

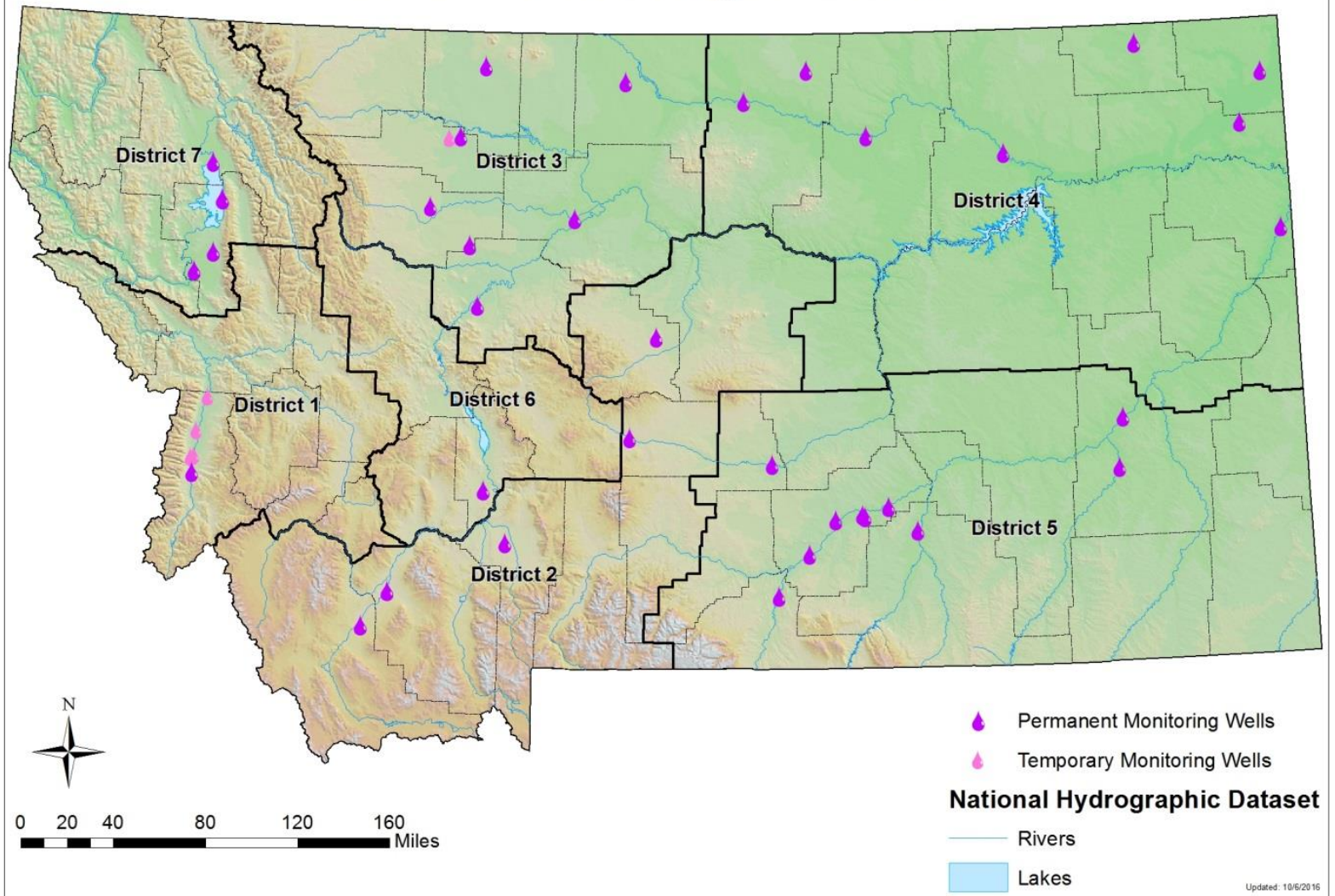
# Groundwater Protection Program



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## 2016 Sampling Season Summary

### Montana Department Of Agriculture Groundwater Protection Program 2016 Monitoring Locations



During the 2016 sampling season the Groundwater Protection Program (GWPP) collected groundwater samples from 37 permanent and 4 temporary monitoring wells. All wells in Regions 1, 6, and 7 and the western half of Regions 2 and 3 were sampled in May, June, August, and September. Wells in the eastern half of Regions 2 and 3 along with all wells in Regions 4 and 5 were sampled in May and August. In total, 129 samples were collected and analyzed for 105 pesticides, pesticide metabolites, nitrate, and nitrite. Results are summarized in the following tables by region. No detections exceeded the respective drinking water standard, or the action threshold of 50% of the respective drinking water standard. In general, most samples were < 1 % of their respective standard.

**Region 1**

Analyte	Number of Detections	Concentration Summary (parts per billion)			
		Average	Minimum	Maximum	Standard
2,4-D	1	Q < 0.009			70
Deethyl atrazine	5	Q < 0.0017			3
Imazapic	1	Q < 0.003			4,000
Imazapyr	2	0.0037	Q < 0.0035	0.0038	21,000
Nitrate as Nitrogen (parts per million)	3	3.2	1	6.8	10
Prometon	6	0.02	0.0092	0.028	100

**Region 2**

Analyte	Number of Detections	Concentration Summary (parts per billion)			
		Average	Minimum	Maximum	Standard
Aminopyralid	1	Q < 0.03			4,000
Chlorsulfuron	2	Q < 0.0056			1,750
Clothianidin	5	Q < 0.016			700
Deethyl atrazine	4	Q < 0.0017			3
Flucarbazone	3	0.4675	Q < 0.0024	1.3	3,000
Imazamethabenz methyl ester	3	Q < 0.001			400
Metsulfuron methyl	4	0.0103	Q < 0.01	0.011	2,000
Nitrate as Nitrogen (parts per million)	10	8.72	1.7	21	10
NOA 407854	1	0.0064			2,000
Prometon	8	0.0047	Q < 0.001	0.0089	100
Prosulfuron	1	0.005			100
Pyroxsulam	1	0.013			7,000
Sulfosulfuron	2	0.0107	0.0095	0.012	300

**Region 3**

Analyte	Number of Detections	Concentration Summary (parts per billion)			
		Average	Minimum	Maximum	Standard
2,4-D	7	0.01	Q < 0.009	0.014	70
Aminopyralid	3	0.3	Q < 0.03	0.63	4,000
Bromoxynil	1	Q < 0.012			3.4
Chlorsulfuron	2	Q < 0.0056			1,750
Flucarbazone	1	Q < 0.0024			3,000
Glyphosate	1	4.3			700
Hexazinone	3	0.0017	0.0015	0.002	400
Imazamethabenz methyl acid metabolite	7	0.0058	Q < 0.0025	0.0096	400
Imazamethabenz methyl ester	7	0.0066	0.0041	0.01	(sum of parent and metabolite)
Imidacloprid	4	0.0037	Q < 0.0018	0.0075	400
MCPP	1	Q < 0.0044			300
Metalaxyl	2	Q < 0.0035			600
Nitrate as Nitrogen (parts per million)	13	57.6	1.7	130	10
Nitrite as Nitrogen (parts per million)	4	0.23	Q < 0.1	0.35	1
NOA 407854	9	0.097	Q < 0.0052	0.27	2000
NOA 447204	3	0.029	Q < 0.02	0.047	(sum of parent and metabolite)
Picloram	2	47	42	52	500
Prometon	6	0.0029	Q < 0.001	0.0089	100
Pyrasulfotole	4	0.79	0.66	0.84	70

## Region 4

Analyte	Number of Detections	Concentration Summary (parts per billion)			
		Average	Minimum	Maximum	Standard
2,4-D	1		Q < 0.009		70
Aminopyralid	3	0.07	Q < 0.03	0.15	4,000
Deethyl atrazine	1		Q < 0.0017		3
Imazamethabenz methyl acid metabolite	2		Q < 0.0025		400
Imazethapyr	2		Q < 0.004		21,000
Nitrate as Nitrogen (parts per million)	11	8.1	Q < 1	18	10
Nitrite as Nitrogen (parts per million)	6	1.055	Q < 0.1	2.4	1
NOA 407854	2		Q < 0.0052		2,000
Prometon	3		Q < 0.001		100
Sulfentrazone	2	0.0425	0.04	0.045	700

## Region 5

Analyte	Number of Detections	Concentration Summary (parts per billion)			
		Average	Minimum	Maximum	Standard
Alachlor ESA	5	0.0842	Q < 0.044	0.11	400
Alachlor OA	1		Q < 0.0068		(sum of parent and metabolite)
Atrazine	3	0.0036	Q < 0.0022	0.005	3 (sum of parent and metabolite)
Deethyl atrazine	3	0.0041	Q < 0.0017	0.007	
DEDIA	1		Q < 0.1		
Hydroxy atrazine	3	0.0307	Q < 0.004	0.06	
Azoxystrobin	1		0.12		1,000
Bentazon	4	0.0366	Q < 0.0022	0.072	200
Clopyralid	1		0.34		1,000
Clothianidin	5	0.1594	Q < 0.016	0.33	700
Dimethenamid OA	2		Q < 0.0072		400
Fluroxypyr	1		1.3		7,000
Imazethapyr	2	0.0051	0.0051	0.005	20,000
MCPA	1		0.13		4
Metalaxyl	1		Q < 0.0035		600
Metolachlor ESA	13	0.0285	Q < 0.005	0.09	700
Nitrate as Nitrogen (parts per million)	6	5.4167	Q , 1	15	10
NOA 407854	8	0.0224	Q < 0.0052	0.062	2000
NOA 447204	1		0.08		(sum of parent and metabolite)
Prometon	9	0.001	Q < 0.001	0.001	100
Propiconazole	1		0.14		700
Pyrasulfotole	2	0.099	0.078	0.12	70
Simazine	2	0.0094	0.0093	0.009	4
Tebuthiuron	1		Q < 0.0011		500
Thiamethoxam	3	0.0297	Q < 0.02	0.049	80

**Region 6**

Analyte	Number of Detections	Concentration Summary (parts per billion)			
		Average	Minimum	Maximum	Standard
Atrazine	1		0.0095		3 (sum of parent and metabolite)
Deethyl atrazine	1		0.018		
Bentazon	1		0.014		200
Imazamethabenz methyl acid metabolite	1		0.015		400 (sum of parent and metabolite)
Imazamethabenz methyl ester	1		0.0028		
Imazamox	1		0.0093		20,000
Nitrate as Nitrogen (parts per million)	1		37		10
NOA 407854	1		Q < 0.0052		2000

**Region 7**

Analyte	Number of Detections	Concentration Summary (parts per billion)			
		Average	Minimum	Maximum	Standard
2,4-D	3		Q < 0.009		70
Aminopyralid	4	0.1125	Q < 0.03	0.36	4,000
Atrazine	1		Q < 0.0022		3 (sum of parent and metabolite)
Deethyl atrazine	5	0.0017	Q < 0.0017	0.0018	
Azoxystrobin	1		Q < 0.0052		
Difenoconazole	1		Q < 0.011		70
Imazamethabenz methyl acid metabolite	4	0.02	0.008	0.038	400 (sum of parent and metabolite)
Imazamethabenz methyl ester	4	0.0018	Q < 0.001	0.0028	
Imazapyr	3	0.0071	Q < 0.0035	0.013	21,000
Imidacloprid	5		Q < 0.0018		400
MCPPP	1		0.011		300
Metolachlor ESA	4	0.555	0.38	0.82	700 (sum of parent and metabolite)
Metolachlor OA	4	0.108	0.087	0.14	
Nitrate as Nitrogen	8	14.9	4.1	41	10
Prometon	11	0.0298	Q < 0.001	0.11	100
Simazine	4	0.0026	Q < 0.0026	0.0026	4

“Q” represents samples detected at below the respective analytical reporting limit. For statistical calculations, the respective analytical reporting limits values were used to quantify results.