80	14.90
Max Soper	D076	9.70	8.70	8.35	9.80	7.93	7.33	10.20	9.00	8.25	7.97	8.15
Robert Johnson	D109	7.05	3.90	3.15	1.75	4.57	9.65	1.63	2.15	5.50	5.25	3.50
Roland Duensing	D111	25.50	19.50	18.70								
Skoglund Investments	D075	16.20	14.77	13.90	15.00	14.10	9.25	9.60	7.40	5.40	6.70	
Steve McClung	D100											10.60
Village of Big Springs	D074	1.00	1.20	1.50	1.45	1.30	4.70	1.30	1.15	5.30	2.10	1.15
Western Irrigation	D113	3.15	2.80	2.25	1.95	5.07	2.70	2.30	1.40	1.95	2.43	2.80
WH Palser Farms	D079	10.70	7.70	8.25	6.95	3.00	3.95	4.80	4.10	3.60	4.60	3.55
Alan Bieber	I119	4.25	7.90	11.80	7.30	8.10	5.20	5.20	10.50	14.20	8.50	10.40
Alan Bieber	I139	4.75	7.10	9.40	6.20	8.00	8.10	11.90	12.70	13.90	8.40	11.30
Calvin McClung	I144	0.40	1.10	1.30	1.60	1.50	1.35	1.20	1.40	1.20	1.20	0.90
CG Farms Inc.	I112	8.90	7.50	7.40	7.28	7.60		19.60	16.20	16.90	12.20	11.50
Charles Steward	I143	15.80	15.60	6.90	16.90	20.00	19.80	18.90	17.70	20.55	16.90	20.40
Curtis Hensley	I114	10.20		7.00	6.87	6.70	6.50	6.20	5.50	11.00	10.00	12.40
Delbert Harris	I115	2.70	2.60									
Husker Land Group, LLC	I116	25.35	11.60	22.90	11.80	12.00				4.00	3.00	4.50
Joyce Beaver	I108	11.10	9.40	8.80	9.00	13.40	12.80	10.20	12.30		12.90	9.30
Lyle Dehning	I118	5.15	4.20	5.50	7.00	6.50	7.50	5.40	5.20	7.20	6.40	6.20
Martin Flaming	I141	12.05	11.20	10.40		10.80	10.20	11.80	9.90	10.60	10.60	10.70
Max Soper	I138	9.00	6.20	8.20	7.70	7.90	6.80	6.40	6.20	8.60	7.90	9.50
Mike/Mark McGreer	I137	9.05	8.30	8.70	8.16	8.80	10.90	8.80	9.30	11.10	10.60	12.30
Philip Armstrong	I142	14.50	12.20	14.20	13.10	14.40	18.60	19.70	15.40	20.00	15.70	17.70
Philip Armstrong	I159	15.70	15.70		19.10	19.60	16.10	15.70	11.30	14.00	8.90	11.20
WH Palser Farms	I145	2.75	2.60	3.00	4.10	6.40		10.90	11.60	17.00	15.70	19.40
SPNRD	D-3-M	7.42	7.18	7.12	6.00	8.70	10.40	10.42	9.40	7.60	5.70	5.10
	D-3-S	5.83	4.85	5.50	7.80	7.65	8.05	7.90	4.60	3.50	3.20	4.20
	D-4-M	5.00	5.47	4.58	3.20	3.70	4.25	3.80	6.60	6.50	5.20	6.40
	D-4-S	4.90	3.32	3.50	4.60	1.79	3.05	2.80	5.20	3.80	6.20	3.50
	D-5-M	4.66	5.72	5.87	2.30	3.65	7.10	4.90	1.55	3.90	1.90	2.80
	D-5-S	3.88	3.58	2.97	2.00	2.95	2.55	2.11	1.05	1.20	1.20	0.90
Average		8.78	7.63	7.71	7.00	7.67	8.02	8.21	7.89	8.79	7.55	8.20

# South Platte Valley Composite Average





# South Platte Valley Subarea Map

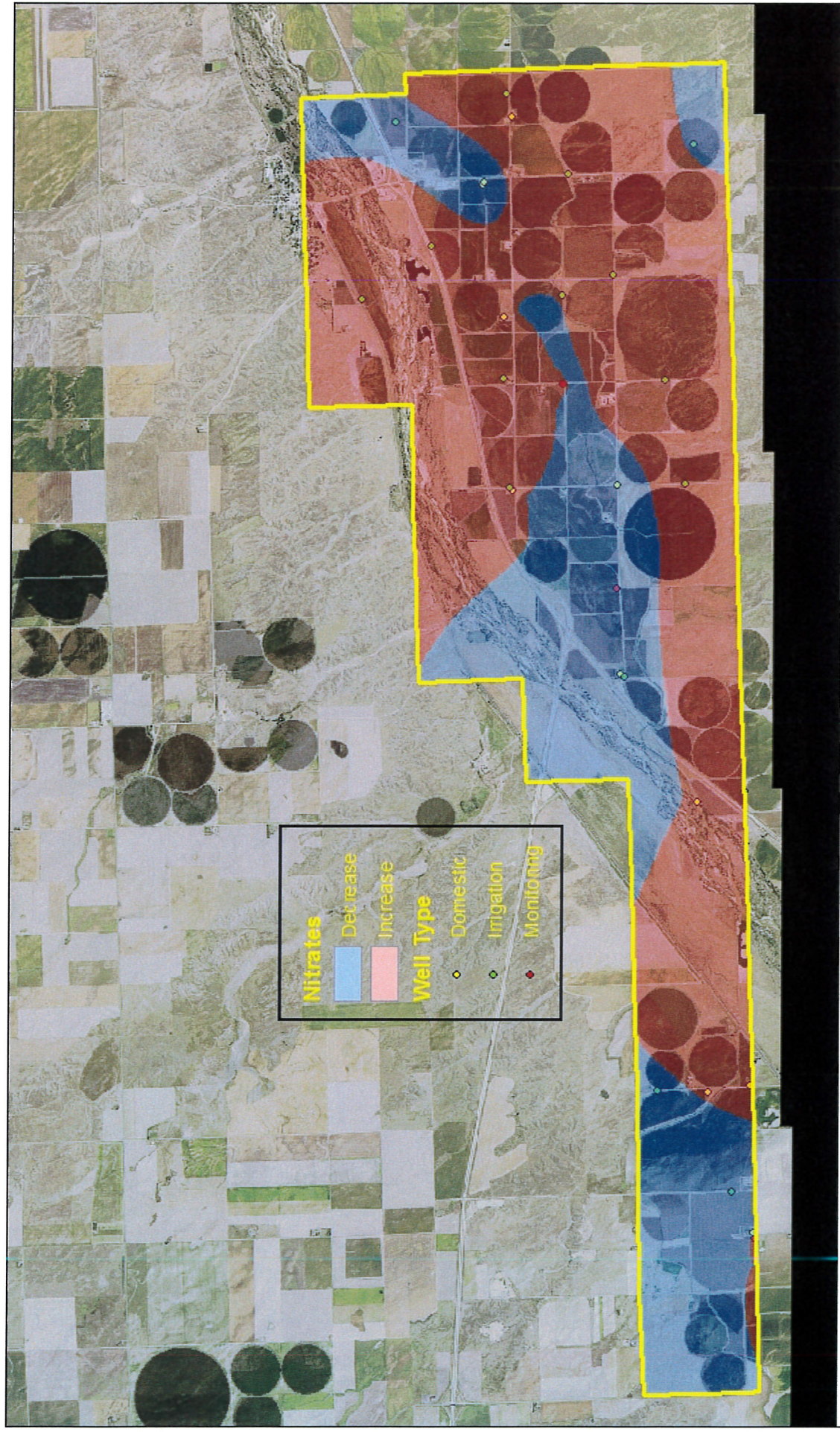


42W

43W



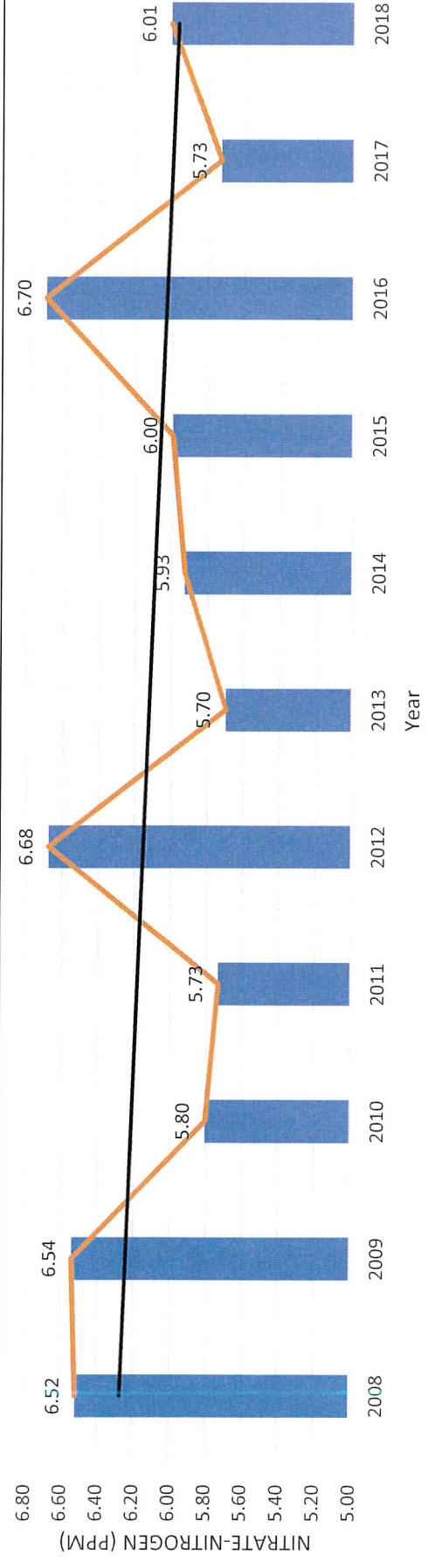
# South Platte Valley Subarea Map





## Lodgepole Valley Deuel County Composite Averages

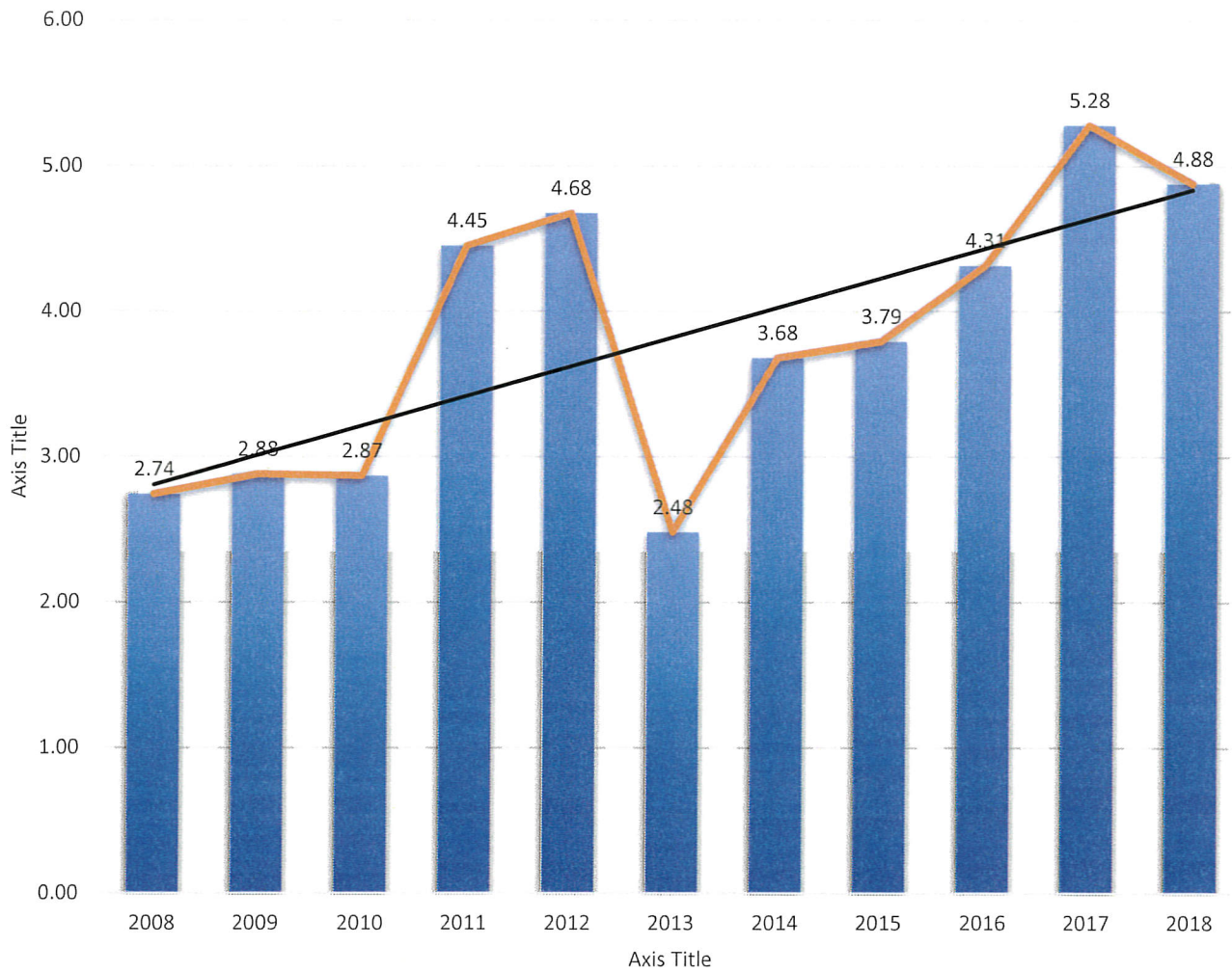
Owner Name	Well ID	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Dale Hummermeier	D098	4.55	5.97	5.85	6.40	5.53	5.95	5.60	5.00	5.05	5.55	5.25
Garrett Brandt	D101	4.95	6.15	5.60	6.10	5.33	5.25	8.70	5.70	6.60	3.75	3.00
Gary Freeman	D097	38.20	31.55	25.00	21.25	25.57	24.20	15.90	20.00	27.80	20.40	23.15
Milton Peterson	D094	5.43	5.50	4.90	5.00	4.10	3.70	4.20	4.20	4.20	4.20	4.20
SandPoint Cattle Co.	D090	5.95	6.45	6.35	5.85	6.90	4.75	4.10	4.70	6.10	6.10	5.00
Steve and Arlene Penner	D092	1.70	2.10	2.45	1.25	2.17	1.85	2.30	1.73	2.05	1.90	1.35
Cordell Boss	I158	4.50	3.60	3.50	3.39	9.70				1.90	4.30	
Craig Kinoshita	I095	7.35	8.10		7.95	8.20	8.10	7.90				8.40
Dave Kalb	I132	3.30					4.50		4.00	8.20	6.70	6.30
Kevin Derry	I093	6.55	5.95	7.60	7.60	9.90	2.30	7.00	8.00	7.80	8.50	9.10
Kevin Derry	I134	6.05	5.80	3.30	5.90	7.20	5.30	5.40	6.10	7.60	4.90	6.30
SandPoint Cattle Co.	I088	2.10	4.00	2.20	2.50	2.80	3.50	2.60	10.90	10.30		
SandPoint Cattle Co.	I089	3.60	3.70	3.60	4.20	4.70	4.10	4.60	4.30	4.30		
Sandpoint Cattle Co.	I133	4.60	3.90	5.10		5.50	5.60	5.60		6.50		
Steve and Arlene Penner	I091			3.60	3.55	4.30	3.40		1.70			
Steve and Arlene Penner	I135			3.20	3.13	3.30	2.80					
SPNRD	D-6	7.57	6.33	8.25	6.25	9.00	10.45	9.10	7.40	3.30	0.90	1.10
	D-7	6.37	7.03	7.28	7.10	6.20	5.85	5.80	5.90	6.00	5.50	5.50
	D-8	2.39	2.53	2.78	2.10	2.45	2.60	2.10	2.30	1.90	2.10	2.00
	D-9	2.17	2.50	3.93	3.65	4.00	4.03	3.93	4.00	4.30	3.90	3.50
<b>Average</b>		<b>6.52</b>	<b>6.54</b>	<b>5.80</b>	<b>5.73</b>	<b>6.68</b>	<b>5.70</b>	<b>5.93</b>	<b>6.00</b>	<b>6.70</b>	<b>5.73</b>	<b>6.01</b>



### Deuel County Tablelands

Owner Name	Well ID	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Avis Leach	D106	3.20	3.43	3.37	2.90	2.95	2.65	2.70	2.30	2.50	3.30	2.80
Dave Kalb	D155								6.90	10.40	10.70	9.30
Gary Freeman	D095								6.35	6.30	7.50	7.85
Raymond Nitzel	D107	3.50	3.60	3.30	3.15	2.95	2.67	3.00	2.65	2.50	3.00	2.75
Dennis Zimmerman	I120	3.30			9.60	9.80		8.00		3.60		
Leo Jessen	I072	1.60		2.50	2.15	3.00	2.60	2.90	2.80	2.90		
Ray Agency	I102	2.10	1.60	2.30			2.00	1.80	1.75	2.00	1.90	1.7
Average		2.74	2.88	2.87	4.45	4.68	2.48	3.68	3.79	4.31	5.28	4.88

### Deuel County Tablelands



### Cheyenne County North Tablelands

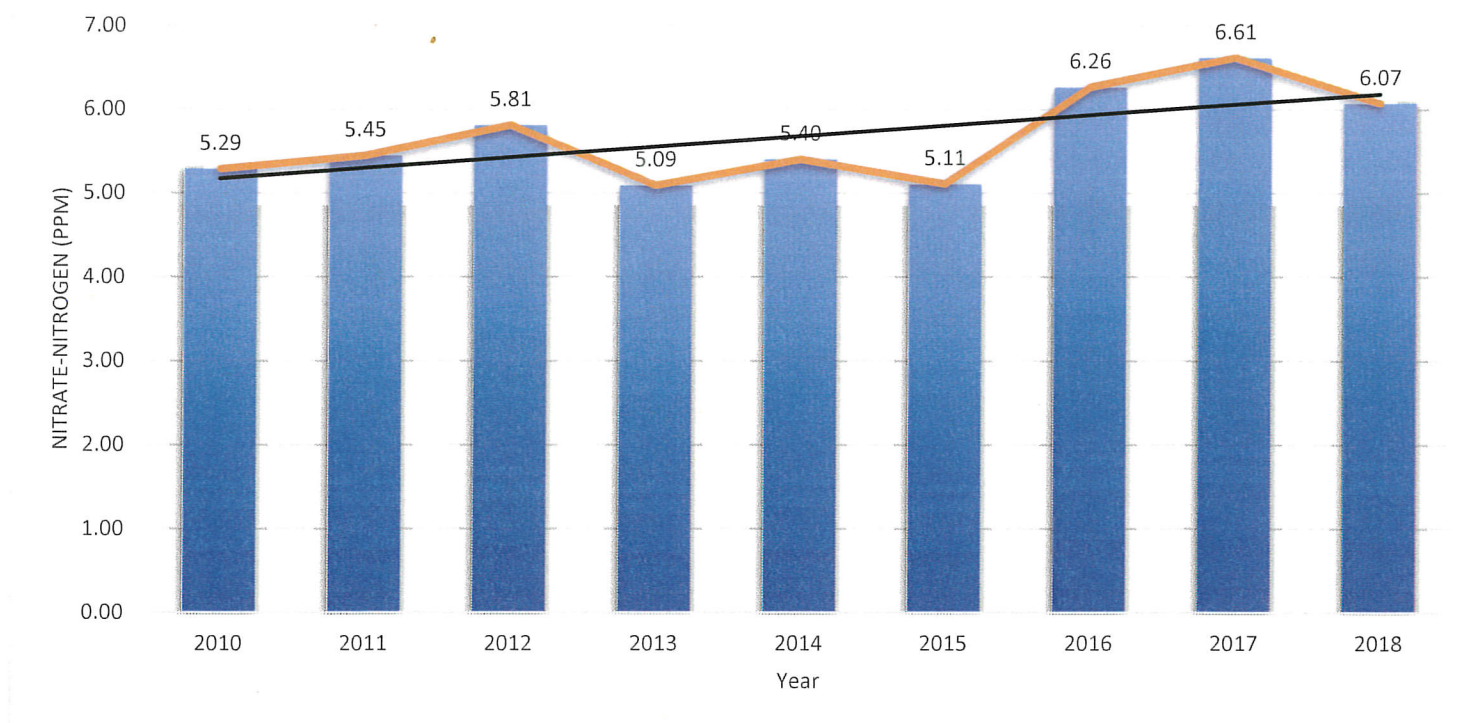
Owner Name	Well ID	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Galen Wittrock	D122	7.43	4.90	6.85	7.40	5.40	5.80	6.60	6.85	6.90	7.30	7.70
Alvin Narjes	I129	3.67			3.42	3.80						
Jack Nienhuser	I128	3.90							3.50		3.30	
Marvin Meyer	I127			1.90					1.20	1.80	1.60	
Patsy Nichols	I126				1.48							
Steve Hopkins	I123			3.10					1.30			
Tim Maas	I125									2.30	2.00	1.90
Tyler Nienhuser	I128	3.90							3.50		3.30	
SPNRD	CD-10-D			3.80								2.30
*Sampled every 10 years	CD-10-S			4.10								1.10
	CL-05-S			1.00								1.10
	CL-09-S			2.70						1.30		
	CL-19-D			1.00								
	CT-01-D			1.00							3.00	
	CT-01-S			2.30							2.80	
	CT-02-D			2.80							1.90	
	CT-02-M			1.80							1.80	
	CT-02-S			1.70							1.90	
	CT-03-S			2.30							3.20	
	CT-06-S			1.30					1.40			
	CT07			1.90								
	CT-15-D			1.20							0.20	
	CT-15-S			1.60							1.30	
	CT-17-D			1.70								2.10
	CT-17-S			2.60								1.40
	CT-18			1.40								1.10
	CT-20			1.90								2.50
	CT-21			2.10								2.30
	CT-24			1.80								1.60
	CT-25			1.40								3.40
	CT-30					2.30						1.70
	CT-31					1.65						1.30
	CT-32					2.60			1.90			
	CT-37					4.00			4.85			
	CT-38					4.70			5.60			
	CT-39-D					2.00						3.90
	CT-43								2.80			
<b>Average</b>		<b>4.73</b>	<b>4.90</b>	<b>2.21</b>	<b>4.10</b>	<b>3.31</b>	<b>5.80</b>	<b>6.60</b>	<b>3.27</b>	<b>3.21</b>	<b>2.58</b>	<b>2.36</b>



## Kimball County Lodgepole Valley Composite Averages

Owner Name	Well ID	2010	2011	2012	2013	2014	2015	2016	2017	2018
Barry Frederick	D017	0.30	0.30	0.27	0.15	0.15	0.10	0.10	0.15	0.30
Bill Gross	D003	3.80	4.40	4.80	5.30	5.40	5.65	7.10	9.20	10.00
Bill Mueller	D027	5.83	6.30	6.40	5.80	5.65	5.83	5.85	6.30	6.05
Cindy Rasmussen	D029	4.35	6.10	4.40	3.40	4.30	7.37	7.20	6.80	5.95
Dan and Laura Bateman	D030	8.35							10.95	10.05
Gene Mohr	D038	5.70	8.10	5.40	3.80	4.55	4.20	6.20	7.80	3.77
Kenneth Rageth	D004	6.80	6.85	7.32	7.77	7.97	8.10	9.40	11.90	14.40
Mike Harroun	D014	8.35	6.90	7.30	6.05	5.40	6.00	6.23	9.45	6.40
Monte Herboldsheimer	D007	6.55	5.30	4.90	5.25	5.65	5.10	5.90	6.00	4.60
Mrs. John Ferguson	D022	4.05	4.00	3.97	4.05	4.05	3.90	4.15	4.70	4.40
Oliver Reservoir	D016	0.65	0.80	0.80	2.25	2.30	1.80	0.20	0.20	0.25
Rosalie Kielian	D043	8.70	5.65	6.20	6.20	7.30	8.00	7.70	10.45	10.95
Scott Barnes	D033	7.55	8.30	8.60	7.60	9.70	8.20	10.20	10.10	9.50
Scott Lockwood	D018	1.35	3.50	0.90	2.85	0.70	0.70	1.53	0.77	0.90
Tim Lukassen	D044	12.40	14.20	12.60	10.13	11.03	10.45	13.73	11.00	9.35
Alan Adamson	I011									
Alan Adamson	I013	3.00	3.20	3.10				3.40	2.80	2.90
Dennis Cauley	I032							5.60	4.60	4.80
Gene Mohr	I039		8.40	7.20	6.80					9.40
Gross Wilkinson Inc.	I005	4.60	5.20	5.70	5.30	5.20				
Gross Wilkinson Inc.	I006	6.15	5.98	6.20	6.30	7.20		9.00	9.80	
Jack Hockersmith	I002	4.90	5.70	5.40	5.20	8.90			6.10	5.20
Jennifer Lynn	I025	4.00	4.00	3.70	3.90	4.40				
Jerry Gregory	I023	3.30	3.10	2.70	2.40	2.20				
Jerry Gregory	I028	6.90	6.52	7.70	5.30	5.40	4.90	7.90	6.60	7.20
John Miller	I041	2.10	4.58			2.70	2.80			3.10
Ken Johnson	I046			7.00	2.40	2.70	2.20	2.50	3.00	2.50
Klent Schnell	I008								2.60	2.20
Lennard Fornstrom	I037	5.70	6.00	6.15	5.80	4.80	5.10	6.30	6.60	7.20
Marquart Farms Inc.	I001	6.30	2.70		4.60				9.90	
Michael Reuter	I045	3.20	5.90	11.10	2.70	3.30	3.40	3.70	3.50	3.80
Mike Harroun	I015	3.10	2.90	2.50	3.10	4.00	2.80	4.00	3.00	3.20
Mrs. John Ferguson	I024	5.10	5.20	5.60	4.50	5.00	5.80	5.80	6.10	6.00
Ray Gunderson	I040	3.80	5.00	4.70	4.10	5.40	5.10	5.80	5.80	6.20
Rosalie Kielian	I042	8.50	12.60	13.10	7.20	11.20		17.00	12.00	15.90
Vowers & Sons	I031	3.20	3.40	4.00	3.20	3.10		3.00	2.80	3.30
	K-1-D	6.43	5.20	5.50	5.60	5.90	4.80	6.00	5.90	4.30
	K-1-S	9.70	9.30	10.80		9.20	8.10	10.50	8.90	8.50
	K-2	10.20	9.60	10.00	11.60	11.21	7.30	8.10	9.40	5.60
	K-3	7.22	5.35	8.35	7.60	6.20	10.50	9.30	12.50	8.70
	K-4	1.93	1.80	2.80	4.20	3.84	2.50	1.95	3.60	2.40
	K-5	3.13	2.50	2.70		2.62	2.40	2.50	2.60	2.30
	K-6-D	4.40	3.80	5.43	5.40	5.50	5.00	6.87	8.00	9.20
	K-6-S	4.53	3.80	5.40	5.40	5.70	5.10	8.20	9.50	10.00
Average		5.29	5.45	5.81	5.09	5.40	5.11	6.26	6.61	6.07

## Kimball County Composite Averages



## Kimball County Tableland Composite Averages

Owner Name	Well ID	2011	2012	2013	2014	2015	2016	2017	2018
Kenton Taylor	D010	8.50		8.60	9.40	8.40	7.70	8.90	7.50
George Bricker	I035	2.17	3.10	3.00	2.50	2.40	2.20		
Gordon Poss	I034	2.67	2.90	2.50	2.90	2.80		2.60	
Jennifer Lynn	I020	2.90	2.30	2.55	2.50	2.70	2.50	2.30	2.60
Jim Beranek	I009	4.30	3.80	3.70	5.20	4.00	4.50		
Terry Madden	I012	2.50	2.80	2.30	3.00	3.80		3.20	3.25
SPNRD	KT-10		4.4				4.1		
*Sampled every 10 years	KT-11						3.6		
	KT13						1.1		
	KT-14						1.9		
	KT-15						2.3		
	KT-16						2.9		
	KT-3		2.8				2		
	KT-4-D						1.5		
	KT-4-S						1.8		
	KT-5		1.1				0.8		
	KT-6		3				2.4		
	KT-7		2.9				2.6		
	KT-8		4.4				3.8		
	KT-9		4.3						
<b>Average</b>		<b>3.84</b>	<b>3.15</b>	<b>3.78</b>	<b>4.25</b>	<b>4.02</b>	<b>2.81</b>	<b>4.25</b>	<b>4.45</b>



Kimball County Composite/Tableland Map

