



2021 GROUND WATER QUALITY MONITORING REPORT

South Platte Natural Resources District



JANUARY 3, 2021

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Nitrates in Drinking Water

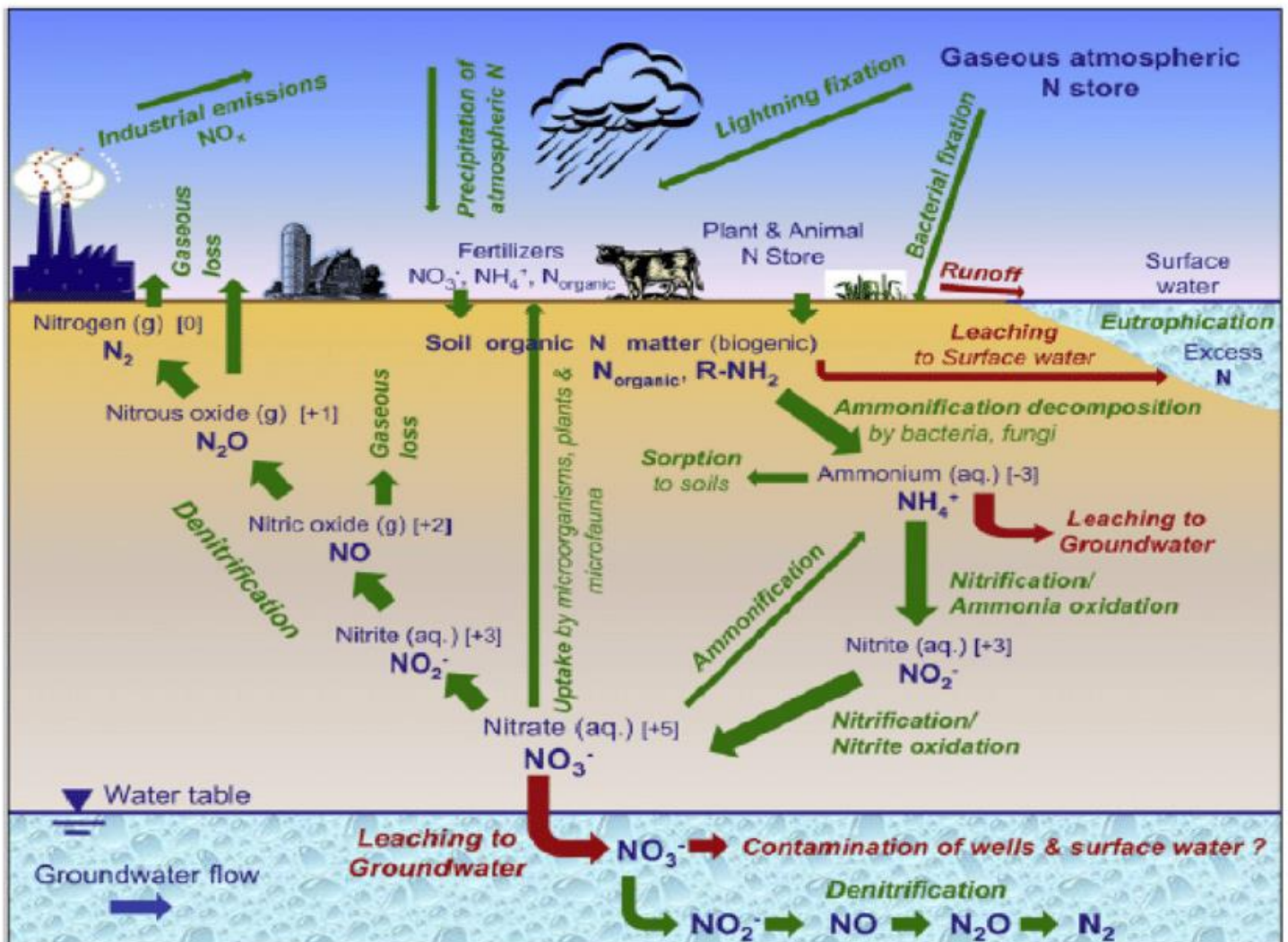
Nitrate levels are regulated within the SPNRD primarily because excess levels can cause methemoglobinemia, or “blue baby” disease. This sickness is extremely rare, but it is important to be aware of the risks. Nitrate levels that affect infants do not pose a direct threat to older children and adults until nitrate levels exceed 100 ppm, but the effect on any given person depends on many factors. (Source: Cornell University Cooperative Extension).

Methemoglobinemia is the most significant health problem associated with nitrate in drinking water. During the process of reduction, nitrite (NO_2) can be formed from nitrate (NO_3). When nitrite is present, hemoglobin (which is an iron based compound which carries oxygen) can be converted to methemoglobin (which cannot carry oxygen). When oxygen cannot be carried through the blood stream, the skin turns blue and brain damage or death can occur.

The current standard for nitrate in drinking water is set at 10 ppm. Because potential health risks are often unknown or hard to predict, many drinking water standards are set at some fraction of the level of “no-observed adverse health effects”. In general, the greater the uncertainty about potential health effects, the greater the margin of safety built into the standard.

Nitrate in groundwater originates primarily from fertilizers, septic systems, and manure. Nitrogen that is not taken up by plants, volatilized, or carried away by surface runoff can leach below the root zone in the form of nitrate and contaminate drinking water sources.

Nitrogen Cycle



Summary

This report summarizes the 2021 ground water quality monitoring program for the South Platte Natural Resources District (SPNRD).

The SPNRD has completed its thirty-third year of monitoring nitrates in the District. Of the 174 network wells, 145 were sampled at least once this year. This breaks down to 48 of 52 domestic wells, 55 out of 76 irrigation wells, 37 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. Most irrigation users have also gone to a set irrigation schedule which has made it difficult to catch those systems running.

There are 62 monitoring wells established on the tablelands that are not considered in the network. All these wells have been sampled within the last few years. Except for three wells, nitrate results in these wells fall between 1-3 parts per million (ppm).

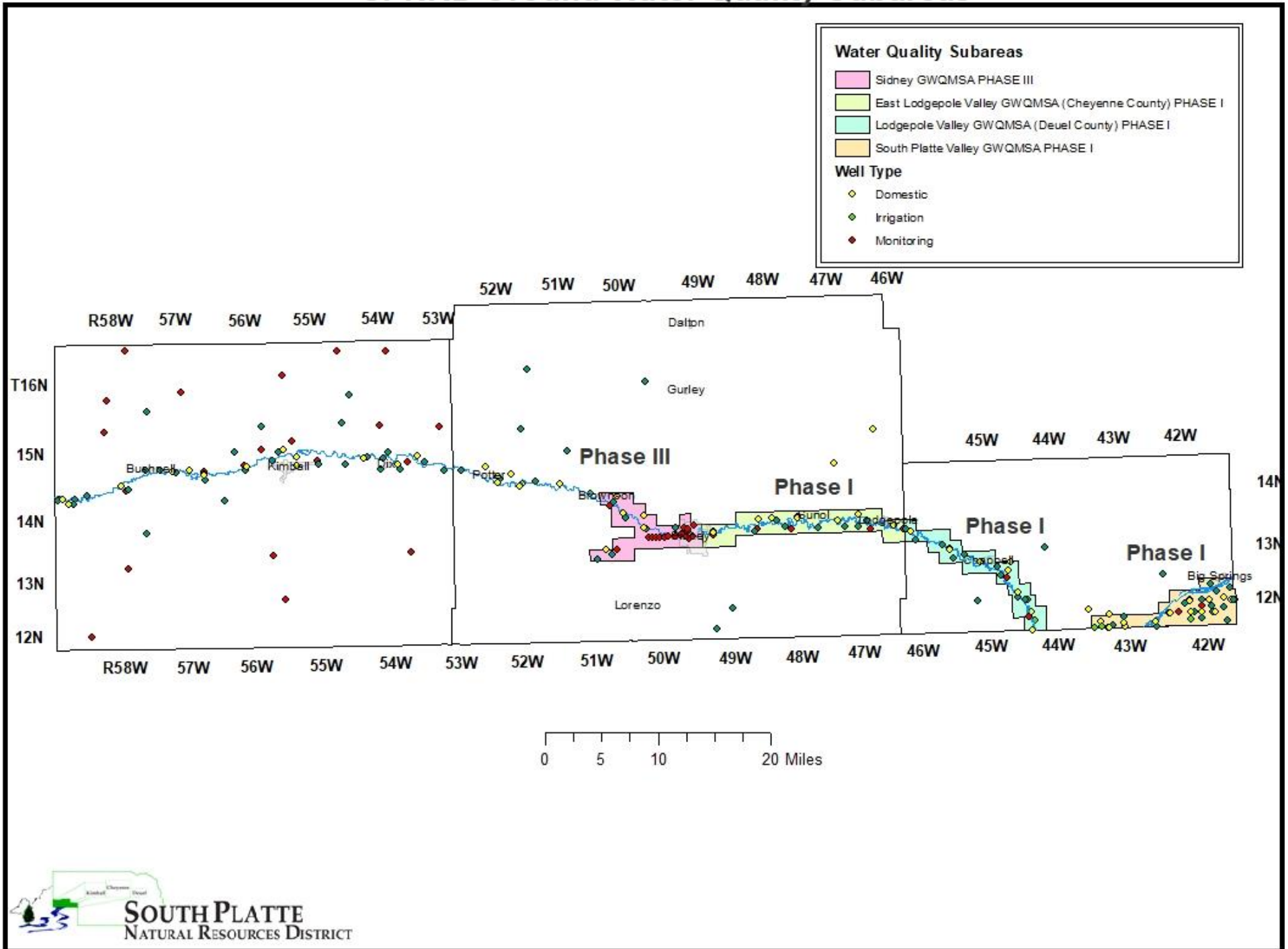
Quality Assurance/Quality Control (QA/QC) measures were followed during nitrate sampling. The primary method used for QA/QC was duplicate sampling. One duplicate was taken for every ten samples. The relative percent difference (RPD) was determined from the two duplicate samples. An average of this percent is then calculated for all the RPD's. This year's average was 1.65% for 28 duplicate samples. 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:

- The Sidney GWQMSA is in a Phase III management control (three consecutive years over the 95% MCL trigger). Producers in this area are required to abide by the District's Nitrogen Reporting Program.
- This is the second consecutive year that the South Platte Valley GWQMSA has been over the 80% MCL trigger
- Nitrate levels have been steadily increasing in areas along the Lodgepole Creek in Kimball county between Pine Bluffs, WY and Bushnell. Currently, there are no ground water quality management areas designated in Kimball county.

SPNRD Ground Water Quality Subareas



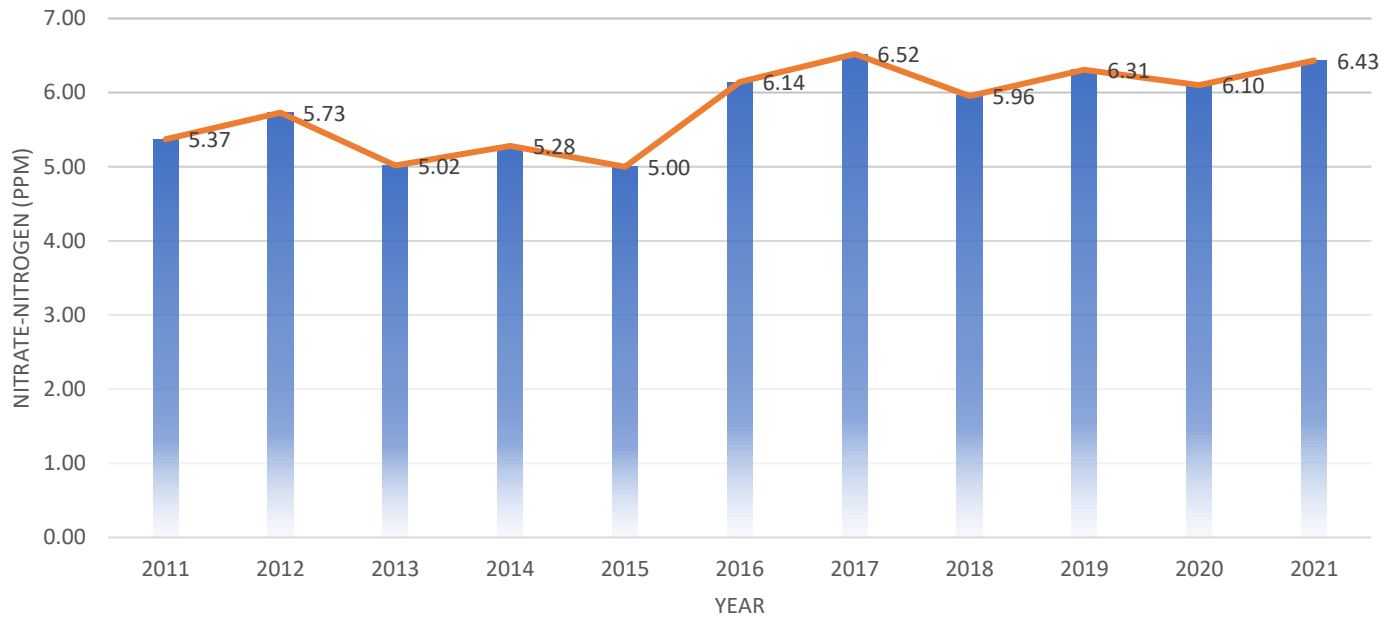
NITRATE AVERAGES FOR TARGET SUBAREAS OF THE DISTRICT

Target Area	2013	2014	2015	2016	2017	2018	2019	2020	2021
City of Sidney Municipal Wells	11.64	9.82	9.83	9.82	11.38	12.89	12.75	13.00	13.44
Sidney Draw Trigger Monitoring Wells	10.22	9.88	10.53	10.49	11.10	11.74	11.82	13.70	14.58
Sidney GWMA Network Wells	4.55	4.61	4.72	6.91	7.05	8.04	8.39	10.46	9.71
Composite Average SGWQMSA (Phase II)	9.03	8.01	8.40	8.97	9.77	10.56	10.55	12.16	12.10
East Lodgepole Valley GWMA Network Wells	7.42	6.31	7.34	7.56	7.44	6.99	6.64	7.60	6.92
East Lodgepole Valley Monitoring Wells	9.99	8.56	7.45	8.65	8.67	10.03	9.00	7.80	9.20
Composite Average East Lodgepole Valley GWQMSA (Phase I)	7.88	7.74	7.36	7.79	7.97	7.75	7.31	7.66	7.49
West Lodgepole Valley Cheyenne County	3.90	3.71	3.43	4.13	5.07	4.16	3.86	3.49	3.71
South Platte Valley GWMA Network Wells	8.63	8.97	8.75	9.79	8.50	9.29	9.02	10.32	9.97
South Platte Valley Monitoring Wells	5.90	5.32	4.73	4.42	3.90	3.82	3.92	4.87	5.38
Composite Average South Platte Valley GWQMSA (Phase I)	8.02	8.21	7.89	8.64	7.55	8.20	7.96	9.23	8.95
Lodgepole Valley (DC) GWMA Network Wells	5.69	6.16	6.36	7.73	6.90	7.21	6.76	6.61	5.24
Lodgepole Valley (DC) Monitoring Wells	5.73	5.23	4.90	3.88	3.10	3.03	3.40	3.78	3.08
Composite Average Lodgepole Valley GWQMSA Deuel County (Phase I)	5.70	5.93	6.00	6.70	5.73	6.01	5.80	5.98	4.70
Lodgepole Valley (KC) Network Wells	4.56	5.16	4.61	6.13	6.37	5.99	6.53	6.06	6.08
Lodgepole Valley (KC) Monitoring Wells	6.63	6.27	5.71	6.68	7.55	6.38	5.61	6.27	7.89
Composite Average Lodgepole Valley (KC)	5.42	4.84	5.18	6.26	6.61	6.07	6.31	6.10	6.43

Kimball County Lodgepole Valley Composite Averages

Well Type	Well ID	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
Domestic	D017	0.30	0.27	0.15	0.15	0.10	0.10	0.15	0.30	0.10	0.15	0.15	
	D003	4.40	4.80	5.30	5.40	5.65	7.10	9.20	10.00	10.90	11.50	11.75	
	D027	6.30	6.40	5.80	5.65	5.83	5.85	6.30	6.05	6.90	7.60	7.50	
	D018	3.50	0.90	2.85	0.70	0.70	1.53	0.77	0.90	0.60	0.40	0.50	
	D030							10.95	10.05	9.85	10.30	9.80	
	D038	8.10	5.40	3.80	4.55	4.20	6.20	7.80	3.77	4.10	3.95	3.30	
	D004	6.85	7.32	7.77	7.97	8.10	9.40	11.90	14.40	18.85	18.50	20.23	
	D029	6.10	4.40	3.40	4.30	7.37	7.20	6.80	5.95	5.35	3.90	3.60	
	D014	6.90	7.30	6.05	5.40	6.00	6.23	9.45	6.40	8.45	7.55	6.25	
	D007	5.30	4.90	5.25	5.65	5.10	5.90	6.00	4.60	4.45	4.80	4.50	
	D022	4.00	3.97	4.05	4.05	3.90	4.15	4.70	4.40	4.20	4.45	4.40	
	D016	0.80	0.80	2.25	2.30	1.80	0.20	0.20	0.25	0.10	0.20	0.10	
	D043	5.65	6.20	6.20	7.30	8.00	7.70	10.45	10.95	11.23	12.05	12.50	
	D044	14.20	12.60	10.13	11.03	10.45	13.73	11.00	9.35	8.50	9.53	9.40	
	Irrigation	I011										3.60	
		I013	3.20	3.10				3.40	2.80	2.90	2.20	2.30	2.30
I039		8.40	7.20	6.80					9.40				
I005		5.20	5.70	5.30	5.20						6.40	8.40	
I006		5.98	6.20	6.30	7.20		9.00	9.80		13.50	14.10	15.15	
I025		4.00	3.70	3.90	4.40								
I041		4.58			2.70	2.80			3.10		3.60	4.40	
I046			7.00	2.40	2.70	2.20	2.50	3.00	2.50		2.50	2.50	
I008								2.60	2.20	2.70	2.40	3.00	
I037		6.00	6.15	5.80	4.80	5.10	6.30	6.60	7.20		7.95		
I001		2.70		4.60				9.90					
I045		5.90	11.10	2.70	3.30	3.40	3.70	3.50	3.80		4.20	3.40	
I032							5.60	4.60	4.80		4.60	5.00	
I024		5.20	5.60	4.50	5.00	5.80	5.80	6.10	6.00		6.30	5.20	
I040		5.00	4.70	4.10	5.40	5.10	5.80	5.80	6.20	5.00	6.40	5.80	
I042		12.60	13.10	7.20	11.20		17.00	12.00	15.90	14.10	12.60	8.00	
I023		3.10	2.70	2.40	2.20						2.80	4.20	
I028		6.52	7.70	5.30	5.40	4.90	7.90	6.60	7.20	6.90	6.50	7.65	
I002	5.70	5.40	5.20	8.90			6.10	5.20			3.80		
I015	2.90	2.50	3.10	4.00	2.80	4.00	3.00	3.20	2.70	3.20			
I031	3.40	4.00	3.20	3.10		3.00	2.80	3.30	3.00	3.60	3.60		
Monitoring	K-1-D	5.20	5.50	5.60	5.90	4.80	6.00	5.90	4.30	4.50	4.20	5.90	
	K-1-S	9.30	10.80		9.20	8.10	10.50	8.90	8.50				
	K-2	9.60	10.00	11.60	11.21	7.30	8.10	9.40	5.60	5.50	5.40	9.80	
	K-3	5.35	8.35	7.60	6.20	10.50	9.30	12.50	8.70	4.50	8.90	9.60	
	K-4	1.80	2.80	4.20	3.84	2.50	1.95	3.60	2.40	5.10	5.10	5.10	
	K-5	2.50	2.70		2.62	2.40	2.50	2.60	2.30	2.60	3.10	3.20	
	K-6-D	3.80	5.43	5.40	5.50	5.00	6.87	8.00	8.20	7.90	8.40	10.00	
K-6-S	3.80	5.40	5.40	5.70	5.10	8.20	9.50	10.10	9.20	8.80	11.60		
Average		5.37	5.73	5.02	5.28	5.00	6.14	6.52	5.96	6.31	6.10	6.43	

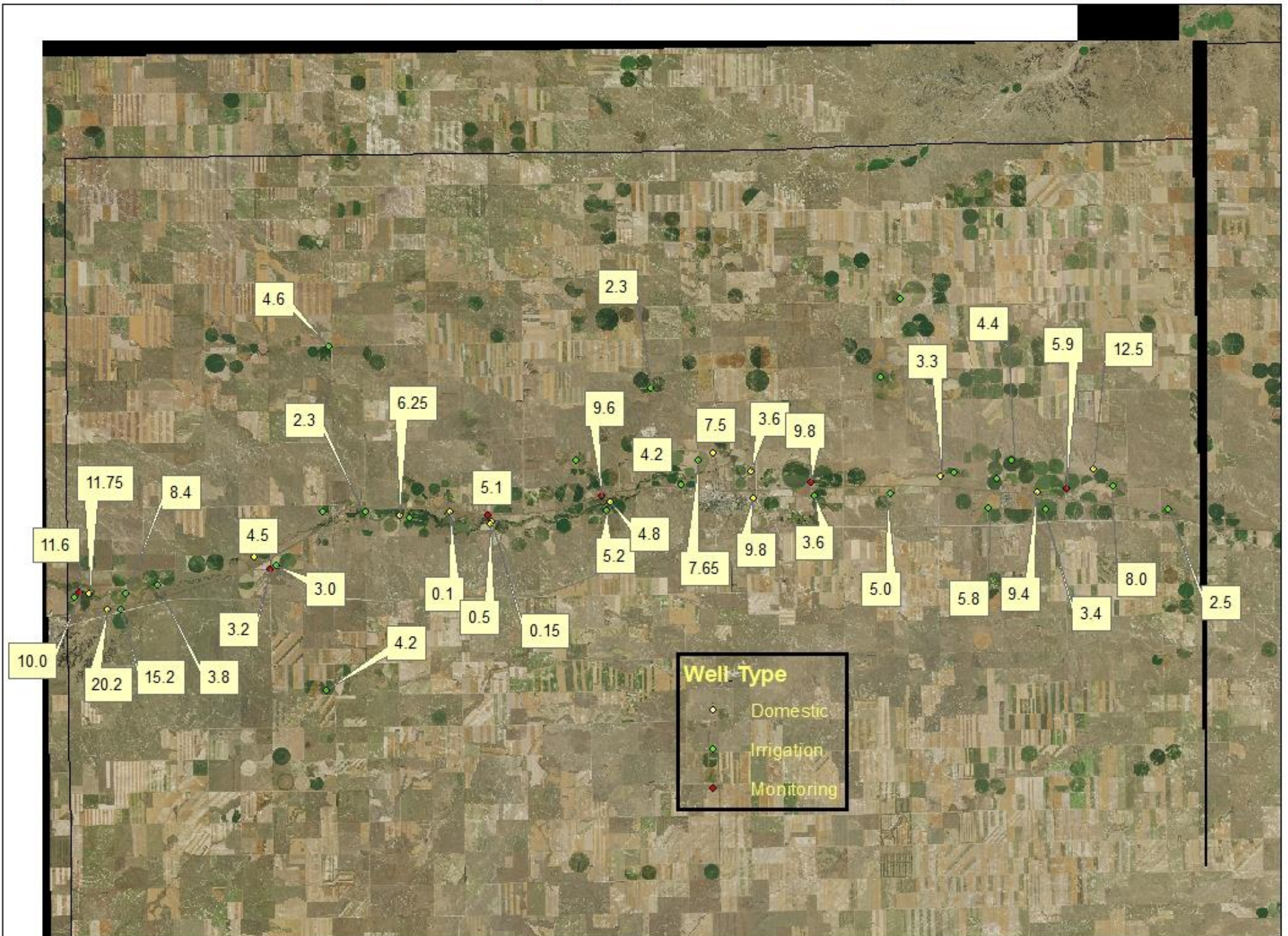
KIMBALL COUNTY LPV COMPOSITE AVERAGES



Kimball County Tablelands

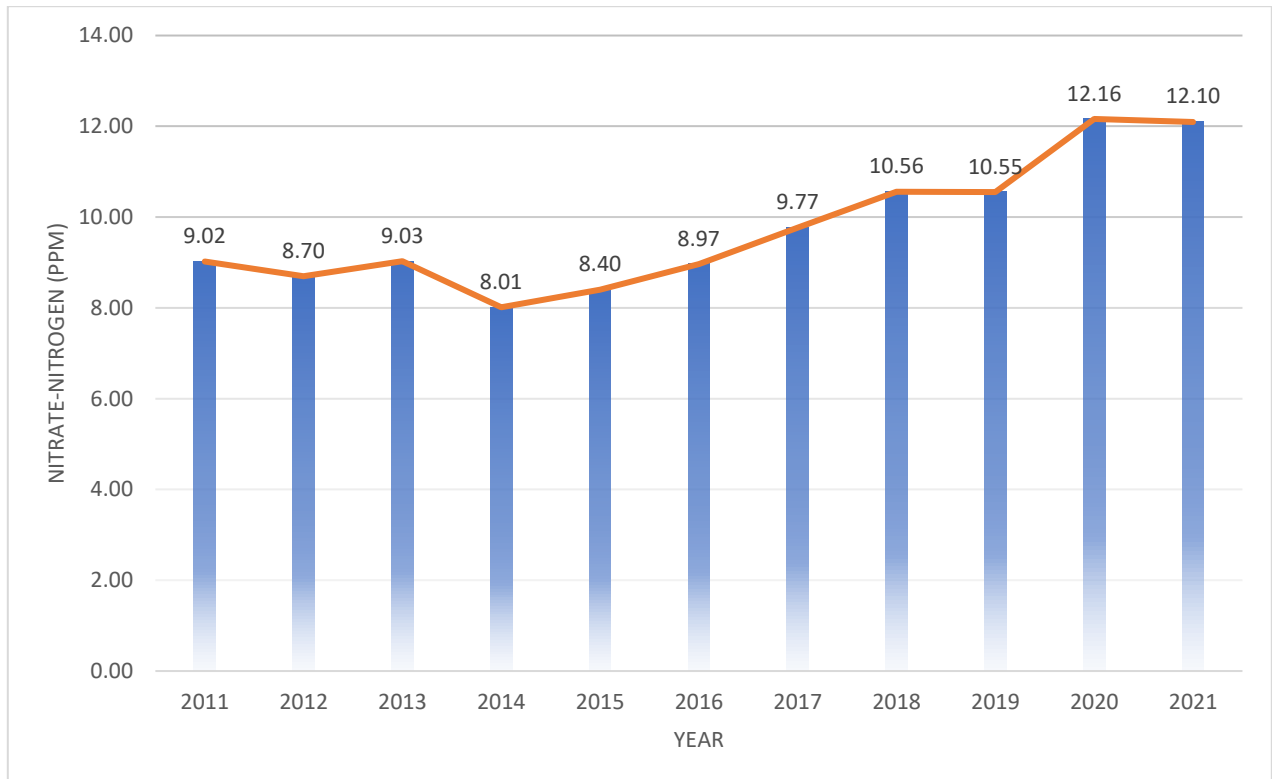
Well Type	Well ID	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
Irrigation	I035	2.17	3.10	3.00	2.50	2.40	2.20			2.30			
	I034	2.67	2.90	2.50	2.90	2.80		2.60			2.60		
	I020	2.90	2.30	2.55	2.50	2.70	2.50	2.30	2.60	1.20	1.50	2.30	
	I009	4.30	3.80	3.70	5.20	4.00	4.50						4.20
	I012	2.50	2.80	2.30	3.00	3.80		3.20	3.25	3.60	3.30		4.60
Average		2.91	2.98	2.81	3.22	3.14	3.07	2.70	2.93	2.37	2.47	3.70	

Kimball County Composite/Tableland Map

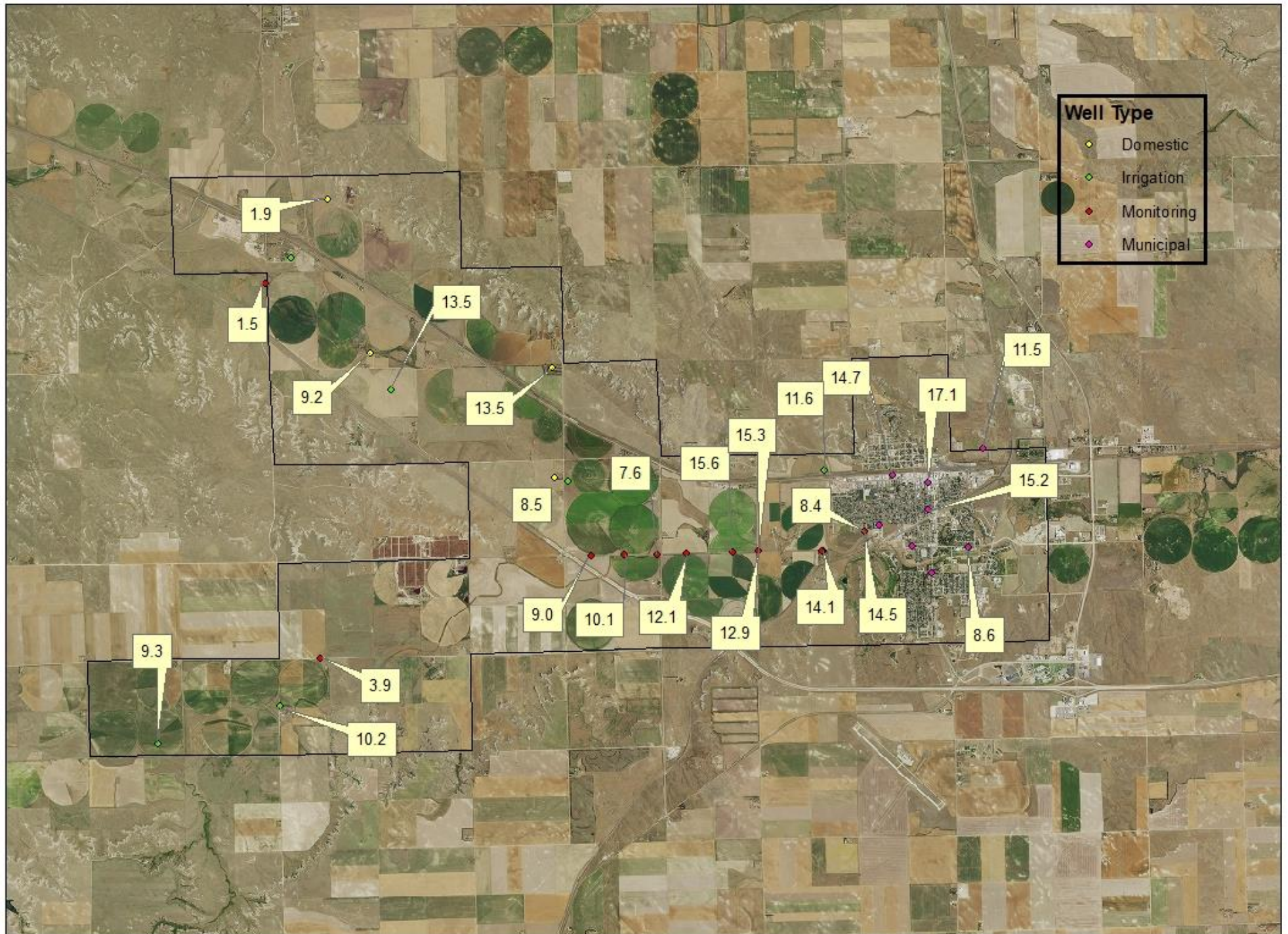


Sidney Ground Water Quality Management Subarea Composite Averages

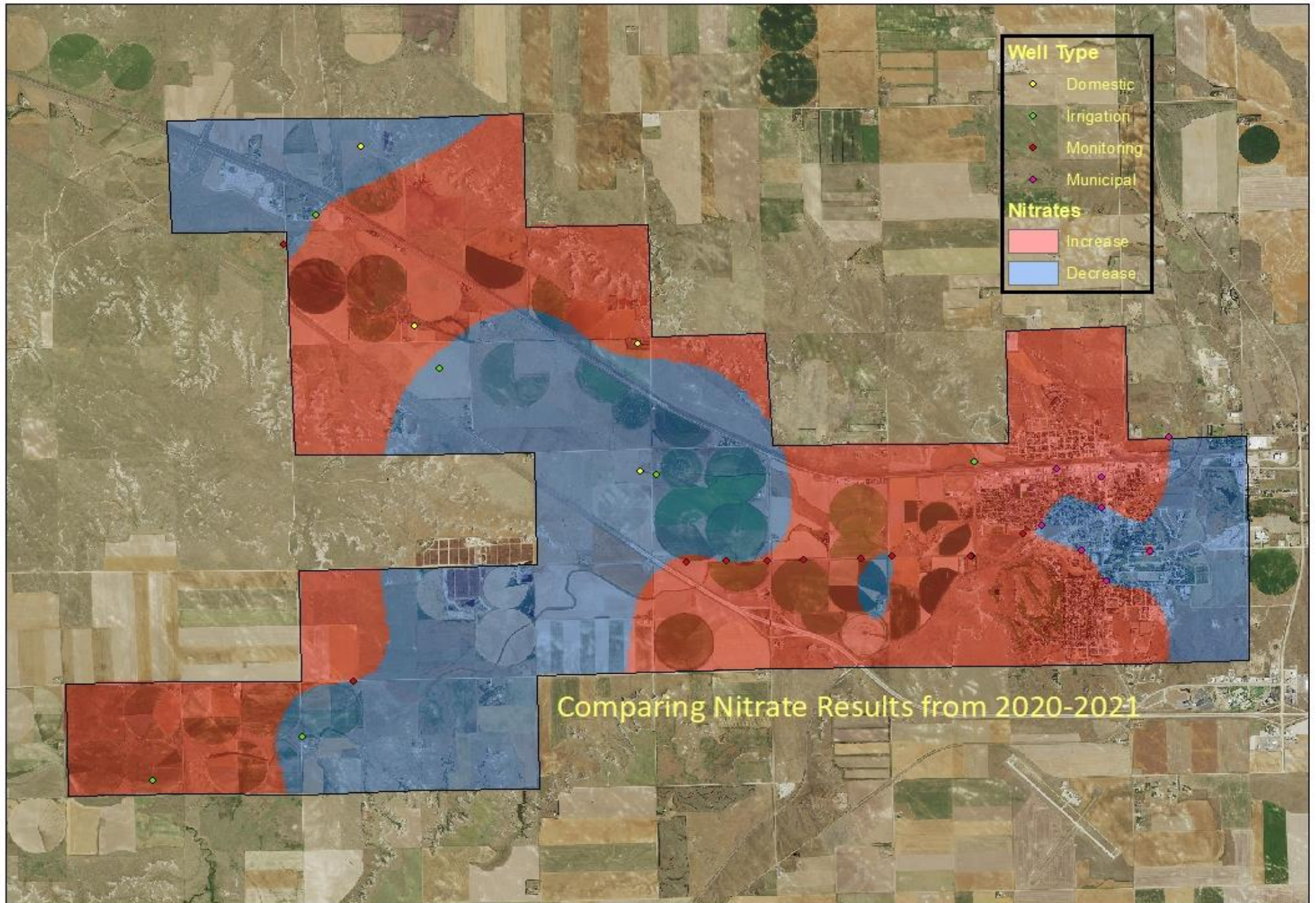
Well Type	Well ID	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Domestic	D068	6.20	1.00	2.95	0.95	8.40	7.05	8.15	6.85	9.20	13.30	8.47
	D069	5.30	5.70	5.15	5.95	5.30	10.05	6.65	8.65	6.80	12.60	13.55
	D060	1.35	1.10	1.55	1.20	1.05	0.95	1.70	2.30	1.20	2.70	1.90
	D058	5.00	6.90	5.95	7.40	5.45	6.45	6.60	9.50	8.27	6.85	9.15
Irrigation	I061		4.40	3.80	3.40	3.80						
	I063						5.40					9.30
	I067	4.01		7.90				9.50	12.50	11.10	11.70	
	I059				8.90		10.10	9.70	9.40	11.40	14.50	13.50
	I070									11.75		11.60
	I064	5.90	5.50		4.50	4.30	8.40		7.10	7.40	11.60	10.20
Municipal	SMW-1	13.75	13.63	13.85	10.42	10.85	11.87	13.95	14.26	13.65	13.72	14.69
	SMW-2	13.65	13.50	13.90	11.49	11.53	12.10	14.29	14.36	14.31	15.35	15.23
	SMW-3	14.00	14.20	14.70	11.44	11.60	10.51	14.30	16.16	16.09	15.85	17.12
	SMW-4	8.90	8.53	8.75	8.23	8.11	7.30					
	SMW-6	14.05	14.17	14.10	12.03	12.15	10.50	7.49				
	SMW-7	11.25	10.80	10.35	9.06	8.35	9.90					
	SMW-8	8.00	7.87	7.80	7.11	7.49	8.19	8.66	8.57	8.71	8.62	8.64
	SMW-9	8.50	9.13	9.70	8.78	8.58	8.15	9.56	11.12	11.00	11.47	11.51
	SD-10	11.87	9.50	10.30	9.90	10.07	10.05	10.80	10.20	11.10	13.40	14.10
SD-12-D	12.20	12.09	12.52	12.30	12.60	11.20	12.10	12.80	14.80	15.90	15.80	
SD-4	7.37	8.00	8.60	8.24	8.95	11.35	12.40	13.70	10.90	11.50	12.10	
SD-6	10.45	9.90	10.40	10.23	11.55	10.53	11.40	12.50	11.40	15.00	15.60	
SD-7-D	9.65	9.32	9.30	8.74	9.50	9.30	8.80	9.50	10.90	12.70	15.30	
Average		9.02	8.70	9.03	8.01	8.40	8.97	9.77	10.56	10.55	12.16	12.10



Sidney Ground Water Quality Management Subarea

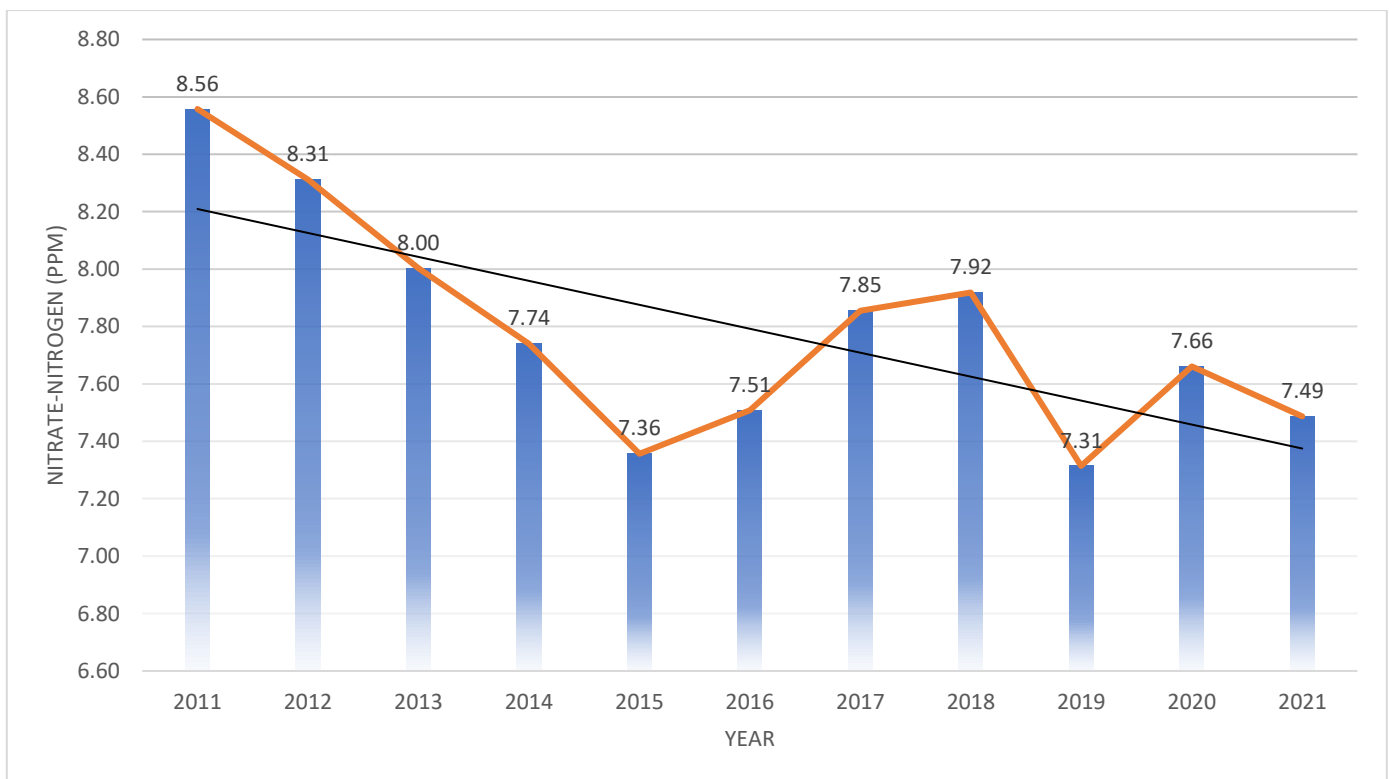


Sidney Ground Water Quality Management Subarea



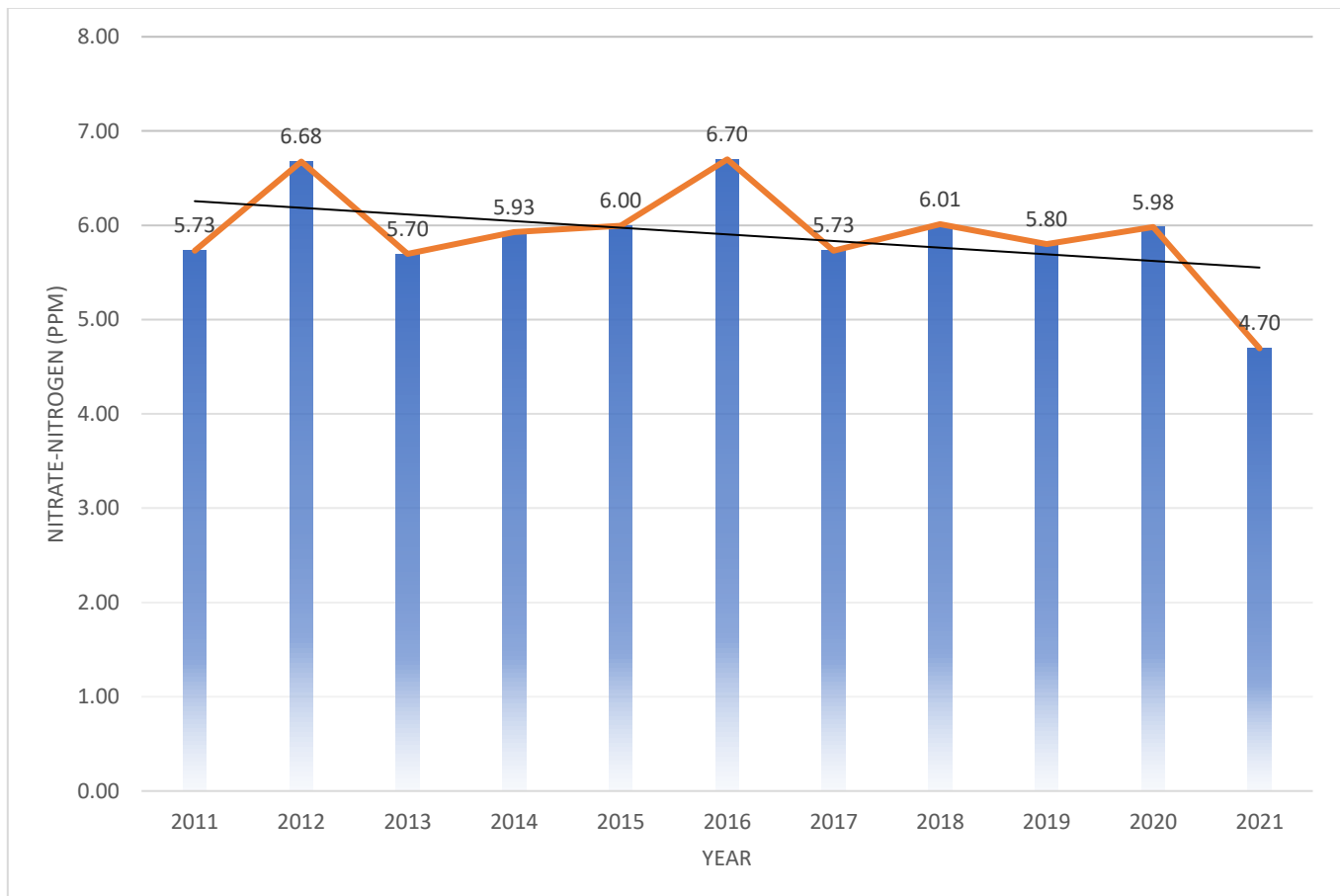
East Lodgepole Valley Ground Water Quality Management Subarea (Cheyenne County)

Well Type	Well ID	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Domestic	D152	7.40	6.90	6.10	8.00	7.40	7.80	7.20				
	D151	13.00	7.80	7.70	8.80	8.23	7.45	7.75	7.35	6.85	6.70	6.40
	D153	6.35	5.40	4.90	4.55	4.50	4.40	6.43	5.40	4.20	3.63	3.43
	D150	6.80	7.10	6.90	8.55	8.20	7.45	7.95	7.80	7.30	7.23	6.20
	D082	12.80	13.55	13.25	14.55	10.75	13.60	11.30	10.10	11.70	10.65	9.20
	D154	8.95	6.80	6.40	8.50	8.50	8.10	8.40	8.00	7.70	7.80	7.80
	D146	4.20	4.00	3.40	4.20	4.00	4.05	4.50	4.05	3.60	4.05	3.80
	D147	6.70	7.40	6.65	6.00			7.50				
	Irrigation	I085		6.80	7.30	7.20	7.70	6.00	6.20	6.40	6.90	
I157		15.50	13.10	11.10	12.60	13.45	9.30	13.60	13.50		13.70	11.50
I087		10.70	11.30	11.40	9.45	7.30	6.80	4.30	7.30		5.20	6.60
I130			7.30	6.30	6.30	6.90	6.60	6.20		7.05	9.00	9.00
I151		4.27	6.90	6.30	5.70	5.15	9.00		7.90	7.10	8.00	8.40
I148		4.76	5.45	6.80	5.20	5.00	6.50	6.70	5.90		7.60	
I083		9.21	10.00	12.80		10.20						
I156		4.20	4.00	2.80	3.20	2.70	3.50	3.40	2.90	4.00	3.40	4.35
Monitoring	E-1	5.80	5.65	5.10	4.94	3.30	4.10	4.30	5.50	5.10	4.00	4.40
	E-2	5.85	14.05	6.85	6.50	6.00	5.80	5.40	6.00	6.40	5.60	7.00
	E-3	20.15	16.10	20.95	15.23	14.30	19.10	23.40	21.30	17.90	19.60	18.10
	E-4	7.40	6.65	7.07	7.60	6.20	5.60	6.85	7.30	6.60	6.40	7.30
Average		8.56	8.31	8.00	7.74	7.36	7.51	7.85	7.92	7.31	7.66	7.49



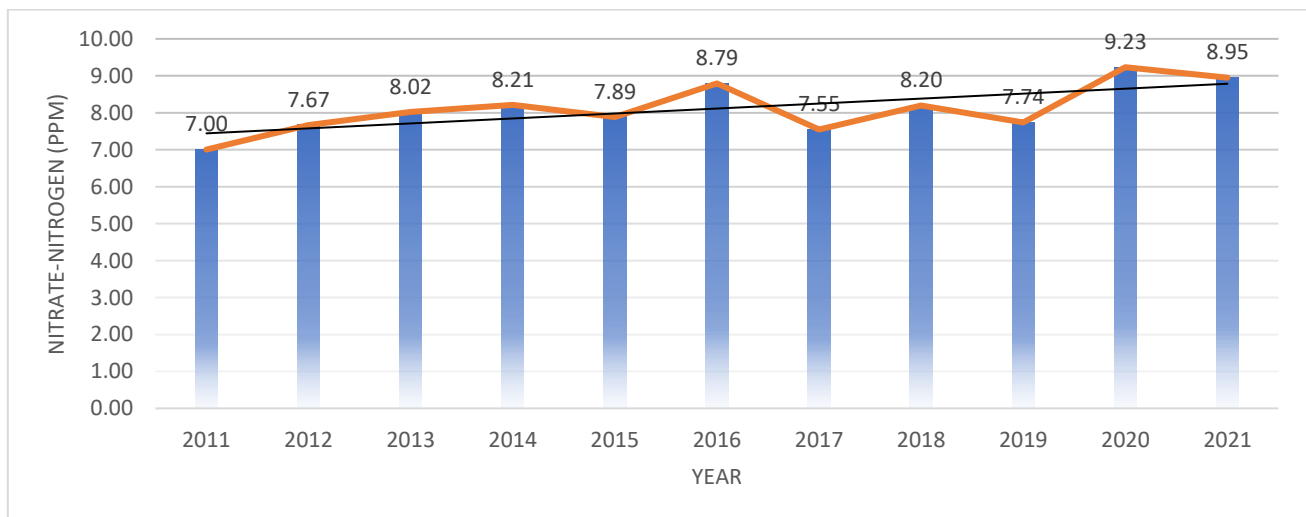
East Lodgepole Valley Ground Water Quality Subarea (Deuel County)

Well Type	Well ID	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Domestic	D101	6.10	5.33	5.25	8.70	5.70	6.60	3.75	3.00	1.75	1.90	3.40
	D090	5.85	6.90	4.75	4.10	4.70	6.10	6.10	5.00	4.20	5.40	3.95
	D098	6.40	5.53	5.95	5.60	5.00	5.05	5.55	5.25	5.10	5.10	4.63
	D094	5.00	4.10	3.70	4.20	4.20	4.20		4.20	3.85	3.80	2.50
	D097	21.25	25.57	24.20	15.90	20.00	27.80	20.40	23.15	31.25	33.00	20.70
	D092	1.25	2.17	1.85	2.30	1.73	2.05	1.90	1.35	2.75	2.35	0.95
Irrigation	I088	2.50	2.80	3.50	2.60	10.90	10.30				2.50	2.30
	I089	4.20	4.70	4.10	4.60	4.30	4.30			4.50	5.30	5.80
	I158	3.39	9.70				1.90	4.30			6.60	3.40
	I095	7.95	8.20	8.10	7.90				8.40			
	I132			4.50		4.00	8.20	6.70	6.30	4.00	4.60	
	I093	7.60	9.90	2.30	7.00	8.00	7.80	8.50	9.10	5.40	5.90	8.10
	I134	5.90	7.20	5.30	5.40	6.10	7.60	4.90	6.30	4.80	6.60	3.20
	I133		5.50	5.60	5.60		6.50				6.60	3.90
	I091	3.55	4.30	3.40		1.70						
	I135	3.13	3.30	2.80							2.90	
Monitoring	D-6	6.25	9.00	10.45	9.10	7.40	3.30	0.90	1.10	2.80	4.10	0.50
	D-7	7.10	6.20	5.85	5.80	5.90	6.00	5.50	5.50	5.40	5.20	5.30
	D-8	2.10	2.45	2.60	2.10	2.30	1.90	2.10	2.00	1.80	2.10	2.30
	D-9	3.65	4.00	4.03	3.93	4.00	4.30	3.90	3.50	3.60	3.70	4.20
Average		5.73	6.68	5.70	5.93	6.00	6.70	5.73	6.01	5.80	5.98	4.70

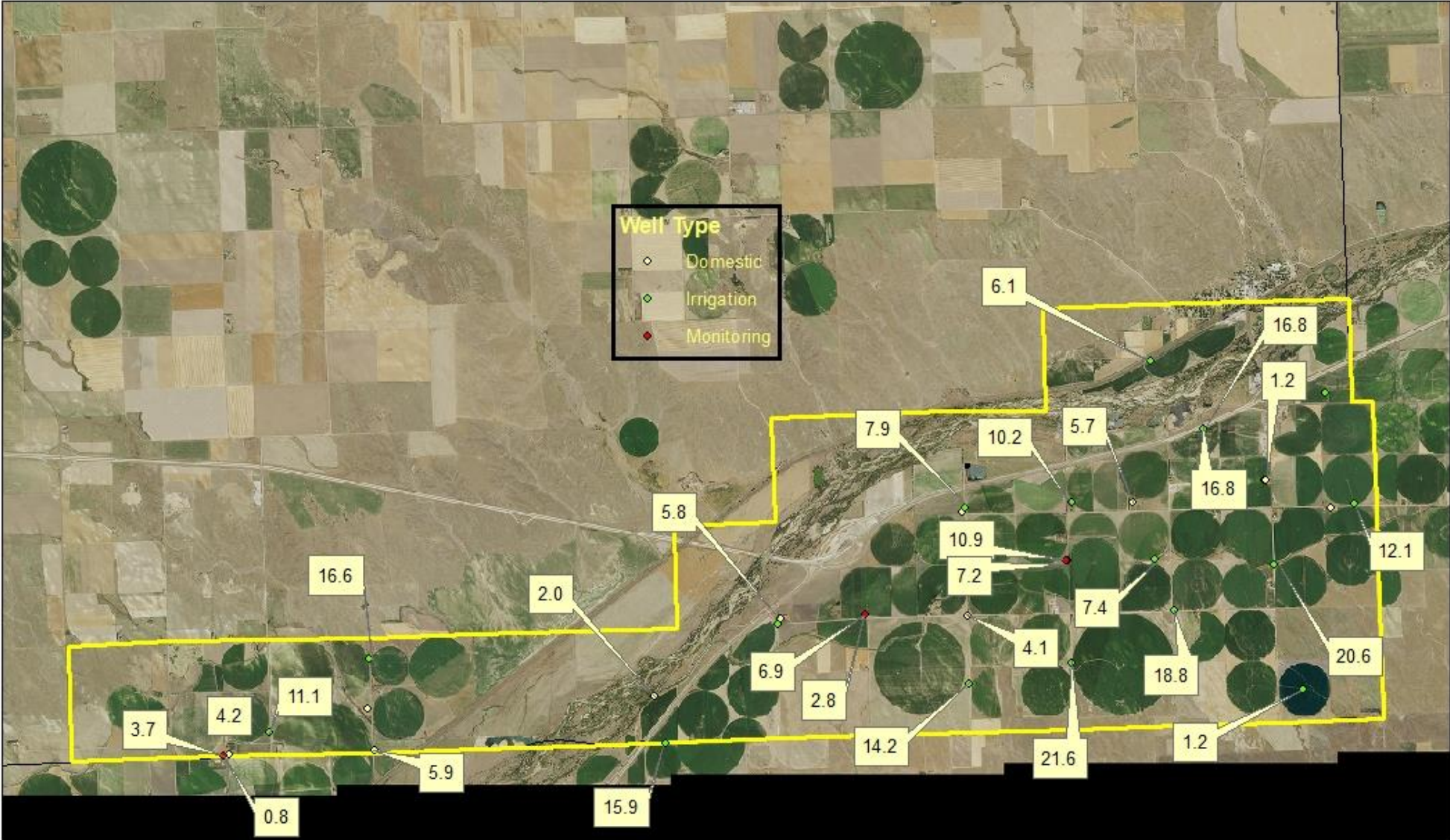


South Platte Valley Ground Water Quality Management Subarea

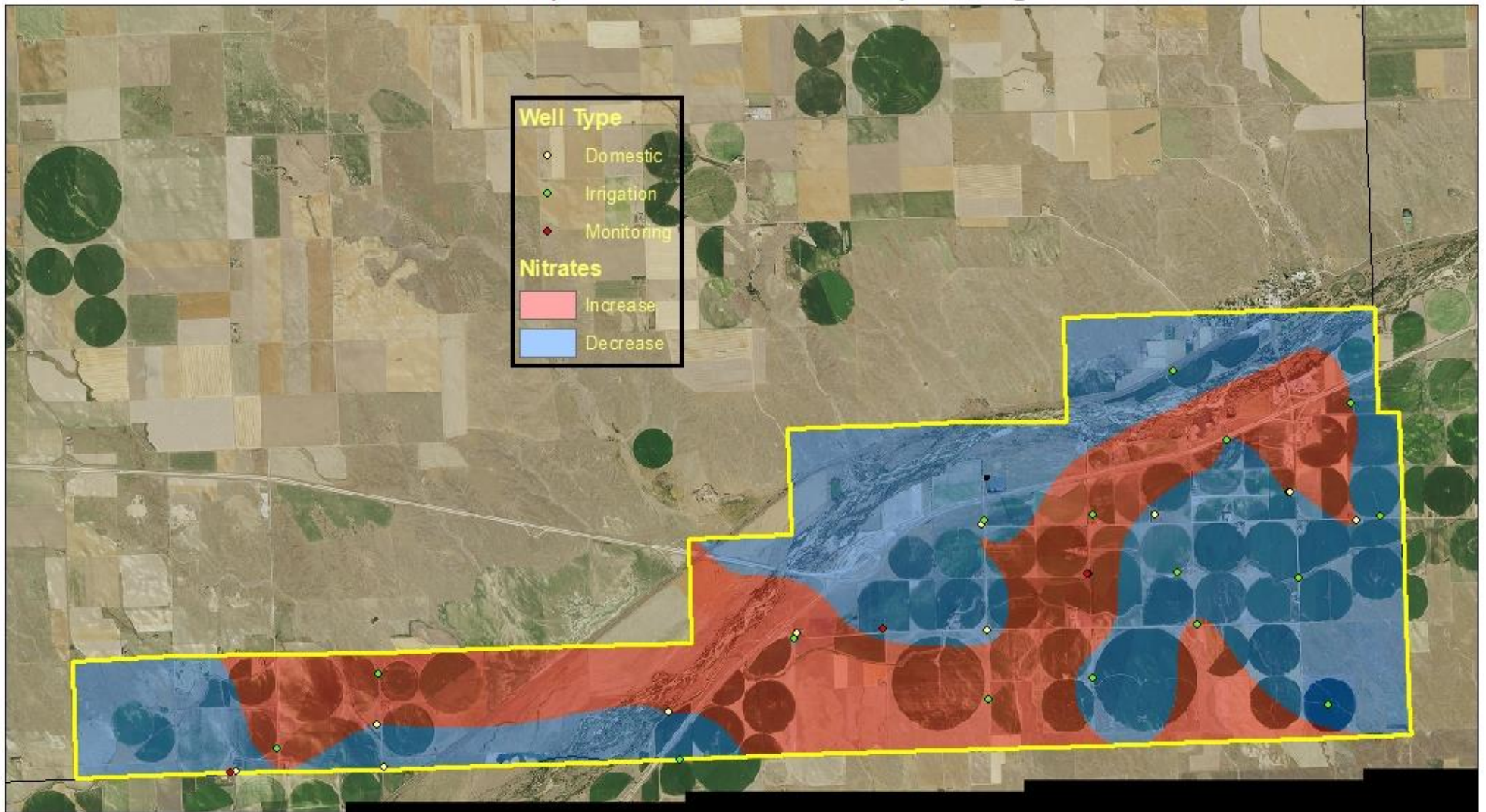
Well Type	Well ID	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
Domestic	D078	3.20	4.40	4.20	4.20		3.80		5.80	4.50	5.13	5.80	
	D077	4.00	4.10	5.10	4.60	5.95		4.70	4.85	4.35	5.40		
	D110		5.55	10.50	15.70	16.10	15.60	12.80	14.90	13.60	8.50	5.90	
	D076	9.80	7.93	7.33	10.20	9.00	8.25	7.97	8.15	7.10	6.30	5.70	
	D109	1.75	4.57	9.65	1.63	2.15	5.50	5.25	3.50	2.10	7.75	4.20	
	D111												
	D075	15.00	14.10	9.25	9.60	7.40	5.40	6.70					
	D100								10.60	1.30	7.80		
	D074	1.45	1.30	4.70	1.30	1.15	5.30	2.10	1.15	1.10	1.35	1.25	
	D113	1.95	5.07	2.70	2.30	1.40	1.95	2.43	2.80	2.13	2.00	2.00	
D079	6.95	3.00	3.95	4.80	4.10	3.60	4.60	3.55	4.25	5.15	4.10		
Irrigation	I119	7.30	8.10	5.20	5.20	10.50	14.20	8.50	10.40	6.80	6.60	6.10	
	I139	6.20	8.00	8.10	11.90	12.70	13.90	8.40	11.30	10.50	10.20	7.90	
	I144	1.60	1.50	1.35	1.20	1.40	1.20	1.20	0.90	1.10	1.70	1.20	
	I112	7.28	7.60		19.60	16.20	16.90	12.20	11.50	16.20	11.10	16.60	
	I143	16.90	20.00	19.80	18.90	17.70	20.55	16.90	20.40	17.70	23.70	20.60	
	I114	6.87	6.70	6.50	6.20	5.50	11.00	10.00	12.40	12.07	17.30	15.90	
	I115												
	I116	11.80	12.00				4.00	3.00	4.50	3.60	10.40	14.20	
	I108	9.00	13.40	12.80	10.20	12.30		12.90	9.30	10.70	10.40	11.10	
	I118	7.00	6.50	7.50	5.40	5.20	7.20	6.40	6.20	10.80	15.30		
	I141		10.80	10.20	11.80	9.90	10.60	10.60	10.70	10.10	10.80	7.40	
	I138	7.70	7.90	6.80	6.40	6.20	8.60	7.90	9.50	10.20	9.10	10.20	
	I137	8.16	8.80	10.90	8.80	9.30	11.10	10.60	12.30	12.40	16.80	16.80	
	I142	13.10	14.40	18.60	19.70	15.40	20.00	15.70	17.70	16.50	18.50	18.80	
	I159	19.10	19.60	16.10	15.70	11.30	14.00	8.90	11.20	10.90	13.60	12.10	
I145	4.10	6.40		10.90	11.60	17.00	15.70	19.40	18.70	22.90	21.60		
Monitoring	D-3-M	6.00	8.70	10.40	10.42	9.40	7.60	5.70	5.10	5.10	7.80	10.90	
	D-3-S	7.80	7.65	8.05	7.90	4.60	3.50	3.20	4.20	5.90	6.50	7.20	
	D-4-M	3.20	3.70	4.25	3.80	6.60	6.50	5.20	6.40	6.10	5.90	6.90	
	D-4-S	4.60	1.79	3.05	2.80	5.20	3.80	6.20	3.50	3.10	4.30	2.80	
	D-5-M	2.30	3.65	7.10	4.90	1.55	3.90	1.90	2.80	2.50	3.40	3.70	
	D-5-S	2.00	2.95	2.55	2.11	1.05	1.20	1.20	0.90	0.80	1.30	0.80	
Average		7.00	7.67	8.02	8.21	7.89	8.79	7.55	8.20	7.74	9.23	8.95	



South Platte Valley Ground Water Quality Management Subarea



South Platte Valley Ground Water Quality Management Subarea



Comparing Nitrate Results from 2000-2001

Cheyenne County West Lodgepole Valley

Well Type	Well ID	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Domestic	D122	7.40	5.40	5.80	6.60	6.85	6.90	7.30	7.70	6.65	6.10	6.65
Irrigation	I129	3.42	3.80								3.60	
	I127					1.20	1.80	1.60				1.60
	I128					3.50		3.30				
	I126	1.48									1.30	
	I123					1.30				1.20		
	I125						2.30	2.00	1.90		2.00	
	I128					3.50		3.30				
Average		4.10	4.60	5.80	6.60	3.27	3.67	3.50	4.80	3.93	3.25	4.13

Cheyenne County Tablelands

Well Type	Well ID	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Domestic	D122	7.40	5.40	5.80	6.60	6.85	6.90	7.30	7.70	6.65	6.10	6.65
Irrigation	I129	3.42	3.80								3.60	
	I127					1.20	1.80	1.60				1.60
	I128					3.50		3.30				
	I126	1.48									1.30	
	I123					1.30				1.20		
	I125						2.30	2.00	1.90		2.00	
	I128					3.50		3.30				
Average		4.10	4.60	5.80	6.60	3.27	3.67	3.50	4.80	3.93	3.25	4.13

Deuel County Tablelands

Well Type	Well ID	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Domestic	D106	2.90	2.95	2.65	2.70	2.30	2.50	3.30	2.80	2.30	2.80	2.00
	D155					6.90	10.40	10.70	9.30	10.50	15.30	6.30
	D095					6.35	6.30	7.50	7.85	6.90	8.00	7.10
	D107	3.15	2.95	2.67	3.00	2.65	2.50	3.00	2.75	2.45	2.45	2.50
Irrigation	I120	9.60	9.80		8.00		3.60					3.80
	I072	2.15	3.00	2.60	2.90	2.80	2.90			1.80	2.70	3.20
	I102			2.00	1.80	1.75	2.00	1.90	1.70	2.50	2.00	2.05
Average		4.45	4.68	2.48	3.68	3.79	4.31	5.28	4.88	4.41	5.54	3.85